Appendix K

Ecological Assessment Report

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ECOLOGICAL ASSESSMENT FOR TARONG WEST WIND FARM, IRONPOT, QUEENSLAND

December 2023

RES AUSTRALIA PTY LTD

Executive summary

RES Australia Pty Ltd engaged Ecosure Pty Ltd to conduct an Ecological Assessment for Matters of National and State Environmental Significance for the proposed Tarong West Wind Farm project in the locality of Ironpot, in south east Queensland. The project was formerly known as the Iron Leaf Wind Farm. The entire project site is approximately 17,500 ha in size, encompassing 15 properties. The project site involves construction of up to 97 wind turbine generators and associated supporting infrastructure and comprises:

- the planning corridor, a 1,952.96 ha subset of the project site, which contains a clearing footprint (1,062.14 ha) for wind turbine generators, tracks, and supporting infrastructure to be developed
- the transport route from Brisbane Port to the project site, most of which is currently suitable for conveying wind turbine blades and other large equipment to the wind farm project site, although some sections such as intersections, access points and narrow road easements will require widening.

Ecological surveys were conducted within the project site and transport route from 2018 to 2023 for conservation significant flora, fauna, and ecological communities listed as threatened or migratory under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and listed as threatened or near threatened or special least concern under the *Nature Conservation Act 1992*. A likelihood of occurrence assessment based on desktop data was completed for conservation significant species potentially present in the project site and was used to guide targeted field assessments. Potential habitat for each species was modelled based on known species information, species occupancy records, Queensland Department of Resources regional ecosystem modelling, and ground-truthed vegetation mapping.

Impacts on matters of conservation significance within the project site have been refined through avoidance in the design phase of the project. Throughout development, several planning corridors and wind turbine generator layouts were considered, and the corridor revised to avoid impacts on remnant vegetation, threatened ecological communities and areas of high value habitat (for example riparian habitats and habitats of high incidence of threatened species). Impacts to one threatened ecological community have been avoided completely (semi-evergreen vine thickets of the Brigalow Belt [North and South] and Nandewar Bioregions), located to the east of the project site.

Targeted surveys detected the presence or likely occurrence of nine fauna and one flora species considered matters of conservation significance within the project site:

- koala (*Phascolarctos cinereus*), listed as endangered under both the Environment *Protection and Biodiversity Conservation Act 1999*and *Nature Conservation Act 1992*
- greater glider (*Petauroides armillatus*), listed as endangered under both the *Environment Protection and Biodiversity Conservation Act 1999* and *Nature Conservation Act 1992*

- glossy black-cockatoo (*Calyptorhynchus lathami lathami*), listed as vulnerable under both the *Environment Protection and Biodiversity Conservation Act 1999* and *Nature Conservation Act 1992*
- grey-headed flying-fox (*Pteropus poliocephalus*), listed as vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999*
- white-throated needletail (*Hirundapus caudacutus*), listed as vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* and *Nature Conservation Act 1992* and migratory under the *Environment Protection and Biodiversity Conservation Act 1999*
- rufous fantail (*Rhipidura rufifrons*), listed as migratory under the *Environment Protection and Biodiversity Conservation Act 1999* and special least concern under the *Nature Conservation Act 1992*
- satin flycatcher (*Myiagra cyanoleuca*), listed as migratory under the *Environment Protection and Biodiversity Conservation Act 1999* and special least concern under the *Nature Conservation Act 1992*
- fork-tailed swift (*Apus pacificus*), listed as migratory under the *Environment Protection and Biodiversity Conservation Act 1999* and special least concern under the *Nature Conservation Act 1992*
- echidna (*Tachyglossus aculeatus*), listed as special least concern under the *Nature Conservation Act 1992*
- Bailey's cypress (*Callitris baileyi*), listed as near threatened under the *Nature Conservation Act 1992*.

Significant impact assessments were conducted for these species confirmed or considered likely to occur and two flora species, wandering peppercress (*Lepidium peregrinum*) and Austral toadflax (*Thesium australe*), considered possible to occur within the clearing footprint. Assessments for matters of national environmental significance were completed in accordance with the Significant Impact Guidelines 1.1 - Matters of National Environmental Significance, and assessments for matters of state environmental significance were completed in accordance with the Significant Residual Impact Guideline. Provided all recommended mitigation measures detailed in this report are applied, it is considered unlikely the proposed development will result in a significant impact to the following matters of conservation significance:

- threatened fauna (greater glider, glossy black cockatoo and grey-headed flying-fox)
- threatened flora (Bailey's cypress, wandering peppercress and Austral toadflax)
- migratory and special least concern fauna (rufous fantail, satin flycatcher, fork-tailed swift, and echidna).

After mitigation and minimisation measures have been implemented, but before offsets are applied, there is likely to be a direct and indirect impact that is considered significant to the following species:

- koala (due to loss of habitat/feeding trees during the construction phase of the project)
- white-throated needletail (through operational impacts due to potential direct mortality resulting from wind turbine strike).

Minimisation of residual impacts to koala will involve management of land-based environmental offsets, and residual impacts to white-throated needletail will be managed using adaptive management measures applied in accordance with the future approved Tarong West Bird and Bat Management Plan. RES Australia Pty Ltd has purchased a property contiguous with the project site to be dedicated for use as land-based environmental offsets. The management of this offset will be subject to a management plan required under a future Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* Approval.

Impacts to regulated vegetation are considered a Matter of State Environmental Significance, and offsets may need to be considered to address the following:

- Up to 16.98 ha of Category B (remnant) regulated vegetation containing least concern REs will be impacted.
- The planning corridor contains 4.93 ha of regulated vegetation within the specified buffer distance of mapped vegetation management watercourses.

The Tarong West Wind Farm project may require offsets under a future Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* approval. Offsets for MNES and MSES (where they relate to the same matter, for example impacts to koala habitat) may be considered and managed together under the Queensland *Environmental Offsets Act 2014*.

The portions of State Code 23 – Wind Farm Development relevant to this ecological assessment under the State Development and Assessment Provisions (version 3.0) are:

- Performance Outcome 5 – Development is designed, sited and operated to ensure that flora, fauna and associated ecological processes are protected from adverse impacts.
- Performance Outcome 8 – Development maintains the natural drainage patterns on the site by protecting:
  - bank stability by limiting bank erosion
  - water quality objectives by filtering sediments, nutrients and other pollutants
  - aquatic habitats
  - terrestrial habitats.

Provided the management and mitigation measures detailed in this ecological assessment and the project specific management plans (Preliminary Fauna Management Plan, Preliminary Vegetation Management Plan and Preliminary Bird and Bat Management Plan) are implemented, the proposed Tarong West Wind Farm project will comply with the performance outcomes of State Code 23 – Wind Farm Development relevant to ecological matters.

Glossary, acronyms and abbreviations

ALA	Atlas of Living Australia
BBMP	Bird and Bat Management Plan
BBUS	Bird and bat utilisation survey
BoM	Bureau of Meteorology
BPA	Biodiversity Planning Assessment
Conservation significant species	Species listed as threatened (critically endangered, endangered, vulnerable) and/or migratory under the EPBC Act, or listed as threatened or near-threated under the NC Act
DAWE	Commonwealth Department of Agriculture, Water and the Environment (now DCCEEW)
DBH	Diameter at breast height (1.4 m above ground)
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DECC	New South Wales Department of Environment and Climate Change
DEHP	Queensland Department of Environment and Heritage Protection (now DES)
DES	Queensland Department of Environment and Science
DEWHA	Department of the Environment, Water, Heritage and the Arts
DNRM	Queensland Department of Natural Resources and Mines (now DOR)
DNRME	Queensland Department of Natural Resources, Mines and Energy (now DoR)
DoE	Commonwealth Department of the Environment (now DCCEEW)
DoR	Queensland Department of Resources
DRDMW	Queensland Department of Regional Development, Manufacturing and Water
DSDILGP	Queensland Department of State Government, Infrastructure, Local Government and Planning
EO Act	*Environmental Offsets Act 2014* (Queensland)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
GBO	General biosecurity obligation
HVR	High value regrowth
LFC	Landscape fragmentation and connectivity tool
MCU	Material Change of Use
MNES	Matters of national environmental significance
MSES	Matters of state environmental significance
NC Act	*Nature Conservation Act 1992* (Queensland)

OHL	Overhead line
PMAV	Property Map of Assessable Vegetation
PMST	Protected matters search tool (Commonwealth)
QPWS	Queensland Parks and Wildlife Service
RE	Regional ecosystem
RES	RES Australia Pty Ltd
RSA	Rotor swept area
SARA	State Assessment and Referral Agency
SAT	Koala spot assessment technique
SBRC	South Burnett Regional Council
SDAP	State Development Assessment Provisions
SEQ	South-east Queensland
SEVT	Semi-evergreen vine thicket
SLATS	Statewide landcover and tree study
SLC	Special least concern
SMP	Species management program
SPRAT	Species profile and threats database
TEC	Threatened ecological community
TNT	Threatened or near threatened
TSSC	Threatened Species Scientific Committee
UG	Underground
VM	Vegetation management
VM Act	*Vegetation Management Act 1999* (Queensland)
WoNS	Weed of National Significance
WTG	Wind turbine generator

Contents

List of figures

List of tables

1 Introduction

1.1 Background

RES Australia Pty Ltd (RES) proposes to develop the Tarong West Wind Farm (formerly known as the Iron Leaf Wind Farm) in the locality of Ironpot in south-east Queensland. The project site comprises 15 properties with an approximate combined area of 17,500 ha (including reserves and easements) (Table 1).

Table 1 Lot on Plan of properties located within the site

Lot	Plan	Area (ha)
5	BO330	3721.19
60	BO188	509.43
66	BO190	412.34
67	BO490	493.51
10	SP168643	1924.15
68	RP800291	511.94
43	FTZ37338	72.84
62	BO188	501.89
63	BO188	507.04
36	BO236	1982.99
7	RP890694	971.60
4	RP890694	922.98
6	BO250	2355.45
29	BO243	1711.42
64	BO190	512.08
Reserves / easements	-	385.39
	Total area	**17,496.23**

1.2 Report conventions

The following conventions are used throughout the report:

- The project site comprises the properties identified in Table 1. The project boundary defines the outer perimeter of the project site.

- The proposed development comprises the spatial data presented in the shapefiles provided by RES in July 2023.
- The planning corridor is the area for all infrastructure and development to occur within the project site and contains the clearing footprint.
- The clearing footprint represents the maximum disturbance footprint of the project, with the flexibility to move this via micro-siting within the planning corridor.
- The study area used in desktop searches comprises the project site and a buffer around the site. Two buffer distances were used:
  - a 10 km buffer which contains similar vegetation and habitat to the project site
  - a 20 km buffer that includes the Bunya Mountains, which contains high altitude rainforest habitat not occurring within the project site.
- Conservation significant species include flora and fauna species that are listed as:
  - threatened (critically endangered, endangered or vulnerable) and/or migratory under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
  - threatened or near threatened (TNT) or special least concern (SLC) under the Queensland *Nature Conservation Act 1992* (NC Act).
- Common and scientific names of flora and fauna species follow the Department of Environment and Science (DES) WildNet database (DES 2022a).
- Introduced species are denoted by an asterisk (*).

1.3 Scope

The scope of this assessment includes:

- a desktop review of potential ecological values that are likely to occur at the site, including
  - Matters of National Environmental Significance (MNES) listed under the EPBC Act
  - Matters of State Environmental Significance (MSES) listed under relevant Queensland legislation
- surveys to confirm existing desktop information (i.e. mapping) for the site and assessment of vegetation condition
- surveys for MNES and MSES in the pre-wet spring season and post-wet autumn season
- a level one bird utilisation survey of the site (Ecosure 2023a)
- identification of any potential habitat features at the site with a particular focus on their likelihood to support conservation significant species
- assessment of the likelihood of MNES and MSES to occur within the site based on desktop and field results

- an assessment of the potential impacts of the proposed development and recommended measures to avoid, minimise and mitigate impacts on MNES and MSES that are known or likely to occur within the site
- significant impact assessments in accordance with the Significant Impact Guidelines 1.1 – MNES (Department of Environment [DoE] 2013a)
- assessments of significant residual impacts on MSES in accordance with the Queensland Environmental Offsets Policy Significant Residual Impact Guideline (Department of Environment and Heritage Protection [DEHP] 2014)
- preliminary assessments of potential offset requirements for significant residual impacts of the proposed development on MNES and MSES
- a Preliminary Vegetation Management Plan (Ecosure 2023b), Preliminary Bird and Bat Management Plan (Ecosure 2023c), and Preliminary Fauna Management Plan (Ecosure 2023d), to further detail measures to manage impacts to flora and fauna
- assessment of compliance with relevant State Codes, including Performance Outcome 5 and Performance Outcome 8 of State Code 23: Wind farm development (DSDILGP 2022a) and State Code 23: Wind farm development – Planning guidelines (DSDILGP 2022b).

1.4 Site description

1.4.1 Site locality

The site is located within the South Burnett Regional Council (SBRC) area and lies approximately 30 km west of Kingaroy and approximately 85 km east of Chinchilla. It is currently used for cattle grazing with areas of cleared paddocks and standing vegetation. Access to the site is via Ironpot Road (Figure 1).

1.4.2 Watercourses and wetlands

The project site occurs within the Boyne-Auburn Rivers drainage sub-basin in the Burnett drainage basin, which drains to the Great Barrier Reef lagoon.

One major mapped watercourse flows generally south to north within the site. The Boyne River begins as a second order stream in the south of the site, becomes a third order stream near Ironpot Road on Lot 68 on RP800291, a fourth order stream at its junction with Middle Creek on Lot 62 on BO188, and a fifth order watercourse at its junction with Mannuem Creek on Lot 60 on BO188, before exiting the site along the north-western boundary of Lot 4 on RP890694. The Boyne River feeds into Boondooma Lake and the Burnett River before discharging at Bargara near Bundaberg.

Other large streams that flow into Boyne River, either within or north of the site, include Mannuem Creek on the eastern boundary, Middle Creek in the south-eastern portion, Jumma Creek in the central portion, Boughyard Creek in the western portion and Ironpot Creek in the north-western portion of the site. Natural wetlands do not occur within the site. Landholders have constructed numerous farm dams throughout the site.

1.4.3 Landforms, geology and soils

The site is located on the southern border of the Brigalow Belt (South) bioregion in the Banana-Auburn Ranges subregion. The southern edge of the site overlaps into the South East Queensland bioregion in the South Burnett subregion, in Lot 68 on RP800291 and in Lot 10 on SP168643. Landforms are primarily undulating plains and hillslopes.

The site predominantly occurs on the Chahpingah Meta-igneous Complex, which is a granite dominated geology. The Evergreen Formation (comprising sandstone, mudstone and siltstone) dominates the southern portion of the site around the upper reaches of the Boyne River along with a small intrusion in the north-western portion. Quaternary alluvium occurs around the Boyne River and other larger watercourses in the northern portion of the site.

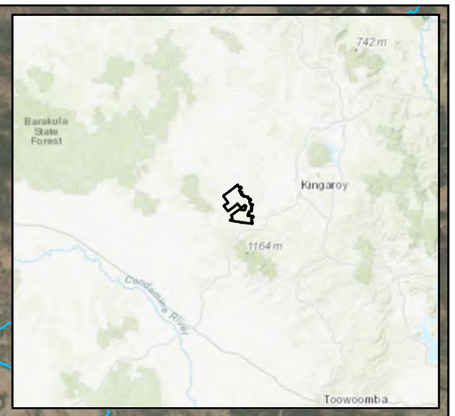
1.4.4 Climate

The climate is defined as sub-tropical with warm, humid summers and cool and dry winters. Average maximum temperatures range from 19.6°C in July to 30.9°C in January (Bureau of Meteorology [BoM], Kingaroy Airport Station 040922, approximately 30 km east of the site). The average annual rainfall is 663.3 mm (BoM 2023).

Figure 1: Project site location

Legend

- Existing 275kV transmission line
- Road
- Watercourse
- Project boundary
- Land parcel



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64/BO190
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10/SP168643
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Jumma Road
Jumma Road
Glenrocke Road
Mannuem Road
Ironpot Road

RES Australia

Ecological Assessment for Tarong West Wind Farm, Ironpot, Queensland

0 1 2 4
Kilometers

Job number: PR3713
Revision: 0
Author: KF
Date: 10/24/2023

GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994
Units: Meter

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1.5 Project description

1.5.1 Wind farm design

Key components

The development and construction of the site will involve significant ground disturbing work and will include the construction of the following, subject to detailed design:

- up to 97 wind turbine generators (WTGs)
- wind turbine foundations and hardstand areas
- three permanent and four temporary (during construction period only) meteorological masts
- internal electrical reticulation consisting of overhead lines (OHL) and underground (UG) cabling
- access tracks including widening sections of Ironpot Road
- planning corridor containing a maximum clearing footprint of 1,062.14 ha. The planning corridor allows scope to micro-site project infrastructure within the planning corridor, with the disturbance capped at the area of the clearing footprint
- on-site connection to existing 275 kilovolt (kV) transmission line
- electrical substations to facilitate connection of the project to the grid
- one battery energy storage system
- construction compounds and laydown areas
- site compounds
- operations and maintenance facilities
- batching plant
- borrow pits
- washdown areas.

WTG specifications have not been finalised at the time of writing this report. A candidate turbine has been selected for the purposes of this Ecological Assessment, based on the following assumptions:

- up to 90 m turbine blades
- up to 180 m rotor diameter
- up to 26,015 m^2 rotor swept area (RSA)
- up to 190 m hub height.

Ecological risk assessments have been carried out using the following turbine envelope assumptions:

- maximum upper tip height of 280 m above ground level

- minimum lower tip height of 65 m above ground level
- WTG hardstands (approximately 270 m by 110 m, plus a 30 m buffer around the perimeter) to allow construction and crane placement.

Figure 2 shows the proposed planning corridor and clearing footprint to accommodate WTGs, access tracks and other associated infrastructure. The clearing footprint represents the maximum proposed clearing area and may be reduced by ongoing refinement in the design and micro-siting of infrastructure throughout the development phase of the project. In the planning corridor presented in this report, no WTGs or hardstands are proposed to be placed in ecologically significant areas (e.g. areas of remnant vegetation).

The project is currently planned to be constructed in a single stage, however the development may be constructed in multiple stages. Construction is proposed to start in the fourth quarter of 2024 and last approximately 30 months.

Construction

The construction methodology will generally include:

- marking out areas for infrastructure installation
- clearing the areas of vegetation
- scraping off the topsoil and stockpiling for later use in rehabilitation
- construction of access tracks
- widening sections of Ironpot Road to allow transport of WTGs
- creating a level pad for infrastructure construction
- installing the infrastructure
- rehabilitating disturbed surfaces that are not required for operations.

Detailed designs providing the dimensions of clearing footprints have not been finalised at this stage. However, the current clearing footprint contemplated in this report is the maximum clearing scenario within the planning corridor.

Operation

The project is expected to have an operational life of at least 30 years excluding construction and decommissioning. The operational parameters of the project have not been finalised at this stage. However, it has been assumed that all WTGs will be operating continuously when wind speeds are sufficient, apart from occasional shut-down periods for maintenance.

Decommissioning

Decommissioning or repowering of the site is expected to occur at the end of the project's useful life. The decommissioning methodology has not been finalised at this stage.

1.5.2 Design development

During project development between 2018 to 2023, the size and scope of Tarong West Wind Farm has changed in response to various constraints, with a focus on avoidance of ecological impacts where possible.

Changes made throughout the development include an overall reduction in number of turbines as follows:

- 151 WTGs in 2018
- down to 128 WTGs in 2022
- down to 97 WTGs in 2023 contemplated in this Ecological Assessment.

Other changes made involve the exclusion of particular properties to avoid ecological impact, and changes in the scope and configuration of required supporting infrastructure.

Significant changes include removal of two properties containing significant areas of remnant vegetation, including Lot 42 on FTZ37338 (1,219.8 ha), which contains two patches of potential semi-evergreen vine thicket (SEVT) threatened ecological community (TEC) and Lot 65 on BO190 (418.3 ha). Project design changes have influenced the methods and coverage of subsequent field surveys throughout the project's development.

This ecological assessment has considered and assessed the 97 WTG layout provided on 24 July 2023 and will require modification if the design evolves to impact areas outside of the planning corridor.

Table 2 Design iterations for Tarong West Wind Farm

Date	Description	WTGs proposed	Project site (ha)	Proposed clearing footprint (impact area, ha)	Comments
May 2020	151 WTG layout	151	19,000.41	1,965.43	Initial layout in early development.
May 2022	128 WTG layout	128	17,496.23	1,615.47	Infrastructure refined based on reduction of WTGs. Site boundary changed to exclude large areas of remnant vegetation from the project site and areas of high glider prevalence along Kingaroy Burrandowan Road (37 glider sightings occurred in vegetation adjacent to the project site area along Kingaroy Burrandowan Road and in properties now excluded from the project site, in habitat identical to that occurring in the site).
July 2023	97 WTG layout	97	17,496.23	1,062.14	Infrastructure refined based on reduction of WTGs and a reduced clearing footprint. Minimising impacts to areas of remnant vegetation and modelled fauna habitat, particularly koala habitat which reduced by approximately 50% since initial design.

1.5.3 Design limitations

Project designs will be refined as the project progresses, based on geotechnical surveys, final turbine selection and other technical requirements. The clearing footprint presented in this assessment represents the maximum footprint for disturbance, and any design changes are anticipated to occur within the planning corridor presented here.

Additionally, any changes to turbine design and selection are anticipated to comply with the defined turbine envelope (Section 1.5.1) on which bird and bat risk assessments are based. Such changes may include:

- micro-siting of WTGs and adjustment of construction hardstand dimensions
- adjustment of turbine blade length and hub height, which will affect RSA and minimum and maximum tip heights (remaining within the defined turbine envelope)
- creation of new tracks and realignment of existing tracks
- adjustment of track dimensions (including reduced width in sensitive areas and increased width on some corners to accommodate long vehicles)
- realignment of riparian crossings
- adjustment of the location and dimensions of other infrastructure.

This ecological assessment may therefore require modification if designs evolve outside of the planning corridor.

Figure 2a: Proposed development layout

Legend

- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Watercourse
- Road
- Batch plant
- Battery energy storage system area
- Laydown
- Operations and maintenance building
- Potential borrow pit
- Site compound
- Substation
- Washdown area
- Planning corridor
- Project boundary
- Land parcel

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Ecological Assessment for Tarong West Wind Farm, Ironpot, Queensland

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Kilometers

Job number: PR3713
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Author: KF
Date: 12/20/2023

GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994
Units: Meter

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Figure 2b: Proposed clearing footprint

Legend

- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Watercourse
- Road
- Existing 275kV transmission line
- Clearing footprint
- Planning corridor
- Project boundary
- Land parcel

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2 Applicable legislation and policy

2.1 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

The EPBC Act establishes a Commonwealth process for the assessment of proposed actions (i.e. project, development, undertaking activity, or series of activities) that are likely to have a significant impact on matters of national environmental significance (MNES), or on Commonwealth land. An action, unless otherwise exempt, requires approval from the Commonwealth Environment Minister if it is considered likely to have an impact on any of the following MNES:

- World Heritage properties
- National heritage places
- Ramsar wetlands of international significance
- threatened species and ecological communities
- migratory and marine species
- Commonwealth marine area
- nuclear actions (including uranium mining)
- Great Barrier Reef Marine Park
- water resources impacted by coal seam gas or mining development.

2.2 State legislation and policy

2.2.1 *Planning Act 2016* (Queensland)

The *Planning Act 2016* (Planning Act) establishes the framework for Queensland's planning and development assessment system. The purpose of the Planning Act is to establish an efficient and accountable system of land-use planning and development assessment that will lead to ecological sustainability. The Planning Act defines ecological sustainability as a balance between:

- the protection of ecological processes and natural systems at local, regional, state and national levels
- economic development
- the cultural, economic, physical and social wellbeing of Queenslanders.

The Planning Act is supported by the Planning Regulation 2017, which provides the process that drives the planning framework, and the State Planning Policy 2017, which sets out the state's interest in land-use planning and development across Queensland. There are 17 state interests across five broad themes.

The State Planning Policy 2017 defines matters of state environmental significance (MSES) as:

- protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* (NC Act)
- 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zones under the *Marine Parks Act 2004*
- areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008
- a designated precinct, in a strategic environmental area under the Regional Planning Interests Regulation 2014, schedule 2, part 5, s15(3)
- wetlands in a wetland protection area or wetlands of high ecological significance shown on the map of referable wetlands under the Environmental Protection Regulation 2008
- wetlands and watercourses in high ecological value waters identified in the Environmental Protection (Water) Policy 2009, schedule 1
- legally secured offset areas as defined under the *Environmental Offsets Act 2014* (EO Act)
- threatened wildlife under the NC Act and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006
- marine plants under the *Fisheries Act 1994* (excluding marine plants in an urban area)
- waterways that provide for fish passage under the *Fisheries Act 1994* (excluding waterways providing for fish passage in an urban area)
- high risk area on the flora survey trigger as described by the Environmental Offsets Regulation 2014, schedule 2, part 6(1)
- regulated vegetation under the *Vegetation Management Act 1999* (VM Act) that is:
  - category B areas on the regulated vegetation management map, that are 'endangered' and 'of concern' regional ecosystems (REs)
  - category C areas on the regulated vegetation management map that are 'endangered' and 'of concern' REs
  - category R areas on the regulated vegetation management map
  - areas of essential habitat on the essential habitat map for an animal that is 'endangered wildlife' or 'vulnerable wildlife' or a plant that is 'endangered wildlife' or 'vulnerable wildlife' wildlife prescribed as 'endangered wildlife' or 'vulnerable wildlife' under the NC Act
  - category A, B, C, R areas that are located within a defined distance from the defining banks of a relevant watercourse identified on the vegetation management watercourse and drainage feature map
  - category A, B, C, R areas that are located within 100 m from the defining bank of a wetland identified on the vegetation management wetlands map.

The Planning Act is further supported by the State Development Assessment Provisions (SDAP), which provide for a coordinated, whole-of-government approach to the state's assessment of development applications. Of relevance to a wind farm development and the scope of this ecological assessment, the following SDAP codes apply and are relevant to assessing impacts on ecological values:

- State code 16: Native vegetation clearing
- State code 18: Constructing or raising waterway barrier works in fish habitats
- State code 23: Wind farm development.

State code 16: Native vegetation clearing

The purpose of this code is to ensure development:

- avoids clearing, or where avoidance is not reasonably possible, minimises clearing to:
  - conserve vegetation
  - avoid land degradation
  - avoid the loss of biodiversity
  - maintain ecological processes
- minimises contributions to greenhouse gas emissions
- for vegetation retention purposes, is undertaken in a manner that retains or regenerates vegetation by sustainably managing the impacts of the clearing on regional ecosystems, biodiversity and ecological processes over time
- is consistent with any notice requiring compliance on the land subject to the development application unless a better environmental outcome can be achieved
- is consistent with vegetation management requirements for particular regulated areas unless a better environmental outcome can be achieved
- avoids impacts on vegetation and minimises and mitigates impacts on vegetation where avoidance is not possible
- does not result in a significant residual impact on a matter of state environmental significance unless the significant residual impact is acceptable, and an offset is provided (where appropriate). An offset is not appropriate for acceptable significant residual impacts on a connectivity area unless the clearing is for development that is a coordinated project, natural channel diversion or contaminants removal.

State code 18: Constructing or raising waterway barrier works in fish habitats

The purpose of the code is to ensure that development involving the constructing or raising of waterway barrier works in a fish habitat:

- maintains fish movement and connectivity throughout waterways and within and between fish habitats
- maintains the health and productivity of fisheries resources and fish habitat

- maintains the community and fishing sectors' use of the area and access to fisheries resources
- provides adequate fish passage including a fish way, if necessary
- avoids impacts or, where matters of state environmental significance cannot be reasonably avoided, impacts are reasonably minimised and mitigated.

does not result in a significant residual impact on a matter of state environmental significance unless the significant residual impact is acceptable, and an offset is provided.

State code 23: Wind farm state code requirements

The purpose of the code is to protect individuals, communities and the environment from adverse impacts as a result of the construction, operation and decommissioning of wind farm development.

Wind farms should be appropriately located, sited, designed and operated to ensure:

- the safety, operational integrity and efficiency of air services and aircraft operations
- risks to people, property and quality of life are minimised by providing acceptable levels of:
  - amenity and acoustic emissions at sensitive land uses
  - resilience to natural hazards
- development minimises adverse impacts on the natural environment, vegetation, and associated ecological processes
- development in an area identified by a local government as having high scenic amenity appropriately manages impacts on the character, scenic amenity and landscape values of the locality
- the safe and efficient operation of local transport networks and road infrastructure.

The wind farm state code is required for Material Change of Use (MCU) applications for new or expanding wind farm projects and will be addressed as part of the project's application. Wind farm projects are assessed by the State of Queensland through the Department of State Development, Infrastructure, Local Government and Planning and the State Assessment and Referral Agency (SARA).

Performance objective PO5 states that "development is designed, sited and operated to ensure that flora, fauna and associated ecological processes are protected from adverse impacts."

The state code is supported by a planning guideline that provides details on the requirements for wind farm applications. The planning guideline contains a methodology for preparing an ecological assessment. In concordance with the guideline, this ecological assessment includes:

- a desktop review of available information to identify any birds and bat species which may be impacted by the project, including obstruction of and proximity to flight paths

- field surveys to map the vegetation and identify flora and fauna species, including corridors
- a review of vegetation and corridors including worst case scenario impacts to regulated vegetation and locally significant vegetation (for example, where a project layout includes a level of flexibility to allow for final micro-siting)
- species-specific studies to obtain more information about flora and fauna (particularly birds and bats) that may be at risk from the development
- avoidance, mitigation and offset strategies to minimise or mitigate impacts on species if required
- implementation processes for monitoring programs associated with the construction and operation of the wind farm development
- a preliminary vegetation management plan, a preliminary fauna management plan and a preliminary bird and bat management plan.

2.2.2 *Nature Conservation Act 1992* (Queensland)

The NC Act provides for the conservation of nature through protection of all native plants and animals (native wildlife) in Queensland and declaration of protected areas. Protection is provided under the NC Act through conservation of land as protected areas and wildlife protection outside of protected areas.

Actions impacting on protected native flora and fauna are regulated under the NC Act. Permits for disturbance to native flora and fauna can be administered under the NC Act. The Nature Conservation (Animals) Regulation 2020 lists fauna species and the Nature Conservation (Plants) Regulation 2020 lists flora species, considered to be extinct, extinct in the wild, critically endangered, endangered, vulnerable, near threatened, special least concern or least concern in Queensland.

Protected Plants

In Queensland, all plants that are native to Australia are “protected plants” under the NC Act. The NC Act is administered by DES to ensure that protected plants and their parts are not illegally removed from the wild or traded. The take and use of protected plants (including whole plants, plant parts and propagating material) from the wild is regulated by a licensing system. People who wish to take protected plants from the wild, for any reason, may be required by law to obtain a licence, permit or authority from DES. This will be the case unless the activity is specifically exempt under a regulation or conservation plan under the Act (such as for timber harvesting of common species). Whether the activity is bound by, or exempt from, provisions of the Act, the clearing of native vegetation may also require development approval under other legislation such as the VM Act.

The Protected Plants Flora Survey Trigger Map shows high risk areas for protected plants that are listed as TNT under the NC Act. It is used to help determine flora survey and clearing permit requirements for a particular location. Areas shown on the map as high risk are subject to particular requirements under the NC Act.

Protected Animal Breeding Places

Section 335 of the Nature Conservation (Animal) Regulation 2020 (Animal Regulation) governs tampering with animal breeding places. Under the Animal Regulation, Section 335(1), it is an offence to tamper with an animal breeding place that is being used by a protected animal to incubate or rear the animal's offspring.

Section 335(2) states that an animal breeding place is being used by a protected animal to incubate or rear the animal's offspring if:

- the animal is preparing, or has prepared, the place for incubating or rearing the animal's offspring; or
- the animal is breeding, or is about to breed, and is physically occupying the place; or
- the animal and the animal's offspring are physically occupying the place, even if the occupation is only periodical; or
- the animal has used the place to incubate or rear the animal's offspring and is of a species generally known to return to the same place to incubate or rear offspring in each breeding season for the animal.

Section 335(4) defines tamper (with an animal breeding place) as "damage, destroy, mark, move or dig up the breeding place".

Section 332(1) does not apply if the removal or tampering is part of an approved Species Management Program (SMP) for animals of the same species (section 335(3)). Section 335(4) defines an approved SMP, for a species of animal, as "a program about managing the population and habitat of the species of animal that is approved by the chief executive".

If a breeding place for a protected animal is likely to be disturbed by construction activities, a SMP is required to be prepared and approved by DES.

2.2.3 *Vegetation Management Act 1999* (Queensland)

The VM Act provides a framework for the regulation of woody, terrestrial native vegetation located outside of protected areas. The stated purpose of the VM Act is to regulate the clearing of native vegetation (defined as woody vegetation that is not a mangrove) in a way that:

- conserves remnant and high value regrowth vegetation that is an endangered, of concern or least concern RE
- conserves vegetation in declared areas
- ensures clearing does not cause land degradation
- prevents biodiversity loss
- maintains ecological processes
- manages the environmental effects of the clearing to ensure the above purposes are obtained.

The VM Act provides for the establishment and mapping of REs that encompass vegetation

community descriptions within a geological and bioregional context, and for the creation and use of clearing codes (among other things). In addition, it provides a process for RE mapping changes by the public, and for the investigation and prosecution of clearing offences. Details on what clearing activities require assessment against the various regional clearing codes authorised under the VM Act are provided by the Planning Act.

The Act introduces categories of regulated vegetation as follows:

- Category A - is any of the following—
  - a declared area, offset area, or exchange area; or
  - an area that has been unlawfully cleared; or
  - is, or has been, subject to—
    - a restoration notice; or
    - an enforcement notice under the Planning Act containing conditions about restoration of vegetation; or
  - has been cleared of native vegetation and in relation to the clearing a person has been found guilty by a court, whether or not a conviction has been recorded, of a clearing offence; or
  - the chief executive decides under section 20BA is a Category A area
- Category B – contains remnant vegetation
- Category C – contains high value regrowth vegetation
- Category R – means regrowth watercourse and drainage feature area.

2.2.4 *Environmental Offsets Act 2014* (Queensland)

The EO Act provides a framework for the delivery of environmental offsets and streamlines the offsets process for proponents and developers. The EO Act and subordinate Environmental Offsets Regulation 2014 and Queensland Environmental Offsets Policy replaced the Queensland Government Environmental Offsets Policy and four specific-issue policies for vegetation management, koala habitat, fish habitat and biodiversity values.

The EO Act amended other Acts to provide consistency for when offsets are triggered and how they should be delivered. The EO Act does not trigger offsets directly but is indirectly involved through existing approval pathways under the Planning Act, NC Act, VM Act and *Fisheries Act 1994*. Offsets can be imposed by an authority when a prescribed activity will have a significant residual impact on a prescribed environmental matter (i.e. a MSES).

Offsets can be delivered by a proponent driven offset (land-based offset) or financial settlement offset depending upon the activity and the matter(s) involved.

If the proposed development is shown to have a significant residual impact on a MSES, then an environmental offset is likely to be conditioned onto the project approval.

2.2.5 *Biosecurity Act 2014* (Queensland)

The *Biosecurity Act 2014* and subordinate Biosecurity Regulation 2016 commenced on 1 July

2016. The Act is a combination of several pieces of now superseded legislation in relation to managing pests (weeds and animals), diseases and contaminants and provides a risk-based approach to biosecurity. Biosecurity matters include prohibited matters, restricted matters, notifiable incidents and restricted places:

- Prohibited Matters are matters (pests, diseases, contaminants) not found in Queensland, but would have a significant adverse impact on our health, way of life, the economy or the environment if it entered the State. All prohibited matters must be reported to Biosecurity Queensland.
- Restricted Matters are matters that are found in Queensland and have a significant impact on human health, social amenity, the economy or the environment. There are 7 categories of restricted matters and Category 1 and 2 matters must be reported. Categories 2, 4, 5 and 6 relate to restrictions on keeping, feeding and moving weeds, pest animals and noxious fish and Category 7 requires people to kill noxious fish. Multiple categories can apply to a specific restricted matter.

The Biosecurity Act also introduces a new concept called a General Biosecurity Obligation (GBO). This applies to everyone in Queensland for managing biosecurity risks that are:

- under their control, and
- that they know about or should reasonably be expected to know about.

Under the GBO, individuals and organisations whose activities pose a biosecurity risk must:

- take all reasonable and practical steps to prevent or minimise each biosecurity risk
- minimise the likelihood of causing a biosecurity event, and limit the consequences if such an event is caused
- prevent or minimise the harmful effects a risk could have, and not do anything that might make any harmful effects worse.

2.2.6 *Water Act 2000* (Queensland)

The *Water Reform and Other Legislation Amendment Act 2014* was passed on 26 November 2014. The Act includes a number of changes to the *Water Act 2000* and other resource related legislation. Amongst the changes, a new watercourse identification map has been prepared to show watercourses and drainage features as described in the Water Act. Works that are proposed to occur within the bed or banks of watercourses would require a riverine protection permit unless that works could be completed under an exemption. The Department of Regional Development, Manufacturing and Water (DRDMW) has released an updated version of the riverine protection permit exemption requirements (WSS/2013/726 Version 2.03 02/06/2023, DRDMW 2023), which are used to determine whether works can be completed without a permit.

2.2.7 *Fisheries Act 1994* (Queensland)

The *Fisheries Act 1994* manages Queensland's fisheries resources and the passage of those resources within Queensland's waterways. The Act regulates the construction of structures

within watercourse that may impede fish movement. Construction of waterway barriers to fish movement would require a waterway barrier works approval unless the work can be completed in accordance with the *Accepted development requirements for operational work that is constructing or raising waterway barrier works* (DAF 2018).

2.3 Local government assessment

The proposed wind farm will require a MCU development application to be submitted to the Queensland Government Department of State Development, Infrastructure, Local Government and Planning (DSDILGP).. The SARA will be the assessment managers for the application.

The wind farm planning application does not require assessment under the SBRC planning scheme.

3 Desktop assessment

3.1 Methods

The following sources of information were assessed as part of the literature review:

- EPBC Act protected matters search tool (PMST) for a 10 km buffer surrounding the project site (represented as 20 km buffer around the central point -26.5941, 151.52069) (Department of Climate Change, Energy, the Environment and Water [DCCEEW] 2023a)
- species profile and threats (SPRAT) database (DCCEEW 2023b)
- the DES WildNet database for a 10 km and 20 km buffer surrounding the project site (represented as 20 and 30 km buffer around the central point -26.5941, 151.52069) (DES 2023a)
- the Atlas of Living Australia (ALA) database for locations of conservation significant fauna and flora species (ALA 2022)
- the State Planning Policy Interactive Mapping System (Department of State Development, Manufacturing, Infrastructure, and Planning 2023) identifying MSES areas
- vegetation management mapping maintained by the Queensland Department of Resources (DoR) (2022a, 2022b), including remnant and pre-clear regional ecosystem (RE) map (version 12.02), regulated vegetation management map (version 6.04), vegetation management watercourse and drainage feature map (version 6.0), vegetation management wetland map (version 8.0) and essential habitat map (version 11.0)
- RE description database – version 13 (Queensland Herbarium 2021)
- Biodiversity Planning Assessment maps identifying significant fauna corridors and areas of state, regional and local biodiversity significance in the Brigalow Belt bioregion (DES 2018a) and South-east Queensland (SEQ) bioregion (DEHP 2016)
- protected flora survey trigger map to identify high risk areas for protected plants (DES 2023b)
- SBRC Planning Scheme 2017 zoning and overlay mapping
- Wind Farms and Birds: Interim Standards for Risk Assessment Australian Wind Energy Association Report (Brett Lane & Associates 2005)
- available remote imagery
- Onshore Wind Farms – interim guidance on bird and bat management (Department of Agriculture, Water and the Environment [DAWE] 2021a)
- other published and non-published literature.

3.2 Likelihood of occurrence assessment

Each significant species and ecological community identified in database searches was assessed for its likelihood of occurrence based on:

- records in the local area (DES 2023, ALA 2022, survey results)
- presence of suitable habitat (determined using desktop and field verified data)
- presence of essential habitat (DoR 2022b)
- species abundance, distribution and behaviour (sourced from published field guides, DCCEEW species profiles and threats database, DES species profiles, recovery plans, scientific journal articles and known records).

Likelihood of occurrence was classified into four categories:

- confirmed – the species or signs of their presence were observed during the field survey
- likely – the site contains habitat that is suitable for the species and Wildnet has recent records of the species (i.e. since 1980) within 10 km of the site
- possible – the site contains habitat that is suitable for the species but Wildnet has no recent records of the species within 10 km of the site; or the site contains marginal / low quality habitat for the species and Wildnet has recent records of the species within 10 km of the site
- unlikely – the site does not contain habitat for the species and Wildnet has no recent records of the species within 10 km of the site.

Likelihood assessments were based on records within a 10 km buffer as the Kingaroy region has been well surveyed and has a relatively high density of species records. Also, a larger 20 km buffer includes the Bunya Mountains, which contains high altitude rainforest habitat that is not present within the project site.

Marine species were excluded from the table.

Note that the final likelihood assessment (presented in Appendix 2) was refined by field surveys that included targeted searches for possible and likely species and ground-truthing of suitable habitat for these species.

3.3 Results

3.3.1 Mapped MNES

The PMST results (Appendix 1) show the following MNES may occur within 10 km of the project site:

- listed threatened ecological communities (TECs)
- listed threatened species

- listed migratory species.

Wetlands of international importance

The PMST identified the following Ramsar wetlands:

- Banrock Station wetland complex (1,300 to 1,400 km away)
- Narran Lake nature reserve (500 to 600 km south of site)
- Riverland (1,200 to 1,300 km away)
- The Coorong, and lakes Alexandrina and Albert wetland (1,400 to 1,500 km away).

The site does not occur within a drainage basin that drains to any of these Ramsar wetlands.

Listed threatened ecological communities

The PMST identified eight TECs as either likely or known to occur within 10 km of the project site (Table 3). The potential occurrence of these TECs was assessed based on mapped areas of component REs (DoR 2022a).

Table 3 TECs and their mapped occurrence within the site based on desktop data

Description of TEC	EPBC Act status	Equivalent REs	Mapped occurrence
Brigalow (*Acacia harpophylla* dominant and codominant)	Endangered	Community consistent with RE 11.3.1, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.10, 11.5.16, 11.9.1, 11.9.5, 11.9.6, 11.11.14, 11.12.21, 12.8.23, 12.9-10.6, 12.12.26	Possible based on desktop assessment. Component REs are not mapped within the site but are mapped within 1 km of the site.
Coolibah- black box woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community consistent with RE 11.3.3, 11.3.15, 11.3.16, 11.3.28, 11.3.37	Not applicable. Component REs are not mapped within or adjacent to the site.
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community consistent with RE 12.3.1, 12.5.13, 12.8.3, 12.8.4, 12.8.13, 12.11.1, 12.11.10, 12.12.1 and 12.12.16	Possible based on desktop assessment. Component REs are not mapped within the site. Component RE (12.8.13) is mapped on Lot 42 on FTZ37338, which is now excluded from the site.
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community consistent with RE 11.3.21, 11.3.24	Not applicable. Component REs are not mapped within or adjacent to the site.
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community consistent with 11.3.2, 11.3.17, 11.4.7, 11.4.12 and 12.3.10	Not applicable. Component REs are not mapped within or adjacent to the site.
Semi-evergreen vine thickets (SEVT) of the Brigalow Belt (North and South) and Nandewar Bioregions	Endangered	Community consistent with RE 11.2.3, 11.3.11, 11.4.1, 11.5.15, 11.8.3, 11.8.6, 11.8.13, 11.9.4, 11.9.8, 11.11.18	Possible based on desktop assessment. Component RE (11.8.3) is mapped as a mosaic

Description of TEC	EPBC Act status	Equivalent REs	Mapped occurrence
			community with RE 12.8.16 on Lot 29 on BO243 in the south-western edge of the site (refer Section 5.2.1 Figure 9).
Weeping Myall Woodlands	Endangered	Community consistent with 11.3.2, 11.3.28.	Not applicable. Component REs are not mapped within or adjacent to the site.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community consistent with RE 11.8.2a, 11.8.8, 11.9.9a	Not applicable. Component REs are not mapped within or adjacent to the site.

Listed threatened species

The PMST (Appendix 1) identified 43 EPBC Act-listed threatened species that have the potential to occur within 10 km of the site, based on the presence of records and/or modelled habitat. These include nine mammals, 12 birds, six reptiles and plants (DCCEEW 2023a, Appendix 1).

The WildNet database search (DES 2023, Appendix 1), which identifies both EPBC Act-listed and NC Act listed threatened flora and fauna, identified two EPBC Act listed threatened species within 10 km of the project site, including one threatened flora species (Austral toadflax, *Thesium australe*) and one threatened fauna species (koala, *Phascolarctos cinereus*). Wildnet has records of 12 flora and 13 fauna species within 20 km of the site, including five birds, two reptiles, and six mammal species.

Locations of these records are mapped in Figure 3. The likelihood of occurrence of these species within the project site is assessed in Appendix 2.

Listed migratory species

The PMST identified 14 EPBC Act-listed migratory species as potentially occurring within 10 km of the site (Appendix 1). Only one species (rufous fantail, *Rhipidura rufifrons*) has Wildnet records within 10 km of the site, while another nine species (fork-tailed swift, sharp-tailed sandpiper, black-faced monarch, satin flycatcher, eastern osprey, white-throated needletail, marsh sandpiper, glossy ibis and spectacled monarch) have records within 20 km (DES 2023). Locations of these records are mapped in Figure 3. The likelihood of occurrence of these species are assessed in Appendix 2.

3.3.2 Mapped MSES

This report addresses MSES, as well as connectivity values identified in the Biodiversity Planning Assessments for the Brigalow Belt and Southeast Queensland bioregions (DEHP 2016, DES 2018a). MSES mapped within the project site include:

- Category B (remnant), C (high value regrowth [HVR]), and R (riparian regrowth) regulated vegetation

- regulated vegetation within a defined distance of a mapped watercourse
- essential habitat for threatened species.

Regulated vegetation

The site is mapped as containing 1,333.73 ha of Category B (remnant) regulated vegetation containing three of concern REs, 317.62 ha of Category C (HVR) vegetation, 859.78 ha of Category R (regrowth watercourse) and 14,985.19 ha of Category X (non-remnant) vegetation (Figure 4). The map shows that numerous areas of regulated vegetation are truncated at property boundaries. These abrupt transitions are caused by the application of Property Maps of Assessable Vegetation (PMAVs) over numerous properties within the project site. A PMAV is a property-scale vegetation map that is used to amend vegetation mapping and replaces the original regulated vegetation map.

Vegetation mapped as MSES within the site include:

- Of concern RE 11.3.4 is mapped in small fragmented patches throughout the site.
- Of concern RE 11.8.3 and of concern RE 12.8.16 are mapped as a mosaic RE in a small patch on Lot 29 on BO243.
- Category C (high value regrowth) areas are mapped on Lot 36 on BO236 which contain patches of a subdominant RE 11.3.25.
- Category R (regrowth watercourse) areas are mapped within 50 m of a watercourse in the Burnett-Mary Catchment.

REs mapped within the site are described in Table 4 and mapped in Figure 5. Mapped REs that form possible components of TECs are a small area of RE 11.8.3 (which corresponds to the semi evergreen vine thicket of the Brigalow Belt TEC). RE 11.8.3 is mapped as a mosaic community with RE 12.8.16 on Lot 29 on BO243 in the western edge of the site.

Table 4 REs mapped as occurring on the site

RE code	EPBC Act status*	VM Status^	Short description
11.3.4	-	Of Concern	*Eucalyptus tereticornis* and/or *Eucalyptus* spp. woodland on alluvial plains.
11.3.25	-	Least Concern	Queensland blue gum or river red gum *E. camaldulensis* woodland fringing drainage lines
11.5.20	-	Least Concern	Gum-topped box *Eucalyptus moluccana* and/or small-fruited grey gum *E. microcarpa* and/or *E. woollsiana* +/- narrow-leaved ironbark *E. crebra* woodland on Cainozoic sand plains
11.7.6	-	Least Concern	Lemon-scented gum *Corymbia citriodora* or narrow-leaved ironbark woodland on Cainozoic lateritic duricrust
11.8.3	TEC	Of Concern	Semi-evergreen vine thicket on Cainozoic igneous rocks
11.11.15	-	Least Concern	Narrow-leaved ironbark woodland on deformed and metamorphosed sediments and interbedded volcanics
11.12.3	-	Least Concern	Narrow-leaved ironbark, Queensland blue gum, rusty gum *Angophora leiocarpa* woodland on igneous rocks especially granite
11.12.6	-	Least Concern	Lemon-scented gum open forest on igneous rocks (granite)
12.8.16	-	Of Concern	*Eucalyptus crebra +/- E. melliodora, E. tereticornis* woodland on Cainozoic igneous rocks

* EPBC Act Status: RE may be a TEC if it meets diagnostic criteria and condition thresholds for the TEC.
^ VM Status: vegetation management status under the Vegetation Management Regulation 2012.

Figure 3a: Threatened flora species records identified from Wildnet database

Legend

EPBC Act and NC Act listed flora species (1980 - 2022)

- *Acacia grandifolia*
- *Bothriochloa bunyensis*
- *Clematis fawcettii*
- *Haloragis exalata* subsp. *velutina*
- *Homopholis belsonii*
- *Lepidium peregrinum*
- *Leuzea australis*
- *Thesium australe*
- *Zieria obovata*

NC Act listed flora species (1980 - 2022)

- <it>Acacia tingoorensis</ita>
- *Callitris baileyi*
- *Cryptocarya floydii*
- *Cyperus clarus*
- *Melaleuca formosa*
- *Rhodamnia dumicola*
- 10 km buffer
- 20 km buffer
- Project boundary

RES Australia

Ecological Assessment for Tarong West Wind Farm, Ironpot, Queensland

0 1 2 4
Kilometers

Job number: PR3713
Revision: 0
Author: KF
Date: 10/24/2023

GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994
Units: Meter

ecosure
improving ecosystems

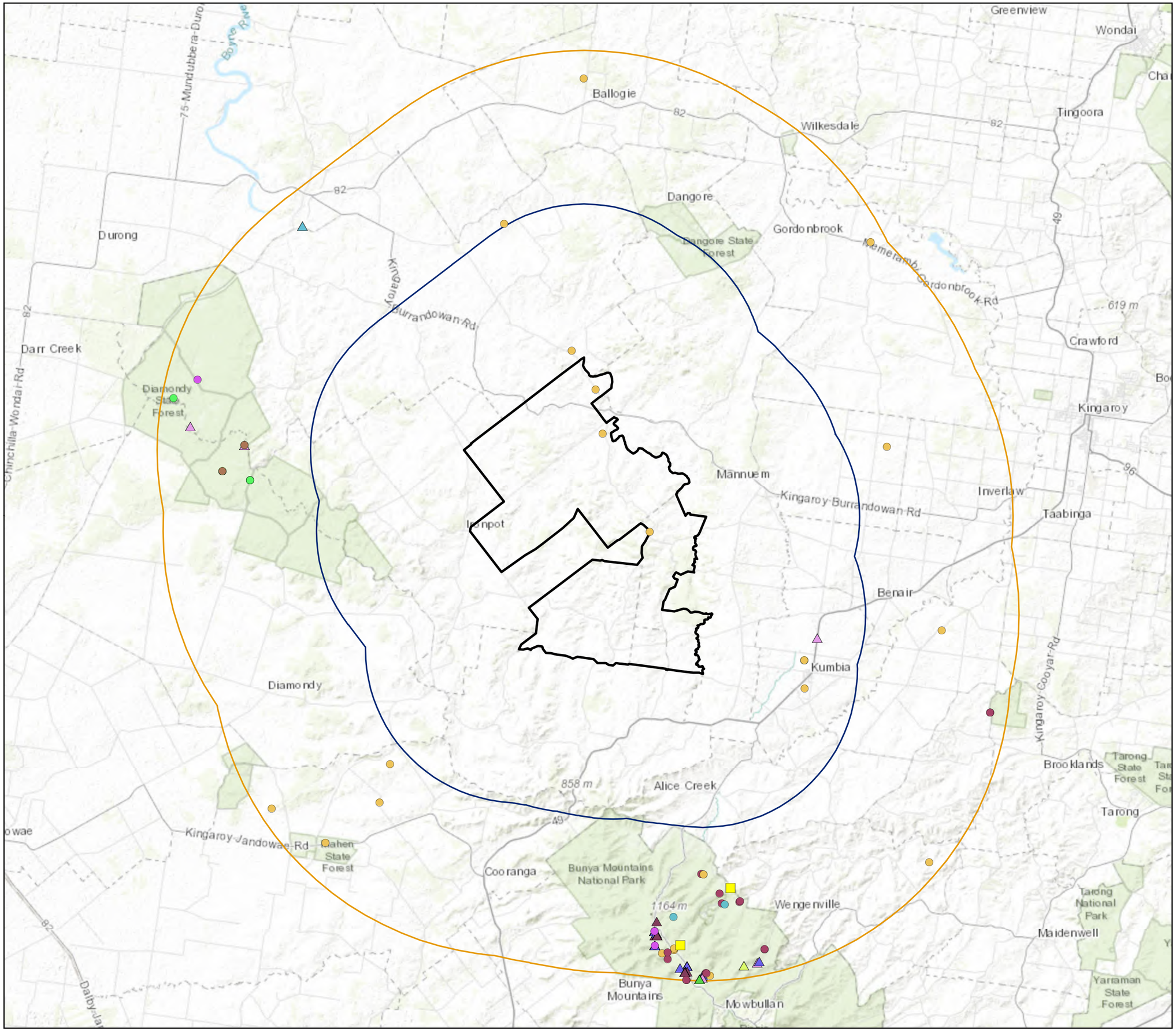

Figure 3b: Threatened fauna species records identified from Wildnet database

Legend

EPBC Act listed fauna species (1980 - 2022)

- Northern quoll (*Dasyurus hallucatus*)

EPBC Act and NC Act listed fauna species (1980 - 2022)

- Black-breasted button-quail (*Turnix melanogaster*)
- Central greater glider (*Petauroides armillatus*)
- Collared delma (*Delma torquata*)
- Koala (*Phascolarctos cinereus*)
- Northern quoll (*Dasyurus hallucatus*)
- Spotted-tailed quoll (southern subspecies) (*Dasyurus maculatus maculatus*)
- White-throated needletail (*Hirundapus caudacutus*)
- Yellow-bellied glider (southern subspecies) (*Petaurus australis australis*)

NC Act listed fauna species (1980 - 2022)

- Bunya sunskink (*Lampropholis colossus*)
- Black-faced monarch (*Monarcha melanopsis*)
- Glossy ibis (*Plegadis falcinellus*)
- Powerful owl (*Ninox strenua*)
- Rufous fantail (<ita>Rhipidura rufifrons</ita)
- Satin flycatcher (*Myiagra cyanoleuca*)
- Short-beaked echidna (*Tachyglossus aculeatus*)
- Spectacled monarch (*Symposiachrus trivirgatus*)
- Tusked frog (*Adelotus brevis*)

10 km buffer

20 km buffer

Project boundary

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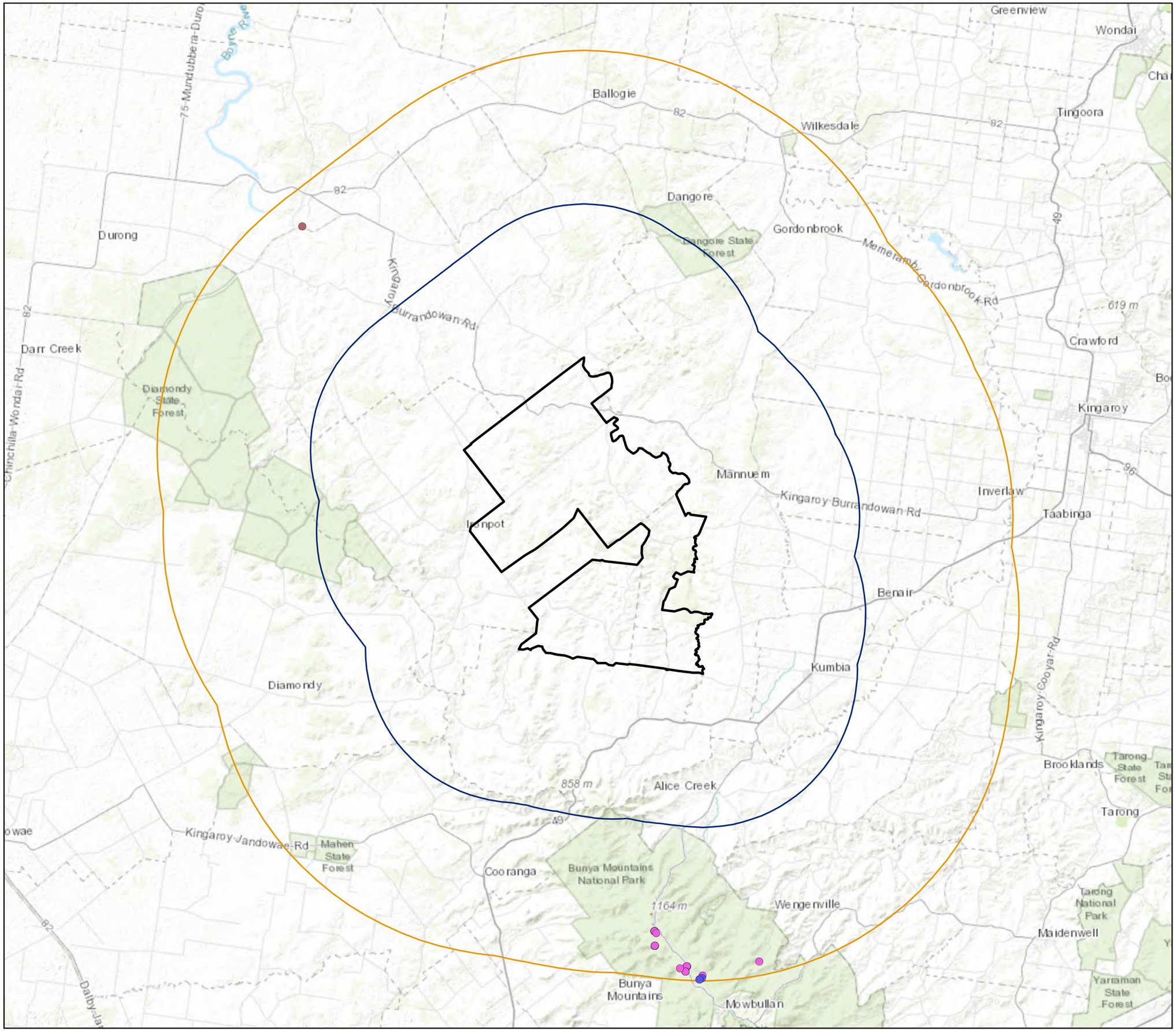

Figure 3c: Migratory species records identified from Wildnet database

Legend

Migratory fauna species (1980 - 2022)

- Black-faced monarch (*Monarcha melanopsis*)
- Glossy ibis (*Plegadis falcinellus*)
- Rufous fantail (*Rhipidura rufifrons*)
- Satin flycatcher (*Myiagra cyanoleuca*)
- Spectacled monarch (*Symposiachrus trivirgatus*)
- 10 km buffer
- 20 km buffer
- Project boundary

RES Australia

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Figure 4: Regulated vegetation mapped within the project site

Legend

- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary

Regulated vegetation

- Category B
- Category C
- Category R
- Category X

RES Australia

Ecological Assessment for Tarong West Wind Farm, Ironpot, Queensland

0 1 2 4
Kilometers

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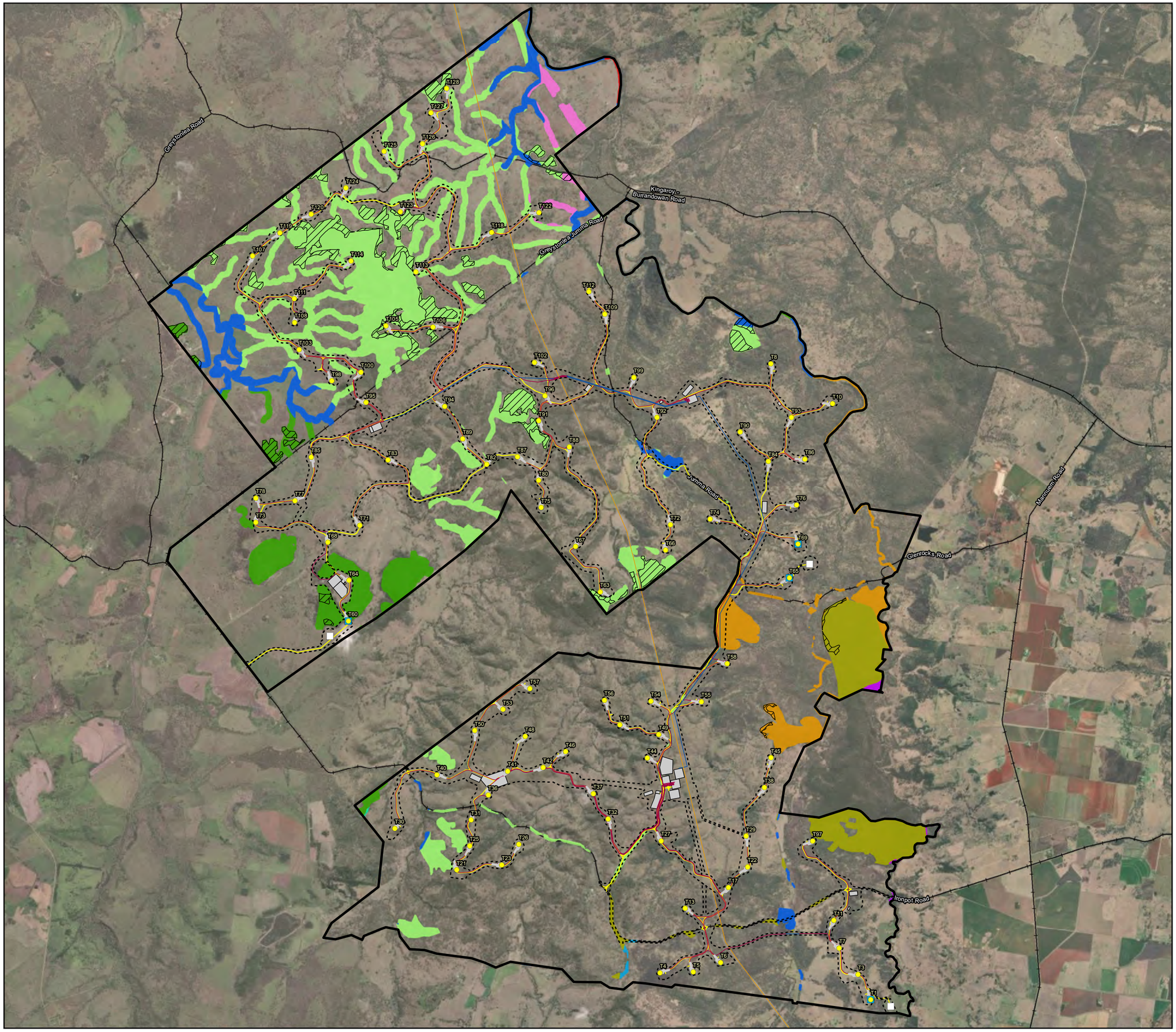

Figure 5: Regional ecosystems mapped within the project site

Legend

- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- High value regrowth

RE

- 11.11.15
- 11.11.15/11.3.25
- 11.11.15/11.5.20/11.3.25
- 11.12.3
- 11.12.3/11.7.6
- 11.12.6
- 11.3.25
- 11.3.4
- 11.5.20
- 11.8.3/12.8.16

RES Australia

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Datum: GDA 1994
Units: Meter

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Essential habitat

Essential habitat is listed as a MSES. Regulated vegetation that is essential habitat for koala is mapped on 4 properties within the site, totalling approximately 18.87 ha (Table 5). Within the planning corridor (including road reserves/easements and properties), approximately 7.25 ha of essential habitat for koala will be impacted.

Table 5 Essential habitat mapped in the site

Property	Area in property (ha)	Fauna species
4/ RP890694	1.52	koala (*Phascolarctos cinereus*)
5/ BO330	7.86	koala (*Phascolarctos cinereus*)
62/ BO188	7.83	koala (*Phascolarctos cinereus*)
7/ RP890694	1.66	koala (*Phascolarctos cinereus*)
Total	18.87	

High risk area for protected plants

Habitat for protected plants is considered a MSES, where it occurs within or outside of a high risk area for protected plants. The version 10.0 flora survey trigger map (DES 2023b) shows no high risk areas for protected plants within the project site.

Protected wildlife habitat

The WildNet database search (DES 2023a, Appendix 1), which identifies both EPBC Act listed and NC Act listed threatened flora and fauna, identified three NC Act listed threatened species within 10 km of the project site, including two threatened flora species (Austral toadflax, *Thesium australe* and Bailey's cypress, *Callitris baileyi*) and one threatened fauna species (koala, *Phascolarctos cinereus*). Wildnet has records of 18 listed flora and 15 listed fauna species within 20 km of the site, including six birds, three reptiles, and six mammal species.

Wetlands and watercourses

The vegetation management (VM) watercourse map shows numerous watercourses within the site with a total length of 364 km. These include the Boyne River (stream order 4-6), one unnamed stream order 5 watercourse in the west of the site and several order 4 streams which feed into the Boyne River (Mannuem Creek on the eastern boundary, Boughyard Creek in the west, Jumma Creek in the central portion and Middle Creek in the south-east). Many small to medium watercourses (stream order 1, 2 and 3) occur within the project site. The map of referable wetlands does not identify any wetland protection areas or wetlands of high ecological significance within the site or surrounding area.

3.3.3 Likelihood of presence of EPBC Act and NC Act listed species

Based on mapped REs, threatened flora species that were considered likely or possible within the site were:

- wandering peppercress (*Lepidium peregrinum*), listed as endangered under EPBC Act and NC Act

- Austral cornflower (*Leuzea australis*, previously *Rhaponticum australe*), listed as vulnerable under EPBC Act and NC Act
- Austral toadflax (*Thesium australe*), listed as vulnerable under EPBC Act and NC Act
- *Polianthion minutiflorum*, listed as vulnerable under the EPBC Act and NC Act
- *Paspalidium grandispiculatum*, listed as vulnerable under the EPBC Act and NC Act
- *Acacia tingoorensis*, listed as vulnerable under the NC Act
- Bailey's cypress (*Callitris baileyi*), listed as near threatened under the NC Act
- *Melaleuca formosa*, listed as near-threatened under the NC Act.

Based on mapped habitat, threatened fauna species that were considered likely to occur within the site were:

- koala (*Phascolarctos cinereus)*, listed as endangered under the EPBC Act and NC Act
- greater glider – southern and central (*Petauroides volans*), listed as endangered under the EPBC Act and NC Act
- white-throated needletail (*Hirundapus caudacutus*), listed as vulnerable under the EPBC Act and NC Act
- south-eastern glossy black-cockatoo (*Calyptorhynchus lathami lathami*), listed as vulnerable under the EPBC Act and NC Act
- collared delma (*Delma torquata*), listed as vulnerable under the EPBC Act and NC Act
- black-breasted button-quail (*Turnix melanogaster)*, listed as vulnerable under the EPBC Act and NC Act
- powerful owl (*Ninox strenua)*, listed as vulnerable under the NC Act.

Threatened fauna species that were considered to possibly occur within the site were:

- spotted-tailed quoll (*Dasyurus maculatus*)*,* listed as endangered under the EPBC Act and NC Act
- Corben's long-eared bat (*Nyctophilus corbeni)*, listed as vulnerable under the EPBC Act and NC Act
- grey-headed flying fox (*Pteropus poliocephalus*), listed as vulnerable under the EPBC Act.

Migratory (EPBC Act) and/or SLC (NC Act) fauna species that were considered likely or possible within the site were:

- fork-tailed swift (*Apus pacificus*)
- oriental cuckoo (*Cuculus optatus*)
- white-throated needletail, also listed as vulnerable under EPBC Act

- black-faced monarch (*Monarcha melanopsis*)
- satin flycatcher (*Myiagra cyanoleuca*)
- rufous fantail (*Rhipidura rufifrons*)
- short-beaked echidna (*Tachyglossus aculeatus*).

3.3.4 Biodiversity planning assessment

A state significant terrestrial fauna corridor intersects the site at 10SP168643 (Figure 6). The vegetation in this corridor is important for maintaining viable biodiversity connections to the greater landscape. This terrestrial corridor connects Bunya Mountains National Park in the south with Diamondy, Nudley and Barakula state forests in the west. The Coopers Gap Wind Farm, which has been constructed to the south of the site, is located within this corridor.

Three state significant riparian corridors intersect the site. These corridors are within the Boyne River catchment, which flow into the Stuart River and ultimately the Burnett River.

Figure 6: Biodiversity corridors

Legend

- Project boundary
- Riparian corridor
- Riparian / terrestrial corridor
- Terrestrial corridor

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4 Field survey methods

Flora and fauna surveys were conducted over several survey periods and seasons from 2018 to 2023. Details of individual survey periods are presented in sections 4.1 Flora methods and 4.2 Fauna methods. Survey teams used GPS-enabled tablet devices running Fulcrum GIS software (accuracy to approximately 10 m) to navigate within the project site and locate survey sites. These devices were also used to record the majority of field data using customised data forms. Electronic data capture using standardised forms ensured that accurate location data were logged with each survey site, improved data accuracy and minimised the risk of transcription errors.

4.1 Flora methods

The assessment of flora values within the site comprised the following:

- identification and verification of vegetation communities within the site (19 detailed sites and 153 observational sites), including:
  - 119 sites in areas mapped as remnant and/or HVR REs
  - 53 sites in areas mapped as non-remnant
- identification and verification of TECs under the EPBC Act (19 detailed sites, including areas mapped as containing REs that can form components of TECs)
- rapid assessment of condition of vegetation communities
- targeted searches for threatened flora species (27 sites)
- assessment of habitat value for threatened flora species.

Flora survey sites are described in Appendix 3 and mapped in Figure 7.

One team of two ecologists conducted spring flora surveys over ten days from 23 October to 1 November 2018 and autumn surveys over four days from 2 to 5 April 2019. Incidental flora sightings were also recorded by fauna teams during the 2020, 2021 and 2022 fauna surveys (section 4.2).

Where important plant species could not be identified in the field (e.g. dominant and characteristic species), specimens were collected in a plant press for further analysis by Ecosure botanical staff or the Queensland Herbarium. Specimens of suspected threatened flora species were also sent to the Queensland Herbarium for confirmation and incorporation into the herbarium records.

Figure 7a: Flora survey sites and state mapped REs

Legend

Autumn survey 2019
- Detailed flora
- Quaternary flora

Spring survey 2018
- Detailed flora
- Quaternary flora
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Planning corridor
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Project boundary
- Previous project boundary
- High value regrowth

Remnant RE
- Endangered - dominant
- Endangered - subdominant
- Of concern - dominant
- Of concern - subdominant
- Least concern

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Figure 7b: Threatened flora survey sites and state mapped REs

Legend

- Threatened flora survey
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- Previous project boundary
- High value regrowth

Remnant RE

- Endangered - dominant
- Endangered - subdominant
- Of concern - dominant
- Of concern - subdominant
- Least concern

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4.1.1 Threatened ecological communities

As detailed in section 2.3, the following TECs have the potential to occur within the project site due to the mapped presence of component REs within or adjacent to the project site:

- lowland rainforest of subtropical Australia – possible as component RE 12.8.13 is mapped within 10 km of the project site
- semi-evergreen vine thickets (SEVT) of the Brigalow Belt (North and South) – possible as component RE 11.8.3 is mapped within the project site
- brigalow (*Acacia harpophylla* dominant and codominant) – possible, as component REs are mapped within 10 km of the project site.

Targeted surveys for the presence of these TECs were conducted across the project site in areas of possible habitat to determine their likelihood of occurrence on the project site. The assessment of potential TECs followed the conservation advice statements prepared by the Threatened Species Scientific Committee (TSSC) for each TEC (DoE 2013b, DSEWPaC 2011a) and recovery plans (McDonald 2010). The key diagnostic assessment criteria used to determine presence of each potential TEC on the project site is detailed below.

Key diagnostic criteria for the lowland rainforest TEC (DSEWPaC 2011a) are:

1. Located in the SEQ bioregion:
   a. consistent with REs 12.3.1, 12.5.13, 12.8.3, 12.8.4, 12.8.13, 12.11.1, 12.11.10, 12.12.1 and 12.1.2.16.
2. Grows on soils derived from basalt or alluvium; or enriched rhyolitic soils; or basaltically enriched metasediments.
3. Structure is typically a tall (20 m–30 m) closed forest, often with multiple canopy layers.
4. Patches typically have high species richness (at least 30 woody species).
5. Patches must also meet one of the three following condition threshold sets:

(a)	(b)	(c)
projective foliage cover of emergent / canopy / subcanopy (over 10 m tall) over entire patch is ≥ 70% and		
natural remnant evident by the persistence of mature residual trees from Appendix B of the listing advice and	some residual trees from Appendix B of the listing advice plus evidence of natural or active regeneration and	non-remnant patch that has recovered through natural or active regeneration and
0.1 ha or more in size and	1 ha or more in size and	2 ha or more in size and
entire patch contains ≥ 40 native woody species from Appendix A of the listing advice and	entire patch contains ≥ 30 native woody species from Appendix A of the listing advice and	entire patch contains ≥ 30 native woody species from Appendix A of the listing advice and
≥ 70% of vegetation is native	≥ 50% of vegetation is native	≥ 50% of vegetation is native

Key diagnostic criteria for the brigalow TEC (DoE 2013b) are:

1. The patch is located in the Southeast Queensland, Brigalow Belt or Mulga Lands bioregions in Queensland, either in:
    a. remnant REs 11.3.1, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.10, 11.5.16, 11.9.1, 11.9.5, 11.9.6, 11.11.14, 11.12.21, 12.8.23, 12.9-10.6, 12.12.26 and 6.4.2 or
    b. regrowth with species composition and structural elements broadly typical of one of the identified REs (although species density may be reduced). This can be assumed to be the case where it has been at least 15 years since it was last comprehensively cleared (not just thinned); unless direct evidence proves otherwise.
2. Brigalow is either dominant in the tree layer, or co-dominant with other species (notably belah *Casuarina cristata*, other species of *Acacia*, or species of *Eucalyptus*).
3. The patch must also meet the following condition thresholds:
    a. the patch is 0.5 ha or more in size and
    b. exotic perennial plants comprise less than 50% of the total vegetation cover of the patch, as assessed over a minimum sample area of 0.5 ha (100 m by 50 m), that is representative of the patch.

No key diagnostic criteria or condition thresholds are currently available for the SEVT TEC. Relevant community characteristics identified in the national recovery plan for SEVT (McDonald 2010) include:

- consistent with REs 11.2.3, 11.3.11, 11.4.1, 11.5.15, 11.8.3, 11.8.6, 11.8.13, 11.9.4, 11.9.8 and 11.11.18 within the Brigalow Belt Bioregion
- thickets with an uneven canopy 4 to 9 m tall and mixed evergreen, semi-evergreen and deciduous emergent tree species 9 to 18 m tall
- trees with microphyll sized leaves and vines prominent
- herbaceous ground layer usually sparse or absent
- occur in areas with a subtropical, seasonally dry climate on soils of high to medium fertility.

4.1.2 Regulated vegetation and REs

The assessment of regulated vegetation and REs followed Neldner et al. (2020) and the RE description database (Queensland Herbarium 2021). To determine the vegetation management status of identified REs, reference was made to the '50/70' rule as described in the VM Act for remnant vegetation. Remnant vegetation means vegetation:

- that is an endangered RE, an of concern RE or a least concern RE and
- with the predominant canopy of the vegetation:
    - covering more than 50% of the undisturbed predominant canopy
    - averaging more than 70% of the vegetation's undisturbed height and

- composed of species characteristic of the vegetation's undisturbed predominant canopy.

HVR under the VM Act is defined as vegetation in an area that has not been cleared for the previous 15 years and is an endangered RE, an of concern RE or a least concern RE.

4.1.3 Vegetation surveys

Vegetation was surveyed across the site to provide a representative sample of the vegetation communities and to identify flora and fauna values present. Vegetation surveys during spring 2018 and autumn 2019 included 19 tertiary (detailed) sites and 153 quaternary (observational) sites (Figure 7, Appendix 3). Quaternary assessments recorded landform and dominant canopy species and were used primarily to ground-truth and record boundaries of REs as mapped by DNRME (2020a). Detailed (tertiary) assessments recorded additional floristic and structural information, including:

- structural characteristics of the vegetation (based on life forms, strata, approximate height and percentage cover)
- vegetation condition (integrity as either pristine, excellent, very good, good, average, degraded or completely degraded)
- presence of weed species
- presence and population characteristics of any threatened flora species
- dominant and common species in each structural component (stratum) of the vegetation
- landscape characteristics
- geology and soil characteristics, including erosion
- wetland characteristics (if present)
- notes on sensitivities to the possible impacts from the proposed activities
- identification of the RE based on site survey results.

4.1.4 Threatened plant survey

The desktop assessment identified three threatened flora species that were considered likely or possible within the site. A survey program which was designed to detect target species and to meet the requirements (if any) for NC Act and EPBC Act survey guidelines is described in Table 6. Due to the large size of the site, surveys for threatened flora species were prioritised and targeted to areas with potential habitat value. Areas of habitat value were identified from RE mapping data and verified in the field. Flora surveys were completed within 19 sites using the random meander method (Cropper 1993). This method requires that a botanist walks a random path within a suitable habitat area recording all species until the habitat has been thoroughly searched or no new flora species have been added to the list for 30 minutes.

Threatened plant surveys were also conducted at seven potential stream crossing sites. Both banks and the stream bed were searched for 100 to 200 m upstream and downstream of the

proposed crossing sites. Appendix 3 and Figure 7 identify locations of threatened plant surveys.

Table 6 Survey effort for threatened flora species potentially occurring within the project site

Name	Commonwealth survey guidelines / EPBC Act referral guidelines	Queensland survey guidelines	Effort and method carried out by Ecosure	Survey limitations
Acacia grandifolia	No survey or referral guidelines are available for this species.	N/A	Timed random meanders in suitable habitat (landzone 8)	None identified, identifiable year-round.
Acacia tingoorensis	Not EPBC listed.	N/A	Timed random meanders in suitable habitat (eucalypt woodlands in north of site)	None identified, identifiable year-round.
Callitris baileyi Bailey's cypress pine	Not EPBC listed	N/A	Timed random meanders in suitable habitat (vine thickets and adjacent forest habitat)	Three individuals identified, identifiable year-round.
Cossinia australiana	No survey or referral guidelines are available for this species.	N/A	Timed random meanders in suitable habitat (vine thickets)	None identified, identifiable year-round.
Denhamia parvifolia small-leaved denhamia	No survey or referral guidelines are available for this species.	N/A	Timed random meanders in suitable habitat (vine thickets and brigalow/belah communities)	None identified, identifiable year-round.
Lepidium peregrinum wandering peppercress	No survey or referral guidelines are available for this species.	N/A	Timed random meanders in suitable habitat (remnant and non-remnant riparian communities).	Most peppercress plants dead at time of survey. However, occasional live plants allowed identification.
Leuzea australis (synonym *Rhaponticum australe* Austral cornflower	No survey or referral guidelines are available for this species.	N/A	Timed random meanders in suitable habitat (woodlands on heavy clay soils).	None identified, identifiable when flowering from autumn to spring.
Phebalium distans Mt Berryman phebalium	No survey or referral guidelines are available for this species.	N/A	Timed random meanders in suitable habitat (vine thickets and adjacent forest habitat)	None identified, identifiable year-round.
Thesium australe Austral toadflax	No survey or referral guidelines are available for this species.	N/A	Timed random meanders in suitable habitat (woodland in damp riparian areas).	None identified, identifiable year round.

4.1.5 Biosecurity matters

Introduced flora species were recorded during spring 2018 and autumn 2019 surveys, and incidentally throughout other surveys on site.

4.2 Fauna methods

The assessment of fauna values within the site comprised the following:

- identification and verification of fauna habitats within the site based on RE mapping data and site assessment
- assessment of habitat value for threatened species including identifying critical elements for species usage such as koala feed tree species, hollow-bearing trees and micro-habitat features
- targeted searches and baited camera trapping for threatened fauna species
- ultrasonic detection using Anabat and Songmeter call recorders and harp trapping for microbats
- call playback surveys for black breasted button quail, nocturnal birds and mammals
- bird utilisation surveys from 2018 to 2023 (Ecosure 2023a)
- searches for glossy black-cockatoo and orts (chewed seed cones).

Fauna surveys included:

- 2018 spring survey completed by one team of two ecologists over 12 days from 29 October to 9 November 2018
- 2019 autumn survey completed by two teams of two ecologists over 11 days from 25 March to 5 April 2019 (one team conducted general fauna surveys and the other team conducted fixed point count bird surveys for the bird utilisation survey)
- 2020 spring survey completed by two teams of two ecologists over six days from 23 November to 28 November 2020 (one team conducted general fauna surveys and the other team conducted fixed point count bird surveys for the bird utilisation survey)
- 2021 spring survey completed by one team of two ecologists over 13 days from 25 to 31 October and 1 November to 7 November (including general fauna surveys and fixed point count bird surveys)
- preconstruction bird and bat utilisation surveys (BBUS), consisting of fixed-point count bird surveys completed by one team of two ecologists:
  - 2022 summer (21 to 24 February and 17 to 18 March)
  - 2022 autumn (22 to 27 June)
  - 2022 winter (16 to 21 August)
  - 2022 spring (6 to 11 November)
  - 2023 summer (30 January to 4 February).

Survey methods, the number of surveys and the overall effort completed are shown in Table 7 and mapped in Figure 8.

Table 7 Fauna survey methods and effort employed during field surveys

	Spring 2018		Autumn 2019		Spring 2020		Spring 2021		Summer 2022		Autumn 2022		Winter 2022		Spring 2022		Summer 2023		Total	
Survey method	**No. sites**	**Survey effort**	**No. sites**	**Survey effort**	**No. sites**	**Survey effort**	**No. sites**	**Survey effort**	**No. sites**	**Survey effort**	**No. sites**	**Survey effort**	**No. sites**	**Survey effort**	**No. sites**	**Survey effort**	**No. sites**	**Survey effort**	**No. sites**	**Survey effort**
Habitat assessment	30	8 hrs x 2 personnel	34	17 hrs x 2 personnel		-		-		-		-		-		-		-	64	25 hrs x 2 personnel
Nocturnal spotlighting		-	23	34.5 hrs over 9 nights x 2 personnel	18	24 hrs over 6 nights x 2 personnel	41	24 hrs over 6 nights x 2 personnel	10	12 hrs over 6 nights x 2 personnel		-		-		-		-	92	94.5 hrs over 27 nights x 2 personnel
Microbat call recording	6	48 detection nights	9	27 detection nights	6	12 detection nights	8	15 detection nights		-		-		-		-		-	29	102 detection nights
Microbat harp trapping		-	9	18 trap nights x 4 traps	9	18 trap nights x 4 traps	8	15 trap nights x 4 traps		-		-		-		-		-	26	51 trap nights x 4 traps
Remote camera trapping for quoll	10	80 trap nights	20	88 trap nights		-		-		-		-		-		-		-	30	168 trap nights
Black-breasted button-quail call playback	-	-	15	1.25 hrs		-		-		-		-		-		-		-	15	1.25 hrs
Black-breasted button-quail active searches	7	1.75 hrs x 2 personnel	4	2 hrs x 2 personnel		-		-		-		-		-		-		-	11	3.75 hrs x 2 personnel
Collared delma active searches	30	5 hrs x 2 personnel	39	8 hrs x 2 personnel		-		-		-		-		-		-		-	69	13 hrs x 2 personnel
Koala call playback		-	15	1.25 hrs		-		-		-		-		-		-		-	15	1.25 hrs
Koala surveys (including SAT)	20	10 hrs x 2 personnel	19	9.5 hrs x 2 personnel		-		-		-		-		-		-		-	39	19.5 hrs x 2 personnel
Fixed point count bird surveys	30	30 hrs x 2 personnel	30	45 hrs x 2 personnel	15	22.5 hrs x 2 personnel	15	22.5 hrs x 2 personnel	15	22.5 hrs x 2 personnel	15	22.5 hrs x 2 personnel	15	22.5 hrs x 2 personnel	15	22.5 hrs x 2 personnel	15	22.5 hrs x 2 personnel	165	232.5 hrs x 2 personnel
Roaming surveys	3	6.75 hrs x 2 personnel	-	-		-		-		-		-		-		-		-	3	6.75 hrs x 2 personnel
Dam waterbird searches	-	-	6	3 hrs x 2 personnel	13	3.25 hrs x 2 personnel	20	4.75 hrs x 2 personnel	11	2 hrs x 2 personnel		-		-		-		-	50	13 hrs x 2 personnel
glossy black-cockatoo active searches	-	1.5 hrs x 2 personnel	34	11.5 hrs x 2 personnel	8	2 hrs x 2 personnel-	7	1.75 hrs x 2 personnel	2	0.5 hrs x 2 personnel		-		-		-		-	51	17.25 hrs x 2 personnel
Powerful owl call playback	7	0.25 hrs per site	15	0.25 hrs per site															22	5.5 hrs

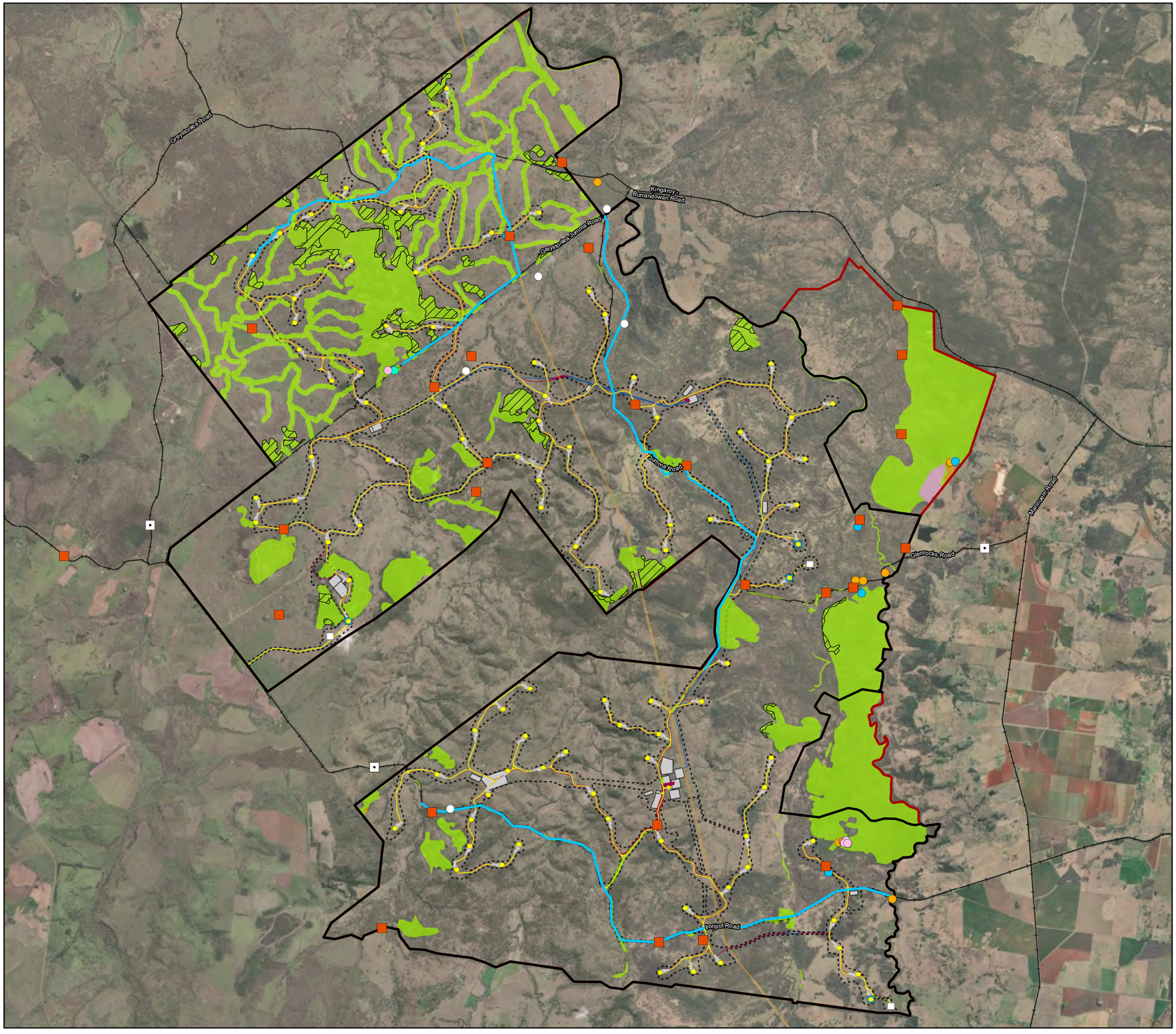

Figure 8a: Spring 2018 fauna survey sites and state mapped REs

Legend

- Bird point count survey (reference site)
- Bird point count surveys (impact site)
- Anabat call recording
- Black-breasted button-quail active search
- Camera trap
- Glossy black-cockatoo active search
- Spotlighting and call playback
- Roaming survey
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- Previous project boundary
- High value regrowth

Remnant RE

- Endangered - dominant
- Endangered - subdominant
- Of concern - dominant
- Of concern - subdominant
- Least concern

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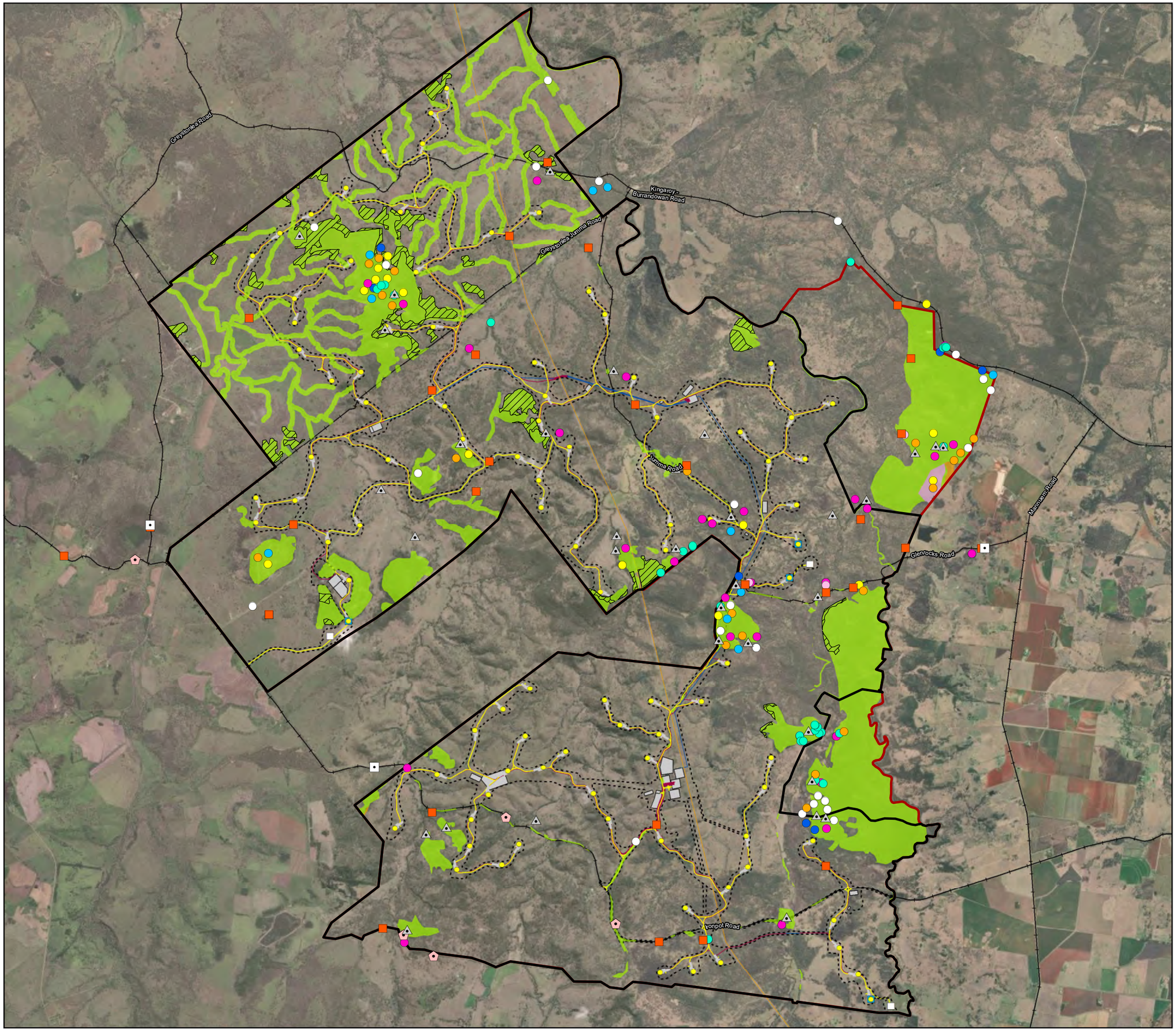

Figure 8b: Autumn 2019 fauna survey sites and state mapped REs

Legend

- Bird point count survey (reference site)
- Bird point count surveys (impact site)
- Anabat call recording
- Black-breasted button-quail active search
- Camera trap
- Dam survey
- Glossy black-cockatoo active search
- Habitat assessment
- Harp trapping
- Herpetofauna, active search
- Nocturnal call playback
- Spotlighting
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Planning corridor
- Infrastructure
- Project boundary
- Previous project boundary
- High value regrowth

Remnant RE

- Endangered - dominant
- Endangered - subdominant
- Of concern - dominant
- Of concern - subdominant
- Least concern

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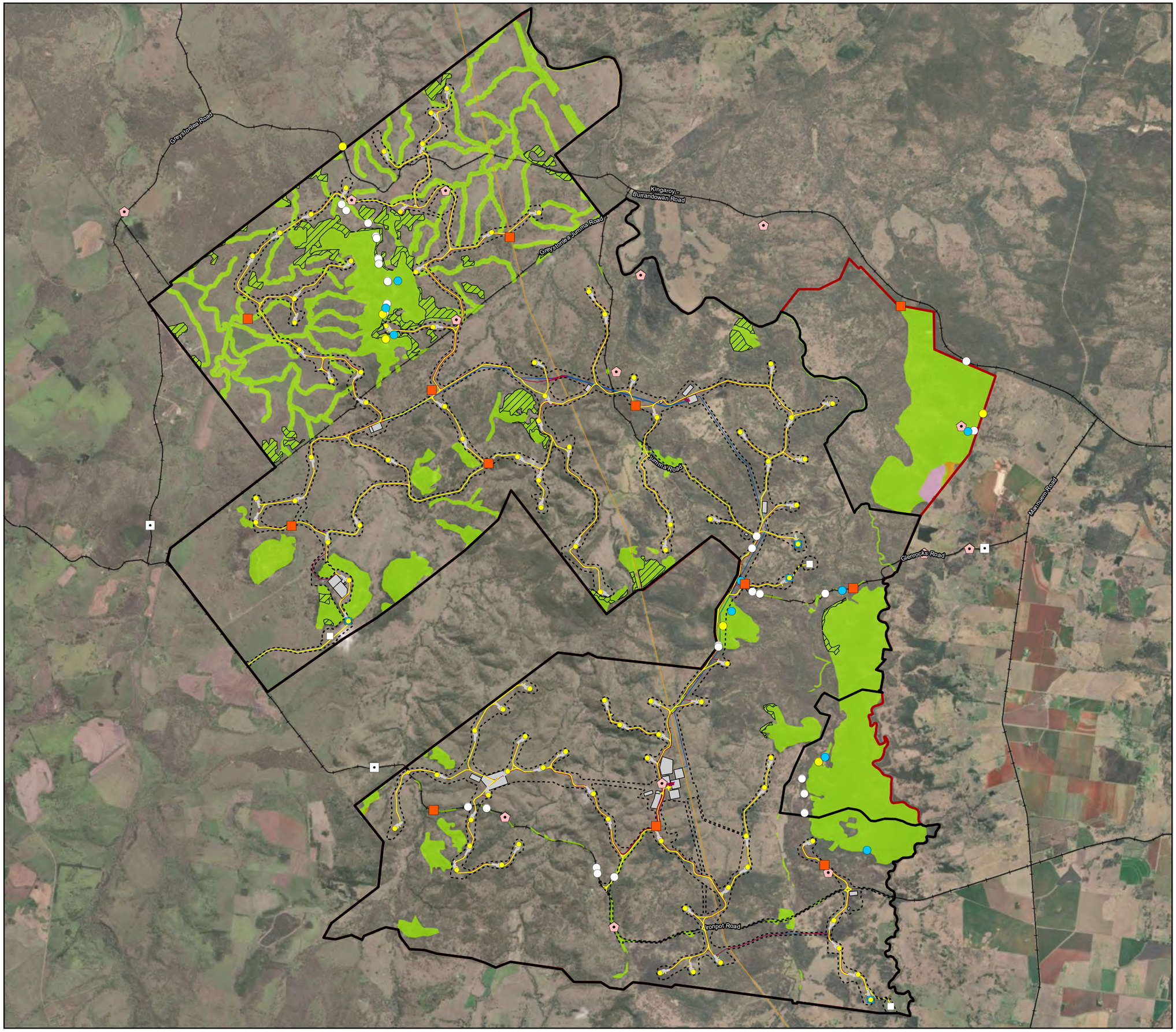

Figure 8c: Spring 2020 fauna survey sites and state mapped REs

Legend

- Bird point count survey (reference site)
- Bird point count survey (impact site)
- Anabat call recording and harp trapping
- Dam survey
- Nocturnal call playback
- Spotlighting
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Planning corridor
- Infrastructure
- Project boundary
- Previous project boundary
- High value regrowth

Remnant RE

- Endangered - dominant
- Endangered - subdominant
- Of concern - dominant
- Of concern - subdominant
- Least concern

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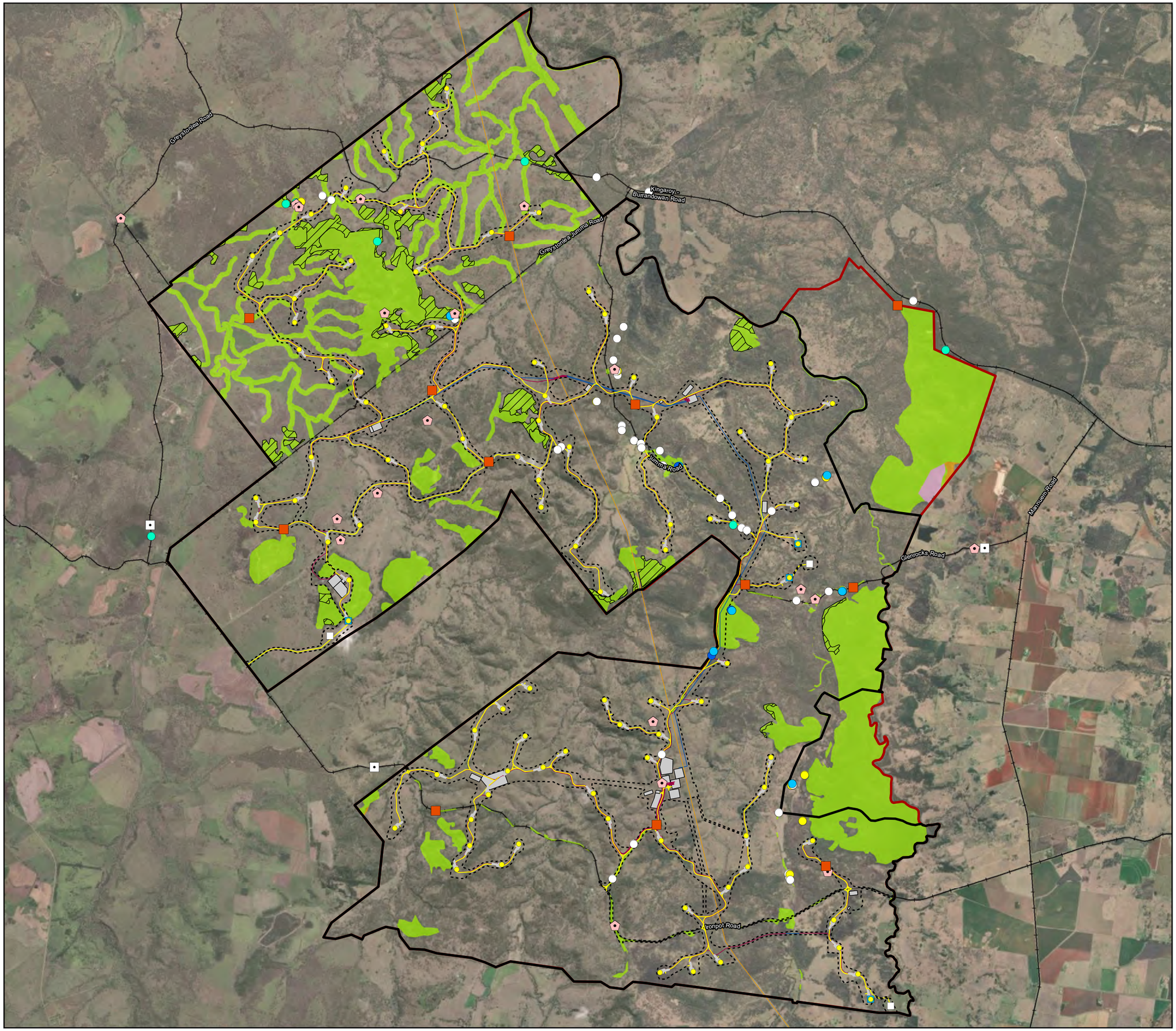

Figure 8d: Spring 2021 fauna survey sites and state mapped REs

Legend

- Bird point count survey (reference site)
- Bird point count surveys (impact site)
- Dam survey
- Anabat call recording and harp trapping
- Harp trapping
- Nocturnal call payback
- Spotlighting
- Glossy black-cockatoo active search
- WTG
- Meteorological mast (permanent)
- Met mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor

PR3713_RE_OldBoundaryClip

Remnant RE

- Endangered - dominant
- Endangered - subdominant
- Of concern - dominant
- Of concern - subdominant
- Least concern
- Project boundary
- Previous project boundary
- High value regrowth

RES Australia

Ecological Assessment for Tarong West Wind Farm, Ironpot, Queensland

0 1 2 4
Kilometers

Job number: PR3713
Revision: 0
Author: KF
Date: 10/25/2023

GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994
Units: Meter

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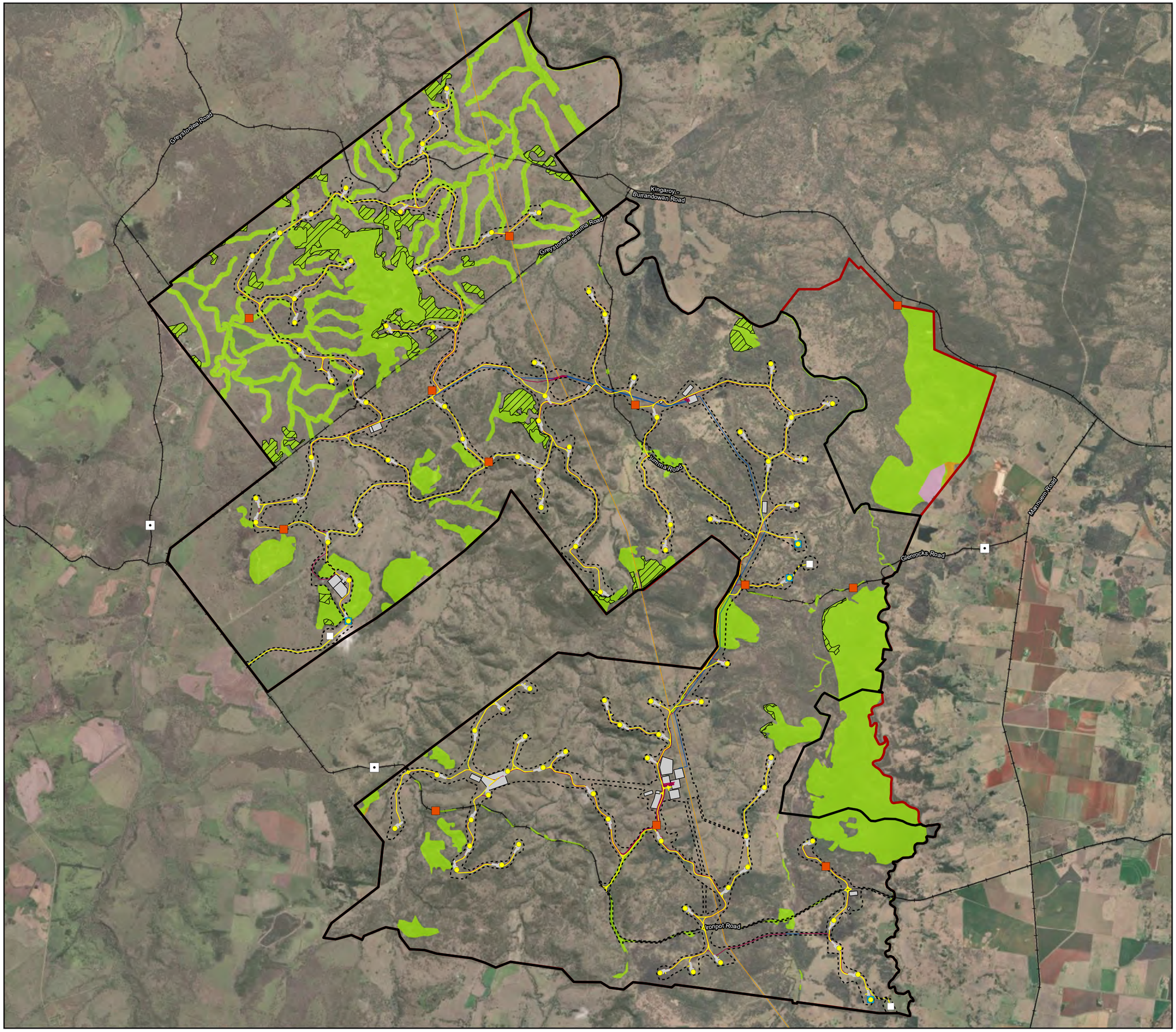

Figure 8e: 2022 pre-construction fauna survey sites and state mapped REs

Legend

- Bird point count survey (reference site)
- Bird point count surveys (impact site)
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- Previous project boundary
- High value regrowth

Remnant RE

- Endangered - dominant
- Endangered - subdominant
- Of concern - dominant
- Of concern - subdominant
- Least concern

RES Australia

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0 1 2 4
Kilometers

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GDA 1994 MGA Zone 56
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4.2.1 Fauna habitat assessment

The habitat assessment included searches for:

- rocks and rocky outcrops, exfoliating rocks and rocks with crevices
- trees and logs with hollows, presence of senescent (old) or dead trees (stags) and trees or logs with peeling bark or loose bark (abundant)
- estimate of habitat condition, based on visual assessment
- vegetation cover: canopy, shrub, ground cover and leaf litter
- habitat features / food resources e.g. termite mounds, mistletoe (abundance), flowering trees
- presence of standing water or ephemeral waterways including wetland, riverine and groundwater springs (presence / absence)
- presence of scats, tracks and other traces of fauna utilisation
- 10 minutes of active searching in leaf litter, rocks and logs for targeted fauna species (e.g. collared delma).

These assessments allowed a broad fauna habitat map to be prepared for the site and assisted in determining which species listed under state and federal legislation are likely to be inhabiting the site.

Fauna habitat was assessed at 30 sites across the project site during the spring 2018 survey and 34 sites during the autumn 2019 survey period. Opportunistic fauna sightings were also recorded.

4.2.2 Threatened fauna survey

Several threatened fauna species have been recorded within 10 km of the project site and/or were considered likely or possible to occur based on mapped habitat within the site (Appendix 1), including:

- koala, listed as endangered under EPBC Act
- greater glider – southern and central, listed as endangered under EPBC Act
- white-throated needletail, listed as vulnerable under EPBC Act
- black-breasted button-quail, listed as vulnerable under EPBC Act
- collared delma, listed as vulnerable under EPBC Act
- spotted-tailed quoll, listed as vulnerable under NC Act and endangered under EPBC Act
- Corben's long-eared bat, listed at vulnerable under EPBC Act
- grey-headed flying-fox, listed as vulnerable under EPBC Act
- glossy back-cockatoo, listed as vulnerable under the EPBC Act.

A survey program which was designed to detect target species and to meet the minimum

requirements for NC Act and EPBC Act survey guidelines is described in Table 8. Where it was not possible to meet the survey guideline requirements for a particular targeted species, this is stated in further detail in Table 8. Total survey effort for the spring 2018, autumn 2019, spring 2020, and spring 2021 surveys included:

- searches for koala scats based on koala spot assessment technique (SAT)
- camera trapping for quolls
- spotlighting for nocturnal fauna, including koala, greater glider and grey-headed flying-fox
- call playback for black-breasted button-quail
- black-breasted button-quail active searches for platelets
- searches for glossy black-cockatoo and orts (chewed seed cones)
- bird utilisation survey, targeting raptors, wetland birds, migratory birds and threatened species at up to 30 point count locations
- bat survey using call detection devices (e.g. Anabat, Songmeter) for microbats
- harp trapping used to capture and detect microbats, targeting Corben's long-eared bat
- active herpetofauna searches for collared delma and other reptiles/amphibians.

Surveys in 2022 (summer, autumn, winter, and spring) and 2023 (summer) focused on bird and bat utilisation, and included:

- bird utilisation survey, targeting raptors, wetland birds, migratory birds and threatened species at 30 point count locations
- searches for megabat camps and megabat foraging
- opportunistic sightings of any fauna of interest.

Targeted searches for koala (SAT surveys) were conducted during the 2018 and 2019 survey periods, and incidental observations were recorded throughout all surveys periods (2018 – 2023). The SAT for surveying koalas was developed by Phillips and Callaghan (2011). It involves locating and marking a central tree where either a scat has been found, a koala has been observed or a tree that is known or considered to be important for a koala is identified. Once a central tree has been established, 29 trees nearest to the central tree are uniquely marked and searches for koala scats are performed within a 1 m radius of each of the 30 trees (29 trees and the central tree). All trees should be at least 10 cm diameter at breast height (DBH). SAT surveys can estimate koala presence and activity levels (i.e. proportion of trees with koala scats).

The rapid SAT technique restricts searches to preferred koala food trees with a DBH greater than 30 cm DBH. Searches are continued until scats are found or a total of seven trees are surveyed (Biolink 2019). This method is suitable for assessment of koala presence across larger areas but cannot determine activity levels (Youngentob et al. 2021).

4.2.3 Migratory fauna survey

Migratory fauna species that are or were considered likely or possible to occur based on mapped habitat within the site include:

- rufous fantail
- white-throated needletail, also listed as vulnerable under EPBC Act
- fork-tailed swift
- oriental cuckoo
- black-faced monarch
- satin flycatcher.

A survey program which was designed to detect target species and to meet the minimum requirements for NC Act and EPBC Act survey guidelines is described in Table 8. Where it was not possible to meet the survey guideline requirements for a particular targeted species, this is stated in further detail in Table 8. Total survey effort for migratory species included:

- bird utilisation survey at up to 30 fixed point count survey locations
- roaming surveys
- opportunistic sightings during habitat assessments and while travelling within the site across all survey types over six years
- targeted dam and watering point surveys.

4.2.4 Level one avian risk investigation

Ecosure prepared a draft BBUS report for the project site incorporating a level one avian risk assessment concurrently with the ecological assessment. Methods and results of the BBUS are documented in detail in a separate BBUS report (Ecosure 2023a).

4.2.5 Quarterly BBUS

Quarterly preconstruction bird and mega bat surveys were designed to detect target species and to meet the minimum requirements for NC Act and EPBC Act survey guidelines described in Table 8. Quarterly BBUS monitoring commenced in summer 2022. Total survey effort for bird and mega bat species during these preconstruction surveys included:

- bird utilisation survey at 15 fixed point count survey locations
- roaming spotlighting surveys
- opportunistic sightings while travelling within the site and at dams and watering points
- opportunistic fauna sightings.

The targeted bird utilisation fixed point count surveys were reduced from 30 locations during the initial surveys in 2018 and 2019 to 15 survey locations for seasonal surveys from spring

2020 onwards. Sites were surveyed morning, noon, and evening at each location for 30 minutes. The reduction in survey locations allowed the sites to be efficiently and effectively surveyed each season while adequately surveying the entirety of the project site.

Table 8 Survey effort for threatened and migratory fauna species potentially occurring within the project site

Name	Commonwealth survey guidelines / EPBC Act referral guidelines	Queensland survey guidelines	Effort and method carried out by Ecosure	Survey results and limitations
Threatened birds				
Hirundapus caudacutus white-throated needletail (also migratory)	Counts of birds to be conducted by an experienced observer from elevated viewpoints (if present) during summer (DoE 2015). Observations should be made of birds coming into roost in tall trees and along ridge tops, but only if roost sites are known (DoE 2015). For sites where there is a collision risk with wind turbines, more targeted surveys should include timed area counts and collision risk modelling (DoE 2015).	No species-specific guidelines.	Spring 2018: Survey for 30 hrs by 2 experienced personnel, using fixed point bird count techniques. Roaming surveys for 6.75 hrs by 2 personnel. Total 73.5 person hrs. Autumn 2019: Survey for 45 hrs by 2 experienced personnel using fixed point bird count techniques. Total 90 person hrs. Spring 2020: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Spring 2021: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Summer 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Autumn 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Winter 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Spring 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Summer 2023: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. **Total survey effort = 478.5 person hrs.**	No survey limitations identified. Methods suitable to detect species flying over site. Fixed point count bird surveys performed to collect information about flight behaviours and collision risk. No roost sites were observed in the project site.
Turnix melanogaster	Land based transect search (15 hrs / 3 days) in areas of less than 50 ha for suitable habitat,	No species-specific guideline but searches for platelets (areas of scratching) and call playback are	Spring 2018: Survey for 1.75 hrs by 2 personnel, searching for birds and platelets in suitable habitat. Survey completed within known	Only 8.75 hrs of targeted surveys for black-breasted button quail were

Name	Commonwealth survey guidelines / EPBC Act referral guidelines	Queensland survey guidelines	Effort and method carried out by Ecosure	Survey results and limitations
black-breasted button-quail	flushing birds, platelets and sounds of foraging. (Department of the Environment, Water, Heritage and the Arts [DEWHA] 2010a). No evidence of seasonal movement (Marchant & Higgins 1993). Breeding season occurs from September to February/March (Hughes & Hughes 1991; Smyth & Young 1996). There are no referral guidelines for this species.	effective survey methods.	breeding season. Total 3.5 person hrs. Autumn 2019: 4 active habitat searches were conducted in SEVT patches for platelet sign by 2 personnel over 2 hrs. 15 call playback surveys were conducted by 2 personnel for 5 mins per site for total of 1.25 hrs. Total 5.25 person hrs. **Total survey effort = 8.75 person hrs.**	completed when 15 hrs / 3 days is recommended. However, due to the small area of potential habitat available within the project site for this species (0.63 ha, refer to section 6.3.3 and Figure 10) , and the complete avoidance of this area in the planning corridor, it is considered that a reasonable survey effort for this species has been achieved.
Calyptorhynchus lathami lathami glossy black-cockatoo	This species is not in the Commonwealth survey guidelines for threatened birds. There are no referral guidelines for this species.	Diurnal bird survey involving a land based transect search through areas characteristic of she-oak *Allocasuarina* and *Casuarina* trees, with presence of suitable water bodies for drinking and also large hollow bearing eucalypts, used by this species during their breeding season. Targeted search for foraging and nesting signs. The colour of the chewed she-oak cone can determine how recent/old the feeding activity was. Sound detection of feeding e.g. the clicking sound of the bird's mandible can be heard and cones/branches falling to the ground (Hourigan 2012). Proposed effort is 20-person hrs over 4 days. Calls are also made from begging young (Cameron 2006). The birds are most active in the first	Spring 2018: Active searches for habitat sign were conducted by two personnel over 1.5 hrs. Survey for 30 hrs by 2 experienced personnel, using fixed point bird count techniques. Roaming surveys for 6.75 hrs by 2 personnel. Total 76.5 person hrs. Autumn 2019: 34 patches of vegetation containing she-oak were searched for orts by two personnel over 11.5 hrs. Survey for 45 hrs by 2 experienced personnel using fixed point bird count techniques. Total 113 person hrs. Spring 2020: 8 patches of vegetation containing she-oak were searched for orts by two personnel over 2 hrs. Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 49 person hrs. Spring 2021: 7 patches of vegetation containing she-oak were searched for orts by two personnel over 1.75 hrs. 2 adults birds observed incidentally. Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 48.5 person hrs. Summer 2022: 2 patches of vegetation containing she-oak were searched for orts by	Methods employed were sufficient to confirm the presence of glossy black-cockatoo at the site.

Name	Commonwealth survey guidelines / EPBC Act referral guidelines	Queensland survey guidelines	Effort and method carried out by Ecosure	Survey results and limitations
		and last two hours of daylight and although their calls are infrequent, they are most likely to be heard at these times. Peak breeding season occurs from March to August in SEQ (Glossy Black Conservancy 2010).	two personnel over 0.5 hrs. Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 46 person hrs. Autumn 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Winter 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Spring 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Summer 2023: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. **Total survey effort = 513 hrs.**	
Ninox strenua powerful owl	No referral guidelines for this species, species is not EPBC listed.	No species-specific guideline. However, this species readily responds to call playback.	Spring 2018: 7 sites with 0.25 hr call playback per site for a total of 1.75 hrs. Autumn 2019: 15 sites with 0.25 hr call playback per site for a total of 3.75 hrs. 23 nocturnal spotlight surveys were conducted by 2 personnel over 9 nights and 34.5 hrs. Spring 2020: 24 hrs nocturnal spotlight surveys over 6 nights by 2 personnel. Total 48 person hrs. Spring 2021: 24 hrs nocturnal spotlight surveys over 6 nights by 2 personnel. Total 48 person hrs. **Total survey effort = 5.5 hr call playback over 22 sites. 94.5 hr of nocturnal spotlighting over 27 nights by 2 personnel. Total 189 person hrs.**	
Botaurus poiciloptilus Australasian bittern	No referral guidelines for this species. General survey technique for bitterns (DEWHA 2010a)	No species-specific guideline. However, general survey techniques for wetland birds	Spring 2018: Survey for 30 hrs by 2 experienced personnel, using fixed point bird count techniques. Roaming surveys for 6.75 hrs by 2	

Name	Commonwealth survey guidelines / EPBC Act referral guidelines	Queensland survey guidelines	Effort and method carried out by Ecosure	Survey results and limitations
	includes: · call playback in areas of suitable habitat · morning or evening surveys at suitable wetland habitat · area searches for signs such as nests, footprints, and feathers.	(Eyre et al. 2022a) includes: · area search of suitable wetland habitat · call playback · aerial surveys for large wetland habitats.	personnel. Total 73.5 person hrs. Autumn 2019: Survey for 45 hrs by 2 experienced personnel using fixed point bird count techniques. Wetland bird surveys conducted for 3 hrs by 2 personnel. Total 96 person hrs. Spring 2020: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Wetland bird searches for 3.25 hrs by 2 personnel. Total 52.5 person hrs. Spring 2021: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Wetland bird surveys for 4.75 hrs by 2 personnel. Total 54.5 person hrs. Summer 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Wetland bird surveys for 2 hrs by 2 personnel. Total 49 person hrs. Autumn 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Winter 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Spring 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Summer 2023: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. **Total survey effort = 505.5 person hrs**	
Threatened mammals				
Dasyurus maculatus maculatus (SE mainland	Sampling units of 100 ha recommended due to wide range	No species-specific guidelines.	Spring 2018: Baited remote camera trapping at 10 sites within suitable habitats for a total of 80 trapping nights. Habitat assessment surveys at	The increased metabolic demands and use of latrine sites during the

Name	Commonwealth survey guidelines / EPBC Act referral guidelines	Queensland survey guidelines	Effort and method carried out by Ecosure	Survey results and limitations
population) spot-tailed quoll, spotted-tail quoll, tiger quoll	of species. Daytime search for suitable habitat, signs of activity, community consultation, latrine sites. Use of survey equipment such as hair sample device, camera traps. Cage trapping not required if prior methods used (DSEWPaC 2011b). Mating occurs late May to early August through to September, males may be detected in areas where they usually do not occur. There are no referral guidelines for this species.		30 sites for 8 hrs by 2 personnel. Total 80 trap nights and 16 person hrs. Autumn 2019: Baited remote camera sites at 20 survey locations for a total of 88 trapping nights. Habitat assessment surveys at 34 sites for 17 hrs by 2 personnel. Total 88 trap nights and 34 person hrs. **Total survey effort = 168 camera trap nights and 50 person hrs.**	breeding season (May to August) makes quolls more active and easier to detect during the breeding season. The spring and autumn surveys were completed outside the optimal survey period so may have resulted in a failure to detect the species. However, habitat surveys confirmed that limited suitable habitat is present, so species is unlikely to occur within the site.
Phascolarctos cinereus koala	This species is not in the Commonwealth mammal survey guideline (DSEWPaC 2011b). Habitat assessment – Koala habitat assessment tool (DoE 2014a). Strip transects (DoE 2014a). Nocturnal spotlighting (DoE 2014a). SAT developed by Phillips and Callaghan (2011). Grid search over a study site. The size of the grid can vary depending on predicted koala density and habitat. Searching for scats (within a 1 m radius) of the base of 30 trees (with DBH greater than 10 cm) at each grid site (DoE 2014a).	Survey requirements are: · SAT developed by Phillips and Callaghan (2011). Methodology for completing a rapid SAT is described in Section 4.2.2.	Spring 2018: Koala rapid SATs were prioritised in RE 11.3.25 patches and secondary effort directed towards other habitats on low fertility soils. Survey effort of 10 hrs by 2 personnel. Habitat assessment surveys at 30 sites for 8 hrs by 2 personnel. Total 36 person hrs. Autumn 2019: Additional Koala rapid SATs were conducted in suitable habitat. 19 surveys were completed by 2 personnel over 9.5 hrs. 23 nocturnal spotlight surveys were conducted by 2 personnel over 9 nights and 34.5 hrs. Habitat assessment surveys at 34 sites for 17 hrs by 2 personnel. Total 122 person hrs. Spring 2020: 24 hrs nocturnal spotlight surveys over 6 nights by 2 personnel. Total 48 person hrs. Spring 2021: 24 hrs nocturnal spotlight surveys over 6 nights by 2 personnel. Total 48 person hrs. Summer 2022: 12 hrs over 6 nights by 2 personnel. Total 24 person hrs.	Methods employed were sufficient to detect koalas (across seasons), demonstrating that koalas occupy and use the site.

Name	Commonwealth survey guidelines / EPBC Act referral guidelines	Queensland survey guidelines	Effort and method carried out by Ecosure	Survey results and limitations
			Incidental observations during all field survey periods over six years. **Total survey effort = 278 hrs.**	
Nyctophilus corbeni Corben's long-eared bat	Survey techniques include harp traps and mist nets. Surveys most successful during warmer nights from October to April. For large scale projects traps and nets should be distributed across landscape to provide a good representation of habitat types Equipment should be situated in open fly-ways and within cluttered vegetation. Project areas of <50 ha it is recommended that a minimum of 5 surveying nights. A total effort of 20 trap nights when harp trapping and 20 mist-net nights is recommended. However, trapping effort may need to be altered depending on survey locations (DEWHA 2010b). Call recording devices can identify the genus but cannot reliably distinguish between *Nyctophilus* species. DEWHA (2010b) does not provide recommended survey effort for call recording. There are no referral guidelines for this species.	No species-specific guidelines.	Spring 2018: Bat recording devices at 6 locations for 48 detection nights. Autumn 2019: Harp trapping at 9 locations for 18 total trapping nights using 4 traps each night. Bat recording devices at 9 locations for a total of 27 detection nights. Spring 2020: Harp trapping at 9 locations for 18 total trapping nights using 4 traps each night. Bat recording devices at 6 locations for a total of 12 detection nights. Spring 2021: Harp trapping at 8 locations for 15 total trapping nights using 4 traps each night. Bat recording devices at 8 locations for a total of 15 detection nights. **Total survey effort = 102 nights of call recording and 204 harp trapping nights.**	No harp trapping occurred in spring 2018. Heavy rain over 2 nights in autumn 2019 reduced the number of successful harp trapping nights from the recommended 20 nights to 18 nights. A further 18 trapping nights in spring 2020 and 15 in spring 2021 increased total effort to 51 harp trapping nights using 4 harp traps giving a total of 204 single harp trap nights across 26 locations. Effort sufficient to detect least concern *Nyctophilus* species (*N. geoffroyi*) during harp trapping.
Pteropus poliocephalus grey-headed flying-	Daytime field surveys for camps (DEWHA 2010b). Surveys of vegetation communities	No species-specific guidelines. General survey requirements for mammals that would be relevant	Spring 2018: 30 habitat assessment sites were visited over 8 hrs by 2 personnel, where searches for flying fox camps occurred. Total 16	Methods employed were sufficient to detect grey-headed flying-fox foraging within the site during the

Name	Commonwealth survey guidelines / EPBC Act referral guidelines	Queensland survey guidelines	Effort and method carried out by Ecosure	Survey results and limitations
fox	and food plants (DEWHA 2010b). Night time surveys walking transects (100 m apart), may include night-time audio recordings (DEWHA 2010b). There are no referral guidelines for this species.	are (Eyre et al. 2022a): Searches for flying fox camps (Eyre et al. 2022a). · Habitat assessment (plant food trees) (Eyre et al. 2022a). · Spotlighting – 2 by 30 person mins spotlight search within 100 x 100 m, survey site (Eyre et al. 2022a).	person hrs. Autumn 2019: 34 habitat assessment sites were visited over 17 hrs by 2 personnel, where searches for flying fox camps occurred. 23 nocturnal spotlight surveys over 9 nights and 34.5 hrs by 2 personnel. Total 103 person hrs. Spring 2020: 24 hrs nocturnal spotlight surveys over 6 nights by 2 personnel. Total 48 person hrs. Spring 2021: 24 hrs nocturnal spotlight surveys over 6 nights by 2 personnel. Total 48 person hrs. Summer 2022: 12 hrs over 6 nights by 2 personnel. Total 24 person hrs. Incidental observations during all field survey periods over six years. **Total survey effort = 239 hrs.**	spring 2021 surveys.
Petauroides volans greater glider	This species is not in the Commonwealth survey guideline (DSEWPaC 2011b). For the purposes of this assessment the survey guidelines for similar sized arboreal mammals (i.e. mahogany glider and fluffy glider) were considered. Daytime searches for suitable habitat, den sites and food trees (DSEWPaC 2011b). Nocturnal spotlighting in suitable vegetation types (DSEWPaC 2011b). There are no referral guidelines for this species.	Bright moonlight negatively influences detectability (Eyre et al. 2022a). Does not readily vocalise, detections based on sightings Easy to detect via spotlight as they stare at intruders for long periods of time and have bright eye-shine (Department of Sustainability and Environment 2011). Standardized spotlight surveys recommended: · On foot, 1 km transects, to maximize coverage of study site, along or off a track. · Conducted well after dark, may not emerge from	Spring 2018: No standardized nocturnal spotlight transect surveys were conducted due to time limitations. Autumn 2019: 23 nocturnal spotlight transect surveys conducted by 2 personnel for a total of 34.5 hrs over 9 nights. Total 69 person hrs. Spring 2020: 18 nocturnal spotlight transect surveys conducted by 2 personnel for a total of 24 hrs over 6 nights. Total 48 person hrs. Spring 2021: 41 nocturnal spotlight transect surveys conducted by 2 personnel for a total of 24 hrs over 6 nights. Total 48 person hrs Summer 2022: 10 nocturnal spotlight transects 12 hrs over 6 nights x 2 personnel. Total 24 person hrs. **Total survey effort = 189 hrs.**	Methods employed were sufficient to confirm the presence of greater gliders at the site.

Name	Commonwealth survey guidelines / EPBC Act referral guidelines	Queensland survey guidelines	Effort and method carried out by Ecosure	Survey results and limitations
		hollows as early as other species. · Under optimal conditions (high habitat quality, warm temperatures and no rain, fog or bright moonlight) a minimum of 2 repeat visits is recommended for a 40 min / 2 ha transect (Wintle et al. 2005). · Lower quality habitat and/or under colder temperatures, five or more repeat visits of the 40 min / 2 ha transect are needed to provide an equivalent probability of detection (Wintle et al. 2005).		
Threatened reptiles				
Delma torquata collared delma	Survey guidelines for Australia's threatened reptiles (DSEWPaC 2011c) suggest pitfall trapping (6 x 4-10 L buckets over 15 m fence with funnel traps). However, draft referral guidelines for threatened brigalow belt reptiles (DSEWPaC 2011d) do not recommend pitfall trapping for this species. Both guidelines recommend active searching in appropriate habitats (one off searches) including raking through leaf litter (DSEWPaC 2011c, 2011d).	No species-specific guidelines. General survey requirements for reptiles that would be relevant are (Eyre et al. 2022a): · Pitfall trapping: 4 buckets at 7.5 m intervals T design, 45 m fence / 4 nights. · Funnel trapping: 6 funnels at 3 m intervals on distal ends of T-design 45 m fence for 4 nights. · Diurnal active searches – 2 by 30 person min search within 2 different 50 x 50 m quadrats.	Spring 2018: 10 minutes of active searches at 30 habitat assessment sites (5 hrs by 2 personnel). Total 10 person hrs. Autumn 2019: 5 active herpetofauna searches over 2.5 hrs by 2 personnel. 10 minutes of active searches at 34 habitat assessment sites over 5.5 hrs by 2 personnel. Total 16 person hrs. **Total survey effort = 26 hrs.**	Species is unlikely to occur on site. Some rocky hillsides are present, but not within preferred sedimentary landzones (9 and 10). No pitfall trapping was therefore considered necessary.

Name	Commonwealth survey guidelines / EPBC Act referral guidelines	Queensland survey guidelines	Effort and method carried out by Ecosure	Survey results and limitations
		· Nocturnal active searches – 2 by 30 person-min searches within the 100 x 100 m survey site. · Scat and sign search – 2 by 30 person min search within 2 different 50 x 50 m quadrats.		
Migratory fauna				
Apus pacificus fork-tailed swift	Counts of birds to be conducted by an experienced observer from elevated viewpoints (if present) during summer (DoE 2015). Fork-tailed swifts have distinctive vocalisations which may be recognised by an experienced observer (DoE 2015). For sites where there is a collision risk with wind turbines, more targeted surveys should include times area counts and collision risk modelling (DoE 2015).	No species-specific guideline.	Spring 2018: Survey for 30 hrs by 2 experienced personnel, using fixed point bird count techniques. Roaming surveys for 6.75 hrs by 2 personnel. Total 73.5 person hrs. Autumn 2019: Survey for 45 hrs by 2 experienced personnel using fixed point bird count techniques. Total 90 person hrs. Spring 2020: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Spring 2021: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Summer 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Autumn 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Winter 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Spring 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Summer 2023: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird	None identified.

Name	Commonwealth survey guidelines / EPBC Act referral guidelines	Queensland survey guidelines	Effort and method carried out by Ecosure	Survey results and limitations
			count techniques. Total 45 person hrs. **Total survey effort = 478.5 person hrs.**	
Cuculus optatus oriental cuckoo *Monarcha melanopsis* black-faced monarch *Myiagra cyanoleuca* satin flycatcher *Rhipidura rufifrons* rufous fantail	The guidelines for the oriental cuckoo and five migrant flycatchers recommend area surveys, preferably 20 minutes per 2 hectares (DoE 2015). Observers should be sufficiently skilled to recognise calls as well as counting birds detected by sight. Surveys to be undertaken in spring or summer (DoE 2015). During migration periods (spring and autumn), surveys should consider habitat suitable and important for migration passage (DoE 2015).	No species-specific guideline.	Spring 2018: Survey for 30 hrs by 2 experienced personnel, using fixed point bird count techniques. Roaming surveys for 6.75 hrs by 2 personnel. Total 73.5 person hrs. Autumn 2019: Survey for 45 hrs by 2 experienced personnel using fixed point bird count techniques. Total 90 person hrs. Spring 2020: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Spring 2021: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Summer 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Autumn 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Winter 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Spring 2022: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. Summer 2023: Survey for 22.5 hrs by 2 experienced personnel using fixed point bird count techniques. Total 45 person hrs. **Total survey effort = 478.5 person hrs.**	None identified.

4.3 Potential habitat modelling

Potential habitat for threatened, migratory, or SLC species was modelled using:

- species detections during field surveys (including sightings and other signs)
- vegetation communities and habitat verified during field surveys
- published records in the local area (DES 2023, ALA 2022)
- existing knowledge of species' habitat requirements sourced from published field guides, DCCEEW species profiles and threats database, DES species profiles, recovery plans, scientific journal articles and other ecological assessments in the region.

The Queensland DoR's RE mapping has been used as the basis for vegetation community mapping (and therefore flora and fauna habitat mapping). Areas of modelled potential habitat are used in determining the extent and significance of impacts from the project for each threatened, migratory, or SLC species, discussed further in sections 6, 8, and 9 of this report.

4.4 Survey limitations

The field surveys assessed the project site based on the boundaries and proposed infrastructure locations provided to Ecosure prior to each survey. Through the refinement of project design, some properties which were surveyed have now been excluded from the project site. This data is nevertheless presented here to document all survey effort and demonstrate avoidance of environmental impacts in the design phase.

Data gained from database searches and used in the desktop components of this assessment have caveats regarding the robustness or completeness of the information. Queensland Herbarium Herbrecs records are specimens actually collected from given locations. Wildnet records include specimen records and sightings. The absence of specimen and sighting records for a particular species from an area does not imply that the species does not occur in that area. Older specimen records may be affected by landscape changes since the collection date (e.g. clearing, weed invasion, changed fire regime). Older records also generally have lower spatial accuracy.

Data from the DCCEEW PMST are based on a combination of actual records, primarily from state government databases, supplemented with modelled distributions of species according to their ecological characteristics. Species and communities identified by this search may occur in the search area but require further investigation to confirm their presence.

Targeted surveys can confirm the presence of a particular fauna species from a given area but cannot confirm the absence of a species. Species detectability may be affected by factors outside the control of survey design, such as climate, cyclical variations in species abundance and disturbances such as grazing and fire.

This assessment included targeted field searches for conservation significant species using currently accepted methods, comprehensive knowledge of their ecological requirements, and surveys in two critical seasonal periods (pre-wet spring season and post-wet autumn season).

Surveying during both pre-wet and post-wet environmental conditions is important as fauna have different activity patterns and flora have different growth patterns and levels of detectability during these periods. However, it cannot entirely rule out the presence of a species in areas containing suitable habitat for the species, based on existing knowledge of the species' ecological requirements. The likelihood of occurrence can be further refined by conducting more targeted surveys within suitable habitat areas. However, targeted surveys were considered appropriate to meet the guideline survey requirements for all species with respect to the available habitat on site (refer Table 6 and Table 8).

Data collected in the fixed point count surveys are intended to be used to estimate risk of collision by taking into account species flight behaviours and air space usage within the project site. Sightings of birds recorded over the course of each survey give a general indication of bird utilisation and abundance and frequency of occurrence of each species. The total number of sightings does not necessarily equal an equivalent number of individual birds, as repeated sightings of the same individuals may occur particularly if nests are present or food is abundant. Repeated sightings are valuable for understanding bird utilisation in the project site, but must be kept in mind when considering estimates of the number of individual birds which may experience impacts from the project.

The RE mapping (version 12.02) used to identify habitat present across the project site, is most recently mapped for this region using a 1:100,000 mapping scale from 2019 imagery. Actual vegetation may differ from mapped REs due to the large mapping scale, the development of approved property maps of assessable vegetation on properties within the project site, and vegetation clearing activities since 2019. For example, small sections of remnant vegetation along creeks and road reserves may not be mapped and small-scale variation within larger areas of remnant vegetation may not be recognised.

Field surveys aimed to survey all mapped endangered and of concern REs, all mapped REs that may form a component of TECs, numerous occurrences of each least concern RE and a representative sample of mapped non-remnant areas within the project site. However, it was not possible to ground-truth all mapped remnant, HVR and non-remnant vegetation due to access constraints. Flora survey sites were selected based on the WTG positions and project planning corridor available at the time of survey. In these areas, surveys conducted nearby in similar vegetation, previous survey data, satellite imagery and desktop mapping were used to classify vegetation. A combination of survey results and desktop information was also used to develop habitat models for threatened species.

Descriptions of vegetation condition are limited to interpretations of standard site survey data and are not based on formal assessments using the BioCondition method.

5 Field survey results

5.1 Survey timing and conditions

Results of flora and fauna surveys are influenced by season and weather conditions. For example, grasses and forbs may die or become dormant during the dry season and some flora species can only be identified when flowering and fruiting. Variations in weather conditions and moon phase can affect the behaviour of fauna. We have included the temperature, rainfall, maximum wind speed and moon phase in the following tables, as these elements can affect the likelihood of the survey team detecting the presence of a species. For example, birds may be less likely to fly during high winds (Robbins 1981), and the moon phase can affect the nocturnal behaviour of some species and make them harder to detect (Eyre et al. 2022a). As such, small prey species may be less likely to forage during the full moon phase as it may increase their chances of detection by a predator.

5.1.1 General ecology surveys

Ecology surveys have been conducted across the project site during periods where the South Burnett region was both drought declared (Autumn 2017 – Summer 2022) and not-drought declared (Autumn 2022 – Summer 2023) (Qld Government 2023).

5.1.1.1 Spring 2018

The spring 2018 survey was completed over three weeks from 22 October to 9 November 2018. The flora survey was completed over two weeks from 22 October to 2 November 2018 and the fauna survey was completed over two weeks from 29 October to 9 November 2018. Weather data during the spring survey from the Kingaroy Airport station (BoM 2023) is shown in Table 9. Minimum temperatures during the survey period were between 10.1 – 18.7 °C and maximum temperatures were between 20.7 – 36.5 °C. A total of 107 mm of rain fell in the two weeks prior to the field survey.

Table 9 Weather conditions during the spring 2018 survey period

Survey type	Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind gust (km/h)	Moon phase
Flora start	22 Oct	11.6	27.8	4.6	26	
	23 Oct	13.4	29.2	0	19	
	24 Oct	17.9	30.8	0	22	
	25 Oct	14.4	29.9	0	41	Full moon
	26 Oct	14.0	33.0	0	44	
	27 Oct	15.5	31.1	0	31	
	28 Oct	16.7	32.7	0	35	
Fauna start	29 Oct	17.4	20.7	0	30	

Survey type	Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind gust (km/h)	Moon phase
	30 Oct	15.3	24.9	0.2	28	
	31 Oct	11.1	27.3	0	24	
	1 Nov	11.6	28.9	0	31	Last quarter
Flora end	2 Nov	10.8	28.1	0	33	
	3 Nov	10.1	30.0	0	37	
	4 Nov	14.4	34.7	0	33	
	5 Nov	16.2	36.5	0	35	
	6 Nov	18.7	35.5	0	37	
	7 Nov	18.5	32.6	0	41	
	8 Nov	13.9	22.2	0.6	54	New moon
Fauna end	9 Nov	10.1	25.6	0	44	

5.1.1.2 Autumn 2019

The autumn 2019 survey was completed over two weeks from 25 March to 5 April 2019. The flora survey was completed over five days from 2 to 5 April 2019 and the fauna survey was completed over two weeks from 25 March to 5 April 2019, with no surveys undertaken on the 31 March 2019. Weather data during the autumn survey from the Kingaroy Airport station (BoM 2023) is shown in Table 10. Minimum temperatures during the survey period were between 7.9 – 20.2 ºC and maximum temperatures were between 23.2 – 31.6 ºC. A total of 3 mm of rain fell in the two weeks prior to the field survey commencing.

The project site received more rainfall than Kingaroy on several nights. Approximately 20 mm was recorded at the nearby Passchendaele Farm on 27 March followed by an additional 20 mm on 31 March 2019. As a consequence, the fauna team lost one night of spotlighting on 31 March 2019 and had reduced spotlighting effort on 27 March. Wet tracks also limited vehicle access to some sections of the site for several days following rain.

Table 10 Weather conditions during the autumn 2019 survey period

Survey type	Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind gust (km/h)	Moon phase
Fauna start	25 Mar	18.9	31.6	0	28	
	26 Mar	19.2	29.9	0	31	
	27 Mar	20.2	-	0.2	43	
	28 Mar	-	23.6	NR	NR	Last quarter
	29 Mar	18.4	25.5	0	31	
	30 Mar	20.2	23.2	5.8	41	

Survey type	Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind gust (km/h)	Moon phase
No survey undertaken	31 Mar	9.7	23.6	7.8	43	
Flora start	1 Apr	7.9	24.5	0.2	35	
	2 Apr	9.9	25.9	0	39	
	3 Apr	16.0	24.9	0	41	
	4 Apr	15.0	25.3	0	35	
Flora and Fauna end	5 Apr	12.1	25.0	0.4	33	New moon

NR – not recorded by BOM.

5.1.1.3 Spring 2020

The spring 2020 survey was completed over six days from 23 to 28 November 2020. Weather data from the Kingaroy Airport station (BoM 2023) for this survey period is shown in Table 11. Minimum temperatures during the survey period were between 13.9 – 16.3 ºC and maximum temperatures were between 28.0 – 35.7 ºC. Rainfall occurred on the 25 November 2020 (29 mm). No rain fell in the two weeks prior to the field survey. Moon visibility varied from 57.3% to 94.6%.

Table 11 Weather conditions during the spring 2020 survey period

Survey type	Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind gust (km/h)	Moon phase
Fauna start	23 Nov	13.9	33.4	0	24.2	Last quarter on Nov 22
	24 Nov	16.2	35.7	0	24.3	
	25 Nov	16.0	28.0	29.0	20.9	
	26 Nov	15.8	32.4	0	23.3	
	27 Nov	16.3	31.4	0	24.8	
Fauna end	28 Nov	14.0	32.5	0	23.3	

5.1.1.4 Spring 2021

The spring 2021 survey was completed over two weeks from 25 October to 7 November 2021. Weather data during the spring survey from the Kingaroy Airport station (BoM 2023) is shown in Table 12. Minimum temperatures during the survey period were between 8.3 – 18.0 ºC and maximum temperature were between 24.1 – 32.1 ºC. A total of 14.7 mm of rain fell in the 2 weeks prior to the field survey.

Table 12 Weather conditions during the spring 2021 survey period

Survey type	Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind gust (km/h)	Moon phase
Fauna start	25 Oct	15.4	27.3	0	46	
	26 Oct	15.0	28.0	14.2	48	
	27 Oct	14.7	29.3	16.8	26	
	28 Oct	18.0	30.6	0	43	
	29 Oct	17.2	24.7	11.0	41	Last quarter
	30 Oct	17.9	32.1	0.6	46	
	31 Oct	15.2	26.8	1.4	44	
	1 Nov	12.3	24.1	0	3	
	2 Nov	12.3	24.5	0	31	
	3 Nov	11.0	25.3	0	39	
	4 Nov	8.3	26.3	0	31	
	5 Nov	13.7	25.2	0	33	New moon
	6 Nov	11.3	26.6	0	33	
Fauna end	7 Nov	16.9	26.3	0	33	

5.1.2 BBUS

5.1.2.1 Summer 2022

The summer 2022 survey was completed over two time periods as there was exceptional rainfall in southeast Queensland in late February 2022 and the survey team was unable to access the site safely. The summer 2022 survey was completed from 21 to 26 February 2022 and again 15 to 17 March 2022 to complete the sites unable to be accessed during weather events. Weather data for these periods from the Kingaroy Airport station (BoM 2023) is shown in Table 13. Minimum temperatures during the survey period were between 15.2 – 20.0 °C and maximum temperature were between 23.7 – 30.6 ºC. A total of 3.8 mm of rain fell in the 2 weeks prior to the first field survey, and 36.0 mm of rain was recorded in the two weeks prior to the second survey.

Table 13 Weather conditions during the summer 2022 survey period

Survey type	Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind gust (km/h)	Moon phase
Fauna start	21 Feb	16.5	30.2	0.2	39	
	22 Feb	17.4	30.6	0.2	46	
	23 Feb	19.2	28.7	0	43	

Survey type	Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind gust (km/h)	Moon phase
	24 Feb	20.0	27.4	1.4	37	Last quarter
	25 Feb	18.0	23.7	54.0	41	
Fauna end	26 Feb	18.3	24.7	28.8	41	
	-	-	-	-	-	-
Fauna start	15 Mar	17.3	27.7	0	22	
	16 Mar	15.2	26.0	0	17	
Fauna end	17 Mar	16.3	26.9	0	35	Full moon on 18 Mar

5.1.2.2 Autumn 2022

The autumn 2022 survey was completed over one week from 22 to 27 June 2022. Weather data during the autumn survey from the Kingaroy Airport station (BoM 2023) is shown in Table 14. Minimum temperatures during the survey period were between -1.7 – 3.3 ºC and maximum temperatures were between 19.5 – 21.7 ºC. No rainfall was recorded in the two weeks prior to the survey.

Table 14 Weather conditions during the autumn 2022 survey period

Survey type	Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind gust (km/h)	Moon phase
Fauna start	22 Jun	2.0	21.4	0	31	Last quarter on 21 Jun
	23 Jun	1.8	21.5	0	20	
	24 Jun	1.3	21.7	0	26	
	25 Jun	-1.7	21.4	0	17	
	26 Jun	0.8	20.1	0	19	
Fauna end	27 Jun	3.3	19.5	0	43	

5.1.2.3 Winter 2022

The winter 2022 survey was completed over one week from 16 to 21 August 2022. Weather data during the winter survey from the Kingaroy Airport station (BoM 2023) is shown in Table 15. Minimum temperatures during the survey period were between 0.2 and 5.0°C and maximum temperatures were between 18.8 and 25.3 °C. A total of 16.4 mm of rain fell in the two weeks prior to the field survey.

Table 15 Weather conditions during the winter 2022 survey period

Survey type	Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind gust (km/h)	Moon phase
Fauna start	16 Aug	0.2	19.9	0	46	
	17 Aug	5.0	18.8	0	35	
	18 Aug	0.7	22.0	0	24	
	19 Aug	1.9	25.3	0	35	Last quarter
	20 Aug	3.0	22.8	0	30	
Fauna end	21 Aug	1.5	20.3	0	30	

5.1.2.4 Spring 2022

The spring 2022 survey was completed over one week from 6 to 11 November 2022. Weather data during the spring survey from the Kingaroy Airport station (BoM 2023) is shown in Table 16. Minimum temperatures during the survey period were between 8.2 and 11.6°C and maximum temperatures were between 23.0 and 26.0 °C. A total of 40.4 mm of rain fell in the two weeks prior to the field survey.

Table 16 Weather conditions during the spring 2022 survey period

Survey type	Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind gust (km/h)	Moon phase
Fauna start	6 Nov	10.0	24.6	0	37	First quarter 1 Nov
	7 Nov	10.9	23.0	0	39	
	8 Nov	9.2	24.5	0	35	Full moon
	9 Nov	9.6	23.8	0	33	
	10 Nov	11.6	24.5	0	44	
Fauna end	11 Nov	8.2	26.0	0	22	

5.1.2.5 Summer 2023

The summer 2023 survey was completed over one week from 30 January to 4 February 2023. Weather data during the summer survey from the Kingaroy Airport station (BoM 2023) is shown in Table 17. Rain on the last day of survey (4 February 2023) limited access to three sites. For 12 survey sites, data was collected for morning, midday, and afternoon surveys. For the three weather-impacted sites, afternoon surveys were conducted at all three sites and morning surveys conducted at two sites. Minimum temperatures during the survey period were between 20.4 and 22.1 °C and maximum temperatures were between 27.2 and 33.5 °C. A total of 21.2 mm of rain fell in the two weeks prior to the field survey.

Table 17 Weather conditions during the summer 2023 survey period

Survey type	Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind gust (km/h)	Moon phase
Fauna start	30 Jan	21.4	32.8	0	31	First quarter on 29 Jan
	31 Jan	20.4	32.8	7.2	39	
	1 Feb	21.3	33.1	6.8	NR	
	2 Feb	22.1	31.2	NR	50	
	3 Feb	20.3	33.5	22.6	43	
Fauna end	4 Feb	22.0	27.2	0.6	30	

NR – not recorded by BOM.

5.2 Vegetation communities

Vegetation surveys included 19 tertiary (detailed) sites and 153 quaternary (observational) sites. Figure 7 shows locations of flora survey sites. Appendix 3 summarises survey data, including location, survey type and mapped and ground-truthed REs. Surveys were completed in 113 sites mapped as remnant/HVR and 53 sites mapped as non-remnant.

5.2.1 Remnant/HVR vegetation

Queensland Herbarium RE mapping recognises nine REs within the site (Table 18, Figure 5). Field surveys confirmed seven of these REs within the project site (Figure 9). One other RE (11.3.4) may possibly occur within the project site on alluvial terraces associated with major watercourses, however this is not likely to occur within the planning corridor (Figure 5). This RE was not ground-truthed as field surveys focussed on areas along watercourses where crossings were likely within the planning corridor and restricted access to all areas along watercourses limited additional survey effort outside of the planning corridor. Field surveys detected one other RE (11.11.4) that was not mapped within the site by the Queensland Herbarium (Table 18).

Field inspections generally agreed with RE mapping, with some minor discrepancies attributed mostly to mapping scale. Field surveys assessed vegetation in more detail, allowing detection of vegetation structure, composition and distribution at a finer scale than the 1:100,000 RE mapping.

Table 18 REs identified within the site

RE code	VM Act status*	Short description	Present within the site
Mapped REs detected within the project site			
11.3.25	least concern	Queensland blue gum or river red gum *E. camaldulensis* woodland fringing drainage lines.	Confirmed along larger streams within the site, especially Boyne River.

RE code	VM Act status*	Short description	Present within the site
11.5.20	least concern	Gum-topped box *Eucalyptus moluccana* and/or small-fruited grey gum *E. microcarpa* and/or *E. woollsiana* +/- narrow-leaved ironbark *E. crebra* woodland on Cainozoic sand plains.	Only one small area confirmed in area now excluded from project site. Possible in small unmapped areas within southeast corner of site.
11.7.6	least concern	Lemon-scented gum *Corymbia citriodora* or narrow-leaved ironbark woodland on Cainozoic lateritic duricrust.	Confirmed in one survey site in area now excluded from project site. Likely to occur in small outcrops of laterite within rocky hilly eucalypt woodland.
11.8.3	of concern	Semi-evergreen vine thicket on Cainozoic igneous rocks.	Confirmed in one small patch near south-western boundary of site.
11.11.15	least concern	Narrow-leaved ironbark woodland on deformed and metamorphosed sediments and interbedded volcanics.	Confirmed in numerous locations throughout site.
11.12.3	least concern	Narrow-leaved ironbark, Queensland blue gum, rusty gum *Angophora leiocarpa* woodland on igneous rocks especially granite.	Confirmed in numerous locations throughout site.
11.12.6	least concern	Lemon-scented gum open forest on igneous rocks (granite).	Confirmed in numerous locations throughout site.
REs not previously mapped within the project site			
11.11.4	least concern	*Eucalyptus crebra* woodland on old sedimentary rocks with varying degrees of metamorphism and folding on coastal ranges.	RE 11.11.4 confirmed in numerous locations throughout site. RE sub-type 11.11.4c (*Eucalyptus moluccana* dominated woodland) recorded in the site. RE sub-type 11.11.4a (*Eucalyptus tereticornis* dominated woodland) not detected during surveys.
Mapped REs not detected within the project site			
11.3.4	of concern	*Eucalyptus tereticornis* and/or *Eucalyptus* spp. woodland on alluvial plains.	Not detected within site. Possible in alluvial terraces beside major streams.
12.8.16	of concern	*Eucalyptus crebra +/- E. melliodora, E. tereticornis* woodland on Cainozoic igneous rocks	Not detected within site.

* VM Act status = vegetation management status under the Vegetation Management Regulation 2012.

Figure 9: Ground-truthed REs and TECs

Legend

- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- SEVT

Remnant RE

- Endangered - dominant
- Of concern - dominant
- Of concern - subdominant
- Least concern

RES Australia

Ecological Assessment for Tarong West Wind Farm, Ironpot, Queensland

0 1 2 4
Kilometers

Job number: PR3713
Revision: 0
Author: KF
Date: 10/25/2023

GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994
Units: Meter

ecosure
improving ecosystems

The project site is predominantly on non-remnant land (15,843.79 ha or 90.56% of the site), most of which is grazing land. Field-verified remnant vegetation occurs within 1,331.08 ha (7.61%) of the site and HVR within 321.35 ha (1.84%). Table 19 summarises areas of ground-truthed vegetation in remnant, HVR and non-remnant condition.

Table 19 Areas of ground-truthed REs in remnant and HVR condition.

RE	VM Act status	Area of vegetation (ha)		
		HVR	Remnant	Non-remnant
11.3.25	least concern	5.85	17.39	0
11.8.3	of concern	0	0.63	0
11.11.4	least concern	12.80	450.06	0
11.11.4/11.12.6	least concern	0	5.14	0
11.11.15	least concern	85.63	76.86	0
11.11.15/11.3.25	least concern	199.87	256.18	0
11.11.15/11.5.20/11.3.25	least concern	0	0.59	0
11.12.3	least concern	2.49	31.05	0
11.12.3/11.7.6	least concern	6.32	97.22	0
11.12.6	least concern	8.39	3.58	0
11.12.6/11.11.15	least concern	0	58.52	0
11.12.6/11.12.3	least concern	0	333.86	0
Non-remnant		0	0	15,843.79
Total		**321.35**	**1331.08**	**15,843.79**
Total percentage of site (site 17,496.23 ha)		**1.84%**	**7.61%**	**90.56%**

* VM Act status = vegetation management status under the Vegetation Management Regulation 2012

Table 20 to Table 27 provide descriptions of the structure, composition and condition of REs recorded during the survey. Figure 9 maps ground-truthed vegetation communities based on field vegetation survey data, which included 119 sites mapped as remnant/HVR and 53 sites mapped as non-remnant. However, it does not include finer scale mapping of small patches of vegetation within areas mapped as non-remnant. For example, it does not map the narrow band of riparian vegetation (RE 11.3.25) along the Boyne River, although surveys identified a narrow band of vegetation that met the definition of remnant (based on structure and floristics) along sections of this stream (Table 20).

Table 20 Description of RE 11.3.25 recorded within site

Attribute	Description
Survey sites	S9, S13, S41, S51, S68 (Figure 7)
Soil, landzone	Alluvial sand/silt/clay, landzone 3
Slope	Mostly gentle slope, although stream banks can be steep and up to 10 m high (e.g. Boyne River)
Landform	Stream
Canopy layer	Average height: 16-20 m Cover: 30-60% *Eucalyptus tereticornis, Angophora floribunda, Corymbia tessellaris, Eucalyptus melanophloia, Eucalyptus crebra*
Sub-canopy layer	Average height: 6-8 m Cover: 10-25% *Acacia leiocalyx, Acacia maidenii, Callistemon viminalis*
Shrub layer	Average height: 1-2 m Cover:1-10 % *Cassinia laevis, Opuntia tomentosa**
Ground layer	Average height: 0.3-0.8 m Cover:40-80% *Lomandra longifolia, Bidens pilosa*, Glandularia aristigera*, Aristida queenslandica, Cymbopogon refractus, Heliotropium amplexicaule*, Eragrostis curvula*, Megathyrsus maximus**
Disturbance	Minor to moderate stream bank erosion. All sites show evidence of fire, with some sites recently burnt. Timber cutting common. Most sites are grazed. Weeds are scattered to frequent, with some areas heavily invaded by exotic grasses (e.g. *Megathyrsus maximus**, *Eragrostis curvula**)
Photograph	

* = Exotic species

Table 21 Description of RE 11.5.20 recorded within site

Attribute	Description
Survey sites	Composite RE near S38 in current project site, and previously recorded at S47 not in current project site (Figure 7)
Soil, landzone	Sandy clay, landzone 5
Slope	Very gentle
Landform	Plain – gentle hillslope
Canopy layer	Average height: 14 m Cover: 30% *Eucalyptus moluccana, Eucalyptus crebra*
Sub-canopy layer	Average height: 7 m Cover: 10% *Acacia leiocalyx, Allocasuarina littoralis*
Shrub layer	Average height: 1 m Cover: 5 % *Solanum nemophilum, Opuntia tomentosa**
Ground layer	Average height: 0.2-0.8 m Cover:20% *Aristida caput-medusae, Aristida queenslandica, Cymbopogon refractus, Cymbopogon obtectus, Scleria sphacelata*
Disturbance	Old fire scars. Timber cutting common. Lightly grazed. Weeds are scattered.
Photograph	

* = Exotic species

Table 22 Description of RE 11.7.6 recorded within site

Attribute	Description
Survey sites	Composite RE near S29, S30, S68 in the project site and previously recorded at S60 not in current project site (Figure 7)
Soil, landzone	Skeletal sandy clay with scattered stones, landzone 7
Slope	Very gentle, adjacent to steep laterite outcrop
Landform	Lateritic hillslope
Canopy layer	Average height: 16 m Cover: 15% *Eucalyptus crebra, Angophora leiocarpa*
Sub-canopy layer	Average height: 5 m Cover: 25% *Alphitonia excelsa, Acacia bancroftiorum, Psydrax odorata*
Shrub layer	Average height: 1.5 m Cover: 5% *Opuntia tomentosa*, Hovea parvicalyx*
Ground layer	Average height: 0.3 m Cover: 15% *Entolasia stricta, Lomandra confertifolia, Aristida caput-medusae, Aristida queenslandica, Cymbopogon refractus*
Disturbance	Old fire scars. Minor sheet erosion. Weeds are scattered.
Photograph	

* = Exotic species

Table 23 Description of RE 11.8.3 recorded within site

Attribute	Description
Survey sites	Composite RE near A3 in the project site and previously recorded at S28 not in current project site (Figure 7)
Soil, landzone	Clay with scattered basalt rocks, landzone 8
Slope	Gentle
Landform	Hillslope
Emergent layer	Average height: 15 m Cover: 5% *Eucalyptus melanophloia*
Canopy layer	Average height: 6 m Cover: 25% *Drypetes deplanchei, Notelaea longifolia, Psydrax odorata, Alectryon connatus, Alectryon diversifolius, Denhamia disperma, Jasminum didymum, Pandorea pandorana*
Shrub layer	Average height: 1.5 m Cover: 60% *Lantana camara*, Olearia canescens, Alyxia ruscifolia, Breynia oblongifolia, Solanum stelligerum*
Ground layer	Average height: 0.3 m Cover: 5% *Aristida queenslandica, Austrostipa ramosissima, Entolasia stricta*
Disturbance	Scattered timber cutting. Weeds are frequent, especially *Lantana camara*.*
Photograph	

* = Exotic species

Table 24 Description of RE 11.11.4 recorded within site

Attribute	Description
Survey sites	S1, S3, S4, S6, S11, S46, S52, S53, S54, S54.1, S55, S57, S58, S70 (Figure 7)
Soil, landzone	Sandy clay, landzone 11
Slope	Gentle to moderate
Landform	Hillslope
Canopy layer	Average height: 15-18 m Cover: 30-60% Dominated by either *Eucalyptus crebra* or *Corymbia citriodora*
Sub-canopy layer	Average height: 4-8 m Cover: 5-25% *Acacia leiocalyx, Acacia irrorata, Alphitonia excelsa*
Shrub layer	Average height: 1-1.5 m Cover: 1-5% *Jacksonia scoparia, Opuntia tomentosa*, Capparis canescens*
Ground layer	Average height: 0.1-0.3 m Cover: 10-30% *Entolasia stricta, Aristida caput-medusae, Aristida queenslandica, Cymbopogon refractus*
Disturbance	Minor sheet erosion in some sites. Some old fire scars. Timber cutting scattered to common. Lightly grazed. Scattered weeds.
Photograph	

* = Exotic species

Table 25 Description of RE 11.11.15 recorded within site

Attribute	Description
Survey sites	S8, S12, S14, S16, S32, S33, S65 (Figure 7)
Soil, landzone	Sandy clay, landzone 11
Slope	Gentle to moderate
Landform	Hillslope
Canopy layer	Average height: 14-16 m Cover: 10-30% *Eucalyptus crebra, Angophora leiocarpa, Eucalyptus exserta*
Sub-canopy layer	Average height: 5-7 m Cover: 10-20% *Acacia leiocalyx, Acacia irrorata, Alphitonia excelsa*
Shrub layer	Average height: 1-2 m Cover: 1-10 % *Cassinia laevis, Jacksonia scoparia, Breynia oblongifolia, Opuntia tomentosa**
Ground layer	Average height: 0.3 m Cover: 20-70% *Cymbopogon refractus, Glandularia aristigera*, Aristida queenslandica, Eragrostis curvula*, Cheilanthes sieberi, Melinis repens**
Disturbance	Minor sheet erosion in some sites. Some old fire scars. Timber cutting scattered to common. Lightly grazed. Scattered weeds.
Photograph	

* = Exotic species

Table 26 Description of RE 11.12.3 recorded within site

Attribute	Description
Survey sites	S22, S23, S29, S30, S38, S45, S49.1, S50, S62 (Figure 7)
Soil, landzone	Sandy clay, landzone 12
Slope	Gentle to moderate
Landform	Hillslope
Canopy layer	Average height: 14-16 m Cover: 30-40% *Eucalyptus crebra, Eucalyptus tereticornis*
Sub-canopy layer	Average height: 5-7 m Cover: 5-30% *Acacia leiocalyx, Acacia bancroftiorum*
Shrub layer	Average height: 1-2 m Cover: 1-2 % *Jacksonia scoparia, Lantana camara*, Acacia spectabilis, Opuntia tomentosa**
Ground layer	Average height: 0.2-0.3 m Cover: 30-50% *Cymbopogon refractus, Eragrostis curvula*, Aristida queenslandica, Cheilanthes sieberi, Chrysocephalum apiculatum, Bidens pilosa*, Cymbopogon obtectus*
Disturbance	Minor sheet erosion in some sites. Some old fire scars. Timber cutting scattered to common. Lightly grazed. Scattered weeds.
Photograph	

* = Exotic species

Table 27 Description of RE 11.12.6 recorded within site

Attribute	Description
Survey sites	S34, S35, S42, S43, S63, S69, S71, S72 (Figure 7)
Soil, landzone	Sandy clay, landzone 12
Slope	Gentle to moderate
Landform	Hillslope
Canopy layer	Average height: 15-18 m Cover: 30-60% *Eucalyptus crebra, Corymbia citriodora, Eucalyptus major* Some lower areas dominated by *Eucalyptus moluccana*
Sub-canopy layer	Average height: 5-7 m Cover: 10-40% *Acacia leiocalyx, Acacia disparrima, Psydrax odorata, Alphitonia excelsa* Some areas with developing vine thicket understorey (e.g. *Drypetes deplanchei, Elaeodendron australe, Pittosporum spinescens*)
Shrub layer	Average height: 1-2 m Cover: 1-5 % *Carissa ovata, Breynia oblongifolia, Lantana camara*, Opuntia tomentosa**
Ground layer	Average height: 0.2-0.3 m Cover: 3-30% *Entolasia whiteana, Chrysocephalum apiculatum, Aristida caput-medusae, Aristida queenslandica, Cymbopogon refractus, Glandularia aristigera*, Eragrostis curvula*, Cheilanthes sieberi, Melinis repens**
Disturbance	Minor sheet erosion in some sites. Some old fire scars. Timber cutting scattered to common. Lightly grazed. Scattered weeds.
Photograph	

* = Exotic species

5.2.2 Non-remnant vegetation

Non-remnant vegetation covers most of the site (15,843.79 ha or 90.56% of the site). The ground layer is sparse to dense and is dominated by grasses, including native species (e.g. *Cymbopogon refractus, Aristida queenslandica, Bothriochloa decipiens, Entolasia stricta, Imperata cylindrica*) and exotic species (e.g. *Cynodon dactylon*, Eragrostis curvula*, Melinis repens*, Megathyrsus maximus**). A variety of native and exotic forbs are common in non-remnant areas. Tree cover is variable, ranging from:

- completely absent in recently cleared areas
- isolated individuals of young or mature trees
- sparse to dense regrowth of *Eucalyptus* and/or *Acacia* species, with some areas reaching canopy height and density levels that approach HVR or remnant status.

Of the 53 survey sites assessed within mapped non-remnant areas:

- 28 sites were verified as non-remnant
- 15 sites were boundaries between non-remnant and remnant vegetation and 2 sites could be classified as RE 11.12.6 (used to adjust mapped boundaries of RE 11.12.6)
- 1 site beside Boyne River could potentially be classified as RE 11.3.25
- 4 sites could potentially be classified as regrowth of RE 11.3.25/11.3.4
- 1 site could potentially be classified as regrowth of RE 11.11.4
- 1 site could potentially be classified as regrowth of RE 11.11.15
- 1 site could potentially be classified as regrowth of RE 11.12.3.

5.3 Flora species

Appendix 4 lists all flora species detected during all flora surveys, including incidental observations. Surveys recorded 292 flora species, of which 188 were native and 104 were introduced.

A total of 26 random meander surveys targeting threatened species were conducted in riparian vegetation (RE 11.3.25), vine forest (RE 11.8.3), ironbark forest/woodland (RE 11.11.15, 11.12.3), spotted gum forest (RE 11.11.4, 11.12.6), woodland on laterite (RE 11.7.6) and gum-topped box forest (RE 11.5.20).

Results of threatened flora surveys are summarised in Table 28. Identification of introduced *Lepidium* species was confirmed by the Queensland Herbarium on 9 May 2019.

Table 28 Threatened species recorded during surveys

Habitat type	Threatened species recorded
Riparian (RE 11.3.25)	No EPBC Act or NC Act listed species detected. All specimens of *Lepidium* collected during the survey were identified by the Queensland Herbarium as the introduced *L. bonariense* and *L. africanum*.
Eucalypt woodlands (RE 11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3, 11.12.6)	No EPBC Act or NC Act listed species detected.
Vine thicket (RE 11.8.3)	No EPBC listed species detected. Two individuals of the NC Act listed Bailey's cypress (*Callitris baileyi*) were identified adjacent to a patch of SEVT which is no longer within the project site.

5.4 Fauna habitat

Five broad habitat types were recorded across the project site (Table 29, Figure 10).

Table 29 Fauna habitats recorded within site

Habitat type	Component REs	Habitat description	Area (ha)
Eucalypt woodland/forest	11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3, 11.12.6	Sparse to mid-dense canopy of trees. Shrub layer absent to mid-dense. Ground layer sparse to mid-dense and dominated by grasses and forbs. Numerous small hollows and occasional large hollows.	1,628.56 (9.31%)
Riparian forest	11.3.25 and non-remnant wooded	Sparse to mid-dense canopy of trees. Shrub layer absent to mid-dense. Ground layer sparse to dense with diverse range of grasses, forbs, sedges and rushes. Numerous small hollows and occasional large hollows.	980 mapped (5.6%) 23.25 ground-truthed remnant (0.13%)
Vine thicket	11.8.3, patches of RE 11.12.6 with developing vine thicket mid storey	Scattered emergent trees over sparse to dense canopy containing a diverse variety of vine thicket tree species. Shrub layer absent to mid-dense. Ground layer very sparse to sparse (may be denser in patches with reduced tree cover), numerous vines. Numerous small hollows and occasional large hollows in emergent eucalypts.	0.63 (0.004%)
Pasture / exotic grassland	Non-remnant	Isolated trees and shrubs. Ground layer sparse to dense and dominated by grasses and forbs. Rare hollows in large remnant paddock trees. Also includes areas of non-remnant woodland with sparse tree cover.	15,843.79 (90.56%)
Farm dam	Non-remnant	Banks have scattered trees and shrubs. Ground layer varies from bare dirt to dense layer of grasses, forbs and sedges. Shallow water may support sparse to dense aquatic plants including forbs, sedges and rushes. Deeper water generally open with scattered lilies or floating aquatic plants. Occasional hollows in large remnant paddock trees.	Scattered throughout site

Figure 10: Field-verified fauna habitat

Legend

- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Planning corridor
- Infrastructure
- Project boundary
- Eucalypt woodland / forest
- Riparian woodland / grassland
- Vine thicket
- Grassland

RES Australia

Ecological Assessment for Tarong West Wind Farm, Ironpot, Queensland

0 1 2 4
Kilometers

Job number: PR3713
Revision: 0
Author: KF
Date: 11/1/2023

GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994
Units: Meter

ecosure
improving ecosystems

Remnant eucalypt woodland/forest

Remnant eucalypt woodland/forest is the main remnant fauna habitat within the site. It is generally dominated by *Eucalyptus crebra* or *Corymbia citriodora*. Mature individuals of these species typically contain numerous small hollows suitable for nesting or denning by small arboreal fauna and occasional large hollows suitable for larger arboreal mammals (e.g. greater gliders) and large birds (e.g. glossy black-cockatoo). These species also provide important seasonal nectar resources. Areas with dense shrubs or ground layer plants provide cover for reptiles and ground dwelling mammals and birds. Leaf litter, logs and rocks provide shelter and foraging habitat for small fauna such as reptiles and small mammals. Some small areas have rock outcrops (e.g. granite, metamorphic, conglomerate and laterite outcrops) that provide shelter and habitat for fauna such as reptiles and small mammals.

Most eucalypt woodland/forest communities were in average to good condition, with some areas degraded by:

- partial clearing and timber-cutting leading to habitat fragmentation and the loss of large hollow-bearing trees
- weed invasion, especially *Eragrostis curvula** and *Glandularia aristigera**
- some areas of intense fires resulting in tree death and increased weed invasion and erosion
- heavy grazing, usually close to farm dams and other sources of water.

Riparian forest/grassland

This habitat occurs on riparian soils along major watercourses. It has been substantially cleared and modified by clearing, fire and weed invasion, so much of the riparian zone within the site supports a narrow band of trees along the bank and grassland with isolated trees further away from the watercourse. Some particularly degraded sections contain grasslands with no trees. Small sections of riparian zone support larger bands of riparian forest, which are generally mapped as remnant/HVR 11.3.25. Riparian forest/grassland is mapped as a 100 m corridor along steam order 3-4 watercourses and a 200 m corridor along stream order 5 watercourses.

Where present, the sparse to mid-dense canopy of trees usually contains scattered large hollows and numerous small hollows, providing nesting and denning habitat for arboreal fauna, including greater gliders. Trees also provide important seasonal nectar resources. Shrubs and ground layer plants can provide cover for reptiles and ground dwelling mammals and birds. Dense leaf litter and flood debris may provide important habitat and cover. Scattered pools provide drinking and bathing water for numerous species, as well as habitat for species requiring water during some phase of their life cycle. Riparian areas can be valuable refuges during droughts and provide important corridors for wildlife travelling between remnant habitat blocks. Many riparian areas in the site have been degraded by:

- historic clearing activities and timber-cutting, resulting in loss of hollow-bearing trees and increased fragmentation and erosion

- dense infestations of weeds such as *Megathyrsus maximus*, Heliotropium amplexicaule*, Eragrostis curvula** and *Lantana camara**
- intense fires that have killed trees, reduced canopy cover and increased streambank erosion and weed invasion
- minor to moderate streambank erosion.

Vine thicket

Vine thicket was recorded in one small patch on the south-western edge of the site. However, some areas of eucalypt forest (e.g. patch of RE 11.12.6 with canopy dominated by *Eucalyptus moluccana*) have a developing mid storey of vine thicket species and therefore share some characteristics with this habitat type. Vine thicket has a sparse to dense canopy of trees and shrubs that provide shelter as well as important seasonal fruit and nectar resources. The shrub layer is often mid-dense to dense, providing cover for reptiles and ground dwelling mammals and birds. Leaf litter, logs and rocks provide shelter and foraging habitat for small fauna such as reptiles and small mammals. This community is in poor condition, due to:

- dense infestations of weeds, especially *Lantana camara**
- encroachment of fire, which can kill fire-sensitive species
- extensive pig damage in some areas.

Non-remnant woodland

Most of the site has been previously cleared (only 9.4% of the site retains remnant vegetation) and supports non-remnant woodland and grassland. Non-remnant woodland includes varying regrowth stages of the original eucalypt woodland communities within the site. Tree cover is variable in density and age and is generally dominated by *Eucalyptus crebra* or *Corymbia citriodora*. As this habitat can provide suitable food trees for koala, it has been modelled as non-remnant areas supporting woody vegetation with foliage projective cover of 25% or over (see Section 5.7.3 for a full description of modelling methods).

Some areas contain remnant mature individuals that contain numerous small hollows suitable for nesting or denning by small arboreal fauna and occasional large hollows suitable for larger arboreal mammals (e.g. greater gliders) and large birds (e.g. glossy black-cockatoo). Mature trees also provide important seasonal nectar resources. Areas with dense shrubs or ground layer plants provide cover for reptiles and ground dwelling mammals and birds. Leaf litter, logs and rocks provide shelter and foraging habitat for small fauna such as reptiles and small mammals. Some small areas have rock outcrops (e.g. granite, metamorphic, conglomerate and laterite outcrops) that provide shelter and habitat for fauna such as reptiles and small mammals. Most non-remnant woodland communities were in poor to average condition, caused by:

- clearing leading to habitat fragmentation and the loss of large hollow-bearing trees and mature trees
- weed invasion, especially *Eragrostis curvula** and *Glandularia aristigera**

- some areas of intense fires resulting in tree death and increased weed invasion and erosion
- heavy grazing, especially close to farm dams and other sources of water.

Cleared grassland

Cleared grassland is the main habitat type within the site. Isolated trees provide limited food, roosting and nesting/denning resources. The sparse to dense grassy ground layer provides shelter and food resources for suitable species. Logs and leaf litter are restricted to areas with higher tree densities. Grasslands are in poor condition, due to:

- clearing of shrub and tree layers
- weed invasion, especially *Eragrostis curvula** and *Glandularia aristigera**
- grazing, especially close to farm dams and other sources of water.

Farm dams

Farm dams are scattered throughout the site and provide some important habitat resources, including:

- drinking and bathing water
- habitat for species requiring water during some phase of their life cycle (e.g. frogs)
- dense fringing vegetation on some dams provide shelter and food resources for small animals such as wetland birds.

5.5 Fauna species

Figure 8 shows locations of fauna sites surveyed from spring 2018 to summer 2023. Surveys during 2018, 2019, 2020 and 2021 included bird surveys and other fauna surveys, which informed ecological assessments and the level one avian risk assessment detailed in the BBUS (Ecosure 2023a). Surveys conducted in 2022 and 2023 comprise the preconstruction phase of monitoring and focus on bird and mega bat detection.

Appendix 5 lists all fauna species recorded during surveys. The combined surveys recorded 262 fauna species, including 16 amphibians, 186 birds, 44 mammals and 16 reptiles (Appendix 5).

Threatened and migratory fauna species detected during surveys within and adjacent to the project site are listed in Table 30.

Table 30 Threatened, migratory, and SLC fauna results for fauna surveys within and adjacent to the project site

Species	EPBC status[1]	NC Status[2]	Spring 2018	Autumn 2019	Spring 2020	Spring 2021	Summer 2022	Autumn 2022	Winter 2022	Spring 2022	Summer 2023	Total
koala	E	E	4 opportunistic sightings, 2 scat detections, 2 scratched trees	5 sightings (2 opportunistic, 3 nocturnal spotlighting), 12 scat detections, 5 scratched trees	2 sightings (1 opportunistic, 1 nocturnal spotlighting)	3 sightings via nocturnal spotlighting	No targeted surveys undertaken	No targeted surveys undertaken	No targeted surveys undertaken	1 opportunistic sighting, no targeted surveys undertaken	No targeted surveys undertaken	**15 sightings, 21 other detections**
greater glider	E	E	0 detections	52 sightings via nocturnal spotlighting	4 sightings via nocturnal spotlighting	11 sightings via nocturnal spotlighting	3 sightings - No targeted surveys undertaken	No targeted surveys undertaken	No targeted surveys undertaken	No targeted surveys undertaken	No targeted surveys undertaken	**70 sightings**
grey-headed flying-fox	V	-	0 detections	0 detections	0 detections	12 observed or heard	0 detections	0 detections	0 detections	0 detections	0 detections	**12 sightings**
white-throated needletail	V, Mi	V	2 sightings during fixed point count surveys	0 detections	0 detections	1 sighting during a dam survey	12 individuals sighted during fixed point count surveys	0 detections	0 detections	26 individuals sighted during fixed point count surveys	191 individuals sighted during fixed point count surveys	**232 sightings**
glossy black-cockatoo	V	V	0 detections	Orts detected at 18 locations	Orts detected in 2 locations	2 sightings during dam surveys. Orts detected at 1 location	No targeted surveys undertaken	No targeted surveys undertaken	0 detections	2 sightings during fixed point count surveys	0 detections, no targeted surveys undertaken	**4 sightings, 21 other detections**
rufous fantail	Mi	SLC	1 sighting during	2 sightings via fixed	0 detections	0 detections	0 detections	0 detections	0 detections	0 detections	0 detections	**3 sightings**

Species	EPBC status[1]	NC Status[2]	Spring 2018	Autumn 2019	Spring 2020	Spring 2021	Summer 2022	Autumn 2022	Winter 2022	Spring 2022	Summer 2023	Total
			SEVT survey	point count survey								
satin flycatcher	Mi	SLC	0 detections	0 detections	1 opportunistic sighting	1 sighting during fixed point count survey	0 detections	1 sighting during fixed point count	0 detections	0 detections	0 detections	**3 sightings**
fork-tailed swift	Mi	SLC	0 detections	0 detections	0 detections	0 detections	0 detections	0 detections	0 detections	0 detections	2 detections during fixed point count surveys	**2 sightings**
echidna	-	SLC	0 detections	6 opportunistic sightings	0 detections	0 detections	0 detections	0 detections	0 detections	0 detections	0 detections	**6 sightings**

[1]EPBC Act status: E – Endangered, V – Vulnerable, Mi – Migratory Species;

[2]NC Act status: E – Endangered, V – Vulnerable, SLC – Special Least Concern.

5.6 Introduced species

Surveys were conducted to catalogue introduced flora and fauna species within the project site. This provides an understanding of the current condition of existing communities and habitat across the project site, as well as identifying introduced species which may impact on threatened species. Surveys recorded 104 introduced flora species (Appendix 4) and 12 introduced fauna species (Appendix 5). Table 31 lists pest species (species that are of concern to local landholders and/or have the potential to cause significant environmental impacts) and their status under state and federal legislation. Ten species are listed as restricted matters under the Queensland *Biosecurity Act 2014* and three species are listed as Weeds of National Significance (WoNS). The South Burnett Biosecurity Surveillance Program for Restricted and Prohibited Matter under the Queensland *Biosecurity Act 2014* (SBRC 2016) does not list any additional species as local priority pest species.

Table 31 Pest flora and fauna species recorded during surveys

Species	Common name	WoNS	Biosecurity Act status (restricted invasive species)
Bidens pilosa	cobbler's pegs	No	-
Dolichandra unguis-cati	cat's claw creeper	Yes	Restricted
Eragrostis curvula	African lovegrass	No	-
Heliotropium amplexicaule	Blue heliotrope	No	-
Lantana camara	lantana	Yes	Restricted
Lantana montevidensis	creeping lantana	No	Restricted
Ligustrum lucidum	broad-leaf privet	No	Restricted
Megathyrsus maximus	guinea grass	No	-
Opuntia tomentosa	velvety tree pear	Yes	Restricted
Schinus molle	narrow leaf pepper tree	No	-
Sporobolus africanus	African rat's tail grass	No	-
Vachellia farnesiana	Mimosa	No	-
Xanthium occidentale	Noogoora burr	No	-
Xanthium spinosum	Bathurst burr	No	-
Canus lupus / C. l. dingo	wild dog / dingo	-	Restricted
Sus scrofa	wild pig	-	Restricted
Vulpes vulpes	European red fox	-	Restricted
Felis catus	feral cat	-	Restricted
Oryctolagus cuniculus	European rabbit	-	Restricted
Rhinella marina	cane toad	-	-
Lepus europaeus	European hare	-	-

Other exotic species include pasture grasses that have been introduced to improve the forage value of the land, including Rhodes grass (*Chloris gayana**), couch (*Cynodon dactylon*, C. nlemfuensis**) and red Natal grass (*Melinis repens**).

5.7 Matters of National Environmental Significance in project site

This section details the MNES and suitable habitat for these matters within the project site. Impacts to these MNES are detailed in Section 6 , and impact assessments after applying mitigation measures (Section 7) are detailed in Section 8 .

5.7.1 Threatened ecological communities

The project site has been extensively cleared with only 9.4% of the site retaining remnant vegetation. Surveys detected one patch of vegetation that was potentially consistent with SEVT TEC under the EPBC Act. This patch was assessed against key diagnostic criteria or community characteristics that are currently available for the relevant TEC.

Surveys did not detect any vegetation consistent with the Lowland Rainforest of Subtropical Australia or Brigalow (*Acacia harpophylla* dominant and co-dominant).

5.7.1.1 Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions

RE 11.8.3 (Semi-evergreen vine thicket on Cainozoic igneous rocks) is a component RE of the semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions TEC.

Surveys identified one potential occurrence of this community (Figure 9). The patch is approximately 0.6 ha in area and is growing beside a creek on Lot 29 on BO243 near the south-western boundary of the project site, outside of the planning corridor (Figure 9). This community is not consistent with the SEVT TEC as it has a canopy dominated by eucalypts and a sparse mid-storey of vine thicket species (Table 32). Therefore, this community is not a TEC.

Table 32 Assessment of vine thicket patch against TEC community characteristics

Community characteristic	Survey result	Consistent with characteristic
In Brigalow Belt bioregion	Community lies in Brigalow Belt bioregion	Yes
Component RE	RE 11.8.3	Yes
Species structure typical of RE (canopy 4-9 m tall, emergents 9-18 m tall)	Canopy dominated by eucalypts 15 m tall and 10% cover. T2 layer 8 m tall and 5% cover.	Eucalypt canopy is too dense and T2 layer too sparse
Species composition typical of RE	15 woody species with some canopy, shrub and vine species characteristic of vine thickets	Yes

5.7.2 Listed threatened flora species

The desktop assessment identified three EPBC Act-listed flora species that are possible to occur within the project site (Section 3.3.2). Table 33 summarises results of field surveys for these species.

Table 33 Results of surveys for EPBC Act listed threatened flora species

Species	EPBC Act status[1]	NC Act status[2]	Survey results
Wandering peppercress (*Lepidium peregrinum*)	E	LC	Not detected. Random meanders conducted within various riparian communities (RE 11.3.25). Several populations of a *Lepidium* species were detected, but these were the introduced *L. bonariense* and *L. africanum*. Nearest known records over 20 km from site in Bunya Mountains (within very different montane habitat). Possible in riparian communities, especially along Boyne River. Further surveys recommended if development is proposed in additional riparian areas outside of the existing planning corridor.
Austral cornflower (*Leuzea australis* synonym *Rhaponticum australe*)	V	V	Not detected. Random meanders conducted within various eucalypt woodland communities (RE 11.3.25, 11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3, 11.12.6). No known records within 10 km. Possible in areas of heavy clay soils derived from basalt, which occur only in the western corner of the project site. Unlikely in other areas. Further surveys recommended if development proposed in areas of heavy black soils outside of the existing planning corridor. However, no development is currently proposed in these areas of the site (Figure 11).
Austral toadflax (*Thesium australe*)	V	V	Not detected. Random meanders conducted within various eucalypt woodland communities (RE 11.3.25, 11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3, 11.12.6). Queensland Herbarium records from HVR RE 11.3.25 beside Jarail Road, approximately 1 km west of western boundary. Possible in eucalypt communities in damp areas. Within the project site, this habitat is restricted to riparian areas, especially along Boyne River (i.e. RE 11.3.25). Further surveys recommended if development proposed in additional riparian areas outside of the existing planning corridor.

[1]EPBC Act status: E – Endangered, V – Vulnerable;

[2]NC Act status: E – Endangered, V – Vulnerable.

Wandering peppercress and Austral toadflax were not detected during surveys, but may potentially occur in remnant and non-remnant riparian areas within the project site. Potential habitat within the project site was modelled as riparian areas associated with mapped watercourses, including remnant and non-remnant vegetation, as follows:

- 100 m riparian corridor along stream order 3 and 4 watercourses
- 200 m riparian corridor along stream order 5 and 6 watercourses.

Potential habitat for wandering peppercress and Austral toadflax is shown in Figure 11. The project site contains approximately 980 ha of riparian areas that contain potential habitat for these species.

Austral cornflower was not detected during the survey, but may potentially occur in woodland

and grassland communities on heavy clay soils derived from basalt. These habitats occur only in the south-western corner of the project site, associated with landzone 8. The project site contains approximately 0.6 ha of potential habitat for Austral cornflower (Figure 11).

5.7.2.1 Wandering peppercress

Wandering peppercress is a perennial herb that occurs from the Bunya Mountains in south-east Queensland to near Tenterfield in northern New South Wales (DoE 2014b). The estimated extent of occurrence is approximately 50,000 km^2. The total area of occupancy was estimated to be less than 100 ha in 2014 (DoE 2014b), but is likely to be larger, as ALA (2022) contains numerous records collected since this date. The total population size is unknown.

Most populations are known from riparian open forest and woodland (DoE 2014b). The closest known records are approximately 20 km south of the project site in the Bunya Mountains (ALA 2022). These records include a cleared creek terrace, the edge of montane rainforest at Dandabah and garden beds containing soil transported from the Dandabah rainforest site. Surveys did not detect this species within the project site, but remnant and non-remnant riparian areas could provide potential habitat.

5.7.2.2 Austral toadflax

Austral toadflax is a small inconspicuous herb that is semi-parasitic on the roots of several grass species, including kangaroo grass (*Themeda triandra*) (DoE 2013c). It has a sporadic distribution from Carnarvon National Park, central Queensland, to Victoria (DoE 2013c). Total population size is unknown, but could be between 100,000 and 1,000,000 individuals (DoE 2013c).

In Queensland, it grows in damp grassland and woodland (DES 2022a). Potential habitat within the project site is restricted to remnant and non-remnant vegetation within riparian areas. Surveys did not detect this species within the project site, but two records are located in HVR of RE 11.3.25 (fringing riparian woodland) adjacent to Jarail Road, about 1 km west of the project site. It is possible that the species may be present in the project site.

Figure 11: Potential habitat for wandering peppercress, Austral toadflax and Australian cornflower

Legend

- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Planning corridor
- Infrastructure
- Project boundary
- Potential habitat for Austral cornflower (*Rhaponticum australe*)
- Potential habitat for wandering peppercress (*Lepidium peregrinum*) and Austral toadflax (*Thesium australe*)

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5.7.3 Listed threatened fauna species

Table 34 summarises the results of surveys for threatened species potentially occurring within the site, further detail for these species are provided in the section below.

Field surveys at the project site have been conducted over six consecutive years including four spring, two autumn, two summer, and one winter survey. Both targeted and opportunistic surveys have been conducted for the threatened species of interest, providing a comprehensive understanding of the fauna assemblages present at the project site.

Table 34 Results of surveys for EPBC Act listed fauna species

Name	EPBC Act status[1]	NC Act status[2]	Survey results
koala (*Phascolarctos cinereus*)	E	**E**	**Confirmed** 15 individuals sighted (12 within and 3 adjacent to the project site), 14 scat detections, 7 scratched trees recorded during fauna surveys within the project site. Primarily associated with RE 11.3.25, but food species are also a component of remnant, HVR and non-remnant vegetation (including REs 11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3 and 11.12.6). No further surveys recommended.
greater glider (*Petauroides volans*)	E	**E**	**Confirmed** Suitable habitat exists within productive communities on alluvial soils dominated by Queensland blue gum (RE 11.3.25) and tall eucalypt forests. A total of 70 greater gliders were detected during spotlighting surveys within habitats containing REs 11.11.4, 11.11.15, 11.12.3 and 11.12.6, primarily on hill crests. Habitat assessments recorded large hollow-bearing trees in all of these REs, which may provide denning resources. No further surveys recommended.
Corben's long-eared bat (*Nyctophilus corbeni*)	V	V	Not detected Species or species habitat may occur within project site (DCCEEW 2023a) but no records within 20 km. Harp trapping took place in remnant REs across the project site, including: 11.11.15/11.3.25, 11.12.6/11.11.4 and 11.12.6. Calls of a *Nyctophilus* species were recorded, but probably from *N. geoffroyi* or *N. gouldi* (both common species recorded within 10 km of the project site). Three *N. geoffroyi* individuals were captured at two locations during spring 2021 surveys. Habitat surveys recorded very limited suitable habitat (forest with intact canopy and distinct dense mid stratum). Unlikely to occur within project site. No further acoustic surveys recommended. BBUS describes additional pre-construction monitoring for this and other bat species, including harp-trapping.
spotted-tail quoll (*Dasyurus maculatus maculatus*)	E	E	Not detected Species or species habitat may occur within the project site (DCCEEW 2023a) but nearest recent records are over 20 km south of the site in Bunya Mountains (which contain very different montane habitat). Camera trapping and spotlighting took place in remnant REs across the project site. Habitat surveys recorded very limited suitable habitat. Unlikely to occur within project site. No further surveys recommended.

Name	EPBC Act status[1]	NC Act status[2]	Survey results
grey-headed flying fox (*Pteropus poliocephalus*)	V	**LC**	**Confirmed foraging** Observed foraging within the site during the spring 2021 surveys when food species were in flower, although no habitats are considered to be critical food sources for this species. Nearest known grey-headed flying-fox camp is near Cooyar (38 km south-east of site) and is a nationally important camp containing 10,000 – 16,000 bats in 2018.Grey-headed flying-foxes are known to roost with other species of flying-fox, including little red flying-foxes (*Pteropus scapularis*) and black flying-foxes (*Pteropus alecto*) (Timmiss et al. 2020). Little red flying-foxes were detected during the survey and a camp is reported to occur to the south of the site (landholder *pers. Comm.*). However, the specific location and species composition of the camp is not known. Likely to forage in site when ironbarks and lemon-scented gums are flowering.
white-throated needletail (*Hirundapus caudacutus*)	V	**V**	**Confirmed** Observed during spring and summer surveys from 2018 to 2023 (n = 232 sightings in total). Forage above most habitats and roost in dense foliage or tree hollows, rarely roosting in Australia.
black breasted button quail (*Turnix melanogaster*)	V	V	Not detected Suitable habitat exists within one small patch of RE 11.8.3 in the south-western corner of the site and records present within 20 km of the site. Not detected during targeted surveys. Possible in small patches of vine thicket on western edge of site. Unlikely elsewhere in site. No further surveys recommended as no development is proposed in or adjacent to vine thicket habitats.
collared delma (*Delma torquata*)	V	V	Not detected PMST considers species or species habitat likely to occur within project site (DCCEEW 2023a) but closest Wildnet records about 20 km south of site in Bunya Mountains (which contain very different montane habitat). Active and opportunistic searches took place in eucalypt woodlands and open forests. Very few sites contained their preferred micro-habitat, exposed rocky outcrops and active searches in these sites did not detect collared delma. Habitat surveys did not record preferred rocky habitat in land zones 3, 9 and 10 (DSEWPaC 2011d). Small areas of scree slopes in land zone 8 and 11 may provide marginal habitat. Unlikely to occur within project site. No further surveys recommended.
glossy black-cockatoo (*Calyptorhynchus lathami lathami*)	V	**V**	**Confirmed** Suitable foraging habitat exists in small patches amongst forest and woodland communities across the site. A total of four glossy black-cockatoo individuals were observed, two adjacent to a dam and two in a forested area. Signs of chewings (orts) have been observed in patches of woodland containing *Allocasuarina torulosa*, *A. littoralis, A. luehmannii* and *Casuarina cunninghamiana*. Habitat assessments recorded large hollow-bearing trees in remnant REs, which may provide denning resources. Pre-clear nesting surveys during clearing recommended.

[1]EPBC Act status: E – Endangered, V – Vulnerable;

[2]NC Act status: E – Endangered, V – Vulnerable, LC – Least Concern.

Figure 12: Threatened and migratory fauna detected during surveys 2018 - 2023

Legend

- Echidna (sighting)
- Koala (sighting)
- Koala (scats / scratches)
- Glossy black-cockatoo (sighting)
- Glossy black-cockatoo (orts)
- Grey-headed flying-fox (sighting)
- Greater glider (sighting)
- Satin flycatcher (sighting)
- Rufous fantail (sighting)
- White-throated needletail (sighting)
- Fork-tailed swift (sighting)
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- Previous project boundary

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5.7.3.1 Koala

The field surveys recorded 12 koala sightings within the project site and 3 sightings in areas adjacent to the project site. An additional 21 signs of koala (koala scats and scratches) were observed within and adjacent to the project site. Koala sightings and signs were predominantly in remnant vegetation containing Queensland blue gum (*Eucalyptus tereticornis*) in RE 11.3.25 and narrow-leaved ironbark (*Eucalyptus crebra*) in REs 11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3 and 11.12.6. Figure 14 shows locations of koala records within the site.

Most REs within the project site contain food trees that koalas are known to use, and the koala population is likely to be widespread throughout the site. Table 35 lists tree species recorded during site surveys that are known to be used by koalas in the Brigalow Belt bioregion (Youngentob et al. 2021), SBRC region (Mitchell 2015), and south-east Queensland (Queensland Parks and Wildlife Service [QPWS] 2002); and/or species identified as koala food trees in Queensland essential habitat mapping (DoR 2022b).

A recent review of koala habitat (Youngentob et al. 2021) identified locally important koala trees (species that are regularly browsed by koalas) and ancillary habitat trees (species that provide shelter or other resources) within bioregions. Surveys recorded six species that are locally important koala trees in the Brigalow Belt bioregion and four species that are ancillary habitat trees (Table 35).

Mitchell (2015) lists the primary koala food tree species in the SBRC area as Queensland blue gum, which occurs as a dominant species in areas of RE 11.3.25 within the project site. Surveys also recorded seven species identified as secondary koala food species in SBRC (Mitchell 2015) or SEQ (QPWS 2002). Two secondary food species, spotted gum (*Corymbia citriodora*) and narrow-leaved ironbark (*Eucalyptus crebra*), are dominant or common canopy species in REs 11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3 and 11.12.6. Approximately 23.2 ha of vegetation dominated by RE 11.3.25 (HVR and remnant) occurs within the site and a further 1,628.6 ha of remnant and HVR vegetation contains secondary koala food species.

Table 35 Known koala food/habitat species recorded during surveys

Species	Region				Source*
	SBRC	SEQ	Outside SEQ	Brigalow Belt	
Acacia salicina				Ancillary habitat	Y
Corymbia citriodora		Secondary	Yes	Ancillary habitat	Q, D, Y
Corymbia tessellaris			Yes	Ancillary habitat	D, Y
Eucalyptus acmenoides				Ancillary habitat	Y
Eucalyptus crebra		Secondary	Yes	Locally important	Q, D, Y
Eucalyptus exserta	Secondary	Secondary	Yes	Locally important	M, Q, D, Y
Eucalyptus major	Secondary	Secondary		Locally important	M, Q, Y
Eucalyptus melanophloia			Yes	Locally important	D, Y
Eucalyptus moluccana		Secondary		Locally important	Q, Y
Eucalyptus tereticornis	Primary	Primary	Yes	Locally important	M, Q, D, Y

* Source: D = DoR 2022b; M = Mitchell 2015; Q = QPWS 2002; Y = Youngentob et al. 2021.

The surveys recorded koalas in remnant, HVR and non-remnant vegetation within the site. Potential habitat for koala within the site was therefore modelled through GIS analysis incorporating surveyed koala locations within the project site, information on koala habitat preferences in the SBRC region, ground-truthed remnant and HVR vegetation, and available mapping of pre-clearing REs (DoR 2022a, 2022b), woody vegetation foliage projective cover (DES 2016) and recent clearing (DES 2016, 2018b).

Ground-truthed remnant and HVR REs (described in Section 5.2.1) that contain known koala food trees (described in Table 35) include REs 11.3.25, 11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3 and 11.12.6. The project site contains approximately 1,651.8 ha of remnant/HVR vegetation that provide potential koala habitat.

Non-remnant areas of vegetation that contain sufficient food and habitat resources can also provide high quality koala habitat (Cristescu et al. 2019, Youngentob et al. 2021). Koala records in non-remnant areas of the project site were in patches of partially cleared or regenerating eucalypts, such as *Eucalyptus crebra, Eucalyptus citriodora* and *Eucalyptus tereticornis*. These patches generally had a mid-dense canopy cover and some connectivity to similar patches throughout the landscape. Potential koala habitat within the non-remnant areas of the project site was modelled through GIS analysis to determine the total available suitable habitat likely to support koala.

5.7.3.2 Koala non-remnant habitat model

GIS modelling of potential koala habitat in non-remnant areas utilised Statewide Landcover and Trees Study (SLATS) land cover mapping for Queensland. This data set measures projective foliage cover of woody vegetation by analysing dry season Landsat satellite imagery with a pixel size of 30 m by 30 m (DES 2016, 2018b). Cover levels vary from 100 (0% foliage projective cover) to 200 (100% foliage projective cover). Comparison of varying cover levels determined that a threshold cover level of 125 (25% foliage projective cover) gave the best inclusion of woody vegetation. Figure 13 shows modelling using thresholds of 125 and 120 overlaid on recent satellite imagery within a representative section of the project site. The 125 threshold model more accurately reflects the distribution of woody to non-woody vegetation cover and provides a more reflective model of available koala habitat and dispersal corridors within the project site. Whereas, the 120 threshold model incorporates substantial areas of non-woody vegetation, which does not contain suitable habitat for the koala, thereby over representing the areas of available koala habitat or corridors within the project site. Additionally, the 125 model most accurately represents the habitat available where records of koalas have been located on the site (Figure 14) and which were ground-truthed to be consistent with the mapped vegetation (Figure 9).

The foliage projective cover method was validated by comparing the SLATS land cover mapping to lidar data collected from the site in 2019. The two datasets are concordant, with significant trees identified by lidar falling within areas of koala habitat modelled using the 125 threshold cover level of the SLATS dataset.

Modelling of potential koala habitat in non-remnant areas used the following mapping rules:

- pre-clear vegetation mapping (DoR 2022a) containing REs that are listed as essential habitat factors for koala (DoR 2022b), including eucalypt woodland/forest

REs 11.3.4, 11.3.25, 11.5.20, 11.7.6, 11.9.5, 11.10.1, 11.11.4a, 11.11.15, 11.12.3 and 11.12.6

- woody vegetation foliage projective cover greater than a value of 125, based on Landsat imagery from 2014 (DES 2016)
- no evidence of clearing from 1998 to 2018, based on analyses of change in woody vegetation cover by the Statewide Land and Tree Survey (DES 2018b)
- habitat patches greater than 0.3 ha in size (i.e. removing isolated habitat patches less than 0.3 ha) as these isolated patches do not contribute significantly to habitat connectivity within the project site.

Figure 14 shows locations of koala records within the site in relation to the modelled extent of potential koala habitat in remnant/HVR and non-remnant areas. The project site contains approximately 5,833.99 ha of potential koala habitat containing koala food species (approximately 33.3% of the entire project site), including 1,651.8 ha of remnant/HVR vegetation and 4,182.19 ha within non-remnant areas. The clearing footprint (1,062.14 ha) contains approximately 186.03 ha of modelled koala habitat containing koala food species (approximately 3.19% of the project site and 17.5% of the clearing footprint). Importantly, the modelled habitat incorporates all known koala records within the project site and includes numerous internal corridors that connect most larger patches of koala habitat across the site, which koalas would use for dispersal. Internal corridors are generally associated with more rugged terrain and larger watercourses (although the model does not capture some heavily cleared watercourses).

Figure 15 shows remnant habitat blocks that may provide important koala habitat surrounding the project site and potential movement corridors to promote regional connectivity of koala populations. Much of the project site and surrounding region is significantly fragmented by previous clearing. Areas to the east and south are extensively cleared for cropping and provide very limited connectivity. However, broken areas of vegetation provide some connectivity northwards to Dangore State Forest (approximately 5 km north of the site) and westwards to Diamondy State Forest (approximately 5 km west of the site). The Boyne River may also act as a riparian corridor, although the riparian zone is mostly heavily cleared with only a narrow band of woody vegetation along the banks.

Figure 13: Comparison of woody vegetation projective foliage thresholds on modelling of koala habitat

Legend

- 125 model - potential koala habitat (non-remnant)
- 120 model - potential koala habitat (non-remnant)
- Project boundary

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Figure 14a: Koala survey records 2018 - 2023 and potential habitat

Legend

- Koala (sighting)
- Koala (scats / scratches)
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- Potential koala habitat (remnant / HVR)
- Potential modelled koala habitat (non-remnant)

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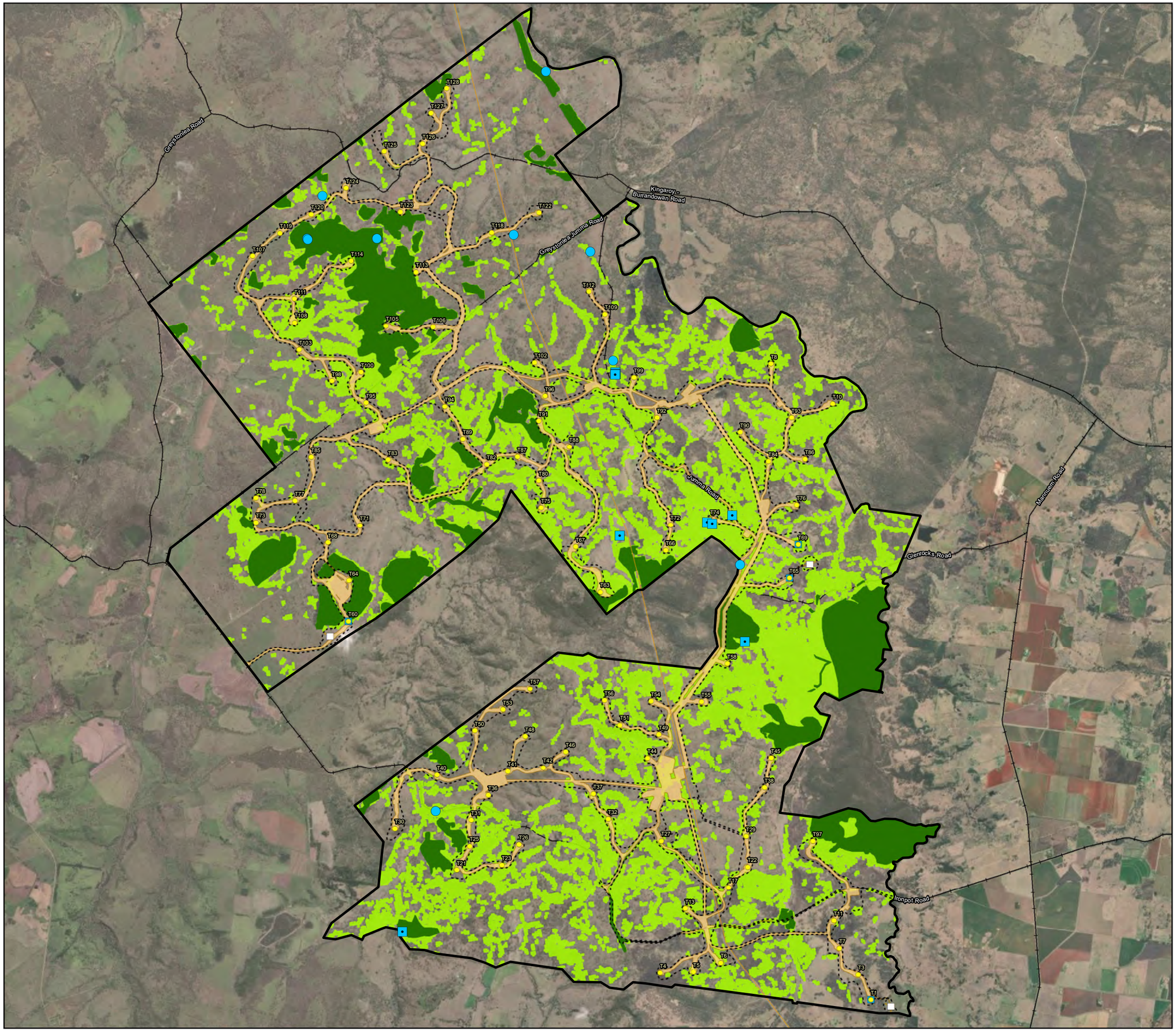

Figure 14b: Koala survey records 2018 - 2023 and potential habitat within clearing footprint

Legend

- Koala (sighting)
- Koala (scats / scratches)
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Existing 275kV transmission line
- Road
- Planning corridor
- Clearing footprint
- Project boundary
- Potential koala habitat (remnant / HVR)
- Potential modelled koala habitat (non-remnant)

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Ecological Assessment for Tarong West Wind Farm, Ironpot, Queensland

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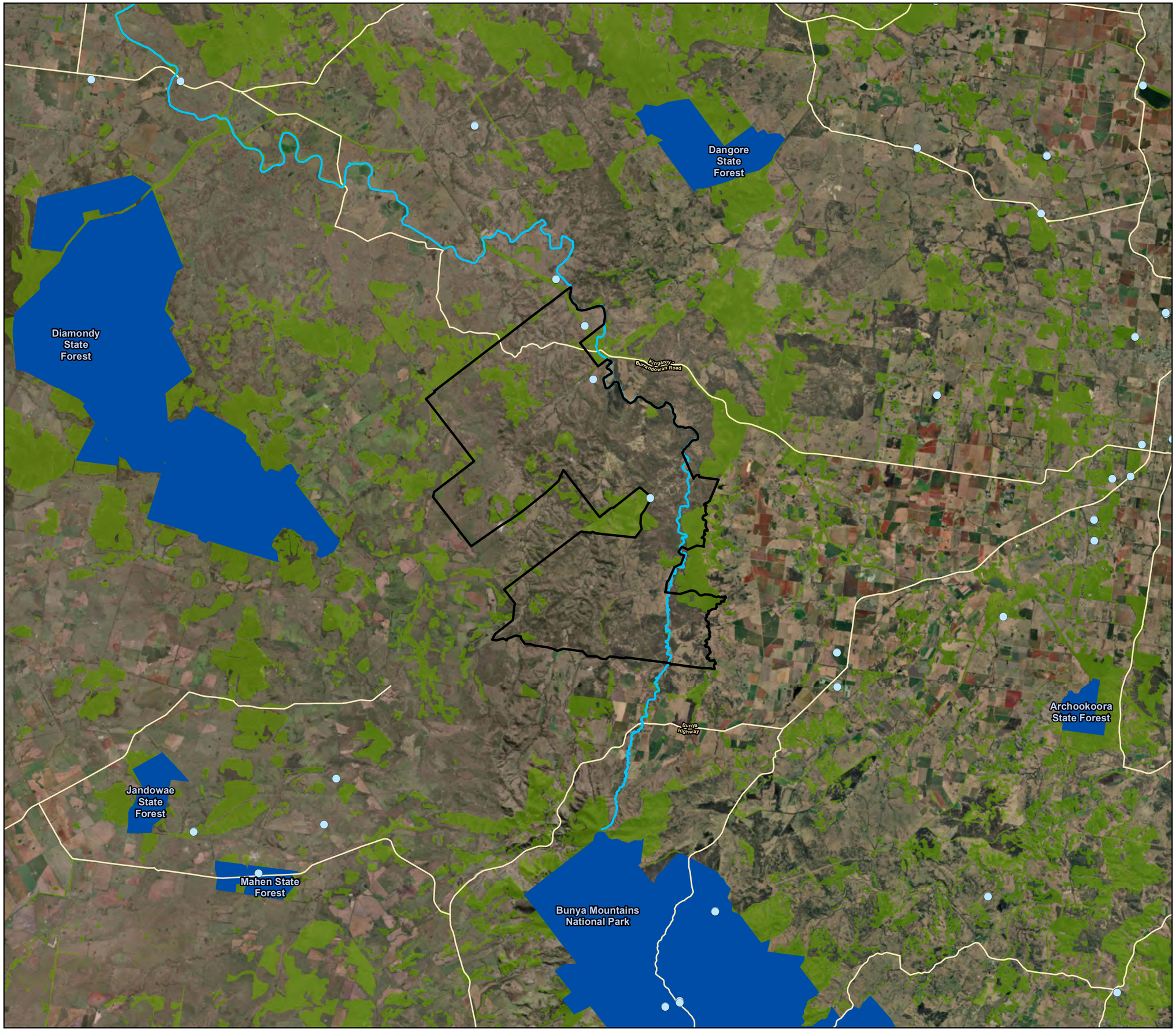

Figure 15: Regional and local koala connectivity

Legend

- Koala record (Wildnet)
- Boyne River
- State road
- Project boundary
- Protected area
- Remnant / HVR vegetation

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5.7.3.3 Greater glider

Greater glider taxonomy is currently unresolved. Recent genetic, distributional and morphological studies (Jackson 2015, Jackson and Groves 2015, McGregor et al. 2020) suggest that the greater glider comprises at least three species or sub-species:

- northern glider (*Petauroides minor* of McGregor et al. 2020) - occurs north of Townsville in northern Qld, listed as vulnerable under EPBC Act as *Petauroides minor* and vulnerable under NC Act as *Petauroides volans minor*
- central greater glider (*Petauroides armillatus* of McGregor et al. 2020) - occurs from Townsville region to northern NSW, not currently recognised in Commonwealth or state legislation but listed as endangered under NC Act as southern greater glider (*Petauroides volans volans*) and endangered under EPBC Act as greater glider - southern and central (*Petauroides volans*)
- southern greater glider (*Petauroides volans* of McGregor et al. 2020) - occurs from northern NSW to Victoria (i.e. does not occur in Qld), listed as endangered under NC Act as southern greater glider (*Petauroides volans volans*) and endangered under EPBC Act as greater glider (southern and central) (*Petauroides volans*).

The greater glider population in the Kingaroy region is therefore considered to be central greater glider (*Petauroides armillatus*) by McGregor et al. (2020), southern greater glider (*Petauroides volans volans*) under Queensland legislation and southern greater glider (*Petauroides volans*) under Commonwealth legislation. The status of greater glider (southern and central) was upgraded from vulnerable to endangered under the EPBC Act in June 2022.

Spotlight surveys recorded 70 greater gliders in 55 locations (Figure 16), including:

- 33 gliders inside the project site
- 37 gliders outside the site (along Kingaroy Burrandowan Road and in properties now excluded from the project site, in habitat identical to that occurring in the site).

Greater gliders were predominantly recorded on hill crests in remnant forest containing REs 11.11.4, 11.11.15, 11.12.3 and 11.12.6. Two individuals were recorded in HVR vegetation adjacent to remnant forest. Habitat assessments confirmed that these REs and the riparian RE 11.3.25 contained trees with large hollows suitable for denning by greater gliders.

The national population of greater gliders is believed to be over 100,000 mature individuals (Woinarski et al. 2014). Population density in coastal lowland forest near Maryborough ranged from 1.6 to 2.3 individuals per ha (Kehl & Borsboom 1984), while density in dry sclerophyll forest in Barakula State Forest ranged from 0.1 to 0.36 individuals per hectare (Smith et al. 2007). Population density was lower in areas with low availability of den trees containing suitable large hollows (Smith et al. 2007).

The EPBC Act conservation advice for greater glider identifies suitable habitat as eucalypt forests or woodlands that contain hollow-bearing trees, with highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows (TSSC 2016). Eyre et al. (2022b) reviewed greater glider distribution and habitat information in Queensland and identified potential habitat as:

- REs with confirmed greater glider records or identified by experts as potential greater glider habitat
- areas with suitable habitat attributes, such as hollow-bearing trees, feed trees, large trees and habitat connectivity (but not necessarily containing all attributes).

Important habitat attributes identified in the review included:

- dominant or co-dominant species in most greater glider habitat in Queensland were *Corymbia citriodora, Eucalyptus moluccana, E. tereticornis, E. crebra, C. intermedia* and *E. portuensis*
- preferred denning trees had a DBH > 50 cm and preferred foraging trees were > 30 cm DBH.

Field surveys confirmed that suitable habitat was restricted to remnant and HVR vegetation containing REs 11.3.25, 11.11.4, 11.11.15, 11.12.3 and 11.12.6.

Potential greater glider habitat was therefore modelled as the ground-truthed extent of remnant and HVR vegetation dominated by REs 11.3.25, 11.11.4, 11.11.15, 11.12.3 and 11.12.6 (Figure 16). The project site contains approximately 1,651.8 ha of potential habitat for the species (321.35 ha HVR and 1,330.45 ha remnant). Greater gliders will use non-remnant areas of the project site to traverse between habitat patches, but these areas are unlikely to provide suitable habitat (e.g. denning sites and density of trees) for sustained periods of occupancy.

Figure 15 presents the remnant habitat blocks surrounding the project site and potential movement corridors to promote regional connectivity of for greater gliders.

5.7.3.4 Grey-headed flying fox

Spring 2021 surveys detected grey-headed flying-fox foraging within the site. Grey-headed flying-fox prefer sub-tropical and temperate rainforest, tall open forest, swamps, heaths and urban areas. Roosting sites (camps) are usually found in dense forest adjacent to waterbodies. This species forages in flowering rainforest trees, eucalypts, paperbarks and banksias within 50 km of camps. It is highly nomadic and disperses in response to food availability (DCCEEW 2023b), so seasonal and yearly fluctuations in camp sizes do occur (DAWE 2021b).

Prior correspondence with DCCEEW has indicated grey-headed flying-foxes are known to forage within habitats similar to the koala (i.e. eucalypt dominated communities). The nearest known grey-headed flying-fox camp is near Cooyar (38 km south-east of the project site) and is a nationally important camp containing 10,000-16,000 bats in 2018 (DCCEEW 2022b). Most recently in 2022, this camp was estimated to contain 500-2,500 bats (DCCEEW 2022b). The project site lies within the nightly foraging range of the species (up to 50 km from camps) and therefore may be utilised for foraging by grey-headed flying-fox when feed species are in flower or fruit. However, generally this species forages within 15 km of their day roost site (Tidemann 1998).

Potential grey-headed flying-fox foraging habitat was modelled as the ground-truthed extent of remnant and HVR vegetation with eucalypt and vine thicket species containing foraging

resources, and non-remnant areas modelled as containing habitat suitable for koala (see section 5.7.3.2) (Figure 17). There are no known camps within the project site and the nearest known camp is 38 km southeast of the project site.

The project site contains approximately 5,834.62 ha of potential foraging habitat for the grey-headed flying-fox (including 1,652.43 ha of remnant/HVR vegetation and 4,182.19 ha within non-remnant areas).

5.7.3.5 Glossy black-cockatoo

Glossy black-cockatoos are widespread across Queensland and New South Wales. They feed exclusively on the seeds of she-oaks, extracting the seeds from closed cones and leaving characteristic feeding litter (orts) under feeding trees (Morcombe 2004). The glossy black-cockatoo can spend up to 88% if its day foraging and feeding (Morcombe 2004). They utilise large hollows in living and dead trees and usually occur in pairs or groups of three (Morcombe 2004). Very little is known about the flight heights or behaviours of the glossy black-cockatoo, but the Kangaroo Island subspecies (*Calyptorhynchus lathami halmaturinus*) is capable of flying up to 30 km a day between nests and feeding areas (Mooney and Pedler 2005).

Surveys confirmed four sightings and signs of glossy black-cockatoo foraging activity (orts) at 21 locations. Suitable foraging habitat exists in small patches of *Allocasuarina torulosa, A. littoralis, A. luehmannii* and *Casuarina cunninghamiana* amongst forest and woodland communities across the site. Large hollow-bearing trees in remnant REs may provide nesting resources. Glossy black cockatoo require large old tree hollows, positioned 10 to 20 m above the ground in eucalypt species, in branches/stems 30 cm in diameter, at a branch/stem angle of vertical or no more than 45 degrees from vertical and with a minimum entrance diameter of 15 cm (Cameron 2006, Glossy Black Conservancy 2010).

Information on the foraging and nesting behaviour of glossy black-cockatoo in the wider region is limited. However, orts, feed trees, and potential nesting trees have also been recorded at a nearby site which borders the project boundary (Lot 61 on BO188), and a pair of glossy black-cockatoos were previously observed to the west of Jumma Road, just outside the current project site (Golder Associates 2018). Records of glossy black-cockatoo presence and signs of feeding activity have been made in 2018 (Golder Associates 2018), 2019, 2020 and 2021, suggesting sustained use of the wider area by this species.

Potential glossy black-cockatoo habitat was modelled as the ground-truthed extent of remnant and HVR vegetation which is most likely to contain large hollows and/or contains *Allocasuarina* or *Casuarina* food trees (which includes all eucalypt forest and riparian REs verified within the project site). The project site contains approximately 1,651.8 ha of potential habitat for the glossy black-cockatoo (Figure 18).

5.7.3.6 Black-breasted button quail

Only one small patch of suitable vine thicket habitat for black-breasted button quail was detected during surveys in the south-western corner of the project site (refer to Figure 10). Targeted surveys did not detect this species or any signs (e.g. platelets). The project site contains approximately 0.63 ha of potential habitat for the species. The current design does

not include any potential habitat for black-breasted button quail.

5.7.3.7 White-throated needletail

White-throated needletail are listed as vulnerable and migratory under the EPBC Act. This species migrates into eastern and south-eastern Australia from late spring to early autumn and breeds in the northern hemisphere (TSSC 2019). In Australia, white-throated needletail are mostly aerial, reaching heights up to 1,000 m, and may occur singly or in large flocks. They fly above most habitats, although they are most common above wooded areas. Although previously believed to never land while in Australia, they have now been recorded roosting in dense foliage or tree hollows (Tarburton 1993, TSSC 2019). Studies using geolocators have shown that white-throated needletails move up and down the eastern coast of Australia and the Great Dividing Range and are capable of moving up to 900 km in a 24 hour period (Yamaquchi et al. 2021). Within Australia the area of occupancy of white-throated needletail is greater than 20,000 km^2 (TSSC 2019).

White-throated needletails were recorded flying above the project site during the spring 2018 (n = 2), spring 2021 (n = 1), summer 2022 (n = 12), spring 2022 (n = 26), and summer 2023 (n = 191) bird surveys (Figure 19). The volume and timing of sightings is not unexpected, as surveys have been conducted for six consecutive years and the species has a widespread distribution in Australia (TSSC 2019). Migration into Australia generally occurs in spring, and migration to breeding grounds in the northern hemisphere occurs in early/mid autumn (TSSC 2019).

The larger numbers recorded during summer 2022 and summer 2023 were generally associated with summer storms. Most birds observed in these summer periods were foraging in front of the summer storms. Group sizes in summer 2023 were variable, ranging from individual birds to flocks of approximately 50 individuals. The tendency to observe white-throated needletails during storms may indicate the species is more likely to occur in the project site along with suitable atmospheric conditions for foraging rather than for availability of suitable roosting habitat. The draft referral guidelines for migratory species (DoE 2015) considers 100 individuals to be an internationally significant proportion of the population and 10 individuals to be a nationally significant proportion of the population.

White-throated needletails have only been observed aerially and none were observed roosting across the project site. However, potential roosting habitat for white-throated needletail has been modelled as all remnant and HVR vegetation within the project site (Figure 19). The project site contains approximately 1,652.43 ha of potential roosting habitat for the species (321.35 ha HVR and 1,331.08 ha remnant) and potential foraging habitat includes all airspace above the project site.

Figure 16: Greater glider survey records 2018 - 2022 and potential habitat

Legend

- Greater glider (sighting)
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- Potential habitat

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Figure 17: Grey-headed flying-fox survey records 2018 - 2023 and potential foraging habitat

Legend

- Grey-headed flying-fox (sighting)
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- Potential foraging habitat

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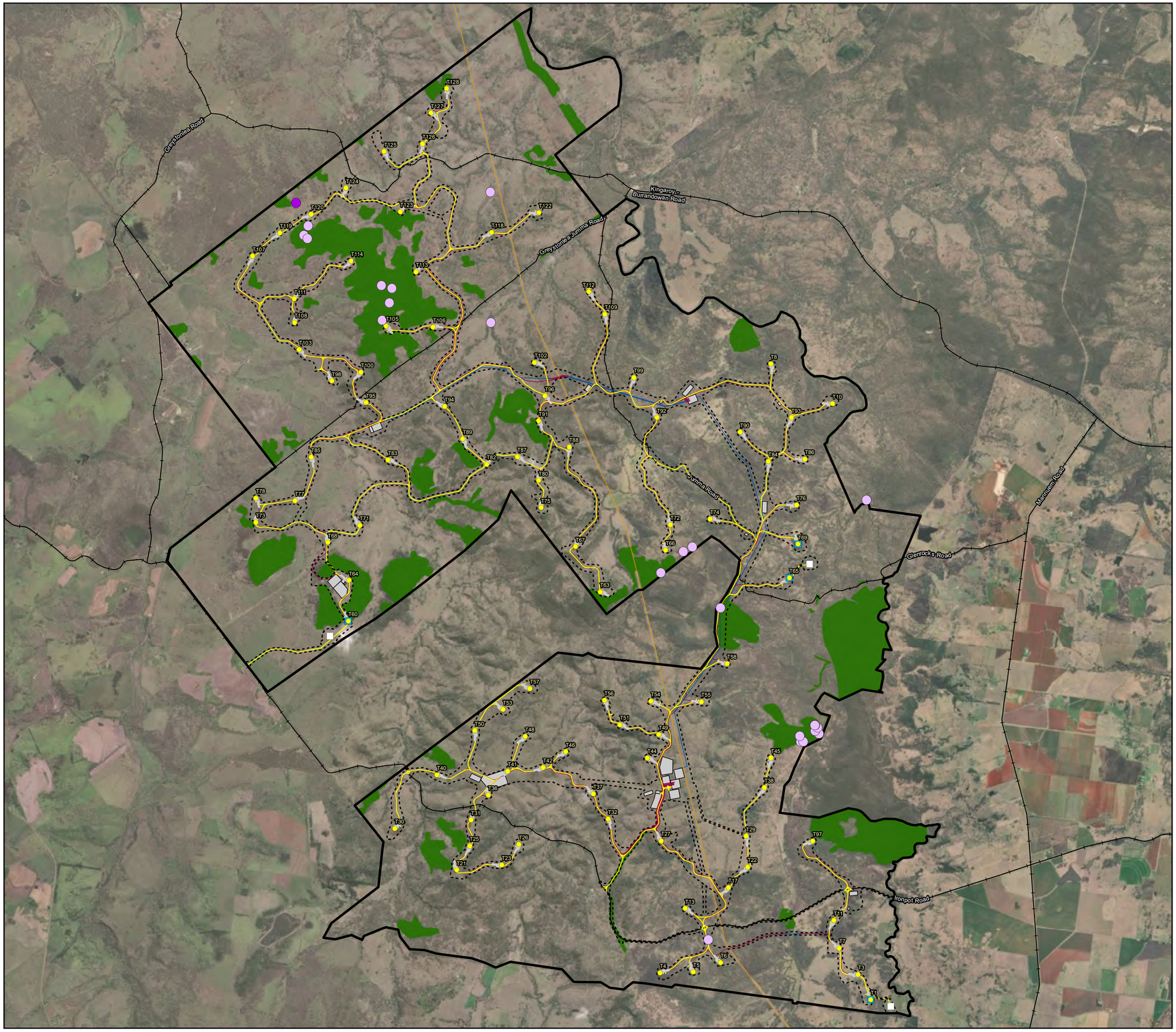

Figure 18: Glossy black-cockatoo survey records 2018-2023 and potential habitat

Legend

- Glossy black-cockatoo (sighting)
- Glossy black-cockatoo (orts)
- WTG
- Met mast (permanent)
- Met mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- Potential habitat

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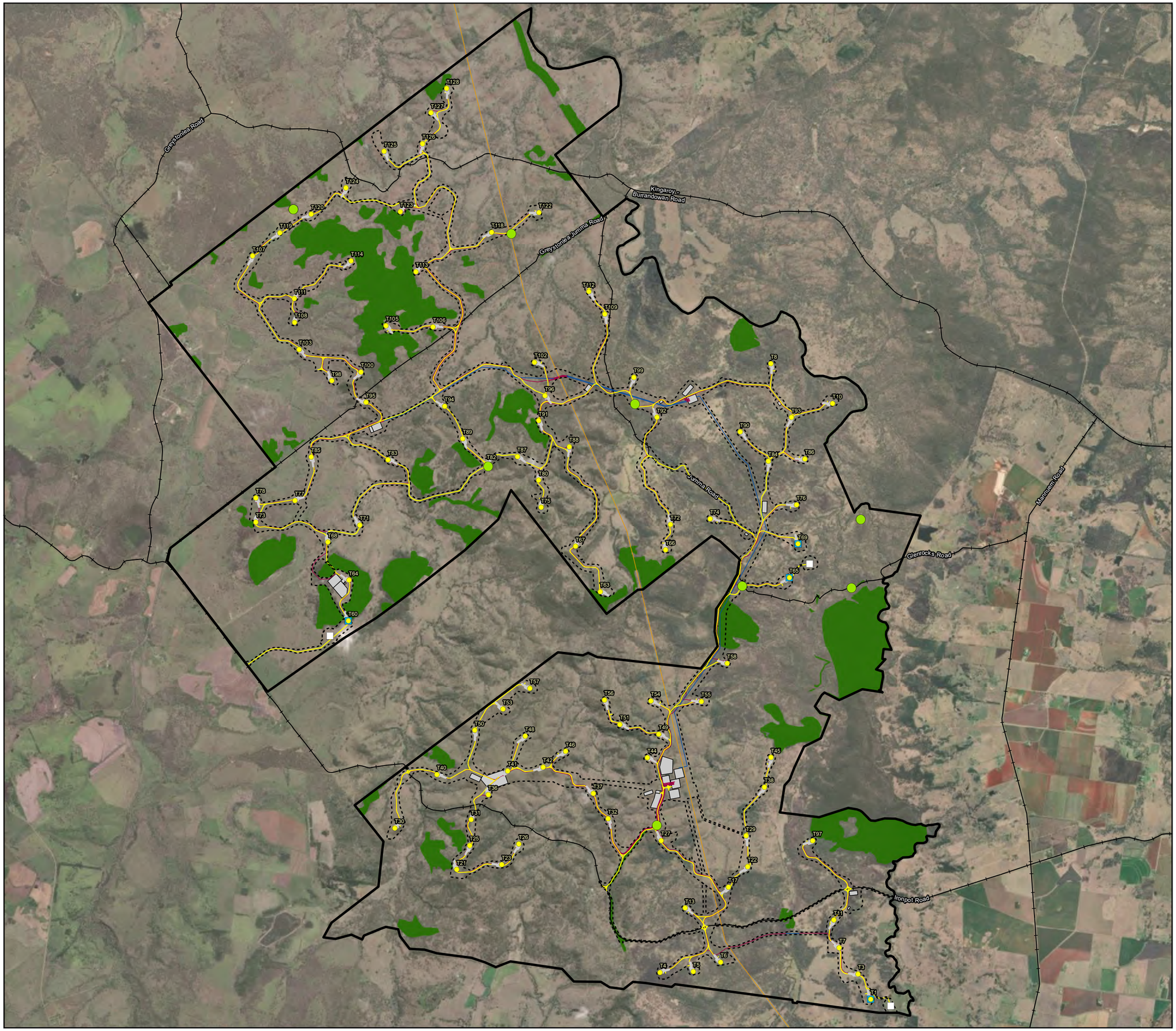

Figure 19: White-throated needletail survey records 2018-2023 and potential roosting habitat

Legend

- White-throated needletail (sighting)
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- Potential habitat

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5.7.4 Listed migratory species

Surveys recorded four species listed as migratory under the EPBC Act. White-throated needletail is also listed as vulnerable under EPBC Act and is discussed in detail in section 5.7.3.7. Sightings of rufous fantail are shown in Figure 20, satin flycatcher in Figure 21 and fork-tailed swift in Figure 22.

The referral guidelines for 14 birds listed as migratory species under the EPBC Act (DoE 2015) provides some guidance to determining important habitat for migratory species. Table 36 provides a summary of this information and an assessment of the potential occurrence of important habitats at the project site.

Table 36 Important habitat for migratory species potentially occurring within the project site

Species	Important habitat	Site assessment
rufous fantail (*Rhipidura rufifrons*)	**Confirmed** Moist, dense habitats, including mangroves, rainforest, riparian forests and thickets, and wet eucalypt forests with a dense understorey. When on passage a wider range of habitats are used including dry eucalypt forests and woodlands and brigalow shrublands. DoE (2015) considers 48,000 individuals to be an ecologically important population.	SEVT Riparian zones Eucalypt forest with dense understorey.
satin flycatcher (*Myiagra cyanoleuca*)	**Confirmed** Eucalypt forest and woodlands, at high elevations when breeding. They are particularly common in tall wet sclerophyll forest, often in gullies or along water courses. In woodlands they prefer open, grassy woodland types. During migration, habitat preferences expand, with the species recorded in most wooded habitats except rainforests. Wintering birds in northern Qld will use rainforest – gallery forests interfaces, and birds have been recorded wintering in mangroves and paperbark swamps. DoE (2015) considers 17,000 individuals to be an ecologically significant population.	Eucalypt forest and woodland Riparian zones.
white-throated needletail (also vulnerable under EPBC Act and NC Act) (*Hirundapus caudacutus*)	**Confirmed** Non-breeding habitat only. Found across a range of habitats, more often over wooded areas, where it is almost exclusively aerial. Large tracts of native vegetation, particularly forest, may be a key habitat requirement for species. Found to roost in tree hollows in tall trees on ridge-tops, on bark or rock faces. Appears to have traditional roost sites. DoE (2015) considers 100 individuals to be an internationally significant proportion of the population and 10 individuals to be a nationally significant proportion of the population.	Airspace over farmland, woodlands, riparian zones, SEVT and ridges.
fork-tailed swift (*Apus pacificus*)	**Confirmed** Non-breeding habitat only. Found across a range of habitats, from inland open plains to wooded areas, where it is exclusively aerial. DoE (2015) considers 1,000 individuals to be an internationally significant proportion of the population and 100 individuals to be a nationally significant proportion of the population.	Airspace over farmland, woodlands, riparian zones, SEVT and ridges.
oriental cuckoo (*Cuculus optatus*)	Not detected Non-breeding habitat only: monsoonal rainforest, vine thickets, wet sclerophyll forest or open *Casuarina, Acacia* or *Eucalyptus* woodlands. Frequently at edges or ecotones between habitat types. Riparian forest is favoured habitat in the Kimberley region.	SEVT Riparian zones.
black-faced monarch (*Monarcha melanopsis*)	Not detected Wet forest specialist, found mainly in rainforest and wet sclerophyll forest, especially in sheltered gullies and slopes with a dense understorey of ferns and/or shrubs.	SEVT Riparian zones.

5.7.4.1 Rufous fantail

Surveys recorded three rufous fantails, one in and two adjacent, to the project site during the fixed point count surveys, one in spring 2018 and two birds in autumn 2019. Records were in eucalypt forest with an understorey of shrubs and/or vine thicket species. Figure 20 shows the location where rufous fantail was recorded within the project site.

Rufous fantails occur along the eastern seaboard of Australia. Breeding populations live in moist, dense habitats (e.g. mangroves, rainforest, riparian forests and thickets, and wet eucalypt forests with dense understorey), while migrating birds may use a wider range of habitats (DoE 2015). They generally forage in the understorey but will also use mid-storey and canopy strata.

Potential habitat for this species within the project site is limited to areas of vine thicket, and patches of riparian vegetation or eucalypt forest with a dense understorey. These areas primarily occur in forest communities along the eastern edge of the site, although small patches of suitable habitat may be scattered throughout other parts of the site. As forest with suitable dense understorey could not be adequately ground-truthed, potential habitat for this species was defined as all riparian, remnant eucalypt forest and SEVT REs within the site (Figure 20). The project site contains approximately 2,594.01 ha of potential habitat for the species (941.58 ha riparian, 321.35 ha HVR and 1,331.08 ha remnant).

5.7.4.2 Satin flycatcher

Surveys recorded one satin flycatcher during the spring 2020 fauna surveys as an incidental observation, and two during a fixed point count surveys, one in spring 2021 and one in autumn 2022. The sightings were mainly within non-remnant open woodland with a grassy understory near the Boyne River. Figure 21 shows the location of satin flycatcher records within the site.

Satin flycatchers are widespread along the east coast of Australia and in Tasmania (DoE 2015). The species mainly inhabits eucalypt forest and woodlands, often with an open grassy understory. They are common in tall wet sclerophyll forest, in gullies and along watercourses.

The species migrates north in autumn to winter in northern Australia, returning south in spring to spend summer in south-eastern Australia. Migrating satin flycatchers have been recorded in most wooded habitats except rainforests. Breeding occurs between November to March at high elevations of more than 600 m above sea level. Being arboreal foragers, they generally feed high in the canopy and subcanopy of trees.

As potential habitat for this species with the project site largely comprises eucalypt forest and woodland, potential habitat within the site was modelled using the following criteria:

- ground-truthed remnant and HVR areas that contain known eucalypt forest or woodland areas (including REs 11.3.25, 11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3 and 11.12.6 - see Section 5.2.1)
- non-remnant areas meeting the following mapping rules:
  - pre-clear vegetation mapping (DoR 2022a) containing REs that are listed as eucalypt forest (Queensland Herbarium 2021), including REs 11.3.4, 11.3.25, 11.5.20, 11.7.6, 11.9.5, 11.10.1, 11.11.4a, 11.11.15, 11.12.3 and 11.12.6

- woody vegetation foliage projective cover greater than a value of 125, based on Landsat imagery from 2014 (DES 2016)
- no evidence of clearing from 1998 to 2018, based on analyses of change in woody vegetation cover by the Statewide Land and Tree Survey (DES 2018b)
- habitat patches greater than 0.3 ha in size (i.e. removing isolated habitat patches less than 0.3 ha).

Modelled habitat is shown in Figure 21. The site contains approximately 5,833.99ha of potential habitat for this species (including 1,651.8 ha of remnant/HVR and 4,182.19 ha within non-remnant areas).

5.7.4.3 Fork-tailed swift

Two fork-tailed swifts were recorded flying above one site during summer 2023 surveys. The sighting occurred over open woodland and grassland in the east of the project site (Figure 22) DoE (2015) considers 1,000 individuals to be an internationally significant proportion of the population and 100 individuals to be a nationally significant proportion of the population. Survey results therefore indicate that the project site does not support an ecologically significant proportion of the fork-tailed swift population.

The habitat and flight behaviour of the fork-tailed swift is similar to the white-throated needletail. In Australia, fork-tailed swifts are believed to be exclusively aerial, flying at heights up to 1,000 m above the ground (DoE 2015). The species migrates to Australia in October and November and departs in April to breed in east Asia (DoE 2015). Fork-tailed swifts occur mostly over inland plains, but are also seen above vegetated areas, coastal habitats and urban environments, where they forage ahead of storm fronts to feed on aerial insects (DCCEEW 2023b).

The project site is highly unlikely to provide roosting habitat for fork-tailed swifts, however, they may forage aerially and roost on the wing over the entire site.

5.7.4.4 Other migratory species

Sightings and species biology of the white-throated needletail are discussed in the threatened species section (Section 5.7.3.7) as it is listed as vulnerable under the EPBC Act.

Oriental cuckoo and black-faced monarch were considered possible to occur on the basis of habitat suitability (riparian zones and SEVT). For the oriental cuckoo, there are no species records within 20 km of the project site. For the black-faced monarch numerous records exist within 20 km of the project site but none exist within 10 km. Neither of these species were detected incidentally or during dam surveys, roaming surveys, or fixed point count bird surveys. As the oriental cuckoo and black-faced monarch are not considered likely to occur on the project site, the species were not further considered for significant impact assessment. No other migratory species were detected during surveys.

Figure 20: Rufous fantail survey records 2018-2023 and potential habitat

Legend

- Rufous fantail (sighting)
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- Potential habitat
- Potential riparian habitat

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Figure 21: Satin flycatcher survey records 2018-2023 and potential habitat

Legend

- Satin flycatcher (sighting)
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary
- Potential habitat
- Potential modelled habitat (non-remnant)

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Figure 22: Fork-tailed swift survey records 2018 - 2023 and potential roosting habitat

Legend

- Fork-tailed swift (sighting)
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
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- Project boundary

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5.8 Matters of State Environmental Significance

5.8.1 TNT flora species and habitat

The desktop assessment identified eight NC Act-listed TNT flora species that are possible or likely to occur within the project site (Appendix 2). Table 37 summarises results of field surveys for these species.

Table 37 Results of surveys for NC Act listed flora species

Species	EPBC Act status[1]	NC Act status[2]	Survey results
Acacia tingoorensis	-	V	Not detected. Random meanders conducted within various eucalypt woodland communities (RE 11.3.25, 11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3, 11.12.6). Possible in eucalypt communities, especially in the north of the site. Recommend to include this species in pre-clear surveys for threatened flora within the planning corridor.
Austral cornflower (*Leuzea australis* synonym *Rhaponticum australe*)	V	V	Not detected. Random meanders conducted within various eucalypt woodland communities (RE 11.3.25, 11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3, 11.12.6). No known records within 10 km. Possible in areas of heavy clay soils derived from basalt, which occur only in the western corner of the project site. Unlikely in other areas. Further surveys recommended if development proposed in areas of heavy black soils outside of the existing planning corridor. However, no development is currently proposed in these areas of the site (Figure 11).
Austral toadflax (*Thesium australe*)	V	V	Not detected. Random meanders conducted within various eucalypt woodland communities (RE 11.3.25, 11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3, 11.12.6). Queensland Herbarium records from HVR RE 11.3.25 beside Jarail Road, approximately 1 km west of western boundary. Possible in eucalypt communities in damp areas. Within the project site, this habitat is restricted to riparian areas, especially along Boyne River (i.e. RE 11.3.25). Further surveys recommended if development proposed in additional riparian areas outside of the existing planning corridor.
Bailey's cypress (*Callitris baileyi*)	-	NT	**Confirmed.** Random meanders conducted within communities with dry rainforest characteristics (RE 11.8.3, areas of RE 11.12.6 with understorey containing rainforest species). Two individuals detected on boundary of RE 11.8.3 (patch which is now outside the project area). One individual recorded in non-remnant riparian vegetation on creek bank near Glenrocks Road. Likely in dry rainforest communities in rocky hilly areas (but these communities only detected in one small patch in the south-western corner of the project site). Possible in riparian areas with some vine thicket elements. No further surveys recommended as no development proposed in or adjacent to vine thicket habitats.

Species	EPBC Act status[1]	NC Act status[2]	Survey results
Small-leaved denhamia (*Denhamia parvifolia*)	V	V	Not detected. Random meanders conducted within communities with dry rainforest characteristics (RE 11.8.3, areas of RE 11.12.6 with understorey containing rainforest species). Unlikely as very limited dry rainforest habitat present on the site. No further surveys recommended as no development proposed in or adjacent to vine thicket habitats.
Mt Berryman 133hebalium (*Phebalium distans*)	E	E	Not detected. Random meanders conducted within communities with dry rainforest characteristics (RE 11.8.3, areas of RE 11.12.6 with understorey containing rainforest species). Unlikely as very limited dry rainforest habitat present on the site. No further surveys recommended as no development proposed in or adjacent to vine thicket habitats.

[1]EPBC Act status: E – Endangered, V – Vulnerable;

[2]NC Act status: E – Endangered, V – Vulnerable, NT – Near Threatened.

Figure 23 shows the location of Bailey's cypress pine recorded within the project site. Two individuals were observed on the boundary of a vine thicket community (RE 11.8.3) which was previously (but is no longer) within the project area. Other individuals may occur in dry rainforest communities in rocky hilly areas. The only recorded occurrences of the vine thicket community RE 11.8.3 within the site are a 16.3 ha patch outside of the eastern project boundary and a 0.63 ha patch within the south-western project boundary.

One further individual was detected during fauna surveys in spring 2021. This tree was just south of Glenrocks Road in partially cleared riparian vegetation on the bank of Middle Creek, approximately 300 m west of its junction with Boyne River. This site contains very marginal habitat for Bailey's cypress pine but is only 300 m from remnant igneous hillslopes that may contain small unmapped patches of dry rainforest associated with rocky areas. Nevertheless, isolated individuals may occur in riparian areas close to rocky hills, especially in communities containing some vine thicket elements.

Plate 1 Bailey's cypress pine

Figure 23: Bailey's cypress detected during surveys and potential habitat

Legend

- Bailey's cypress pine
- WTG
- Meteorological mast (permanent)
- Meteorological mast (temporary)
- Turbine hardstand
- Access track
- Existing 275kV transmission line
- OHL reticulation
- UG reticulation
- Road
- Infrastructure
- Planning corridor
- Project boundary

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5.8.2 TNT fauna species and habitat

Table 38 summarises the results of surveys for NC Act TNT species potentially occurring within the project site. Species detected on site are all listed as threatened under the EPBC Act in addition to the NC Act and have been discussed in detail in section 5.7.3.

Table 38 Results of surveys for NC Act listed fauna species

Name	EPBC Act status	NC Act status	Survey results
koala *Phascolarctos cinereus*	E	E	**Confirmed** 15 individuals sighted (12 within and 3 adjacent to the project site), 14 scat detections, 7 scratched trees recorded during fauna surveys within the project site. Primarily associated with RE 11.3.25, but food species are also a component of remnant, HVR and non-remnant vegetation (including REs 11.5.20, 11.7.6, 11.11.4, 11.11.15, 11.12.3 and 11.12.6). No further surveys recommended.
greater glider *Petauroides volans*	E	E	**Confirmed** Suitable habitat exists within productive communities on alluvial soils dominated by Queensland blue gum (RE 11.3.25) and tall eucalypt forests. A total of 70 greater gliders were detected during spotlighting surveys within habitats containing REs 11.11.4, 11.11.15, 11.12.3 and 11.12.6, primarily on hill crests. Habitat assessments recorded large hollow-bearing trees in all of these REs, which may provide denning resources. No further surveys recommended.
Corben's long-eared bat *Nyctophilus corbeni*	V	V	Not detected Species or species habitat may occur within project site (DCCEEW 2023a) but no records within 20 km. Harp trapping took place in remnant REs across the project site, including: 11.11.15/11.3.25, 11.12.6/11.11.4 and 11.12.6. Calls of a *Nyctophilus* species were recorded, but probably from *N. geoffroyi* or *N. gouldi* (both common species recorded within 10 km of the project site). Three *N. geoffroyi* individuals were captured at two locations during spring 2021 surveys. Habitat surveys recorded very limited suitable habitat (forest with intact canopy and distinct dense mid stratum). Unlikely to occur within project site. No further acoustic surveys recommended. BBUS describes additional pre-construction monitoring for this and other bat species, including harp-trapping.
spotted-tail quoll *Dasyurus maculatus*	E	E	Not detected Species or species habitat may occur within the project site (DCCEEW 2023a) but nearest recent records are over 20 km south of the site in Bunya Mountains (which contain very different montane habitat). Camera trapping and spotlighting took place in remnant REs across the project site. Habitat surveys recorded very limited suitable habitat. Unlikely to occur within project site. No further surveys recommended.
white-throated needletail *Hirundapus caudacutus*	V	V	**Confirmed** Observed during spring and summer surveys from 2018 to 2023 (n = 232 sightings in total). Forage above most habitats and roost in dense foliage or tree hollows.

Name	EPBC Act status	NC Act status	Survey results
black breasted button quail *Turnix melanogaster*	V	V	Not detected Suitable habitat exists within one small patch of RE 11.8.3 in the south-western corner of the site and records present within 20 km of the site. Not detected during targeted surveys. Possible in small patches of vine thicket on western edge of site. Unlikely elsewhere in site. No further surveys recommended as no development is proposed in or adjacent to vine thicket habitats.
collared delma *Delma torquata*	V	V	Not detected PMST considers species or species habitat likely to occur within project site (DCCEEW 2023a) but the closest Wildnet records are about 20 km south of site in Bunya Mountains (which contain very different montane habitat). Active and opportunistic searches took place in eucalypt woodlands and open forests. Very few sites contained their preferred micro-habitat, exposed rocky outcrops and active searches in these sites did not detect collared delma. Habitat surveys did not record preferred rocky habitat in land zones 3, 9 and 10 (DSEWPaC 2011d). Small areas of scree slopes in land zone 8 and 11 may provide marginal habitat. Unlikely to occur within project site. No further surveys recommended.
glossy black-cockatoo *Calyptorhynchus lathami lathami*	V	V	**Confirmed** Suitable foraging habitat exists in small patches amongst forest and woodland communities across the site. A total of four glossy black-cockatoo individuals were observed, two adjacent to a dam and two in a forested area. Signs of chewings (orts) have been observed in patches of woodland containing *Allocasuarina torulosa*, *A. littoralis, A. luehmannii* and *Casuarina cunninghamiana*. Habitat assessments recorded large hollow-bearing trees in remnant REs, which may provide denning resources. Pre-clear nesting surveys during clearing recommended.
powerful owl *Ninox strenua*	-	V	Not detected Species or species habitat may occur within the project site (PMST 2018, and 16 Wildnet records occur within 20 km of the project site. Suitable prey populations (e.g. greater gliders, squirrel gliders, sugar gliders) occur within the site. There was no response to call playback for this species and no sightings were made during spotlighting surveys. No further surveys recommended.

[1]EPBC Act status: E – Endangered, V – Vulnerable.

[2]NC Act status: E – Endangered, V – Vulnerable.

5.8.3 Special least concern fauna species and habitat

Table 39 summarises the results of surveys for SLC species potentially occurring within the project site.

Table 39 Results of surveys for special least concern NC Act listed species

Name	EPBC Act status	NC Act status	Survey results
short-beaked echidna *Tachyglossus aculeatus*	-	SLC	**Confirmed** Short-beaked echidna occupy a broad range of habitats, including forests, woodlands, heathlands, grasslands, and arid environments. Five Wildnet sightings within 20 km and six sightings of echidna during field surveys.

Name	EPBC Act status	NC Act status	Survey results
satin flycatcher *Myiagra cyanoleuca*	Mi	SLC	**Confirmed** Eucalypt forest and woodlands, at high elevations when breeding. They are particularly common in tall wet sclerophyll forest, often in gullies or along water courses. In woodlands they prefer open, grassy woodland types. During migration, habitat preferences expand, with the species recorded in most wooded habitats except rainforests. Wintering birds in northern Qld will use rainforest – gallery forests interfaces, and birds have been recorded wintering in mangroves and paperbark swamps. DoE (2015) considers 17,000 individuals to be an ecologically significant population.
rufous fantail (*Rhipidura rufifrons*)	Mi	SLC	**Confirmed** Moist, dense habitats, including mangroves, rainforest, riparian forests and thickets, and wet eucalypt forests with a dense understorey. When on passage a wider range of habitats are used including dry eucalypt forests and woodlands and brigalow shrublands. DoE (2015) considers 48,000 individuals to be an ecologically important population.
fork-tailed swift (*Apus pacificus*)	Mi	SLC	**Confirmed** Non-breeding habitat only. Found across a range of habitats, from inland open plains to wooded areas, where it is exclusively aerial. DoE (2015) considers 1,000 individuals to be an internationally significant proportion of the population and 100 individuals to be a nationally significant proportion of the population.
oriental cuckoo (*Cuculus optatus*)	Mi	SLC	Not detected Non-breeding habitat only: monsoonal rainforest, vine thickets, wet sclerophyll forest or open *Casuarina, Acacia* or *Eucalyptus* woodlands. Frequently at edges or ecotones between habitat types. Riparian forest is favoured habitat in the Kimberley region.
black-faced monarch (*Monarcha melanopsis*)	Mi	SLC	Not detected Wet forest specialist, found mainly in rainforest and wet sclerophyll forest, especially in sheltered gullies and slopes with a dense understorey of ferns and/or shrubs.

[1]EPBC Act status: Mi - Migratory;

[2]NC Act status: SLC – Special Least Concern.

5.8.4 Connectivity

The project site occurs within a highly fragmented region with remnant vegetation and HVR occurring within generally small and discontinuous patches. The site occurs within the Banana – Auburn Ranges subregion, which is a fragmented subregion (DES 2013). Large remnant patches occur along the eastern boundary of the site, which extends to vegetation to the north-east of the site and eventually connects to Dangore State Forest to the north. A large patch of vegetation in the western portion connects to vegetation near Kingaroy-Burrandowan Road, which eventually connects to Diamondy State Forest to the west. Linear strips of vegetation provide some connectivity along Kingaroy-Burrandowan Road along the northern boundary of the project site. Riparian vegetation along larger watercourses (e.g. Boyne River, Jumma Creek) provide connectivity along the lower portions of the project site.

Other large vegetation patches occur on hilly topography and are isolated by cleared lower slopes and valleys.

A state significant biodiversity corridor is mapped to the south-west of the project site and connects the Bunya Mountains and Diamondy State Forest. Few patches of vegetation are captured by this biodiversity corridor within the site and all occur along the south-western boundary. Connectivity from the project site to the Bunya Mountains is limited and is intersected by the Bunya Highway.

5.8.5 Wetlands and watercourses

The map of referable wetlands does not identify any wetland protection areas or wetlands of high ecological significance within the site or surrounding area. Wetlands recorded during field surveys in November 2018 included:

- seasonal and semi-permanent pools scattered along major watercourses
- a few small ephemeral seepages probably fed by minor broken rock aquifers
- numerous farm dams used for stock watering throughout the site.

Riparian wetlands supported some aquatic flora species but were heavily degraded by weeds such as *Lantana camara*, *Megathyrsus maximus*, *Heliotropium amplexicaule*, *Eragrostis curvula*, *Xanthium occidentale*, *Dolichandra unguis-cati* and *Vachellia farnesiana*. Most riparian areas also showed signs of frequent intense fires and minor to moderate streambank erosion. Nevertheless, these areas provide habitat for fauna species and are likely to be used as refuges during extended dry periods and corridors for fauna moving between remnant habitat blocks.

Several small seepages were recorded in the site during the spring surveys, probably due to storms in the week preceding field surveys. No seepages contained open water or supported specialist aquatic flora at the time of survey, so are unlikely to contribute significantly to habitat values within the site.

The site contains numerous farm dams that provide drinking water for cattle. Some dams support a limited variety of aquatic and semi-aquatic flora species, such as *Nymphoides*

indica, *Typha orientalis*, *Phragmites australis*, *Juncus usitatus*, *Eleocharis cylindrostachys*, *Schoenoplectus validus* and *Centella asiatica*. Farm dams supply limited habitat for waterbirds and frogs and are likely to provide drinking water for a range of native species, including glossy black-cockatoos.

Excluding pools along watercourses, no natural wetlands with open water were recorded within the site. One shallow wetland was observed just east of Greystonlea Road about 500 m north of the site boundary. In spring 2018 it was about 1 ha in size and provided habitat for a variety of waterbirds, including yellow-billed spoonbill (*Platalea flavipes*). It was dry in autumn 2019 (even after substantial rainfall recorded during the autumn survey) so this area only provides ephemeral wetland habitat.

5.9 Areas of biodiversity significance

The project site is mapped as predominantly containing areas of regional and local biodiversity significance on the Biodiversity Planning Assessment (BPA) mapping for the Brigalow Belt Bioregion and the SEQ Bioregion.

Areas of regional significance are found mainly in the eastern portion of the project site, clustered around the Boyne River. These areas are identified as having regional significance as they contain an ‘of concern’ RE. Areas of local significance are identified as all remaining areas of ‘least concern’ RE vegetation. Areas of state significance occur to the south of the project site as they form part of a state significant biodiversity corridor.

5.10 Level one avian risk investigation

Results of the BBUS for the project site incorporating a level one avian risk assessment are provided in a separate report (Ecosure 2023a).

6 Impacts of proposed project

6.1 Summary of impacts

This section provides a summary of the potential impacts to ecological values that may be caused by the construction and/or operation of the project.

The development process for wind farms occurs gradually over time as new data is gained and analysed and solutions are developed to overcome resource, engineering, environmental and social issues. In practical terms, this means that the locations of WTGs, construction pads, cable routes and tracks may change, but within a defined corridor. This process is termed 'micro-siting' and allows for small changes to the project design to overcome site constraints.

The planning corridor is the area for all infrastructure and development to occur within the project site and contains the clearing footprint. The current clearing footprint shown in Figure 2 represents the maximum disturbance footprint of the project, with the flexibility to move this via micro-siting within the planning corridor. The planning corridor contains a maximum clearing footprint of 1,062.12 ha.

6.1.1 Construction impacts

The construction of a wind farm has the potential to result in significant impacts to ecological values such as:

- direct impacts
  - loss of vegetation communities (remnant and HVR)
  - loss of habitat for fauna (which may include remnant, HVR and non-remnant vegetation)
  - loss of habitat for threatened flora and fauna species and migratory species
  - fragmentation of vegetation through construction of tracks and powerlines
  - unintentional injury and mortality of animals through habitat clearance and collision with construction traffic
- indirect impacts
  - introducing and spreading weeds and pathogens and facilitating pest animal movement into new areas
  - contributing to erosion and sediment loss into receiving catchments
  - generating dust from construction activities.

Direct impacts

In determining the potential loss of vegetation and habitat from construction activities, the following assumptions have been made:

- WTG locations and associated hardstand areas are provided in the current planning corridor layer
- proposed access tracks and existing tracks to be upgraded are:
  - designed using detailed contour data (to avoid steep terrain), waterways (to avoid areas within 50 m of waterways where possible) and roads (to minimise ingress / egress points onto public roads), supported by site visits to refine designs
  - contained within the planning corridor to allow for micro-siting of access tracks
  - powerlines from WTGs to the substation will generally be underground and contained within the proposed planning corridor (although some overhead powerlines will be required)
- larger infrastructure zones will be required in some areas to accommodate associated infrastructure (e.g. temporary construction facilities, permanent operation and maintenance facilities, substation and switching yard)
- minor clearing and road-widening along a transport route from Brisbane Port to the project site (as described in icubed 2022 and Ecosure 2022).

Construction of access tracks, WTGs and supporting infrastructure will likely exacerbate impacts to connectivity by:

- creating wider gaps within vegetation patches or creating new gaps
- increasing edge effects
- further facilitating introductions of pest animals and weeds into new patches.

Impacts of the project will be addressed in accordance with the impact minimisation hierarchy to:

- firstly avoid, then minimise, then mitigate any potential impacts on ecological values
- compensate (i.e. offset) any significant residual impacts.

Where possible, the location of supporting infrastructure for WTGs have been sited to avoid impacts to significant vegetation. Furthermore, where possible impacts will be minimised through micro-siting and through the detailed design phase. The potential impacts of proposed infrastructure are likely to present a maximum extent of clearing and are anticipated to be reduced by ongoing refinement in the design and micro-siting of infrastructure.

Indirect impacts

Indirect impacts of the project may include impacts to surface water quality, dust generation and introduction and spread of weeds and pest animals. Surface water quality has the potential to be affected during exposure of topsoil and subsoils which are then transported into downstream receiving environments from rainfall events. Generally, these impacts include increases in turbidity (from suspended solids) and mobilisation of pollutants (e.g. fuels, oils, rubbish). Generation of dust has the potential to coat vegetation and, in severe cases, interrupt photosynthetic processes leading to reduced plant growth or mortality. Vehicles, equipment

and machinery can introduce and spread weed propagules. Disturbances caused by construction activities can also promote pest plant and animal invasions.

6.1.2 Operational impacts

Impacts through the operational phase of the project primarily relate to the potential injury or mortality of birds and bats from WTG blade strike or barotrauma (the sudden change in pressure experienced by small animals that can damage the lungs) from the motion of WTG blades. Other operational impacts include erosion of soils from tracks, powerline easements and WTG pads, accidental wildlife collisions by operational traffic and the introduction and spread of weeds from movement of vehicles, equipment and machinery.

6.2 Impacts on flora and vegetation

6.2.1 Clearing of vegetation

There is one small patch of SEVT (RE 11.8.3) on the western edge of the site (Figure 9). Although not determined to meet all criteria as a TEC community, this community will not be impacted by the project as the current planning corridor is over 450 m from the patch.

The maximum area of remnant vegetation to be cleared under the current design are summarised in Table 40 and mapped in Figure 9. Up to 16.98 ha of remnant vegetation, may be cleared for construction and operational works within the clearing footprint.

HVR vegetation has been avoided in the design phase, and no HVR vegetation occurs within the planning corridor. When compared to equivalent RE communities within the project site, these areas represent only 1.51% of remnant vegetation within the site. When compared to all ground-truthed REs in the project site the proposed works will clear only 1.03% of remnant/HVR vegetation within the site. Vegetation that may be cleared is comprised of least concern REs only. No of concern or endangered REs, or TECs, will be impacted.

Table 40 Impact of project infrastructure on remnant vegetation

RE	VM Act status	Total clearing within clearing footprint (ha)	Total site (ha)	% of total project site
Remnant RE Map				
11.11.4	Least concern	0.43	462.86	0.09%
11.11.15/11.3.25	Least concern	4.53	456.05	0.99%
11.12.6	Least concern	0.44	11.97	3.68%
11.12.6/11.11.15	Least concern	10.82	58.52	18.49%
11.12.3/11.7.6	Least concern	0.75	103.54	0.72%
11.12.3	Least concern	0.01	33.54	0.03%
Total (equivalent REs)		**16.98**	**1,126.48**	**1.51%**
Total (all REs)		**16.98**	**1,652.44**	**1.03%**

6.2.2 Threatened flora impacts

Based on the desktop assessment and field surveys, three EPBC Act-listed species may potentially occur within the project site (wandering peppercress, Austral toadflax, and Austral cornflower).

The current design may remove up to 15.28 ha of potential habitat for wandering peppercress and Austral toadflax within the clearing footprint. Ongoing refinement of infrastructure design is expected to reduce impacts to riparian vegetation by:

- utilising existing farm tracks for watercourse crossings wherever possible
- reducing clearing widths at watercourse crossings
- minimising other infrastructure within riparian zones.

Austral cornflower may potentially occur in woodlands on heavy clay soils derived from basalt, which were detected only in the eastern and western edge of the project site. As these areas are outside the planning corridor, this species is highly unlikely to be impacted by the project.

Table 41 summarises areas of potential habitat for threatened flora species that may be impacted by proposed infrastructure.

Table 41 Impact of project infrastructure on threatened flora habitat

Species	Potential habitat	Maximum proposed clearing within clearing footprint (ha)	Total habitat within project site (ha)	% of total habitat within project site
Wandering peppercress	Remnant/HVR RE 11.3.25 Riparian areas: 100 m corridor around stream order 3 and 4 watercourses and 200 m corridor around stream order 5 and 6 watercourses	15.28	980.19	1.55%
Austral toadflax	Remnant/HVR RE 11.3.25 Riparian areas: 100 m corridor around stream order 3 and 4 watercourses and 200 m corridor around stream order 5 and 6 watercourses	15.28	980.19	1.55%
Austral cornflower	Woodlands on soils derived from basalt (land zone 8)	0	0.6	0%
Bailey's cypress	Dry rainforest communities in rocky hilly areas and vine thicket habitats	0	0.63	0%

6.3 Impacts on fauna and habitats

6.3.1 Construction impacts

The impacts of construction works on fauna and fauna habitats will primarily involve the loss of native habitats and habitat features that provide specialised shelter or foraging resources

such as hollow-bearing trees (nesting and denning resources for birds and arboreal mammals), woody debris (shelter habitat for reptiles), flowering/fruiting species (food resources for a variety of species) and structurally complex vegetation (shelter habitat for small birds). Impacts to fauna may therefore include:

- removal of foraging habitat (e.g. primary and secondary food trees for koala)
- removal of hollow-bearing trees (e.g. nesting hollows for greater gliders)
- removal of hollow logs and coarse woody debris
- removal of potential and active breeding sites
- death or injury to fauna during clearing
- fauna collisions with construction vehicles
- fragmentation of habitat areas and movement corridors
- facilitating introduction of pest plants and animals into new areas.

6.3.2 Operational impacts

Operational impacts from the proposed development primarily relate to the potential for birds and bats to strike, or suffer barotrauma from, WTG blades. Other impacts may include:

- spread of pests from project infrastructure and movement of vehicles and machinery
- ongoing disturbance to wildlife (e.g. avoidance of habitat adjacent to WTGs)
- fauna collisions during operational vehicle movements.

A risk assessment to WTG strike for birds and bats has been included in the BBUS (Ecosure 2023).

6.3.3 General threatened fauna impacts

The project site contains potential habitat for six EPBC Act listed threatened fauna species: koala, greater glider, grey-headed flying fox, glossy black-cockatoo, white-throated needletail and black-breasted button-quail. Potential impacts on habitat for these species are summarised in Table 42 and further detailed in Sections 6.3.4, 6.3.5, 6.3.6, 6.3.7 and 6.3.8.

Table 42 Impact of project infrastructure on threatened fauna habitat

Species	Potential habitat	Maximum proposed clearing within clearing footprint (ha)	Total habitat within project site (ha)	% of total habitat within project site
koala	Remnant/HVR REs containing koala food trees Non-remnant vegetation with -woody vegetation foliage projective cover > 125 and mapped as pre-clear REs containing koala food trees	186.03 (16.98 remnant, 169.05 non-remnant)	5,833.99 (1,651.8 remnant/HVR, 4,182.19 non-remnant)	3.19%

Species	Potential habitat	Maximum proposed clearing within clearing footprint (ha)	Total habitat within project site (ha)	% of total habitat within project site
greater glider	Remnant/HVR REs 11.3.25, 11.11.4, 11.11.15, 11.12.3 and 11.12.6	16.98	1,651.8	1.03%
grey-headed flying fox	Remnant/HVR REs containing foraging habitat. Non-remnant vegetation containing foraging habitat.	186.03 (16.98 remnant, 169.05 non-remnant)	5,834.62 (1,652.43 remnant/HVR, 4,182.19 non-remnant)	3.19%
glossy black-cockatoo	Remnant/HVR REs containing foraging and nesting habitat.	16.98	1,651.8	1.03%
white-throated needletail	Roosting habitat: Remnant/HVR REs	16.98	1,652.43	1.03%
black-breasted button-quail	Remnant/HVR RE 11.8.3	0	0.63	0%

6.3.4 Impacts to koalas

Surveys detected 15 koala sightings (12 within and 3 adjacent to the project site) and a further 21 koala signs (koala scats and scratches) in vegetation containing Queensland blue gum (RE 11.3.25) and narrow-leaved ironbark (REs 11.5.20, 11.11.4, 11.11.15 and 11.12.3). Eight koala food tree species were recorded during surveys (Table 35).

The current project design will remove up to 186.03 ha of modelled koala habitat (16.98 ha of remnant vegetation and 169.05 ha within non-remnant areas) within the clearing footprint for the construction of project infrastructure (Table 42, Figure 14).

Operational activities may increase the risk of vehicle strike, especially vehicle movements when koalas are most active (e.g. at night and in the lead up to the breeding season from July to September).

6.3.5 Impacts to greater gliders

Nocturnal spotlighting surveys detected 70 greater gliders within and adjacent to the project site. Gliders were distributed across numerous areas of remnant and HVR forest (REs 11.3.25, 11.11.4, 11.11.15, 11.12.3 and 11.12.6) throughout the project site, primarily on hill crests (Figure 16).

Approximately 16.98 ha of potential habitat for greater glider will be cleared within the clearing footprint for the construction of project infrastructure (Table 42, Figure 16). In addition to the impacts of habitat loss, fragmentation of remnant habitat patches by clearing areas greater than 50 m wide will likely force gliders to traverse across the ground increasing their susceptibility to predation (Taylor and Goldingay 2014).

Operational activities are unlikely to directly impact significantly on greater gliders.

6.3.6 Impacts to grey-headed flying-fox

The spring 2021 surveys observed grey-headed flying-fox foraging on flowering eucalypts within the site. Potential grey-headed flying-fox foraging habitat was modelled as the ground-truthed extent of remnant and HVR vegetation containing flowering eucalypt species and non-remnant areas modelled as containing habitat suitable for koala (Figure 17). There are no known camps within the project site or within 20 km of the site.

The current project design will remove up to 186.03 ha of modelled foraging habitat within the clearing footprint for the construction of project infrastructure (Table 42, Figure 17).

Operational impacts to grey-headed flying-fox are likely to be limited to direct strike if travelling within the RSA, particularly during seasons when vegetation is in flower and fruit.

6.3.7 Impacts to glossy black-cockatoo

Surveys sighted four adult birds and detected orts in 21 locations, confirming glossy black-cockatoos utilise the site for feeding habitat. Several remnant patches and non-remnant areas of vegetation contain *Allocasuarina* and *Casuarina* species. Habitat for glossy black-cockatoo occurs within numerous vegetation communities, including REs 11.5.20, 11.11.4, 11.11.15, 11.12.3, and 11.12.6 (Figure 18).

Up to 16.98 ha of potential habitat for glossy black-cockatoo will be cleared within the clearing footprint for the construction of project infrastructure (Table 42).

Operational activities have the potential to impact glossy black-cockatoos through direct strike if travelling within the RSA or disturbance to nesting behaviour if WTG is located adjacent to a nesting location. No glossy black-cockatoo nesting locations are currently known within the project site.

6.3.8 Impacts to white-throated needletail

A total of 232 white-throated needletails were recorded flying above non-remnant vegetation across all of the spring 2018, spring 2021, and summer 2022, spring 2022, and summer 2023 bird surveys (Figure 19). White-throated needletail group sizes ranged from one individual to flocks of approximately 50 birds, with the higher numbers observed during summer storms. In any one survey period, the total number of white-throated needletail sightings ranged from one to 191 sightings (Table 30). Recent counts in Australia range from single birds to flocks of hundreds (DoE 2015).

The large number of sightings over the summer 2023 survey period may include repeated sightings of the same individuals. Throughout the six-day survey, conditions were ideal for feeding for this species, with multiple weather fronts passing through generating updrafts which would carry insects to feeding height. It is possible that the ideal feeding conditions encouraged the same flock to remain in the area, resulting in a high number of sightings in

total (n = 191), but not necessarily meaning that 191 individual birds were seen during the survey. The largest number of white-throated needletails observed at any one time was approximately 50, so we can conclude that at least 50 individual white-throated needletails were sighted during the survey period.

Repeated sightings are valuable for understanding bird utilisation in the project site, but must be kept in mind when considering estimates of the number of individual birds which may experience impacts from the project. The draft referral guidelines for 14 bird species listed as migratory species under the EPBC Act (DoE 2015) considers 100 individuals to be an internationally significant proportion of the population and 10 individuals to be a nationally significant proportion of the population. The project site is therefore known to contain nationally significant populations of white-throated needletail.

Studies using geolocators have shown that white-throated needletails move up and down the eastern coast of Australia and the Great Dividing Range and are capable of moving up to 900 km in a 24-hour period (Yamaquchi et al. 2021). Within Australia the area of occupancy of white-throated needletail is greater than 20,000 km^2.

White-throated needletail are almost exclusively aerial in Australia, but have been recorded roosting in dense foliage or tree hollows (Tarburton 1993, TSSC 2019). Up to 16.98 ha of potential roosting habitat for white-throated needletail will be cleared within the clearing footprint for the construction of project infrastructure (Table 42, Figure 19), however no roosting activity has been observed on site. Construction activities are unlikely to impact significantly on feeding habitat, as this species is an aerial forager.

Potential operational impacts include blade strike when flying and foraging at RSA height and disturbance of foraging habitat for white-throated needle-tail caused by the WTG operations. Habitat disturbance will be minimised by micro-siting WTGs as far away as practicable from remnant vegetation. Blade strike issues are assessed and discussed in more detail in the BBUS (Ecosure 2023a). White-throated needletail are known to collide with WTGs in Australia (Hull et al. 2013; Tarburton 2021). As they also fly before and after daylight hours, Tarburton (2021) noted that they are at a greater risk of strike. Observations of white-throated needletail at the project site have ranged between morning (7:30 am, 9:30 am), noon (11:55 am) and evening (5:20 pm).

6.3.9 Impacts to migratory species

Surveys detected four migratory species listed under the EPBC Act – white-throated needletail (discussed in Section 6.3.8 as it is also listed as vulnerable), rufous fantail (Figure 20), satin flycatcher (Figure 21), and fork-tailed swift (Figure 22). The rufous fantail, satin flycatcher, and fork-tailed swift are listed as SLC under the NC Act and the white-throated needletail is listed as vulnerable under the NC Act.

Rufous fantail

Three rufous fantails were observed in areas of eucalypt forest with an understorey of shrubs and/or vine thicket species (Figure 20). Up to 27.72 ha of potential habitat for rufous fantail

will be cleared for the construction of project infrastructure. This is approximately 0.11% of potential habitat for the rufous fantail within the project site.

Potential operational impacts include blade strike if flying and foraging at RSA height and disturbance from WTGs to habitat used for foraging or roosting. However, the rufous fantail is considered a low risk of collision with WTGs as it generally flies below RSA height between patches of habitat (Ecosure 2023a). While mortality as a result of blade strike is not likely, behavioural disturbance from WTGs may occur during operation (Marques et al. 2021).

DoE (2015) considers 15,000 individuals to be an internationally significant proportion of the north-eastern rufous fantail population and 1,500 individuals to be a nationally significant proportion of the population. DoE (2015) also defines a threshold level of 340 km^2 for a nationally significant area of important habitat for the north-eastern rufous fantail.

Satin flycatcher

Three satin flycatchers were observed, one in eucalypt forest with a grassy understory approximately 20 m west of the Boyne River, one in remnant eucalypt woodland to the east of the project site and one in non-remnant woodland in the north of the project site (Figure 21). The current project design will remove up to 186.03 ha of potential habitat for the satin flycatcher (16.98 ha of remnant vegetation and 169.05 ha within non-remnant areas) for the construction of project infrastructure. This is approximately 17.5% of potential habitat for the satin flycatcher within the project site.

Potential operational impacts include blade strike if flying and foraging at RSA height and disturbance from WTGs to habitat used for foraging or roosting. However, as satin flycatchers are arboreal feeders and generally forage in the canopy and subcanopy, rarely flying above the canopy the species is considered a low risk of collision with WTGs as it will generally fly below RSA height between patches of habitat (Ecosure 2023a). While mortality as a result of blade strike is not likely, behavioural disturbance from WTGs may occur during operation (Marques et al. 2021).

DoE (2015) considers 17,000 individuals to be an internationally significant proportion of the satin flycatcher population and 1,700 individuals to be a nationally significant proportion of the population. DoE (2015) also defines a threshold level of 440 km^2 for a nationally significant area of important habitat for the satin flycatcher.

Fork-tailed swift

Surveys recorded two fork-tailed swifts during summer 2023 fixed point count bird surveys. The sightings occurred over open woodland and grassland in the east of the project site.

In Australia, fork-tailed swifts are believed to be exclusively aerial, roosting on the wing and flying at heights up to 1,000 m above the ground (DoE 2015). The species migrates to Australia in October and November and departs in April to breed in east Asia (DoE 2015). Fork-tailed swifts occur mostly over inland plains, but are also seen above vegetated areas, coastal habitats and urban environments, where they forage ahead of storm fronts to feed on aerial insects (DCCEEW 2023b).

Fork-tailed swifts have only been observed aerially and none were observed roosting across the project site. Construction impacts are not considered for this species as the project site is highly unlikely to provide roosting habitat, as they forage aerially and roost on the wing.

Potential operational impacts include blade strike if flying and foraging at RSA height and disturbance of foraging habitat caused by the WTG operations.

6.4 Transport route impacts

The proposed project will require transport of turbine infrastructure (including blades up to 90 m long) along a transport route from Brisbane Port to the project site (icubed 2023). While the majority of the route follows major roads, some minor clearing and road-widening may be required at some intersections and small sections of Ironpot Road (on the southern edge of the project site). The areas of the transport route that fall within the project site and planning corridor, have been included in this assessment of impacts.

An ecological assessment of the proposed transport route (Ecosure 2023) concluded that the small extent of clearing associated with the transport route outside of the project site was unlikely to result in a significant impact or increase the cumulative impact of the project on any MNES or MSES.

7 Recommended mitigation measures

Impacts will be managed in accordance with the impact minimisation hierarchy to firstly avoid, then minimise, then mitigate any potential impacts on ecological values.

7.1 Avoidance of impacts

Most impacts to ecological values have been avoided through siting of infrastructure away from sensitive values. This includes the placement of WTGs and tracks away from regulated vegetation and watercourses as far as possible. As detailed design progresses, micro-siting of infrastructure will be implemented to avoid important habitat features such as hollow-bearing trees and food trees, where possible.

The project site was reduced during project redesign to avoid large patches of remnant and HVR vegetation to the east of the site. Additionally, the current planning corridor will avoid the largest, most intact patches of vegetation along the eastern boundary and in the north west section of the site. The current design will remove up to a maximum of 16.98 ha of ground-truthed vegetation, comprising 16.98 ha of remnant REs (Table 40, Figure 9). This clearing represents 1.03% of the total remnant and HVR vegetation in the project site. As the project design progresses, all practicable efforts will be made to avoid impacts to vegetation communities and fauna habitats, including seasonal impacts to flora and fauna.

No TECs will be cleared or disturbed by the proposed development.

Pre-clearance surveys are recommended at varying stages before and during construction, including:

- walk-through assessment:
  - pre-clear surveys and assessments to identify the potential presence of threatened flora and fauna within all significant habitats to be disturbed
  - can occur months before any clearing or construction commences (e.g. as part of the infrastructure siting and layout process) and generally cover the area proposed to be disturbed as well as a buffer to allow micro-siting of infrastructure to occur
- pre-clear survey:
  - surveys and assessments to identify the presence of constraints and sensitive areas (including flora and fauna, threatened and otherwise) within a proposed clearing footprint and vicinity
  - generally undertaken within about seven days prior to clearing, but no later than 24 hours prior to clearing
  - identify and mark potential animal breeding places and hollow-bearing trees
- fauna spotter-catching:
  - assessments undertaken just prior to clearing, to identify whether fauna is present that needs to be left in situ and avoided, or relocated, whether habitat

trees, breeding or foraging places are being utilised, or to identify other features need to be retained and or works rescheduled

- also undertaken during all habitat clearing works (e.g. trees, shrubs, earthen banks, built infrastructure, waterbodies or grassed areas) to check habitat for presence of fauna, relocate fauna where feasible and take relocated and/or injured fauna to a qualified carer if required.

7.2 Minimisation of impacts

Where avoidance of an impact is not possible, impacts may be minimised by redesign and/or relocation of infrastructure or low impact construction methods. Impacts to ecological values may be minimised through various strategies including:

- siting of infrastructure in areas that have already been cleared
- siting of infrastructure on the edge of vegetation patches to reduce fragmentation
- micro-siting the location of access tracks and other infrastructure based on the results of pre-clear flora and fauna surveys
- reconfiguring infrastructure to minimise the amount of vegetation impacted (e.g. elongating pad dimensions may be possible on some sites)
- upgrading existing farm tracks for construction traffic to minimise the amount of vegetation requiring removal and reducing fragmentation (compared with clearing required for new tracks)
- minimising track width where possible
- minimising the width of new and upgraded tracks within sensitive habitats such as stream crossings or through remnant/HVR vegetation
- retaining the ground stratum and top soil (e.g. by trimming trees and woody shrubs) may be possible in some areas (e.g. adjacent to tracks and watercourse crossings) rather than ground disturbance works in order to retain soil structure and prevent erosion
- retaining large hollow-bearing trees that provide important nesting habitat for threatened species (e.g. greater glider or glossy black-cockatoo) where possible
- demarcation of clearing boundaries and designation of areas outside clearing boundaries as “no go” zones to avoid accidental damage to adjacent vegetation
- pre-clear surveys to identify habitat features before clearing commences and allow development of an appropriate tree removal procedure if required
- developing a traffic management plan to minimise damage to sensitive ecological areas and injury/mortality of fauna
- presence of a fauna spotter catcher during habitat clearing works (e.g. trees, shrubs, earthen banks, built infrastructure, waterbodies or grassed areas) to detect fauna and conduct appropriate capture and release methods
- avoiding seasonal foraging or breeding seasons of threatened fauna where possible

- protecting trees adjacent to work sites in accordance with the recommendations of a suitably qualified arborist.

7.3 Mitigation of impacts

After impacts have been avoided and minimised as far as practicable, remaining impacts will be mitigated. Mitigation strategies may include:

- rehabilitating disturbed areas following completion of construction activities such as temporary WTG construction pads, laydown areas and other infrastructure (site office, substations) or removal of temporary infrastructure
- rehabilitating unused verges of tracks within sensitive habitats following construction
- protection and potential restoration of any vegetation corridors that may facilitate the long-term survival and dispersal of the threatened flora and fauna species identified in this assessment
- development of appropriate environmental management procedures in a construction environmental management plan (e.g. erosion and sediment control, dust suppression, weed and pest animal management, offsite rubbish disposal)
- installation of wildlife movement or nesting furniture or structures (e.g., glider poles, koala crossings, nest boxes for unavoidable loss of hollows).

Aerial fauna that fly at RSA height may be killed by blade strike or barotrauma. The following mitigation of impacts should be considered to mitigate turbine strike:

- Where possible micro-site WTGS to maximise separation from the edges of remnant vegetation.
- Maintain the RSA height at no less than 60 m above ground height.
- An adaptive management and monitoring program to assess the effectiveness and implementation of controls as required.

Fauna may also be injured or killed by vehicles travelling within the project site during construction and operational stages. A traffic management plan for the project should incorporate measures to reduce the risk of collisions with vehicles including:

- limiting vehicle traffic to authorised tracks and roads
- avoid travel at night and minimise travel at dawn and dusk, where possible
- minimise the number of vehicles by using buses to transport construction staff around site
- enforcing strict speed limits and fauna safe behaviour through signage and staff training.

Generic minimising and mitigating strategies are provided in Table 43.

Table 43 Potential impacts to ecological values and recommended mitigation measures

Potential impact	Recommended mitigation measures
Removal of habitat	Set clear boundaries for clearing works. Keep clearing footprints to a minimum. Where possible, remove limbs from trees rather than entire trees (e.g. adjacent to tracks and waterway crossings). Avoid removal of significant vegetation communities (e.g. SEVT).
Declines in threatened species populations	Avoid vegetation clearing where previously cleared areas in the project site are available for the location of infrastructure. Avoid removal of critically important features of threatened species habitats (e.g. large hollow-bearing trees for greater gliders) where possible. Use fauna spotter catchers to identify and, if necessary, relocate threatened fauna before clearing works. Clearing should be completed in a sequential manner to allow fauna to first self-relocate. Establish temporary exclusion fencing to minimise entrapment, injury and/or mortality of fauna in sensitive areas during construction, where possible. Implement the Tarong West Preliminary Vegetation Management Plan (Ecosure 2023b) to address potential impacts of construction on flora and vegetation communities. Implement Tarong West Preliminary Fauna Management Plan (Ecosure 2023c) to address potential impacts of construction on fauna and habitat. Develop a traffic management plan that includes measures to minimise impacts of construction on fauna and sensitive environmental areas. Implement the Tarong West Preliminary Bird and Bat Management Plan (BBMP) (Ecosure 2023d) to address potential impacts of WTG operation on aerial species.
Erosion of waterways	Best Practice Erosion and Sediment Control Guidelines (International Erosion Control Association [IECA] 2008) should be followed to prevent off-site impacts to downstream receiving environments.
Removal of hollow-bearing trees or logs	Where possible, logs and hollow limbs cleared during construction should be placed in adjacent vegetation, so they can be used for habitat.
Removal of potential and active breeding sites	Fauna spotter catcher to undertake pre-clear survey to identify habitat features and potential breeding sites prior to clearing works so that eggs or young can be removed and taken to qualified carer. A Queensland approved Species Management Plan high risk of impacts should be implemented for potential impacts to the breeding places of threatened and colonial breeding species confirmed or considered likely to occur on the project site.
Death or injury to fauna	Fauna spotter catcher to check all habitat prior to and during clearing. Fauna spotter catcher should also check creeks and drainage lines for frogs and aquatic fauna prior to any proposed works in waterways. Have contact details of qualified carer to take any fauna injured or orphaned during works for rehabilitation. Develop a traffic management plan that includes measures to minimise impacts of construction on fauna including: · designated access routes · restricting vehicle traffic to daylight hours where possible. · enforcing strict speed limits.
Spread of weeds	Restricted weed species must be treated prior to construction commencing using an appropriate control technique. Reasonable control would include treating individual plants with a registered herbicide, which must be applied by an experienced and licenced weed control contractor. Ensure all plant conduct washdowns prior to entering site.

Potential impact	Recommended mitigation measures
Spread of pest animals	Restricted pest animals must be managed to minimise biosecurity risks. During construction and operation, rubbish and food waste should be appropriately stored and disposed off-site to minimise attracting foxes, wild dogs and pigs. Contributing to existing landholder and local government control programs for foxes, wild dogs and pigs may be beneficial to reduce impacts on native ecosystems and infrastructure (e.g. watercourse crossings, fences) and enhance community engagement.

Offsets will be developed to compensate for any significant residual impacts that remain after implementing all practicable measures to avoid, minimise and mitigate impacts. RES Australia Pty Ltd has purchased a property contiguous with the project site to be dedicated for use as land-based environmental offsets. The management of this offset will be subject to a future management plan required under a future Approval.

8 MNES (EPBC Act) significant impact assessment

8.1 Threatened ecological communities

No impacts are proposed to occur in or adjacent to the SEVT TEC (RE 11.8.3). Therefore, no further assessment of impacts will be completed for this TEC.

8.2 Threatened species assessments

The MNES Significant Impact Guidelines 1.1 (DoE 2013a) provide criteria to assess whether a proposed action will have, or is likely to have, a significant impact on threatened species. Criteria for vulnerable and endangered species are listed in Table 44.

Table 44 Significant impact criteria for vulnerable and endangered species under the EPBC Act

Vulnerable species	Endangered species
Lead to a long-term decrease in the size of an important population of a species	Lead to a long-term decrease in the size of a population
Reduce the area of occupancy of an important population	Reduce the area of occupancy of the species
Fragment an existing important population into two or more populations	Fragment an existing population into two or more populations
Adversely affect habitat critical to the survival of a species	Adversely affect habitat critical to the survival of a species
Disrupt the breeding cycle of an important population	Disrupt the breeding cycle of a population
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Result in invasive species that are harmful to an endangered species becoming established in the endangered species' habitat
Introduce disease that may cause the species to decline	Introduce disease that may cause the species to decline
Interfere substantially with the recovery of the species	Interfere with the recovery of the species

This section identifies whether the project is likely to result in a significant impact to any EPBC Act listed species.

When assessing the significance of an action on a vulnerable species, it is necessary to define whether an 'important population' of the species occurs or could potentially occur within the project site. An important population is defined as one that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans,

and/or that are:

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

Table 45 provides an assessment of important populations for vulnerable species that are known, likely or possible to occur within the project site. Wandering peppercress, koala and greater glider are not included in this assessment as the use of 'important population' is not used for endangered species.

Table 45 Assessment of important populations for vulnerable species

Species	Key source population	Maintaining genetic diversity	Limit of the species' range	Important population
Austral cornflower	No. The species was not detected despite searches within suitable habitat areas. Suitable habitat on heavy clay soils is restricted to small areas on the eastern and western edge of the project site, which will not be disturbed by the proposed development.	No. There are many records of the species within the wider region. Much of the vegetation within the project site is fragmented and isolated, which limits genetic exchange.	No. The project site occurs within the central portion of the species range (Allora (north of Warwick) to Callide (north-west of Biloela).	No
Austral toadflax	Unlikely. The species was not detected despite searches within suitable habitat areas. Suitable habitat within the site is likely to be limited to riparian areas.	No. There are many records of the species within the wider region. Much of the vegetation within the project site is fragmented and isolated, which limits genetic exchange.	No. The species extends form Carnarvon Gorge to Victoria.	No
black breasted button quail	No. There are extensive areas of vegetation surrounding the project site, which are likely to provide similar habitat values.	No. There are many records of the species within the wider region. Suitable SEVT habitat within the project site is fragmented and isolated, which limits genetic exchange both across the site and in the broader landscape.	No. The project site is not at the limit of the species' range.	No
grey-headed flying-fox	No. There are no known camps within proximity of the project site.	No. The grey-headed flying-fox is a highly mobile species, ranging up to 50 km a night from camps.	No. Although most of the population occurs along the coastal fringe, the species ranges further west to Chinchilla, Taroom and beyond.	No

Species	Key source population	Maintaining genetic diversity	Limit of the species' range	Important population
glossy black-cockatoo	No. There are extensive areas of vegetation surrounding the project site which are likely to provide similar habitat values.	No. There are many records of the species within the wider region. Much of the vegetation within the project site is fragmented and isolated, which limits genetic exchange.	No. The project site is not at the limit of the species' range.	No
white-throated needletail	Yes. One six day survey in summer 2023 recorded up to 191 bird sightings and flocks of approximately 50 birds, which is regarded as a nationally important population (DoE 2015).	No. There are many records of the species within the wider region. The species does not breed within Australia.	No. The species occurs throughout eastern and south-eastern Australia from late spring to early autumn.	Yes

Habitat critical to the survival of the species is further defined as areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species (including the maintenance of species essential to the survival of the species, such as pollinators)
- to maintain genetic diversity and long term evolutionary development
- for the reintroduction of populations or recovery of the species.

8.3 Threatened flora species

Targeted searches in potential habitat did not detect any EPBC Act-listed flora species.

The vulnerable Austral cornflower may potentially occur in woodland communities on heavy clay soils, which occur only in the western edge of the project site. The proposed development will avoid these areas, so will not impact on potential habitat for Austral cornflower.

The vulnerable Austral toadflax and endangered wandering peppercress can grow in remnant and non-remnant woodlands and grasslands within riparian areas, so clearing of riparian habitat could impact potential habitat for these species.

8.3.1 Austral toadflax

A formal impact assessment for the Austral toadflax listed as vulnerable under the EPBC Act is provided in Table 46.

The project may clear up to 15.28 ha of potential habitat associated with riparian areas, which represents 1.55% of available habitat within the project site. An important focus of ongoing project refinement has been to avoid riparian areas where possible, and the current design has substantially reduced proposed clearing of riparian areas. Further surveys will be required if clearing is proposed in riparian areas outside of the current planning corridor to search for populations of Austral toadflax. Micro-siting of project infrastructure in or near riparian areas

will avoid and minimise impacts to areas where populations of toadflax or kangaroo grass are found. Provided that these measures are successfully implemented, it is unlikely that the proposed infrastructure will result in a significant impact to the species.

Table 46 EPBC Act significant impact assessment for vulnerable Austral toadflax

Significant impact criteria	Assessment of the site
Lead to a long-term decrease in the size of an important population of a species	Unlikely. An important population of Austral toadflax is not known to not occur within the site. No individuals were detected during surveys, although 2 records are known from a riparian area approximately 1 km west of the site.
Reduce the area of occupancy of an important population	Unlikely. An important population of Austral toadflax is not known to not occur within the site. The proposed project will remove up to 15.28 ha of potential riparian habitat, which is only 1.55% of available habitat within the site. Project refinements have substantially reduced proposed clearing of riparian habitat within the site. Ongoing micro-siting of infrastructure will further reduce proposed clearing of potential habitat.
Fragment an existing important population into two or more populations	Unlikely. An important population of Austral toadflax is not known to occur within the site. Watercourse crossings for the proposed project may cause minor fragmentation along riparian corridors. Clearing at crossing points will be minimised as far as possible and is unlikely to result in significant barriers to pollination and seed dispersal. Proposed riparian clearing is also unlikely to impact on host grass species (e.g. kangaroo grass).
Adversely affect habitat critical to the survival of a species	Unlikely. There is no advice relating to what habitat is considered habitat critical to the survival of the species. Surveys within suitable habitat did not detect this species, with the nearest known records about 1 km west of the project site (Figure 3). Current negative survey results suggest that the project site does not contain critical habitat for this species.
Disrupt the breeding cycle of an important population	Unlikely. An important population of Austral toadflax is not known to occur within the site. The reproductive ecology of Austral toadflax is unknown, but related species are thought to be pollinated by small bees and flies, and seeds may be dispersed by gravity, water and ants (USDA 2019). The proposed project will remove up to 15.28 ha of potential riparian habitat, which is only 1.55% of available habitat within the site. This level of clearing is unlikely to result in significant impacts to pollination or seed dispersal.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely. Surveys within suitable habitat did not detect this species, with the nearest known records about 1 km west of the project site (Figure 3). Current negative survey results suggest that the project site does not contain critical habitat for this species. The proposed project will remove up to 15.28 ha of potential riparian habitat, which is only 1.55% of available habitat within the site. Ongoing micro-siting of infrastructure will further reduce proposed clearing of potential habitat. Other potential impacts on habitat quality could include weed invasion, increased grazing pressure, changed fire regimes and riparian erosion. Measures to minimise impacts to habitat quality will include weed and pest animal management and erosion and sediment control.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species'	Unlikely. Austral toadflax and its host grass species may be heavily grazed by domestic stock such as cattle and horses, and some feral herbivores such as rabbits (Scarlett et al 2013). Riparian weeds may also outcompete and smother austral

Significant impact criteria	Assessment of the site
habitat	toadflax and its host grass species. A construction environmental management plan will be developed to manage weed and pest animal management. This will include appropriate weed hygiene measures and treatment of weeds prior to and during construction.
Introduce disease that may cause the species to decline	Unlikely. Austral toadflax is not known to be susceptible to any diseases that may cause the species to decline.
Interfere substantially with the recovery of the species.	Unlikely. The project may remove up to 15.28 ha of potential riparian habitat, but this represents only 1.55% of available habitat within the site. If further surveys detect a population of this species, it is likely that micro-siting of infrastructure would be able to avoid the population. The small amount of proposed clearing is unlikely to be substantial enough to interfere with the recovery of the species.
Overall impact assessment	The proposed project is unlikely to have a significant impact on austral toadflax, assuming all practical impact mitigation measures are applied.

8.3.2 Wandering peppercress

A formal impact assessment for wandering peppercress listed as endangered under the EPBC Act is provided in Table 47.

The project may clear up to 15.28 ha of potential habitat associated with riparian areas, which represents 1.55% of available habitat within the project site. An important focus of ongoing project refinement has been to avoid riparian areas where possible, and the current design has substantially reduced proposed clearing of riparian areas. Further surveys will be required if clearing is proposed in riparian areas outside of the current planning corridor to search for populations of wandering peppercress. Micro-siting of project infrastructure in or near riparian areas should avoid or minimise impacts if populations are found. Provided that these measures are successfully implemented, it is unlikely that the proposed infrastructure will result in a significant impact to the species.

Table 47 EPBC Act significant impact assessment for endangered wandering peppercress

Significant impact criteria	Assessment of the site
Lead to a long-term decrease in the size of a population	Unlikely. No individuals were detected during surveys, and the nearest known records are about 20 km to the south in very different montane habitat in the Bunya Mountains. Based on current desktop and field results, it is unlikely that a population exists within the proposed development area. Nevertheless, further targeted surveys will be completed in all potential riparian habitat within the footprint of the planning corridor. The corridor contains sufficient buffers, so that any detected individuals could likely be avoided by micro-siting of infrastructure.
Reduce the area of occupancy of the species	Unlikely. No individuals were detected during surveys, and the nearest known records are about 20 km to the south. Based on current desktop and field results, it is unlikely that a population exists within the proposed development area. The proposed project will remove up to 15.28 ha of potential riparian habitat, which is only 1.55% of available habitat within the site. Project refinements have substantially reduced proposed clearing of riparian habitat within the site. Ongoing micro-siting of

Significant impact criteria	Assessment of the site
	infrastructure will further reduce proposed clearing of potential habitat.
Fragment an existing population into two or more populations	Unlikely. Watercourse crossings for the proposed project may cause minor fragmentation along riparian corridors. Clearing at crossing points will be minimised as far as possible and is unlikely to result in significant barriers to pollination and seed dispersal.
Adversely affect habitat critical to the survival of a species	Unlikely. There is no advice relating to what habitat is considered habitat critical to the survival of the species. Surveys within suitable habitat did not detect this species, with the nearest known records about 20 km to the south in very different montane habitat in the Bunya Mountains. Current negative survey results suggest that the project site does not contain critical habitat for this species.
Disrupt the breeding cycle of a population	Unlikely. Seeds have a mucilaginous coat so are likely to be dispersed by attaching to feathers and fur of passing animals (Heenan and de Lange 2011). This is supported by records of introduction into New Zealand and Europe on sheep fleeces. Pollinators are unknown, but related species are pollinated by bees and other insects (Robertson and Klemash 2003), The proposed project will remove up to 15.28 ha of potential riparian habitat, which is only 1.55% of available habitat within the site. This level of clearing is unlikely to result in significant impacts to pollination or seed dispersal.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely. No individuals were detected during surveys, and the nearest known records are about 20 km to the south. Current negative survey results suggest that the project site does not contain critical habitat for this species. The proposed project will remove up to 15.28 ha of potential riparian habitat, which is only 1.55% of available habitat within the site. Ongoing micro-siting of infrastructure will further reduce proposed clearing of potential habitat. Other potential impacts on habitat quality could include weed invasion, increased grazing pressure and riparian erosion (DoE 2014b). Measures to minimise impacts to habitat quality will include weed and pest animal management and erosion and sediment control.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Unlikely. Wandering peppercress may be grazed by domestic stock such as cattle and horses, and some feral herbivores such as rabbits (DoE 2014b). Riparian weeds may also outcompete and smother this species. A construction environmental management plan will be developed to manage weed and pest animal management. This will include appropriate weed hygiene measures and treatment of weeds prior to and during construction.
Introduce disease that may cause the species to decline	Unlikely. Wandering peppercress is not known to be susceptible to any diseases that may cause the species to decline.
Interfere with the recovery of the species.	Unlikely. The project may remove up to 15.28 ha of potential riparian habitat, but this represents only 1.55% of available habitat within the site. If further surveys detect a population of this species, it is likely that micro-siting of infrastructure would be able to avoid the population. The small amount of proposed clearing is unlikely to be substantial enough to interfere with the recovery of the species.
Overall impact assessment	The proposed project is unlikely to have a significant impact on wandering peppercress, assuming all practical impact mitigation measures are applied.

Based on the current results, it is considered unlikely that the project will have significant impacts on EPBC Act listed flora species.

Walk-through assessments are recommended if the final designs propose clearing outside of the current planning corridor to search for threatened flora species where clearing is proposed within the following areas:

- remnant and HVR woodland REs on heavy clay soils (Austral cornflower)
- riparian communities, including remnant, HVR and non-remnant areas (Austral toadflax, wandering peppercress).

If walk-through assessments detect an EPBC Act listed species, further assessment will be required to determine the size and extent of populations, identify measures to avoid, minimise and mitigate potential impacts and assess whether any residual impacts are significant. Offsets may be required for any significant residual impact.

8.4 Threatened fauna species

8.4.1 Koala

The koala was recently upgraded from vulnerable to endangered under the EPBC Act. The previous koala referral guidelines were repealed on 12 February 2022 and no new guidelines specific to koala have been published. As survey works and previous report iterations were completed prior to this change, sections of the previous assessment (e.g. assessment of critical habitat and impacts on koala recovery) are included in Appendix 6. The current assessment follows the MNES Significant Impact Guidelines (DoE 2013a) for an endangered species.

A formal significant impact assessment for koalas at the site is provided in Table 48. Impacts to koalas include the clearing of up to 186.03 ha of habitat (16.98 ha of remnant vegetation and 169.05 ha of non-remnant vegetation) that could reduce habitat availability and connectivity, increase risk of predation from terrestrial predators such as dogs and exacerbate stress-induced disease.

General measures to mitigate impacts to koala include:

- minimising clearing works within identified koala habitat, including ongoing refinement and micro-siting of infrastructure to avoid habitat
- minimising injury/mortality of koalas during clearing works through pre-clear surveys and sequential clearing
- use of fauna spotter-catchers to identify and temporarily retain any occupied tree to allow koalas to self-relocate
- temporary exclusion fencing around areas of habitat identified as koala habitat during the environmental assessment process or during works by a fauna spotter catcher
- traffic management to minimise collisions during construction and operational phases

- predator control if signs of koala predation or increased predator numbers are observed during construction
- weed and pest animal management during construction and operational phases.

Table 48 EPBC Act significant impact assessment for endangered koala

Significant impact criteria	Assessment of the site
Lead to a long-term decrease in the size of a population	Likely. The number of koala sightings/signs and significant areas of suitable habitat distributed throughout the site suggest that the local population of koalas is likely to be regionally significant. The local population could be reduced by loss or degradation of habitat, direct injury/mortality, and increased predation. The project will require clearing of up to 186.03 ha of potential koala habitat (16.98 ha remnant and 169.05 ha non-remnant), which represents 3.19% of the potential habitat within the project site. The habitat is recognised as habitat critical to the survival of the species and any clearing of this habitat has the potential to result in the decrease of the size of the local koala population. However, the clearing area will be further reduced by ongoing refinement and micro-siting to minimise impacts to koala habitat.
Reduce the area of occupancy of the species	Unlikely. The project will clear up to 186.03 ha of potential koala habitat and reduce the area of occupancy for the local populations by approximately 3.19% of the potential habitat within the project site. Impacts will be further reduced by ongoing refinement and micro-siting to reduce clearing. Provided that recommended mitigation measures are successfully implemented, the project will not displace koalas from a significant proportion of the project site. However, it is still likely that the area of occupancy of the species will be reduced in the local area.
Fragment an existing population into two or more populations	Unlikely. Fragmentation of koala habitat through the construction of access tracks and other infrastructure may make koalas more vulnerable to vehicle collisions and predators such as wild dogs. However, given the already fragmented nature of the project site and the relatively small proportion of suitable habitat to be cleared, the current project is unlikely to increase fragmentation significantly. Strict traffic management procedures (e.g. limited access routes, speed controls, limited night traffic with reduced speeds during breeding season) will reduce potential impacts of access tracks. Rehabilitation works, where possible, will include planting of locally important koala trees, especially in areas that provide connectivity between larger habitat patches.
Adversely affect habitat critical to the survival of a species	Likely. The current koala guidelines do not specify areas of critical koala habitat. Under the repealed previous koala guidelines (DoE 2014a), the site contains habitat critical to the survival of the koala (scores 7 out of 10 as described in Appendix 6) within inland areas. The project will result in the clearing of up to 186.03 ha of potential koala habitat that would provide foraging, breeding or shelter. While proposed mitigation measures (ongoing refinement and micro-siting of infrastructure, weed and pest animal management, rehabilitation) will further reduce direct and indirect impacts on habitat, the project is likely to adversely affect critical koala habitat.
Disrupt the breeding cycle of a population	Likely. Koala home ranges vary widely from 3 to 500 ha, with the home range of the dominant male overlapping with home ranges of several females (DCCEEW 2023b; Department of Environment and Climate Change [DECC] 2008). Koalas are most active during the breeding season from September to February with males seeking females and sub-adults dispersing from their

Significant impact criteria	Assessment of the site
	mother's home range (DCCEEW 2023b; Dique et al. 2003). The removal of subadult males by trauma has the potential to critically disrupt geneflow (DCCEEW 2023b). The risk of geneflow disruption is exacerbated by the higher mobility in subadult males compared to their female counterparts, increasing their vulnerability to fatal encounters with vehicles and dogs. During the breeding season, koalas are at a greater risk of mortality from predation and vehicle strike, especially in fragmented landscapes. Measures to mitigate impacts to breeding cycles will include ongoing refinement and micro-siting to reduce clearing and fragmentation, strict traffic management procedures (e.g. limited access routes, speed controls, limited night traffic with reduced speeds during breeding season), and monitoring and control of predators. However, as clearing and construction operations are likely to occur during breeding season disruption to the breeding cycle of the local population cannot be discounted.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely. The project will require clearing of up to 186.03 ha of potential koala habitat, which represents 3.19% of the potential habitat within the project site. Impacts will be further reduced by ongoing refinement and micro-siting to reduce clearing. The site contains habitat critical to the survival of the koala. Reduction in areas of koala habitat containing food tree species may reduce the availability of food resources for koalas and may lead to trees being unsustainably over-browsed or koalas leaving the area in search of new and higher quality food resources. These impacts, while possible on a local level, will not occur on a scale that will likely cause the species to decline. Measures to minimise impacts to habitat quality will include weed and pest animal management, erosion and sediment control, dust suppression and offsite rubbish disposal. The project will lead to some clearing and fragmentation of koala habitat. However, given the relatively small percentage of available habitat to be cleared within the project site and the already fragmented nature of the project site due to existing farming practices, it is unlikely to decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat	Unlikely. Koalas are threatened by dogs (domestic and wild) when they come down to the ground between trees or travel to new areas. Dogs are already well established within the region, so the proposed activity is unlikely to result in dogs becoming more prevalent or moving into previously uninhabited areas. However, the project may increase population levels of introduced predators during the operation phase, through an increase in available food resources (carcasses from turbine strike). Provided pest animal management is undertaken along with carcass monitoring, introduced predator populations can be managed to avoid impacts to the koala population.
Introduce disease that may cause the species to decline	Unlikely. Koalas have been impacted by chlamydia, which is prevalent in some populations, including SEQ. Most koalas observed during the surveys displayed the tell-tale 'dirty bottom' appearance of chlamydia infection. Stress caused by land clearing and habitat reductions are known to exacerbate chlamydia in koalas. The proposed project will result in clearance of koala habitat that could increase stress in the short term, but is unlikely to cause a long term increase in stress-induced disease. Stress will be further reduced by sequential clearing, which involves staged clearing of trees to allow koalas to relocate without human intervention, and the temporary retention of any tree in which a koala is present.
Interfere with the recovery of the species.	Unlikely. The proposed activity in its current form will clear up to 186.03 ha of koala habitat, leading to a reduction in the availability of koala habitat in structural

Significant impact criteria	Assessment of the site
	terms and in the form of local food availability. Provided that recommended mitigation measures as described above and in Appendix 6 are successfully implemented, the project is unlikely to interfere with the recovery of the species on a regional or national level.
Overall impact assessment	The proposed project is likely to have a significant impact on koala, after all practical impact mitigation measures are applied.

8.4.2 Greater glider

A formal impact assessment for the greater glider listed as endangered under the EPBC Act is provided in Table 49. Out of 70 total sightings of greater glider, 33 were within the project site and 37 occurred in vegetation adjacent to the project site (along Kingaroy Burrandowan Road and in properties now excluded from the project site, in habitat identical to that occurring in the site).

The project may clear up to 16.98 ha of greater glider habitat with an associated potential loss of hollow-bearing trees used for denning. However, only 1.03% of the total available greater glider habitat within the site is proposed to be cleared. Greater gliders require large hollows that usually take over 150 years to form in eucalypts, use 4-20 den trees each, and will co-utilize the same dens at different times (Smith et al. 2007). Nest boxes suitable for greater gliders will aid to minimise impacts of unavoidable clearing of any potential denning hollows in mapped glider habitat.

Tracks will cause some limited fragmentation. Greater gliders can traverse gaps 75 m to 100 m in width (Van Dyck & Strahan 2008), however, gaps of 55 m wide across roads have been reported to create a complete barrier for greater gliders attempting to move between adjacent forest patches (Taylor and Goldingay 2009). Although the proposed planning corridor is generally 100 m wide to allow micro-siting, the final clearing footprint of tracks within this corridor will generally be narrower. Pre-clearing surveys will be undertaken to inform, where possible, micro-siting of project infrastructure that minimises loss of tree hollows, clearing and fragmentation of habitat. As a precautionary measure to mitigate against potential fragmentation of populations, installation of fauna crossing infrastructure (e.g., glider poles) will assist in areas where tracks are greater than 50 m in width within the planning corridor. Provided that these measures are successfully implemented, it is unlikely that the proposed infrastructure will result in a significant impact to the species.

Table 49 EPBC Act significant impact assessment for endangered greater gliders

Significant impact criteria	Assessment of the site
Lead to a long-term decrease in the size of a population.	Unlikely. The number of greater glider sightings and significant areas of suitable habitat distributed throughout the site suggest that the local population of greater gliders is likely to be regionally significant. The local population could be reduced by loss or degradation of habitat, direct injury/mortality and increased predation. The project will require clearing of up to 16.98 ha of potential greater glider habitat. This represents 1.03% of the potential habitat within the project site. Impacts to foraging and nesting habitat loss will be

Significant impact criteria	Assessment of the site
	reduced by ongoing infrastructure layout refinement and WTG micro-siting to reduce clearing. Additionally, surveys recorded large numbers of greater gliders in extensive areas of suitable habitat immediately north of the project site. Measures to minimise injury/mortality will include pre-clear surveys, sequential clearing and use of fauna spotter-catchers to identify and allow greater gliders to self-relocate during construction or be relocated (if required), traffic management to minimise collisions, minimise track widths, install permanent fauna movement infrastructure (e.g. glider poles), undertake pest management and install temporary exclusion fencing in areas of mapped glider habitat during the construction phase. Provided these measures are successfully implemented, the project is unlikely to lead to a long term decrease in the size of the local population.
Reduce the area of occupancy of the species	Unlikely. While the project will require clearing of up to 16.98 ha of potential greater glider habitat, it represents only 1.03% of the potential habitat within the project site. Additionally, surveys recorded large numbers of greater gliders in extensive areas of suitable habitat immediately north of the project site that will not be impacted by this project. Impacts will be further reduced by ongoing refinement and micro-siting to reduce clearing of important greater glider denning habitat. Provided the recommended mitigation measures are successfully implemented, the project will not displace greater gliders from a significant proportion of the project site and will therefore not reduce the area of occupancy of the local population.
Fragment an existing population into two or more populations	Unlikely. Fragmentation of greater glider habitat through the construction of access tracks and other infrastructure may result in greater gliders moving across the ground making them more vulnerable to vehicle collisions and predators such as wild dogs. The planning corridor avoids most large blocks of known and potential habitat for greater glider, which occurs in the hilltop remnant vegetation. Clearing for the upgrade of one section of Jumma Road will slightly increase fragmentation of one habitat block known to support greater glider. Clearing in this section will be minimised as far as possible. Nevertheless, clearing should be kept to less than 50 -75 m wide wherever possible, which greater gliders are capable of gliding between (Van Dyck & Strahan 2008). Where detailed design for the track, drainage and corridor for electrical reticulation will clear spans wider than 50 m, glider poles will be installed at key points to avoid gliders having to traverse the ground. Installation of these structures are essential to minimising the impact of habitat fragmentation of glider habitat along Jumma Road. Strict traffic management procedures (e.g. limited access routes, speed controls, limited night traffic with reduced speeds) will further reduce potential impacts of access tracks on habitat fragmentation, along with pest animal management during operation phases of the project. Provided that proposed measures are successfully implemented, it is unlikely that the proposed infrastructure will result in significant fragmentation of populations.
Adversely affect habitat critical to the survival of a species	Unlikely. There is no advice relating to what habitat is considered habitat critical to the survival of the species. However, habitat characteristics likely to contribute to the survival of the species include tall forests, presence of eucalypt food species, abundant large hollows, and low levels of fragmentation. Pastoral clearing within the site has caused substantial loss of suitable habitat, with areas containing suitable large hollows now restricted to areas of remnant vegetation. Even within remnant areas, selective logging has reduced the abundance of hollows. Critical habitat is therefore confined to areas of remnant eucalypt forest, especially those areas along the eastern edge of the site that are least fragmented. The proposed project will remove 16.98 ha of potential habitat, which is only 1.03% of available habitat within the project site. Impacts will be further reduced by ongoing refinement and micro-siting to reduce clearing of important greater glider denning habitat (trees with large hollows). Tracks will not notably contribute to further habitat fragmentation. It is expected that sufficient habitat will remain at

Significant impact criteria	Assessment of the site
	the site to support the existing population of greater gliders.
Disrupt the breeding cycle of a population	Unlikely. Strict traffic and construction management procedures (e.g. limited access routes, speed controls, limiting activities to daylight use as far as possible) will minimise impacts on this nocturnal species, as well as nest box installation for all hollows unavoidably removed. The proposed level of clearing and ongoing disturbance is unlikely to disrupt the breeding cycle of greater glider.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely. The loss of 16.98 ha of potential habitat is unlikely to exacerbate the existing extent and degree of fragmentation of vegetation patches within the project site. In addition, the proposed clearing will be restricted to WTG pads, access tracks and associated infrastructure, which will not result in large areas of habitat loss. Some hollow-bearing trees providing important denning resources may be removed by clearing works. However, where possible, large hollow-bearing trees will be avoided by micro-siting of infrastructure guided by pre-clearing surveys.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat	Unlikely. Greater gliders are known to be taken by wild dogs, dingoes and foxes (Maloney 2007), and these predators were observed at the project site during field surveys. The project is not likely to result in an invasive fauna species becoming further established in the species' habitat. However, the project may increase population levels of introduced predators during the operation phase, through an increase in available food resources (carcasses from turbine strike). Provided pest animal management is undertaken including carcass monitoring, predator populations can be managed to avoid impacts to the greater glider population. Additionally, installation of fauna movement infrastructure (e.g. glider poles) on tracks wider than 50 m will limit gliders traversing the ground, where they are at higher risk of predation (Taylor and Goldingay 2014) Some invasive weeds can increase the flammability of the habitat, amplifying wildfire risks. The proposed project will implement appropriate weed management in accordance with the Preliminary Vegetation Management Plan (Ecosure 2023b)for the areas within and adjacent to the clearing footprint, therefore is unlikely to result in the establishment of an invasive weed species that could harm greater glider habitat.
Introduce disease that may cause the species to decline	Unlikely. Greater gliders are not threatened by any disease that could be brought into the species' habitat by the project.
Interfere with the recovery of the species.	Unlikely. The small amount of proposed clearing is unlikely to exacerbate the existing extent and degree of fragmentation of suitable habitat within the project site but could reduce large hollows providing important greater glider denning resources. Protecting and retaining hollow-bearing trees is an important recovery action for the greater glider. Pre-clearing surveys will allow micro-siting of project infrastructure that minimises loss of tree hollows and clearing and fragmentation of habitat, avoiding any significant impact on species recovery.
Overall impact assessment	The proposed project is unlikely to have a significant impact on greater glider, assuming all practical impact mitigation measures are applied.

8.4.3 Grey-headed flying-fox

A formal impact assessment for the grey-headed flying-fox listed as vulnerable under the EPBC Act is provided in Table 50. The project site contains approximately 5,834.62 ha of potential foraging habitat for the grey-headed flying-fox (including 1,652.43 ha of

remnant/HVR vegetation and 4,182.19 ha within non-remnant areas). The current design may remove up to 186.03 ha of potential foraging habitat for the grey-headed flying-fox, which is only 3.19% of potential habitat within the project site. Pre-clearing surveys will be undertaken to allow micro-siting of project infrastructure that, where possible, minimises clearing of mature eucalypts or foraging sources such as large fig trees.

Operational impacts to grey-headed flying-fox are likely to be limited to direct strike if travelling within the RSA and disturbance from WTGs to foraging habitat when trees are in flower and fruit. Habitat disturbance will be minimised by micro-siting WTGs as far away as practicable from remnant vegetation.

Provided that mitigation measures are successfully implemented, it is unlikely that the proposed infrastructure will result in a significant impact to an important population of the species.

Table 50 EPBC Act significant impact assessment for vulnerable grey-headed flying-fox

Significant impact criteria	Assessment of the site
Lead to a long-term decrease in the size of an important population of a species	Unlikely. Given grey-headed flying-fox is considered to exist within a single, national population due to its highly mobile and fluid nature between colonies. Therefore, an important population of grey-headed flying-fox does not occur within the site. The project may clear up to 186.03 ha of foraging habitat, including 16.98 ha of remnant vegetation and 169.05 ha within non-remnant areas (representing 3.19% of potential foraging habitat within project site). There are no known grey-headed flying-fox camps within 20 km of the project site. Ample foraging habitat exists within the surrounding landscape (within 50 km of the project site in large patches of vegetation). The removal of potential foraging habitat for the project works is unlikely to lead to a long-term decrease in the population size of this species. Operational impacts may include collision with WTGs and behavioural disturbance in potential foraging habitat. Behavioural disturbance will be minimised by micro-siting WTGs as far away as practicable from remnant vegetation. The risk of collisions will be monitored and adaptive management measures applied in accordance in a future BBMP.
Reduce the area of occupancy of an important population	Unlikely. The project may clear up to 186.03 ha of foraging habitat, including 16.98 ha of remnant vegetation and 169.05 ha within non-remnant areas (representing 3.19% of potential habitat within site). There are no known grey-headed flying-fox camps within 20 km of the project site. The project will result in the loss of some foraging habitat, but large tracts of foraging habitat are present in the surrounding landscape. Therefore, the impact to this highly mobile species is minimal and unlikely to result in a significant reduction in area of occupancy.
Fragment an existing important population into two or more populations	Unlikely. The grey-headed flying-fox is a highly mobile species which occurs as a single national population due to its ability to move between colonies. Ample foraging habitat is available within 50 km of the nearest known camp (38 km south-east of the project site). This project is therefore unlikely to fragment an existing important population of grey-headed flying-fox.
Adversely affect habitat critical to the survival of a species	Unlikely. Reliable foraging resources in spring are critical to the survival of grey-headed flying-fox to avoid poor reproductive success (DCCEEW 2023b). The project site

Significant impact criteria	Assessment of the site
	contains eucalypt species that provide foraging resources when flowering. The project will clear up to 186.03 ha of potential foraging habitat but large areas of foraging habitat will remain within the project site and surrounding landscape. The project site is over 20 km from the nearest known camp. Therefore, it is unlikely that this project will adversely affect habitat critical to the survival of the grey-headed flying-fox.
Disrupt the breeding cycle of an important population	Unlikely. The proposed works will remove potential foraging habitat, but large areas of foraging habitat will remain within the project site and surrounding landscape, and there are no known camps within 20 km of the project site. Given the high mobility of this species and the abundance of flowering eucalypts in the region, the project is unlikely to disrupt the breeding cycle of grey-headed flying-fox. Nevertheless, as reliable foraging resources in spring are critical to the survival of grey-headed flying-fox, removal of flowering eucalypts should be avoided during this period where possible.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely. No roosting grey-headed flying-fox have been observed during field surveys. The proposed works will remove potential foraging habitat, but there are no known camps within 20 km of the project site. Given the amount of foraging habitat remaining within the wider locality, the proposed clearing is unlikely to cause the species' population to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Unlikely. Clearing of vegetation which may provide foraging habitat for grey-headed flying-fox has the potential to allow for weed species to establish in place. Provided appropriate mitigation measures (e.g., adopting effective weed hygiene measures and progressive rehabilitation of disturbed areas) are implemented during the proposed works, it is highly unlikely an invasive species will impact the grey-headed flying-fox.
Introduce disease that may cause the species to decline	Unlikely. The impact of disease on flying foxes is relatively unknown (DAWE 2021b). Grey-headed flying-foxes generally exist in equilibrium with Lyssavirus, but population impacts have been observed when the species is under significant ecological stress (DCCEEW 2023b). Grey-headed flying-foxes can be susceptible to Angiostrongylosis and a number of other diseases; however, the impact of these diseases at a population level is unknown (DAWE 2021b). It is unlikely the proposed project works will result in significant ecological stress to the species, and result in increased rates of the disease through the population.
Interfere substantially with the recovery of the species.	Unlikely. National key recovery targets focus on improving the national population trend of grey-headed flying-fox by reducing the impact of threats. Recovery objectives include protecting and increasing foraging habitat, increasing public awareness and improving management of camps (DCCEEW 2023b). The project site contains vegetation which may provide foraging habitat for the species. Though potential foraging habitat is proposed to be cleared as part of the clearing, given the availability of large tracts of vegetation within the wider landscape, this is not considered a substantial interference to this species' recovery.
Overall impact assessment	The proposed project is unlikely to have a significant impact on grey-headed flying-fox, assuming all practical impact mitigation measures are applied.

8.4.4 Glossy black-cockatoo

A formal impact assessment for the glossy black-cockatoo listed as vulnerable under the EPBC Act is provided in Table 51. Approximately 16.98 ha of potential habitat for glossy black-cockatoo will be cleared for the construction of project infrastructure but large areas of similar habitat are available within the project site and the surrounding region. Construction activities are unlikely to significantly reduce foraging habitat. While some hollow-bearing trees may be removed during construction, micro-siting of WTGs and other infrastructure will avoid clearing these trees where possible.

Operational impacts to glossy black-cockatoo are likely to be limited to direct strike if travelling within the RSA and disturbance from WTGs to breeding behaviours. Habitat disturbance will be minimised by siting WTGs as far away as practicable from remnant vegetation, in particular areas where (if any) suitable nesting hollows are identified and watering points. The BBUS (Ecosure 2023a) concluded that the glossy black-cockatoo has a moderate risk of blade strike. Ongoing carcass monitoring to assess strike numbers of glossy black-cockatoo, revised risk assessments and adaptive management measures should be applied during the operational phase of the project in accordance with an approved BBMP.

Table 51 EPBC Act significant impact assessment for vulnerable glossy black-cockatoo

Significant impact criteria	Assessment of the site
Lead to a long-term decrease in the size of an important population of a species	Unlikely. Important glossy black-cockatoo populations have not been identified on the project site. Construction will clear up to 16.98 ha of potential foraging and nesting habitat, which is only 1.03% of available habitat within the project site. Impacts to stands of preferred feed trees and nesting hollows will be managed by identification of areas during preclearing surveys and micro-siting of WTGs to avoid clearing these areas where possible. Operational impacts may include collision with WTG blades and behavioural disturbance in nesting/roosting habitat. The risk of collisions and behavioural disturbance will be minimised by siting WTGs as far away as practicable from remnant vegetation and watering points. The risk of collisions will be monitored and adaptive management measures applied in accordance with a future BBMP.
Reduce the area of occupancy of an important population	Unlikely. An important population of glossy black-cockatoo does not occur within the site. Clearing of 16.98 ha of foraging and nesting habitat will not significantly reduce the area of occupancy in the broader region.
Fragment an existing important population into two or more populations	Unlikely. An important population of glossy black-cockatoo does not occur within the site. The project is unlikely to create barriers to movement or fragment populations of this highly mobile species.
Adversely affect habitat critical to the survival of a species	Unlikely. The project will require clearing of 16.98 ha of potential foraging and nesting habitat. This represents only 1.03% of similar foraging and nesting habitat available within the project site. There is also significant habitat immediately adjacent to the project site and surrounding landscape (Golder Associates 2018). Impacts to stands of preferred feed trees and nesting hollows will be managed by identification of areas during preclearing surveys and micro-siting of WTGs to avoid clearing these areas where possible. If these measures are implemented, it is unlikely that this project will adversely affect habitat critical to the survival of

Significant impact criteria	Assessment of the site
	the species.
Disrupt the breeding cycle of an important population	Unlikely. An important population of glossy black-cockatoo does not occur within the site. Preclearance surveys will be undertaken prior to the removal of vegetation to identify potential nesting hollows or valuable foraging areas. To mitigate any potential impacts to breeding cycles, it is recommended the removal of glossy black-cockatoo foraging and breeding habitat be scheduled outside of the breeding season, which will be identified in a detailed BBMP.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely. The project will require clearing of 16.98 ha of foraging and nesting habitat, this represents only 1.03% of similar habitat within the project site. Given the amount of habitat remaining within the wider locality (including known foraging areas adjacent to the project site), the proposed clearing is unlikely to cause the species' population to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Unlikely. No invasive species are known to threaten the glossy black-cockatoo. However, invasive weeds can alter the characteristics of habitat, thereby changing foraging and nesting resource availability and some weeds may increase the flammability of the habitat, amplifying wildfire risks. The proposed project will implement appropriate weed management in accordance with the Preliminary Vegetation Management Plan (Ecosure 2023b) for the areas within and adjacent to the clearing footprint, therefore it is unlikely to result in the establishment of an invasive species that could harm glossy black-cockatoos or their habitat.
Introduce disease that may cause the species to decline	Unlikely. Glossy black-cockatoos are not threatened by any known disease that could be brought into the species habitat by the project.
Interfere substantially with the recovery of the species.	Unlikely. The project site contains vegetation which provides foraging and nesting habitat for glossy black-cockatoo. Some habitat is proposed to be cleared, however, given the availability of large tracts of vegetation within and adjacent to the project site that will remain, it is unlikely that construction of this project will significantly impact the species.
Overall impact assessment	The proposed project is unlikely to have a significant impact on glossy black-cockatoo, assuming all practical impact mitigation measures are applied.

8.4.5 White-throated needletail

A formal impact assessment for the white-throated needletail listed as vulnerable under the EPBC Act is provided in Table 52. Approximately 16.98 ha of potential roosting habitat for white-throated needletail will be cleared for the construction of project infrastructure. However, surveys did not record any roosting and large areas of similar habitat are available within the project site and the surrounding region. Construction activities are unlikely to impact significantly on feeding habitat, as this species is an aerial forager.

Potential operational impacts include blade strike when flying and foraging at RSA height. Ongoing carcass monitoring to assess strike numbers of white-throated needletail, revised risk assessments and adaptive management measures should be applied during the operational phase of the project in accordance with an approved BBMP.

Surveys have identified numbers of white-throated needletail which represent a nationally significant proportion of the population. Given that white-throated needletail are at high risk of collision with WTG and adequate WTG strike mitigation measures are not currently known for this species, the project may result in a significant impact on white-throated needletail.

Table 52 EPBC Act significant impact assessment for vulnerable white-throated needletail

Significant impact criteria	Assessment of the site
Lead to a long-term decrease in the size of an important population of a species	Likely. White-throated needletail were detected in five of the nine survey periods, predominately during spring and summer periods. Total sighting numbers ranged from 1 to 191 individual sightings over a six day period and flock sizes ranged from a single individual to at least 50 birds. DoE (2015) considers 100 individuals to be an internationally significant proportion of the population and 10 individuals to be a nationally significant proportion of the population. The project site therefore contained a nationally important population of white-throated needletail. Sightings were more prevalent during suitable atmospheric conditions, such as summer storms. White-throated needletail may aerially forage above the entire site and could potentially roost within remnant/HVR woodland (although no roosting was recorded during surveys). Construction will have minimal impact on foraging habitat and will clear up to 16.98 ha of potential roosting habitat, which is only 1.03% of available habitat within the project site. Additionally, the site is not close to the species' distribution limit and is surrounded by equivalent habitat containing known records of the species. White-throated needletail rarely roost in Australia, and so operational impacts (including collision with WTG blades) represent a higher risk of impact through direct mortality. The risk of collisions will be monitored and adaptive management measures applied in accordance with a future BBMP.
Reduce the area of occupancy of an important population	Unlikely. The estimated area of occupancy in Australia is over 20,000 km^2 (TSSC 2019). Clearing of 16.98 ha of roosting habitat will not significantly reduce the area of occupancy.
Fragment an existing important population into two or more populations	Unlikely. A nationally important population of white-throated needletail has been observed within the project site, however the species is a highly mobile aerial forager, so the project is highly unlikely to create barriers to movement.
Adversely affect habitat critical to the survival of a species	Unlikely. Critical breeding habitat for the species does not occur in Australia. The project will require clearing of 16.98 ha of potential roosting habitat, but this represents only 1.03% of similar habitat within the project site.
Disrupt the breeding cycle of an important population	Unlikely. White-throated needletail does not breed in Australia and so we consider for the purposes of this assessment that disruption of breeding activities (through removal of potential nesting habitat or behavioural disturbance) is unlikely to occur. However, turbine strike could impact the breeding cycle through the reduction of the population size. Ongoing carcass monitoring and revised risk assessments should be completed during the operational phase of the project to continue to assess strike numbers and population impacts of white-throated needletail.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely. The project will require clearing of 16.98 ha of potential roosting habitat, but this represents only 1.03% of similar habitat within the project site. White-throated needletail is a highly mobile species that forages aerially over most habitats, so

Significant impact criteria	Assessment of the site
	the small clearing footprint is unlikely to significantly reduce foraging habitat.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Unlikely. No invasive species are known to threaten the white-throated needletail. The proposed project will not result in the establishment of an invasive species that could harm white-throated needletails or their habitat.
Introduce disease that may cause the species to decline, or	Unlikely. White-throated needletails are not threatened by any known disease that could be brought into the species habitat by the project.
Interfere substantially with the recovery of the species.	Likely. A recovery plan has not been prepared for this species. However, conservation actions focus on working with East Asia to protect breeding habitat and identify areas of important habitats in Australia. Although the project will clear up to 16.98 ha of potential roosting habitat this is unlikely to impact on this highly mobile aerial species. Individuals may collide with WTGs during operation. However, ongoing monitoring of the strike risk to the population and adapting management measures in a future BBMP during the operational phase will help to mitigate impacts to the species.
Overall impact assessment	The proposed project is likely to have a significant impact on white-throated needletail, after all practical impact mitigation measures are applied.

8.5 Migratory species

Migratory species confirmed during surveys were the rufous fantail, satin flycatcher, white-throated needletail (also listed as vulnerable) and fork-tailed swift.

8.5.1 Rufous fantail

A formal impact assessment for the rufous fantail is provided in Table 53. Up to 27.72 ha of potential habitat for this species will be cleared for the construction of project infrastructure. Areas within the planning corridor have limited understorey vegetation so are marginally suitable for this species. Areas of more suitable habitat are available within the eastern edge of the project site and the surrounding region, however, as a conservative measure the 27.72 ha of marginal habitat should still be considered suitable for the species. As this species is highly mobile, the limited level of clearing is unlikely to lead to significant fragmentation of potential habitat.

Potential operational impacts include collisions with WTGs and disturbance of WTGs to habitat used for foraging or nesting. Habitat disturbance will be minimised by micro-siting WTGs as far away as practicable from remnant vegetation. Rufous fantails are unlikely to collide with WTGs during operation as they generally forage in the lower and mid strata and rarely fly above the canopy (Ecosure 2023a).

Provided that recommended mitigation measures are successfully implemented, the proposed development is unlikely to have a significant residual impact on rufous fantail.

Table 53 EPBC Act significant impact assessment for rufous fantail

Significant impact criteria	Assessment of the site
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat	Unlikely. The site is not important habitat for rufous fantail as the region is not known to contain a nationally significant proportion of the species' population (1,500 individuals for the north-eastern rufous fantail), does not contain substantial areas of forest with dense understorey suitable for breeding habitat, and is not near the limit of the species' range. The project will require clearing of 27.72 ha of potential habitat, but this represents only 0.11% of similar habitat within the project site. The area within the planning corridor does not contain a dense understorey layer preferred by rufous fantail. This area is also well below the threshold level for a nationally significant area of important habitat (340 km^2 for the north-eastern rufous fantail).
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	Unlikely. Invasive species that may be harmful to rufous fantail include black rat and invasive riparian vines (DoE 2015). No introduced rats were detected during fauna surveys. Flora surveys recorded one invasive vine, cat's claw creeper, along larger watercourses, but the project is unlikely to result in further spread of this species or the introduction of other invasive species.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	Unlikely. The project will require clearing of 27.72 ha of marginal habitat for rufous fantail, which is unlikely to impact on the foraging and breeding success of this species. Nine seasonal surveys detected only three individuals, indicating that the site supports a relatively small local population. The species is a highly mobile aerial forager, so the project is highly unlikely to create barriers to movement. Rufous fantails generally forage in the lower and mid strata and rarely fly above the canopy, so collisions with WTGs are unlikely. The risk of collisions and disturbance to foraging birds will be further reduced by micro-siting WTGs as far as practicable from remnant vegetation during construction.
Overall impact assessment	The proposed project is unlikely to have a significant impact on rufous fantail, assuming all practical impact mitigation measures are applied.

8.5.2 Satin flycatcher

A formal impact assessment for the satin flycatcher is provided in Table 54. Approximately 186.03 ha of potential habitat (16.98 ha of remnant vegetation and 169.05 ha within non-remnant areas) for this species will be cleared for the construction of project infrastructure. However large areas of more suitable habitat are available within the eastern edge of the project site (where the species was recorded) and the surrounding region. As this species is highly mobile, the limited level of clearing is unlikely to lead to significant fragmentation of potential habitat. Potential operational impacts include collisions with project infrastructure and disturbance of WTGs to habitat used for foraging or nesting. Habitat disturbance will be minimised by micro-siting WTGs as far away as practicable from remnant vegetation and watercourses. Satin flycatchers are unlikely to collide with WTGs during operation as they generally forage in the canopy and mid-canopy and rarely fly above the canopy (Ecosure 2023a).

Provided that recommended mitigation measures are successfully implemented in a future BBMP, the proposed development is unlikely to have a significant residual impact on the satin flycatcher.

Table 54 EPBC Act significant impact assessment for satin flycatcher

Significant impact criteria	Assessment of the site
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat	Unlikely. The site is not important habitat for satin flycatcher as the region is not known to contain a nationally significant proportion of the species' population (1,700 individuals for the satin flycatcher), is below the species preferred breeding elevation of >600 m above sea level and is not near the limit of the species' range. The project will require clearing of up to 186.03 ha of potential habitat, but this represents only 3.19% of equivalent suitable habitat within the project site, with large areas of more suitable habitat in the surrounding region. The clearing area is also below the threshold level for a nationally significant area of important habitat (440 km^2 for the satin flycatcher).
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	Unlikely. Invasive species that may be harmful to satin flycatcher include black rat and invasive riparian vines (DoE 2015). No introduced rats were detected during fauna surveys. Flora surveys recorded one invasive vine, cat's claw creeper, along larger watercourses, but the project is unlikely to result in further spread of this species or the introduction of other invasive species.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	Unlikely. The project will require clearing of 186.03 ha of marginal habitat for satin flycatcher, which is unlikely to impact on the foraging and breeding success of this species given the regional widespread availability of eucalypt habitat and the species tendency to breed at high altitude (>600 m elevation). Nine seasonal surveys detected only three individuals, indicating that the site supports a relatively small local population. The species is a highly mobile arboreal forager, so the project is highly unlikely to create barriers to movement. Satin flycatchers generally forage in the canopy and sub-canopy and rarely fly above the canopy, so collisions with WTGs are unlikely. The risk of collisions and disturbance to foraging birds will be further reduced by micro-siting WTGs as far as practicable from remnant vegetation during construction.
Overall impact assessment	The proposed project is unlikely to have a significant impact on satin flycatcher, assuming all practical impact mitigation measures are applied.

8.5.3 White-throated needletail

A formal impact assessment for the white-throated needletail against EPBC Act migratory criteria is provided in Table 55. Approximately 16.98 ha of potential roosting habitat for white-throated needletail will be cleared for the construction of project infrastructure. However, surveys did not record any roosting birds and large areas of similar habitat are available within the project site and the surrounding region. Construction activities are unlikely to impact significantly on feeding habitat, as this species is an aerial forager.

Potential operational impacts include collisions with WTGs. Surveys have recorded numbers of white-throated needletail which represent nationally (and potentially internationally) significant proportions of the population. Given that white-throated needletail are at high risk of collision with WTGs, the project may result in a significant impact to a nationally important population of white-throated needletail.

Table 55 EPBC Act significant impact assessment for white-throated needletail against migratory criteria

Significant impact criteria	Assessment of the site
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat	Unlikely. This species does not breed in Australia. DoE (2015) lists important roosting habitat as tree hollows in tall trees on ridge-tops, on bark or rock faces; and identifies large tracts of native vegetation, particularly forest, may be a key habitat requirement. The project will require clearing of 16.98 ha of potential roosting habitat, but this represents only 1.03% of potential roosting habitat within the project site. White-throated needletail is a highly mobile species that forages aerially over most habitats, so the small clearing footprint is unlikely to significantly impact foraging habitat. A threshold level for a nationally significant area of important habitat has not been defined for this species.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	Unlikely. No invasive species are known to threaten the white-throated needletail. The proposed project will not result in the establishment of an invasive species that could harm white-throated needletails or their habitat.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	Likely. Surveys have recorded nationally important populations of white-throated needletail on the project site. The species is a highly mobile aerial forager, which is considered more likely to frequent the site during suitable atmospheric conditions (summer storms) for foraging rather than for roosting habitat. Construction will have minimal impact on foraging habitat and will clear 16.98 ha of potential roosting habitat, which is only 1.03% of available habitat within the project site. Additionally, the site is not close to the species' distribution limit, and is surrounded by equivalent habitat containing known records of the species. White-throated needletails may collide with WTGs, and the presence of WTGs may disrupt the migration or feeding behaviour or an ecologically significant proportion of the species (DEWHA 2009). The risk of collisions will be managed in accordance with a future BBMP, including ongoing monitoring of carcasses, regular review of the strike risk and adapting management measures where possible.
Overall impact assessment	The proposed project is likely to have a significant impact on white-throated needletail, after all practical impact mitigation measures are applied.

8.5.4 Fork-tailed swift

A formal impact assessment for the fork-tailed swift against EPBC Act migratory criteria is provided in Table 56. Fork-tailed swifts have only been observed aerially and none were observed roosting across the project site. Construction impacts are not considered for this species as the project site is highly unlikely to provide roosting habitat, as they forage aerially and roost on the wing.

Potential operational impacts include blade strike if flying and foraging at RSA height and disturbance of foraging habitat caused by the WTG operations. Blade strike issues are assessed and discussed in more detail in the BBUS (Ecosure 2023a).

Table 56 EPBC Act significant impact assessment for fork-tailed swift

Significant impact criteria	Assessment of the site
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat	Unlikely. This species does not breed in Australia. DoE (2015) lists important habitat as inland open plains to wooded areas, though it is believed to be exclusively aerial. Fork-tailed swift is a highly mobile species that forages aerially over most habitats, so the clearing footprint is unlikely to significantly reduce or fragment foraging habitat. A threshold level for a nationally significant area of important habitat has not been defined for this species.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	Unlikely. No invasive species are known to threaten the fork-tailed swift (DoE 2015). The proposed project will not result in the establishment of an invasive species that could harm fork-tailed swifts or their habitat.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	Unlikely. The project site does not support an ecologically significant proportion of the population. The species is a highly mobile aerial forager, which is most likely to frequent the project site during suitable atmospheric conditions (summer storms) for foraging. This species does not breed in Australia. Construction is unlikely to impact on foraging or roosting habitat, as fork-tailed swift is exclusively aerial, roosting on the wing (DoE 2015). Individuals may occasionally collide with WTGs during operation. The risk of collisions will be managed in accordance with an approved BBMP, including ongoing monitoring of carcasses, regular review of the strike risk and adapting management measures where possible.
Overall impact assessment	The proposed project is unlikely to have a significant impact on fork-tailed swift, assuming all practical impact mitigation measures are applied.

8.6 Summary of impacts to MNES

Table 57 summarises the predicted impacts of the proposed project on MNES known or likely to occur within the project site, based on the current design and following application of all recommended avoidance, minimisation, and mitigation measures. As a vulnerable and migratory species, white-throated needletail are assessed separately under different impact assessment criteria for threatened and migratory fauna (DoE 2013a).

Table 57 Summary of impacts to MNES

MNES	Presence within project site and level of impact	Significance of impact after mitigation
	Threatened ecological communities	
SEVT of the Brigalow Belt (North and South) and Nandewar Bioregions	Confirmed present in properties no longer included in the project site. None located within or adjacent to planning corridor; no impact	Not significant

MNES	Presence within project site and level of impact	Significance of impact after mitigation
	Threatened flora	
wandering peppercress (*Lepidium peregrinum*)	Not detected. Possible in all riparian areas within the planning corridor.	Not significant
Austral toadflax (*Thesium australe*)	Not detected. Possible in all riparian areas within the planning corridor.	Not significant
Austral cornflower (*Leuzea australis*)	Not detected. Possible areas of heavy clay soils derived from basalt. No habitat located within current planning corridor.	Not significant
	Threatened fauna	
koala (*Phascolarctos cinereus*)	Confirmed in numerous remnant and non-remnant eucalypt communities within site. Potential habitat loss of up to 186.03 ha, including 16.98 ha of remnant vegetation and 169.05 ha modelled habitat within non-remnant areas (representing 3.19% of potential habitat within project site). Habitat would be considered critical to the survival of koala (Appendix 6).	Significant
greater glider (*Petauroides volans*)	Confirmed in remnant eucalypt forest. Potential habitat loss of up to 16.98 ha (representing 1.03% of potential habitat within project site).	Not significant
grey-headed flying-fox (*Pteropus poliocephalus*)	Confirmed foraging in non-remnant areas. Potential foraging habitat loss of up to 186.03 ha, including 16.98 ha of remnant vegetation and 169.05 ha within non-remnant areas (representing 3.19% of potential foraging habitat within project site).	Not significant
glossy black-cockatoo (*Calyptorhynchus lathami lathami*)	Confirmed through sighting above dam and evidence of orts. Potential habitat loss of up to 16.98 ha (representing 1.03% of potential habitat within project site).	Not significant
white-throated needletail (*Hirundapus caudacutus*) (also migratory)	Confirmed flying above several habitat types. Potential loss of roosting habitat up to 16.98 ha (representing 1.03% of potential roosting habitat within project site). No significant impact to foraging habitat. Species is considered a risk of collision with WTGs. While no individuals or low numbers of individuals have been observed during eight out of nine survey periods, one survey period (summer 2023) recorded large numbers of birds (n = 191 in total). WTG collision could impact a nationally significant population through direct mortality.	Significant

MNES	Presence within project site and level of impact	Significance of impact after mitigation
	Migratory fauna	
rufous fantail (*Rhipidura rufifrons*)	Confirmed in eucalypt forest with understorey of shrubs and/or vine thicket species. Potential habitat loss of up to 27.72 ha (representing 0.11% of potential habitat within project site). However, habitat within planning corridor has open understorey and is considered marginally suitable for rufous fantail. Species is considered at low risk of collision with WTGs as it generally forages in lower and mid strata.	Not significant
satin flycatcher (*Myiagra cyanoleuca*)	Confirmed in non-remnant open woodland with a grassy understory. Potential habitat loss of up to 186.03 ha (representing 3.19% of potential habitat within the project site). Suitable eucalypt forest/woodland habitat is widespread throughout the project site and surrounding region. Species is considered at low risk of collision with WTGs as it generally forages in lower and mid strata.	Not significant
white-throated needletail (*Hirundapus caudacutus*) (also threatened)	Confirmed flying above several habitat types. Potential loss of roosting habitat up to 16.98 ha (representing 1.03% of potential roosting habitat within project site). No significant impact to foraging habitat. Species is considered a risk of collision with WTGs. While no individuals or low numbers of individuals have been observed during eight out of nine survey periods, one survey period (summer 2023) recorded large numbers of birds (n = 191 in total). WTG collision could impact a nationally population through direct mortality.	Significant
fork-tailed swift (*Apus pacificus*)	Confirmed flying above eucalypt woodland. No significant impact to foraging habitat. No roosting habitat present at the project site. Species is considered a risk of collision with WTGs, however only two individuals have been observed over nine survey periods.	Not significant

9 MSES (NC Act)

9.1 Threatened and special least concern species assessments

The Significant Residual Impact Guideline (DEHP 2014) provide criteria to assess whether a proposed action will have, or is likely to have, a significant impact on a threatened species. Criteria for vulnerable and endangered species are listed in Table 58.

Table 58 Significant residual impact criteria for wildlife habitat under the NC Act

Endangered and vulnerable wildlife habitat	Special least concern wildlife habitat
Lead to a long-term decrease in the size of a local population	Result in a long-term decrease in the size of a local population
Reduce the extent of occurrence of the species	Reduce the extent of occurrence of the species
Fragment an existing population	Fragment an existing population
Result in genetically distinct populations forming as a result of habitat isolation	Result in genetically distinct populations forming as a result of habitat isolation
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Cause disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species
Introduce disease that may cause the population to decline	
Interfere with the recovery of the species	
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	

9.2 Impacts to protected wildlife habitat (flora)

Threatened flora species under the EPBC Act considered possible to occur within the project site (austral toadflax and wandering peppercress) were assessed under the EPBC Act significant impact assessment guidelines in section 8.3. It was concluded that significant impacts were unlikely to occur to these species, and as they are considered possible to occur on the site (not confirmed or likely), significant residual impact under the NC Act assessment guidelines was not conducted for these species.

9.2.1 Bailey's cypress

Three individual Bailey's cypress (listed as near-threatened under the NC Act) were identified within and adjacent to the project site. Two were identified adjacent to a patch of SEVT (RE 11.8.3) to the east of the project area, and a third was identified within the project area, in partially cleared riparian vegetation near to rocky slopes. Habitat for Bailey's cypress within

the project area consists of:

- a small (0.63 ha) patch of RE 11.8.3 in the southwestern portion of the project site which does not meet the criteria for the SEVT TEC, and is not within the planning corridor
- riparian areas near to rocky hillslopes with vine thicket properties.

A formal significant residual impact assessment for Bailey's cypress pine in accordance with NC Act assessment guidelines (DEHP 2014) is presented in Table 59.

Table 59 NC Act significant residual impact assessment for near-threatened Bailey's cypress

Significant Residual Impact Criteria	Assessment of the site
Lead to a long-term decrease in the size of a local population	Unlikely. One individual was identified within the project site, with a further two identified to the east of the project site within an area of identified SEVT. Ten Wildnet records exist within 20 km of the project site, most of which are located in the Bunya Mountains to the south of the project site. Potential habitat for the species is limited within the project area and planning corridor, and no known individuals will be impacted by clearing within the planning corridor.
Reduce the extent of occurrence of the species	Unlikely. No known individuals of Bailey's cypress are located within the planning corridor, and impacts to potential Bailey's cypress habitat have been minimised by citing the infrastructure corridor primarily outside of remnant vegetation and riparian habitats. The infrastructure corridor does not impact the 0.63 ha patch of vine thicket within the project site, and the known individual within non-remnant vegetation within the project site is not impacted by the infrastructure corridor. Project refinements have substantially reduced proposed clearing of riparian habitat within the site. While the project site is at the western most extent of their known range in Queensland, there is a limited amount of habitat available within the project area. Additionally, numerous records exist within the Bunya Mountains to the immediate south of the project area in more suitable habitat for the species.
Fragment an existing population	Unlikely. Remnant vegetation within the project area is already highly fragmented, and fragmentation of remaining remnant and regrowth vegetation will be minimised by upgrading existing farm tracks and minimising track width where possible particularly at stream crossings or through remnant/HVR vegetation. Watercourse crossings for the proposed project may cause minor fragmentation along riparian corridors. Clearing at crossing points will be minimised as far as possible.
Result in genetically distinct populations forming as a result of habitat isolation	Unlikely. Watercourse crossings for the proposed project may cause minor fragmentation along riparian corridors. *Callitris* species are conifers, relying on wind pollination. Clearing at crossing points will be minimised as far as possible and is unlikely to result in significant barriers to wind pollination and seed dispersal.

Significant Residual Impact Criteria	Assessment of the site
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Unlikely. African lovegrass is an introduced grass which has been identified as a contributing factor to increased fuel loads and high intensity fires, which has been identified as a threat to Bailey's cypress (South Burnett Regional Council, n.d.). The project area is used for cattle grazing, and African lovegrass is already present in the project area. The planning corridor avoids to a large extent the riparian and remnant habitats where Bailey's cypress may occur. In addition, a construction environmental management plan will be developed to manage weed and pest animal management. This will include appropriate weed hygiene measures and treatment of weeds prior to and during construction.
Introduce disease that may cause the population to decline	Unlikely. Bailey's cypress is not known to be susceptible to any disease that may cause the population to decline.
Interfere with the recovery of the species	Unlikely. The limited extent of impact on potential Bailey's cypress habitat (0.63 ha), as well as the limited number of individuals observed within the project area (n = 1), suggests that the project area is of limited habitat value for the recovery of the species. This may be due in part to historical clearing, grazing, and fire regimes in the area, which have limited the amount of suitable habitat available for Bailey's cypress. It is therefore unlikely that the recovery of the species will be interfered with as a result of the proposed project. Numerous records exist to the south of the project area within the more highly suitable habitat of the Bunya Mountains.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	Unlikely. The project is not proposed to impact any SEVT (RE 11.8.3) or the known individual sighted in non-remnant vegetation within the project site. Only small numbers of isolated individuals (one individual within riparian vegetation and two adjacent to an SEVT patch) have been identified and so an ecologically significant location (highly suitable habitat with a source population of numerous individuals) is not likely to be impacted as a result of the project.
Overall impact assessment	The proposed project is unlikely to have a significant impact on Bailey's cypress, assuming all practical impact mitigation measures are applied.

9.3 Impacts to protected wildlife habitat (fauna)

9.3.1 Koala

A formal significant residual impact assessment for koalas in accordance with NC Act assessment guidelines (DEHP 2014) is presented in Table 60. Impacts to koalas include the clearing of up to 186.03 ha of habitat (16.98 ha of remnant/HVR vegetation and 169.05 ha of non-remnant vegetation) that could reduce habitat availability, increase risk of predation from terrestrial predators such as dogs, and exacerbate stress-induced disease.

Table 60 NC Act significant impact assessment for endangered koala

Significant Residual Impact Criteria	Assessment of the site
Lead to a long-term decrease in the size of a local population	Likely. The number of koala sightings/signs and significant areas of suitable habitat distributed throughout the site suggest that the local population of koalas is likely to be regionally significant. The local population could be reduced by loss or degradation of habitat, direct injury/mortality, and increased predation. The project will require clearing of up to 186.03 ha of potential koala habitat (16.98 ha remnant and 169.05 ha non-remnant), which represents 3.19% of the potential habitat within the project site. The habitat is recognised as habitat critical to the survival of the species and any clearing of this habitat has the potential to result in the decrease of the size of the local koala population. However, the clearing area will be further reduced by ongoing refinement and micro-siting to minimise impacts to koala habitat.
Reduce the extent of occurrence of the species	Unlikely. The project will clear up to 186.03 ha of potential koala habitat and reduce the area of occupancy for the local populations by approximately 3.19% of the potential habitat within the project site. Impacts will be further reduced by ongoing refinement and micro-siting to reduce clearing. Provided that recommended mitigation measures are successfully implemented, the project will not displace koalas from a significant proportion of the project site. However, it is still likely that the area of occupancy of the species will be reduced in the local area.
Fragment an existing population	Unlikely. Fragmentation of koala habitat through the construction of access tracks and other infrastructure may make koalas more vulnerable to vehicle collisions and predators such as wild dogs. However, given the already fragmented nature of the project site and the relatively small proportion of suitable habitat to be cleared, the current project is unlikely to increase fragmentation significantly. Strict traffic management procedures (e.g. limited access routes, speed controls, limited night traffic with reduced speeds during breeding season) will reduce potential impacts of access tracks. Rehabilitation works, where possible, will include planting of locally important koala trees, especially in areas that provide connectivity between larger habitat patches.
Result in genetically distinct populations forming as a result of habitat isolation	Unlikely. As the proposed development will not lead to significant fragmentation of koala populations or impede koala movements, it is unlikely that it will cause habitat isolation or cause the formation of genetically distinct populations.
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Unlikely. Koalas are threatened by dogs (domestic and wild) when they come down to the ground between trees or travel to new areas. Dogs are already well established within the region, so the proposed activity is unlikely to result in dogs becoming more prevalent or moving into previously uninhabited areas. However, the project may increase population levels of introduced predators during the operation phase, through an increase in available food resources (carcasses from turbine strike). Provided pest animal management is undertaken along with carcass monitoring, introduced predator populations can be managed to avoid impacts to the koala population.

Significant Residual Impact Criteria	Assessment of the site
Introduce disease that may cause the population to decline	Unlikely. Koalas have been impacted by chlamydia, which is prevalent in some populations, including SEQ. Most koalas observed during the surveys displayed the tell-tale 'dirty bottom' appearance of chlamydia infection. Stress caused by land clearing and habitat reductions are known to exacerbate chlamydia in koalas. The proposed project will result in clearance of koala habitat that could increase stress in the short term but is unlikely to cause a long term increase in stress-induced disease. Stress will be further reduced by sequential clearing, which involves staged clearing of trees to allow koalas to relocate without human intervention, and the temporary retention of any tree in which a koala is present.
Interfere with the recovery of the species	Unlikely. The proposed activity in its current form will clear up to 186.03 ha of koala habitat, leading to a reduction in the availability of koala habitat in structural terms and in the form of local food availability. Provided that recommended mitigation measures as described above and in Appendix 6 are successfully implemented, the project is unlikely to interfere with the recovery of the species on a regional or national level.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	Unlikely. The floristic and structural composition of forest habitat is critical to koala occurrence and survival (DECC 2008). Primary and secondary food trees provide the majority of the diet, although other species may provide seasonal or supplementary nutrition or be used for shelter. Tree size is also important. For example, koalas preferred trees with a DBH of 20 to 30 cm in Karawatha Forest Park (Mossaz 2010). Koalas occupy variable home ranges in south-east Queensland ranging from 1 to 92 ha (de Oliveira et al. 2014, Pieters 1993), but do not require specific breeding locations or sites (White 1999). The project will require clearing of up to 186.03 ha of potential koala habitat, which represents 3.19% of the potential habitat within the project site. Impacts will be further reduced by ongoing refinement and micro-siting to reduce clearing, which is unlikely to cause disruption to ecologically significant locations for koalas.
Overall impact assessment	The proposed project is likely to have a significant impact on koala, after all practical impact mitigation measures are applied.

9.3.2 Greater glider

A formal significant residual impact assessment for greater gliders in accordance with NC Act assessment guidelines is presented in Table 61. Surveys recorded sightings of 70 greater gliders, 33 of which were within the project site. Impacts of the proposed development include clearing of up to 16.98 ha of potential habitat and loss of hollow-bearing trees that provide denning sites. Proposed mitigation measures include ongoing refinements to reduce clearing of habitat and pre-clearing surveys to allow micro-alignment of project infrastructure that minimises loss of tree hollows and clearing and fragmentation of habitat.

Table 61 NC Act significant impact assessment for endangered greater glider

Significant Residual Impact Criteria	Assessment of the site
Lead to a long-term decrease in the size of a local population	Unlikely. The number of greater glider sightings and significant areas of suitable habitat distributed throughout the site suggest that the local population of greater gliders is likely to be regionally significant. The local population could be reduced by loss or degradation of habitat, direct injury/mortality and increased predation. The project will require clearing of up to 16.98 ha of potential greater glider habitat. This represents 1.03% of the potential habitat within the project site. Impacts to foraging and nesting habitat loss will be reduced by ongoing infrastructure layout refinement and WTG micro-siting to reduce clearing. Additionally, surveys recorded large numbers of greater gliders in extensive areas of suitable habitat immediately north of the project site. Measures to minimise injury/mortality will include pre-clear surveys, sequential clearing and use of fauna spotter-catchers to identify and allow greater gliders to self-relocate during construction or be relocated 8iuy, traffic management to minimise collisions, minimise track widths, install permanent fauna movement infrastructure (e.g. glider poles), undertake pest management and install temporary exclusion fencing in areas of mapped glider habitat during the construction phase. Provided these measures are successfully implemented, the project is unlikely to lead to a long term decrease in the size of the local population.
Reduce the extent of occurrence of the species	Unlikely. While the project will require clearing of up to 16.98 ha of potential greater glider habitat, it represents only 1.03% of the potential habitat within the project site. Additionally, surveys recorded large numbers of greater gliders in extensive areas of suitable habitat immediately north of the project site that will not be impacted by this project. Impacts will be further reduced by ongoing refinement and micro-siting to reduce clearing of important greater glider denning habitat. Provided the recommended mitigation measures are successfully implemented, the project will not displace greater gliders from a significant proportion of the project site and will therefore not reduce the area of occupancy of the local population.
Fragment an existing population	Unlikely. Fragmentation of greater glider habitat through the construction of access tracks and other infrastructure may result in greater gliders moving across the ground making them more vulnerable to vehicle collisions and predators such as wild dogs. The planning corridor avoids most large blocks of known and potential habitat for greater glider, which occurs in the hilltop remnant vegetation. Clearing for the upgrade of one section of Jumma Road will slightly increase fragmentation of one habitat block known to support greater glider. Clearing in this section will be minimised as far as possible. Nevertheless, clearing should be kept to less than 50 -75 m wide wherever possible, which greater gliders are capable of gliding between (Van Dyck & Strahan 2008). Where detailed design for the track, drainage and corridor for electrical reticulation will clear spans wider than 50 m, glider poles will be installed at key points to avoid gliders having to traverse the ground. Installation of these structures are essential to minimising the impact of habitat fragmentation of glider habitat along Jumma Road. Strict traffic management procedures (e.g. limited access routes, speed controls, limited night traffic with reduced speeds) will further reduce potential impacts of access tracks on habitat fragmentation, along with pest animal management during operation phases of the project. Provided that proposed measures are successfully implemented, it is unlikely that the proposed infrastructure

Significant Residual Impact Criteria	Assessment of the site
	will result in significant fragmentation of populations.
Result in genetically distinct populations forming as a result of habitat isolation	Unlikely As the proposed development will not lead to significant fragmentation of greater glider populations or impede greater glider movements, it is unlikely that it will cause habitat isolation or cause the formation of genetically distinct populations.
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Unlikely Greater gliders are known to be taken by wild dogs, dingoes and foxes (Maloney 2007), and these predators were observed at the project site during field surveys. The project is not likely to result in an invasive fauna species becoming further established in the species' habitat. However, the project may increase population levels of introduced predators during the operation phase, through an increase in available food resources (carcasses from turbine strike). Provided pest animal management is undertaken along with carcass monitoring and removal, predator populations can be managed to avoid impacts to the greater glider population. Additionally, installation of fauna movement infrastructure (e.g. glider poles or rope ladders) on tracks wider than 50 m will limit gliders traversing the ground, where they are at higher risk of predation (Taylor and Goldingay 2014)
Introduce disease that may cause the population to decline	Unlikely. Greater gliders are not threatened by any disease that could be brought into the species' habitat by the project.
Interfere with the recovery of the species	Unlikely. The small amount of proposed clearing is unlikely to exacerbate the existing extent and degree of fragmentation of suitable habitat within the project site but could reduce large hollows providing important greater glider denning resources. Protecting and retaining hollow-bearing trees is an important recovery action for the greater glider. Pre-clearing surveys will allow micro-siting of project infrastructure that minimises loss of tree hollows and clearing and fragmentation of habitat, avoiding any significant impact on species recovery.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	Unlikely Proposed clearing may result in the loss of a small area of feeding habitat and removal of some ecologically significant breeding sites (e.g. hollows in large eucalypt trees). The proposed project will remove 16.98 ha of potential habitat, which is only 1.03% of available habitat within the project site. These impacts can be reduced by refinement of project design to reduce clearing and micro-aligning infrastructure to minimise clearing of large hollow-bearing trees. While some hollow-bearing trees may be removed during clearing works, the project is unlikely to cause disruption to breeding sites that would impact significantly on local populations.
Overall impact assessment	The proposed project is unlikely to have a significant impact on greater gliders, assuming all practical mitigation measures are implemented.

9.3.3 Glossy black-cockatoo

A formal significant residual impact assessment for glossy black cockatoos in accordance with NC Act assessment guidelines is presented in Table 62. Surveys within the project site confirmed four sightings of glossy-black cockatoo and signs of glossy black-cockatoo foraging activity (orts) in 21 locations. Given the presence of numerous food trees (*Allocasuarina*

torulosa, *A. littoralis*, *A. luehmannii* and *Casuarina cunninghamiana*), large hollows suitable for nesting and abundant water in dams, the project site represents a significant area of habitat for the species. Potential impacts include loss of food and nesting trees, blade strike when flying at RSA height and disturbance of WTGs to habitat used for breeding, foraging or drinking. Based on the currently available data for this species at the site and regionally and given the current project design, the proposed development may have significant residual impacts on the local population.

Further data regarding how this species utilises the air space (flight paths and heights) on the site and the location of important habitat features (e.g. potential nesting sites, additional food trees and waterbodies) would assist to further refine mitigation measures and reduce impacts on this species. A management plan should be developed that identifies potential impacts to glossy black cockatoos, recommends measures to effectively mitigate impacts and describes methods to monitor effectiveness of the plan (including review and contingency planning).

Table 62 NC Act significant impact assessment for vulnerable glossy black-cockatoo

Significant Residual Impact Criteria	Assessment of the site
Lead to a long-term decrease in the size of a local population	Unlikely. Important glossy black-cockatoo populations have not been identified on the project site. Construction will clear up to 16.98 ha of potential foraging and nesting habitat, which is only 1.03% of available habitat within the project site. Impacts to stands of preferred feed trees and nesting hollows will be managed by identification of areas during preclearing surveys and micro-siting of WTGs to avoid clearing these areas where possible. Operational impacts may include collision with WTG blades and behavioural disturbance in nesting/roosting habitat. The risk of collisions and behavioural disturbance will be minimised by siting WTGs as far away as practicable from remnant vegetation and watering points. The risk of collisions will be monitored and adaptive management measures applied in accordance with a future BBMP.
Reduce the extent of occurrence of the species	Unlikely. An important population of glossy black-cockatoo does not occur within the site. Clearing of 16.98 ha of foraging and nesting habitat will not significantly reduce the area of occupancy in the broader region.
Fragment an existing population	Unlikely. An important population of glossy black-cockatoo does not occur within the site. The project is unlikely to create barriers to movement or fragment populations of this highly mobile species.
Result in genetically distinct populations forming as a result of habitat isolation	Glossy black cockatoos are a highly mobile species so can exploit patches of suitable foraging habitat over large areas of the landscape. Birds are known to fly up to 15 km between nesting and food resources, although this is not a daily occurrence and most daily movements are between the roost site, drinking site and foraging site. When local food resources are depleted, birds may roam more widely to locate suitable food trees. It is highly unlikely that glossy black cockatoos that use the project site are confined only to the project site and do not interact with other populations of the species in different locations. Therefore, it is highly unlikely for genetically distinct or isolated populations to be produced as a result of the project.

Significant Residual Impact Criteria	Assessment of the site
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Unlikely. No invasive species are known to threaten the glossy black-cockatoo. However, invasive weeds can alter the characteristics of habitat, thereby changing foraging and nesting resource availability and some weeds may increase the flammability of the habitat, amplifying wildfire risks. The proposed project will implement appropriate weed management in accordance with the Preliminary Vegetation Management Plan (Ecosure 2023b) for the areas within and adjacent to the clearing footprint, therefore it is unlikely to result in the establishment of an invasive species that could harm glossy black-cockatoos or their habitat.
Introduce disease that may cause the population to decline	Unlikely. Glossy black-cockatoos are not threatened by any known disease that could be brought into the species habitat by the project.
Interfere with the recovery of the species	Unlikely. The project site contains vegetation which provides foraging and nesting habitat for glossy black-cockatoo. Some habitat is proposed to be cleared, however, given the availability of large tracts of vegetation within and adjacent to the project site that will remain, it is unlikely that construction of this project will significantly impact the species.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	Unlikely. The project will require clearing of 16.98 ha of potential foraging and nesting habitat. This represents only 1.03% of similar foraging and nesting habitat available within the project site. There is also significant habitat immediately adjacent to the project site and surrounding landscape (Golder Associates 2018). Impacts to stands of preferred feed trees and nesting hollows will be managed by identification of areas during preclearing surveys and micro-siting of WTGs to avoid clearing these areas where possible. If these measures are implemented, it is unlikely that this project will adversely affect ecologically significant locations for the glossy black-cockatoo.
Overall impact assessment	The proposed project is unlikely to have a significant impact on glossy black-cockatoo, assuming all practical mitigation measures are implemented.

9.3.4 White-throated needletail

A formal significant residual impact assessment for the white-throated needletail is provided in Table 63. Approximately 23.55 ha of potential roosting habitat for white-throated needletail will be cleared for the construction of project infrastructure. However, surveys did not record any roosting and large areas of similar habitat are available within the project site and the surrounding region. Construction activities are unlikely to impact significantly on feeding habitat, as this species is an aerial forager.

Potential operational impacts include blade strike when flying and foraging at RSA height. Ongoing carcass monitoring to assess strike numbers of white-throated needletail, revised risk assessments and adaptive management measures should be applied during the operational phase of the project in accordance with an approved BBMP.

Surveys have identified numbers of white-throated needletail which represent a nationally significant proportion of the population. Given that white-throated needletail are at high risk of

collision with WTG and adequate WTG strike mitigation measures are not currently known for this species, the project may result in a significant impact on white-throated needletail.

Table 63 NC Act significant impact assessment for vulnerable white-throated needletail

Significant Residual Impact Criteria	Assessment of the site
Lead to a long-term decrease in the size of a local population	Likely. White-throated needletail were detected in five of the nine survey periods, predominately during spring and summer periods. Total sighting numbers ranged from 1 to 191 individual sightings over a six day period and flock sizes ranged from a single individual to at least 50 birds. DoE (2015) considers 100 individuals to be an internationally significant proportion of the population and 10 individuals to be a nationally significant proportion of the population. The project site therefore contained a nationally important population of white-throated needletail. Sightings were more prevalent during suitable atmospheric conditions, such as summer storms. White-throated needletail may aerially forage above the entire site and could potentially roost within remnant/HVR woodland (although no roosting was recorded during surveys). Construction will have minimal impact on foraging habitat and will clear up to 16.98 ha of potential roosting habitat, which is only 1.03% of available habitat within the project site. Additionally, the site is not close to the species' distribution limit and is surrounded by equivalent habitat containing known records of the species. White-throated needletail rarely roost in Australia, and so operational impacts (including collision with WTG blades) represent a higher risk of impact through direct mortality. The risk of collisions will be monitored and adaptive management measures applied in accordance with a future BBMP.
Reduce the extent of occurrence of the species	Unlikely. The estimated area of occupancy in Australia is over 20,000 km^2 (TSSC 2019). Clearing of 16.98 ha of roosting habitat will not significantly reduce the area of occupancy.
Fragment an existing population	Unlikely. A nationally important population of white-throated needletail has been observed within the project site, however the species is a highly mobile aerial forager, so the project is highly unlikely to create barriers to movement.
Result in genetically distinct populations forming as a result of habitat isolation	Unlikely. The white-throated needletail is a highly mobile aerial forager, and is almost exclusively aerial, only rarely roosting in vegetation. Furthermore, the species migrates outside of Australia to breed. Removal of up to 16.98 ha of potential roosting habitat will not result in genetically distinct populations forming, as individuals are capable of extensive movement within the landscape.
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Unlikely. No invasive species are known to threaten the white-throated needletail. The proposed project will not result in the establishment of an invasive species that could harm white-throated needletails or their habitat.
Introduce disease that may cause the population to decline	Unlikely. White-throated needletails are not threatened by any known disease that could be brought into the species habitat by the project.

Significant Residual Impact Criteria	Assessment of the site
Interfere with the recovery of the species	Likely. A recovery plan has not been prepared for this species. However, conservation actions focus on working with East Asia to protect breeding habitat and identify areas of important habitats in Australia. Although the project will clear up to 16.98 ha of potential roosting habitat this is unlikely to impact on this highly mobile aerial species. Individuals may collide with WTGs during operation. However, ongoing monitoring of the strike risk to the population and adapting management measures in a future BBMP during the operational phase will help to mitigate impacts to the species.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	Unlikely. The project will require clearing of 16.98 ha of potential roosting habitat, but this represents only 1.03% of similar habitat within the project site. White-throated needletails do not breed in Australia, and rarely roost, being almost exclusively aerial. White-throated needletail is a highly mobile species that forages aerially over most habitats, so the small clearing footprint is unlikely to significantly reduce foraging habitat.
Overall impact assessment	The proposed project is likely to have a significant impact on white-throated needletail, after all practical impact mitigation measures are applied.

9.3.5 Echidna (special least concern)

A formal significant residual impact assessment for the short-beaked echidna in accordance with NC Act assessment guidelines is presented in Table 64. Short-beaked echidna utilise a wide range of habitats, including remnant forest, woodlands, shrublands and grasslands, as well as grazing lands and disturbed habitats.

Table 64 NC Act significant impact assessment for special least concern echidna

Significant Residual Impact Criteria	Assessment of the site
Result in a long-term decrease in the size of a local population	Unlikely. Wildlife Online (DES 2023) has 5 records within 20 km of the project site. Surveys within the project site detected echidnas at six locations. Echidnas utilise a wide range of habitats, including remnant forest, woodlands, shrublands and grasslands, as well as grazing lands and other disturbed habitats. The proposed project will remove 16.98 ha of remnant habitat from WTG pad areas and access tracks, which is only 1.03% of equivalent habitat within the project site. Given the large amount of preferred habitat within the project site, sufficient habitat is likely to remain at the site to support the existing population of echidnas.
Reduce the extent of occurrence of the species	Unlikely. As echidnas can utilise a wide range of remnant and non-remnant vegetation communities, the proposed level of clearing for the current development is unlikely to reduce the extent of occurrence of this species.
Fragment an existing population	Unlikely. The proposed development will not clear any of the large remnant vegetation block on the eastern side of the project site. Clearing will be restricted to linear track corridors (nominally 20 m wide) and 150m by 150m pads for WTG construction. Echidnas can easily traverse the

Significant Residual Impact Criteria	Assessment of the site
	proposed tracks. Collisions with vehicles will be mitigated by restricting vehicle travel to existing tracks where possible and enforcing strict speed limits. Provided that these measures are successfully implemented, it is unlikely that the proposed development will significantly fragment the existing echidna population.
Result in genetically distinct populations forming as a result of habitat isolation	Unlikely. As the proposed development will not lead to significant fragmentation of echidna populations or impede greater echidna movements, it is unlikely that it will cause habitat isolation or cause the formation of genetically distinct populations.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	Unlikely. Proposed clearing may result in the loss of a small area of feeding habitat and removal some ecologically significant resting sites (e.g. logs, protective understorey vegetation). These impacts can be reduced by refinement of project design to reduce clearing and micro-aligning infrastructure to minimise clearing of protective understorey vegetation. Fallen timber will be retained and respread within the project site After construction. While some habitat may be removed during clearing works, the project is unlikely to cause disruption to breeding sites that would impact significantly on local populations.
Overall impact assessment	Unlikely. The proposed project is unlikely to have a significant impact on short-beaked echidna, assuming all practical mitigation measures are implemented.

9.4 Impacts to regulated vegetation

Schedule 10 of the Planning Regulation 2017 specifies that operational work that involves clearing of native vegetation is assessable development unless it is exempt clearing work or meets specified exemptions under Schedule 21 of the Planning Regulation 2017. Relevant exemptions include:

- clearing of Category X vegetation on freehold and leasehold land
- clearing of less than 0.5 ha of Category B least concern vegetation or Category X, C or R vegetation within a watercourse if the clearing is a necessary and unavoidable consequence of an activity carried out under the 'Riverine Protection Permit Exemption Requirements'
- clearing under an accepted development vegetation clearing code (provided under section 19 of the VM Act) on freehold and leasehold land, including:
  - managing Category C regrowth vegetation - required outcomes and practices for clearing Category C areas (high value regrowth)
  - managing Category R regrowth vegetation - required outcomes and practices for clearing Category R areas (native woody vegetation within 50 m of a watercourse in the Burdekin, Mackay, Whitsunday and Wet Tropics Great Barrier Reef catchments).

Any other clearing for the current project is assessable development and must be for a relevant purpose under section 22A of the VM Act. The proposal is considered to be for a relevant purpose under section 22A, as it meets condition 2(d):

- for relevant infrastructure activities and clearing for the development cannot reasonably be avoided or minimised.

However, it should be noted that some vegetation categories may not be considered a relevant purpose under Section 22A, including:

- condition 2AA – clearing in a Category C area on freehold and leasehold land
- condition 2B – clearing in a Category R area on freehold and leasehold land.

If vegetation within these categories cannot be cleared under the relevant exemption (accepted development vegetation clearing codes for Category C and R vegetation), it may be necessary to avoid areas of Category C and R vegetation to obtain project approval. Further advice should be sought from DNRME regarding these clearing conditions and implications for project design.

Mapped regulated vegetation was ground-truthed within the project site, resulting in refinement of the impact area within each category of regulated vegetation (Table 65).

Table 65 Mapped and ground-truthed vegetation

Vegetation category	Mapped vegetation within project site	Mapped vegetation within planning corridor	Ground-truthed vegetation within planning corridor
Category B	1333.73 ha	20.33 ha	16.98 ha
Category C	317.62 ha	0.89 ha	0 ha
Category R	859.78 ha	21.75 ha	Up to 21.75 ha^
Category X	14,985.19 ha	1,019.17 ha	Up to 1,045.16 ha
Total	17,496.32 ha	1,062.14 ha	1,062.14 ha

^ This is the total mapped Category R area. Woody vegetation within Category R areas will be refined following pre-clear surveys during micro-siting of infrastructure.

Approximately 16.98 ha of ground-truthed Category B (remnant) vegetation containing least concern REs (Table 40, Table 65) will be potentially impacted by project infrastructure within the planning corridor. No ground-truthed Category C (HVR) vegetation occurs within the planning corridor and no of concern or endangered REs will be impacted.

Category R (regrowth on reef watercourses) areas will be impacted. However, it is currently uncertain as to whether any native woody vegetation is proposed to be cleared within Category R areas, since the category protects native woody vegetation within 50 m of a mapped regrowth watercourse. Clearing in Category R areas is not regulated if no native woody vegetation is present within the 50 m buffer. These areas should be ground-truthed during pre-clear walk-through assessments to determine if native woody vegetation is present.

Regulated vegetation within the specified buffer distance from a mapped vegetation management watercourse or drainage line are a MSES. The proposed development will clear 4.93 ha of this MSES.

9.5 Impacts to connectivity

The project site occurs within a highly fragmented region with remnant and HVR regrowth occurring within generally small and discontinuous patches. Clearing for WTG construction pads and access tracks will cause minor decreases in connectivity of existing vegetation patches and fauna movement corridors on the project site.

Impacts to connectivity were assessed using the Landscape Fragmentation and Connectivity (LFC) tool. The tool uses a GIS based script that calculates the quantum of the proposed impact on connectivity values such as size and configuration of impacted polygons. The tool identified that the proposed clearing will result in a 0.83% reduction in core areas at the local scale and no reduction in the number of core remnant areas, and therefore concluded that impact on connectivity areas was not significant.

9.6 Impacts to wetlands and watercourses

Several watercourses occur within the project site and are identified as waterways under the Water Act. Existing crossings are located across some watercourses and generally occur as unimproved crossings to permit use by light vehicles. Depending upon the level of degradation, crossings will require upgrading to permit access by construction vehicles. New crossings of smaller watercourses (stream order 1, 2 and 3) are also proposed, however no new crossings of larger watercourses (Boyne River, Jumma Creek) are proposed. An existing crossing of the Boyne River on Ironpot Road or Kingaroy-Burrandowan Road will require upgrading.

9.7 Water Act

Waterway crossing detailed designs have not been completed so are not assessed in this report. However, a riverine protection permit may be required should the upgrade works be unable to be completed in accordance with the DRDMW riverine protection permit exemption requirements. The minimum requirements outlined below must be achieved to be exempt from the need for a riverine protection permit (DRDMW 2023):

- The extent of the area required to carry out the permitted activity must be limited to the minimum area necessary to reasonably carry out the works.
- Sediment and erosion controls must be used.
- All areas of disturbed bed and banks must be stabilised to protect against erosion.
- All fill placed must be free from contamination (e.g. weeds seeds, oils, chemicals and other contaminants).
- Disturbed banks must be returned to a profile similar to the pre-disturbance condition.

- Natural stream bed controls or features that create natural waterholes (e.g. riffles, logs, sediment or rock bars) must not be lowered or removed.
- Any excavated material that is not removed as waste must be spread evenly within the bed and banks of the watercourse so that it does not interfere with the flow of water.
- All fill placed in the bed of the stream must not redirect flow into an adjacent bank.
- Access tracks or crossings must not interfere with the low flow of water.
- The invert of culverts or the deck height of a splash through crossing must be placed at or below bed level.
- All culverts placed within the watercourse must be aligned with the stream channel and placed as close to the centre of the watercourse channel as practical.
- All culverts placed within the watercourse must be of a sufficient size to ensure uninterrupted low flows and minimise the occurrence of blockage of culverts caused by flood-borne debris.
- Constructed access tracks (e.g. culverts or splash through crossings) must be provided with a scour apron and cut off wall on the downstream side sufficient to prevent bed erosion.
- All disturbed areas must be revegetated with trees, shrub and grasses endemic to the area, sufficient to re-establish a riparian environment and protect bed and banks from erosion.
- There are no further requirements imposed on the project under the Water Act.

The construction of waterway barriers to fish movement is considered under the *Fisheries Act 1994*. These works would require a waterway barrier works approval unless the work can be completed in accordance with the *Accepted development requirements for operational work that is constructing or raising waterway barrier works* (DAF 2018).

9.8 Biosecurity Act

Some animal pests and weed species are listed as prohibited or restricted matters under the *Biosecurity Act 2014*. The Act also places a GBO on everyone, which means that they are responsible for managing biosecurity risks that are:

- under their control and
- that they know about or should reasonably be expected to know about.

Under the GBO, individuals and organisations whose activities pose a biosecurity risk must:

- take all reasonable and practical steps to prevent or minimise each biosecurity risk
- minimise the likelihood of causing a ‘biosecurity event’, and limit the consequences if such an event is caused

- prevent or minimise the harmful effects a risk could have, and not do anything that might make any harmful effects worse.

Cat's claw creeper (*Dolichandra unguis-cati*), lantana (*Lantana camara*), creeping lantana (*Lantana montevidensis*), broad-leaf privet (*Ligustrum lucidum*), velvety tree pear (*Opuntia tomentosa*), wild dog/dingo, feral cat, European rabbit, wild pig and European red fox are restricted matters and landowners have an obligation to take all reasonable and practicable steps to prevent or minimise biosecurity risks associated with these matters. The GBO also applies to companies undergoing activities on land. Reasonable steps should include:

- treatment of restricted plants prior to construction commencing
- on-going treatment of new pest plants during construction and operational stages
- vehicle and construction machinery have weed and seed hygiene declarations prior to commencing works
- management of rubbish and food wastes to minimise attracting foxes, wild dogs, feral pigs and feral cats.

A feral animal management plan is recommended to mitigate potential impacts to TNT species including koala, greater glider and glossy black cockatoo. The plan should consider:

- trapping and/or baiting of wild dogs, foxes, feral cats and feral pigs
- monitoring of feral animal populations (e.g. by use of motion capture cameras).

9.9 Summary of impacts to MSES

Table 57 summarises the predicted impacts of the proposed project on MSES known or likely to occur within the project site, based on the current design and following application of all recommended avoidance, minimisation, and mitigation measures.

Table 66 Summary of impacts to MSES

MSES	Presence within project site and level of impact	Significance of impact after mitigation
Threatened flora habitat		
Bailey's cypress (*Callitris baileyi*)	Confirmed adjacent to SEVT in area no longer part of project site, and at one location in riparian vegetation near remnant igneous hillslopes within the project area. Possible in riparian areas close to rocky hills, especially in communities containing vine thicket elements. Potential habitat of up to 0.63ha within the project area.	Not significant
Threatened fauna habitat		
koala (*Phascolarctos cinereus*)	Confirmed in numerous remnant and non-remnant eucalypt communities within site. Potential habitat loss of up to 186.03 ha, including 16.98 ha of remnant vegetation and 169.05 ha modelled	Significant

MSES	Presence within project site and level of impact	Significance of impact after mitigation
	habitat within non-remnant areas (representing 3.19% of potential habitat within project site).	
greater glider (*Petauroides volans*)	Confirmed in remnant eucalypt forest. Potential habitat loss of up to 16.98 ha (representing 1.03% of potential habitat within project site).	Not significant
glossy black-cockatoo (*Calyptorhynchus lathami lathami*)	Confirmed through sighting above dam and evidence of orts. Potential habitat loss of up to 16.98 ha (representing 1.03% of potential habitat within project site).	Not significant
white-throated needletail (*Hirundapus caudacutus*)	Confirmed flying above several habitat types. Potential loss of roosting habitat up to 16.98 ha (representing 1.03% of potential roosting habitat within project site). No significant impact to foraging habitat. Species is considered a risk of collision with WTGs. While no individuals or low numbers of individuals have been observed during eight out of nine survey periods, one survey period (summer 2023) recorded large numbers of birds (n = 191 in total). WTG collision could impact a nationally significant population through direct mortality.	Significant
Special least concern fauna habitat		
short-beaked echidna (*Tachyglossus aculeatus*)	Confirmed in several habitat types. Potential habitat loss of up to Species utilises a wide range of habitat types.	Not significant
rufous fantail (*Rhipidura rufifrons*)	Confirmed in eucalypt forest with understorey of shrubs and/or vine thicket species. Potential habitat loss of up to 27.72 ha (representing 0.11% of potential habitat within project site). However, habitat within planning corridor has open understorey and is considered marginally suitable for rufous fantail. Species is considered at low risk of collision with WTGs as it generally forages in lower and mid strata.	Not significant
satin flycatcher (*Myiagra cyanoleuca*)	Confirmed in non-remnant open woodland with a grassy understory. Potential habitat loss of up to 186.03 ha (representing 3.19% of potential habitat within the project site). Suitable eucalypt forest/woodland habitat is widespread throughout the project site and surrounding region. Species is considered at low risk of collision with WTGs as it generally forages in lower and mid strata.	Not significant
fork-tailed swift (*Apus pacificus*)	Confirmed flying above eucalypt woodland. No significant impact to foraging habitat. No roosting habitat present at the project site. Species is considered a risk of collision with WTGs, however only two individuals have been observed over nine survey periods.	Not significant

10 State Development Assessment Provisions

This section provides an assessment of the proposed development against the state codes relevant to ecological values (DSDILGP 2022a):

- State code 16 – native vegetation clearing
- State code 18 – constructing or raising waterway barrier works in fish habitats
- State code 23 – wind farm development.

10.1 Native vegetation clearing

The project will require a MCU application and therefore the relevant portions of the native vegetation clearing code are PO1 – PO3 and PO80 – PO92. These performance outcomes are addressed in Appendix 7.

10.2 Constructing or raising waterway barrier works in fish habitats

The site contains numerous waterways as defined under the *Fisheries Act 1999*, including:

- 129.3 km of waterways with a low risk of impact
- 42.2 km of waterways with a moderate risk of impact
- 40.3 km of waterways with a high risk of impact
- 46.5 km of waterways with a major risk of impact.

Construction of crossings (including bed-level and culvert crossings but not bridges) on mapped waterways require assessment under this code. The code outlines 38 performance outcomes that may apply to waterway crossings within the project site. However, an assessment cannot be completed until the construction methods of proposed crossing sites are finalised.

10.3 Wind farm development

The relevant portions of State Code 23 that are addressed in this section are as follows:

- PO5 – Development is designed, sited and operated to ensure that flora, fauna and associated ecological processes are protected from adverse impacts.
- PO8 – Development maintains the natural drainage patterns on the site by protecting:
  - bank stability by limiting bank erosion

- water quality objectives by filtering sediments, nutrients and other pollutants
- aquatic habitats
- terrestrial habitats.

Response to PO5

This ecological assessment report has identified the flora and fauna values occurring or likely to occur within the project site and has identified where impacts to such values are expected. Section 7.1 details the measures taken in the design phase of the project to avoid impacts to ecological values (including locating WTGs away from remnant vegetation, avoiding clearing in remnant vegetation, and micro-siting infrastructure where possible to avoid clearing of fauna habitat features such as hollow trees). Sections 7.2 and 7.3 detail the measures which are to be implemented to minimise and mitigate potential impacts on ecological values from the construction and operation of project infrastructure. If these measures are implemented the proposed development will comply with PO5.

Response to PO8

The access track design identifies that upgraded existing tracks and new tracks will require crossings to be upgraded/constructed to allow the passage of construction vehicles. Section 7 identifies measures aimed at the avoidance of impacts on watercourses and measures to be implemented throughout construction to ensure riparian conditions and functions are not adversely impacted and that aquatic and associated terrestrial habitats are protected. No conservation significant aquatic species were identified or considered likely to occur within the project area or be impacted by ongoing operations. Section 9.7 describes the riverine protection permit exemption guidelines that can be adopted to minimise impacts to watercourses, if avoidance is not possible. These are generally consistent with the recommended mitigation measures in Section 7. If these measures are implemented the proposed development will comply with PO8.

11 Summary and conclusion

This ecological assessment has identified the flora and fauna values existing within the project site of Tarong West Wind Farm, and has identified values of significance at the Commonwealth, state, and regional levels. The project site is currently used for cattle grazing, with areas of cleared paddock and standing vegetation. The project site consists predominantly of non-remnant vegetation (90.56%), but much of the field-verified remnant vegetation (7.61%) and high-value regrowth vegetation (1.84%) present on the project site is in average to good condition, providing a number of fauna habitat values such as hollows, seasonal nectar resources, and rocky outcrops.

Impacts to all ecological values have been refined through avoidance in the design phase of the project. Several previous turbine layouts, planning corridors and clearing footprints have been considered, and the layout revised to minimise impacts on remnant and high value regrowth vegetation, which provides much of the flora and fauna habitat in the project site. Impacts to one MNES, semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions, have been avoided entirely by exclusion of this area from the project site.

Over the construction phase of the project, within the clearing footprint (1,062.14 ha), the following may be removed:

- Up to 16.98 ha of remnant vegetation, which represents only 1.03% of equivalent vegetation communities within the project site
- Up to 169.05 ha of non-remnant vegetation modelled as threatened fauna habitat
- Up to 876.11 ha of non-remnant vegetation.

The project site contains significant ecological values including:

- MNES:
  - known habitat for threatened koala, greater glider, grey-headed flying-fox glossy black-cockatoo, and white-throated needletail
  - known habitat for migratory rufous fantail, satin flycatcher, fork-tailed swift, and white-throated needletail
- MSES:
  - regulated vegetation (least concern REs within the specified buffer distance of watercourses and drainage lines)
  - known TNT wildlife habitat (koala, greater glider, glossy black-cockatoo, and white-throated needletail
  - known habitat for one TNT flora species (Bailey's cypress)
  - known habitat for special least concern species (short-beaked echidna, rufous fantail, satin flycatcher, and fork-tailed swift
  - watercourses

- connectivity.

The MNES assessment identified eight EPBC Act-listed fauna species confirmed or likely to occur within the project site. These species have been identified through a desktop assessment and detailed targeted field surveys carried out over several periods from 2018 to 2023. The potential impacts of the proposed project on these species have been identified and assessed in accordance with the EPBC Act Matters of National Environmental Significance Significant Impact Guidelines 1.1 (DoE 2013a). Management measures have been proposed to avoid, mitigate, or minimise impacts to those species confirmed or likely to be present in the project site. Based on detailed ecological assessment, the following conclusions can be made:

- Provided that the management and mitigation measures detailed in section 7 are implemented, impacts to greater glider (endangered), grey-headed flying-fox (vulnerable), glossy black-cockatoo (vulnerable), rufous fantail (migratory), satin flycatcher (migratory), fork-tailed swift (migratory), are not likely to be significant.
- Provided the management and mitigation measures detailed in the project specific preliminary management plans (Preliminary Fauna Management Plan (Ecosure 2023c), Preliminary Vegetation Management Plan (Ecosure 2023b) and Preliminary Bird and Bat Management Plan (Ecosure 2023d)) are implemented, the proposed Tarong West Wind Farm project will comply with the Performance Outcomes of State Code 23 – Wind Farm Development relevant to this assessment.
- After recommended management and mitigation measures have been implemented, impacts to koala (endangered) as a result of this project are likely to be significant. This results mainly from habitat clearing during the construction phase of the project (up to 186.03 ha of potential koala habitat, including 16.98 ha of remnant vegetation and 169.05 ha within non-remnant areas). Environmental management of land-based offsets is being considered at an early stage to offset the residual impact to koala. RES Australia Pty Ltd has purchased a property contiguous with the project site to be dedicated for use as land-based environmental offsets. The management of this offset will be subject to a future management plan required under a future Approval.
- After recommended management and mitigation measures have been implemented, impacts to white-throated needletail (vulnerable and migratory) as a result of this project are likely to be significant. Though some potential roosting habitat may be cleared (up to 16.98 ha of remnant vegetation), the species is almost exclusively aerial and rarely roosts in Australia. The likelihood of a significant impact to white-throated needletail results primarily from potential operational impacts (strike with WTGs). Measures to minimise the residual impact to white-throated needletail include:
  - ongoing monitoring of bird use and collision risk within the project site, and development of an adaptive management plan in a future approved BBMP.

The MSES assessment identified four NC Act-listed TNT fauna species, one TNT flora species, and four SLC fauna species as confirmed as occurring on the project site. The potential impacts of the proposed project on these species have been identified and assessed

in accordance with the Significant Residual Impact Guideline (DEHP 2014). Based on detailed ecological assessment, the following recommendations can be made:

- Provided that the management and mitigation measures detailed in section 7 are implemented, residual impacts to greater glider (endangered), glossy black-cockatoo (vulnerable), rufous fantail (SLC), satin flycatcher (SLC), fork-tailed swift (SLC), and short-beaked echidna (SLC) are not likely to be significant.
- After recommended management and mitigation measures have been implemented, residual impacts to koala (endangered) are likely to be significant, through loss or degradation of habitat, direct/indirect mortality, or increased predation.
- After recommended management and mitigation measures have been implemented, impacts to white-throated needletail (vulnerable) are likely to be significant, potentially through direct mortality as a result of collision with WTGs.
- Up to 16.98 ha of Category B (remnant) regulated vegetation containing least concern REs will be impacted.
- No Category C (HVR) vegetation occurs within the planning corridor and no of concern or endangered REs will be impacted.
- 4.93 ha of regulated vegetation within the specified buffer distance of mapped vegetation management watercourses.

Provided the management and mitigation measures detailed in this ecological assessment and the project specific management plans (Preliminary Fauna Management Plan (Ecosure 2023c), Preliminary Vegetation Management Plan (Ecosure 2023b) and Preliminary Bird and Bat Management Plan (Ecosure 2023d)) are implemented, the proposed Tarong West Wind Farm project will comply with the relevant performance outcomes (PO5 and PO8) of State Code 23 – Wind Farm Development.

References

ALA 2022. *Spatial Data Portal*. Atlas of Living Australia. Available: http://spatial.ala.org.au/webportal/, Canberra.

Biolink 2019. Redlands Coast Koala Population and Habitat Assessment. Report to Redlands City Council.

BirdLife Australia 2017. *Australasian bittern*. Available: https://birdlife.org.au/bird-profiles/australasian-bittern/, accessed: February 2023.

Brown GK and Bostock PD (eds) 2019. *Census of the Queensland Flora 2019*. Queensland Department of Environment and Science: Brisbane.

BoM 2023. *Climate data online, Kingaroy Airport Station (No. 040922),* Available: www.bom.gov.au/climate/data, accessed: February 2023.

Brett Lane & Associates and Aria Professional Services 2005. *Wind Farms and Birds: Interim Standards For Risk Assessment*. A report prepared for the Australian Wind Energy Association, Report No. 2003.35(2.2).

Cameron M 2006. Nesting habitat of the glossy black-cockatoo in central New South Wales. Biological Conservation, 127, 402-410.

Clean Energy Council 2018. Best Practice Guidelines for Implementation of Wind Energy Projects in Australia. Clean Energy Council, Melbourne.

Commonwealth of Australia 2016. *National Recovery Plan for the Regent Honeyeater (Anthochaera phrygia).* Canberra.

Coxen's Fig-Parrot Recovery Team 2001. Coxen's fig-parrot *Cyclopsitta diophthalma coxeni* recovery plan 2001−2005. Report to Environment Australia, Canberra. Queensland Parks and Wildlife Service, Brisbane.

Cristescu RH, Scales KL, Schultz AJ, Miller RL, Schoeman DS, Dique D and Frere CH 2019. Environmental impact assessments can misrepresent species distributions: A case study of koalas in Queensland, Australia. *Animal Conservation* 22(4): 314–323.

Cropper S 1993. *Management of endangered plants*, CSIRO Publications, Melbourne.

DAF 2018, Accepted development requirements for operational work that is constructing or raising waterway barrier works, date effective 1st October 2018, Department of Agriculture and Fisheries, Queensland.

DAWE 2021a. *Onshore Wind Farms – interim guidance on bird and bat management*, Department of Agriculture, Water and the Environment, Canberra.

DAWE 2021b. *National Recovery Plan for the Grey-headed Flying-fox 'Pteropus poliocephalus*', Department of Agriculture, Water and the Environment, Canberra.

DCCEEW, 2022a, Conservation Advice for Petauroides volans (greater glider (southern and central)), Canberra, Available:

http://www.environment.gov.au/biodiversity/threatened/species/pubs/254-conservation-advice-05072022.pdf.

DCCEEW 2022b. *National Flying Fox Monitoring Viewer*. Department of Climate Change, Energy, the Environment and Water, Canberra. Available: https://www.environment.gov.au/webgis-framework/apps/ffc-wide/ffc-wide.jsf.

DCCEEW 2023a. *Protected matters search tool*. Department of Climate Change, Energy, the Environment and Water, Canberra. Available: http://www.environment.gov.au/epbc/protected-matters-search-tool.

DCCEEW 2023b. *Species profile and threats database*, Department of Climate Change, Energy, the Environment and Water, Canberra. Available: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

DECC 2008. *Recovery plan for the koala (Phascolarctos cinereus)*. NSW Department of Environment and Climate Change, Sydney.

DEHP 2014. Queensland Environmental Offsets Policy Significant Residual Impact Guideline. Qld Department of Environment and Heritage Protection, Brisbane.

DEHP 2016. *Biodiversity Planning Assessment for Southeast Queensland Bioregion*, v 4.1, Department of Environment and Heritage Protection Brisbane.

Department of Sustainability and Environment 2011. *Approved Survey Standards: Greater Glider Petauroides volans*. Department of Sustainability and Environment, Melbourne.

DES 2013. *Banana-Auburn Ranges IBRA subregion — facts and maps*. Available at: https://wetlandinfo.des.qld.gov.au/wetlands/facts-maps/ibra-subregion-banana-auburn-ranges/

DES 2016. *Landsat Foliage Projective Cover - Queensland 2014*, Department of Environment and Science, Brisbane.

DES 2018a. *Biodiversity Planning Assessment for Brigalow Belt Bioregion, v 2.1*, Department of Environment and Science, Brisbane.

DES 2018b. *Statewide Landcover and Trees Study (SLATS): Overview of Methods*, Department of Environment and Science, Brisbane.

DES 2022a. *Species profile search*, Available: https://apps.des.qld.gov.au/species-search/, Department of Environment and Science, Brisbane.

DES 2023a. *Wildlife online species database search*. Available: https://apps.des.qld.gov.au/report-request/species-list/, Department of Environment and Science, Brisbane.

DES 2023b. *Protected plants flora survey trigger map*, Department of Environment and Science, Brisbane.DEWHA 2008a. *Approved conservation advice for Petaurus australis australis subsp. (fluffy glider).* Department of the Environment, Water, Heritage and the Arts, Canberra.

DEWHA 2008b. *Approved conservation advice for Trymalium minutiflorum.* Department of the Environment, Water, Heritage and the Arts, Canberra.

DEWHA 2009. *EPBC Act Policy Statement 2.3 – Wind Farm Industry*. Department of the Environment, Water, Heritage and the Arts, Canberra.

DEWHA 2010a. *Survey guidelines for Australia's threatened birds – guidelines for detecting birds listed as threatened under the Environmental Protection and Biodiversity Conservation Act 1999*. Department of the Environment, Water, Heritage and the Arts, Commonwealth of Australia, Canberra.

DEWHA 2010b. *Survey guidelines for Australia's threatened bats – guidelines for detecting bats listed as threatened under the Environmental Protection and Biodiversity Conservation Act 1999*. Department of the Environment, Water, Heritage and the Arts, Commonwealth of Australia, Canberra.

Dique DS, Thompson J, Preece HJ, de Villiers DL and Carrick FN 2003. Dispersal patterns in a regional koala population in south-east Queensland. *Wildlife Research,* vol. 30, pp. 281-290.

DoE 2013a. *Matters of National Environmental Significance significant impact guidelines 1.1*. Department of the Environment, Canberra.

DoE 2013b. *Approved Conservation Advice for the Brigalow (Acacia harpophylla dominant and co-dominant) ecological community*. Department of the Environment, Canberra.

DoE 2013c. *Approved Conservation Advice for Thesium australe (austral toadflax)*. Department of the Environment, Canberra.

DoE 2014a. *EPBC Act Referral Guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)*, Department of the Environment, Commonwealth of Australia, Canberra.

DoE 2014b. *Approved Conservation Advice for Lepidium peregrinum (Wandering Pepper-cress).* Department of the Environment, Canberra.

DoE 2014c. *Approved Conservation Advice for Sarcochilus weinthalii (blotched sarcochilus)*. Department of the Environment, Canberra.

DoE 2015. *Referral guideline for 14 birds listed as migratory species under the EPBC Act*. Department of the Environment, Commonwealth of Australia.

DoE 2016. *National Recovery Plan for the Spotted-tailed Quoll Dasyurus maculatus*, Australian Government Department of the Environment, Canberra.

DoR 2022a. *Vegetation management mapping.* Available: https://www.qld.gov.au/environment/land/vegetation/map-request, Department of Resources, Brisbane.

DoR 2022b. *Vegetation management property reporting.* Available: https://www.qld.gov.au/environment/land/vegetation/map-request, Department of Resources, Brisbane.

DRDMW 2023. *Riverine protection permit exemption requirements - WSS/2013/726*. Department of Regional Development, Manufacturing and Water, State of Queensland.

DSDILGP 2022a. *State development assessment provisions - Version 3.0*, Department of State Development, Infrastructure, Local Government and Planning, State of Queensland.

DSDILGP 2022b. *Planning guidance – State code 23: Wind farm development*. Department of State Development, Infrastructure, Local Government and Planning, State of Queensland.

DSEWPaC 2011a. *Approved Conservation Advice for the Lowland Rainforest of Subtropical Australia*. Department of Sustainability, Environment, Water, Population and Communities, Canberra, ACT.

DSEWPaC 2011b. *Survey guidelines for Australia's threatened mammals – guidelines for detecting mammals listed as threatened under the Environmental Protection and Biodiversity Conservation Act 1999*. Department of Sustainability, Environment, Water, Population and Communities, Canberra.

DSEWPaC 2011c. *Survey guidelines for Australia's threatened reptiles – guidelines for detecting reptiles listed as threatened under the Environmental Protection and Biodiversity Conservation Act 1999*. Department of Sustainability, Environment, Water, Population and Communities, Canberra.

DSEWPaC 2011d. Draft Referral guidelines for the nationally listed Brigalow Belt reptiles. Department of Sustainability, Environment, Water, Population and Communities, Canberra, ACT.

DSDMIP 2018. *State Planning Policy Interactive Mapping System*. Department of State Development, Manufacturing, Infrastructure, and Planning Available: https://spp.dsdip.esriaustraliaonline.com.au/geoviewer/map/planmaking, Brisbane.

Ecosure 2023a. *Bird and Bat Utilisation Survey Report for Tarong West Wind Farm*. Report to RES Pty Ltd, Australia, Brisbane.

Ecosure 2023b. Preliminary Vegetation Management Plan Tarong West Wind Farm, Ironpot Queensland. Report to RES Pty Ltd, Australia, Brisbane.

Ecosure 2023c. Preliminary Fauna Management Plan Tarong West Wind Farm, Ironpot Queensland. Report to RES Pty Ltd, Australia, Brisbane.

Ecosure 2023d. Preliminary Bird and Bad Management Plan Tarong West Wind Farm, Ironpot Queensland. Report to RES Pty Ltd, Australia, Brisbane.

Ecosure 2023e. *Ecological assessment of proposed transport route corridor for Ironleaf wind farm*. Report to icubed consulting.

Eyre TJ, Ferguson DJ, Smith GC, Mathieson MT, Venz MF, Hogan, LD, Hourigan CL, Kelly, AL and Rowland J 2022a. *Terrestrial Vertebrate Fauna Survey Assessment Guidelines for Queensland – version 4.0*. Department of Environment and Science, Queensland Government, Brisbane.

Eyre TJ, Smith GC, Venz MF, Mathieson MT, Hogan LD, Starr, C, Winter, J and McDonald, K 2022b. *Guide to greater glider habitat in Queensland*. Report prepared for DAWE, Canberra. Department of Environment and Science, Brisbane.

Glossy Black Conservancy 2010. Glossy black-cockatoo Conservation Guidelines for South-Eastern Queensland and far North-Eastern New South Wales. Glossy Black Conservancy.

Golder Associates 2018. *Ironpot Wind Farm Ecological Impact Assessment*. Report to Australia Energy Windfarm.

Heenan PB and de Lange PJ 2011. *Lepidium peregrinum* (Brassicaceae)—a new addition to the New Zealand flora, *New Zealand Journal of Botany*, vol. 49 no.4, pp. 489-496.

Higgins PJ, Peter JM and Steele WK (eds) 2001. *Handbook of Australian, New Zealand and Antarctic Birds. Volume 5: Tyrant-flycatchers to Chats*. Melbourne, Victoria: Oxford University Press.

Hourigan C 2012. Glossy black-cockatoo, *Calyptorhynchus lathami*. Targeted species survey guidelines. Queensland Herbarium, Department of Environment and Science, Brisbane.

Hughes P and Hughes B 1991. 'Notes on the Black-breasted Button-quail at Widgee, Queensland', *Australian Bird Watcher*, vol. 14, pp. 113–118.

Hull CL, Stark EM, Peruzzo S and Sims CC 2013. Avian collisions at two wind farms in Tasmania, Australia: taxonomic and ecological characteristics of colliders versus noncolliders. *New Zealand Journal of Zoology,* vol. 40, pp.47-62.

icubed 2022. *Transport route study for Ironleaf windfarm vegetation management plan*. Icubed consulting, Brisbane.

IECA 2008. *Best Practice Erosion and Sediment Control Guidelines*. International Erosion Control Association, Australasia Chapter, Picton, NSW.

Jackson SM and Groves CP, 2015, *Taxonomy of Australian Mammals*, CSIRO Publishing, Clayton.

Jackson SM, 2015, Family Pseudocheiridae (Ringtail Possums and Greater Gliders), In *Handbook of the Mammals of the World*. *Volume 5: Monotremes and Marsupials* (eds Mittermeier RA & Wilson DE), 654–658, Springer, Barcelona.

Kehl J and Borsboom A 1984. Home range, den tree use and activity patterns in the Greater Glider, *Petauroides volans*. In: Smith, A. and Hume, I. (Eds) *Possums and Gliders*. Surrey Beatty and Sons, Chipping Norton, New South Wales.

Maloney KS 2007. *The status of the greater glider in the Illawarra region*. MSc thesis, Woolongong.

Marchant S and Higgins PJ (eds) 1993. *Handbook of Australian, New Zealand and Antarctic Birds. Volume 2. Raptors to Lapwings*, Oxford University Press, Melbourne.

Marques AT, Batalha H and Bernardino J 2021. Bird displacement by wind turbines: Assessing current knowledge and recommendations for future studies. *Birds*, vol. 2, no. 4, pp. 460-475.

McDonald W 2010. *National recovery plan for the 'Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions' ecological community*. Department of Environment and Resource Management, Brisbane.

McGregor DC, Padovan A, Georges A, Krockenberger HY and Youngentob KN, 2020, Genetic evidence supports three previously described species of greater glider, *Petauroides volans*, *P. minor*, and *P. armillatus*, *Nature Scientific Reports*, 10:1-11, https://doi.org/10.1038/s41598-020-76364-z

Mitchell 2015. *National Koala Tree Planting List*. Australian Koala Foundation.

Mooney PA and Pedler LP 2005. *Recovery Plan for the South Australian Subspecies of the Glossy Black-Cockatoo (Calyptorhynchus lathami halmaturinus): 2005-2010*. Department for the Environment and Heritage, South Australia.

Morcombe M 2004. *Field Guide to Australian Birds – second edition*. Steve Parish Publishing, Australia

Neldner VJ, Wilson BA, Dillewaard HA, Ryan TS, Butler DW and McDonald WJF 2020. *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*. Version 5.1. Updated March 2020. Queensland Herbarium, Queensland Department of Environment and Science, Brisbane.

OEH 2022. *Glossy black-cockatoo profile*. Office of Environment and Heritage. Available: https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10140

de Oliveira, SM, Murray PJ, de Villiers DL, Baxter GS. 2014. Ecology and movement of urban koalas adjacent to linear infrastructure in coastal south-east Queensland. *Australian Mammalogy*, 36:45–54

Phillips S and Callaghan J 2011. The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas *Phascolarctos cinereus. Australian Zoologist*, vol. 35, no. 3, pp. 774-780.

Pieters, CW. 1993. *An Investigation into the Efficacy of a Koala/Wildlife Funnel-Tunnel at Gaven, Queensland.* The Urban Wildlife Research Centre, Paradise Point.

Pizzey G and Knight F 2012. *The Field Guide the Birds of Australia*, 8th edition.

Queensland Government 2023. *Queensland Drought Duration Report*. The Long Paddock, Queensland Department of Environment and Science, State of Queensland. Available: https://longpaddock.qld.gov.au/drought/drought-declarations/droughthistory/.

Queensland Herbarium 2021. *Regional Ecosystem Description Database (REDD).* Version 12.1 (December 2021), Queensland Department of Environment and Science, Brisbane.

QPWS 2002. *Trees for koalas in coastal south-east Queensland*, Queensland Parks and Wildlife Service, Brisbane.

Robbins CS 1981. Bird activity levels related to weather. *Studies in Avian Biology*, vol. 6, pp. 301-310

Robertson I and Klemash D 2003. Insect-mediated pollination in slickspot peppergrass, *Lepidium papilliferum* L. (Brassicaceae), and its implications for population viability. *Western North American Naturalist*, vol. 63, pp. 333-42.

Rowland J 2012. Grey snake, *Hemiaspis damelii.* Targeted species survey guidelines. Queensland Herbarium, Department of Environment and Science, Brisbane.

Sattler PS and Williams RD 1999. *The conservation status of Queensland's bioregional ecosystems*. Environmental Protection Agency, Brisbane.

SBRC 2016. *South Burnett Biosecurity Surveillance Program for Restricted and Prohibited Matter under the Biosecurity Act 2014*, Biosecurity Queensland, Department of Agriculture and Fisheries.

Scarlett NH, Branwell M and Earl G 2003. *Action Statement No. 56 Austral Toad-flax Thesium australe.* Department of Sustainability and Environment, Melbourne, Victoria.

Smith GC, Mathieson M and Hogan L 2007. Home range and habitat use of a low-density population of Greater Glider, *Petauroides volans* (Pseudocheiridae: Marsupialia), in a hollow-limiting environment. *Wildlife Research,* vol. 34, pp.472-483.

Smyth AK and Young J 1996. 'Observations on the endangered Black-breasted Button-quail *Turnix melanogaster* breeding in the wild', *Emu*, vol. 96, pp. 202–207.

South Burnett Regional Council n.d. *Callitris baileyi (C. T. White) – Bailey's Cypress Pine*, South Burnett Regional Council. Available: https://www.southburnett.qld.gov.au/downloads/file/3935/callitris-baileyi.

Tarburton MK 1993. Radiotracking a White-throated Needletail to roost. *Emu,* 93, 121-124.

Tarburton MK 2021. Recent increase in knowledge about numbers and flight behaviour in the White-throated Needletail *Hirundapus caudacutus. Australian Field Ornithology*, 38, 124–130.

Taylor BD and Goldingay RL 2014. Use of highway underpasses by bandicoots over a 7-year period that encompassed road widening. *Australian Mammal*. 36: 178-183.

Taylor BD and Goldingay RL 2009. Can road-crossing structures improve population viability of an urban gliding mammal? *Ecology and Society*. 14(13).

Threatened Species Scientific Committee (TSSC) 2016. *Conservation Advice Petauroides volans greater glider*. Canberra: Department of the Environment, Canberra.

Threatened Species Scientific Committee (TSSC) 2019. *Conservation Advice Hirundapus caudacutus White-throated Needletail*. Department of the Environment and Energy, Canberra.

Tidemann CR 1998. Grey-headed Flying-fox, *Pteropus poliocephalus*, Temminck, 1824. In: Strahan, R. ed. *The Mammals of Australia*. Frenchs Forest: New Holland Publishers Pty Ltd.

Timmiss LA, Martin JM, Murray NK, Welbergen JA, Westcott D, McKeown A and Kingsford RT 2020. Threatened but not conserved: flying-fox roosting and foraging habitat in Australia. *Australian Journal of Zoology*, 68, 226-233.

USDA 2019. *Weed Risk Assessment for Thesium ramosum*. United States Department of Agriculture, Raleigh.

Van Dyck S and Strahan R 2008. *Mammals of Australia*, 3rd edition, Reed New Holland, Sydney.

White, NA. 1999. Ecology of the koala (*Phascolarctos cinereus*) in rural south-east Queensland, Australia. *Wildlife Research* 26: 731–744.

Wilson S and Swan G 2014. A Complete Guide to Reptiles of Australia, 4th edn, Lliane Clarke, London.

Wintle BA, Kavanagh RP, McCarthy MA and Burgman MA 2005. Estimating and dealing with detectability in occupancy surveys for forest owls and arboreal marsupials. *The Journal of*

Wildlife Management, 69, 905-917.

Woinarski JCZ, Burbidge AA and Harrison PL 2014. *The Action Plan for Australian Mammals 2012*, CSIRO Publishing, Collingwood.

Yamaguchi NM, Mori S, Yonekawa SH, Waga HD and Higuchi H 2021. Light-level geolocators reveal that White-throated Needletails *Hirundapus caudacutus* follow a figure-eight migration route between Japan and Australia. *Pacific Science* 21, 75–84.

Youngentob KN, Marsh KF and Skewes J 2021. *A review of koala habitat assessment criteria and methods.* Report prepared for DAWE, Canberra.

Appendix 1 Database search results

A. 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: 23-Feb-2023

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	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	8
Listed Threatened Species:	43
Listed Migratory Species:	14

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	20
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:	None
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
Banrock station wetland complex	1300 - 1400km upstream from Ramsar site	In buffer area only
Narran lake nature reserve	500 - 600km upstream from Ramsar site	In buffer area only
Riverland	1200 - 1300km upstream from Ramsar site	In buffer area only
The coorong, and lakes alexandrina and albert wetland	1400 - 1500km upstream from Ramsar site	In buffer area only

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
Brigalow (Acacia harpophylla dominant and co-dominant)	Endangered	Community known to occur within area	In buffer area only
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community may occur within area	In feature area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area	In buffer area only
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community likely to occur within area	In buffer area only
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community likely to occur within area	In feature area
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	Endangered	Community likely to occur within area	In buffer area only

Community Name	Threatened Category	Presence Text	Buffer Status
Weeping Myall Woodlands	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			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat may occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat may occur within area	In buffer area only
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
[Turnix melanogaster](#) Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			
[Chalinolobus dwyeri](#) Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area	In feature area
[Dasyurus hallucatus](#) Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely 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 may occur within area	In buffer area only
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	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 likely to occur within area	In feature area
[Petrogale penicillata](#) Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
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
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Acacia grandifolia			
[3566]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Arthraxon hispidus			
Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cadellia pentastylis			
Ooline [9828]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Clematis fawcettii			
Stream Clematis [4311]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cossinia australiana			
Cossinia [3066]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Denhamia parvifolia			
Small-leaved Denhamia [18106]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dichanthium setosum			
bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Haloragis exalata subsp. velutina			
Tall Velvet Sea-berry [16839]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lepidium peregrinum			
Wandering Pepper-cress [14035]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Phebalium distans Mt Berryman Phebalium [81869]	Endangered	Species or species habitat likely to occur within area	In feature area
Picris evae Hawkweed [10839]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Plectranthus omissus [55729]	Endangered	Species or species habitat may occur within area	In buffer area only
Rhaponticum australe Austral Cornflower, Native Thistle [22647]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Sophora fraseri [8836]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat known to occur within area	In feature area
REPTILE			
Anomalopus mackayi Five-clawed Worm-skink, Long-legged Worm-skink [25934]	Vulnerable	Species or species habitat may occur within area	In feature area
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Elseya albagula Southern Snapping Turtle, White-throated Snapping Turtle [81648]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Furina dunmalli](#) Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In feature area
[Hemiaspis damelii](#) Grey Snake [1179]	Endangered	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
[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 may occur within area	In buffer area only
Migratory Wetlands Species			

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

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat 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
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to 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
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
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		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
Boyneside	Nature Refuge	QLD	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Wambo Wind Farm	2020/8727	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Coal Conveyor between New Acland Coal Mine and Tarong Power Stations	2007/3430	Not Controlled Action	Completed	In feature area
Coopers Gap Wind Farm	2008/4559	Not Controlled Action	Completed	In buffer area only
Coopers Gap Wind Farm	2008/4237	Not Controlled Action	Completed	In buffer area only
Development of the Coopers Gap Wind Farm	2011/5976	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
Surat Basin to Tarong Railway project	2003/1264	Not Controlled Action	Completed	In feature area

Bioregional Assessments			
SubRegion	BioRegion	Website	Buffer Status
Maranoa-Balonne-Condamine	Northern Inland Catchments	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.

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B. Wildnet species search

Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Queensland status: All
Records: All
Date: Since 1980
Latitude: -26.5941
Longitude: 151.5207
Distance: 20
Email: mcastelli@ecosure.com.au
Date submitted: Thursday 23 Feb 2023 13:32:25
Date extracted: Thursday 23 Feb 2023 13:40:06

The number of records retrieved = 383

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			1
animals	amphibians	Hylidae	*Cyclorana alboguttata*	greenstripe frog		C		1
animals	amphibians	Hylidae	*Cyclorana brevipes*	superb collared frog		C		1
animals	amphibians	Hylidae	*Litoria balatus*	slender bleating treefrog		C		1
animals	amphibians	Hylidae	*Litoria caerulea*	common green treefrog		C		4
animals	amphibians	Hylidae	*Litoria fallax*	eastern sedgefrog		C		6
animals	amphibians	Hylidae	*Litoria latopalmata*	broad palmed rocketfrog		C		4
animals	amphibians	Hylidae	*Litoria peronii*	emerald spotted treefrog		C		3
animals	amphibians	Hylidae	*Litoria rubella*	ruddy treefrog		C		3
animals	amphibians	Limnodynastidae	*Limnodynastes peronii*	striped marshfrog		C		5
animals	amphibians	Limnodynastidae	*Limnodynastes tasmaniensis*	spotted grassfrog		C		2
animals	amphibians	Limnodynastidae	*Limnodynastes terraereginae*	scarlet sided pobblebonk		C		2
animals	amphibians	Limnodynastidae	*Platyplectrum ornatum*	ornate burrowing frog		C		1
animals	amphibians	Myobatrachidae	*Uperoleia rugosa*	chubby gungan		C		1
animals	birds	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill		C		4
animals	birds	Acanthizidae	*Acanthiza reguloides*	buff-rumped thornbill		C		1
animals	birds	Acanthizidae	*Gerygone olivacea*	white-throated gerygone		C		9
animals	birds	Acanthizidae	*Pyrrholaemus sagittatus*	speckled warbler		C		3
animals	birds	Acanthizidae	*Sericornis frontalis*	white-browed scrubwren		C		4
animals	birds	Acanthizidae	*Smicrornis brevirostris*	weebill		C		5
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		4
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		C		1
animals	birds	Alcedinidae	*Dacelo novaeguineae*	laughing kookaburra		C		10
animals	birds	Alcedinidae	*Todiramphus sanctus*	sacred kingfisher		C		5
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		4
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		9
animals	birds	Anatidae	*Aythya australis*	hardhead		C		4
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		5
animals	birds	Anatidae	*Cygnus atratus*	black swan		C		1
animals	birds	Anatidae	*Dendrocygna eytoni*	plumed whistling-duck		C		2
animals	birds	Anatidae	*Oxyura australis*	blue-billed duck		C		2
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		4
animals	birds	Ardeidae	*Ardea alba modesta*	eastern great egret		C		2
animals	birds	Ardeidae	*Ardea pacifica*	white-necked heron		C		2
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		7
animals	birds	Artamidae	*Artamus cinereus*	black-faced woodswallow		C		1
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		14
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		5
animals	birds	Artamidae	*Gymnorhina tibicen*	Australian magpie		C		12
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		7
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		9
animals	birds	Cacatuidae	*Calyptorhynchus banksii*	red-tailed black-cockatoo		C		3
animals	birds	Cacatuidae	*Eolophus roseicapilla*	galah		C		17
animals	birds	Cacatuidae	*Nymphicus hollandicus*	cockatiel		C		5
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		7
animals	birds	Campephagidae	*Coracina papuensis*	white-bellied cuckoo-shrike		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Campephagidae	*Lalage tricolor*	white-winged triller		C		1
animals	birds	Charadriidae	*Elseyornis melanops*	black-fronted dotterel		C		3
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		2
animals	birds	Charadriidae	*Vanellus miles novaehollandiae*	masked lapwing (southern subspecies)		C		5
animals	birds	Charadriidae	*Vanellus tricolor*	banded lapwing		C		1
animals	birds	Ciconiidae	*Ephippiorhynchus asiaticus*	black-necked stork		C		1
animals	birds	Climacteridae	*Cormobates leucophaea metastasis*	white-throated treecreeper (southern)		C		1
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		3
animals	birds	Columbidae	*Geopelia placida*	peaceful dove		C		2
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		7
animals	birds	Columbidae	*Phaps chalcoptera*	common bronzewing		C		1
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		6
animals	birds	Corcoracidae	*Corcorax melanorhamphos*	white-winged chough		C		5
animals	birds	Corcoracidae	*Struthidea cinerea*	apostlebird		C		6
animals	birds	Corvidae	*Corvus coronoides*	Australian raven		C		4
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		20
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		2
animals	birds	Cuculidae	*Chalcites minutillus barnardi*	Eastern little bronze-cuckoo		C		1
animals	birds	Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo		C		2
animals	birds	Dicaeidae	*Dicaeum hirundinaceum*	mistletoebird		C		3
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		1
animals	birds	Estrildidae	*Lonchura castaneothorax*	chestnut-breasted mannikin		C		1
animals	birds	Estrildidae	*Neochmia modesta*	plum-headed finch		C		1
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		4
animals	birds	Estrildidae	*Taeniopygia guttata*	zebra finch		C		1
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		1
animals	birds	Hirundinidae	*Cheramoeca leucosterna*	white-backed swallow		C		1
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		3
animals	birds	Hirundinidae	*Petrochelidon ariel*	fairy martin		C		1
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		4
animals	birds	Maluridae	*Malurus lamberti*	variegated fairy-wren		C		2
animals	birds	Maluridae	*Malurus lamberti sensu lato*	variegated fairy-wren		C		2
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		8
animals	birds	Megapodiidae	*Alectura lathami*	Australian brush-turkey		C		1
animals	birds	Meliphagidae	*Acanthagenys rufogularis*	spiny-cheeked honeyeater		C		2
animals	birds	Meliphagidae	*Caligavis chrysops*	yellow-faced honeyeater		C		3
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		4
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		5
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		13
animals	birds	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater		C		2
animals	birds	Meliphagidae	*Melithreptus albogularis*	white-throated honeyeater		C		2
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		1
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		3
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		5
animals	birds	Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater		C		2
animals	birds	Meliphagidae	*Ptilotula penicillata*	white-plumed honeyeater		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		C		1
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		14
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		2
animals	birds	Motacillidae	*Anthus novaeseelandiae*	Australasian pipit		C		2
animals	birds	Neosittidae	*Daphoenositta chrysoptera*	varied sittella		C		1
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		1
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		1
animals	birds	Pachycephalidae	*Colluricincla megarhyncha*	little shrike-thrush		C		1
animals	birds	Pachycephalidae	*Pachycephala pectoralis*	golden whistler		C		1
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		7
animals	birds	Pardalotidae	*Pardalotus punctatus*	spotted pardalote		C		1
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		13
animals	birds	Petroicidae	*Eopsaltria australis*	eastern yellow robin		C		1
animals	birds	Petroicidae	*Microeca fascinans*	jacky winter		C		1
animals	birds	Petroicidae	*Petroica rosea*	rose robin		C		1
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		2
animals	birds	Phalacrocoracidae	*Phalacrocorax carbo*	great cormorant		C		1
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		1
animals	birds	Phalacrocoracidae	*Phalacrocorax varius*	pied cormorant		C		2
animals	birds	Podargidae	*Podargus strigoides*	tawny frogmouth		C		1
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		3
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		5
animals	birds	Psittaculidae	*Alisterus scapularis*	Australian king-parrot		C		3
animals	birds	Psittaculidae	*Aprosmictus erythropterus*	red-winged parrot		C		3
animals	birds	Psittaculidae	*Parvipsitta pusilla*	little lorikeet		C		1
animals	birds	Psittaculidae	*Platycercus adscitus*	pale-headed rosella		C		6
animals	birds	Psittaculidae	*Platycercus elegans*	crimson rosella		C		1
animals	birds	Psittaculidae	*Platycercus eximius*	eastern rosella		C		1
animals	birds	Psittaculidae	*Psephotus haematonotus*	red-rumped parrot		C		3
animals	birds	Psittaculidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		4
animals	birds	Psittaculidae	*Trichoglossus moluccanus*	rainbow lorikeet		C		5
animals	birds	Psophodidae	*Psophodes olivaceus*	eastern whipbird		C		1
animals	birds	Rallidae	*Fulica atra*	Eurasian coot		C		2
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		1
animals	birds	Rallidae	*Porphyrio melanotus*	purple swamphen		C		1
animals	birds	Rallidae	*Tribonyx ventralis*	black-tailed native-hen		C		1
animals	birds	Recurvirostridae	*Himantopus leucocephalus*	pied stilt		C		2
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		6
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		7
animals	birds	Rhipiduridae	*Rhipidura rufifrons*	rufous fantail		SL		1
animals	birds	Strigidae	*Ninox boobook*	southern boobook		C		1
animals	birds	Threskiornithidae	*Platalea flavipes*	yellow-billed spoonbill		C		2
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		1
animals	birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis		C		5
animals	birds	Zosteropidae	*Zosterops lateralis*	silvereye		C		3
animals	mammals	Felidae	*Felis catus*	cat	Y			1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Leporidae	*Lepus europaeus*	European brown hare	Y			1
animals	mammals	Leporidae	*Oryctolagus cuniculus*	rabbit	Y			1
animals	mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo		C		1
animals	mammals	Macropodidae	*Notamacropus rufogriseus*	red-necked wallaby		C		1
animals	mammals	Peramelidae	*Isoodon macrourus*	northern brown bandicoot		C		1
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		1
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		E	E	9
animals	mammals	Pteropodidae	*Pteropus scapulatus*	little red flying-fox		C		6
animals	mammals	Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna		SL		1
animals	reptiles	Agamidae	*Intellagama lesueurii*	eastern water dragon		C		1
animals	reptiles	Agamidae	*Pogona barbata*	bearded dragon		C		1
animals	reptiles	Boidae	*Antaresia maculosa*	spotted python		C		1
animals	reptiles	Carphodactylidae	*Underwoodisaurus milii*	thick-tailed gecko		C		1
animals	reptiles	Chelidae	*Chelodina longicollis*	eastern snake-necked turtle		C		4/4
animals	reptiles	Elapidae	*Pseudonaja textilis*	eastern brown snake		C		1
animals	reptiles	Scincidae	*Cryptoblepharus pulcher pulcher*	elegant snake-eyed skink		C		1
animals	reptiles	Scincidae	*Lygisaurus foliorum*	tree-base litter-skink		C		1
animals	reptiles	Scincidae	*Tiliqua scincoides scincoides*	eastern bluetongue		C		1
animals	reptiles	Varanidae	*Varanus gouldii*	sand monitor		C		1
animals	reptiles	Varanidae	*Varanus varius*	lace monitor		C		3
fungi	Agaricomycetes	Agaricaceae	*Calvatia lilacina*			C		2/1
fungi	Agaricomycetes	Agaricaceae	*Chlorophyllum*					1/1
fungi	Agaricomycetes	Agaricaceae	*Coprinus truncorum*			C		1/1
fungi	Agaricomycetes	Boletaceae	*Boletus*					1/1
fungi	Agaricomycetes	Fomitopsidaceae	*Postia*					1/1
fungi	Agaricomycetes	Ganodermataceae	*Amauroderma rude*			C		1/1
fungi	Agaricomycetes	Gloeophyllaceae	*Veluticeps*			C		1/1
fungi	Agaricomycetes	Hymenochaetaceae	*Hymenochaete*					1/1
fungi	Agaricomycetes	Marasmiaceae	*Marasmius crinisequi*			C		1/1
fungi	Agaricomycetes	Omphalotaceae	*Lentinula lateritia*			C		2/1
fungi	Agaricomycetes	Panaeolaceae	*Panaeolus bernicis*			C		1/1
fungi	Agaricomycetes	Polyporaceae	*Lenzites*					1/1
fungi	Agaricomycetes	Polyporaceae	*Trametes hirsuta*			C		1/1
fungi	Agaricomycetes	Polyporaceae	*Trametes versicolor*			C		1/1
fungi	Agaricomycetes	Stereaceae	*Stereum hirsutum*			C		1/1
fungi	Agaricomycetes	Stereaceae	*Stereum illudens*			C		1/1
fungi	Pezizomycetes	Pyronemataceae	*Scutellinia*					1/1
fungi	Pezizomycetes	Sarcoscyphaceae	*Cookeina*					1/1
fungi	sordariomycetes	Cordycipitaceae	*Cordyceps hawkesii*			C		1/1
plants	land plants	Acanthaceae	*Rostellularia adscendens*			C		1/1
plants	land plants	Agavaceae	*Agave americana*		Y			1
plants	land plants	Amaranthaceae	*Deeringia amaranthoides*	redberry		C		1/1
plants	land plants	Apiaceae	*Apium prostratum var. prostratum*			C		1/1
plants	land plants	Apiaceae	*Berula erecta*	water parsnip	Y			1/1
plants	land plants	Apiaceae	*Cyclospermum leptophyllum*		Y			1/1
plants	land plants	Apiaceae	*Daucus glochidiatus*	Australian carrot		C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Apocynaceae	*Alstonia constricta*	bitterbark		C		1/1
plants	land plants	Apocynaceae	*Alyxia ruscifolia*			C		2/2
plants	land plants	Apocynaceae	*Carissa ovata*	currantbush		C		1
plants	land plants	Apocynaceae	*Gymnema pleiadenium*			C		1/1
plants	land plants	Araceae	*Landoltia punctata*			C		1/1
plants	land plants	Araliaceae	*Hydrocotyle acutiloba*			C		1/1
plants	land plants	Araliaceae	*Hydrocotyle laxiflora*	stinking pennywort		C		1/1
plants	land plants	Araliaceae	*Hydrocotyle peduncularis*			C		1/1
plants	land plants	Asteraceae	*Acanthospermum hispidum*	star burr	Y			1/1
plants	land plants	Asteraceae	*Brachyscome microcarpa subsp. microcarpa*			C		1/1
plants	land plants	Asteraceae	*Carduus thoermeri*	nodding thistle	Y			1/1
plants	land plants	Asteraceae	*Carthamus lanatus*	saffron thistle	Y			1/1
plants	land plants	Asteraceae	*Coreopsis lanceolata*		Y			1/1
plants	land plants	Asteraceae	*Glossocardia bidens*	native cobbler's pegs		C		1/1
plants	land plants	Asteraceae	*Olearia canescens subsp. discolor*			C		1/1
plants	land plants	Asteraceae	*Picris angustifolia subsp. carolorum-henricorum*			C		1/1
plants	land plants	Asteraceae	*Senecio esleri*			C		1/1
plants	land plants	Asteraceae	*Senecio quadridentatus*	cotton fireweed		C		1/1
plants	land plants	Asteraceae	*Zinnia peruviana*	wild zinnia	Y			3/3
plants	land plants	Bignoniaceae	*Pandorea pandorana*	wonga vine		C		1/1
plants	land plants	Boraginaceae	*Cynoglossum australe*			C		1/1
plants	land plants	Boraginaceae	*Heliotropium amplexicaule*	blue heliotrope	Y			2/2
plants	land plants	Brassicaceae	*Lepidium africanum*	common peppercress	Y			1/1
plants	land plants	Brassicaceae	*Rorippa nasturtium-aquaticum*	watercress	Y			1/1
plants	land plants	Cactaceae	*Opuntia*					27
plants	land plants	Cactaceae	*Opuntia tomentosa*	velvety tree pear	Y			2
plants	land plants	Campanulaceae	*Wahlenbergia capillaris*			SL		2/2
plants	land plants	Capparaceae	*Capparis sarmentosa*	scrambling caper		C		2/2
plants	land plants	Caryophyllaceae	*Petrorhagia dubia*		Y			1/1
plants	land plants	Caryophyllaceae	*Polycarpon tetraphyllum*		Y			1/1
plants	land plants	Casuarinaceae	*Allocasuarina littoralis*			C		1/1
plants	land plants	Casuarinaceae	*Allocasuarina luehmannii*	bull oak		C		1/1
plants	land plants	Celastraceae	*Celastrus subspicata*	large-leaved staffvine		C		1/1
plants	land plants	Celastraceae	*Denhamia bilocularis*			C		1/1
plants	land plants	Celastraceae	*Denhamia disperma*			C		1/1
plants	land plants	Celastraceae	*Elaeodendron australe var. integrifolium*			C		2/2
plants	land plants	Commelinaceae	*Commelina diffusa*			C		1/1
plants	land plants	Commelinaceae	*Murdannia graminea*	murdannia		C		1/1
plants	land plants	Convolvulaceae	*Convolvulus angustissimus subsp. angustissimus*			C		1/1
plants	land plants	Convolvulaceae	*Convolvulus erubescens*	Australian bindweed		C		1/1
plants	land plants	Convolvulaceae	*Dichondra repens*	kidney weed		C		1/1
plants	land plants	Convolvulaceae	*Evolvulus alsinoides var. decumbens*			C		1/1
plants	land plants	Crassulaceae	*Bryophyllum delagoense*		Y			1
plants	land plants	Crassulaceae	*Bryophyllum x houghtonii*		Y			1
plants	land plants	Cupressaceae	*Callitris baileyi*	Bailey's cypress		NT		4/4
plants	land plants	Cupressaceae	*Callitris columellaris*			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Cyperaceae	*Bolboschoenus fluviatilis*			C		1/1
plants	land plants	Cyperaceae	*Cyperus fulvus*			C		1/1
plants	land plants	Cyperaceae	*Cyperus involucratus*		Y			1/1
plants	land plants	Cyperaceae	*Cyperus vaginatus*			C		1/1
plants	land plants	Cyperaceae	*Eleocharis cylindrostachys*			C		1/1
plants	land plants	Cyperaceae	*Fimbristylis dichotoma*	common fringe-rush		C		1/1
plants	land plants	Cyperaceae	*Schoenoplectus tabernaemontani*			C		1/1
plants	land plants	Droseraceae	*Drosera lunata*			SL		1/1
plants	land plants	Ebenaceae	*Diospyros geminata*	scaly ebony		C		1/1
plants	land plants	Ericaceae	*Styphelia trichostyla*			C		1/1
plants	land plants	Erythroxylaceae	*Erythroxylum sp. (Splityard Creek L.Pedley 5360)*			C		1/1
plants	land plants	Euphorbiaceae	*Acalypha eremorum*	soft acalypha		C		1/1
plants	land plants	Euphorbiaceae	*Croton acronychioides*	thick-leaved croton		C		1/1
plants	land plants	Euphorbiaceae	*Croton insularis*	Queensland cascarilla		C		1/1
plants	land plants	Euphorbiaceae	*Croton phebalioides*	narrow-leaved croton		C		1/1
plants	land plants	Euphorbiaceae	*Euphorbia dallachyana*			C		1/1
plants	land plants	Euphorbiaceae	*Euphorbia davidii*		Y			2/2
plants	land plants	Gentianaceae	*Centaurium*					1/1
plants	land plants	Gentianaceae	*Centaurium tenuiflorum*		Y			1/1
plants	land plants	Geraniaceae	*Geranium solanderi var. solanderi*	native geranium		C		1/1
plants	land plants	Goodeniaceae	*Goodenia paradoxa*			C		1/1
plants	land plants	Haloragaceae	*Gonocarpus*					1/1
plants	land plants	Haloragaceae	*Haloragis heterophylla*	rough raspweed		C		1/1
plants	land plants	Hypericaceae	*Hypericum gramineum*			C		1/1
plants	land plants	Hypoxidaceae	*Hypoxis pratensis var. tuberculata*			C		1/1
plants	land plants	Lamiaceae	*Ajuga australis*	Australian bugle		C		1/1
plants	land plants	Lamiaceae	*Coleus australis*			C		1/1
plants	land plants	Lamiaceae	*Mentha satureioides*	native pennyroyal		C		2/2
plants	land plants	Lamiaceae	*Teucrium argutum*			C		1/1
plants	land plants	Lamiaceae	*Teucrium junceum*			C		1/1
plants	land plants	Laxmanniaceae	*Eustrephus latifolius*	wombat berry		C		1
plants	land plants	Laxmanniaceae	*Lomandra filiformis subsp. coriacea*			C		1/1
plants	land plants	Leguminosae	*Acacia*					1
plants	land plants	Leguminosae	*Acacia disparrima subsp. disparrima*			C		1/1
plants	land plants	Leguminosae	*Acacia leiocalyx subsp. leiocalyx*			C		1/1
plants	land plants	Leguminosae	*Acacia leucoclada subsp. argentifolia*			C		1/1
plants	land plants	Leguminosae	*Acacia loroloba*	Ma Ma Creek wattle		C		1/1
plants	land plants	Leguminosae	*Acacia penninervis var. penninervis*			C		1/1
plants	land plants	Leguminosae	*Bossiaea scortechinii*			C		1/1
plants	land plants	Leguminosae	*Chorizema parviflorum*	eastern flame pea		C		1/1
plants	land plants	Leguminosae	*Desmodium brachypodum*	large ticktrefoil		C		1/1
plants	land plants	Leguminosae	*Galactia tenuiflora var. lucida*			C		1/1
plants	land plants	Leguminosae	*Glycine*					3/2
plants	land plants	Leguminosae	*Glycine clandestina*			C		1/1
plants	land plants	Leguminosae	*Glycine tabacina*	glycine pea		C		1/1
plants	land plants	Leguminosae	*Hardenbergia violacea*			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Leguminosae	*Hovea parvicalyx*			C		1/1
plants	land plants	Leguminosae	*Indigofera baileyi*			C		1/1
plants	land plants	Leguminosae	*Melilotus indicus*	hexham scent	Y			1/1
plants	land plants	Leguminosae	*Mirbelia pungens*			C		1/1
plants	land plants	Leguminosae	*Pultenaea bracteaminor*			C		1/1
plants	land plants	Leguminosae	*Senna barclayana*			C		1/1
plants	land plants	Leguminosae	*Senna surattensis*			C		1/1
plants	land plants	Leguminosae	*Tephrosia bidwillii*			C		1/1
plants	land plants	Leguminosae	*Trifolium repens var. repens*	white clover	Y			1/1
plants	land plants	Leguminosae	*Zornia muriculata subsp. angustata*			C		1/1
plants	land plants	Linderniaceae	*Lindernia prolata*			C		1/1
plants	land plants	Loranthaceae	*Amyema lucasii*			C		1/1
plants	land plants	Loranthaceae	*Amyema quandang var. bancroftii*	broad-leaved grey mistletoe		C		1/1
plants	land plants	Loranthaceae	*Dendrophthoe glabrescens*			C		1/1
plants	land plants	Malvaceae	*Anoda cristata*	anoda weed	Y			1/1
plants	land plants	Malvaceae	*Malvastrum coromandelianum subsp. coromandelianum*		Y			1/1
plants	land plants	Malvaceae	*Sida hackettiana*			C		1/1
plants	land plants	Malvaceae	*Sida rhombifolia*		Y			1/1
plants	land plants	Meliaceae	*Owenia venosa*	crow's apple		C		2/2
plants	land plants	Menyanthaceae	*Nymphoides indica*	water snowflake		SL		1/1
plants	land plants	Myrtaceae	*Angophora floribunda*	rough-barked apple		C		1/1
plants	land plants	Myrtaceae	*Corymbia citriodora*	spotted gum		C		1
plants	land plants	Myrtaceae	*Corymbia trachyphloia subsp. trachyphloia*			C		1/1
plants	land plants	Myrtaceae	*Eucalyptus*					1
plants	land plants	Myrtaceae	*Eucalyptus apothalassica*			C		1/1
plants	land plants	Myrtaceae	*Eucalyptus crebra*	narrow-leaved red ironbark		C		2/1
plants	land plants	Myrtaceae	*Eucalyptus dura*			C		2/2
plants	land plants	Myrtaceae	*Eucalyptus major*	mountain grey gum		C		1/1
plants	land plants	Myrtaceae	*Sannantha collina*			C		1/1
plants	land plants	Oleaceae	*Jasminum simplicifolium subsp. australiense*			C		1/1
plants	land plants	Oleaceae	*Notelaea microcarpa*			C		1/1
plants	land plants	Oxalidaceae	*Oxalis chnoodes*			C		1/1
plants	land plants	Phyllanthaceae	*Bridelia leichhardtii*			C		1/1
plants	land plants	Phyllanthaceae	*Phyllanthus subcrenulatus*			C		1/1
plants	land plants	Pittosporaceae	*Pittosporum*					1
plants	land plants	Pittosporaceae	*Pittosporum angustifolium*			C		1/1
plants	land plants	Pittosporaceae	*Pittosporum viscidum*	black-fruited thornbush		C		1/1
plants	land plants	Plantaginaceae	*Callitriche sonderi*			C		1/1
plants	land plants	Plantaginaceae	*Gratiola pedunculata*			C		1/1
plants	land plants	Plumbaginaceae	*Plumbago zeylanica*	native plumbago		C		1/1
plants	land plants	Poaceae	*Aristida calycina var. filifolia*			C		1/1
plants	land plants	Poaceae	*Arundinella nepalensis*	reedgrass		C		1/1
plants	land plants	Poaceae	*Bothriochloa bladhii subsp. bladhii*			C		1/1
plants	land plants	Poaceae	*Bothriochloa decipiens var. decipiens*			C		1/1
plants	land plants	Poaceae	*Cenchrus purpurascens*			C		1/1
plants	land plants	Poaceae	*Chloris divaricata var. cynodontoides*			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Poaceae	*Chloris ventricosa*	tall chloris		C		1/1
plants	land plants	Poaceae	*Chrysopogon filipes*			C		1/1
plants	land plants	Poaceae	*Chrysopogon sylvaticus*			C		1/1
plants	land plants	Poaceae	*Cleistochloa subjuncea*			C		1/1
plants	land plants	Poaceae	*Cymbopogon refractus*	barbed-wire grass		C		1/1
plants	land plants	Poaceae	*Dichanthium sericeum subsp. sericeum*			C		1/1
plants	land plants	Poaceae	*Dichelachne montana*			C		2/2
plants	land plants	Poaceae	*Digitaria minima*			C		1/1
plants	land plants	Poaceae	*Eragrostis curvula*		Y			2/2
plants	land plants	Poaceae	*Eragrostis longipedicellata*			C		1/1
plants	land plants	Poaceae	*Eragrostis sororia*			C		1/1
plants	land plants	Poaceae	*Imperata cylindrica*	blady grass		C		1/1
plants	land plants	Poaceae	*Microlaena stipoides var. stipoides*			C		1/1
plants	land plants	Poaceae	*Oplismenus aemulus*	creeping shade grass		C		1/1
plants	land plants	Poaceae	*Paspalidium distans*	shotgrass		C		1/1
plants	land plants	Poaceae	*Sarga leiocladum*			C		1/1
plants	land plants	Poaceae	*Sporobolus creber*			C		3/3
plants	land plants	Poaceae	*Sporobolus elongatus*			C		1/1
plants	land plants	Poaceae	*Themeda triandra*	kangaroo grass		C		1/1
plants	land plants	Poaceae	*Tripogon loliiformis*	five minute grass		C		2/2
plants	land plants	Poaceae	*Urochloa whiteana*			C		1/1
plants	land plants	Polygalaceae	*Polygala japonica*			C		1/1
plants	land plants	Polygalaceae	*Polygala triflora*			C		1/1
plants	land plants	Polygonaceae	*Persicaria decipiens*	slender knotweed		C		1/1
plants	land plants	Polygonaceae	*Rumex crispus*	curled dock	Y			1/1
plants	land plants	Polypodiaceae	*Pyrrosia rupestris*	rock felt fern		SL		1/1
plants	land plants	Portulacaceae	*Portulaca bicolor*			C		1/1
plants	land plants	Pteridaceae	*Adiantum atroviride*			SL		1/1
plants	land plants	Pteridaceae	*Cheilanthes distans*	bristly cloak fern		C		1/1
plants	land plants	Pteridaceae	*Cheilanthes sieberi subsp. sieberi*			C		1/1
plants	land plants	Pteridaceae	*Pellaea nana*			SL		1/1
plants	land plants	Ranunculaceae	*Ranunculus lappaceus*	common buttercup		C		1/1
plants	land plants	Ranunculaceae	*Ranunculus meristus*			C		1/1
plants	land plants	Ranunculaceae	*Ranunculus sessiliflorus var. sessiliflorus*			C		1/1
plants	land plants	Rhamnaceae	*Cryptandra longistaminea*			C		1/1
plants	land plants	Rosaceae	*Rubus parvifolius*	pink-flowered native raspberry		C		1/1
plants	land plants	Rubiaceae	*Everistia vacciniifolia var. vacciniifolia*			C		1/1
plants	land plants	Rubiaceae	*Opercularia hispida*	hairy stinkweed		C		1/1
plants	land plants	Rubiaceae	*Psydrax odorata forma subnitida*			C		1/1
plants	land plants	Rutaceae	*Acronychia laevis*	glossy acronychia		C		1/1
plants	land plants	Rutaceae	*Coatesia paniculata*			C		1/1
plants	land plants	Rutaceae	*Flindersia collina*	broad-leaved leopard tree		C		2/2
plants	land plants	Rutaceae	*Zieria aspalathoides subsp. aspalathoides*			C		1/1
plants	land plants	Salicaceae	*Casearia multinervosa*	casearia		C		1/1
plants	land plants	Samolaceae	*Samolus valerandi*	brookweed		C		1/1
plants	land plants	Santalaceae	*Exocarpos cupressiformis*	native cherry		C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Santalaceae	*Thesium australe*	toadflax		V	V	3/3
plants	land plants	Sapindaceae	*Dodonaea*					1
plants	land plants	Sapindaceae	*Elattostachys xylocarpa*	white tamarind		C		1/1
plants	land plants	Sapotaceae	*Planchonella cotinifolia var. cotinifolia*			C		1/1
plants	land plants	Scrophulariaceae	*Eremophila debilis*	winter apple		C		1/1
plants	land plants	Solanaceae	*Solanum*					1
plants	land plants	Solanaceae	*Solanum corifolium*	straggling nightshade		C		1/1
plants	land plants	Solanaceae	*Solanum nemophilum*			C		1/1
plants	land plants	Solanaceae	*Solanum seaforthianum*	Brazilian nightshade	Y			1
plants	land plants	Thymelaeaceae	*Pimelea curviflora subsp. divergens*			C		1/1
plants	land plants	Verbenaceae	*Lantana camara*	lantana	Y			4
plants	land plants	Violaceae	*Pigea stellarioides*			C		1/1
plants	land plants	Viscaceae	*Korthalsella breviarticulata*			C		1/1
plants		Papilionoideae	*Crotalaria mitchellii subsp. mitchellii*			C		2/2
plants		Papilionoideae	*Indigofera hirsuta*	hairy indigo		C		1/1

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.*
The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.*
The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).
This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Queensland status: All
Records: All
Date: Since 1980
Latitude: -26.5941
Longitude: 151.5207
Distance: 30
Email: mcastelli@ecosure.com.au
Date submitted: Thursday 23 Feb 2023 13:45:57
Date extracted: Thursday 23 Feb 2023 13:50:03

The number of records retrieved = 1423

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			12
animals	amphibians	Hylidae	*Cyclorana alboguttata*	greenstripe frog		C		1
animals	amphibians	Hylidae	*Cyclorana brevipes*	superb collared frog		C		1
animals	amphibians	Hylidae	*Litoria balatus*	slender bleating treefrog		C		5/2
animals	amphibians	Hylidae	*Litoria caerulea*	common green treefrog		C		5
animals	amphibians	Hylidae	*Litoria chloris*	orange eyed treefrog		C		1
animals	amphibians	Hylidae	*Litoria fallax*	eastern sedgefrog		C		38
animals	amphibians	Hylidae	*Litoria gracilenta*	graceful treefrog		C		1
animals	amphibians	Hylidae	*Litoria latopalmata*	broad palmed rocketfrog		C		15
animals	amphibians	Hylidae	*Litoria peronii*	emerald spotted treefrog		C		11
animals	amphibians	Hylidae	*Litoria rubella*	ruddy treefrog		C		4
animals	amphibians	Hylidae	*Litoria verreauxii*	whistling treefrog		C		10
animals	amphibians	Hylidae	*Litoria wilcoxii*	eastern stony creek frog		C		28
animals	amphibians	Limnodynastidae	*Limnodynastes peronii*	striped marshfrog		C		14
animals	amphibians	Limnodynastidae	*Limnodynastes sp.*			C		1
animals	amphibians	Limnodynastidae	*Limnodynastes tasmaniensis*	spotted grassfrog		C		10/1
animals	amphibians	Limnodynastidae	*Limnodynastes terraereginae*	scarlet sided pobblebonk		C		3
animals	amphibians	Limnodynastidae	*Platyplectrum ornatum*	ornate burrowing frog		C		1
animals	amphibians	Myobatrachidae	*Crinia parinsignifera*	beeping froglet		C		1
animals	amphibians	Myobatrachidae	*Crinia signifera*	clicking froglet		C		8
animals	amphibians	Myobatrachidae	*Mixophyes fasciolatus*	great barred frog		C		25
animals	amphibians	Myobatrachidae	*Mixophyes sp.*			C		2
animals	amphibians	Myobatrachidae	*Pseudophryne major*	great brown broodfrog		C		1
animals	amphibians	Myobatrachidae	*Pseudophryne sp.*			C		1
animals	amphibians	Myobatrachidae	*Uperoleia fusca*	dusky gungan		C		1
animals	amphibians	Myobatrachidae	*Uperoleia rugosa*	chubby gungan		C		1
animals	birds	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill		C		76
animals	birds	Acanthizidae	*Acanthiza lineata*	striated thornbill		C		6
animals	birds	Acanthizidae	*Acanthiza nana*	yellow thornbill		C		24
animals	birds	Acanthizidae	*Acanthiza pusilla*	brown thornbill		C		37
animals	birds	Acanthizidae	*Acanthiza reguloides*	buff-rumped thornbill		C		13
animals	birds	Acanthizidae	*Gerygone fusca*	western gerygone		C		19
animals	birds	Acanthizidae	*Gerygone mouki*	brown gerygone		C		42
animals	birds	Acanthizidae	*Gerygone olivacea*	white-throated gerygone		C		60
animals	birds	Acanthizidae	*Pyrrholaemus sagittatus*	speckled warbler		C		83
animals	birds	Acanthizidae	*Sericornis citreogularis*	yellow-throated scrubwren		C		26
animals	birds	Acanthizidae	*Sericornis frontalis*	white-browed scrubwren		C		108
animals	birds	Acanthizidae	*Sericornis magnirostra*	large-billed scrubwren		C		14
animals	birds	Acanthizidae	*Smicrornis brevirostris*	weebill		C		118
animals	birds	Accipitridae	*Accipiter fasciatus*	brown goshawk		C		82
animals	birds	Accipitridae	*Accipiter novaehollandiae*	grey goshawk		C		78
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		78
animals	birds	Accipitridae	*Aviceda subcristata*	Pacific baza		C		8
animals	birds	Accipitridae	*Circus approximans*	swamp harrier		C		6
animals	birds	Accipitridae	*Elanus axillaris*	black-shouldered kite		C		15
animals	birds	Accipitridae	*Haliaeetus leucogaster*	white-bellied sea-eagle		C		4

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Accipitridae	*Haliastur sphenurus*	whistling kite		C		5
animals	birds	Accipitridae	*Hamirostra melanosternon*	black-breasted buzzard		C		2
animals	birds	Accipitridae	*Hieraaetus morphnoides*	little eagle		C		1
animals	birds	Accipitridae	*Lophoictinia isura*	square-tailed kite		C		1
animals	birds	Accipitridae	*Milvus migrans*	black kite		C		1
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		C		1
animals	birds	Aegothelidae	*Aegotheles cristatus*	Australian owlet-nightjar		C		28
animals	birds	Alaudidae	*Mirafra javanica*	Horsfield's bushlark		C		4
animals	birds	Alcedinidae	*Dacelo novaeguineae*	laughing kookaburra		C		205
animals	birds	Alcedinidae	*Todiramphus macleayii*	forest kingfisher		C		6
animals	birds	Alcedinidae	*Todiramphus pyrrhopygius*	red-backed kingfisher		C		1
animals	birds	Alcedinidae	*Todiramphus sanctus*	sacred kingfisher		C		86
animals	birds	Anatidae	*Anas castanea*	chestnut teal		C		2
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		19
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		67
animals	birds	Anatidae	*Aythya australis*	hardhead		C		12
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		67
animals	birds	Anatidae	*Cygnus atratus*	black swan		C		8
animals	birds	Anatidae	*Dendrocygna arcuata*	wandering whistling-duck		C		1
animals	birds	Anatidae	*Dendrocygna eytoni*	plumed whistling-duck		C		5
animals	birds	Anatidae	*Malacorhynchus membranaceus*	pink-eared duck		C		5
animals	birds	Anatidae	*Nettapus coromandelianus*	cotton pygmy-goose		C		1
animals	birds	Anatidae	*Oxyura australis*	blue-billed duck		C		2
animals	birds	Anatidae	*Radjah radjah*	radjah shelduck		C		1
animals	birds	Anatidae	*Spatula rhynchotis*	Australasian shoveler		C		6
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		7
animals	birds	Anseranatidae	*Anseranas semipalmata*	magpie goose		C		1
animals	birds	Apodidae	*Apus pacificus*	fork-tailed swift		SL		4
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		V	V	4
animals	birds	Ardeidae	*Ardea alba modesta*	eastern great egret		C		11
animals	birds	Ardeidae	*Ardea intermedia*	intermediate egret		C		4
animals	birds	Ardeidae	*Ardea pacifica*	white-necked heron		C		16
animals	birds	Ardeidae	*Botaurus poiciloptilus*	Australasian bittern		E	E	1
animals	birds	Ardeidae	*Bubulcus ibis*	cattle egret		C		8
animals	birds	Ardeidae	*Egretta garzetta*	little egret		C		5
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		54
animals	birds	Artamidae	*Artamus cinereus*	black-faced woodswallow		C		4
animals	birds	Artamidae	*Artamus cyanopterus*	dusky woodswallow		C		2
animals	birds	Artamidae	*Artamus leucorynchus*	white-breasted woodswallow		C		3
animals	birds	Artamidae	*Artamus minor*	little woodswallow		C		1
animals	birds	Artamidae	*Artamus personatus*	masked woodswallow		C		80
animals	birds	Artamidae	*Artamus superciliosus*	white-browed woodswallow		C		3
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		198
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		180
animals	birds	Artamidae	*Gymnorhina tibicen*	Australian magpie		C		249
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		257

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		176
animals	birds	Cacatuidae	*Cacatua sanguinea*	little corella		C		4
animals	birds	Cacatuidae	*Calyptorhynchus banksii*	red-tailed black-cockatoo		C		13
animals	birds	Cacatuidae	*Calyptorhynchus lathami lathami*	glossy black-cockatoo (eastern)		V	V	4
animals	birds	Cacatuidae	*Eolophus roseicapilla*	galah		C		238
animals	birds	Cacatuidae	*Nymphicus hollandicus*	cockatiel		C		66
animals	birds	Cacatuidae	*Zanda funerea*	yellow-tailed black-cockatoo		C		21
animals	birds	Campephagidae	*Coracina maxima*	ground cuckoo-shrike		C		6
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		192
animals	birds	Campephagidae	*Coracina papuensis*	white-bellied cuckoo-shrike		C		7
animals	birds	Campephagidae	*Edolisoma tenuirostre*	common cicadabird		C		30
animals	birds	Campephagidae	*Lalage leucomela*	varied triller		C		36
animals	birds	Campephagidae	*Lalage tricolor*	white-winged triller		C		28
animals	birds	Casuariidae	*Dromaius novaehollandiae*	emu		C		1
animals	birds	Charadriidae	*Elseyornis melanops*	black-fronted dotterel		C		7
animals	birds	Charadriidae	*Erythrogonys cinctus*	red-kneed dotterel		C		2
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		23
animals	birds	Charadriidae	*Vanellus miles novaehollandiae*	masked lapwing (southern subspecies)		C		19
animals	birds	Charadriidae	*Vanellus tricolor*	banded lapwing		C		3
animals	birds	Ciconiidae	*Ephippiorhynchus asiaticus*	black-necked stork		C		2
animals	birds	Cisticolidae	*Cisticola exilis*	golden-headed cisticola		C		8
animals	birds	Climacteridae	*Climacteris picumnus*	brown treecreeper		C		80
animals	birds	Climacteridae	*Cormobates leucophaea*	white-throated treecreeper		C		52
animals	birds	Climacteridae	*Cormobates leucophaea metastasis*	white-throated treecreeper (southern)		C		45
animals	birds	Columbidae	*Chalcophaps longirostris*	Pacific emerald dove		C		79
animals	birds	Columbidae	*Columba leucomela*	white-headed pigeon		C		6
animals	birds	Columbidae	*Columba livia*	rock dove	Y			3
animals	birds	Columbidae	*Geopelia cuneata*	diamond dove		C		1
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		174
animals	birds	Columbidae	*Geopelia placida*	peaceful dove		C		168
animals	birds	Columbidae	*Geophaps plumifera*	spinifex pigeon		C		1
animals	birds	Columbidae	*Leucosarcia melanoleuca*	wonga pigeon		C		20
animals	birds	Columbidae	*Lopholaimus antarcticus*	topknot pigeon		C		14
animals	birds	Columbidae	*Macropygia phasianella*	brown cuckoo-dove		C		27
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		210
animals	birds	Columbidae	*Phaps chalcoptera*	common bronzewing		C		13
animals	birds	Columbidae	*Ptilinopus magnificus*	wompoo fruit-dove		C		2
animals	birds	Columbidae	*Ptilinopus regina*	rose-crowned fruit-dove		C		4
animals	birds	Columbidae	*Spilopelia chinensis*	spotted dove	Y			4
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		64
animals	birds	Corcoracidae	*Corcorax melanorhamphos*	white-winged chough		C		40
animals	birds	Corcoracidae	*Struthidea cinerea*	apostlebird		C		168
animals	birds	Corvidae	*Corvus coronoides*	Australian raven		C		114
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		219
animals	birds	Corvidae	*Corvus sp.*			C		5
animals	birds	Cuculidae	*Cacomantis flabelliformis*	fan-tailed cuckoo		C		55

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Cuculidae	*Cacomantis pallidus*	pallid cuckoo		C		11
animals	birds	Cuculidae	*Cacomantis variolosus*	brush cuckoo		C		23
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		128
animals	birds	Cuculidae	*Chalcites basalis*	Horsfield's bronze-cuckoo		C		7
animals	birds	Cuculidae	*Chalcites lucidus*	shining bronze-cuckoo		C		13
animals	birds	Cuculidae	*Chalcites minutillus barnardi*	Eastern little bronze-cuckoo		C		1
animals	birds	Cuculidae	*Chalcites osculans*	black-eared cuckoo		C		1
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		43
animals	birds	Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo		C		32
animals	birds	Dicaeidae	*Dicaeum hirundinaceum*	mistletoebird		C		143
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		51
animals	birds	Estrildidae	*Lonchura castaneothorax*	chestnut-breasted mannikin		C		11
animals	birds	Estrildidae	*Neochmia modesta*	plum-headed finch		C		14
animals	birds	Estrildidae	*Neochmia temporalis*	red-browed finch		C		94
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		189
animals	birds	Estrildidae	*Taeniopygia guttata*	zebra finch		C		17
animals	birds	Eurostopodidae	*Eurostopodus mystacalis*	white-throated nightjar		C		6
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		3
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		33
animals	birds	Falconidae	*Falco longipennis*	Australian hobby		C		3
animals	birds	Falconidae	*Falco peregrinus macropus*	Australian peregrine falcon		C		6
animals	birds	Falcunculidae	*Falcunculus frontatus*	crested shrike-tit		C		6
animals	birds	Hirundinidae	*Cheramoeca leucosterna*	white-backed swallow		C		1
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		35
animals	birds	Hirundinidae	*Petrochelidon ariel*	fairy martin		C		7
animals	birds	Hirundinidae	*Petrochelidon nigricans*	tree martin		C		16
animals	birds	Jacanidae	*Irediparra gallinacea*	comb-crested jacana		C		3
animals	birds	Laridae	*Chlidonias hybrida*	whiskered tern		C		1
animals	birds	Laridae	*Hydroprogne caspia*	Caspian tern		SL		1
animals	birds	Locustellidae	*Cincloramphus cruralis*	brown songlark		C		2
animals	birds	Locustellidae	*Cincloramphus mathewsi*	rufous songlark		C		3
animals	birds	Locustellidae	*Cincloramphus timoriensis*	tawny grassbird		C		3
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		180
animals	birds	Maluridae	*Malurus lamberti*	variegated fairy-wren		C		117
animals	birds	Maluridae	*Malurus lamberti sensu lato*	variegated fairy-wren		C		44
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		82
animals	birds	Megapodiidae	*Alectura lathami*	Australian brush-turkey		C		38
animals	birds	Meliphagidae	*Acanthagenys rufogularis*	spiny-cheeked honeyeater		C		23
animals	birds	Meliphagidae	*Acanthorhynchus tenuirostris*	eastern spinebill		C		34
animals	birds	Meliphagidae	*Anthochaera carunculata*	red wattlebird		C		1
animals	birds	Meliphagidae	*Caligavis chrysops*	yellow-faced honeyeater		C		58
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		153
animals	birds	Meliphagidae	*Grantiella picta*	painted honeyeater		V	V	1
animals	birds	Meliphagidae	*Lichenostomus melanops*	yellow-tufted honeyeater		C		3
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		153
animals	birds	Meliphagidae	*Manorina flavigula*	yellow-throated miner		C		4

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		220
animals	birds	Meliphagidae	*Manorina melanophrys*	bell miner		C		1
animals	birds	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater		C		236
animals	birds	Meliphagidae	*Melithreptus albogularis*	white-throated honeyeater		C		75
animals	birds	Meliphagidae	*Melithreptus brevirostris*	brown-headed honeyeater		C		12
animals	birds	Meliphagidae	*Melithreptus gularis*	black-chinned honeyeater		C		6
animals	birds	Meliphagidae	*Melithreptus lunatus*	white-naped honeyeater		C		5
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		25
animals	birds	Meliphagidae	*Nesoptilotis leucotis*	white-eared honeyeater		C		10
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		105
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		125
animals	birds	Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater		C		119
animals	birds	Meliphagidae	*Ptilotula fusca*	fuscous honeyeater		C		6
animals	birds	Meliphagidae	*Ptilotula penicillata*	white-plumed honeyeater		C		3
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		C		77
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		233
animals	birds	Monarchidae	*Monarcha melanopsis*	black-faced monarch		SL		83
animals	birds	Monarchidae	*Myiagra cyanoleuca*	satin flycatcher		SL		27
animals	birds	Monarchidae	*Myiagra inquieta*	restless flycatcher		C		36
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		76
animals	birds	Monarchidae	*Symposiachrus trivirgatus*	spectacled monarch		SL		4
animals	birds	Motacillidae	*Anthus novaeseelandiae*	Australasian pipit		C		4
animals	birds	Neosittidae	*Daphoenositta chrysoptera*	varied sittella		C		102
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		72
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		51
animals	birds	Otididae	*Ardeotis australis*	Australian bustard		C		8
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		151
animals	birds	Pachycephalidae	*Colluricincla megarhyncha*	little shrike-thrush		C		4
animals	birds	Pachycephalidae	*Pachycephala pectoralis*	golden whistler		C		130
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		137
animals	birds	Pandionidae	*Pandion haliaetus cristatus*	eastern osprey		SL		1
animals	birds	Paradisaeidae	*Ptiloris paradiseus*	paradise riflebird		C		19
animals	birds	Pardalotidae	*Pardalotus punctatus*	spotted pardalote		C		47
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		207
animals	birds	Passeridae	*Passer domesticus*	house sparrow	Y			5
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		8
animals	birds	Petroicidae	*Eopsaltria australis*	eastern yellow robin		C		190
animals	birds	Petroicidae	*Microeca fascinans*	jacky winter		C		25
animals	birds	Petroicidae	*Petroica goodenovii*	red-capped robin		C		4
animals	birds	Petroicidae	*Petroica rosea*	rose robin		C		22
animals	birds	Petroicidae	*Tregellasia capito*	pale-yellow robin		C		1
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		15
animals	birds	Phalacrocoracidae	*Phalacrocorax carbo*	great cormorant		C		3
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		7
animals	birds	Phalacrocoracidae	*Phalacrocorax varius*	pied cormorant		C		5
animals	birds	Phasianidae	*Coturnix pectoralis*	stubble quail		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Phasianidae	*Pavo cristatus*	Indian peafowl	Y			1
animals	birds	Phasianidae	*Synoicus ypsilophorus*	brown quail		C		77
animals	birds	Pittidae	*Pitta versicolor*	noisy pitta		C		12
animals	birds	Podargidae	*Podargus strigoides*	tawny frogmouth		C		99
animals	birds	Podicipedidae	*Podiceps cristatus*	great crested grebe		C		4
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		34
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		81
animals	birds	Psittaculidae	*Alisterus scapularis*	Australian king-parrot		C		177
animals	birds	Psittaculidae	*Aprosmictus erythropterus*	red-winged parrot		C		116
animals	birds	Psittaculidae	*Glossopsitta concinna*	musk lorikeet		C		1
animals	birds	Psittaculidae	*Melopsittacus undulatus*	budgerigar		C		3
animals	birds	Psittaculidae	*Northiella haematogaster*	blue bonnet		C		2
animals	birds	Psittaculidae	*Parvipsitta pusilla*	little lorikeet		C		15
animals	birds	Psittaculidae	*Platycercus adscitus*	pale-headed rosella		C		206
animals	birds	Psittaculidae	*Platycercus elegans*	crimson rosella		C		32
animals	birds	Psittaculidae	*Platycercus eximius*	eastern rosella		C		2
animals	birds	Psittaculidae	*Psephotus haematonotus*	red-rumped parrot		C		26
animals	birds	Psittaculidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		78
animals	birds	Psittaculidae	*Trichoglossus moluccanus*	rainbow lorikeet		C		181
animals	birds	Psophodidae	*Psophodes olivaceus*	eastern whipbird		C		106
animals	birds	Ptilonorhynchidae	*Ailuroedus crassirostris*	green catbird		C		17
animals	birds	Ptilonorhynchidae	*Chlamydera maculata*	spotted bowerbird		C		2
animals	birds	Ptilonorhynchidae	*Ptilonorhynchus violaceus*	satin bowerbird		C		174
animals	birds	Ptilonorhynchidae	*Sericulus chrysocephalus*	regent bowerbird		C		46
animals	birds	Rallidae	*Fulica atra*	Eurasian coot		C		18
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		7
animals	birds	Rallidae	*Gallirallus philippensis*	buff-banded rail		C		2
animals	birds	Rallidae	*Porphyrio melanotus*	purple swamphen		C		5
animals	birds	Rallidae	*Tribonyx ventralis*	black-tailed native-hen		C		1
animals	birds	Recurvirostridae	*Himantopus leucocephalus*	pied stilt		C		12
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		178
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		217
animals	birds	Rhipiduridae	*Rhipidura rufifrons*	rufous fantail		SL		65
animals	birds	Scolopacidae	*Calidris acuminata*	sharp-tailed sandpiper		SL		3
animals	birds	Scolopacidae	*Tringa stagnatilis*	marsh sandpiper		SL		1
animals	birds	Strigidae	*Ninox boobook*	southern boobook		C		126
animals	birds	Strigidae	*Ninox connivens*	barking owl		C		1
animals	birds	Strigidae	*Ninox strenua*	powerful owl		V		16
animals	birds	Sturnidae	*Acridotheres tristis*	common myna	Y			6
animals	birds	Sturnidae	*Sturnus vulgaris*	common starling	Y			17
animals	birds	Threskiornithidae	*Platalea flavipes*	yellow-billed spoonbill		C		12
animals	birds	Threskiornithidae	*Platalea regia*	royal spoonbill		C		3
animals	birds	Threskiornithidae	*Plegadis falcinellus*	glossy ibis		SL		3
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		15
animals	birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis		C		35
animals	birds	Turdidae	*Zoothera heinei*	russet-tailed thrush		C		6

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Turdidae	*Zoothera lunulata*	Bassian thrush		C		6
animals	birds	Turdidae	*Zoothera sp.*			C		2/2
animals	birds	Turnicidae	*Turnix melanogaster*	black-breasted button-quail		V	V	21
animals	birds	Tytonidae	*Tyto javanica*	eastern barn owl		C		13
animals	birds	Tytonidae	*Tyto novaehollandiae*	masked owl		C		2
animals	birds	Tytonidae	*Tyto tenebricosa tenebricosa*	sooty owl		C		2
animals	birds	Zosteropidae	*Zosterops lateralis*	silvereye		C		178
animals	insects	Coenagrionidae	*Ischnura heterosticta heterosticta*	common bluetail				1
animals	insects	Coenagrionidae	*Pseudagrion aureofrons*	gold-fronted riverdamsel				1
animals	insects	Coenagrionidae	*Xanthagrion erythroneurum*	red & blue damsel				1
animals	insects	Hesperiidae	*Anisynta tillyardi*	chequered grass-skipper				1
animals	insects	Hesperiidae	*Dispar compacta*	barred skipper				1
animals	insects	Hesperiidae	*Ocybadistes walkeri sothis*	green grass-dart				1
animals	insects	Hesperiidae	*Suniana lascivia lascivia*	dark grass-dart				1
animals	insects	Libellulidae	*Diplacodes bipunctata*	wandering percher				1
animals	insects	Lycaenidae	*Acrodipsas cuprea variabilis*	copper ant-blue				1
animals	insects	Lycaenidae	*Nacaduba biocellata biocellata*	two-spotted line-blue				1
animals	insects	Lycaenidae	*Prosotas felderi*	short-tailed line-blue				1
animals	insects	Lycaenidae	*Theclinesthes serpentatus serpentatus*	salt-bush blue				2
animals	insects	Lycaenidae	*Zizina otis labradus*	common grass-blue (Australian subspecies)				2
animals	insects	Nymphalidae	*Acraea andromacha andromacha*	glasswing				2
animals	insects	Nymphalidae	*Charaxes sempronius sempronius*	tailed emperor				1
animals	insects	Nymphalidae	*Danaus petilia*	lesser wanderer				3
animals	insects	Nymphalidae	*Danaus plexippus*	monarch	Y			2
animals	insects	Nymphalidae	*Euploea corinna*	common crow				1
animals	insects	Nymphalidae	*Geitoneura acantha*	ringed xenica				2
animals	insects	Nymphalidae	*Hypocysta adiante adiante*	orange ringlet				1
animals	insects	Nymphalidae	*Hypocysta metirius*	brown ringlet				2
animals	insects	Nymphalidae	*Junonia villida villida*	meadow argus				2
animals	insects	Nymphalidae	*Melanitis leda bankia*	evening brown				1
animals	insects	Papilionidae	*Graphium choredon*	blue triangle				1
animals	insects	Papilionidae	*Graphium eurypylus*	pale triangle				1
animals	insects	Papilionidae	*Papilio aegeus aegeus*	orchard swallowtail (Australian subspecies)				1
animals	insects	Papilionidae	*Papilio demoleus sthenelus*	chequered swallowtail				2
animals	insects	Pieridae	*Belenois java teutonia*	caper white				1
animals	insects	Pieridae	*Catopsilia pyranthe crokera*	white migrant				1
animals	insects	Pieridae	*Cepora perimale*					1
animals	insects	Pieridae	*Cepora perimale scyllara*	caper gull (Australian subspecies)				1
animals	insects	Pieridae	*Delias argenthona argenthona*	scarlet jezebel				2
animals	insects	Pieridae	*Delias nysa nysa*	yellow-spotted jezebel (Australian subspecies)				1
animals	insects	Pieridae	*Elodina angulipennis*	southern pearl-white				2
animals	insects	Pieridae	*Elodina parthia*	striated pearl-white				2
animals	insects	Pieridae	*Eurema hecabe*	large grass-yellow				1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	insects	Pieridae	*Eurema smilax*	small grass-yellow				2
animals	insects	Pieridae	*Pieris rapae*	cabbage white	Y			1
animals	mammals	Canidae	*Canis familiaris*	dog	Y			7
animals	mammals	Dasyuridae	*Antechinus flavipes flavipes*	yellow-footed antechinus (south-east Queensland)		C		5
animals	mammals	Dasyuridae	*Dasyurus hallucatus*	northern quoll		C	E	1
animals	mammals	Dasyuridae	*Dasyurus maculatus maculatus*	spotted-tailed quoll (southern subspecies)		E	E	2
animals	mammals	Dasyuridae	*Sminthopsis murina*	common dunnart		C		2
animals	mammals	Emballonuridae	*Saccolaimus flaviventris*	yellow-bellied sheathtail bat		C		4
animals	mammals	Felidae	*Felis catus*	cat	Y			7
animals	mammals	Leporidae	*Lepus europaeus*	European brown hare	Y			3
animals	mammals	Leporidae	*Oryctolagus cuniculus*	rabbit	Y			4
animals	mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo		C		6
animals	mammals	Macropodidae	*Notamacropus dorsalis*	black-striped wallaby		C		6
animals	mammals	Macropodidae	*Notamacropus parryi*	whiptail wallaby		C		4
animals	mammals	Macropodidae	*Notamacropus rufogriseus*	red-necked wallaby		C		6
animals	mammals	Macropodidae	*Thylogale stigmatica*	red-legged pademelon		C		1
animals	mammals	Macropodidae	*Wallabia bicolor*	swamp wallaby		C		8
animals	mammals	Miniopteridae	*Miniopterus australis*	little bent-wing bat		C		4
animals	mammals	Miniopteridae	*Miniopterus schreibersii oceanensis*	eastern bent-wing bat		C		7
animals	mammals	Molossidae	*Austronomus australis*	white-striped freetail bat		C		1
animals	mammals	Molossidae	*Mormopterus lumsdenae*	northern free-tailed bat		C		1
animals	mammals	Molossidae	*Mormopterus ridei*	eastern free-tailed bat		C		1
animals	mammals	Molossidae	*Mormopterus sp.*			C		2
animals	mammals	Muridae	*Melomys cervinipes*	fawn-footed melomys		C		6
animals	mammals	Muridae	*Mus musculus*	house mouse	Y			11
animals	mammals	Muridae	*Pseudomys gracilicaudatus*	eastern chestnut mouse		C		1
animals	mammals	Muridae	*Rattus fuscipes*	bush rat		C		7
animals	mammals	Muridae	*Rattus lutreolus*	swamp rat		C		1
animals	mammals	Muridae	*Rattus sp.*			C		2
animals	mammals	Muridae	*Rattus tunneyi*	pale field-rat		C		1
animals	mammals	Peramelidae	*Isoodon macrourus*	northern brown bandicoot		C		14
animals	mammals	Peramelidae	*Perameles nasuta*	long-nosed bandicoot		C		3
animals	mammals	Petauridae	*Petaurus australis australis*	yellow-bellied glider (southern subspecies)		V	V	2
animals	mammals	Petauridae	*Petaurus norfolcensis*	squirrel glider		C		2
animals	mammals	Phalangeridae	*Trichosurus caninus*	short-eared possum		C		8
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		23
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		E	E	32
animals	mammals	Potoroidae	*Aepyprymnus rufescens*	rufous bettong		C		12
animals	mammals	Pseudocheiridae	*Petauroides armillatus*	central greater glider		E	E	10
animals	mammals	Pseudocheiridae	*Pseudocheirus peregrinus*	common ringtail possum		C		2
animals	mammals	Pteropodidae	*Pteropus alecto*	black flying-fox		C		5
animals	mammals	Pteropodidae	*Pteropus poliocephalus*	grey-headed flying-fox		C	V	8
animals	mammals	Pteropodidae	*Pteropus scapulatus*	little red flying-fox		C		12

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Pteropodidae	*Pteropus sp.*			C		1
animals	mammals	Suidae	*Sus scrofa*	pig	Y			2
animals	mammals	Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna		SL		5
animals	mammals	Vespertilionidae	*Chalinolobus gouldii*	Gould's wattled bat		C		5
animals	mammals	Vespertilionidae	*Chalinolobus morio*	chocolate wattled bat		C		13
animals	mammals	Vespertilionidae	*Chalinolobus picatus*	little pied bat		C		2
animals	mammals	Vespertilionidae	*Kerivoula papuensis*	golden-tipped bat		C		5
animals	mammals	Vespertilionidae	*Nyctophilus geoffroyi*	lesser long-eared bat		C		8
animals	mammals	Vespertilionidae	*Nyctophilus gouldi*	Gould's long-eared bat		C		26
animals	mammals	Vespertilionidae	*Scoteanax rueppellii*	greater broad-nosed bat		C		1
animals	mammals	Vespertilionidae	*Scotorepens greyii*	little broad-nosed bat		C		4
animals	mammals	Vespertilionidae	*Vespadelus baverstocki*	inland forest bat		C		5
animals	mammals	Vespertilionidae	*Vespadelus pumilus*	eastern forest bat		C		17
animals	mammals	Vespertilionidae	*Vespadelus vulturnus*	little forest bat		C		3
animals	ray-finned fishes	Ambassidae	*Ambassis agassizii*	Agassiz's glassfish				1
animals	ray-finned fishes	Atherinidae	*Craterocephalus marjoriae*	silverstreak hardyhead				2
animals	ray-finned fishes	Eleotridae	*Hypseleotris galii*	firetail gudgeon				1
animals	ray-finned fishes	Eleotridae	*Hypseleotris sp.*					1
animals	ray-finned fishes	Eleotridae	*Mogurnda adspersa*	southern purplespotted gudgeon				2
animals	ray-finned fishes	Melanotaeniidae	*Melanotaenia duboulayi*	crimsonspotted rainbowfish				2
animals	ray-finned fishes	Plotosidae	*Tandanus tandanus*	freshwater catfish				1
animals	ray-finned fishes	Terapontidae	*Leiopotherapon unicolor*	spangled perch				1
animals	reptiles	Agamidae	*Intellagama lesueurii*	eastern water dragon		C		6
animals	reptiles	Agamidae	*Pogona barbata*	bearded dragon		C		8
animals	reptiles	Boidae	*Antaresia maculosa*	spotted python		C		1
animals	reptiles	Boidae	*Morelia spilota*	carpet python		C		9
animals	reptiles	Carphodactylidae	*Underwoodisaurus milii*	thick-tailed gecko		C		4
animals	reptiles	Chelidae	*Chelodina longicollis*	eastern snake-necked turtle		C		4/4
animals	reptiles	Diplodactylidae	*Diplodactylus vittatus*	wood gecko		C		4
animals	reptiles	Diplodactylidae	*Oedura tryoni*	southern spotted velvet gecko		C		7
animals	reptiles	Elapidae	*Cacophis krefftii*	dwarf crowned snake		C		1
animals	reptiles	Elapidae	*Cryptophis nigrescens*	eastern small-eyed snake		C		5
animals	reptiles	Elapidae	*Furina dunmalli*	Dunmall's snake		V	V	1/1
animals	reptiles	Elapidae	*Hemiaspis signata*	black-bellied swamp snake		C		1
animals	reptiles	Elapidae	*Hoplocephalus bitorquatus*	pale-headed snake		C		1
animals	reptiles	Elapidae	*Notechis scutatus*	eastern tiger snake		C		2
animals	reptiles	Elapidae	*Pseudechis guttatus*	spotted black snake		C		2
animals	reptiles	Elapidae	*Pseudechis porphyriacus*	red-bellied black snake		C		1
animals	reptiles	Elapidae	*Pseudonaja textilis*	eastern brown snake		C		1
animals	reptiles	Gekkonidae	*Gehyra dubia*	dubious dtella		C		2
animals	reptiles	Gekkonidae	*Heteronotia binoei*	Bynoe's gecko		C		10
animals	reptiles	Pygopodidae	*Delma torquata*	collared delma		V	V	1
animals	reptiles	Scincidae	*Anomalopus verreauxii*	three-clawed worm-skink		C		4
animals	reptiles	Scincidae	*Calyptotis scutirostrum*	scute-snouted calyptotis		C		11
animals	reptiles	Scincidae	*Carlia pectoralis*	open-litter rainbow skink		C		1
animals	reptiles	Scincidae	*Carlia pectoralis sensu lato*			C		6

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	reptiles	Scincidae	*Carlia vivax*	tussock rainbow-skink		C		2
animals	reptiles	Scincidae	*Concinnia tenuis*	bar-sided skink		C		1
animals	reptiles	Scincidae	*Cryptoblepharus pannosus*	ragged snake-eyed skink		C		1
animals	reptiles	Scincidae	*Cryptoblepharus pulcher pulcher*	elegant snake-eyed skink		C		10
animals	reptiles	Scincidae	*Ctenotus spaldingi*	straight-browed ctenotus		C		2
animals	reptiles	Scincidae	*Egernia striolata*	tree skink		C		2/1
animals	reptiles	Scincidae	*Lampropholis colossus*	Bunya sunskink		NT		8
animals	reptiles	Scincidae	*Lampropholis delicata*	dark-flecked garden sunskink		C		1
animals	reptiles	Scincidae	*Lampropholis guichenoti*	pale-flecked garden sunskink		C		1
animals	reptiles	Scincidae	*Lerista fragilis*	eastern mulch slider		C		2/1
animals	reptiles	Scincidae	*Lerista sp.*			C		1
animals	reptiles	Scincidae	*Lerista timida*	timid slider		C		4/2
animals	reptiles	Scincidae	*Lygisaurus foliorum*	tree-base litter-skink		C		12
animals	reptiles	Scincidae	*Morethia boulengeri*	south-eastern morethia skink		C		3
animals	reptiles	Scincidae	*Saiphos equalis*	three-toed skink		C		3
animals	reptiles	Scincidae	*Tiliqua scincoides scincoides*	eastern bluetongue		C		2
animals	reptiles	Typhlopidae	*Anilios sp.*			C		3
animals	reptiles	Varanidae	*Varanus gouldii*	sand monitor		C		3
animals	reptiles	Varanidae	*Varanus panoptes*	yellow-spotted monitor		C		2
animals	reptiles	Varanidae	*Varanus tristis*	black-tailed monitor		C		1
animals	reptiles	Varanidae	*Varanus varius*	lace monitor		C		19
animals	uncertain	Indeterminate	*Indeterminate*	Unknown or Code Pending				5
fungi	Agaricomycetes	Agaricaceae	*Agaricus*					1/1
fungi	Agaricomycetes	Agaricaceae	*Calvatia lilacina*			C		2/1
fungi	Agaricomycetes	Agaricaceae	*Chlorophyllum*					1/1
fungi	Agaricomycetes	Agaricaceae	*Chlorophyllum molybdites*	green-spored parasol		C		1/1
fungi	Agaricomycetes	Agaricaceae	*Coprinus truncorum*			C		1/1
fungi	Agaricomycetes	Agaricaceae	*Lepiota*					10/10
fungi	Agaricomycetes	Agaricaceae	*Macrolepiota clelandii*			C		1/1
fungi	Agaricomycetes	Agaricaceae	*Macrolepiota konradii*			C		1/1
fungi	Agaricomycetes	Amanitaceae	*Amanita*			C		3/3
fungi	Agaricomycetes	Amanitaceae	*Amanita pyramidifera*			C		1/1
fungi	Agaricomycetes	Amanitaceae	*Amanita subvaginata*			C		1/1
fungi	Agaricomycetes	Amanitaceae	*Amanita xanthocephala*			C		1/1
fungi	Agaricomycetes	Aphelariaceae	*Aphelaria complanata*			C		1/1
fungi	Agaricomycetes	Auriculariaceae	*Auricularia*					1/1
fungi	Agaricomycetes	Auriculariaceae	*Auricularia auricula-judae*			C		2/2
fungi	Agaricomycetes	Auriculariaceae	*Auricularia cornea*			C		1/1
fungi	Agaricomycetes	Auriscalpiaceae	*Lentinellus*					2/2
fungi	Agaricomycetes	Auriscalpiaceae	*Lentinellus ursinus*			C		2/2
fungi	Agaricomycetes	Bolbitiaceae	*Descolea recedens*			C		3/3
fungi	Agaricomycetes	Bolbitiaceae	*Setchelliogaster*					1/1
fungi	Agaricomycetes	Boletaceae	*Boletus*					3/3
fungi	Agaricomycetes	Boletaceae	*Phylloporus*					1/1
fungi	Agaricomycetes	Cantharellaceae	*Cantharellus*					1/1
fungi	Agaricomycetes	Clavariaceae	*Clavaria*					2/2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
fungi	Agaricomycetes	Clavulinaceae	*Clavulina*			C		1/1
fungi	Agaricomycetes	Coniophoraceae	*Gyrodontium sacchari*			C		2/2
fungi	Agaricomycetes	Corticiaceae	*Corticium*			C		1/1
fungi	Agaricomycetes	Cortinariaceae	*Cortinarius*					12/12
fungi	Agaricomycetes	Cortinariaceae	*Crepidotus nephrodes*			C		3/3
fungi	Agaricomycetes	Cortinariaceae	*Gymnopilus*					1/1
fungi	Agaricomycetes	Crepidotaceae	*Crepidotus*					12/12
fungi	Agaricomycetes	Crepidotaceae	*Crepidotus applanatus*			C		1/1
fungi	Agaricomycetes	Entolomataceae	*Clitopilus*					1/1
fungi	Agaricomycetes	Entolomataceae	*Entoloma*					9/9
fungi	Agaricomycetes	Entolomataceae	*Rhodocybe*					1/1
fungi	Agaricomycetes	Fomitopsidaceae	*Postia*					1/1
fungi	Agaricomycetes	Ganodermataceae	*Amauroderma rude*			C		2/2
fungi	Agaricomycetes	Ganodermataceae	*Ganoderma australe*			C		1/1
fungi	Agaricomycetes	Geastraceae	*Geastrum australe*			C		2/2
fungi	Agaricomycetes	Geastraceae	*Geastrum pectinatum*			C		2/2
fungi	Agaricomycetes	Gloeophyllaceae	*Veluticeps*			C		1/1
fungi	Agaricomycetes	Hericiaceae	*Hericium coralloides*			C		1/1
fungi	Agaricomycetes	Hydnodontaceae	*Trechispora*					13/13
fungi	Agaricomycetes	Hygrophoraceae	*Hygrocybe kula*			C		2/2
fungi	Agaricomycetes	Hymenochaetaceae	*Hymenochaete*					5/5
fungi	Agaricomycetes	Hymenochaetaceae	*Inonotus*					2/2
fungi	Agaricomycetes	Hymenochaetaceae	*Phellinus*					4/4
fungi	Agaricomycetes	Hyphodermataceae	*Hyphoderma setigerum*			C		2/2
fungi	Agaricomycetes	Inocybaceae	*Inocybe*			C		5/5
fungi	Agaricomycetes	Inocybaceae	*Inocybe nobilissima*			C		2/2
fungi	Agaricomycetes	Lachnocladiaceae	*Scytinostroma*					1/1
fungi	Agaricomycetes	Marasmiaceae	*Armillaria novaezelandiae*			C		2/2
fungi	Agaricomycetes	Marasmiaceae	*Crinipellis*					3/3
fungi	Agaricomycetes	Marasmiaceae	*Favolaschia calocera*		Y			3/3
fungi	Agaricomycetes	Marasmiaceae	*Gerronema*					1/1
fungi	Agaricomycetes	Marasmiaceae	*Marasmius*					12/12
fungi	Agaricomycetes	Marasmiaceae	*Marasmius cohortalis*			C		1/1
fungi	Agaricomycetes	Marasmiaceae	*Marasmius crinisequi*			C		2/2
fungi	Agaricomycetes	Marasmiaceae	*Marasmius elegans*			C		2/2
fungi	Agaricomycetes	Mycenaceae	*Mycena*					29/29
fungi	Agaricomycetes	Mycenaceae	*Mycena leaiana var. australis*			C		4/4
fungi	Agaricomycetes	Omphalotaceae	*Anthracophyllum*					1/1
fungi	Agaricomycetes	Omphalotaceae	*Anthracophyllum archeri*			C		1/1
fungi	Agaricomycetes	Omphalotaceae	*Lentinula lateritia*			C		7/6
fungi	Agaricomycetes	Omphalotaceae	*Marasmiellus*					9/9
fungi	Agaricomycetes	Omphalotaceae	*Omphalotus nidiformis*			C		1/1
fungi	Agaricomycetes	Panaeolaceae	*Panaeolus antillarum*			C		1/1
fungi	Agaricomycetes	Panaeolaceae	*Panaeolus bernicis*			C		2/2
fungi	Agaricomycetes	Panaeolaceae	*Panaeolus sphinctrinus*			C		2/2
fungi	Agaricomycetes	Peniophoraceae	*Peniophora*					1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
fungi	Agaricomycetes	Physalacriaceae	*Armillaria*					2/2
fungi	Agaricomycetes	Physalacriaceae	*Armillaria hinnulea*			C		3/3
fungi	Agaricomycetes	Physalacriaceae	*Armillaria luteobubalina*			C		1/1
fungi	Agaricomycetes	Physalacriaceae	*Oudemansiella exannulata*			C		4/4
fungi	Agaricomycetes	Pleurotaceae	*Hohenbuehelia*					9/9
fungi	Agaricomycetes	Pleurotaceae	*Pleurotus*					3/3
fungi	Agaricomycetes	Pluteaceae	*Chamaeota*					1/1
fungi	Agaricomycetes	Pluteaceae	*Pluteus*					19/19
fungi	Agaricomycetes	Pluteaceae	*Pluteus cervinus var. cervinus*			C		1/1
fungi	Agaricomycetes	Pluteaceae	*Pluteus nanus*			C		1/1
fungi	Agaricomycetes	Polyporaceae	*Coriolus*					1/1
fungi	Agaricomycetes	Polyporaceae	*Hexagonia*					1/1
fungi	Agaricomycetes	Polyporaceae	*Laetiporus sulphureus*			C		1/1
fungi	Agaricomycetes	Polyporaceae	*Lenzites*					2/2
fungi	Agaricomycetes	Polyporaceae	*Panus*					3/3
fungi	Agaricomycetes	Polyporaceae	*Polyporus*					8/8
fungi	Agaricomycetes	Polyporaceae	*Polyporus grammocephalus*			C		1/1
fungi	Agaricomycetes	Polyporaceae	*Trametes*					5/5
fungi	Agaricomycetes	Polyporaceae	*Trametes hirsuta*			C		2/2
fungi	Agaricomycetes	Polyporaceae	*Trametes versicolor*			C		2/2
fungi	Agaricomycetes	Psathyrellaceae	*Lacrymaria*					1/1
fungi	Agaricomycetes	Psathyrellaceae	*Psathyrella*					5/5
fungi	Agaricomycetes	Psathyrellaceae	*Psathyrella asperospora*			C		1/1
fungi	Agaricomycetes	Russulaceae	*Russula*			C		1/1
fungi	Agaricomycetes	Russulaceae	*Russula erumpens*			C		3/3
fungi	Agaricomycetes	Russulaceae	*Russula lenkunya*			C		2/2
fungi	Agaricomycetes	Russulaceae	*Zelleromyces*			C		1/1
fungi	Agaricomycetes	Schizophyllaceae	*Schizophyllum commune*			C		1/1
fungi	Agaricomycetes	Schizoporaceae	*Hyphodontia australis*			C		4/4
fungi	Agaricomycetes	Schizoporaceae	*Schizopora*					2/2
fungi	Agaricomycetes	Sclerodermataceae	*Pisolithus albus*			C		1/1
fungi	Agaricomycetes	Stereaceae	*Aleurodiscus*					1/1
fungi	Agaricomycetes	Stereaceae	*Stereum hirsutum*			C		1/1
fungi	Agaricomycetes	Stereaceae	*Stereum illudens*			C		1/1
fungi	Agaricomycetes	Stereaceae	*Stereum ostrea*			C		2/2
fungi	Agaricomycetes	Strophariaceae	*Galerina marginata*			C		1/1
fungi	Agaricomycetes	Strophariaceae	*Hypholoma*					2/2
fungi	Agaricomycetes	Strophariaceae	*Hypholoma fasciculare*			C		1/1
fungi	Agaricomycetes	Strophariaceae	*Pholiota*					4/4
fungi	Agaricomycetes	Strophariaceae	*Pholiota adiposa*			C		1/1
fungi	Agaricomycetes	Strophariaceae	*Stropharia aurantiaca*			C		5/5
fungi	Agaricomycetes	Tricholomataceae	*Collybia*					8/8
fungi	Agaricomycetes	Tricholomataceae	*Conchomyces*					1/1
fungi	Agaricomycetes	Tricholomataceae	*Conchomyces bursiformis*			C		1/1
fungi	Agaricomycetes	Tricholomataceae	*Filoboletus manipularis*			C		2/2
fungi	Agaricomycetes	Tricholomataceae	*Melanoleuca*					1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
fungi	Agaricomycetes	Tricholomataceae	*Mycena pura*			C		2/2
fungi	Agaricomycetes	Tricholomataceae	*Panellus stipticus*			C		2/2
fungi	Agaricomycetes	Tricholomataceae	*Tricholoma*					3/3
fungi	Leotiomycetes	Chlorociboriaceae	*Chlorociboria aeruginascens*			C		1/1
fungi	Leotiomycetes	Helotiaceae	*Helotium*					1/1
fungi	Pezizomycetes	Pezizaceae	*Peziza repanda*			C		2/2
fungi	Pezizomycetes	Pyronemataceae	*Aleuria*					1/1
fungi	Pezizomycetes	Pyronemataceae	*Scutellinia*					1/1
fungi	Pezizomycetes	Pyronemataceae	*Scutellinia scutellata*			C		1/1
fungi	Pezizomycetes	Sarcoscyphaceae	*Cookeina*					1/1
fungi	arthoniomycetes	Arthoniaceae	*Arthonia*					3/3
fungi	arthoniomycetes	Arthoniaceae	*Cryptothecia scripta*			C		1/1
fungi	arthoniomycetes	Chrysothricaceae	*Chrysothrix xanthina*			C		1/1
fungi	arthoniomycetes	Opegraphaceae	*Cresponea plurilocularis*			C		1/1
fungi	lecanoromycetes	Acarosporaceae	*Acarospora novae-hollandiae*			C		1/1
fungi	lecanoromycetes	Caliciaceae	*Buellia*					1/1
fungi	lecanoromycetes	Caliciaceae	*Calicium glaucellum*			C		1/1
fungi	lecanoromycetes	Caliciaceae	*Dirinaria applanata*			C		1/1
fungi	lecanoromycetes	Caliciaceae	*Dirinaria confluens*			C		1/1
fungi	lecanoromycetes	Caliciaceae	*Dirinaria picta*			C		1/1
fungi	lecanoromycetes	Caliciaceae	*Pyxine petricola*			C		1/1
fungi	lecanoromycetes	Cladoniaceae	*Cladia aggregata*			C		1/1
fungi	lecanoromycetes	Cladoniaceae	*Cladia muelleri*			C		1/1
fungi	lecanoromycetes	Cladoniaceae	*Cladonia cervicornis subsp. verticillata*			C		1/1
fungi	lecanoromycetes	Cladoniaceae	*Cladonia floerkeana*			C		1/1
fungi	lecanoromycetes	Coenogoniaceae	*Coenogonium*					1/1
fungi	lecanoromycetes	Collemataceae	*Collema*					2/2
fungi	lecanoromycetes	Graphidaceae	*Diorygma circumfusum*			C		2/2
fungi	lecanoromycetes	Graphidaceae	*Diorygma pruinosum*			C		2/2
fungi	lecanoromycetes	Graphidaceae	*Graphis virescens*			C		3/3
fungi	lecanoromycetes	Graphidaceae	*Sarcographa labyrinthica*			C		1/1
fungi	lecanoromycetes	Graphidaceae	*Thelotrema*					1/1
fungi	lecanoromycetes	Haematommataceae	*Haematomma collatum*			C		1/1
fungi	lecanoromycetes	Lecanoraceae	*Lecanora achroa*			C		1/1
fungi	lecanoromycetes	Lecanoraceae	*Lecidella*					1/1
fungi	lecanoromycetes	Lobariaceae	*Crocodia aurata*			C		2/2
fungi	lecanoromycetes	Lobariaceae	*Pseudocyphellaria haywardiorum*			C		1/1
fungi	lecanoromycetes	Megalosporaceae	*Megalospora tuberculosa*			C		1/1
fungi	lecanoromycetes	Pannariaceae	*Pannaria microphyllizans*			C		1/1
fungi	lecanoromycetes	Pannariaceae	*Physma*					1/1
fungi	lecanoromycetes	Parmeliaceae	*Austroparmelina subarida*			C		1/1
fungi	lecanoromycetes	Parmeliaceae	*Austroparmelina subtiliacea*			C		1/1
fungi	lecanoromycetes	Parmeliaceae	*Flavoparmelia euplecta*			C		2/2
fungi	lecanoromycetes	Parmeliaceae	*Flavoparmelia rutidota*			C		2/2
fungi	lecanoromycetes	Parmeliaceae	*Hypotrachyna heterochroa*			C		1/1
fungi	lecanoromycetes	Parmeliaceae	*Notoparmelia cunninghamii*			C		1/1

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fungi	lecanoromycetes	Parmeliaceae	*Parmelia*					1/1
fungi	lecanoromycetes	Parmeliaceae	*Parmotrema austrosinense*			C		1/1
fungi	lecanoromycetes	Parmeliaceae	*Parmotrema cristiferum*			C		1/1
fungi	lecanoromycetes	Parmeliaceae	*Parmotrema perlatum*			C		2/2
fungi	lecanoromycetes	Parmeliaceae	*Parmotrema reticulatum*			C		1/1
fungi	lecanoromycetes	Parmeliaceae	*Parmotrema tinctorum*			C		3/3
fungi	lecanoromycetes	Parmeliaceae	*Punctelia pseudocoralloidea*			C		1/1
fungi	lecanoromycetes	Parmeliaceae	*Punctelia subflava*			C		1/1
fungi	lecanoromycetes	Parmeliaceae	*Usnea angulata*			C		1/1
fungi	lecanoromycetes	Parmeliaceae	*Usnea baileyi*			C		1/1
fungi	lecanoromycetes	Parmeliaceae	*Usnea bismolliuscula*			C		1/1
fungi	lecanoromycetes	Parmeliaceae	*Usnea dasaea*			C		3/3
fungi	lecanoromycetes	Parmeliaceae	*Xanthoparmelia australasica*			C		1/1
fungi	lecanoromycetes	Parmeliaceae	*Xanthoparmelia spargenosa*			C		1/1
fungi	lecanoromycetes	Pertusariaceae	*Pertusaria patellifera*			C		1/1
fungi	lecanoromycetes	Pertusariaceae	*Pertusaria scaberula*			C		5/5
fungi	lecanoromycetes	Physciaceae	*Heterodermia japonica*			C		2/2
fungi	lecanoromycetes	Physciaceae	*Heterodermia leucomela*			C		2/2
fungi	lecanoromycetes	Physciaceae	*Heterodermia obscurata*			C		1/1
fungi	lecanoromycetes	Physciaceae	*Hyperphyscia*					1/1
fungi	lecanoromycetes	Physciaceae	*Hyperphyscia pandani*			C		1/1
fungi	lecanoromycetes	Physciaceae	*Physcia jackii*			C		2/2
fungi	lecanoromycetes	Physciaceae	*Physcia undulata*			C		1/1
fungi	lecanoromycetes	Pilocarpaceae	*Micarea*					1/1
fungi	lecanoromycetes	Porinaceae	*Porina*					1/1
fungi	lecanoromycetes	Porinaceae	*Porina internigrans*			C		1/1
fungi	lecanoromycetes	Ramalinaceae	*Bacidia*					2/2
fungi	lecanoromycetes	Ramalinaceae	*Ramalina*					3/3
fungi	lecanoromycetes	Ramalinaceae	*Ramalina celastri*			C		1/1
fungi	lecanoromycetes	Ramalinaceae	*Ramalina celastri subsp. celastri*			C		1/1
fungi	lecanoromycetes	Ramalinaceae	*Ramalina inflata subsp. perpusilla*			C		1/1
fungi	lecanoromycetes	Ramalinaceae	*Ramalina peruviana*			C		1/1
fungi	lecanoromycetes	Teloschistaceae	*Caloplaca norfolkensis*			C		1/1
fungi	lecanoromycetes	Teloschistaceae	*Caloplaca rexfilsonii*			C		1/1
fungi	lecanoromycetes	Teloschistaceae	*Teloschistes flavicans*			C		3/3
fungi	lecanoromycetes	Teloschistaceae	*Teloschistes sieberianus*			C		2/2
fungi	lecanoromycetes	Teloschistaceae	*Teloschistes xanthoroides*			C		1/1
fungi	lecanoromycetes	Tephromelataceae	*Tephromela atra*			C		2/2
fungi	sordariomycetes	Cordycipitaceae	*Cordyceps*					2/2
fungi	sordariomycetes	Cordycipitaceae	*Cordyceps hawkesii*			C		1/1
fungi	sordariomycetes	Nectriaceae	*Nectria pseudotrichia*			C		2/2
fungi	sordariomycetes	Xylariaceae	*Biscogniauxia*					7/7
fungi	sordariomycetes	Xylariaceae	*Daldinia eschscholzii*			C		3/3
fungi	sordariomycetes	Xylariaceae	*Hypoxylon*					6/6
fungi	sordariomycetes	Xylariaceae	*Hypoxylon rubiginosum var. rubiginosum*			C		3/3
fungi	uncertain	Incertae sedis Fungi	*Chlorosplenium*					1/1

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plants	land plants	Acanthaceae	*Brunoniella australis*	blue trumpet		C		1/1
plants	land plants	Acanthaceae	*Pseuderanthemum variabile*	pastel flower		C		5/5
plants	land plants	Acanthaceae	*Rostellularia adscendens*			C		5/4
plants	land plants	Agavaceae	*Agave americana*		Y			1
plants	land plants	Aizoaceae	*Tetragonia tetragonoides*	New Zealand spinach		C		1/1
plants	land plants	Amaranthaceae	*Alternanthera denticulata*	lesser joyweed		C		1/1
plants	land plants	Amaranthaceae	*Alternanthera nana*	hairy joyweed		C		2/2
plants	land plants	Amaranthaceae	*Alternanthera pungens*	khaki weed	Y			1/1
plants	land plants	Amaranthaceae	*Deeringia amaranthoides*	redberry		C		2/2
plants	land plants	Amaranthaceae	*Gomphrena celosioides*	gomphrena weed	Y			1/1
plants	land plants	Amaranthaceae	*Nyssanthes diffusa*	barbed-wire weed		C		3/2
plants	land plants	Amaranthaceae	*Nyssanthes erecta*			C		5/4
plants	land plants	Anacardiaceae	*Rhodosphaera rhodanthema*	tulip satinwood		C		1/1
plants	land plants	Annonaceae	*Melodorum leichhardtii*			C		1
plants	land plants	Apiaceae	*Apium prostratum var. prostratum*			C		1/1
plants	land plants	Apiaceae	*Berula erecta*	water parsnip	Y			1/1
plants	land plants	Apiaceae	*Cyclospermum leptophyllum*		Y			1/1
plants	land plants	Apiaceae	*Daucus glochidiatus*	Australian carrot		C		3/3
plants	land plants	Apiaceae	*Platysace ericoides*	heath platysace		C		1/1
plants	land plants	Apocynaceae	*Alstonia constricta*	bitterbark		C		4/4
plants	land plants	Apocynaceae	*Alyxia ruscifolia*			C		8/6
plants	land plants	Apocynaceae	*Araujia sericifera*	white moth vine	Y			1/1
plants	land plants	Apocynaceae	*Carissa ovata*	currantbush		C		6/2
plants	land plants	Apocynaceae	*Cynanchum viminale subsp. brunonianum*			C		1/1
plants	land plants	Apocynaceae	*Gomphocarpus physocarpus*	balloon cottonbush	Y			1/1
plants	land plants	Apocynaceae	*Gymnema pleiadenium*			C		2/2
plants	land plants	Apocynaceae	*Leichhardtia lloydii*			C		1/1
plants	land plants	Apocynaceae	*Leichhardtia micradenia*			C		1/1
plants	land plants	Apocynaceae	*Leichhardtia viridiflora subsp. viridiflora*			C		1/1
plants	land plants	Apocynaceae	*Parsonsia eucalyptophylla*	gargaloo		C		1/1
plants	land plants	Apocynaceae	*Parsonsia lanceolata*	northern silkpod		C		2/2
plants	land plants	Apocynaceae	*Parsonsia lilacina*	crisped silkpod		C		1/1
plants	land plants	Apocynaceae	*Parsonsia longipetiolata*			C		2/2
plants	land plants	Apocynaceae	*Secamone elliptica*			C		1/1
plants	land plants	Apocynaceae	*Vincetoxicum grandiflorum*			C		1/1
plants	land plants	Apocynaceae	*Vincetoxicum ovatum*			C		1/1
plants	land plants	Apocynaceae	*Vincetoxicum paniculatum*			C		1/1
plants	land plants	Araceae	*Landoltia punctata*			C		1/1
plants	land plants	Araliaceae	*Astrotricha biddulphiana*			C		2/1
plants	land plants	Araliaceae	*Hydrocotyle acutiloba*			C		1/1
plants	land plants	Araliaceae	*Hydrocotyle laxiflora*	stinking pennywort		C		4/4
plants	land plants	Araliaceae	*Hydrocotyle peduncularis*			C		2/2
plants	land plants	Araliaceae	*Polyscias elegans*	celery wood		C		1/1
plants	land plants	Araliaceae	*Trachymene incisa subsp. incisa*			C		1/1
plants	land plants	Araucariaceae	*Araucaria cunninghamii*	hoop pine		C		1
plants	land plants	Asparagaceae	*Asparagus africanus*	ornamental asparagus	Y			17

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Asphodelaceae	*Aloe maculata*		Y			1
plants	land plants	Asphodelaceae	*Bulbine alata*	native leek		C		1/1
plants	land plants	Asphodelaceae	*Bulbine bulbosa*	golden lily		C		2/2
plants	land plants	Aspleniaceae	*Asplenium australasicum*			C		1/1
plants	land plants	Aspleniaceae	*Asplenium flabellifolium*	necklace fern		C		1/1
plants	land plants	Aspleniaceae	*Asplenium flaccidum subsp. flaccidum*			C		1/1
plants	land plants	Aspleniaceae	*Asplenium polyodon*	mare's tail fern		C		1/1
plants	land plants	Aspleniaceae	*Asplenium subglandulosum subsp. subglandulosum*			C		1/1
plants	land plants	Asteraceae	*Acanthospermum hispidum*	star burr	Y			1/1
plants	land plants	Asteraceae	*Apowollastonia spilanthoides*			C		1/1
plants	land plants	Asteraceae	*Brachyscome basaltica*			C		1/1
plants	land plants	Asteraceae	*Brachyscome microcarpa subsp. microcarpa*			C		3/3
plants	land plants	Asteraceae	*Brachyscome multifida*			C		1
plants	land plants	Asteraceae	*Calotis cuneata*			C		1/1
plants	land plants	Asteraceae	*Calotis dentex*	white burr daisy		C		3/3
plants	land plants	Asteraceae	*Calotis lappulacea*	yellow burr daisy		C		2/2
plants	land plants	Asteraceae	*Camptacra barbata*			C		1/1
plants	land plants	Asteraceae	*Carduus thoermeri*	nodding thistle	Y			2/2
plants	land plants	Asteraceae	*Carthamus lanatus*	saffron thistle	Y			1/1
plants	land plants	Asteraceae	*Cassinia laevis subsp. rosmarinifolia*			C		1/1
plants	land plants	Asteraceae	*Cassinia quinquefaria*			C		1/1
plants	land plants	Asteraceae	*Chrysocephalum apiculatum*	yellow buttons		C		3/2
plants	land plants	Asteraceae	*Cirsium vulgare*	spear thistle	Y			1/1
plants	land plants	Asteraceae	*Coreopsis lanceolata*		Y			1/1
plants	land plants	Asteraceae	*Cyanthillium cinereum*			C		3/1
plants	land plants	Asteraceae	*Erigeron bonariensis*		Y			1/1
plants	land plants	Asteraceae	*Erigeron pusillus*		Y			1/1
plants	land plants	Asteraceae	*Euchiton japonicus*			C		2/2
plants	land plants	Asteraceae	*Euchiton sphaericus*			C		1/1
plants	land plants	Asteraceae	*Galinsoga parviflora*	yellow weed	Y			1/1
plants	land plants	Asteraceae	*Glossocardia bidens*	native cobbler's pegs		C		4/4
plants	land plants	Asteraceae	*Gynura drymophila var. drymophila*			C		1/1
plants	land plants	Asteraceae	*Hypochaeris albiflora*		Y			1/1
plants	land plants	Asteraceae	*Leuzea australis*			V	V	1/1
plants	land plants	Asteraceae	*Olearia canescens subsp. discolor*			C		2/2
plants	land plants	Asteraceae	*Ozothamnus bidwillii*	climbing daisy		C		1/1
plants	land plants	Asteraceae	*Ozothamnus cassinioides*			C		1/1
plants	land plants	Asteraceae	*Peripleura hispidula*			C		1
plants	land plants	Asteraceae	*Picris angustifolia subsp. carolorum-henricorum*			C		2/2
plants	land plants	Asteraceae	*Podolepis arachnoidea*	clustered copper-wire daisy		C		2/2
plants	land plants	Asteraceae	*Podolepis neglecta*			C		1/1
plants	land plants	Asteraceae	*Pterocaulon redolens*			C		1/1
plants	land plants	Asteraceae	*Rhodanthe anthemoides*	white paper daisy		C		3/3
plants	land plants	Asteraceae	*Schkuhria pinnata*		Y			2/2
plants	land plants	Asteraceae	*Senecio diaschides*			C		2/2
plants	land plants	Asteraceae	*Senecio esleri*			C		1/1

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plants	land plants	Asteraceae	*Senecio quadridentatus*	cotton fireweed		C		1/1
plants	land plants	Asteraceae	*Sigesbeckia orientalis*	Indian weed		C		3/3
plants	land plants	Asteraceae	*Solenogyne bellioides*			C		1/1
plants	land plants	Asteraceae	*Sonchus oleraceus*	common sowthistle	Y			1/1
plants	land plants	Asteraceae	*Sphaeromorphaea australis*			C		3/1
plants	land plants	Asteraceae	*Vittadinia dissecta var. hirta*			C		1/1
plants	land plants	Asteraceae	*Vittadinia pustulata*			C		1/1
plants	land plants	Asteraceae	*Vittadinia sulcata*	native daisy		C		2/2
plants	land plants	Asteraceae	*Vittadinia tenuissima*	western New Holland daisy		C		1/1
plants	land plants	Asteraceae	*Xerochrysum bracteatum*	golden everlasting daisy		C		1/1
plants	land plants	Asteraceae	*Xerochrysum viscosum*			C		1/1
plants	land plants	Asteraceae	*Zinnia peruviana*	wild zinnia	Y			7/7
plants	land plants	Bignoniaceae	*Dolichandra unguis-cati*	cat's claw creeper	Y			5
plants	land plants	Bignoniaceae	*Pandorea pandorana*	wonga vine		C		3/2
plants	land plants	Blechnaceae	*Blechnum neohollandicum*			C		2/2
plants	land plants	Boraginaceae	*Cynoglossum australe*			C		1/1
plants	land plants	Boraginaceae	*Heliotropium amplexicaule*	blue heliotrope	Y			2/2
plants	land plants	Brassicaceae	*Lepidium africanum*	common peppercress	Y			3/3
plants	land plants	Brassicaceae	*Raphanus raphanistrum*	wild radish	Y			1/1
plants	land plants	Brassicaceae	*Rapistrum rugosum*		Y			1/1
plants	land plants	Brassicaceae	*Rorippa dietrichiana*			C		1/1
plants	land plants	Brassicaceae	*Rorippa nasturtium-aquaticum*	watercress	Y			2/2
plants	land plants	Brassicaceae	*Sisymbrium orientale*	Indian hedge mustard	Y			1/1
plants	land plants	Brassicaceae	*Sisymbrium thellungii*	African turnip-weed	Y			1/1
plants	land plants	Bryaceae	*Bryum argenteum*			C		1/1
plants	land plants	Bryaceae	*Imbribryum clavatum*			C		1/1
plants	land plants	Byttneriaceae	*Seringia corollata*			C		3/3
plants	land plants	Cactaceae	*Harrisia pomanensis*		Y			2/2
plants	land plants	Cactaceae	*Opuntia*					38
plants	land plants	Cactaceae	*Opuntia stricta*		Y			2
plants	land plants	Cactaceae	*Opuntia tomentosa*	velvety tree pear	Y			19
plants	land plants	Campanulaceae	*Lobelia purpurascens*	white root		SL		1/1
plants	land plants	Campanulaceae	*Wahlenbergia*					2/1
plants	land plants	Campanulaceae	*Wahlenbergia capillaris*			SL		2/2
plants	land plants	Campanulaceae	*Wahlenbergia gracilis*	sprawling bluebell		SL		1/1
plants	land plants	Campanulaceae	*Wahlenbergia graniticola*	granite bluebell		SL		1/1
plants	land plants	Capparaceae	*Capparis loranthifolia*			C		1
plants	land plants	Capparaceae	*Capparis mitchellii*			C		1
plants	land plants	Capparaceae	*Capparis sarmentosa*	scrambling caper		C		3/2
plants	land plants	Caryophyllaceae	*Paronychia brasiliana*	Brazilian whitlow	Y			1/1
plants	land plants	Caryophyllaceae	*Petrorhagia dubia*		Y			1/1
plants	land plants	Caryophyllaceae	*Petrorhagia nanteuilii*	proliferous pink	Y			1/1
plants	land plants	Caryophyllaceae	*Polycarpon tetraphyllum*		Y			2/2
plants	land plants	Caryophyllaceae	*Stellaria angustifolia subsp. angustifolia*			C		1/1
plants	land plants	Caryophyllaceae	*Stellaria media*	chickweed	Y			2/2
plants	land plants	Casuarinaceae	*Allocasuarina inophloia*			C		9

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Casuarinaceae	*Allocasuarina littoralis*			C		1/1
plants	land plants	Casuarinaceae	*Allocasuarina luehmannii*	bull oak		C		4/3
plants	land plants	Casuarinaceae	*Casuarina cristata*	belah		C		3/1
plants	land plants	Casuarinaceae	*Casuarina cunninghamiana subsp. cunninghamiana*			C		1/1
plants	land plants	Celastraceae	*Celastrus australis*	staff climber		C		1/1
plants	land plants	Celastraceae	*Celastrus subspicata*	large-leaved staffvine		C		2/1
plants	land plants	Celastraceae	*Denhamia bilocularis*			C		9/8
plants	land plants	Celastraceae	*Denhamia disperma*			C		3/3
plants	land plants	Celastraceae	*Denhamia parvifolia*			V	V	12/11
plants	land plants	Celastraceae	*Denhamia silvestris*			C		1/1
plants	land plants	Celastraceae	*Elaeodendron australe var. integrifolium*			C		4/4
plants	land plants	Celastraceae	*Siphonodon australis*	ivorywood		C		1
plants	land plants	Chenopodiaceae	*Dysphania ambrosioides*		Y			2/2
plants	land plants	Chenopodiaceae	*Dysphania carinata*			C		2/2
plants	land plants	Chenopodiaceae	*Einadia hastata*			C		1/1
plants	land plants	Chenopodiaceae	*Einadia nutans*			C		1
plants	land plants	Chenopodiaceae	*Enchylaena tomentosa var. glabra*			C		1/1
plants	land plants	Chenopodiaceae	*Maireana microphylla*			C		1/1
plants	land plants	Chenopodiaceae	*Salsola australis*			C		1/1
plants	land plants	Chenopodiaceae	*Sclerolaena birchii*	galvanised burr		C		1/1
plants	land plants	Commelinaceae	*Commelina diffusa*			C		4/4
plants	land plants	Commelinaceae	*Murdannia graminea*	murdannia		C		6/5
plants	land plants	Convolvulaceae	*Convolvulus angustissimus subsp. angustissimus*			C		1/1
plants	land plants	Convolvulaceae	*Convolvulus erubescens*	Australian bindweed		C		1/1
plants	land plants	Convolvulaceae	*Dichondra repens*	kidney weed		C		1/1
plants	land plants	Convolvulaceae	*Dichondra sp. (Inglewood J.M.Dalby 86/93)*			C		1/1
plants	land plants	Convolvulaceae	*Evolvulus alsinoides*			C		2
plants	land plants	Convolvulaceae	*Evolvulus alsinoides var. decumbens*			C		2/2
plants	land plants	Convolvulaceae	*Ipomoea lonchophylla*			C		1/1
plants	land plants	Crassulaceae	*Bryophyllum delagoense*		Y			3
plants	land plants	Crassulaceae	*Bryophyllum x houghtonii*		Y			1
plants	land plants	Cucurbitaceae	*Sicyos australis*	star cucumber		C		1/1
plants	land plants	Cupressaceae	*Callitris baileyi*	Bailey's cypress		NT		10/8
plants	land plants	Cupressaceae	*Callitris columellaris*			C		1/1
plants	land plants	Cupressaceae	*Callitris endlicheri*	black cypress pine		C		1/1
plants	land plants	Cyperaceae	*Abildgaardia oxystachya*			C		1/1
plants	land plants	Cyperaceae	*Bolboschoenus fluviatilis*			C		2/2
plants	land plants	Cyperaceae	*Carex appressa*			C		1/1
plants	land plants	Cyperaceae	*Carex declinata*			C		4/4
plants	land plants	Cyperaceae	*Carex gaudichaudiana*			C		1/1
plants	land plants	Cyperaceae	*Carex inversa*	knob sedge		C		3/3
plants	land plants	Cyperaceae	*Cyperus bowmanni*			C		1/1
plants	land plants	Cyperaceae	*Cyperus clarus*			V		1/1
plants	land plants	Cyperaceae	*Cyperus concinnus*			C		1/1
plants	land plants	Cyperaceae	*Cyperus curvistylis*			C		1/1
plants	land plants	Cyperaceae	*Cyperus dietrichiae var. brevibracteatus*			C		1/1

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plants	land plants	Cyperaceae	*Cyperus dietrichiae var. dietrichiae*			C		1/1
plants	land plants	Cyperaceae	*Cyperus fulvus*			C		6/6
plants	land plants	Cyperaceae	*Cyperus gracilis*			C		3/3
plants	land plants	Cyperaceae	*Cyperus involucratus*		Y			1/1
plants	land plants	Cyperaceae	*Cyperus mirus*			C		1/1
plants	land plants	Cyperaceae	*Cyperus sanguinolentus*			C		1/1
plants	land plants	Cyperaceae	*Cyperus squarrosus*	bearded flatsedge		C		1/1
plants	land plants	Cyperaceae	*Cyperus vaginatus*			C		2/2
plants	land plants	Cyperaceae	*Eleocharis cylindrostachys*			C		2/2
plants	land plants	Cyperaceae	*Eleocharis dietrichiana*			C		1/1
plants	land plants	Cyperaceae	*Fimbristylis aestivalis*			C		1/1
plants	land plants	Cyperaceae	*Fimbristylis dichotoma*	common fringe-rush		C		6/5
plants	land plants	Cyperaceae	*Fimbristylis tristachya*			C		1/1
plants	land plants	Cyperaceae	*Gahnia aspera*			C		2/1
plants	land plants	Cyperaceae	*Lepidosperma laterale*			C		2/1
plants	land plants	Cyperaceae	*Schoenoplectus tabernaemontani*			C		2/2
plants	land plants	Cyperaceae	*Schoenus kennyi*			C		1
plants	land plants	Cyperaceae	*Scleria mackaviensis*			C		2/2
plants	land plants	Cyperaceae	*Scleria sphacelata*			C		1
plants	land plants	Dilleniaceae	*Hibbertia linearis var. obtusifolia*			C		1/1
plants	land plants	Dilleniaceae	*Hibbertia patens*			C		1/1
plants	land plants	Dilleniaceae	*Hibbertia stricta*			C		2
plants	land plants	Ditrichaceae	*Ceratodon purpureus*			C		1/1
plants	land plants	Droseraceae	*Drosera lunata*			SL		1/1
plants	land plants	Dryopteridaceae	*Lastreopsis decomposita*	trim shield fern		SL		1/1
plants	land plants	Dryopteridaceae	*Parapolystichum microsorum*			SL		1/1
plants	land plants	Ebenaceae	*Diospyros geminata*	scaly ebony		C		2/2
plants	land plants	Ebenaceae	*Diospyros humilis*	small-leaved ebony		C		1/1
plants	land plants	Elaeocarpaceae	*Elaeocarpus obovatus subsp. obovatus*			C		2/2
plants	land plants	Entodontaceae	*Entodon mackaviensis*			C		1/1
plants	land plants	Ericaceae	*Brachyloma daphnoides subsp. daphnoides*			C		1/1
plants	land plants	Ericaceae	*Lissanthe pluriloculata*			C		1
plants	land plants	Ericaceae	*Melichrus urceolatus*	honey gorse		C		2/2
plants	land plants	Ericaceae	*Styphelia biflora*			C		1
plants	land plants	Ericaceae	*Styphelia trichostyla*			C		1/1
plants	land plants	Erythroxylaceae	*Erythroxylum australe*	cocaine tree		C		1
plants	land plants	Erythroxylaceae	*Erythroxylum sp. (Splityard Creek L.Pedley 5360)*			C		3/3
plants	land plants	Euphorbiaceae	*Acalypha capillipes*	small-leaved acalypha		C		1/1
plants	land plants	Euphorbiaceae	*Acalypha eremorum*	soft acalypha		C		1/1
plants	land plants	Euphorbiaceae	*Alchornea ilicifolia*	native holly		C		1
plants	land plants	Euphorbiaceae	*Claoxylon australe*	brittlewood		C		1/1
plants	land plants	Euphorbiaceae	*Croton acronychioides*	thick-leaved croton		C		2/1
plants	land plants	Euphorbiaceae	*Croton insularis*	Queensland cascarilla		C		8/6
plants	land plants	Euphorbiaceae	*Croton phebalioides*	narrow-leaved croton		C		3/3
plants	land plants	Euphorbiaceae	*Euphorbia dallachyana*			C		1/1
plants	land plants	Euphorbiaceae	*Euphorbia davidii*		Y			2/2

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plants	land plants	Euphorbiaceae	*Euphorbia drummondii*			C		1/1
plants	land plants	Euphorbiaceae	*Euphorbia hirta*		Y			1/1
plants	land plants	Euphorbiaceae	*Excoecaria dallachyana*	scrub poison tree		C		3/3
plants	land plants	Euphorbiaceae	*Homalanthus populifolius*			C		1/1
plants	land plants	Euphorbiaceae	*Mallotus philippensis*	red kamala		C		1/1
plants	land plants	Euphorbiaceae	*Manihot grahamii*		Y			1/1
plants	land plants	Fabroniaceae	*Fabronia australis*			C		1/1
plants	land plants	Frullaniaceae	*Frullania monocera var. subhampeana*			C		1/1
plants	land plants	Gentianaceae	*Centaurium*					1/1
plants	land plants	Gentianaceae	*Centaurium tenuiflorum*		Y			1/1
plants	land plants	Geraniaceae	*Geranium solanderi var. solanderi*	native geranium		C		3/3
plants	land plants	Goodeniaceae	*Dampiera adpressa*			C		1/1
plants	land plants	Goodeniaceae	*Goodenia*					2
plants	land plants	Goodeniaceae	*Goodenia delicata*			C		4/3
plants	land plants	Goodeniaceae	*Goodenia glabra*			C		2/2
plants	land plants	Goodeniaceae	*Goodenia grandiflora*			C		2/2
plants	land plants	Goodeniaceae	*Goodenia paniculata*			C		1/1
plants	land plants	Goodeniaceae	*Goodenia paradoxa*			C		3/3
plants	land plants	Goodeniaceae	*Goodenia rosulata*			C		1/1
plants	land plants	Goodeniaceae	*Goodenia rotundifolia*			C		1
plants	land plants	Grimmiaceae	*Grimmia laevigata*			C		1/1
plants	land plants	Haloragaceae	*Gonocarpus*					1/1
plants	land plants	Haloragaceae	*Haloragis exalata subsp. velutina*			V	V	4/4
plants	land plants	Haloragaceae	*Haloragis heterophylla*	rough raspweed		C		2/2
plants	land plants	Haloragaceae	*Myriophyllum crispatum*			C		1/1
plants	land plants	Hemerocallidaceae	*Dianella brevipedunculata*			C		1
plants	land plants	Hemerocallidaceae	*Dianella caerulea var. assera*			C		1/1
plants	land plants	Hemerocallidaceae	*Dianella longifolia*			C		1
plants	land plants	Hemerocallidaceae	*Dianella longifolia var. stenophylla*			C		1/1
plants	land plants	Hemerocallidaceae	*Dianella longifolia var. stupata*			C		1/1
plants	land plants	Hemerocallidaceae	*Dianella revoluta*			C		3
plants	land plants	Hemerocallidaceae	*Geitonoplesium cymosum*	scrambling lily		C		3/3
plants	land plants	Hypericaceae	*Hypericum gramineum*			C		3/3
plants	land plants	Hypopterygiaceae	*Hypopterygium tamarisci*			C		1/1
plants	land plants	Hypoxidaceae	*Hypoxis pratensis var. tuberculata*			C		1/1
plants	land plants	Johnsoniaceae	*Caesia parviflora*			C		2/2
plants	land plants	Johnsoniaceae	*Caesia parviflora var. vittata*			C		1/1
plants	land plants	Johnsoniaceae	*Tricoryne elatior*	yellow autumn lily		C		2/1
plants	land plants	Juncaceae	*Juncus aridicola*	tussock rush		C		1/1
plants	land plants	Juncaceae	*Juncus polyanthemus*			C		1/1
plants	land plants	Juncaceae	*Juncus prismatocarpus*	branching rush		C		2/2
plants	land plants	Juncaceae	*Juncus subsecundus*			C		1/1
plants	land plants	Juncaceae	*Juncus usitatus*			C		4/3
plants	land plants	Juncaceae	*Juncus vaginatus*			C		1/1
plants	land plants	Juncaceae	*Luzula flaccida*			C		1/1
plants	land plants	Lamiaceae	*Ajuga australis*	Australian bugle		C		1/1

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plants	land plants	Lamiaceae	*Clerodendrum tomentosum*			C		1/1
plants	land plants	Lamiaceae	*Coleus australis*			C		5/5
plants	land plants	Lamiaceae	*Coleus graveolens*			C		2/2
plants	land plants	Lamiaceae	*Mentha satureioides*	native pennyroyal		C		5/5
plants	land plants	Lamiaceae	*Prostanthera cryptandroides subsp. euphrasioides*			C		2/2
plants	land plants	Lamiaceae	*Scutellaria humilis*	dwarf skullcap		C		1/1
plants	land plants	Lamiaceae	*Teucrium argutum*			C		3/3
plants	land plants	Lamiaceae	*Teucrium junceum*			C		3/2
plants	land plants	Lamiaceae	*Vitex lignum-vitae*			C		2/2
plants	land plants	Lauraceae	*Cinnamomum camphora*	camphor laurel	Y			1/1
plants	land plants	Lauraceae	*Cryptocarya bidwillii*	yellow laurel		C		1/1
plants	land plants	Lauraceae	*Cryptocarya floydii*	gorge laurel		NT		1/1
plants	land plants	Lauraceae	*Litsea reticulata*			C		1/1
plants	land plants	Lauraceae	*Neolitsea australiensis*	green bolly gum		C		2/2
plants	land plants	Laxmanniaceae	*Eustrephus latifolius*	wombat berry		C		2/1
plants	land plants	Laxmanniaceae	*Laxmannia gracilis*	slender wire lily		C		6/3
plants	land plants	Laxmanniaceae	*Lomandra filiformis*			C		3
plants	land plants	Laxmanniaceae	*Lomandra filiformis subsp. coriacea*			C		1/1
plants	land plants	Laxmanniaceae	*Lomandra laxa*	broad-leaved matrush		C		1/1
plants	land plants	Laxmanniaceae	*Lomandra leucocephala subsp. leucocephala*			C		1/1
plants	land plants	Laxmanniaceae	*Lomandra longifolia*			C		3/1
plants	land plants	Laxmanniaceae	*Lomandra multiflora subsp. multiflora*			C		2
plants	land plants	Leguminosae	*Acacia*					2
plants	land plants	Leguminosae	*Acacia bancroftiorum*			C		2/2
plants	land plants	Leguminosae	*Acacia blakei subsp. blakei*			C		2/2
plants	land plants	Leguminosae	*Acacia buxifolia subsp. pubiflora*			C		1/1
plants	land plants	Leguminosae	*Acacia caroleae*			C		1/1
plants	land plants	Leguminosae	*Acacia complanata*	flatstem wattle		C		2
plants	land plants	Leguminosae	*Acacia conferta*			C		1/1
plants	land plants	Leguminosae	*Acacia crassa subsp. crassa*			C		4
plants	land plants	Leguminosae	*Acacia disparrima subsp. disparrima*			C		1/1
plants	land plants	Leguminosae	*Acacia excelsa*			C		1
plants	land plants	Leguminosae	*Acacia glaucocarpa*	hickory wattle		C		2/2
plants	land plants	Leguminosae	*Acacia harpophylla*	brigalow		C		1/1
plants	land plants	Leguminosae	*Acacia implexa*	lightwood		C		2/2
plants	land plants	Leguminosae	*Acacia irrorata subsp. irrorata*			C		2/2
plants	land plants	Leguminosae	*Acacia leichhardtii*			C		3/1
plants	land plants	Leguminosae	*Acacia leiocalyx*			C		4
plants	land plants	Leguminosae	*Acacia leiocalyx subsp. leiocalyx*			C		4/4
plants	land plants	Leguminosae	*Acacia leucoclada subsp. argentifolia*			C		1/1
plants	land plants	Leguminosae	*Acacia longispicata*			C		1
plants	land plants	Leguminosae	*Acacia loroloba*	Ma Ma Creek wattle		C		3/2
plants	land plants	Leguminosae	*Acacia maidenii*	Maiden's wattle		C		1/1
plants	land plants	Leguminosae	*Acacia melvillei*			C		1/1
plants	land plants	Leguminosae	*Acacia muelleriana*			C		4/4
plants	land plants	Leguminosae	*Acacia neriifolia*	pechey wattle		C		1

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plants	land plants	Leguminosae	*Acacia penninervis var. penninervis*			C		3/1
plants	land plants	Leguminosae	*Acacia pustula*			C		3/3
plants	land plants	Leguminosae	*Acacia salicina*	doolan		C		2/1
plants	land plants	Leguminosae	*Acacia tingoorensis*			V		10/10
plants	land plants	Leguminosae	*Aeschynomene brevifolia*			C		1/1
plants	land plants	Leguminosae	*Bossiaea scortechinii*			C		1/1
plants	land plants	Leguminosae	*Chamaecrista rotundifolia var. rotundifolia*		Y			1/1
plants	land plants	Leguminosae	*Chorizema parviflorum*	eastern flame pea		C		2/2
plants	land plants	Leguminosae	*Crotalaria incana subsp. incana*		Y			1/1
plants	land plants	Leguminosae	*Crotalaria juncea*	sunhemp	Y			1/1
plants	land plants	Leguminosae	*Crotalaria mitchellii subsp. laevis*			C		1/1
plants	land plants	Leguminosae	*Daviesia wyattiana*	long-leaved bitter pea		C		1/1
plants	land plants	Leguminosae	*Desmodium brachypodum*	large ticktrefoil		C		5/5
plants	land plants	Leguminosae	*Desmodium macrocarpum*			C		1/1
plants	land plants	Leguminosae	*Desmodium rhytidophyllum*			C		3/2
plants	land plants	Leguminosae	*Desmodium varians*	slender tick trefoil		C		2/1
plants	land plants	Leguminosae	*Dillwynia sieberi*			C		1
plants	land plants	Leguminosae	*Erythrina numerosa*			C		1/1
plants	land plants	Leguminosae	*Erythrina vespertilio*			C		1/1
plants	land plants	Leguminosae	*Erythrina vespertilio subsp. vespertilio*			C		1/1
plants	land plants	Leguminosae	*Galactia tenuiflora var. lucida*			C		1/1
plants	land plants	Leguminosae	*Gleditsia triacanthos*	honey locust	Y			1/1
plants	land plants	Leguminosae	*Glycine*					3/2
plants	land plants	Leguminosae	*Glycine clandestina*			C		1/1
plants	land plants	Leguminosae	*Glycine clandestina var. sericea*			C		1/1
plants	land plants	Leguminosae	*Glycine latifolia*			C		1/1
plants	land plants	Leguminosae	*Glycine stenophita*			C		1/1
plants	land plants	Leguminosae	*Glycine tabacina*	glycine pea		C		4/3
plants	land plants	Leguminosae	*Glycine tomentella*	woolly glycine		C		1/1
plants	land plants	Leguminosae	*Gompholobium foliolosum*	fern-leaved burtonia		C		1/1
plants	land plants	Leguminosae	*Hardenbergia violacea*			C		2/1
plants	land plants	Leguminosae	*Hovea lanceolata*			C		1
plants	land plants	Leguminosae	*Hovea lorata*			C		2/1
plants	land plants	Leguminosae	*Hovea parvicalyx*			C		2/2
plants	land plants	Leguminosae	*Indigofera australis subsp. australis*			C		1/1
plants	land plants	Leguminosae	*Indigofera baileyi*			C		1/1
plants	land plants	Leguminosae	*Indigofera brevidens*			C		1/1
plants	land plants	Leguminosae	*Jacksonia scoparia*			C		5/3
plants	land plants	Leguminosae	*Lespedeza juncea subsp. sericea*	perennial lespedeza		C		1/1
plants	land plants	Leguminosae	*Melilotus indicus*	hexham scent	Y			1/1
plants	land plants	Leguminosae	*Mirbelia aotoides*			C		1/1
plants	land plants	Leguminosae	*Mirbelia pungens*			C		1/1
plants	land plants	Leguminosae	*Mirbelia speciosa subsp. ringrosei*			C		2/1
plants	land plants	Leguminosae	*Neptunia gracilis*			C		1/1
plants	land plants	Leguminosae	*Pultenaea bracteaminor*			C		1/1
plants	land plants	Leguminosae	*Pultenaea cunninghamii*	prickly pea		C		1/1

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plants	land plants	Leguminosae	*Pultenaea petiolaris*			C		1/1
plants	land plants	Leguminosae	*Pultenaea spinosa*			C		1
plants	land plants	Leguminosae	*Rhynchosia minima var. minima*			C		2/2
plants	land plants	Leguminosae	*Senna barclayana*			C		1/1
plants	land plants	Leguminosae	*Senna coronilloides*			C		1/1
plants	land plants	Leguminosae	*Senna surattensis*			C		1/1
plants	land plants	Leguminosae	*Tephrosia bidwillii*			C		1/1
plants	land plants	Leguminosae	*Tephrosia brachyodon var. longipes*			C		1/1
plants	land plants	Leguminosae	*Tephrosia filipes subsp. filipes*			C		1/1
plants	land plants	Leguminosae	*Tephrosia rufula*			C		1/1
plants	land plants	Leguminosae	*Trifolium repens var. repens*	white clover	Y			2/2
plants	land plants	Leguminosae	*Zornia dyctiocarpa var. dyctiocarpa*			C		1/1
plants	land plants	Leguminosae	*Zornia muriculata subsp. angustata*			C		5/5
plants	land plants	Lejeuneaceae	*Lejeunea drummondii*			C		1/1
plants	land plants	Lembophyllaceae	*Camptochaete excavata*			C		1/1
plants	land plants	Lembophyllaceae	*Fallaciella gracilis*			C		2/2
plants	land plants	Lentibulariaceae	*Utricularia dichotoma*	fairy aprons		SL		2/2
plants	land plants	Leptodontaceae	*Forsstroemia trichomitria subsp. australis*			C		1/1
plants	land plants	Leptodontaceae	*Leptodon smithii*			C		1/1
plants	land plants	Leptostomataceae	*Leptostomum macrocarpon*			C		1/1
plants	land plants	Liliaceae	*Lilium formosanum*		Y			1/1
plants	land plants	Linderniaceae	*Lindernia prolata*			C		1/1
plants	land plants	Loganiaceae	*Strychnos psilosperma*	strychnine tree		C		1/1
plants	land plants	Lophocoleaceae	*Chiloscyphus semiteres*			C		1/1
plants	land plants	Loranthaceae	*Amyema cambagei*			C		1/1
plants	land plants	Loranthaceae	*Amyema congener subsp. rotundifolia*			C		2/2
plants	land plants	Loranthaceae	*Amyema lucasii*			C		1/1
plants	land plants	Loranthaceae	*Amyema quandang var. bancroftii*	broad-leaved grey mistletoe		C		3/3
plants	land plants	Loranthaceae	*Amyema quandang var. quandang*			C		1/1
plants	land plants	Loranthaceae	*Dendrophthoe glabrescens*			C		1/1
plants	land plants	Loranthaceae	*Lysiana subfalcata*			C		1/1
plants	land plants	Malvaceae	*Abutilon oxycarpum var. oxycarpum*			C		3/3
plants	land plants	Malvaceae	*Anoda cristata*	anoda weed	Y			1/1
plants	land plants	Malvaceae	*Hibiscus sturtii*			C		1/1
plants	land plants	Malvaceae	*Hibiscus sturtii var. sturtii*			C		1/1
plants	land plants	Malvaceae	*Hibiscus verdcourtii*			C		1/1
plants	land plants	Malvaceae	*Malvastrum americanum*		Y			1
plants	land plants	Malvaceae	*Malvastrum coromandelianum subsp. coromandelianum*		Y			2/2
plants	land plants	Malvaceae	*Pavonia hastata*	pink pavonia	Y			1/1
plants	land plants	Malvaceae	*Sida*					2/2
plants	land plants	Malvaceae	*Sida atherophora*			C		1/1
plants	land plants	Malvaceae	*Sida hackettiana*			C		3/1
plants	land plants	Malvaceae	*Sida rhombifolia*		Y			1/1
plants	land plants	Meliaceae	*Anthocarapa nitidula*	incense cedar		C		1/1
plants	land plants	Meliaceae	*Owenia venosa*	crow's apple		C		7/5
plants	land plants	Meliaceae	*Owenia x reliqua*			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Menispermaceae	*Legnephora moorei*			C		1/1
plants	land plants	Menyanthaceae	*Nymphoides indica*	water snowflake		SL		1/1
plants	land plants	Meteoriaceae	*Papillaria crocea*			C		1/1
plants	land plants	Meteoriaceae	*Papillaria flexicaulis*			C		1/1
plants	land plants	Meteoriaceae	*Papillaria leuconeura*			C		2/2
plants	land plants	Metzgeriaceae	*Metzgeria furcata*			C		1/1
plants	land plants	Moraceae	*Ficus coronata*	creek sandpaper fig		C		1/1
plants	land plants	Moraceae	*Trophis scandens subsp. scandens*			C		1/1
plants	land plants	Myrtaceae	*Acmena smithii*	lillypilly satinash		C		1/1
plants	land plants	Myrtaceae	*Angophora floribunda*	rough-barked apple		C		1/1
plants	land plants	Myrtaceae	*Angophora leiocarpa*	rusty gum		C		40/1
plants	land plants	Myrtaceae	*Angophora subvelutina*			C		1/1
plants	land plants	Myrtaceae	*Backhousia angustifolia*	narrow-leaved backhousia		C		3/2
plants	land plants	Myrtaceae	*Corymbia citriodora*	spotted gum		C		1
plants	land plants	Myrtaceae	*Corymbia citriodora subsp. variegata*			C		59
plants	land plants	Myrtaceae	*Corymbia gummifera*	red bloodwood		C		1
plants	land plants	Myrtaceae	*Corymbia intermedia*	pink bloodwood		C		1
plants	land plants	Myrtaceae	*Corymbia tessellaris*	Moreton Bay ash		C		1
plants	land plants	Myrtaceae	*Corymbia trachyphloia subsp. trachyphloia*			C		1/1
plants	land plants	Myrtaceae	*Corymbia watsoniana subsp. watsoniana*			C		10
plants	land plants	Myrtaceae	*Eucalyptus*					1
plants	land plants	Myrtaceae	*Eucalyptus acmenoides*			C		3
plants	land plants	Myrtaceae	*Eucalyptus apothalassica*			C		2/1
plants	land plants	Myrtaceae	*Eucalyptus bakeri*	Baker's mallee		C		1/1
plants	land plants	Myrtaceae	*Eucalyptus blakelyi*	Blakely's red gum		C		1
plants	land plants	Myrtaceae	*Eucalyptus crebra*	narrow-leaved red ironbark		C		17/2
plants	land plants	Myrtaceae	*Eucalyptus decorticans*			C		39
plants	land plants	Myrtaceae	*Eucalyptus dura*			C		3/3
plants	land plants	Myrtaceae	*Eucalyptus exserta*	Queensland peppermint		C		2
plants	land plants	Myrtaceae	*Eucalyptus fibrosa*			C		1
plants	land plants	Myrtaceae	*Eucalyptus fibrosa subsp. fibrosa*			C		1/1
plants	land plants	Myrtaceae	*Eucalyptus longirostrata*			C		1/1
plants	land plants	Myrtaceae	*Eucalyptus major*	mountain grey gum		C		1/1
plants	land plants	Myrtaceae	*Eucalyptus melanophloia subsp. melanophloia*			C		1/1
plants	land plants	Myrtaceae	*Eucalyptus orgadophila*	mountain coolibah		C		1/1
plants	land plants	Myrtaceae	*Eucalyptus populnea*	poplar box		C		1
plants	land plants	Myrtaceae	*Eucalyptus tereticornis subsp. basaltica*			C		1/1
plants	land plants	Myrtaceae	*Eucalyptus tereticornis subsp. tereticornis*			C		1/1
plants	land plants	Myrtaceae	*Gossia bidwillii*			C		2
plants	land plants	Myrtaceae	*Lysicarpus angustifolius*	budgeroo		C		4
plants	land plants	Myrtaceae	*Melaleuca decora*			C		1/1
plants	land plants	Myrtaceae	*Melaleuca formosa*			NT		3/2
plants	land plants	Myrtaceae	*Melaleuca squamophloia*			C		1/1
plants	land plants	Myrtaceae	*Melaleuca trichostachya*			C		1/1
plants	land plants	Myrtaceae	*Rhodamnia dumicola*	rib-fruited malletwood		E		1/1
plants	land plants	Myrtaceae	*Sannantha collina*			C		1/1

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plants	land plants	Nyctaginaceae	*Boerhavia dominii*			C		2/2
plants	land plants	Nyctaginaceae	*Boerhavia sp. (St George A.Hill AQ399299)*			C		1/1
plants	land plants	Nyctaginaceae	*Bougainvillea glabra*		Y			1
plants	land plants	Oleaceae	*Jasminum dianthifolium*			C		1/1
plants	land plants	Oleaceae	*Jasminum didymum subsp. racemosum*			C		4/4
plants	land plants	Oleaceae	*Jasminum simplicifolium subsp. australiense*			C		5/4
plants	land plants	Oleaceae	*Ligustrum lucidum*	large-leaved privet	Y			1/1
plants	land plants	Oleaceae	*Notelaea longifolia*			C		3
plants	land plants	Oleaceae	*Notelaea microcarpa*			C		4/4
plants	land plants	Oleaceae	*Notelaea pungens*			C		3/2
plants	land plants	Onagraceae	*Epilobium billardierianum subsp. cinereum*			C		1/1
plants	land plants	Onagraceae	*Epilobium billardierianum subsp. hydrophilum*			C		1/1
plants	land plants	Onagraceae	*Oenothera affinis*	long-flowered evening primrose	Y			1/1
plants	land plants	Ophioglossaceae	*Ophioglossum lusitanicum*	adder's tongue		C		1/1
plants	land plants	Ophioglossaceae	*Ophioglossum reticulatum*			C		1/1
plants	land plants	Ophioglossaceae	*Sceptridium australe*			C		1/1
plants	land plants	Orchidaceae	*Calanthe triplicata*	christmas orchid		SL		1/1
plants	land plants	Orchidaceae	*Cyanicula caerulea*			SL		1
plants	land plants	Orchidaceae	*Dendrobium monophyllum*			SL		1/1
plants	land plants	Orchidaceae	*Dipodium punctatum*			SL		1/1
plants	land plants	Orchidaceae	*Dipodium variegatum*			SL		1/1
plants	land plants	Orchidaceae	*Diuris abbreviata*	lemon doubletail		SL		1/1
plants	land plants	Orchidaceae	*Diuris parvipetala*			V		1/1
plants	land plants	Orchidaceae	*Dockrillia pugioniformis*	dagger orchid		SL		1/1
plants	land plants	Orthotrichaceae	*Macromitrium*					1/1
plants	land plants	Oxalidaceae	*Oxalis chnoodes*			C		1/1
plants	land plants	Oxalidaceae	*Oxalis radicosa*			C		2/2
plants	land plants	Passifloraceae	*Passiflora aurantia var. pubescens*			C		2/2
plants	land plants	Passifloraceae	*Passiflora subpeltata*	white passion flower	Y			1/1
plants	land plants	Phrymaceae	*Mimulus gracilis*	slender monkey flower		C		2/2
plants	land plants	Phyllanthaceae	*Breynia oblongifolia*			C		4/3
plants	land plants	Phyllanthaceae	*Bridelia leichhardtii*			C		1/1
plants	land plants	Phyllanthaceae	*Phyllanthus microcladus*			C		1/1
plants	land plants	Phyllanthaceae	*Phyllanthus occidentalis*			C		1
plants	land plants	Phyllanthaceae	*Phyllanthus similis*			C		1/1
plants	land plants	Phyllanthaceae	*Phyllanthus subcrenulatus*			C		1/1
plants	land plants	Phyllanthaceae	*Phyllanthus virgatus*			C		4/2
plants	land plants	Phytolaccaceae	*Phytolacca octandra*	inkweed	Y			1/1
plants	land plants	Picrodendraceae	*Petalostigma pubescens*	quinine tree		C		3/1
plants	land plants	Pittosporaceae	*Auranticarpa rhombifolia*			C		2/2
plants	land plants	Pittosporaceae	*Bursaria incana*			C		3/1
plants	land plants	Pittosporaceae	*Bursaria spinosa subsp. spinosa*			C		4/2
plants	land plants	Pittosporaceae	*Pittosporum*					1
plants	land plants	Pittosporaceae	*Pittosporum angustifolium*			C		6/5
plants	land plants	Pittosporaceae	*Pittosporum undulatum*	sweet pittosporum		C		2/2
plants	land plants	Pittosporaceae	*Pittosporum viscidum*	black-fruited thornbush		C		4/4

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plants	land plants	Plantaginaceae	*Callitriche sonderi*			C		1/1
plants	land plants	Plantaginaceae	*Gratiola pedunculata*			C		1/1
plants	land plants	Plantaginaceae	*Plantago debilis*	shade plantain		C		2/2
plants	land plants	Plantaginaceae	*Veronica plebeia*	trailing speedwell		C		1/1
plants	land plants	Plumbaginaceae	*Plumbago zeylanica*	native plumbago		C		1/1
plants	land plants	Poaceae	*Alloteropsis semialata*	cockatoo grass		C		1/1
plants	land plants	Poaceae	*Ancistrachne uncinulata*	hooky grass		C		2/2
plants	land plants	Poaceae	*Aristida benthamii var. benthamii*			C		1
plants	land plants	Poaceae	*Aristida calycina var. calycina*			C		2/1
plants	land plants	Poaceae	*Aristida calycina var. filifolia*			C		1/1
plants	land plants	Poaceae	*Aristida calycina var. praealta*			C		1/1
plants	land plants	Poaceae	*Aristida caput-medusae*			C		5/3
plants	land plants	Poaceae	*Aristida echinata*			C		1/1
plants	land plants	Poaceae	*Aristida jerichoensis var. jerichoensis*			C		1
plants	land plants	Poaceae	*Aristida lazaridis*			C		2/2
plants	land plants	Poaceae	*Aristida leptopoda*	white speargrass		C		1/1
plants	land plants	Poaceae	*Aristida lignosa*			C		1/1
plants	land plants	Poaceae	*Aristida personata*			C		1/1
plants	land plants	Poaceae	*Aristida queenslandica var. dissimilis*			C		1
plants	land plants	Poaceae	*Aristida ramosa*	purple wiregrass		C		2
plants	land plants	Poaceae	*Aristida vagans*			C		3/1
plants	land plants	Poaceae	*Arundinella nepalensis*	reedgrass		C		2/1
plants	land plants	Poaceae	*Austrostipa scabra subsp. scabra*			C		1/1
plants	land plants	Poaceae	*Austrostipa verticillata*	slender bamboo grass		C		1/1
plants	land plants	Poaceae	*Bothriochloa bladhii subsp. bladhii*			C		1/1
plants	land plants	Poaceae	*Bothriochloa bunyensis*	Bunya Mountains bluegrass		V	V	3/3
plants	land plants	Poaceae	*Bothriochloa decipiens*			C		1
plants	land plants	Poaceae	*Bothriochloa decipiens var. decipiens*			C		2/2
plants	land plants	Poaceae	*Bothriochloa macra*	redleg grass		C		1/1
plants	land plants	Poaceae	*Bromus catharticus*	prairie grass	Y			1/1
plants	land plants	Poaceae	*Calyptochloa gracillima subsp. gracillima*			C		3/2
plants	land plants	Poaceae	*Capillipedium parviflorum*	scented top		C		1/1
plants	land plants	Poaceae	*Capillipedium spicigerum*	spicytop		C		1/1
plants	land plants	Poaceae	*Cenchrus caliculatus*	hillside burrgrass		C		1/1
plants	land plants	Poaceae	*Cenchrus ciliaris*		Y			1/1
plants	land plants	Poaceae	*Cenchrus purpurascens*			C		2/2
plants	land plants	Poaceae	*Chloris divaricata var. cynodontoides*			C		1/1
plants	land plants	Poaceae	*Chloris ventricosa*	tall chloris		C		3/3
plants	land plants	Poaceae	*Chrysopogon filipes*			C		1/1
plants	land plants	Poaceae	*Chrysopogon sylvaticus*			C		1/1
plants	land plants	Poaceae	*Cleistochloa subjuncea*			C		5/3
plants	land plants	Poaceae	*Cymbopogon obtectus*			C		1/1
plants	land plants	Poaceae	*Cymbopogon refractus*	barbed-wire grass		C		6/4
plants	land plants	Poaceae	*Dactyloctenium radulans*	button grass		C		1/1
plants	land plants	Poaceae	*Dichanthium annulatum*	sheda grass	Y			1/1
plants	land plants	Poaceae	*Dichanthium sericeum subsp. sericeum*			C		5/5

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plants	land plants	Poaceae	*Dichelachne crinita*	longhair plumegrass		C		1/1
plants	land plants	Poaceae	*Dichelachne montana*			C		2/2
plants	land plants	Poaceae	*Digitaria*					1/1
plants	land plants	Poaceae	*Digitaria ammophila*	silky umbrella grass		C		1/1
plants	land plants	Poaceae	*Digitaria breviglumis*			C		1
plants	land plants	Poaceae	*Digitaria brownii*			C		1/1
plants	land plants	Poaceae	*Digitaria diminuta*			C		1/1
plants	land plants	Poaceae	*Digitaria divaricatissima*	spreading umbrella grass		C		2/2
plants	land plants	Poaceae	*Digitaria minima*			C		1/1
plants	land plants	Poaceae	*Digitaria ramularis*			C		2/1
plants	land plants	Poaceae	*Dinebra decipiens var. peacockii*			C		2/2
plants	land plants	Poaceae	*Echinopogon caespitosus var. caespitosus*	hedgehog grass		C		1/1
plants	land plants	Poaceae	*Echinopogon ovatus*			C		1/1
plants	land plants	Poaceae	*Eleusine tristachya*	goose grass	Y			1/1
plants	land plants	Poaceae	*Enneapogon gracilis*	slender nineawn		C		3/3
plants	land plants	Poaceae	*Enneapogon lindleyanus*			C		2/2
plants	land plants	Poaceae	*Entolasia stricta*	wiry panic		C		4/1
plants	land plants	Poaceae	*Eragrostis curvula*		Y			5/2
plants	land plants	Poaceae	*Eragrostis elongata*			C		3/1
plants	land plants	Poaceae	*Eragrostis leptostachya*			C		3
plants	land plants	Poaceae	*Eragrostis longipedicellata*			C		1/1
plants	land plants	Poaceae	*Eragrostis megalosperma*			C		1/1
plants	land plants	Poaceae	*Eragrostis sororia*			C		2/2
plants	land plants	Poaceae	*Eragrostis tenuifolia*	elastic grass	Y			1/1
plants	land plants	Poaceae	*Eremochloa bimaculata*	poverty grass		C		3/1
plants	land plants	Poaceae	*Eriochloa crebra*	spring grass		C		2/2
plants	land plants	Poaceae	*Eulalia aurea*	silky browntop		C		4/2
plants	land plants	Poaceae	*Heteropogon contortus*	black speargrass		C		3/3
plants	land plants	Poaceae	*Homopholis belsonii*	Belson's panic		E	V	1
plants	land plants	Poaceae	*Imperata cylindrica*	blady grass		C		2/2
plants	land plants	Poaceae	*Megathyrsus maximus*		Y			1
plants	land plants	Poaceae	*Megathyrsus maximus var. pubiglumis*		Y			1/1
plants	land plants	Poaceae	*Melinis repens*	red natal grass	Y			2/2
plants	land plants	Poaceae	*Microlaena stipoides var. stipoides*			C		2/2
plants	land plants	Poaceae	*Oplismenus aemulus*	creeping shade grass		C		1/1
plants	land plants	Poaceae	*Panicum effusum*			C		6/3
plants	land plants	Poaceae	*Panicum queenslandicum var. queenslandicum*			C		2/2
plants	land plants	Poaceae	*Paspalidium caespitosum*	brigalow grass		C		1/1
plants	land plants	Poaceae	*Paspalidium criniforme*			C		1
plants	land plants	Poaceae	*Paspalidium distans*	shotgrass		C		3/3
plants	land plants	Poaceae	*Paspalidium gracile*	slender panic		C		1/1
plants	land plants	Poaceae	*Poa labillardierei var. labillardierei*	tussock grass		C		5/5
plants	land plants	Poaceae	*Rytidosperma bipartitum*			C		1
plants	land plants	Poaceae	*Rytidosperma indutum*			C		1/1
plants	land plants	Poaceae	*Rytidosperma longifolium*			C		2/2
plants	land plants	Poaceae	*Rytidosperma racemosum var. obtusatum*			C		1/1

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plants	land plants	Poaceae	*Rytidosperma tenuius*			C		1/1
plants	land plants	Poaceae	*Sarga leiocladum*			C		3/3
plants	land plants	Poaceae	*Setaria surgens*			C		1/1
plants	land plants	Poaceae	*Sporobolus creber*			C		4/4
plants	land plants	Poaceae	*Sporobolus elongatus*			C		3/3
plants	land plants	Poaceae	*Sporobolus fertilis*	giant Parramatta grass	Y			1/1
plants	land plants	Poaceae	*Themeda triandra*	kangaroo grass		C		5/4
plants	land plants	Poaceae	*Tragus australianus*	small burr grass		C		1/1
plants	land plants	Poaceae	*Tripogon loliiformis*	five minute grass		C		3/3
plants	land plants	Poaceae	*Urochloa foliosa*			C		2/2
plants	land plants	Poaceae	*Urochloa whiteana*			C		1/1
plants	land plants	Poaceae	*Walwhalleya proluta*			C		1/1
plants	land plants	Polygalaceae	*Polygala japonica*			C		2/2
plants	land plants	Polygalaceae	*Polygala triflora*			C		1/1
plants	land plants	Polygalaceae	*Polygala virgata*		Y			1/1
plants	land plants	Polygonaceae	*Muehlenbeckia gracillima*			C		1/1
plants	land plants	Polygonaceae	*Persicaria barbata*			C		1/1
plants	land plants	Polygonaceae	*Persicaria decipiens*	slender knotweed		C		2/2
plants	land plants	Polygonaceae	*Persicaria lapathifolia*	pale knotweed		C		3/3
plants	land plants	Polygonaceae	*Persicaria orientalis*	princes feathers		C		1/1
plants	land plants	Polygonaceae	*Persicaria prostrata*	creeping knotweed		C		1/1
plants	land plants	Polygonaceae	*Polygonum plebeium*	small knotweed		C		1/1
plants	land plants	Polygonaceae	*Rumex brownii*	swamp dock		C		1/1
plants	land plants	Polygonaceae	*Rumex crispus*	curled dock	Y			1/1
plants	land plants	Polypodiaceae	*Dictymia brownii*	strap fern		SL		2/2
plants	land plants	Polypodiaceae	*Pyrrosia rupestris*	rock felt fern		SL		2/1
plants	land plants	Polypodiaceae	*Zealandia pustulata subsp. pustulata*			SL		1/1
plants	land plants	Porellaceae	*Porella crawfordii*			C		1/1
plants	land plants	Portulacaceae	*Portulaca australis*			C		2/1
plants	land plants	Portulacaceae	*Portulaca bicolor*			C		2/2
plants	land plants	Portulacaceae	*Portulaca filifolia*			C		1/1
plants	land plants	Portulacaceae	*Portulaca oleracea*	pigweed	Y			2/2
plants	land plants	Pottiaceae	*Barbula calycina*			C		1/1
plants	land plants	Pottiaceae	*Triquetrella papillata*			C		1/1
plants	land plants	Pottiaceae	*Weissia controversa*			C		1/1
plants	land plants	Proteaceae	*Banksia spinulosa var. collina*			C		2/2
plants	land plants	Proteaceae	*Grevillea floribunda subsp. floribunda*			C		1/1
plants	land plants	Proteaceae	*Grevillea robusta*			C		2/1
plants	land plants	Proteaceae	*Grevillea striata*	beefwood		C		3/2
plants	land plants	Proteaceae	*Persoonia sericea*	silky geebung		C		3/2
plants	land plants	Psilotaceae	*Psilotum nudum*	skeleton fork fern		SL		1/1
plants	land plants	Pteridaceae	*Adiantum atroviride*			SL		2/2
plants	land plants	Pteridaceae	*Adiantum formosum*			C		1/1
plants	land plants	Pteridaceae	*Adiantum hispidulum var. hypoglaucum*			SL		1/1
plants	land plants	Pteridaceae	*Cheilanthes distans*	bristly cloak fern		C		3/3
plants	land plants	Pteridaceae	*Cheilanthes sieberi*			C		1

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plants	land plants	Pteridaceae	*Cheilanthes sieberi subsp. sieberi*			C		4/4
plants	land plants	Pteridaceae	*Pellaea nana*			SL		3/2
plants	land plants	Pteridaceae	*Pellaea paradoxa*	heart fern		SL		2/1
plants	land plants	Ptychomitriaceae	*Ptychomitrium*					1/1
plants	land plants	Ptychomitriaceae	*Ptychomitrium australe*			C		1/1
plants	land plants	Putranjivaceae	*Drypetes deplanchei*	grey boxwood		C		3
plants	land plants	Racopilaceae	*Racopilum cuspidigerum*			C		1/1
plants	land plants	Ranunculaceae	*Clematis fawcettii*			V	V	5/5
plants	land plants	Ranunculaceae	*Clematis glycinoides*			C		1/1
plants	land plants	Ranunculaceae	*Ranunculus lappaceus*	common buttercup		C		1/1
plants	land plants	Ranunculaceae	*Ranunculus meristus*			C		1/1
plants	land plants	Ranunculaceae	*Ranunculus sessiliflorus var. sessiliflorus*			C		1/1
plants	land plants	Rhamnaceae	*Alphitonia excelsa*	soap tree		C		11/2
plants	land plants	Rhamnaceae	*Cryptandra longistaminea*			C		1/1
plants	land plants	Rhamnaceae	*Polianthion minutiflorum*			V	V	1/1
plants	land plants	Rhamnaceae	*Pomaderris aspera*			C		1/1
plants	land plants	Rhamnaceae	*Pomaderris canescens*			C		1/1
plants	land plants	Rhamnaceae	*Pomaderris queenslandica*			C		2/2
plants	land plants	Rhamnaceae	*Pomaderris sp. (Wondul Range P.Grimshaw+ G675)*			C		2/2
plants	land plants	Ripogonaceae	*Ripogonum album*	white supplejack		C		1
plants	land plants	Ripogonaceae	*Ripogonum brevifolium*	small-leaved supplejack		C		1/1
plants	land plants	Rosaceae	*Acaena novae-zelandiae*			C		1/1
plants	land plants	Rosaceae	*Cotoneaster pannosus*		Y			1/1
plants	land plants	Rosaceae	*Rubus anglocandicans*	blackberry	Y			1
plants	land plants	Rosaceae	*Rubus moluccanus var. trilobus*			C		1/1
plants	land plants	Rosaceae	*Rubus parvifolius*	pink-flowered native raspberry		C		1/1
plants	land plants	Rosaceae	*Rubus rosifolius var. rosifolius*			C		1/1
plants	land plants	Rosaceae	*Rubus x novus*			C		1/1
plants	land plants	Rubiaceae	*Asperula conferta*			C		1/1
plants	land plants	Rubiaceae	*Cyclophyllum coprosmoides*			C		1
plants	land plants	Rubiaceae	*Everistia vacciniifolia var. vacciniifolia*			C		1/1
plants	land plants	Rubiaceae	*Galium ciliare subsp. ciliare*			C		1/1
plants	land plants	Rubiaceae	*Galium leptogonium*			C		2/2
plants	land plants	Rubiaceae	*Opercularia hispida*	hairy stinkweed		C		1/1
plants	land plants	Rubiaceae	*Pomax umbellata*			C		2/1
plants	land plants	Rubiaceae	*Psychotria daphnoides var. daphnoides*			C		1/1
plants	land plants	Rubiaceae	*Psydrax lamprophylla*			C		1/1
plants	land plants	Rubiaceae	*Psydrax odorata forma buxifolia*			C		4/3
plants	land plants	Rubiaceae	*Psydrax odorata forma subnitida*			C		2/2
plants	land plants	Rubiaceae	*Psydrax oleifolia*			C		2/1
plants	land plants	Rubiaceae	*Spermacoce*					1
plants	land plants	Rubiaceae	*Triflorensia cameronii*			C		2/2
plants	land plants	Rutaceae	*Acronychia laevis*	glossy acronychia		C		5/2
plants	land plants	Rutaceae	*Boronia glabra*			C		2/2
plants	land plants	Rutaceae	*Coatesia paniculata*			C		3/3
plants	land plants	Rutaceae	*Flindersia australis*	crow's ash		C		4/3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Rutaceae	*Flindersia collina*	broad-leaved leopard tree		C		5/3
plants	land plants	Rutaceae	*Flindersia xanthoxyla*	yellow-wood		C		1/1
plants	land plants	Rutaceae	*Geijera parviflora*	wilga		C		2/2
plants	land plants	Rutaceae	*Geijera salicifolia*	brush wilga		C		8/5
plants	land plants	Rutaceae	*Melicope micrococca*	white evodia		C		2/2
plants	land plants	Rutaceae	*Phebalium distans*	Mt Berryman phebalium		E	E	3/3
plants	land plants	Rutaceae	*Phebalium nottii*	pink phebalium		C		1/1
plants	land plants	Rutaceae	*Philotheca difformis subsp. difformis*			C		1/1
plants	land plants	Rutaceae	*Zieria aspalathoides subsp. aspalathoides*			C		1/1
plants	land plants	Rutaceae	*Zieria cytisoides*	downy zieria		C		1/1
plants	land plants	Rutaceae	*Zieria obovata*			V	V	1
plants	land plants	Salicaceae	*Casearia multinervosa*	casearia		C		3/3
plants	land plants	Salviniaceae	*Azolla rubra*			C		1/1
plants	land plants	Samolaceae	*Samolus valerandi*	brookweed		C		1/1
plants	land plants	Santalaceae	*Exocarpos cupressiformis*	native cherry		C		2/2
plants	land plants	Santalaceae	*Exocarpos latifolius*			C		1
plants	land plants	Santalaceae	*Santalum lanceolatum*			SL		2/2
plants	land plants	Santalaceae	*Thesium australe*	toadflax		V	V	4/4
plants	land plants	Sapindaceae	*Alectryon diversifolius*	scrub boonaree		C		2/2
plants	land plants	Sapindaceae	*Alectryon oleifolius subsp. elongatus*			C		1/1
plants	land plants	Sapindaceae	*Alectryon pubescens*			C		1/1
plants	land plants	Sapindaceae	*Alectryon subdentatus*			C		1
plants	land plants	Sapindaceae	*Arytera foveolata*	pitted coogera		C		2/2
plants	land plants	Sapindaceae	*Arytera microphylla*			C		2
plants	land plants	Sapindaceae	*Atalaya salicifolia*			C		2/2
plants	land plants	Sapindaceae	*Cardiospermum grandiflorum*	heart seed vine	Y			2
plants	land plants	Sapindaceae	*Cossinia australiana*			E	E	1/1
plants	land plants	Sapindaceae	*Cupaniopsis parvifolia*	small-leaved tuckeroo		C		2
plants	land plants	Sapindaceae	*Dodonaea*					1
plants	land plants	Sapindaceae	*Dodonaea stenophylla*			C		1/1
plants	land plants	Sapindaceae	*Dodonaea triangularis*			C		1/1
plants	land plants	Sapindaceae	*Dodonaea viscosa subsp. angustifolia*			C		1/1
plants	land plants	Sapindaceae	*Elattostachys xylocarpa*	white tamarind		C		2/1
plants	land plants	Sapotaceae	*Planchonella cotinifolia var. cotinifolia*			C		1/1
plants	land plants	Sapotaceae	*Planchonella cotinifolia var. pubescens*			C		1/1
plants	land plants	Scrophulariaceae	*Eremophila debilis*	winter apple		C		3/3
plants	land plants	Scrophulariaceae	*Eremophila deserti*			C		1/1
plants	land plants	Scrophulariaceae	*Myoporum acuminatum*	coastal boobialla		C		2/2
plants	land plants	Sematophyllaceae	*Sematophyllum subhumile*			C		3/3
plants	land plants	Solanaceae	*Duboisia leichhardtii*			C		1/1
plants	land plants	Solanaceae	*Lycium ferocissimum*	African boxthorn	Y			2
plants	land plants	Solanaceae	*Nicotiana megalosiphon*			C		1/1
plants	land plants	Solanaceae	*Physalis ixocarpa*	annual ground cherry	Y			1/1
plants	land plants	Solanaceae	*Solanum*					1
plants	land plants	Solanaceae	*Solanum corifolium*	straggling nightshade		C		1/1
plants	land plants	Solanaceae	*Solanum ellipticum*	potato bush		C		2/2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Solanaceae	*Solanum limitare*			C		2/2
plants	land plants	Solanaceae	*Solanum mauritianum*	wild tobacco	Y			2/1
plants	land plants	Solanaceae	*Solanum mitchellianum*			C		1/1
plants	land plants	Solanaceae	*Solanum nemophilum*			C		9/7
plants	land plants	Solanaceae	*Solanum rixosum*			C		1/1
plants	land plants	Solanaceae	*Solanum seaforthianum*	Brazilian nightshade	Y			1
plants	land plants	Solanaceae	*Solanum stelligerum*	devil's needles		C		3/2
plants	land plants	Stackhousiaceae	*Stackhousia muricata*			C		1
plants	land plants	Stackhousiaceae	*Stackhousia viminea*	slender stackhousia		C		1/1
plants	land plants	Sterculiaceae	*Brachychiton australis*	broad-leaved bottle tree		SL		1
plants	land plants	Sterculiaceae	*Brachychiton discolor*			SL		1/1
plants	land plants	Sterculiaceae	*Brachychiton populneus subsp. populneus*			SL		2/2
plants	land plants	Sterculiaceae	*Brachychiton populneus subsp. trilobus*			SL		1/1
plants	land plants	Stylidiaceae	*Stylidium eglandulosum*			SL		1/1
plants	land plants	Tectariaceae	*Arthropteris tenella*	climbing fern		C		1/1
plants	land plants	Thelypteridaceae	*Cyclosorus interruptus*			SL		1/1
plants	land plants	Thuidiaceae	*Thuidiopsis sparsa*			C		3/3
plants	land plants	Thuidiaceae	*Thuidiopsis sparsa var. sparsa*			C		3/3
plants	land plants	Thymelaeaceae	*Pimelea curviflora subsp. divergens*			C		3/3
plants	land plants	Thymelaeaceae	*Pimelea linifolia subsp. linifolia*			C		1/1
plants	land plants	Thymelaeaceae	*Pimelea neoanglica*	poison pimelea		C		1/1
plants	land plants	Trachylomataceae	*Trachyloma diversinerve*			C		1/1
plants	land plants	Trachylomataceae	*Trachyloma planifolium*			C		1/1
plants	land plants	Urticaceae	*Dendrocnide photiniphylla*	shiny-leaved stinging tree		C		1
plants	land plants	Urticaceae	*Parietaria debilis*	native pellitory		C		1/1
plants	land plants	Urticaceae	*Urtica incisa*	stinging nettle		C		3/3
plants	land plants	Verbenaceae	*Glandularia aristigera*		Y			1/1
plants	land plants	Verbenaceae	*Lantana camara*	lantana	Y			38
plants	land plants	Verbenaceae	*Verbena incompta*		Y			1/1
plants	land plants	Viburnaceae	*Sambucus australasica*	native elderberry		C		1/1
plants	land plants	Violaceae	*Pigea enneasperma*			C		1/1
plants	land plants	Violaceae	*Pigea stellarioides*			C		3/3
plants	land plants	Violaceae	*Viola hederacea*			C		1/1
plants	land plants	Viscaceae	*Korthalsella breviarticulata*			C		1/1
plants	land plants	Viscaceae	*Viscum whitei subsp. whitei*			C		1/1
plants	land plants	Vitaceae	*Causonis clematidea*			C		2/2
plants	land plants	Vitaceae	*Cissus antarctica*			C		1
plants	land plants	Vitaceae	*Clematicissus opaca*			C		1/1
plants	land plants	Vitaceae	*Tetrastigma nitens*	shining grape		C		1
plants	land plants	Xanthorrhoeaceae	*Xanthorrhoea*					1/1
plants	land plants	Xanthorrhoeaceae	*Xanthorrhoea glauca*			SL		1/1
plants	land plants	Xanthorrhoeaceae	*Xanthorrhoea glauca subsp. glauca*			SL		1/1
plants	land plants	Xanthorrhoeaceae	*Xanthorrhoea johnsonii*			SL		2
plants	land plants	Zygophyllaceae	*Roepera apiculata*			C		1/1
plants	uncertain	Indet.	*Indet.*			C		9/9
plants		Mimosoid clade	*Acacia grandifolia*			C	V	1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants		Mimosoid clade	*Leucaena leucocephala*		Y			1
plants		Papilionoideae	*Crotalaria mitchellii subsp. mitchellii*			C		4/4
plants		Papilionoideae	*Indigofera hirsuta*	hairy indigo		C		1/1

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.*
The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.*
The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).
This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Appendix 2 Likelihood of occurrence assessment

Key to likelihood of occurrence assessment:

- EPBC Act Status
  - CE – critically endangered
  - E – endangered
  - V – vulnerable
  - Mi – migratory
- NC Act Status
  - CR - critically endangered
  - E – endangered
  - V – vulnerable
  - NT – near threatened
  - SLC – special least concern
  - LC – least concern
- Likelihood of occurrence
  - Confirmed – the species or signs of their presence were observed during the field survey
  - Likely – the site contains habitat that is suitable for the species and Wildnet has recent records of the species (i.e. since 1980) within 10 km of the site
  - Possible – the site contains habitat that is suitable for the species but Wildnet has no recent records of the species within 10 km of the site; or the site contains marginal / low quality habitat for the species and Wildnet has recent records of the species within 10 km of the site
  - Unlikely – the site does not contain habitat for the species and Wildnet has no recent records of the species within 10 km of the site
- Source
  - E - EPBC Act protected matters search
  - W – wildlife online database search.

Likelihood of occurrence of conservation significant species within project site

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Fauna						
Actitis hypoleucos	common sandpiper	Mi	SLC	Around coastal wetlands and some inland wetlands on the muddy margins or rocky shores. Also inhabits estuaries, deltas of streams, lakes, pools, billabongs, reservoirs, dams and claypans.	Unlikely. Limited suitable habitat onsite. No Wildnet records within 20 km.	E
Anomalopus mackayi	five-clawed worm skink	V	E	Known to occur in both remnant and non-remnant woodlands and grasslands on alluvial cracking clays or self-mulching friable basalt soils in NSW and QLD, occurring on REs 11.3.21, 11.3.25, 11.8.5, 11.8.15, 13.3.3, 13.3.4 associated non-remnants. They have also been found in areas modified by agriculture and other human activities. This species has been found sheltering under artificial materials lying flat on the ground.	Unlikely. Limited suitable habitat onsite. No Wildnet records within 20 km.	E
Anthochaera phrygia	regent honeyeater	CE	CR	Commonly associated with box-ironbark eucalypt woodland and dry sclerophyll forest, may inhabit riparian vegetation and lowland coastal forest. Mainly a canopy species it is reliant on select species of eucalypt and mistletoe which provide rich nectar (Commonwealth of Australia 2016).	**Possible.** Moderate habitat on site and no records within 20 km. No detections during dam surveys, bird surveys, and opportunistic sightings.	E
Apus pacificus	fork-tailed swift	Mi	SLC	The fork-tailed swift is a non-breeding migrant to Australia. It is widespread across Australia and territories arriving in north west Australia in October and November. Almost exclusively aerial from <1 m to 1,000 m. Most observed over inland plains in Australia, but sometimes recorded over coastal cliffs and beaches as well as urban areas.	**Confirmed.** Present in a wide range of habitats and may overfly the site. Two individuals sighted in fixed point surveys. No Wildnet records within 10 km but four records within 20 km.	E
Botaurus poiciloptilus	Australasian bittern	E	E	The Australasian Bittern can be found in habitats containing reedbeds, and other vegetation in water such as cumbungi, lignum and sedges (Birdlife Australia 2017).	**Possible.** Some suitable habitat on site. One Wildnet record within 20 km but no records within 10 km. No detections during dam surveys, bird surveys, and opportunistic sightings.	W

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Calidris acuminata	sharp-tailed sandpiper	Mi	SLC	Edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation, lagoons, swamps, lakes and pools near the coast, dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline salt lakes, saltworks, sewage farms, flooded paddocks, sedge lands, ephemeral wetlands, but leave when they dry (Morcombe 2004).	Unlikely. Limited suitable habitat onsite. No Wildnet records within 10 km, but 3 records within 20 km. No detections during dam surveys, fixed point surveys, roaming surveys and opportunistic sightings.	E, W
Calidris ferruginea	curlew sandpiper	CE	CR	Intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, non-tidal swamps, lakes and lagoons, ponds in saltworks, sewage farms, ephemeral and permanent lakes, dams, waterholes and bore drains (Pizzey and Knight 2012).	Unlikely. No suitable habitat onsite. No Wildnet records within 20 km. No detections during dam surveys, bird surveys, and opportunistic sightings.	E
Calidris melanotos	pectoral sandpiper	Mi	SLC	In Australasia, the pectoral sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands (DCCEEW 2023b).	Unlikely. No suitable habitat onsite. No Wildnet records within 20 km. No detections during dam surveys, bird surveys, and opportunistic sightings.	E
Calyptorhynchus lathami lathami	glossy black-cockatoo	V	V	The glossy black cockatoo is highly dependent on *Allocasuarina* species (Higgins et al 2001). It inhabits open forest and woodlands on the coastline as well as within the Great Dividing Range where stands of sheoak (especially *Allocasuarina littoralis* and *Allocasuarina torulosa*). Inland populations feed on a wide variety of sheoaks including drooping sheoak, *Allocasuarina diminuta*, *Allocasuarina gymnanthera* and belah (OEH 2022). They mostly roost in the canopy of live, leafy trees such as eucalypts but breed in a hollow stump or limb of living or dead trees as well as holes in trunks of tall trees (Higgins et al 2001).	**Confirmed.** Suitable foraging habitat exists in patches onsite. Two individuals observed roosting beside a dam onsite, a further two sighted during fixed point surveys, and evidence of feeding found.	E, survey results
Chalinolobus dwyeri	large-eared pied bat	E	E	The species has been found roosting in caves, overhangs, abandoned mine tunnels and disused fairy martin nests (Hoye and Dwyer 1995; Schulz 1998). No evidence exists of the large-eared pied bat roosting in tree hollows (DES 2022a).	Unlikely. Limited suitable habitat onsite and no Wildnet records within 20 km. No detections during surveys.	E
Cuculus optatus	oriental cuckoo	Mi	SLC	Mainly inhabiting forests, the oriental cuckoo occurs in mixed, deciduous and coniferous forest. It is present at all levels of the forest canopy, and can be found at a range of elevations, occasionally being recorded in mountains as high up as 1,100 metres (Higgins 1999).	**Possible**. Present in a wide range of habitats, one record from Ironpot locality over 20 km from site.	E

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Cyclopsitta diophthalma coxeni	Coxen's fig-parrot	CE	CR	Habitat includes rainforests, adjacent eucalypt woodlands, coastal scrub and riparian vegetation (Pizzey and Knight 2012). Coxen's fig-parrot occurs wherever fig trees are present in lowland and upland forest types, riparian corridors, farmland and urban environments. It feeds primarily on the seeds of figs (Coxen's Fig-Parrot Recovery Team 2001).	Unlikely. No suitable habitat onsite and no confirmed records within the locality. One citizen science record exists from Kumbia (ALA 2020); however this is likely to be erroneous and has not been confirmed by other reputable sources.	E
Dasyurus hallucatus	northern quoll	E	LC	*Dasyurus hallucatus* is commonly found in a wide range of eucalypt forest and woodland habitats associated with steep dissected rocky terrain, also found in rainforest patches, vegetation along creek lines, adjacent to mangroves, around human settlement and on beaches.	Unlikely. Limited suitable habitat onsite and no records within 10 km. Nearest records are about 20 km south of site in very different montane habitat in the Bunya Mountains. Not detected during camera trapping and spotlighting surveys.	E, W
Dasyurus maculatus maculatus	spotted-tail quoll	E	E	The southern subspecies, *D. maculatus maculatus*, has been recorded from a wide range of habitat types including rainforest, wet and dry sclerophyll forest, coastal heathland, scrub and dunes, woodland, heathy woodland, swamp forest, mangroves, on beaches and sometimes in grassland or pastoral areas adjacent to forested areas (DoE 2016).	Unlikely. Limited suitable habitat onsite. One Wildnet record from 1930 within 10 km from Kumbia, but this area now extensively cleared. Nearest recent records are about 20 km south of site in very different montane habitat in the Bunya Mountains. Not detected during camera trapping and spotlighting surveys.	E, W

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Delma torquata	collared delma	V	V	This species is endemic, recorded disjunctly from the western edges of Brisbane north-west to Blackdown Tableland and inland to the Roma area (Wilson and Swan 2014). This species habitat is associated with rocky terrain; however this species has also been recorded in woodlands with no significant rock components (Wilson and Swan 2014). Habitat includes open eucalypt forest with a sparse understorey of shrubs and tussock grasses, on rocky hillsides with flattish rocks or on deep-cracking soils. Associated with land zones 3, 9 and 10 and specifically, RE 11.3.2, 11.9.10, 11.10.1 and 11.10.4.	Unlikely. Preferred REs not present on site. No rocky areas observed in land zones 3, 9 or 10. Several areas of scree slopes were identified in land zone 8 and 11, which may provide marginal habitat. No Wildnet records within 10 km. Nearest records are about 20 km south of site in very different montane habitat in the Bunya Mountains. Not detected during active searches in woodland habitats.	E, W
Egernia rugosa	yakka skink	V	V	Known distribution extends from the coast to the hinterland of sub-humid to semi-arid Queensland. Core habitat is within the Mulga Lands and Brigalow Belt South Bioregions. Occurs in open dry sclerophyll forests (ironbark) or low woodland and open shrub land on RE land zones 3, 4, 5, 7, 8, 9, 10 and 12 (though land zone 8 not considered core habitat and land zone 12 in Wet Tropics bioregion only). Has also been recorded in lancewood forest on coarse gritty soils in the vicinity of low ranges, foothills and undulating terrain with good drainage. Colonies have been found in large hollow logs, cavities or burrows under large fallen trees, tree stumps, logs, stick-raked piles, large rocks and rock piles, dense ground-covering vegetation, and deeply eroded gullies, tunnels and sinkholes.	**Possible.** Some potential habitat onsite but not detected during active herpetofauna searches. No Wildnet records within 20 km.	E
Elseya albagula	southern snapping turtle	CE	CE	Prefers clear flowing water but can occur in non-flowing water. Known from Wide Bay Creek and Mary River.	Unlikely. All records are from much further downstream, no Wildnet records within 20 km.	E

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Erythrotriorchis radiatus	red goshawk	E	E	Typically occurs in woodland and forests in subtropical and warm temperate regions of Australia (Marchant and Higgins 1993). It prefers landscapes that contain a mix of habitats including coastal and sub-coastal tall open forest, woodland and rainforest edges (Marchant and Higgins 1993). Resident pairs of red goshawks prefer intact, extensive woodlands and forests with a mosaic of vegetation types that are open enough for fast manoeuvring flight (Marchant and Higgins 1993). These favoured areas contain permanent water, are relatively fertile and biologically rich with large populations of birds. Such areas are also preferentially selected for agricultural development (Sattler and Williams 1999). Nests are typically built at an average height of 20 m (DERM 2012).	Unlikely. Marginal habitat onsite, nearest record is from the Nanango area approximately 50 km east of the project site.	E
Falco hypoleucos	grey falcon	V	V	Inhabits woodland, shrubland and grassland in the arid and semi-arid zones, especially wooded watercourses.	Unlikely. Limited habitat and no records within 20 km. No detections during dam surveys, bird surveys, and opportunistic sightings.	E
Furina dunmalli	Dunmall's snake	V	V	This species occurs from near the Queensland border in the brigalow belt south and Nandewar regions (DSEWPaC 2011c). Habitat for this species includes forest and woodlands on cracking clays and clay loams dominated by brigalow (*Acacia harpophylla*), other Wattles (*A. burrowii*, *A. deanii*, *A. leiocalyx*), and native Cypress (*Callitris* spp.). Little is known about this species ecological requirements, however it is suggested that fallen timber, ground litter, and cracks in alluvial soils provide shelter for this species (DSEWPaC 2011c).	Unlikely. Limited habitat onsite (0.26 ha patch of belah dominated woodland in north-east corner of site). Not detected during active herpetofauna searches. No Wildnet records within 20 km.	E
Gallinago hardwickii	Latham's snipe	Mi	SLC	Latham's snipe is a non-breeding migrant to the south-east of Australia including Tasmania, passing through the north and New Guinea on passage. Latham's Snipe breed in Japan and on the east Asian mainland. Usually seen in small groups or singly in freshwater wetlands on or near the coast (Pizzey and Knight 2012).	Unlikely. No suitable waterbodies onsite. No Wildnet records within 20 km.	E

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Geophaps scripta scripta	squatter pigeon	V	V	The squatter pigeon is regionally abundant within the Brigalow Belt (northern) and Desert Uplands Bioregions. The species occurs in a wide range of habitats wherever there is a grassy understorey. It is commonly encountered in grassy woodlands and open forests dominated by Eucalypts (DCCEEW 2023b)	Unlikely. Habitat is suitable, however no Wildnet records within 20 km. No detections during dam surveys, bird surveys, and opportunistic sightings.	E
Grantiella picta	painted honeyeater	V	V	Forests, woodlands, dry scrublands often with abundant mistletoe. Key habitat is defined as brigalow and gidgee (with mistletoe), including REs 11.3.1, 11.3.1a, 11.3.1b, 11.3.1c, 11.3.16, 11.3.17, 11.3.20, 11.4.3, 11.4.3a, 11.4.3b, 11.4.3c, 11.4.7, 11.4.10, 11.9.5, 11.9.6, 11.9.6a, and 11.9.10 (DES 2022a).	Unlikely. No suitable habitat exists onsite and no records within 10 km. One Wildnet record within 20 km. Many records from the wider locality (ALA 2022). No detections during dam surveys, bird surveys, and opportunistic sightings.	E
Hemiaspis damelii	grey snake	E	E	Found on the inland eastern interior to the Rockhampton coastal region. Inhabits fallen timber and soil cracks, usually near water. (Wilson and Swan 2014). Occurs from central inland NSW to coastal areas near Rockhampton. Inhabits brigalow and belah woodlands on cracking clay soils in association with water bodies, small gullies, ditches and gilgais as they prey almost exclusively on frogs (Rowland 2012).	Unlikely. Limited habitat on site (0.26 ha patch of belah dominated woodland in north-east corner of site). Not detected during active herpetofauna searches. No Wildnet records within 20 km.	E
Hirundapus caudacutus	white-throated needletail	V, Mi	V	The white-throated needletail is a non-breeding migrant to Australia (present October-April). It is widespread across eastern and south-eastern Australia but is considered a vagrant in central and western Australia. White-throated needletails are aerial birds, utilising the airspace above forests, woodlands, farmlands and ridge tops (Pizzey and Knight 2012).	**Confirmed.** Numerous individuals recorded during fixed point count surveys from 2018 - 2023. Likely to fly over the site. Four Wildnet records within 20 km.	E, W, survey results
Hydroprogne caspia	Caspian tern	Mi	SLC	Mostly found in sheltered coastal areas and may also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline.	Unlikely. No suitable habitat on site and no Wildnet records within 10 km. One Wildnet record within 20 km.	W
Lathamus discolor	swift parrot	CE	E	Dry sclerophyll eucalypt forests and woodlands. Occasionally wet sclerophyll forests. Feeds mostly on nectar, mainly from eucalypts, but also eats psyllid insects and lerps, seeds and fruit.	Unlikely. No suitable habitat onsite and no records within 20 km.	E

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Monarcha melanopsis	black-faced monarch	Mi	SLC	The black-faced monarch is a small insectivorous bird species. It breeds in eastern coastal Australia during summer and migrates to spend the non-breeding winter period in New Guinea, with a portion of the population overwintering in northern Australia. Habitat preference includes rainforests, eucalypt woodland and riparian zones (Pizzey and Knight 2012). Habitat onsite includes the SEVT and remaining riparian vegetation.	**Possible**. Suitable habitat exists along the eastern boundary of the site. No Wildnet records within 10 km, but numerous records within 20 km. No detections during dam surveys, bird surveys, and opportunistic sightings.	E, W
Motacilla flava	yellow wagtail	Mi	SLC	Variety of habitat types from farmland to wet pastures and grasslands.	Unlikely. Habitat is suitable, but no Wildnet records within 20 km. No detections during dam surveys, bird surveys, and opportunistic sightings.	E
Myiagra cyanoleuca	satin flycatcher	Mi	SLC	Occur in heavily vegetated gullies in forests, woodlands, mangroves and parks (Pizzey and Knight 2012).	**Confirmed.** Recorded in spring 2020, spring 2021, and autumn 2022 surveys. No Wildnet records within 10 km, but numerous records within 20 km.	E, W, survey results
Ninox strenua	powerful owl	-	V	Pairs occupy a large, probably permanent, home range in mountain forests, gullies and forest margins, sparser hilly woodlands, coastal forests, woodlands, scrubs, exotic pine plantations, large trees in private pubic gardens, some in cities (Pizzey and Knight, 2012).	Possible Numerous Wildnet records within 20 km. Records from the wider locality (ALA 2022) although none within 20 km of the project site. Call playback for this species during the fauna survey did not elicit a response. Suitable prey populations (e.g. greater gliders, squirrel gliders, sugar gliders) occur within the site.	W, survey results
Numenius madagascariensis	eastern curlew	CE	E	Primarily coastal distribution. The species is found in all states, is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves	Unlikely No suitable habitat onsite and no records from within 20 km. No detections during dam surveys, bird surveys, and opportunistic sightings.	E

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Nyctophilus corbeni	Corben's long-eared bat, south-eastern long-eared bat	V	V	Variety of vegetation types, including mallee, bulloak and box eucalypt dominated communities. Requires hollows for roosting and prefers large, intact and connected habitat patches.	Unlikely. No suitable habitat and no records from within 20 km. Harp trapping did not detect this species.	E
Pandion cristatus (syn. *P. haliaetus)*	eastern osprey	Mi	SLC	Occur in littoral and coastal habitats and terrestrial wetlands and occasionally travel inland along major rivers. Require extensive areas of open fresh, brackish or saline waters.	Unlikely. No rivers with permanent water occur. No Wildnet records within 10 km but one record within 20 km.	E, W
Pedionomus torquatus	plains-wanderer	CE	CR	Inhabit sparse native grasslands and are often absent from areas where grass becomes too dense or too sparse.	Unlikely No habitat onsite and no records from within 20 km. No detections during dam surveys, bird surveys, and opportunistic sightings.	E
Petauroides armillatus (syn. *Petauroides volans* southern and central*)*	central greater glider	E	E	Tall eucalypt forests and woodlands. Silent, solitary and nocturnal. Eats gum leaves. Dependent on large tracts of undisturbed, tall forest with suitably large nesting hollows; each animal requires approximately 1.5 ha.	**Confirmed.** Suitable habitat exists onsite and Wildnet records within 20 km. A total of 70 individuals were detected during spotlighting surveys.	E, W, survey results
Petaurus australis australis	yellow-bellied glider	V	V	Occurs in the Atherton Region, Queensland at altitudes of 700 m+ above sea level. Three distinct meta-populations: on Mount Windsor Tablelands, one on Mount Carbine Tableland and finally one extending from Atherton to Kirrama. Inhabits tall mature eucalypt forest and shelters in hollows. (DEWHA 2008a).	**Possible.** Suitable habitat exists onsite. No Wildnet records within 10 km but two records within 20 km. No detections during surveys.	E
Petrogale penicillata	brush-tailed rock-wallaby	V	V	Prefers steep rocky habitats, with high importance on rocky outcrops and north facing aspects. Occurs in a range of vegetation types from rainforest to open forest.	Unlikely. No habitat onsite and no records from within 20 km.	E
Phascolarctos cinereus	koala	E	E	A range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by *Eucalyptus* species – food and shelter trees.	**Confirmed.** Fauna surveys have recorded numerous individual sightings as well as scats and scratches. Nine Wildnet records within 10 km.	W, E, survey results

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Pteropus poliocephalus	grey-headed flying fox	V	LC	Sub-tropical and temperate rainforest, tall open forest, swamps, heaths and urban areas. Roosting sites usually in dense forest adjacent to waterbodies. Forages within 50 km of camp in flowering trees or rainforests, eucalypts, paperbarks and banksias.	**Confirmed**. Observed foraging at two locations within the site during spring 2021 when food species in flower. Most flying fox camps occur closer to the coast. No camps known from within 20 km, with closest camp in The Palms National Park, Cooyar, approximately 39 km to the south-east.	E, W, survey results
Plegadis falcinellus	glossy ibis	Mi	SLC	Fresh water marshes near the edges of lakes and rivers, lagoons, flood-plains, swamps, reservoirs, sewage ponds and cultivated areas under irrigation.	**Possible.** Suitable habitat exists on site. No Wildnet records within 10 km but three records within 20 km. No detections during dam surveys, bird surveys, and opportunistic sightings.	W
Rhipidura rufifrons	rufous fantail	Mi	SLC	Wet sclerophyll forests, often in gullies dominated by eucalypts such as tallow-wood *Eucalyptus microcorys*, blackbutt *E. pilularis* or red mahogany *E. resinifera*; usually with a dense shrubby understorey often including ferns.	**Confirmed**. Three individuals observed: one during 2018 spring survey, and two during fixed point count survey in autumn 2019. One Wildnet record within 10 km and 65 records within 20 km.	W, E, survey results
Rostratula australis	Australian painted snipe	E	E	Shallow inland wetlands, brackish or freshwater that are permanently or temporarily inundated.	Unlikely. No suitable wetland habitat and no records within 20 km.	E
Symposiachrus trivirgatus (syn. *Monarcha trivirgatus)*	spectacled monarch	Mi	SLC	Spectacled monarchs are largely confined to the north east and east coastal and near coastal regions of Australia. Prefer understorey of rainforest, thickly wooded gullies and waterside vegetation (Pizzey and Knight 2012).	**Possible.** Limited suitable habitat. No Wildnet records within 10 km but four records within 20 km. Closest records from Murgon and Nanango areas about 20 km from site. No detections during dam surveys, bird surveys, and opportunistic sightings.	E, W

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Tachyglossus aculeatus	short-beaked echidna	-	SLC	Inhabits forests and woodlands, health, grasslands and arid environments.	Confirmed. Suitable habitat exists within the survey area and three WildNet records present within 20 km. Sightings and scats recorded.	W, survey results
Tringa stagnatilis	marsh sandpiper	Mi	SLC	Permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, intertidal mudflats, sewage farms and saltworks.	Unlikely. No suitable habitat. No Wildnet records within 10 km, but one record within 20 km.	E
Turnix melanogaster	black-breasted button-quail	V	V	Occur in forested areas where deep leaf litter layer exists in a wide variety of forest types. Fallen logs and a dense, heterogeneously distributed shrub layers are also considered to be important habitat characteristics for shelter and breeding.	**Possible.** Marginal habitat exists in RE 11.8.3 in the south-western corner. No Wildnet records within 10 km but numerous records within 20 km. No detections during dam surveys, bird surveys, and opportunistic sightings.	E, W
Tympanocryptis condaminensis	Condamine earless dragon	E	E	Grassland is the preferred habitat for this species. Post European settlement this species has been recorded on cropland, remnant native grassland and exotic grassland. Known to forage in stubble fields and areas of no-till farming. Furthest eastern distribution is a broad arc from Jondaryan, Mt Tyson to Felton.	Unlikely. No habitat on site and no records from within 20 km. Site is outside of the species known range.	E

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Flora						
Acacia grandifolia	-	V	LC	Grows on hilly terrain of varying aspects and slope, on hillcrests, in gullies on plains. Species forms open stands on sand, among large sandstone boulders and has been found on stony soils which are basalt derived.	Unlikely. Limited habitat in site and no records within 10 km. One Wildnet record within 20 km. Southern end of distribution near Wilkesdale about 20 km north of site.	E, W
Acacia tingoorensis	-	-	V	Grows in eucalypt woodland or forest, on deep red loam, shallow loamy or sandy soils.	Possible Suitable habitat and 10 Wildnet records within 20 km but not found during field surveys.	W
Arthraxon hispidus	hairy-joint grass	V	V	Spreading grass often growing near creeks or swamps, generally in or on the edges of rainforest and wet eucalypt forest.	Unlikely. Limited habitat and no records within 20 km.	E
Bothriochloa bunyensis	satin top grass	V	V	Endemic to SEQ and occurs on relatively fertile krasnozem (dark brown) soils derived from basalt on upper slopes and hill crests at altitudes of 600–1100 m. Occurs in grassland or woodland with a grassy understorey.	Unlikely. No suitable habitat and no records within 10 km. Nearest records are about 20 km south of site in very different montane habitat in the Bunya Mountains.	E, W
Bulbophyllum globuliforme	miniature moss-orchid	V	NT	A host-specific species, growing only on hoop pine, colonising the upper branches of mature trees (DCCEEW 2023b).	Unlikely No hoop pine on site and no Wildnet records within 20 km.	E
Cadellia pentastylis	ooline	V	V	Semi-evergreen vine thickets and sclerophyll vegetation on undulating terrain of various geology, including sandstone, conglomerate and claystone.	Unlikely. Limited habitat and no records within 20 km. Not found during surveys of suitable habitat.	E
Callitris baileyi	Bailey's cypress pine	-	NT	Occurs in dry rainforest and its margins. Usually grows in rocky hilly areas near creeks, and on shallow soils.	Confirmed Two individuals recorded on boundary of vine thicket (RE 11.8.3) in rocky hilly area. One individual recorded on creek bank near Glenrocks Rd.	W, survey results

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Clematis fawcettii	stream clematis	V	V	Prefers canopy gaps on loam soils derived from basalt and mixed volcanic rocks usually near streams. Occurs in association with dry rainforest, subtropical rainforest, eucalypt forests with scattered vine forest species.	Unlikely. Limited habitat in site and no records within 10 km. Nearest records are about 20 km south of site in very different montane habitat in the Bunya Mountains. Not found during surveys of suitable habitat.	E, W
Cossinia australiana	cossinia	E	E	Occurs on fertile soils from Rockhampton to Kingaroy. Associated with patches of Araucarian vine forest or vine thickets.	Unlikely. Limited habitat in site. No Wildnet records within 10 km and one record within 20 km. Not found during surveys of suitable habitat.	E, W
Cryptocarya floydii	gorge laurel	-	NT	Occurs on the Bunya Mountains, southern Queensland, to Wollomombi Falls, northern New South Wales. Inhabits drier rainforests, in particular rocky areas (DES 2019).	Unlikely. No suitable habitat and no Wildnet records within 20 km.	W
Cyperus clarus	-	-	V	Found near Emerald in central Queensland to Delungra on the New South Wales north-western slopes. There is also one population within the Jandowae State Forest. Grows in grassland or open woodland. (Booth, 2014).	Unlikely Limited habitat in site and 12 records within 20 km but not found during field surveys.	E, W
Denhamia parvifolia	small-leaved denhamia	V	V	Grows on soils derived from various geological substrates and is associated with semi-evergreen vine thickets and *Acacia harpophylla* (brigalow) scrub communities.	Unlikely. Limited habitat in site. No records within 10 km but 12 records within 20 km. Not found during surveys of suitable habitat.	E
Dichanthium queenslandicum	king blue-grass	E	LC	Occurs on black cracking clay in tussock grasslands mainly in association with other species of blue grass.	Unlikely. No suitable habitat and no records within 10 km.	E
Dichanthium setosum	bluegrass	V	LC	Occurs on heavy basaltic black soils and red-brown loams with clay subsoil in grasslands and open woodlands.	Unlikely. No suitable habitat and no records within 10 km.	E

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Diuris parvipetala		-	V	Occurs in south-eastern Queensland and north-eastern New South Wales. Grows among grass in open forest, on ridges and gentle to steep slopes, among basalt boulders and granite pavements. (Bostock, 2014).	Possible Limited habitat and one Wildnet record within 20 km.	---
Haloragis exalata subsp. velutina	tall velvet sea berry	V	V	Found in rainforest and rainforest margins and adjacent grassland and open grassy woodland and often occurs in damp places near watercourses and in woodland on steep rocky slopes.	Unlikely. Limited habitat. No records within 10 km and four records within 20 km. Not found during surveys of suitable habitat.	E, W
Homopholis belsonii	Belson's panic	V	E	Rocky, basaltic hills supporting Eucalyptus albens / Geijera parviflora woodland, flat to gently undulating alluvial areas supporting Casuarina cristata forest and /or Acacia harpophylla, or drainage lines supporting C. cristata and sandy country dominated by Cypress Pine-Bloodwood-Ironbark-She-Oak Forest. (DOE, 2019	Unlikely. Limited habitat and one WildNet record within 20 km.	W
Lepidium monoplocoides	winged peppercress	E	LC	Tends to occur in semi-arid areas with mallee scrub which are seasonally waterlogged. Found in open woodland dominated by *Allocasuarina luehmannii* and/or eucalypts such as *Eucalyptus largiflorens* or *E. populnea* (DCCEEW 2023b).	Unlikely. No Wildnet records within 20 km.	E
Lepidium peregrinum	wandering peppercress	E	LC	This species has been found growing in riparian areas associated with open forests. It is commonly abundant in tussock grasslands fringing riparian areas	**Possible.** Suitable habitat but no records within 10 km. Nearest records are about 20 km south of site in very different montane habitat in the Bunya Mountains. Not found during surveys of suitable habitat.	E, W
Macadamia integrifolia	macadamia nut	V	V	Prefers rainforest margins in remnant rainforest, on high nutrient soils with rock fragments. Occurs on a wide variety of well drained landforms and slopes.	Unlikely. Limited habitat and no records within 20 km.	E
Melaleuca formosa	-	-	NT	Occurs in the south-eastern region of Queensland. Inhabits monsoonal or vine forests, Melaleuca thicket with Eucalypt overstory, shrubland or rainforest. (Brophy, Craven & Doran 2013)	Possible. Limited habitat and three records within 20 km.	W

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Paspalidium grandispiculatum	-	V	V	Mixed forest with *Corymbia citriodora* on sub-coastal, old loamy and sandy plains and mixed open forest often with *Corymbia trachyphloia*, *C. citriodora*, *Eucalyptus crebra*, *E. fibrosa* on quartzose sandstone. Occasionally recorded in pasture.	**Possible**. Suitable habitat but no Wildnet records within 20 km.	E
Phebalium distans	Mt Berryman phebalium	E	E	Found in semi-evergreen vine thicket on red volcanic soils, or in communities adjacent to this vegetation type.	Unlikely. Limited habitat and no Wildnet records within 10 km. Not found during surveys of suitable habitat.	E
Plectranthus omissus	-	E	E	Known from only four sites between Gympie and Gayndah. Grows on rock outcrops in eucalypt open forest and adjacent to vine forests. (DEWHA, 2008)	Unlikely No suitable habitat and no Wildnet records within 20 km.	E
Polianthion minutiflorum	-	V	V	Forest and woodland on sandstone slopes and gullies with skeletal soil, or deeper soils adjacent to deeply weathered laterite (DEWHA 2008b).	**Possible.** Suitable habitat but no Wildnet records within 10 km. One record within 20 km.	E
Rhaponticum australe (syn. *Leuzea australis*)	Austral cornflower, native thistle	V	V	Grows in eucalypt open forest with grassy understory on roadsides and on road reserves with *Chloris gayana, Cirsium vulgare, Eucalyptus tereticornis* and *Angophora floribunda* on black clay soil.	**Possible.** Limited suitable habitat in site. No Wildnet records within 10 km and one record within 20 km. Possible on heavy clay soils that occur only in the south-western edge of the site. Not found during surveys of suitable habitat. No suitable habitat within planning corridor.	E
Sarcochilus weinthalii	blotched sarcochilus	V	E	Inhabits rainforest, dry rainforest and drier scrub of sub-coastal ranges, microphyll and notophyll rainforest types and in patches of isolated scrub (DoE 2014c).	Unlikely. No suitable habitat, one Wildnet record within 20 km in the Bunya Mountains.	E
Sophora fraseri	brush sophora	V	V	Found in moist habitats, often in hilly terrain at altitudes between 60-660 m. Occurs in shallow soils along rainforest margins in eucalypt forests or in large canopy gaps in closed forest communities.	Unlikely. Limited habitat and no records within 20 km.	E

Scientific name	Common name	EPBC status	NC status	Habitat description/ regional ecosystems present	Likelihood of occurrence	Source
Thesium australe	Austral toadflax	V	V	Shrubland, grassland or woodland, usually on damp sites. Suitable vegetation types within the project site likely to be limited to woodlands and grasslands in seasonally wet riparian areas.	**Possible**. Suitable riparian habitat in site and Wildnet records beside Jarail Rd about 1 km west of site. Not found during surveys of suitable habitat.	E, W
Zieria obovata	-	V	V	Wet open eucalypt forest dominated by *Syncarpia glomulifera*, *Eucalyptus abergiana*, and *E. cloeziana*, and on steep rocky slopes among granite slabs and boulders.	Unlikely. Limited habitat and no Wildnet records within 10 km. One Wildnet record within 20 km.	W

Appendix 3 Flora survey sites

Site	Latitude	Longitude	Survey type	Mapped RE	Ground-truthed RE
S1	-26.5961759	151.449076	Tertiary, threatened survey	11.11.15	11.11.4
S2	-26.6004646	151.451141	Quaternary	NR	NR
S3	-26.6027789	151.4551464	Tertiary, threatened survey	11.11.15	11.11.4
S4	-26.6139368	151.4641696	Quaternary	11.11.15	11.11.4
S5	-26.6145141	151.4632612	Quaternary	NR	NR
S6	-26.6043303	151.4703187	Quaternary	11.11.15	11.11.4
S7	-26.58142	151.489043	Quaternary	NR	NR
S8	-26.5839246	151.4941471	Tertiary, threatened survey	11.11.15/11.3.25	11.11.15
S9	-26.5929	151.4907267	Tertiary, threatened survey	11.11.15 / 11.3.25	11.3.25
S10	-26.5866661	151.488873	Quaternary	11.11.15/11.3.25	NR
S11	-26.5881356	151.4871303	Quaternary	11.11.15/11.3.25	11.11.4
S12	-26.6527896	151.4898147	Quaternary	11.11.15/11.3.25	11.11.15
S13	-26.6527139	151.4885312	Quaternary	11.11.15/11.3.25	11.3.25
S14	-26.6724279	151.4815414	Quaternary	11.11.15/11.3.25	11.11.15
S15	-26.5788262	151.5110025	Quaternary	NR	NR? HVR 11.11.15?
S16	-26.5813127	151.5096668	Tertiary, threatened survey	11.11.15/11.3.25	11.11.15
S17	-26.579291	151.5086747	Quaternary	11.11.15/11.3.25	HVR 11.11.15
S18	-26.5718993	151.525241	Quaternary	NR	NR
S19	-26.5643469	151.5285246	Quaternary	NR	NR
S20	-26.5627959	151.527348	Quaternary	NR	NR? HVR 11.3.25?
S21	-26.576551	151.4972066	Quaternary	NR	NR
S22	-26.5806719	151.5870479	Tertiary, threatened survey	11.12.3/11.7.6	11.12.3
S23	-26.5858967	151.5872062	Quaternary	11.12.3/11.7.6	11.12.3
S24	-26.5908076	151.5901239	Quaternary	12.12.24/12.12.28/ 12.3.3	12.12.24
S25	-26.590009	151.5913337	Quaternary	12.12.24/12.12.28/ 12.3.3	12.12.8
S26	-26.5892325	151.5930143	Quaternary	12.12.13	12.12.24/12.12.8

Site	Latitude	Longitude	Survey type	Mapped RE	Ground-truthed RE
S27	-26.5881432	151.5942842	Quaternary	12.8.13/12.12.13	12.12.24/12.12.8
S28	-26.5859752	151.5944624	Tertiary, threatened survey	11.12.4	11.8.3
S29	-26.6126883	151.576673	Quaternary	11.12.3/11.7.6	11.12.3
S30	-26.6152246	151.5761588	Tertiary, threatened survey	11.12.6	11.12.3
S31	-26.6238091	151.5554895	Quaternary	NR	NR
S32	-26.6189056	151.5539952	Quaternary	11.12.3/11.7.6	11.11.15
S33	-26.6174561	151.5534398	Tertiary, threatened survey	11.12.3/11.7.6	11.11.15
S34	-26.6159089	151.5467794	Quaternary	11.12.3/11.7.6	11.12.6
S35	-26.6195085	151.5474313	Quaternary	11.12.3/11.7.6	11.12.6
S36	-26.6554562	151.5340447	Quaternary	NR	NR
S37	-26.6761108	151.5616398	Quaternary	NR	NR
S38	-26.669187	151.5236757	Quaternary	11.12.6	11.12.3
S39	-26.6702269	151.5383792	Quaternary	NR	NR? HVR 11.12.3?
S40	-26.6743799	151.5546367	Quaternary	NR	NR
S41	-26.6701292	151.5600609	Quaternary	11.3.25	11.3.25
S42	-26.6571856	151.5713529	Tertiary, threatened survey	11.12.6	11.12.6
S43	-26.6562388	151.570424	Quaternary	11.12.6	11.12.6
S44	-26.6590417	151.5706684	Quaternary	NR	NR
S45	-26.57824189	151.5962871	Tertiary, threatened survey	11.5.20	11.12.3
S46	-26.57128085	151.5990605	Tertiary, threatened survey	11.12.6/11.11.4	11.11.4
S47	-26.57386998	151.6021109	Quaternary	11.12.6/11.11.4a	11.5.20
S48	-26.55443113	151.5757875	Quaternary	NR	NR
S49	-26.55190093	151.5730164	Quaternary	NR	NR
S49.1	-26.52461263	151.5184391	Quaternary	11.12.3	11.12.3
S50	-26.51710932	151.5131081	Quaternary	11.12.3	11.12.3
S51	-26.51253641	151.5094302	Quaternary	11.3.25	11.3.25
S51.1	-26.5328953	151.5129895	Quaternary	11.11.15/11.3.25	HVR 11.11.15
S52	-26.56605142	151.4769971	Quaternary	11.11.15/11.3.25	11.11.4
S53	-26.56319403	151.4789497	Quaternary	11.11.15/11.3.25	11.11.4

Site	Latitude	Longitude	Survey type	Mapped RE	Ground-truthed RE
S54	-26.55917323	151.4781772	Quaternary	11.11.15/11.3.25	11.11.4
S54.1	-26.55594515	151.479467	Quaternary	11.11.15/11.3.25	11.11.4
S55	-26.5524146	151.4791871	Tertiary, threatened survey	11.11.15/11.3.25	11.11.4
S56	-26.54933985	151.4783254	Quaternary	11.11.15/11.3.25	HVR 11.11.4
S57	-26.54650591	151.4736859	Quaternary	11.11.15/11.3.25	11.11.4
S58	-26.5433878	151.4676796	Quaternary	11.11.15/11.3.25	11.11.4
S59	-26.54178933	151.46452	Quaternary	11.11.15/11.3.25	HVR 11.11.15
S60	-26.56330333	151.5882901	Tertiary, threatened survey	11.12.6/11.11.4	11.7.6
S61	-26.56515963	151.5864264	Quaternary	11.12.3/11.7.6	HVR 11.12.3
S62	-26.56880739	151.5875634	Quaternary	11.12.3/11.7.6	11.12.3
S63	-26.56793861	151.5896368	Tertiary, threatened survey	11.12.6/11.11.4	11.12.6
S64	-26.54056214	151.4821775	Quaternary	11.11.15/11.3.25	HVR 11.11.15
S65	-26.54097654	151.4800425	Quaternary	11.11.15/11.3.25	11.11.15
S66	-26.6836077	151.5709048	Quaternary	NR	NR
S67	-26.67505258	151.5774766	Quaternary	NR	NR or HVR 11.11.4
S68	-26.62802893	151.567478	Tertiary, threatened survey	NR	11.3.25
S69	-26.63304793	151.5746358	Quaternary	11.12.6	11.12.6
S70	-26.63342491	151.5767131	Quaternary	11.5.20	11.11.4
S71	-26.63481492	151.5765687	Quaternary	11.5.20	11.12.6
S72	-26.65584093	151.5696643	Tertiary, threatened survey	11.12.6	11.12.6
S73	-26.5897941	151.4880619	Quaternary	11.11.15/11.3.25	NR/11.11.4
S74	-26.5892146	151.4877632	Quaternary	11.11.15/11.3.25	NR/11.11.4
S75	-26.5882201	151.4878302	Quaternary	11.11.15/11.3.25	NR/11.11.4
S76	-26.5874506	151.4880011	Quaternary	11.11.15/11.3.25	NR/11.11.4
S77	-26.579322	151.527114	Quaternary	NR	NR
S78	-26.5873885	151.5937403	Quaternary	12.8.13/12.12.13	12.8.13 bdry
S79	-26.5870093	151.5943576	Quaternary	12.8.13/12.12.13	12.8.13 bdry
S80	-26.5871742	151.5941273	Quaternary	12.8.13/12.12.13	12.8.13 bdry
S81	-26.5872657	151.5938979	Quaternary	12.8.13/12.12.13	12.8.13 bdry

Site	Latitude	Longitude	Survey type	Mapped RE	Ground-truthed RE
S82	-26.5869546	151.5937997	Quaternary	12.8.13/12.12.13	12.8.13 bdry
S83	-26.5865715	151.5937498	Quaternary	11.12.4	12.8.13
S84	-26.58630307	151.5937224	Quaternary	11.12.4	12.8.13
S85	-26.5859648	151.5936009	Quaternary	11.12.4	12.8.13
S86	-26.58575109	151.5937234	Quaternary	11.12.4	12.8.13
S87	-26.5839122	151.5930603	Quaternary	11.12.3/11.7.6	12.8.23?
S88	-26.5838619	151.593527	Quaternary	11.12.3/11.7.6	12.8.13 bdry
S89	-26.5839816	151.593886	Quaternary	11.12.3/11.7.6	12.8.13 bdry
S90	-26.584052	151.5943682	Quaternary	11.12.3/11.7.6	12.8.13 bdry
S91	-26.58426125	151.5949841	Quaternary	11.12.3/11.7.6	12.8.13 bdry
S92	-26.5847757	151.5948408	Quaternary	11.12.3/11.7.6	12.8.13 bdry
S93	-26.5853865	151.5947857	Quaternary	11.12.3/11.7.6	12.8.13 bdry
S94	-26.5852917	151.5954815	Quaternary	11.12.3/11.7.6	12.8.13 bdry
S95	-26.5842428	151.5978637	Quaternary	11.12.3/11.7.6	12.8.13 bdry
S96	-26.5865884	151.5968601	Quaternary	11.12.4	12.8.13 bdry
S97	-26.586225	151.5965103	Quaternary	11.12.4	12.8.13 bdry
S98	-26.5863571	151.5961309	Quaternary	11.12.4	12.8.13 bdry
S99	-26.5864141	151.5957634	Quaternary	11.12.4	12.8.13 bdry
S100	-26.5865437	151.5953866	Quaternary	11.12.4	12.8.13 bdry
S101	-26.5864324	151.5948294	Quaternary	11.12.4	12.8.13 bdry
S102	-26.6202089	151.5539546	Quaternary	11.12.3/11.7.6	11.11.15
S103	-26.6187772	151.5547744	Quaternary	11.12.3/11.7.6	11.11.15
S104	-26.656618	151.5706205	Quaternary	NR	11.12.6
S105	-26.6582653	151.5697485	Quaternary	NR	11.12.6
S106	-26.57361228	151.6025757	Quaternary	11.12.6/11.11.4a	11.5.20 bdry
S107	-26.57476948	151.6019396	Quaternary	11.5.20	11.5.20 bdry
S108	-26.57354447	151.6021413	Quaternary	11.12.6/11.11.4a	11.5.20 bdry
S19	-26.562139	151.4789625	Quaternary	11.11.15/11.3.25	HVR 11.11.4
S110	-26.5493662	151.478361	Quaternary	11.11.15/11.3.25	HVR 11.11.4

Site	Latitude	Longitude	Survey type	Mapped RE	Ground-truthed RE
S111	-26.56289149	151.5902565	Quaternary	11.12.6/11.11.4	11.12.6
S112	-26.65854036	151.5619307	Quaternary	NR	NR
S113	-26.63318238	151.5768492	Quaternary	11.5.20	11.11.4
S114	-26.63625648	151.5747156	Quaternary	11.12.6	11.12.6
S115	-26.65847464	151.5694487	Quaternary	NR	11.12.6 bdry
S116	-26.65860042	151.5691884	Quaternary	NR	11.12.6 bdry
S117	-26.6585308	151.568953	Quaternary	NR	11.12.6 bdry
S118	-26.65841199	151.5684061	Quaternary	NR	11.12.6 bdry
S119	-26.65823484	151.5685	Quaternary	NR	11.12.6 bdry
S120	-26.65816028	151.5684021	Quaternary	NR	11.12.6 bdry
S121	-26.65802785	151.5686801	Quaternary	NR	11.12.6 bdry
S122	-26.65784977	151.5689982	Quaternary	NR	11.12.6 bdry
S123	-26.65792898	151.5691689	Quaternary	NR	11.12.6 bdry
S124	-26.65757246	151.5691265	Quaternary	NR	11.12.6 bdry
S125	-26.65726304	151.569607	Quaternary	NR	11.12.6 bdry
S126	-26.65732578	151.5698023	Quaternary	NR	11.12.6 bdry
S127	-26.65668817	151.5698891	Quaternary	NR	11.12.6 bdry
S128	-26.65661365	151.5696143	Quaternary	11.12.6	11.12.6 bdry
S129	-26.65682634	151.5690469	Quaternary	NR	11.12.6 bdry
S130	-26.65683241	151.5700151	Quaternary	NR	11.12.6 bdry
S131	-26.65704875	151.5699225	Quaternary	11.12.6	11.12.6 bdry
S132	-26.65640327	151.5691924	Quaternary	11.12.6	11.12.6 bdry
S133	-26.65607528	151.5692029	Quaternary	11.12.6	11.12.6 bdry
S134	-26.65604628	151.5688115	Quaternary	11.12.6	11.12.6 bdry
S135	-26.6559418	151.5686067	Quaternary	11.12.6	11.12.6 bdry
S136	-26.65585731	151.5683154	Quaternary	11.12.6	11.12.6 bdry
S137	-26.65568951	151.5679307	Quaternary	11.12.6	11.12.6 bdry
S138	-26.65541206	151.5682311	Quaternary	11.12.6	11.12.6 bdry
S139	-26.65539103	151.5683721	Quaternary	11.12.6	11.12.6 bdry

Site	Latitude	Longitude	Survey type	Mapped RE	Ground-truthed RE
S140	-26.65552262	151.5688703	Quaternary	11.12.6	11.12.6 bdry
S141	-26.65528395	151.5693052	Quaternary	11.12.6	11.12.6 bdry
S142	-26.65565099	151.5697235	Quaternary	11.12.6	11.12.6 bdry
S143	-26.65566352	151.5698038	Quaternary	11.12.6	11.12.6 bdry
A1	-26.645662	151.518477	Tertiary, threatened survey	NR	NR
A2	-26.640008	151.487396	Quaternary	11.11.15	11.11.15
A3	-26.64998507	151.4731964	Tertiary, threatened survey	11.8.3/12.8.16	11.8.3
A4	-26.64782771	151.4744225	Quaternary	11.11.15	11.11.15
A5	-26.59667161	151.5448053	Quaternary	NR	NR
A6	-26.59723473	151.5451323	Quaternary	NR	NR
A7	-26.59733628	151.5465558	Quaternary	11.11.15/11.3.25	11.11.4
A8	-26.59763377	151.5480614	Quaternary, threatened survey	NR	HVR 11.3.25
A9	-26.59971572	151.5254061	Quaternary	NR	NR
A10	-26.59835746	151.5332941	Quaternary	11.11.15/11.3.25	11.11.15
A11	-26.59872845	151.5307757	Quaternary	NR	NR
A12	-26.5726664	151.5283566	Quaternary	NR	NR
A13	-26.58135028	151.5363983	Quaternary, threatened survey	NR	NR
A14	-26.58037101	151.5444811	Quaternary, threatened survey	NR	NR
A15	-26.56226948	151.5495355	Quaternary	NR	HVR 11.3.4
A16	-26.56308234	151.5501175	Quaternary	11.11.15/11.3.25	11.11.15
A17	-26.56325639	151.5534485	Quaternary	NR	NR
A18	-26.5649503	151.5565813	Quaternary	11.12.3/11.7.6	11.12.3
A19	-26.57922226	151.5622384	Quaternary	11.11.15/11.3.25	11.11.15
A20	-26.58658899	151.5570841	Quaternary, threatened survey	NR	NR
A21	-26.59464894	151.5768818	Quaternary, threatened survey	NR	NR
A22	-26.59095723	151.4772935	Quaternary	11.11.15/11.3.25	11.11.4
A23	-26.60077437	151.495101	Quaternary, threatened survey	NR	NR

Site	Latitude	Longitude	Survey type	Mapped RE	Ground-truthed RE
A24	-26.59969825	151.4839583	Quaternary	11.11.15	11.11.4
A25	-26.60592412	151.4776403	Quaternary	11.11.15/11.3.25	11.11.15
A26	-26.56252696	151.4743856	Quaternary, threatened survey	NR	HVR 11.3.25

NR – Non remnant vegetation
Bdry – Vegetation boundary

Appendix 4 Flora species recorded in detailed vegetation survey sites

Species abundance:

D – Dominant
A – Abundant
F – Frequent
O - Occasional
R - Rare
- Introduced species

Q: Data from quaternary sites

p – recorded in quaternary site

Species		Abundance within survey site																			
		S1	S3	S8	S9	S16	S22	S28	S30	S33	S42	S45	S46	S55	S60	S63	S68	S72	A1	A3	Q
Abutilon oxycarpum								O			O						O				p
Acacia amblygona																					p
Acacia bancroftiorum									F				O		F	O					p
Acacia disparrima											D				R			F			p
Acacia fimbriata																					p
Acacia excelsa																			A		
Acacia irrorata		O	O			O								O						R	p
Acacia leiocalyx		F	O	D	F	F	O		A	F		D	O	O		F	O			O	p
Acacia maidenii								R									F				p
Acacia pustula					R																p
Acacia salicina																			F		p

Species		Abundance within survey site																			
		S1	S3	S8	S9	S16	S22	S28	S30	S33	S42	S45	S46	S55	S60	S63	S68	S72	A1	A3	Q
Acacia spectabilis							O	O				O				O					p
Acalypha eremorum											F							O			
Alectryon connatus								O													
Alectryon diversifolius								O			O									O	p
Allocasuarina littoralis										R					R	O					p
Allocasuarina luehmannii			D										R	R							p
Allocasuarina torulosa																					p
Alphitonia excelsa		O	R	R		D	O	O	O	O	R	R	A	O	D	D				O	p
Alstonia constricta									R		O				O						p
Alternanthera nana		R					O									R					
Alternanthera pungens	#		R																		
Alyxia ruscifolia								O			F					O		F			p
Amyema congener						F									R						
Angophora floribunda					F												F				p
Angophora leiocarpa							O		R	D			O		F	R					p
Aristida acuta																			O		p
Aristida caput-medusae													F		O	O					p
Aristida queenslandica		O	O	O	F	F		O	F			O		O	O	F					p
Arundinella nepalensis										O											p
Austrostipa ramosissima								O									O	O			p
Axonopus compressus	#																R				
Bidens pilosa	#				O			O	F								F				p
Bothriochloa bladhii																					p
Boerhavia dominii		O		O																	
Bothriochloa decipiens							O														p

Species		Abundance within survey site																			
		S1	S3	S8	S9	S16	S22	S28	S30	S33	S42	S45	S46	S55	S60	S63	S68	S72	A1	A3	Q
Brachychiton populneus				R						R						R	R			O	p
Brachychiton rupestris										R											
Breynia oblongifolia				R			O	O	R	F			O			F		O			p
Brunoniella australis		O		O					O		R	O				R	O				
Bulbostylis barbata													R								
Callitris baileyi																					p
Callitris glaucophylla																	R				
Calotis dentex									O	O											
Calotis lappulacea					O				O								O				p
Calyptochloa gracillima				O			O														
Capparis arborea											F							O			p
Capparis canescens		O																			p
Capparis lasiantha								R										F			
Capparis loranthifolia																		F			
Carissa ovata											F							F			p
Cassinia laevis				R		D			R	D			R			R					p
Casuarina cunninghamiana																	O				p
Cayratia clematidea								R			R							O			
Centella asiatica																	O				
Cheilanthes sieberi		O		F	O	F	F	O	F	O		O	R			O		R	R	O	p
Chloris gayana	#				F															F	p
Chrysocephalum apiculatum		O		O	O	O	F		O		F	O									p
Commelina diffusa																	O	R			
Commelina lanceolata				F		O	O			R	O		O	O							p
Coreopsis lanceolata	#																				p

Species		Abundance within survey site																			
		S1	S3	S8	S9	S16	S22	S28	S30	S33	S42	S45	S46	S55	S60	S63	S68	S72	A1	A3	Q
Corymbia citriodora		D	D											D							p
Corymbia clarksoniana																					p
Corymbia tessellaris					F			R													p
Crinum angustifolium																					p
Crotalaria mitchellii																	R				
Croton insularis								R													
Cupaniopsis parvifolia																	R				
Cyanthillium cinereum		O		O		O				O				O							
Cymbidium canaliculatum							R					R									
Cymbopogon obtectus												F		R							p
Cymbopogon refractus		D		D	F	D	A		D	F					O		O				p
Cynodon dactylon	#				O												O				p
Cynodon nlemfuensis	#																		O		p
Cyperus eragrostis	#																				p
Cyperus gracilis				O												O	R	R			
Cyperus sp.		O															O				p
Datura stramonium	#																				p
Daviesia ulicifolia																					p
Denhamia bilocularis																				R	
Denhamia disperma								O													
Desmodium brachypodum						O	O		O			O					O			O	p
Desmodium rhytidophyllum		O							O					O							p
Desmodium varians							O										O				
Dianella brevipedunculata							O		O	O		O				R	O			O	p
Dianella caerulea		O	O	R					R		R			O		R					

Species		Abundance within survey site																			
		S1	S3	S8	S9	S16	S22	S28	S30	S33	S42	S45	S46	S55	S60	S63	S68	S72	A1	A3	Q
Dichanthium sericeum																			O	O	p
Digitaria minima														O							
Diospyros humilis																					p
Dodonaea viscosa						O			O	O											p
Dodonaea triquetra																				R	p
Dolichandra unguis-cati	#																				p
Drypetes deplanchei								F								O		O			p
Dysphania carinata																					p
Einadia nutans				O	R			R	O	O	O		O	R		O	O	R			p
Elaeodendron australe											R							O			p
Eleocharis cylindrostachys					O																
Enneapogon lindleyanus		O																			p
Enteropogon acicularis																				O	
Entolasia stricta			D					O		O			D	F	D	O					p
Entolasia whiteana											D							O			
Eragrostis curvula	#			O	O	R						D					O		O	F	p
Eragrostis elongata										R											
Eremophila debilis		R					R														p
Erythroxylum sp. Splityard Creek								R													
Eucalyptus acmenoides													O								p
Eucalyptus crebra		O		D	F	D	D		D	O	O	D	D		D	D		O		D	p
Eucalyptus exserta										F											p
Eucalyptus major																F					p
Eucalyptus melanophloia					O		O	O									F		A		p
Eucalyptus moluccana																		D			p

Species		Abundance within survey site																			
		S1	S3	S8	S9	S16	S22	S28	S30	S33	S42	S45	S46	S55	S60	S63	S68	S72	A1	A3	Q
Eucalyptus tereticornis				O	F		O					A	R			F	F			O	p
Euphorbia heterophylla	#																				p
Eustrephus latifolius								O			O						O	O		O	p
Everistia vacciniifolia									R		O							O			
Evolvulus alsinoides		R		O			O		R												p
Exocarpos cupressiformis													R		O		O				p
Ficus rubiginosa																					p
Fimbristylis dichotoma					O		O	O	R		O	O							F		p
Flindersia australis																					p
Flindersia collina											R							R			
Gahnia aspera								O							O						p
Geijera salicifolia											O							F		O	p
Geitonoplesium cymosum											R							O		O	
Glandularia aristigera	#	O		F	F												F			O	p
Glossocardia bidens		R					R		R			O	R			R					
Glycine microphylla		F		O		O	O		O	O		O						O			
Gomphocarpus physocarpus	#																				p
Gomphrena celosioides	#																			R	p
Goodenia delicata														F							p
Grewia latifolia								R		R										R	p
Hardenbergia violacea		O												O							p
Heliotropium amplexicaule	#			O	D														O		p
Heteropogon contortus					O		O														p
Hovea parvicalyx															O						
Hybanthus stellarioides							O														

Species		Abundance within survey site																			
		S1	S3	S8	S9	S16	S22	S28	S30	S33	S42	S45	S46	S55	S60	S63	S68	S72	A1	A3	Q
Imperata cylindrica																					p
Indigofera australis		O															O				
Jacksonia scoparia									F	D				D							p
Jagera pseudorhus									R												
Jasminum didymum								O			F							F			
Jasminum simplicifolium								O	O	R	O							R		F	p
Juncus usitatus					O																
Lantana camara	#						O	D	O			O			R	O	O	R		R	p
Lantana montevidensis	#			O																	
Lepidium africanum	#																				p
Lepidium bonariense	#																				p
Leucopogon biflorus													O								
Leucopogon trichostylus																R					
Ligustrum lucidum	#																				p
Lobelia concolor									R			O	F			R					
Lomandra confertifolia															O	O					
Lomandra filiformis													R								p
Lomandra hystrix													O								
Lomandra longifolia												O					A				p
Lomandra multiflora			O									R		O			R				
Maireana microphylla				O					R												p
Marsdenia lloydii																					p
Medicago polymorpha	#				R																
Megathyrsus maximus	#																O				p
Melaleuca viminalis																	F				p

Species		Abundance within survey site																			
		S1	S3	S8	S9	S16	S22	S28	S30	S33	S42	S45	S46	S55	S60	S63	S68	S72	A1	A3	Q
Melinis repens	#	O		O		F	O			R		R								F	p
Microlaena stipoides										O											
Murdannia graminea						O	F														p
Notelaea longifolia								F	R	R											p
Nyssanthes diffusa																		R			
Olearia canescens								F													
Oplismenus aemulus								R										R			
Opuntia tomentosa	#	R	R	O	O	O	O		O	O		O	O	O	O	O	O	O	F	O	p
Oxalis corniculata	#			O	O	O		R		O							O			O	
Pandorea pandorana				O				O	O	O	F				R	R		O		O	p
Panicum decompositum																					p
Panicum effusum		R		O		O	R														
Panicum queenslandicum							R		O												
Paspalum distichum																					p
Parsonsia lanceolata										R	R		R		O						
Passiflora aurantia											R										
Petalostigma pubescens										R											p
Phragmites australis																					p
Phyllanthus virgatus		R		O	O		O		O				O			R	O				
Pimelea neoanglica																					p
Pittosporum angustifolium							R			R										R	
Pittosporum spinescens								R	O		O		R			O		O			p
Podolepis neglecta																	R				
Polyscias elegans								R													

Species		Abundance within survey site																			
		S1	S3	S8	S9	S16	S22	S28	S30	S33	S42	S45	S46	S55	S60	S63	S68	S72	A1	A3	Q
Pomax umbellata													R								
Portulaca oleracea	#									O											
Portulaca pilosa	#			O		F	R														p
Psydrax attenuata																					p
Psydrax odorata		R				O	R	O	O	O	F		R		O	F		F		R	p
Pterocaulon sphacelatum							O					O					R		O		p
Pultenaea petiolaris																					p
Rapistrum rugosum	#																O				
Richardia brasiliensis	#				R																
Rostellularia adscendens				O													O				p
Rubus parvifolius																	O				
Rumex brownii					O												O			O	p
Schoenoplectus validus																					p
Schinus molle	#																				p
Scleria sphacelata												O	O		O						p
Sida cordifolia	#									R							O				
Sida rhombifolia	#			O	O				R										F	O	p
Sigesbeckia orientalis										O											
Solanum nemophilum			O						O	O				O		R				O	p
Solanum nigrum	#																R				
Solanum seaforthianum	#										R							R			
Solanum stelligerum								O	O		O							O			p
Sonchus oleraceus	#																				p
Sporobolus africanus	#																				p
Sporobolus creber				R		R															

Species		Abundance within survey site																			
		S1	S3	S8	S9	S16	S22	S28	S30	S33	S42	S45	S46	S55	S60	S63	S68	S72	A1	A3	Q
Stackhousia monogyna																					p
Teucrium junceum																		F			p
Themeda triandra																					p
Tragus australianus																					p
Tricoryne elatior																					p
Triflorensia cameronii																					p
Tripogon loliiformis																			O		p
Typha domingensis																					p
Urochloa panicoides	#																				p
Urochloa mosambicensis	#				O																
Urtica incisa																	O				
Vachellia farnesiana	#																				p
Verbena incompta	#																				p
Wahlenbergia communis																	R				
Wahlenbergia gracilis		O		O	R																
Wahlenbergia stricta																			O		
Xanthium occidentale	#																			O	p
Xanthium spinosum	#																				p
Xanthorrhoea johnsonii																					p
Zinnia peruviana	#																				p
Zornia dyctiocarpa		R																			
Zornia muriculata							O														

Appendix 5 Fauna species recorded in surveys (2018 – summer 2023)

NC Act status - conservation status under *Nature Conservation Act 1992*.

V = Vulnerable, NT = Near Threatened, LC = Least Concern, SLC = Special Least Concern

EPBC Act status - conservation status under *Environment Protection and Biodiversity Conservation Act 1999*.

V= Vulnerable, Mi = Migratory Species

* Exotic species

^ Possible detection. Calls similar to those of the species were recorded, but were not reliably identified.

^^ *Nyctophilus* species cannot be reliably identified from call records alone and species can only be confirmed from sighting or capture. Given the confirmed occurrence of one *Nyctophilus* species in the study area (*N. geoffroyi*), and likely occurrence of another (*N. gouldi*), call records of *Nyctophilus* are likely to be from *N. geoffroyi* or *N. gouldi*. Both species are not listed under the EPBC Act.

^^^ Detected via orts during active search.

Group	Family	Species	Common name	NC status	EPBC status
Amphibian	Hylidae	*Litoria dentata*	bleating tree frog	LC	-
Amphibian	Hylidae	*Litoria latopalmata*	broad-palmed rocket frog	LC	-
Amphibian	Bufonidae	*Rhinella marina**	cane toad	-	-
Amphibian	Myobatrachidae	*Uperoleia rugosa*	chubby gungan	LC	-
Amphibian	Hylidae	*Litoria caerulea*	common green treefrog	LC	-
Amphibian	Myobatrachidae	*Crinia signifera*	eastern froglet	LC	-
Amphibian	Myobatrachidae	*Uperoleia laevigata*	eastern gungan	LC	-
Amphibian	Hylidae	*Litoria fallax*	eastern sedgefrog	LC	-
Amphibian	Myobatrachidae	*Crinia parinsignifera*	eastern sign-bearing froglet	LC	-
Amphibian	Hylidae	*Litoria peronii*	emerald-spotted treefrog	LC	-
Amphibian	Myobatrachidae	*Pseudophryne major*	great brown broodfrog	LC	-
Amphibian	Limnodynastidae	*Platyplectrum ornatum*	ornate burrowing frog	LC	-
Amphibian	Hylidae	*Litoria rubella*	ruddy treefrog	LC	-
Amphibian	Limnodynastidae	*Limnodynastes terraereginae*	scarlet sided pobblebonk	LC	-
Amphibian	Limnodynastidae	*Limnodynastes tasmaniensis*	spotted grassfrog	LC	-
Amphibian	Hylidae	*Litoria nasuta*	striped rocketfrog	LC	-
Bird	Corcoracidae	*Struthidea cinerea*	apostlebird	LC	-
Bird	Anhingidae	*Anhinga novaehollandiae*	Australasian darter	LC	-
Bird	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird	LC	-
Bird	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe	LC	-
Bird	Motacillidae	*Anthus novaeseelandiae*	Australasian pipit	LC	-
Bird	Megapodiidae	*Alectura lathami*	Australian brush-turkey	LC	-
Bird	Otididae	*Ardeotis australis*	Australian bustard	LC	-
Bird	Falconidae	*Falco longipennis*	Australian hobby	LC	-
Bird	Psittacidae	*Alisterus scapularis*	Australian king-parrot	LC	-

Group	Family	Species	Common name	NC status	EPBC status
Bird	Artamidae	*Gymnorhina tibicen*	Australian magpie	LC	-
Bird	Aegothelidae	*Aegotheles cristatus*	Australian owlet-nightjar	LC	-
Bird	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican	LC	-
Bird	Corvidae	*Corvus coronoides*	Australian raven	LC	-
Bird	Anatidae	*Chenonetta jubata*	Australian wood duck	LC	-
Bird	Charadriidae	*Vanellus tricolor*	banded lapwing	LC	-
Bird	Strigidae	*Ninox connivens*	barking owl	LC	-
Bird	Columbidae	*Geopelia humeralis*	bar-shouldered dove	LC	-
Bird	Meliphagidae	*Manorina melanophrys*	bell miner	LC	-
Bird	Accipitridae	*Milvus migrans*	black kite	LC	-
Bird	Accipitridae	*Hamirostra melanosternon*	black-breasted buzzard	LC	-
Bird	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike	LC	-
Bird	Charadriidae	*Elseyornis melanops*	black-fronted dotterel	LC	-
Bird	Ciconiidae	*Ephippiorhynchus asiaticus*	black-necked stork	LC	-
Bird	Accipitridae	*Elanus axillaris*	black-shouldered kite	LC	-
Bird	Recurvirostridae	*Himantopus himantopus*	black-winged stilt	LC	-
Bird	Psittacidae	*Northiella haematogaster*	blue bonnet	LC	-
Bird	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater	LC	-
Bird	Halcyonidae	*Dacelo leachii*	blue-winged kookaburra	LC	-
Bird	Gruidae	*Antigone rubicunda*	brolga	LC	-
Bird	Columbidae	*Macropygia amboinensis*	brown cuckoo-dove	LC	-
Bird	Falconidae	*Falco berigora*	brown falcon	LC	-
Bird	Acanthizidae	*Gerygone mouki*	brown gerygone	LC	-
Bird	Accipitridae	*Accipiter fasciatus*	brown goshawk	LC	-
Bird	Meliphagidae	*Lichmera indistincta*	brown honeyeater	LC	-

Group	Family	Species	Common name	NC status	EPBC status
Bird	Phasianidae	*Coturnix ypsilophora*	brown quail	LC	-
Bird	Acanthizidae	*Acanthiza pusilla*	brown thornbill	LC	-
Bird	Climacteridae	*Climacteris picumnus*	brown treecreeper	LC	-
Bird	Meliphagidae	*Melithreptus brevirostris*	brown-headed honeyeater	LC	-
Bird	Cuculidae	*Cacomantis variolosus*	brush cuckoo	LC	-
Bird	Acanthizidae	*Acanthiza reguloides*	buff-rumped thornbill	LC	-
Bird	Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo	LC	-
Bird	Anatidae	*Anas castanea*	chestnut teal	LC	-
Bird	Estrildidae	*Lonchura castaneothorax*	chestnut-breasted mannikin	LC	-
Bird	Cacatuidae	*Nymphicus hollandicus*	cockatiel	LC	-
Bird	Accipitridae	*Accipiter cirrocephalus*	collared sparrowhawk	LC	-
Bird	Columbidae	*Phaps chalcoptera*	common bronzewing	LC	-
Bird	Campephagidae	*Edolisoma tenuirostre*	common cicadabird	LC	-
Bird	Sturnidae	*Acridotheres tristis**	common myna	-	-
Bird	Sturnidae	*Sturnus vulgaris**	common starling	-	-
Bird	Columbidae	*Ocyphaps lophotes*	crested pigeon	LC	-
Bird	Columbidae	*Geopelia cuneata*	diamond dove	LC	-
Bird	Coraciidae	*Eurystomus orientalis*	dollarbird	LC	-
Bird	Estrildidae	*Taeniopygia bichenovii*	double-barred finch	LC	-
Bird	Meliphagidae	*Myzomela obscura*	dusky honeyeater	LC	-
Bird	Rallidae	*Gallinula tenebrosa*	dusky moorhen	LC	-
Bird	Artamidae	*Artamus cyanopterus*	dusky woodswallow	LC	-
Bird	Tytonidae	*Tyto delicatula*	eastern barn owl	LC	-
Bird	Cuculidae	*Eudynamys orientalis*	eastern koel	LC	-
Bird	Meliphagidae	*Acanthorhynchus tenuirostris*	eastern spinebill	LC	-

Group	Family	Species	Common name	NC status	EPBC status
Bird	Psophodidae	*Psophodes olivaceus*	eastern whipbird	LC	-
Bird	Petroicidae	*Eopsaltria australis*	eastern yellow robin	LC	-
Bird	Columbidae	*Chalcophaps indica*	emerald dove	LC	-
Bird	Casuariidae	*Dromaius novaehollandiae*	emu	LC	-
Bird	Hirundinidae	*Petrochelidon ariel*	fairy martin	LC	-
Bird	Cuculidae	*Cacomantis flabelliformis*	fan-tailed cuckoo	LC	-
Bird	Halcyonidae	*Todiramphus macleayii*	forest kingfisher	LC	-
Bird	Apodidae	*Apus pacificus*	fork-tailed swift	SLC	Mi
Bird	Cacatuidae	*Eolophus roseicapilla*	galah	LC	-
Bird	Cacatuidae	*Calyptorhynchus lathami lathami*	glossy black-cockatoo (eastern)	V	V
Bird	Pachycephalidae	*Pachycephala pectoralis pectoralis*	golden whistler (central Queensland)	LC	-
Bird	Cisticolidae	*Cisticola exilis*	golden-headed cisticola	LC	-
Bird	Phalacrocoracidae	*Phalacrocorax carbo*	great cormorant	LC	-
Bird	Artamidae	*Cracticus torquatus*	grey butcherbird	LC	-
Bird	Rhipiduridae	*Rhipidura albiscapa*	grey fantail	LC	-
Bird	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush	LC	-
Bird	Anatidae	*Anas gracilis*	grey teal	LC	-
Bird	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler	LC	-
Bird	Campephagidae	*Coracina maxima*	ground cuckoo-shrike	LC	-
Bird	Anatidae	*Aythya australis*	hardhead	LC	-
Bird	Petroicidae	*Melanodryas cucullata*	hooded robin	LC	-
Bird	Alaudidae	*Mirafra javanica*	Horsfield's bushlark	LC	-
Bird	Ardeidae	*Ardea intermedia*	intermediate egret	LC	-
Bird	Petroicidae	*Microeca fascinans*	jacky winter	LC	-
Bird	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra	LC	-

Group	Family	Species	Common name	NC status	EPBC status
Bird	Monarchidae	*Myiagra rubecula*	leaden flycatcher	LC	-
Bird	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater	LC	-
Bird	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant	LC	-
Bird	Cuculidae	*Chalcites minutillus*	little bronze-cuckoo	LC	-
Bird	Cacatuidae	*Cacatua sanguinea*	little corella	LC	-
Bird	Corvidae	*Corvus bennetti*	little crow	LC	-
Bird	Meliphagidae	*Philemon citreogularis*	little friarbird	LC	-
Bird	Psittacidae	*Parvipsitta pusilla*	little lorikeet	LC	-
Bird	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant	LC	-
Bird	Pachycephalidae	*Colluricincla megarhyncha*	little shrike-thrush	LC	-
Bird	Cacatuidae	*Cacatua tenuirostris*	long-billed corella	LC	-
Bird	Monarchidae	*Grallina cyanoleuca*	magpie-lark	LC	-
Bird	Charadriidae	*Vanellus miles miles*	masked lapwing	LC	-
Bird	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird	LC	-
Bird	Psittacidae	*Glossopsitta concinna*	musk parrot	LC	-
Bird	Falconidae	*Falco cenchroides*	nankeen kestrel	LC	-
Bird	Meliphagidae	*Philemon corniculatus*	noisy friarbird	LC	-
Bird	Meliphagidae	*Manorina melanocephala*	noisy miner	LC	-
Bird	Oriolidae	*Oriolus sagittatus*	olive-backed oriole	LC	-
Bird	Accipitridae	*Aviceda subcristata*	Pacific baza	LC	-
Bird	Anatidae	*Anas superciliosa*	Pacific black duck	LC	-
Bird	Turnicidae	*Turnix varius*	painted button-quail	LC	-
Bird	Psittacidae	*Platycercus adscitus*	pale-headed rosella	LC	-
Bird	Cuculidae	*Cacomantis pallidus*	pallid cuckoo	LC	-
Bird	Columbidae	*Geopelia striata*	peaceful dove	LC	-

Group	Family	Species	Common name	NC status	EPBC status
Bird	Falconidae	*Falco peregrinus*	peregrine falcon	LC	-
Bird	Cuculidae	*Centropus phasianinus*	pheasant coucal	LC	-
Bird	Artamidae	*Cracticus nigrogularis*	pied butcherbird	LC	-
Bird	Phalacrocoracidae	*Phalacrocorax varius*	pied cormorant	LC	-
Bird	Artamidae	*Strepera graculina*	pied currawong	LC	-
Bird	Anatidae	*Dendrocygna eytoni*	plumed whistling-duck	LC	-
Bird	Estrildidae	*Neochmia modesta*	plum-headed finch	LC	-
Bird	Rallidae	*Porphyrio melanotus*	purple swamphen	LC	-
Bird	Phasianidae	-	quail spp.	-	-
Bird	Meropidae	*Merops ornatus*	rainbow bee-eater	LC	-
Bird	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet	LC	-
Bird	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren	LC	-
Bird	Estrildidae	*Neochmia temporalis*	red-browed finch	LC	-
Bird	Psittacidae	*Psephotus haematonotus*	red-rumped parrot	LC	-
Bird	Cacatuidae	*Calyptorhynchus banksii*	red-tailed black-cockatoo	LC	-
Bird	Psittacidae	*Aprosmictus erythropterus*	red-winged parrot	LC	-
Bird	Monarchidae	*Myiagra inquieta*	restless flycatcher	LC	-
Bird	Rhipiduridae	*Rhipidura rufifrons*	rufous fantail	SLC	Mi
Bird	Megaluridae	*Cincloramphus mathewsi*	rufous songlark	LC	-
Bird	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler	LC	-
Bird	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher	LC	-
Bird	Monarchidae	*Myiagra cyanoleuca*	satin flycatcher	SLC	Mi
Bird	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet	LC	-
Bird	Cuculidae	*Chalcites lucidus*	shining bronze-cuckoo	LC	-
Bird	Timaliidae	*Zosterops lateralis*	silvereye	LC	-

Group	Family	Species	Common name	NC status	EPBC status
Bird	Meliphagidae	*Gavicalis virescens*	singing honeyeater	LC	-
Bird	Strigidae	*Ninox novaeseelandiae*	southern boobook	LC	-
Bird	Dicruridae	*Dicrurus bracteatus*	spangled drongo	LC	-
Bird	Acanthizidae	*Pyrrholaemus sagittatus*	speckled warbler	LC	-
Bird	Meliphagidae	*Acanthagenys rufogularis*	spiny-cheeked honeyeater	LC	-
Bird	Columbidae	*Spilopelia chinensis**	spotted dove	-	-
Bird	Pardalotidae	*Pardalotus punctatus*	spotted pardalote	LC	-
Bird	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis	LC	-
Bird	Pardalotidae	*Pardalotus striatus*	striated pardalote	LC	-
Bird	Acanthizidae	*Acanthiza lineata*	striated thornbill	LC	-
Bird	Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater	LC	-
Bird	Phasianidae	*Coturnix pectoralis*	stubble quail	LC	-
Bird	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo	LC	-
Bird	Maluridae	*Malurus cyaneus*	superb fairy-wren	LC	-
Bird	Podargidae	*Podargus strigoides*	tawny frogmouth	LC	-
Bird	Columbidae	*Lopholaimus antarcticus*	topknot pigeon	LC	-
Bird	Corvidae	*Corvus orru*	Torresian crow	LC	-
Bird	Hirundinidae	*Petrochelidon nigricans*	tree martin	LC	-
Bird	Psittacidae	*Neophema pulchella*	turquoise parrot	LC	-
Bird	Neosittidae	*Daphoenositta chrysoptera*	varied sittella	LC	-
Bird	Campephagidae	*Lalage leucomela*	varied triller	LC	-
Bird	Maluridae	*Malurus lamberti*	variegated fairy-wren	LC	-
Bird	Anatidae	*Dendrocygna arcuata*	wandering whistling-duck	LC	-
Bird	Accipitridae	*Aquila audax*	wedge-tailed eagle	LC	-
Bird	Acanthizidae	*Smicrornis brevirostris*	weebill	LC	-

Group	Family	Species	Common name	NC status	EPBC status
Bird	Hirundinidae	*Hirundo neoxena*	welcome swallow	LC	-
Bird	Acanthizidae	*Gerygone fusca*	western gerygone	LC	-
Bird	Accipitridae	*Haliastur sphenurus*	whistling kite	LC	-
Bird	Hirundinidae	*Cheramoeca leucosterna*	white-backed swallow	LC	-
Bird	Campephagidae	*Coracina papuensis*	white-bellied cuckoo-shrike	LC	-
Bird	Artamidae	*Artamus leucorynchus*	white-breasted woodswallow	LC	-
Bird	Acanthizidae	*Sericornis frontalis*	white-browed scrubwren	LC	-
Bird	Meliphagidae	*Nesoptilotis leucotis*	white-eared honeyeater	LC	-
Bird	Ardeidae	*Egretta novaehollandiae*	white-faced heron	LC	-
Bird	Meliphagidae	*Melithreptus lunatus*	white-naped honeyeater	LC	-
Bird	Ardeidae	*Ardea pacifica*	white-necked heron	LC	-
Bird	Meliphagidae	*Ptilotula penicillata*	white-plumed honeyeater	LC	-
Bird	Acanthizidae	*Gerygone olivacea*	white-throated gerygone	LC	-
Bird	Meliphagidae	*Melithreptus albogularis*	white-throated honeyeater	LC	-
Bird	Apodidae	*Hirundapus caudacutus*	white-throated needletail	V	V, Mi
Bird	Eurostopodidae	*Eurostopodus mystacalis*	white-throated nightjar	LC	-
Bird	Climacteridae	*Cormobates leucophaea*	white-throated treecreeper	LC	-
Bird	Corcoracidae	*Corcorax melanorhamphos*	white-winged chough	LC	-
Bird	Campephagidae	*Lalage tricolor*	white-winged triller	LC	-
Bird	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail	LC	-
Bird	Acanthizidae	*Acanthiza nana*	yellow thornbill	LC	-
Bird	Threskiornithidae	*Platalea flavipes*	yellow-billed spoonbill	LC	-
Bird	Meliphagidae	*Caligavis chrysops*	yellow-faced honeyeater	LC	-
Bird	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill	LC	-
Bird	Cacatuidae	*Calyptorhynchus funereus*	yellow-tailed black-cockatoo	LC	-

Group	Family	Species	Common name	NC status	EPBC status
Bird	Acanthizidae	*Sericornis citreogularis*	yellow-throated scrubwren	LC	-
Bird	Cisticolidae	*Cisticola juncidis laveryi*	zitting cisticola	LC	-
Mammal	Pteropodidae	*Pteropus alecto*	black flying-fox	LC	-
Mammal	Felidae	*Felis catus**	cat	-	-
Mammal	Vespertilionidae	*Chalinolobus morio^*	chocolate wattled bat	LC	-
Mammal	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum	LC	-
Mammal	Dasyuridae	*Sminthopsis murina*	common dunnart	LC	-
Mammal	Macropodidae	*Macropus robustus*	common wallaroo	LC	-
Mammal	Canidae	*Canis lupus dingo*	dingo	-	-
Mammal	Canidae	*Canis familiaris**	dog	-	-
Mammal	Vespertilionidae	*Scotorepens orion*	eastern broad-nosed bat	LC	-
Mammal	Vespertilionidae	*Vespadelus troughtoni*	eastern cave bat	LC	-
Mammal	Vespertilionidae	*Vespadelus pumilus*	eastern forest bat	LC	-
Mammal	Macropodidae	*Macropus giganteus*	eastern grey kangaroo	LC	-
Mammal	Bovidae	*Bos taurus**	European cattle	-	-
Mammal	Leporidae	*Lepus europaeus**	European hare	-	-
Mammal	Canidae	*Vulpes vulpes**	European red fox	-	-
Mammal	Vespertilionidae	*Chalinolobus gouldii*	Gould's wattled bat	LC	-
Mammal	Pseudocheiridae	*Petauroides volans (Petauroides armillatus)*	greater glider	E	E
Mammal	Pteropodidae	*Pteropus poliocephalus*	grey-headed flying-fox	LC	V
Mammal	Equidae	*Equus caballus**	horse	-	-
Mammal	Phascolarctidae	*Phascolarctos cinereus*	koala	V	E
Mammal	Vespertilionidae	*Vespadelus darlingtoni*	large forest bat	LC	-
Mammal	Vespertilionidae	*Nyctophilus geoffroyi*	lesser long-eared bat	LC	-
Mammal	Miniopteridae	*Miniopterus australis*	little bent-wing bat	LC	-

Group	Family	Species	Common name	NC status	EPBC status
Mammal	Vespertilionidae	*Scotorepens greyii*	little broad-nosed bat	LC	-
Mammal	Vespertilionidae	*Vespadelus vulturnus*	little forest bat	LC	-
Mammal	Vespertilionidae	*Chalinolobus picatus*	little pied bat	LC	-
Mammal	Pteropodidae	*Pteropus scapulatus*	little red flying-fox	LC	-
Mammal	Miniopteridae	*Miniopterus schreibersii oceanensis*	northern bent-wing bat	LC	-
Mammal	Peramelidae	*Isoodon macrourus*	northern brown bandicoot	LC	-
Mammal	Molossidae	*Mormopterus (Ozimops) lumsdenae*	northern freetail bat	LC	-
Mammal	Leporidae	*Oryctolagus cuniculus**	rabbit	-	-
Mammal	Macropodidae	*Notamacropus rufogriseus*	red-necked wallaby	LC	-
Mammal	Molossidae	*Mormopterus (Ozimops) ridei^*	Ride's freetail bat	LC	-
Mammal	Potoroidae	*Aepyprymnus rufescens*	rufous bettong	LC	-
Mammal	Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna	SLC	-
Mammal	Petauridae	*Petaurus norfolcensis*	squirrel glider	LC	-
Mammal	Petauridae	*Petaurus breviceps*	sugar glider	LC	-
Mammal	Macropodidae	*Wallabia bicolor*	swamp wallaby	LC	-
Mammal	Vespertilionidae	*Nyctophilus sp.^^*	unidentified long-eared bat species	LC	-
Mammal	Vespertilionidae	*Vespadelus sp.*	unknown Vespadelus bat	LC	-
Mammal	Macropodidae	*Macropus parryi*	whiptail wallaby	LC	-
Mammal	Molossidae	*Austronomus australis*	white-striped freetail bat	LC	-
Mammal	Suidae	*Sus scrofa**	wild pig	-	-
Mammal	Emballonuridae	*Saccolaimus flaviventris*	yellow-bellied sheathtail bat	LC	-
Reptile	Agamidae	*Pogona barbata*	bearded dragon	LC	-
Reptile	Diplodactylidae	*Diplodactylus steindachneri*	box-patterned gecko	LC	-
Reptile	Gekkonidae	*Heteronotia binoei*	Bynoe's gecko	LC	-
Reptile	Boidae	*Morelia spilota*	carpet python	LC	-

Group	Family	Species	Common name	NC status	EPBC status
Reptile	Gekkonidae	*Gehyra dubia*	dubious dtella	LC	-
Reptile	Elapidae	*Pseudonaja textilis*	eastern brown snake	LC	-
Reptile	Cryptophis	*Cryptophis nigrescens*	eastern small-eyed snake	LC	-
Reptile	Agamidae	*Intellagama lesueurii*	eastern water dragon	LC	-
Reptile	Scincidae	*Morethia taeniopleura*	fire-tailed skink	LC	-
Reptile	Colubridae	*Tropidonophis mairii*	keelback	LC	-
Reptile	Varanidae	*Varanus varius*	lace monitor	LC	-
Reptile	Elapidae	*Pseudechis porphyriacus*	red-bellied black snake	LC	-
Reptile	Diplodactylidae	*Oedura tryoni*	southern spotted velvet gecko	LC	-
Reptile	Carphodactylidae	*Underwoodisaurus milii*	thick-tailed gecko	LC	-
Reptile	Varanidae	*Varanus panoptes*	yellow spotted monitor	LC	-
Reptile	Elapidae	*Demansia psammophis*	yellow-faced whip snake	LC	-

Appendix 6 Koala assessment information under repealed referral guidelines

The following information has been prepared using the previous referral guidelines which were repealed on 12 February 2022. No referral guidelines have been released to date since the classification of koala as endangered. For context this information has been included in this MNES assessment given survey works and previous report iterations were completed prior to the EPBC Act conservation status listing of koala being updated from vulnerable to endangered on 12 February 2022.

The repealed referral guidelines for koala (DoE 2014a) provide a method for determining whether the habitat within a project site is critical to the survival of the koala. The guidelines classify the project site as an inland environment as it receives less than 800 mm annual rainfall. The Kingaroy Airport Station 040922, approximately 30 km east of the site, records an average annual rainfall of 663.3 mm (BoM 2023).

Table 67 assesses koala habitat within the site following the referral guidelines for an inland environment. As described in Section 5.7.3, potential habitat for koala was identified as:

- ground-truthed remnant and HVR areas that contain known koala food trees
- non-remnant areas that contain known koala food trees (based on pre-clear vegetation mapping), woody vegetation foliage projective cover greater than a value of 125 and patch size greater than 0.3 ha.

Potential habitat within the site scores 7 out of 10 for koala habitat, which indicates that the habitat is critical for the continuing survival of the koala.

Table 67 Koala habitat assessment

Attribute	Score: inland environs	Site assessment
Koala occurrence	+2 (high): Evidence of one or more koalas within the last 5 years.	+2. Field surveys recorded 15 sightings of koala (12 within and 3 adjacent to project site) and 21 signs of koala throughout the site.
	+1 (medium): Evidence of one or more koalas within 2 km of the edge of the impact area within the last 10 years.	
	0 (low): None of the above.	
Vegetation composition	+2 (high): Has forest, woodland or shrubland with emerging trees with 2 or more known koala food tree species, OR 1 food tree species that alone accounts for >50% of the vegetation in the relevant strata.	+2. Small patches of RE 11.3.25 within the site were dominated by the primary koala food tree, Queensland blue gum, but it generally did not form over 50% of the canopy layer. However, the most common eucalypt communities within the site (RE 11.11.4, 11.11.15, 11.12.3, 11.12.6) and substantial areas of non-remnant vegetation contained two secondary koala food species
	+1 (medium): Has forest, woodland or shrubland with emerging trees with only 1 species of known koala food tree present.	

Attribute	Score: inland environs	Site assessment
	0 (low): None of the above.	(spotted gum and narrow-leaved ironbark). Surveys recorded a total of 7 koala food species within the site.
Habitat connectivity	+2 (high); Area is part of a contiguous landscape ≥ 1000 ha.	+1. The site is heavily fragmented with vegetation occurring predominantly as isolated patches. Larger tracts of vegetation occur along the eastern boundary.
	+1 (medium); Area is part of a contiguous landscape < 1000 ha, but ≥ 500 ha.	
	0 (low): None of the above.	
Key existing threats	+2 (high): Little or no evidence of koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for koala occurrence. Areas which score 0 for koala occurrence and have no dog or vehicle threat present.	+1. There is little or no evidence of koala mortality from vehicle strike or dog attack within the local area This is likely due to the sparse nature of the koala population in the South Burnett region, rather than an indication of an absence of these threats. Wild dogs *Canis lupus familiaris* are known from the region and are likely to present some degree of threat to koala. The Bunya Highway also occurs to the south of the project site and presents a threat to koalas traversing the highway. However, traffic flows along other local roads such as Ironpot Rd and Kingaroy-Burrandowan Rd are low so pose a lower threat.
	+1 (medium): Evidence of infrequent or irregular koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for koala occurrence, OR Areas which score 0 for koala occurrence and are likely to have some degree dog or vehicle threat present.	
	0 (low): Evidence of frequent or regular koala mortality from vehicle strike or dog attack in the study area at present, OR Areas which score 0 for koala occurrence and have a significant dog or vehicle threat present.	
Recovery value	+2 (high): Habitat is likely to be important for achieving the interim recovery objectives.	The interim recovery objectives for inland areas include: • protect and conserve the quality and extent of habitat refuges for the persistence of the species during droughts and periods of extreme heat, especially in riparian environments and other areas with reliable soil moisture and fertility • maintain the quality, extent and connectivity of large areas of koala habitat surrounding habitat refuges. +1. The site contains some riparian corridors, but these are mostly cleared or confined to narrow fringes of remnant trees. Areas of habitat occur on the slopes and ranges, particularly along the eastern boundary, but they provide limited vegetated connection to drought refuges.
	+1 (medium): Uncertain whether the habitat is important for achieving the interim recovery objectives for the relevant context.	
	0 (low): Habitat is unlikely to be important for achieving the interim recovery objectives.	

As the project is likely to impact on koala habitat that scores ≥5, the repealed koala referral guidelines also require assessment of impacts that may interfere substantially with the recovery of the koala (DoE 2014a):

- *Increasing koala fatalities in habitat critical to the survival of the koala due to dog attacks to a level that is likely to result in multiple, ongoing mortalities*. Dogs are

already well established within the region and the project site is already fragmented and contains numerous access tracks (historically the site has had large amounts of clearing and currently 9.4% of the site retains remnant vegetation). The proposed activity is unlikely to result in dogs becoming more prevalent or moving into previously uninhabited areas. However, dog control may be implemented if signs of koala predation or increased predator numbers are observed during construction. This may include contributing to existing landholder and local government control programs for wild dogs (e.g. dog baiting programs).

- *Increasing koala fatalities in habitat critical to the survival of the koala due to vehicle-strikes to a level that is likely to result in multiple, ongoing mortalities*. A traffic management plan will be implemented during construction and operational phases of the project to incorporate measures to reduce the risk of collisions with vehicles, including limiting vehicle traffic to authorised tracks and roads, restricting vehicle travel to daytime where possible (as threatened species such as koala and greater gliders are most active at night), and enforcing strict speed limits. Any injured koalas will be taken to a qualified carer for rehabilitation. These measures are expected to avoid significant levels of mortality, especially during operation when vehicle traffic levels will be much lower.
- *Facilitating the introduction or spread of disease or pathogens to habitat critical to the survival of the koala, that are likely to significantly reduce the reproductive output of koalas or reduce the carrying capacity of the habitat*. Most koalas observed during the survey displayed the tell-tale ‘dirty bottom’ appearance of chlamydia infection. Stress caused by land clearing and habitat reductions are known to exacerbate chlamydia in koalas. The proposed project will result in clearance of koala habitat that could increase stress in the short term, but is unlikely to cause a long term increase in stress-induced disease. Stress will be further reduced by sequential clearing, which involves staged clearing of trees to allow koalas to relocate without human intervention, and the temporary retention of any tree in which a koala is present. Vehicle and equipment hygiene procedures will minimise the risk of introducing or spreading Phytophthora or myrtle rust.
- *Creating a barrier to movement to, between or within habitat critical to the survival of the koala that is likely to result in a long-term reduction in genetic fitness or access to habitat critical to the survival of the koala*. Fragmentation of koala habitat through the construction of access tracks and other infrastructure may make koalas more vulnerable to vehicle collisions and predators such as wild dogs. However, given the already fragmented nature of the project site and surrounding areas (Figure 15) and the relatively small proportion of suitable habitat to be cleared, the current project is unlikely to increase fragmentation significantly. Strict traffic management procedures (e.g. limited access routes, speed controls, daylight use) will reduce potential impacts of access tracks.
- *Changing hydrology which degrades habitat critical to the survival of the koala to the extent that the carrying capacity of the habitat is reduced in the long-term*. The site already contains numerous tracks, watercourse crossings and dams that have caused minor alterations to hydrology, erosion and sediment movement. The proposed project will involve installation of some extra tracks and watercourse crossings, but these will be constructed and maintained in accordance with Best Practice Erosion and Sediment Control Guidelines (IECA 2008). The project will not impact accessibility of koala to open water for drinking.

Appendix 7 Native vegetation state code 16 version 3.0

Table 68 General code provisions

Performance outcomes	Acceptable outcomes	Response
PO1 Clearing of vegetation is consistent with any notice requiring compliance on the land subject to the development application, unless a better environmental outcome can be achieved.	No acceptable outcome is prescribed.	**Complies with PO1** Clearing will comply with any notice requiring compliance on the land subject to the development application.
PO2 Clearing of vegetation is consistent with vegetation management requirements for particular regulated areas unless a better environmental outcome can be achieved.	No acceptable outcome is prescribed.	**Complies with PO2** No category A areas are mapped within the project site.
PO3 Clearing of vegetation in a legally secured offset area: 1. is consistent with the offset delivery plan 2. is consistent with an agreement for the offset area on the land subject to the development application; or 3. only occurs if an additional offset is provided.	No acceptable outcome is prescribed.	**Complies with PO3** No legally secured offset areas occur within the project site.

Table 69 Material change of use and/or reconfiguring a lot for all other purposes

Performance outcomes	Acceptable outcomes	Response
Clearing avoids and minimises impacts		
PO80 Clearing of vegetation and adverse impacts of clearing vegetation do not occur unless the application has demonstrated that the clearing and the adverse impacts of clearing have been: 1. reasonably avoided; or 2. reasonably minimised where it cannot be reasonably avoided.	No acceptable outcome is prescribed.	**Complies with PO80** The project design has taken into account avoidance of remnant and HVR vegetation as far as practicable. This includes placement of WTG pads, associated infrastructure (site office, laydown, transformer) and use of existing farm tracks. Any remaining impacts will be minimised as far as practicable through micro-siting and other opportunities.

Performance outcomes	Acceptable outcomes	Response
Clearing associated with wetlands		
PO81 Clearing of vegetation within a natural wetland and/or within 100 metres of the defining bank of a natural wetland maintains the composition, structure and function of any regional ecosystem associated with any natural wetland to protect all of the following: 1. bank stability by protecting against bank erosion; 2. water quality by filtering sediments, nutrients and other pollutants; 3. aquatic habitat; 4. terrestrial habitat.	**AO81.1** Clearing does not occur in a natural wetland or within 100 metres of the defining bank of any natural wetland. OR	**Unlikely to comply with PO81/AO81.1.**
	AO81.2 Clearing within 100 metres of the defining bank of any natural wetland: 1. does not occur within 10 metres of the defining bank of any natural wetland; and 2. does not exceed widths in reference table 1 in this code.	**Unlikely to comply with PO81/AO81.2.**
PO82 Where clearing of vegetation in a regional ecosystem associated with a natural wetland does not maintain the composition, structure and function of the regional ecosystem, and cannot be avoided and has been mitigated, an offset is provided for any acceptable significant residual impact.	No acceptable outcome is prescribed.	**Complies with PO82** Excluding pools along watercourses, no natural wetlands with open water were recorded within the site. The project site consists predominantly of non-remnant vegetation (90.56%), but also contains field-verified remnant vegetation (7.61%) and high-value regrowth vegetation (1.84%). The infrastructure corridor intersects numerous areas of riparian vegetation. Despite this, the design of the infrastructure corridor has minimised impacts to connectivity by avoiding remnant vegetation where possible The current design will remove up to a maximum of 16.98 ha of remnant vegetation and up to 1,045.16 ha of non-remnant vegetation. Large tracts of remnant vegetation have been avoided in the infrastructure corridor, and ongoing micro-siting will continue to avoid impacts where possible within the infrastructure corridor, particularly near watercourses and riparian vegetation. Sections 7 and 9.7 of this report further detail minimisation and mitigation measures to manage impacts to vegetation associated with wetlands.

Performance outcomes	Acceptable outcomes	Response
Clearing associated with watercourses and drainage features		
PO83 Clearing of vegetation within a watercourse and/or drainage feature and/or within the relevant distance (listed in reference table 2) of a watercourse and/or drainage feature, maintains the composition, structure and function of the regional ecosystem associated with the watercourse and/or drainage feature to protect all of the following: 1. bank stability by protecting against bank erosion; 2. water quality by filtering sediments, nutrients and other pollutants; 3. aquatic habitat; 4. terrestrial habitat.	**AO83.1** Clearing does not occur in any of the following areas: 1. inside the defining bank of a watercourse or drainage feature; and 2. within the relevant distance of the defining bank of any watercourse or drainage feature in reference table 2 of this code. OR	**Does not comply with PO83/AO83.1** Clearing is proposed to occur within the relevant distance of the defining bank of watercourses/drainage features.
	AO83.2 Clearing within any watercourse or drainage feature, or within the relevant distance of the defining bank of any watercourse or drainage feature in reference table 2 of this code: 1. does not exceed the widths in reference table 1 of this code; and 2. does not occur within 10 metres of the defining bank, unless clearing is required into or across the watercourse or drainage feature.	**Does not comply with PO83/AO83.2** Clearing is proposed to occur within the relevant distance of the defining bank of watercourses/drainage features.
PO84 Where clearing of vegetation in a regional ecosystem associated with a watercourse and/or drainage feature does not maintain the composition, structure and function of the regional ecosystem, and cannot be avoided and has been mitigated, an offset is provided for any acceptable significant residual impact.	No acceptable outcome is prescribed.	**Complies with PO84** Clearing of regulated vegetation associated with a watercourse will occur for upgrade of existing tracks and/or construction of new tracks. Offsets will be provided for impacts to regulated vegetation within the defined distance of mapped watercourses.
Connectivity		
PO85 Regional ecosystems on the subject land and any adjacent land, retain sufficient vegetation to maintain: 1. ecological processes; and 2. ensure the regional ecosystem remains in the landscape despite threatening processes.	**AO85.1** Clearing occurs in accordance with reference table 3 in this code.	**Unlikely to comply with PO85/AO85.1** The project site occurs within an inland bioregion. The applicable criteria includes “Clearing does not: 1. occur in areas of vegetation that are less than 50 ha; and 2. reduce the extent of the vegetation to less than 50 ha; and 3. occur in areas of vegetation less than 200 m wide; and

Performance outcomes	Acceptable outcomes	Response
		4. reduce the width of vegetation to less than 200 m; and 5. occur where the extent of vegetation on the subject lot(s) is reduced to, or less than, 30 per cent of the total subject area." The project site consists predominantly of non-remnant vegetation (90.56%), but also contains field-verified remnant vegetation (7.61%) and high-value regrowth vegetation (1.84%). The infrastructure corridor does intersect numerous areas of regulated vegetation and in some cases will not comply with the above criteria. Despite this, the design of the infrastructure corridor has minimised impacts to connectivity by avoiding remnant vegetation where possible The current design will remove up to a maximum of 16.98 ha of remnant vegetation and up to 1,045.16 ha of non-remnant vegetation. Large tracts of remnant vegetation have been avoided in the infrastructure corridor, and ongoing micro-siting will continue to avoid impacts where possible within the infrastructure corridor. Additionally, the Landscape Fragmentation and Connectivity Tool identified that the proposed clearing will result in a 0.83% reduction in core areas at the local scale and no reduction in the number of core remnant areas, and therefore concluded that impact on connectivity areas was not significant.
Soil erosion if the local government is not the assessment manager for the development application		
PO86 Clearing does not result in accelerated soil erosion within or outside the land the subject of the development application.	**AO86.1** Clearing only occurs if an erosion and sediment control plan is developed and implemented to prevent increased soil erosion and instability resulting from the clearing.	**Complies with PO86/AO86.1** Clearing will be undertaken in accordance with a sediment and erosion control plan, which includes measures to ensure the rates of soil loss and sediment movement are the same or less than those prior to the proposed development.
Salinity		
PO87 Clearing of vegetation within 100 metres of a salinity expression area does not contribute to or accelerate land degradation through either of the following: 1. waterlogging;	**AO87.1** Clearing does not occur within 100 metres of a salinity expression area.	**Complies with PO87/AO87.1** "Salinity expression area means an area containing more than one of the following salinity indicators:

Performance outcomes	Acceptable outcomes	Response
2. the salinisation of groundwater, surface water or soil.		1. plant species tolerant of saline conditions, shallow water tables or poor drainage (waterlogging); 2. wet areas in lower parts of the landscape or bare soil (soil scalding); 3. dieback of larger trees in low, wetter parts of the landscape (outside drought conditions or the effects of fire); 4. salt accumulations on the surface (often white and powdery, sometimes crystalline); or 5. areas of shallow groundwater." The subject site is not known to contain areas with more than one of the prescribed salinity indicators. Clearing for the project will not contribute to or accelerate land degradation through waterlogging, or through the salinisation of groundwater, surface water or soil. An Environmental Management Plan will be prepared to manage potential impacts to groundwater, surface water or soil.
Conserving endangered and of concern regional ecosystems		
PO88 Clearing of vegetation maintains the composition, structure and function of endangered regional ecosystems and/or of concern regional ecosystems.	**AO88.1** Clearing does not occur in an endangered regional ecosystem or an of concern regional ecosystem. OR	**Complies with AO 88.1** Clearing is not proposed to occur in an endangered RE or an of concern RE.
	AO88.2 Total clearing of endangered regional ecosystems and of concern regional ecosystems combined does not exceed the widths prescribed in table reference table 1 of this code. OR	
	AO88.3 Total clearing of endangered regional ecosystems and of concern regional ecosystems combined does not exceed areas prescribed in table reference table 1 of this code.	
PO89 Where clearing of vegetation in an endangered regional ecosystem or an of concern regional ecosystems does not maintain the composition, structure and function of the regional ecosystem, and cannot be avoided and has	No acceptable outcome is prescribed.	Not applicable. No clearing of vegetation is proposed in an endangered RE or an of concern RE.

Performance outcomes	Acceptable outcomes	Response
been mitigated, the cleared area: 1. is rehabilitated; or 2. where the cleared area cannot reasonably be rehabilitated, an offset is provided for any acceptable significant residual impact.		
Essential habitat excluding essential habitat for *Phascolarctos cinereus* (koalas) if development is assessable under Schedule 10, Part 10 of the Planning Regulation 2017		
PO90 Clearing of vegetation in a regional ecosystem that is an area of essential habitat maintains the composition, structure and function of the regional ecosystem for each protected wildlife species individually.	**AO90.1** Clearing does not occur in essential habitat. OR	**Complies with AO16.1** Clearing of essential habitat for species other than koala is not proposed to occur.
	AO90.2 Clearing in essential habitat does not exceed the widths prescribed in reference table 1 of this code. OR	
	AO90.3 Clearing in essential habitat does not exceed the areas prescribed in reference table 1 of this code.	
PO91 Where clearing of vegetation in a regional ecosystem that is an area of essential habitat does not maintain the composition, structure and function of the regional ecosystem, and cannot be avoided and has been mitigated, an offset is provided for any acceptable significant residual impact for each protected wildlife species individually.	No acceptable outcome is prescribed.	Does not apply. Clearing of essential habitat for species other than koala is not proposed to occur.
Acid sulfate soils if the local government is not the assessment manager for the development application		
PO92 Clearing does not result in, or accelerate, disturbance of acid sulfate soils or changes to the hydrology of the location that will result in either of the following: 1. aeration of horizons containing iron sulphides; 2. mobilisation of acid or metals.	**AO92.1** Clearing does not occur in land zone 1, land zone 2 or land zone 3. OR	
	AO92.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the five metre Australian Height Datum only occurs where: 1. mechanical clearing does not disturb the soil to a depth greater than 30 centimetres; and	**Complies with PO92/AO92.2** Some clearing may be required on land zone 3, however the project site does not occur below 5 m Australian Height Datum.

Performance outcomes	Acceptable outcomes	Response
	2. acid sulfate soils are managed consistent with the soil management guidelines in the Queensland Acid Sulfate Soil Technical Manual.	

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