

Appendix A

# Desktop Assessment Results





Australian Government

Department of Climate Change, Energy,  
the Environment and Water

# EPBC Act Protected Matters Report

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

Report created: 10-Sep-2025

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# 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](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance (Ramsar)</a>	None
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	8
<a href="#">Listed Threatened Species:</a>	50
<a href="#">Listed Migratory Species:</a>	13

## 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.

<a href="#">Commonwealth Lands:</a>	None
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	23
<a href="#">Whales and Other Cetaceans:</a>	None
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	None

## Extra Information

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

<a href="#">State and Territory Reserves:</a>	3
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">EPBC Act Referrals:</a>	14
<a href="#">Key Ecological Features (Marine):</a>	None
<a href="#">Biologically Important Areas:</a>	None
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

### 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
<a href="#">Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community</a>	Endangered	Community may occur within area	In buffer area only
<a href="#">Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland</a>	Endangered	Community may occur within area	In buffer area only
<a href="#">Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions</a>	Endangered	Community may occur within area	In feature area
<a href="#">Lowland Rainforest of Subtropical Australia</a>	Critically Endangered	Community may occur within area	In buffer area only
<a href="#">Poplar Box Grassy Woodland on Alluvial Plains</a>	Endangered	Community likely to occur within area	In feature area
<a href="#">Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions</a>	Endangered	Community likely to occur within area	In buffer area only
<a href="#">Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions</a>	Endangered	Community likely to occur within area	In buffer area only
<a href="#">Weeping Myall Woodlands</a>	Endangered	Community likely to occur within area	In feature area

### Listed Threatened Species

[\[ Resource Information \]](#)

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Cyclopsitta diophthalma coxeni</a> Coxen's Fig-Parrot [59714]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Erythrotriorchis radiatus</a> Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Geophaps scripta scripta</a> Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Grantiella picta</a> Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Neochmia ruficauda ruficauda</a> Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Poephila cincta cincta</a> Southern Black-throated Finch [64447]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Stagonopleura guttata</a> Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Turnix melanogaster</a> Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<b>FROG</b>			
<a href="#">Taudactylus pleione</a> Kroombit Tinker Frog, Pleione's Torrent Frog [1889]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
<b>MAMMAL</b>			
<a href="#">Chalinolobus dwyeri</a> Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Dasyurus hallucatus</a> Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Dasyurus maculatus maculatus (SE mainland population)</a> 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
<a href="#">Hipposideros semoni</a> Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat [180]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Macroderma gigas</a> Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Petauroides volans</a> Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Petaurus australis australis</a> Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)</a> Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Potorous tridactylus tridactylus</a> Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Pteropus poliocephalus</a> Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
<b>PLANT</b>			
<a href="#">Arthraxon hispidus</a> Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Bosistoa transversa</a> Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Bulbophyllum globuliforme</a> Miniature Moss-orchid, Hoop Pine Orchid [6649]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Cadellia pentastylis</a> Ooline [9828]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Cossinia australiana</a> Cossinia [3066]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Cupaniopsis shirleyana</a> Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Cycas megacarpa</a> [55794]	Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Cycas ophiolitica</a> [55797]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Dichanthium setosum</a> bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Eucalyptus raveretiana</a> Black Ironbox [16344]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Fontainea venosa</a> [24040]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Leuzea australis listed as Rhaponticum australe</a> Austral Cornflower, Native Thistle [9363]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Macadamia integrifolia</a> 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
<a href="#">Polianthion minutiflorum</a> [82772]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Samadera bidwillii</a> Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Sophora fraseri</a> [8836]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<b>REPTILE</b>			
<a href="#">Delma torquata</a> Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Denisonia maculata</a> Ornamental Snake [1193]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Egernia rugosa</a> Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Elseya albagula</a> Southern Snapping Turtle, White-throated Snapping Turtle [81648]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Furina dunmalli</a> Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Hemiaspis damelii</a> Grey Snake [1179]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Rheodytes leukops</a> Fitzroy River Turtle, Fitzroy Tortoise, Fitzroy Turtle, White-eyed River Diver [1761]	Endangered	Species or species habitat may occur within area	In buffer area only

### Listed Migratory Species [ [Resource Information](#) ]

Scientific Name	Threatened Category	Presence Text	Buffer Status
<b>Migratory Marine Birds</b>			
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
<b>Migratory Marine Species</b>			
<a href="#">Crocodylus porosus</a> Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area	In feature area
<b>Migratory Terrestrial Species</b>			
<a href="#">Cuculus optatus</a> Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat may occur within area	In buffer area only
<b>Migratory Wetlands Species</b>			
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat known to occur within area	In feature area

## Other Matters Protected by the EPBC Act

Listed Marine Species			[ Resource Information ]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
<a href="#">Anseranas semipalmata</a> Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Bubulcus ibis as Ardea ibis</a> Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Chalcites osculans as Chrysococcyx osculans</a> Black-eared Cuckoo [83425]		Species or species habitat may occur within area overfly marine area	In buffer area only
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Monarcha melanopsis</a> Black-faced Monarch [609]		Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In buffer area only
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat known to occur within area	In feature area
<a href="#">Pterodroma cervicalis</a> White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Rostratula australis as Rostratula benghalensis (sensu lato)</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Symposiachrus trivirgatus as Monarcha trivirgatus</a> Spectacled Monarch [83946]		Species or species habitat may occur within area overfly marine area	In feature area

## Reptile

<a href="#">Crocodylus porosus</a> Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area	In feature area
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## Extra Information

State and Territory Reserves			[ Resource Information ]
Protected Area Name	Reserve Type	State	Buffer Status
Dan Dan	National Park	QLD	In buffer area only
Futter Creek	Conservation Park	QLD	In buffer area only
Kroombit Tops	National Park	QLD	In buffer area only

EPBC Act Referrals				[ Resource Information ]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
<a href="#">Big G Pumped Hydropower Energy Storage</a>	2024/10056		Referral Decision	In buffer area only
<a href="#">Callide Wind Farm</a>	2021/9057		Post-Approval	In buffer area only
<a href="#">Calvale to Calliope River Transmission Line Reinforcement Project</a>	2024/10044		Assessment	In buffer area only
<a href="#">Powerlink Gladstone to Larcom Creek 275kV Transmission Line</a>	2003/1229		Completed	In buffer area only
<a href="#">Specimen Hill Wind Farm</a>	2020/8864		Post-Approval	In buffer area only
<a href="#">Upper Calliope Solar Farm</a>	2023/09752		Assessment	In buffer area only

## Controlled action

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
<b>Controlled action</b>				
<a href="#">Construct and operate 447km high pressure gas transmission pipeline</a>	2009/4976	Controlled Action	Post-Approval	In feature area
<a href="#">Construction of a high pressure buried gas pipeline, Kogan to Gladstone, QLD</a>	2009/5029	Controlled Action	Post-Approval	In buffer area only
<a href="#">Gas Pipeline with Alternative Pipeline to Supply Natural Gas Liquefaction Park</a>	2008/4096	Controlled Action	Post-Approval	In buffer area only
<a href="#">Queensland Curtis LNG Project - Pipeline Network</a>	2008/4399	Controlled Action	Post-Approval	In buffer area only
<b>Not controlled action</b>				
<a href="#">Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia</a>	2015/7522	Not Controlled Action	Completed	In feature area
<a href="#">Moura Link - Aldoga Rail Project</a>	2007/3773	Not Controlled Action	Completed	In buffer area only
<b>Not controlled action (particular manner)</b>				
<a href="#">Calliope Range Deviation - single carriageway, dual lane road along 4.7km of Dawson Highway</a>	2009/4702	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
<b>Referral decision</b>				
<a href="#">Gas Transmission Pipeline to supply Natural Gas Liquefaction Park</a>	2008/4061	Referral Decision	Completed	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 is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

## 3 DATA SOURCES

### Threatened ecological communities

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

### Threatened, migratory and marine species

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

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

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

## 4 LIMITATIONS

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

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

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

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

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

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

# Acknowledgements

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

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

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

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

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Appendix B

# Likelihood of Occurrence Assessment

## Likelihood of Occurrence Assessment

Scientific Name	Common name	EPBC Act Status <sup>1</sup>	NC Act Status <sup>1</sup>	Preferred Habitat <sup>2</sup>	Likelihood of Occurrence
<b>Fauna</b>					
<b>Birds</b>					
<i>Actitis hypoleucos</i>	Common sandpiper	Mi	SLC	The species utilises a wide range of coastal wetlands and some inland wetlands with varying levels of salinity, mostly around muddy margins or rocky shores and rarely on mudflats. It has been recorded in estuaries and deltas of streams, as well as on banks further upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow and may be steep. It is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags.	<b>No</b> – The species has not been recorded within the Project Area but is known from the search extent. The closest record of the species occurs approximately 23 km north-east of the Project Area (ALA 2024). The Project Area is within the species’ ‘may occur’ distribution as per SPRAT. Limited wetland habitat is available within the Project Area with the extent of potential habitat limited to small farm dams which are generally degraded by stock watering. These areas are not considered likely to attract the species given the limited availability of habitat and extent of disturbance.
<i>Apus pacificus</i>	Fork-tailed swift	Mi	SLC	The species is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher.	<b>Moderate</b> – This species has not been recorded within the Project Area but it is known from the search extent (within 20 km of the Project Area). The nearest record occurs approximately 18 km south-east of the Project Area in Don Don National Park (ALA 2024). Further records occur more broadly around the Project Area associated with large open waterbodies (such as Lake Awoonga) and State Forests. The Project Area is within the species ‘likely to occur’ distribution as per SPRAT. While this species is unlikely to physically occupy mapped habitats within the Project Area, it may utilise the airspace above the Project Area during migration or for foraging.
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	Mi, V	V	The species prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh, or other low vegetation.	<b>Low</b> – The species has not been recorded from the Project Area or the search extent. The closet record is 33 km away on Lake

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				This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans, and hypersaline salt lakes inland. They also occur in salt works and sewage farms.	Awoonga (ALA 2024). Records are predominantly associated with coastal environments, however the species has also been recorded far inland. The Project Area is within the species 'may occur' distribution as per SPRAT. Marginal habitat for this species is available within the Project Area with the extent of potential habitat limited to small farm dams which are generally degraded by stock watering.
<i>Calidris ferruginea</i>	Curlew sandpiper	CE, Mi	CE	The species mainly occurs on intertidal mudflats in sheltered coastal areas such as estuaries, bays, inlets and lagoons, and around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded less often inland, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand, occurring in both fresh and brackish waters.	<b>Low</b> – The species has not been recorded from the Project Area or the search extent. The closet record is 33 km away on Lake Awoonga (ALA 2024). The Project Area is within the species 'may occur' distribution as per SPRAT. Marginal habitat for this species occurs within the Project Area with the extent of potential habitat limited to small farm dams which are generally degraded by stock watering.
<i>Calidris melanotos</i>	Pectoral sandpiper	Mi	SLC	The species prefers shallow fresh to saline wetlands. It is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains, and artificial wetlands.	<b>No</b> – The species has not been recorded from the Project Area or the search extent. The closet record is approximately 95 km north-east of the Project Area near Yeppoon (ALA 2024). The Project Area is within the species 'may occur' distribution as per SPRAT. Suitable habitat for this species is largely absent from the Project Area though small pockets of potentially suitable habitat occurs in association with farm dams. These areas are generally heavily degraded by stock watering and are considered marginally suitable to the species.
<i>Charadrius leschenaultii</i>	Greater sand plover	V, Mi	V	The species is almost entirely coastal, inhabiting littoral and estuarine habitats. They mainly occur on sheltered sandy, shelly, or muddy beaches with large intertidal mudflats or sandbanks, as well as	<b>No</b> – The species has not been recorded within the Project Area but has been identified within the search extent. The closest record occurs approximately 17 km north of the

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				sandy estuarine, and inshore reefs, rock platforms, small rocky islands, or sand cays on coral reefs.	Project Area dated from 2010. This record has a high degree of spatial accuracy and is located approximately 45 km inland from the coast (ALA 2024). While this record occurs approximately the same distance inland as the Project Area, the Project Area lacks any suitable wetland habitat that may support this species for foraging or roosting. The Project Area is within the species 'may occur' distribution as per SPRAT. Generally coastal, this species required open flats to forage which are not present within the Project Area.
<i>Cyclopsitta diophthalma coxeni</i>	Coxen's fig-parrot	CE	CE	The species occurs in rainforest habitats including subtropical rainforest, dry rainforest, littoral and developing littoral rainforest, and vine forest, from sea level to approximately 900 m ASL. The species is likely to favour alluvial areas that support figs and other trees with fleshy fruits. It has also been recorded in other habitat types including corridors of riparian vegetation in woodland, open woodland or other types of cleared habitat and isolated stands of fig or other trees on urban, agricultural or cleared land.	<b>No</b> – This species has not been recorded within the Project Area or the search extent. The nearest record of this species occurs approximately 70 km south of the Project Area, however, this record is dated from 1970 (ALA 2024). The Project Area occurs outside of the species' distribution as per SPRAT. The species is very uncommon within habitats where it is known to occur (in south-east Queensland) and it is unlikely to persist in habitats proximal to the Project Area. While dense vegetation supporting fig tree species ( <i>Ficus sp.</i> ) occur along watercourses within the Project Area, the species is not known from the region and is highly unlikely to occur.
<i>Cuculus optatus</i>	Oriental cuckoo	Mi	SLC	The species uses a range of vegetated habitats such as monsoon rainforest, wet Sclerophyll forest, open woodlands and often along edges of forests, or ecotones between forest types.	<b>Moderate</b> – The species has not been recorded within the Project Area or the search extent. The nearest record occurs approximately 30 km south-east of the Project Area near Wietalaba National Park, with additional records occurring further east and fewer to the west (ALA 2024). The Project Area is within the species' 'may occur' distribution as per SPRAT. Suitable habitat for the species occurs within the Project Area

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					associated with vegetated creeklines and open woodlands.
<i>Erythrotriorchis radiatus</i>	Red goshawk	V	E	The species occurs in coastal and sub-coastal tall open forests and woodlands, preferring areas with a mosaic of vegetation types, permanent water, and abundant small birds. Associated with gorge and escarpment country in partially cleared country in eastern Queensland.	<b>Unlikely</b> – The species has not been recorded within the Project Area or the search extent. Records exist approximately 25 km south of the Project Area in Kroombit Tops National Park, though the latest of these records is from 1997 (ALA 2024). The species has not been recorded in central / southern Queensland recently and is considered extinct from the regions, persisting only in north Queensland. The Project Area is within the species' 'likely to occur' distribution as per SPRAT. Suitable habitat including permanent water, tall forests and woodlands and a mosaic of vegetation communities are limited within the Project Area. In addition, the Project Area does not contain gorge or escarpment country and riparian vegetation is narrow and disconnected.
<i>Falco hypoleucos</i>	Grey falcon	V	V	The species frequents timbered lowland plains, particularly Acacia shrublands that are crossed by tree-lined water courses. The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter.	<b>No</b> – The species has not been recorded within the Project Area or the search extent. The closest record is 109 km west of the Project Area associated with the Dawson River near Moura, however this record is undated, and has a high degree of spatial uncertainty. It is likely that this record originated from further west in the arid or semi-arid zones. No suitable arid or semi-arid habitat occurs within the Project Area which is largely comprised of eucalyptus woodlands, paddock trees and cleared areas. The Project Area is outside of the arid and semi-arid zones where the base annual rainfall is less than 350 mm annually.
<i>Geophaps scripta scripta</i>	Squatter pigeon (southern)	V	V	The species occurs in open, dry woodland with a grassy understorey in proximity to permanent	<b>Known</b> – This species has been recorded on 10 occasions within the Project Area during

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				water. Prefers areas of sandy soil with sparser cover of low grasses; and less common on heavier soils with dense grass cover.	the December 2021 and February 2024 Umwelt field surveys. It was recorded occupying a diversity of habitats including non-remnant pasture grassland, banks of farm dams and low regrowth shrubland.
<b><i>Gallinago hardwickii</i></b>	Latham's snipe	Mi, V	V	In Australia, the species occurs in permanent and ephemeral wetlands up to 2,000 m ASL. They usually inhabit open, freshwater wetlands with low, dense vegetation such as swamps, flooded grasslands or heathlands, around bogs and other water bodies.	<b>Moderate</b> –The species has been recorded from the Project Area (ALA 2024) however, no date is known for this record, and it is associated with a high degree of spatial uncertainty. The next closest record occurs 30 km east near lake Awoonga dated 2015. The Project Area occurs in the species' 'likely to occur' distribution as per SPRAT. The Project Area contains some suitable wetland habitat where farm dams and watercourses are present. Despite the regular occurrence of cattle, one large farm dam provides trailing bank vegetation that could be utilised by the species for shelter, as well as providing areas to forage in shallow margins of farm dams.
<b><i>Grantiella picta</i></b>	Painted honeyeater	V	V	Mostly occurs in woodland habitats which have an abundance of mistletoes. These woodlands are usually dominated by <i>Acacia</i> spp. (e.g. <i>A. harpophylla</i> , <i>A. pendula</i> , and <i>A. aneura</i> ), <i>Casuarina cristata</i> and <i>Allocasuarina luehmannii</i> . Also found in <i>Callitris glaucophylla</i> woodlands in the eastern part of their range, if mistletoes are abundant	<b>Low</b> – The species has not been recorded within the Project Area or the search extent. Records of the species are uncommon in the Project region with the main population concentration trending north-west, away from the coast. The nearest record exists approximately 47 km south-west of the Project Area near Biloela (ALA 2024). This record is an outlier indicating that a small percentage of the population is likely to utilise areas west of the Project Area. The Project Area is within the species' 'may occur' distribution as per SPRAT. Some habitat suitable for the species exists where mistletoe has been recorded in eucalypt or acacia woodlands. Despite being uncommon,

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					mistletoe was recorded at one location in the southern extent of the Project Area.
<i>Hirundapus caudacutus</i>	White-throated needletail	V, Mi	V	The species is found across a range of habitats, more often over woodland areas, where it is almost exclusively aerial, though it roosts in tree hollows and the foliage canopy. It forages for insects aerially, often forming mixed feeding flocks with other species. The species roosts in tall trees at night, mainly in forest habitats.	<b>Moderate</b> - The species has been historically observed within the Project Area (no date supplied) (ALA 2024). Further records exist within the search extent generally associated with large patches of remnant vegetation. The Project Area is within the species 'likely to occur' distribution as per SPRAT. This species is likely to utilise the airspace above vegetated areas within the Project Area to forage. Roosting may occur within large trees associated with woodlands and forests within the Project Area.
<i>Limosa lapponica baueri</i>	Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit	E	E	This species forages near the edge of water bodies or in shallow water within the intertidal zone of estuaries and harbours. Foraging usually occurs on exposed sandy or soft mud substrates on intertidal flats and beaches. Roosting occurs on large intertidal sandflats, spits and banks. Occasionally roosts occur within mudflats, estuaries, coastal lagoons and bays.	<b>No</b> – The species has not been recorded within the Project Area or the search extent. The nearest records of this species occur in association with coastal habitats approximately 42 km east of the Project Area (ALA 2024). The Project Area occurs outside of the species mapped distribution as per SPRAT. No suitable intertidal habitat for this species occurs within the Project Area. Some farm dams exist which are unlikely to provide suitable resources for the species.
<i>Limosa lapponica</i>	Bar-tailed godwit	Mi	SLC	This species forages near the edge of water bodies or in shallow water within the intertidal zone of estuaries and harbours. Foraging usually occurs on exposed sandy or soft mud substrates on intertidal flats and beaches. Roosting occurs on large intertidal sandflats, spits and banks. Occasionally roosts occur within mudflats, estuaries, coastal lagoons and bays.	<b>No</b> – The species has not been recorded within the Project Area or the search extent. The nearest records of this species occur in association with coastal habitats approximately 42 km east of the Project Area (ALA 2024). The Project Area occurs outside of the species mapped distribution as per SPRAT. No suitable intertidal habitat for this species occurs within the Project Area. Some farm dams exist which are unlikely to provide suitable resources for the species.

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<i>Motacilla flava</i>	Yellow wagtail	Mi	SLC	Habitat requirements for the species are highly variable, but typically include open grassy flats near water. Habitats include open areas with low vegetation such as grasslands, airstrips, pastures, sports fields; damp open areas such as muddy or grassy edges of wetlands, rivers, irrigated farmland, dams, waterholes; sewage farms, sometimes utilise tidal mudflats and edges of mangroves.	<b>No</b> – The species has not been recorded within the Project Area or the search extent. Records of this species are uncommon in the Project region as this species is a vagrant bird to Australia with the nearest record occurring approximately 47 km east of the Project Area near Tannum Sands dated 2016 (ALA 2024). The Project Area occurs outside of the species’ mapped distribution as per SPRAT. While suitable low, open vegetation occurs within the Project Area, this habitat is widespread throughout Queensland and the species is unlikely to be attracted to the Project Area due to the availability of habitat.
<i>Neochmia ruficauda ruficauda</i>	Star finch	E	E	The species inhabits tall grass and reed beds associated with swamps and watercourses. It may also be found in grassy woodlands, open forests and mangroves.	<b>No</b> – The subspecies has not been recorded within the Project Area or the search extent. The closest record is 86 km away in the Rockhampton region, however this record is historical (dated 1860) (ALA 2024). The subspecies has undergone a significant reduction in range and is now considered potentially extinct. Some areas within the Project Area may meet the species foraging requirements with grasslands and reeds around agricultural dams. However, these areas consist primarily of exotic vegetation and are generally degraded by stock.
<i>Numenius madagascariensis</i>	Eastern curlew	CE, Mi	CE	The species occurs in sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass (Zosteraceae). The species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. They are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes within the mangroves. They are also found in coastal saltworks and sewage farms.	<b>No</b> – The subspecies has not been recorded within the Project Area or the search extent. Records exist in association with coastal environments to the east of the Project Area, however, no valid records are known from freshwater environments within the Project region. The Project Area is partially within the species’ ‘may occur’ distribution as per SPRAT. No intertidal marine habitat is available within the Project Area. Therefore,

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					there is an unlikely likelihood it occurs within the Project Area
<b><i>Pandion haliaetus</i></b>	Osprey	Mi	SLC	Along rivers, creeks or other vegetated waterways where the waterway supports occasional pools	<p><b>Moderate</b> – The species has been recorded within the Project Area based on an undated record (ALA 2024) submitted with a high degree of spatial uncertainty. The next closest record exists approximately 1.8 km north of the Project Area on Mount Alma Road associated with Harper Creek. This record is likely derived from a large nearby waterbody (farm dam) and is dated from 2016. The Project Area is within the species’ ‘likely to occur’ distribution as per SPRAT. While the species has been recorded recently and nearby, the Project Area supports very little suitable habitat for the species.</p> <p>Approximately 350 m east of the Project Area is Tom’s Hole, a large freshwater wetland off Tom’s Creek. Dispersal habitat for the species may occur in association with riparian vegetation along mapped watercourses. During dispersal inland, the species may intermittently utilise farm dams to hunt for fish, though this is likely limited to the condition of the waterbody and the availability of fish prey.</p>
<b><i>Poephila cincta cincta</i></b>	Southern black-throated finch	E	E	The species inhabits grassy, open woodlands and forests, typically dominated by <i>Eucalyptus spp.</i> including <i>E. crebra</i> , <i>E. camaldulensis</i> and <i>E. melanophloia</i> , <i>Corymbia spp.</i> and <i>Melaleuca spp.</i> , and occasionally in tussock grasslands or other habitats often along or near watercourses, or in the vicinity of water.	<p><b>No</b> – The species has not been recorded within the Project Area or the search extent. Historical records exist in Gladstone and Rockhampton, with further records extending north-west into areas previously occupied by the subspecies. No relevant records are known from within 100 km of the Project Area and the species is considered absent from the region (ALA 2024). While grassy woodland habitat occurs within the Project Area, it is</p>

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					outside of the species mapped distribution as per the SPRAT.
<i>Rostratula australis</i>	Australian painted snipe	E	E	The species occurs in shallow freshwater wetlands or saltmarshes, including inundated grasslands, dams and bore drains, generally with good cover of grasses or low scrub.	<b>Low</b> – The species has not been recorded within the Project Area or the search extent. Few records of the species occur within the Project region with the closest occurring approximately 44 km away in Gladstone dated 2011 (ALA 2024). While few records exist, the species is widespread in eastern Australia and is highly mobile. The Project Area is within the species’ ‘likely to occur’ habitat as per SPRAT. Some preferred habitat is within the Project Area, though limited to agricultural dams with varying degrees of disturbance mostly from stock and weed incursion. These habitats lack timber structure and overhanging bank vegetation and are not considered suitable to support the species.
<i>Stagonopleura guttata</i>	Diamond firetail	V	V	Habitat includes Eucalyptus, Acacia or Casuarina woodlands, open forests and other lightly timbered habitats, including farmland and grassland with scattered trees. Includes areas of relatively low tree density, few large logs and little litter cover but high grass cover.	<b>Low</b> – The species was not recorded in the Project Area during field surveys, but it is known from one record located approximately 19 km east of the Project Area (ALA 2025). This record has a high degree of spatial uncertainty, and no date has been attributed. The next nearest records of the species occur approximately 75 km south of the Project near Kalpower where a number of records were made in 2019 and 2020. The Project Area occurs partially within the species’ ‘may occur’ distribution as per SPRAT with the remaining area located outside of this mapping. Diamond firetail is uncommon in the Project region, with the concentration of the species population occurring further south into south-east

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<i>Tringa nebularia</i>	Common greenshank	E	E	The species is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass. Habitats include embayments, harbours, river estuaries, deltas and lagoons.	<b>No</b> – The species has not been recorded within the Project Area. There is one record within the Project Area with a high spatial inaccuracy of 9 km. The nearest accurate record of the species occurs near Taragoona near Lake Awoonga however this record is dated from 1979 (ALA 2024). Further, more recent records occur to the north near Port Alma where the species has been recorded on multiple occasions associated with tidal pools and estuaries. The Project Area occurs outside of the species' mapped distribution as per SPRAT. No suitable habitat is present within the Project Area with the extent of wetland habitats limited to degraded agricultural dams. These areas are unlikely to provide suitable habitat resources for the species.
<i>Turnix melanogaster</i>	Black-breasted button-quail	V	V	The species is restricted to rainforests and forests, mostly in areas with 770-1200 mm rainfall per annum. They prefer drier low closed forests, particularly semi-evergreen vine thicket, low microphyll vine forest, <i>Araucarian microphyll</i> vine forest and <i>Araucarian notophyll</i> vine forest. They may also be found in low, dense Acacia thickets and, in littoral areas, in vegetation behind sand dunes.	<b>Low</b> – This species has not been recorded in the Project Area or the search extent. Records of this species occur throughout the east coast of Queensland, generally associated with dense thickets and coastal forest. The nearest relevant records occur north-east of the Project Area near Tannum Sands, approximately 45 km east. These records are dated from 2022 (ALA 2024). The Project Area is within the species' 'may occur' distribution as per SPRAT. Limited habitat occurs within the Project Area that could support this species with the extent of dense vegetation confined to watercourse lines which have generally experienced a high degree of disturbance. These areas are not connected to adjacent suitable habitat and are unlikely to provide a corridor for movement of the species.

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<b>Mammals</b>					
<i>Chalinolobus dwyeri</i>	Large-eared pied bat	E	E	Sandstone cliffs and fertile woodland valley habitat within proximity of each other is habitat of importance to the species. Rainforest and moist eucalypt forest habitats on other geological substrates (rhyolite, trachyte and basalt) at high elevation are of similar importance.	<b>No</b> – The species has not been recorded within the Project Area or search extent. The nearest records exist approximately 190 km west of the Project Area in the Dawson State Forest, and further south in the Arcadia Valley (ALA 2024). The Project Area does not occur within the species’ mapped distribution as per SPRAT. No suitable sandstone cliffs or caves occur within or around the Project Area and as such, the species is unlikely to utilise eucalypt woodland within the Project Area for foraging.
<i>Dasyurus hallucatus</i>		E	-	This species occupies a diversity of habitats including rocky areas, eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrubland, grasslands and desert. The species generally requires some form of rocky area for denning purposes, with surrounding vegetated habitats used for foraging and dispersal.	<b>Low</b> - This species was identified in the PMST as ‘species or species habitat likely to occur’ within the Project Area. A WildNet record from 2009 occurs approximately 40 km north of the Project Area in Telina, Gladstone. Numerous ALA records are also known from Kroombit Tops National Park, approximately 28 km south-east of the Project Area, with the most recent from 2018.  Within the Project Area, suitable habitat for the northern quoll is limited, as the species prefers rocky landscape features and surrounding vegetated habitats. Given that the Project Area is dominated by non-remnant pastures on low-relief landforms and lies at the southern extent of the species’ known distribution, the likelihood of occurrence is considered low.
<i>Dasyurus maculatus maculatus (SE mainland population)</i>	Spotted-tailed quoll	E	E	The Spotted-tailed Quoll inhabits a variety of habitats, all characterized by high and predictable seasonal rainfall. The southern subspecies has been recorded from a wide range of habitats including rainforest, wet and dry Sclerophyll forest, coastal heathland, scrub and dunes, woodland,	<b>No</b> – The species has not been recorded from the Project Area or the search extent. The closet record occurs approximately 17 km away, however, this record is dated from 1935 (ALA, 2024). The Project Area occurs outside of the species mapped distribution as per

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				heathy woodland, swamp forest, mangroves, on beaches and sometimes in grassland or pastoral areas adjacent to forested areas. Both wet and dry forest habitats have recorded relatively high densities of this species. Den sites include rock crevices, hollow logs, hollow tree buttresses, tree hollows, windrows, vegetation clumps, caves, boulder tumbles, under buildings, and underground burrows, including those of rabbits and wombats. Maternal dens are found in rock crevices, caves, boulder tumbles, hollow logs, hollow tree roots, and burrows. When a suitable substrate is available, female quolls will dig burrows.	SPRAT. Limited suitable habitat occurs within the Project Area. While eucalypt woodland occurs within the Project Area, they are not connected to high value habitats and areas of suitable habitat are not extensive. In addition, denning opportunities are uncommon with the absence of rocky areas.
<b><i>Hipposideros semoni</i></b>	Semon's leaf-nosed bat	V	E	The species mainly occurs in rainforest and in riparian vegetation adjacent to rainforest. Roost sites have been recorded in abandoned buildings, houses, caves, trees, old mines, cracks in rocks and under rock overhangs. Not much is known on the ecology of this species.	<b>No</b> – The species has not been recorded within the Project Area or the search extent. The closest records occur approximately 28 km south of the Project Area in Kroombit Tops National Park (ALA 2024). These records are associated with habitat connected to potential roost sites and occur in dense rainforest or riparian vegetation with a high degree of connectivity to surrounding habitat. The Project Area occurs outside of the species' mapped distribution as per SPRAT. Woodlands suitable for this species are absent from the Project Area which is largely comprised of previously cleared regrowth woodland and patches of degraded remnant vegetation. A low degree of connectivity to surrounding habitats is afforded by the Project Area.
<b><i>Macroderma gigas</i></b>	Ghost bat	V	E	The species occurs throughout a wide range of habitats from rainforest, monsoon and vine scrub to open woodlands in arid areas. These habitats are used for foraging, while roost habitat is more specific. Favoured roosting sites of the species are	<b>Low</b> – The species has not been recorded from the Project Area or the search extent. One record of the species exists directly west (approximately 46 km) and another to the north-east (approximately 42 km). Both of

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				undisturbed caves or mineshafts which have several openings.	these records are dated from 1985. The nearest relevant records to the Project Area occur at Mount Etna, approximately 108 km north of the Project Area, north of Rockhampton (ALA 2024). The Project Area is within the species' 'likely to occur' distribution as per SPRAT. No suitable cave sites occur within the Project Area and the surrounding landscape is unlikely to provide roosting habitat. Therefore, the species is unlikely to utilise eucalypt woodland within the Project Area for foraging.
<b><i>Nyctophilus corbeni</i></b>	Corben's long-eared bat	V	V	The species inhabits a range of inland dry forest habitats including <i>Eucalyptus camaldulensis</i> , mallee, <i>Acacia harpophylla</i> and other arid and semi-arid habitats; in southern Queensland it is more common in box, ironbark and cypress pine forests on sandy soils. The species is most abundant in vegetation with a distinct canopy and a dense, cluttered shrub layer, and in large, continuous remnants. Roosts solitarily in tree hollows, crevices, and under loose bark (particularly on dead <i>Allocasuarina luehmannii</i> or <i>Casuarina cristata</i> ).	<b>Low</b> – The species has not been recorded within the Project Area or the search extent. Records are uncommon within the Project region, occurring further west with the nearest record occurring approximately 185 km west of the Project Area in the Dawson Range State Forest (ALA 2024). The Project Area occurs outside of the species' mapped distribution as per SPRAT. Woodland habitat occurring within the Project Area is marginally suitable for the species, primarily lacking the cluttered understory and roosting opportunities of habitat further west of the Project Area in the Brigalow Belt. The species also requires large patches of suitable habitat which are not afforded within the Project Area.
<b><i>Petauroides volans volans</i></b>	Greater glider (southern)	E	E	The species is largely restricted to eucalypt forests and woodlands; it is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. This species is known to occur from Bundaberg in Queensland to Victoria and includes two subspecies ( <i>Petauroides volans incus</i> and <i>Petauroides volans volans</i> ).	<b>Moderate</b> – The species has not been recorded from the Project Area but is known from the search extent. Records exist between 10 km and 20 km south of the Project Area in Maxwellton State Forest dating from 2017 to 2020. The Project Area occurs within the species' 'likely to occur' distribution as per SPRAT. The species may use eucalypt woodlands within the Project

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					Area, particularly areas where hollows suitable for denning occur.
<b><i>Petaurus australis brevirostrum</i></b>	Yellow-bellied Glider (south-eastern)	V	V	The species occurs in eucalypt-dominated woodlands and forests, including both wet and dry Sclerophyll forests. It shows a preference for large patches of mature old growth forests that provide suitable trees for foraging and shelter. There is also a clear preference for forests with a proportion of winter-flowering and smooth-barked eucalyptus. The species requires some level of floristic diversity to provide a year round food supply and are unlikely to persists in forests dominated by only one or two tree species.	<b>Low</b> – The species has not been recorded from the Project Area or the search extent. Records of the species occur approximately 20 km west of the Project Area in the Don River State Forest, and further south in the Maxwellton State Forest and Kroombit Tops National Park (ALA 2024). These records are associated with large patches of continuous eucalyptus forest and woodland. The Project Area occurs partially within the species’ ‘may occur’ distribution as per SPRAT. While eucalypt woodland is mapped within the Project Area, the species requires large patches of suitable habitat for population maintenance. Habitats within the Project Area are largely fragmented and occur mostly in regrowth condition. These areas are considered to have a low likelihood of supporting a population of the species.
<b><i>Phascolarctos cinereus</i></b>	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	E	E	The species inhabits a range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by Eucalypt species. The species is limited by habitat (restricted to below 800 m ASL, temperature and, at the western and northern ends of the range, leaf moisture.	<b>Moderate</b> - The species has been historically observed within the Project Area with a single record occurring in the north-western corner along Duck Holes Creek in 1985 (ALA 2024). Most records of the species in the project region are historical, recorded in either the 1980s or 1990s, with the nearest relevant record occurring approximately 24 km north-east of the Project Area near Aldoga, dated 2015. The Project Area is within the species’ ‘likely to occur’ distribution as per SPRAT. If the species is present within the region, it may use eucalypt woodland vegetation and paddock trees within the Project Area for breeding, foraging and dispersal.

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<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo (northern)	V	V	Long-nosed potoroo occurs in wet eucalypt forests to coastal heath and scrubs. There is no consistent pattern to the habitat of the species apart from the presence of an abundant supply of fungi (for food) and dense vegetation for shelter.	<b>No</b> – The species has not been recorded from the Project Area or the search extent. The nearest record exists approximately 70 km south-east of the Project Area associated with Bulburin National Park (ALA 2024). The Project Area occurs outside of the species’ mapped distribution as per SPRAT. No wet eucalypt forest occurs within the Project Area and mapped eucalypt woodlands have a limited degree of connectivity with surrounding habitats.
<i>Pteropus poliocephalus</i>	grey-headed flying-fox	V	LC	The species occurs in rainforests, open forests, woodlands and melaleuca swamps. Roosting camps are usually in dense riparian vegetation.	<b>Moderate</b> – The species has not been recorded from the Project Area or the search extent. The nearest record of the species is from a flying-fox camp in Calliope located approximately 28 km east of the Project Area dated 2019 (ALA 2024). The Project Area occurs within the species’ ‘may occur’ distribution as per SPRAT. The Project Area contains suitable Winter/Spring flowering eucalypts suitable for foraging in mapped woodlands and is within the nightly foraging commute distance of the Calliope flying-fox camp.
<b>Reptiles</b>					
<i>Delma torquata</i>	Adorned delma	V	V	The species inhabits eucalypt-dominated woodlands and open-forests in Queensland Regional Ecosystem Land Zones 3 (alluvium), 9 (undulating country on fine-grained sedimentary rocks) and 10 (sandstone ranges).	<b>Low</b> – The species has not been recorded from the Project Area or the search extent. Records of the species occur within the Project region associated with slopes of the Great Dividing Range. In particular, records are known from Kroombit Tops National Park located approximately 30 km south of the Project Area dated 2010. One further record exists 50 km north-west of the Project Area on the Ulam Range, however, this record is dated 1989. The Project Area is within the species’ ‘may occur’ distribution as per the SPRAT.

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					Vegetation structure within the Project Area is similar to where this species has been recorded, however, habitats within the Project Area are subject to a high degree of disturbance from grazing and clearing. Large areas of the Project Area are mapped as regrowth vegetation and is unlikely to support the species.
<b><i>Denisonia maculata</i></b>	Ornamental snake	V	V	The species inhabits lower-lying subtropical areas with deep-cracking clay soils and adjacent slightly elevated ground of clayey and sandy loams. The species is also found in vegetation of woodland and shrub land, including <i>Acacia harpophylla</i> , riverside woodland and open forest, particularly on natural levees.	<b>Low</b> – The species has not been recorded from the Project Area or the search extent. The nearest record occurs approximately 45 km south-west of the Project Area near Biloela (ALA 2024). The Project Area is partially within the species ‘likely to occur’ distribution as per SPRAT. While limited habitat for this species occurs within the Project Area in association with vegetation occurring on land zone 3 these areas do not support relevant microhabitat features including cracking clays or high water retention capacity necessary for the long-term maintenance of prey species, including frogs. In addition, these areas are often degraded by stock and do not support the range of microhabitat features required by the species (primarily soil cracks).
<b><i>Egernia rugosa</i></b>	Yakka skink	V	V	The species occurs in a variety of drier forests and woodlands, usually on well-drained, gritty soils, including <i>Eucalyptus populnea</i> on alluvial soils, <i>Callitris glaucophylla</i> on sands, <i>Allocasuarina luehmannii</i> , <i>Acacia harpophylla</i> , <i>Acacia catenulata</i> and <i>Acacia aneura</i> . The species inhabits burrows, abandoned rabbit warrens, and hollow logs or in deep rock crevices.	<b>Moderate</b> – The species has not been recorded from the Project Area or the search extent. The closet record is 29 km away near Mount Larcom (ALA 2024), however this record is associated with a high degree of spatial uncertainty. The Project Area is within the species’ ‘may occur’ distribution as per SPRAT. Some suitable habitat may be present on land zone 3, analogous with RE 11.3.2 ( <i>Eucalyptus populnea</i> ) woodlands on alluvial soils, where rocks, logs and dense ground

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					cover is present. Given the species is wide-spread, highly cryptic and found in a broad range of habitat types. Therefore, based on the precautionary principle, with suitable habitat and microhabitat present in the Project Area, <i>E. rugosa</i> is assumed to have a moderate likelihood of occurrence.
<b><i>Elseya albagula</i></b>	Southern snapping turtle	CE	CE	The species is only found in the Burnett, Fitzroy, Raglan and Mary River drainages of south-east Queensland. It prefers permanent flowing water habitats where there are suitable shelters and refuges.	<b>No</b> – The species has not been recorded from the Project Area or the search extent. Records of this species are uncommon within the Project region with the nearest occurring approximately 28 km north near Ambrose (ALA 2024). The Project Area occurs outside of the species’ mapped distribution as per SPRAT. No records are known from the Calliope River catchment where the watercourses of the Project Area occur. Watercourses which do occur within the Project Area are ephemeral and do not flow year round.
<b><i>Furina dunmalli</i></b>	Dunmall's snake	V	V	The species is found in a broad range of habitats, including forests and woodlands on black alluvial cracking clay and clay loams dominated by <i>Acacia harpophylla</i> , <i>Acacia spp.</i> , <i>Callitris spp.</i> or <i>Allocasuarina luehmannii</i> ; and <i>Corymbia citriodora</i> , <i>Eucalyptus crebra</i> and/or <i>E. melanophloia</i> , <i>Callitris glaucophylla</i> and/or <i>A. luehmannii</i> open forest and woodland associations on sandstone derived soils.	<b>Low</b> – The species has not been recorded from the Project Area or the search extent. The nearest relevant record to the Project Area occurs 57 km south near Cania dated 2013 (ALA 2024). Other records occur near Gladstone and Tannum Sands, however these are historical and associated with a high degree of spatial uncertainty. The Project Area is within the species’ ‘may occur’ distribution as per SPRAT. Alluvial soils occur within the Project Area and may form cracking clays in some areas however, microhabitat values such as dense woody debris used as shelter is rarely abundant as is preferred by the species. This habitat may be considered ‘suitable habitat’ as per <i>Draft Referral Guidelines for Nationally Listed Brigalow Belt</i>

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					<i>Reptiles</i> , however, these areas are usually subject to a high degree of disturbance from stock. Associated tree species are uncommon on alluvial soils within the Project Area.
<b><i>Hemiaspis damelii</i></b>	Grey snake	E	E	In Queensland, grey snake habitat is <i>Acacia harpophylla</i> and <i>Casuarina cristata</i> woodlands on heavy, dark brown to black cracking clay soils, particularly in association with water bodies, areas with small gullies and ditches, and floodplain environments where the species shelters beneath logs, rocks and soil cracks. Habitat in Queensland also includes <i>Dichanthium sericeum</i> and/or <i>Astrebla</i> spp. grassland on alluvial plains with cracking clay soils. Grey snake occurrence on the western downs of Queensland has a strong positive association with red sodosol soils which have a strong texture contrast between the A horizon and sodic B horizon, and which are often quite dense and coarsely structured (blocky, prismatic or columnar peds) favouring the crack-inhabiting and foraging ecology of this species (Apan et al. 2010). Key attributes of grey snake habitat are the floodplains and ephemeral wetlands which provide breeding habitat for the frog species that are its main prey, the presence of the frog species themselves, and the heavy clay soils which provide and cracks and crevices that the species uses in its hunting strategy and for shelter.	<b>No</b> - The species has not been recorded from the Project Area or the search extent. Records of the species within the Project region are rare. The nearest records occur near Rockhampton, approximately 81 km north of the Project Area (ALA 2024). The Project Area is within the species' 'may occur' distribution as per SPRAT. Limited habitat is available within the Project Area for this species given the absence of <i>Acacia harpophylla</i> and <i>Casuarina cristata</i> . In addition, the Project Area lacks suitable landforms which support gilgai and cracking clays necessary for prey species and the grey snake's long brumation period. The Project Area is largely comprised of eucalypt woodlands and pasture grassland.
<b><i>Rheodytes leukops</i></b>	Fitzroy river turtle	V	V	The species is a benthic feeder that occurs in flowing rivers with large deep pools with rocky, gravelly, or sandy substrates, connected by shallow riffles. Preferred areas have high water clarity and are often associated with ribbonweed ( <i>Vallisneria</i> sp.) beds. Commonly associated riparian vegetation includes <i>Eucalyptus</i>	<b>No</b> – The species has not been recorded from the Project Area or the search extent. No records of the species exist within the Calliope River catchment with the nearest record occurring in the Fitzroy River catchment approximately 67 km north of the Project Area in the Fitzroy River (ALA 2024).

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				<i>tereticornis</i> , <i>Casuarina cunninghamiana</i> , <i>Melaleuca viminalis</i> and <i>Melaleuca linariifolia</i> .	The Project Area is partially within the species' 'may occur' distribution as per SPRAT. Watercourses of the Project Area are ephemeral and do not contain large, deep pools which are suitable to this species.
<b>Amphibians</b>					
<i>Taudactylus pleione</i>	Kroombit tinker frog	CE	CE	The species is known to occur in <i>Archontophoenix cunninghamiana</i> rainforest and boulder scree gullies. It is found around rocky shelves and boulders, under rocks or in deep rock piles near temporary streamlines, seepage zones and in sheltered rock fragments at the base of cliffs (rocky scree). Important habitat for this species has been identified as rainforest patches over 500 m in altitude in Kroombit Tops National Park and Kroombit Forest Reserve.	<b>No</b> – The species has not been recorded from the Project Area or the search extent. The closest record is 32 km south of the Project Area in Kroombit Tops National Park, dated 2015 (ALA 2024). The Project Area occurs outside of the species' mapped distribution as per SPRAT. Suitable rainforest and boulder scree gully habitat is not present within the Project Area and this species is only known from within Kroombit Tops National Park and Kroombit Forest Reserve.
<b>Other Migratory species</b>					
<i>Crocodylus porosus</i>	Salt-water crocodile	Mi	V	The species mostly occurs in tidal rivers, coastal floodplains and channels, billabongs and swamps up to 150 km inland from the coast. It usually inhabits the estuarine reaches of rivers. In Qld, the species is usually restricted to coastal waterways and floodplain wetlands. Floating rafts of vegetation provide important nesting habitat.	<b>No</b> – The species has not been recorded from the Project Area or the search extent. The nearest relevant records of the species occur in the Fitzroy River approximately 80 km north of the Project Area (ALA 2024). The Project Area occurs within the species' 'likely to occur' distribution as per SPRAT. Watercourses within the Project Area are unlikely to support this species given their ephemeral nature, the distance from coastal environments and the species absence or infrequent occupation of marine habitats at the mouth of the Calliope River.
<b>Flora</b>					
<i>Acacia eremophiloides</i>	-	V	V	<i>Acacia eremophiloides</i> is found predominantly in open forest or open woodland with an open to sparse shrub understorey. It grows on exposed rocky granite ridges and in open communities	<b>Low</b> – The main distribution of this species is a 10 km <sup>2</sup> area around Beeron National Park, approximately 200 km south of the Project Area, as per SPRAT. There is one isolated

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				among large granite boulders. It occurs on shallow, sandy, well-drained soils, comprising decomposed granite and organic matter. <i>A. eremophiloides</i> is found at altitudes between 460-550 m.	<p>recorded of this species from 2000 at Dan Dan State Forest, located approximately 15 km south-west of the Project Area. This record is associated with SEVT communities on metamorphic.</p> <p>This species was not identified during ecological field surveys, and suitable habitat, associated with exposed granite ridgelines with scrub (i.e. SEVT) was not identified within the Project Area. Furthermore, the Project Area reaches a maximum of 120 m ASL, therefore suitable habitat is likely located to the south-west of the Project Area, where elevation is above 460 m ASL.</p>
<b><i>Arthraxon hispidus</i></b>	Hairy-joint grass	V	V	The species is found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps, as well as woodland. It has also been recorded growing around freshwater springs on coastal foreshore dunes, in shaded small gullies, on creek banks, on sandy alluvium in creek beds in open forests, and with bog mosses in mound springs.	<b>Low</b> – This species has not been recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia). The Project Area is located adjacent to the species known and likely distribution as per SPRAT. Potential suitable habitat it mapped within the Project Area, analogous with REs 11.3.1 and 11.3.25. However, the potential habitat was observed to have high threatening processes, including high infections of exotic grass species. This species was not recorded during ecological field surveys, and due to the degraded state of the microhabitat necessary to support it, the likelihood of its occurrence is reduced.
<b><i>Bosistoa transversa</i></b>	Three-leaved bosistoa	V	-	This species grows in lowland subtropical rainforest up to 300 meters above sea level. It is often found on steep slopes with dark organic loam over basalt. Associated species include <i>Heritiera actinophylla</i> (White Booyong), <i>Syzygium moorei</i> (Smooth-bark Rose Apple), <i>Endiandra pubens</i> (Hairy Walnut), and <i>Dendrocnide excelsa</i> (Shiny Leaf Stinging Tree). Umwelt also have	<b>Low</b> – This species has not been recorded in the Project Area or the desktop search extent (Wildlife Online, ALA 2025). The Project Area is located adjacent to the species habitat known and likely distribution as per the SPRAT database. There is no potential suitable habitat (REs analogous with subtropical lowland rainforest) mapped within the Project Area.

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				records that are associated with notophyll or Auracarian dominated vegetation communities.	
<b><i>Bulbophyllum globuliforme</i></b>	Miniature moss-orchid	V	NT	The species is host-specific, only growing on the hoop pine, where it colonises the upper branches of mature trees. The hoop pine occurs in upland (usually 100-900 m above sea level) subtropical rainforest communities.	<b>No</b> - Atlas of Living Australia records show that this species has been previously recorded in April 2024 at Kroombit Tops National Park, located approximately 17 km south of the Project Area. The exact coordinates of this record has been generalised by 2 km to protect the species. The Project Area is located adjacent to the 'species or species habit likely to occur' range as per the SPRAT. The Project Area reaches a maximum of 120 m ASL. Field investigations identified no suitable habitat within the Project Area, associated with <i>Araucaria cunninghamii</i> populations, which is considered a host plant for <i>B. globuliforme</i> .
<b><i>Cadellia pentastylis</i></b>	Ooline	V	V	This species occurs on a range of vegetation types including semi-evergreen vine thicket, <i>Acacia harpophylla</i> – <i>Casuarina cristata</i> , Eucalyptus populnea and <i>Acacia catenulata</i> communities at 200 - 500 m ASL. It often occurs on the edges of sandstone and basalt escarpments on moderately fertile soils.	<b>No</b> – This species has not been recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia) and the Project Area is located outside of the species' 'may occur' and 'likely to occur' distribution as per SPRAT. Potential suitable habitat, analogous with REs 11.3.2 and 11.12.17 is mapped within the Project Area, however targeted surveys did not detect the presence of this species. Furthermore, the Project Area is located below the altitudinal distribution of the species and the underlying geology does not contain sandstone and basalt derived soils, lowering the likelihood of occurrence.
<b><i>Cossinia australiana</i></b>	Cossinia	E	E	The species is known from fragmented relict patches of araucarian vine forests or vine thickets on fertile soils. At most sites it is recorded as uncommon, usually as scattered individuals.	<b>No</b> – This species has not been recorded within the Project Area or the search extent, and the closet record is 31 km away within Callide Timber Reserve. The Project Area is

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					located within the species' 'may occur' distribution as per SPRAT. No suitable habitat was identified within the Project Area, analogous with <i>Araucaria cunninghamii</i> vine thickets communities, therefore reducing the likelihood of occurrence.
<b><i>Cupaniopsis shirleyana</i></b>	Wedge-leaf tuckeroo	V	V	The species occurs in a variety of dry rainforest vegetation types, including vine thicket communities on hillsides, stream beds and along riverbanks at altitudes up to 550 m ASL. This species is also likely to occur on the margins of native vegetation in scrubby urbanised areas. It is predominately found on dark brown sandy loams and sandy clay loams (pH 5-7.5) and rocky scree slopes.	<b>Low</b> – This species has not been recorded within the desktop search extent (ALA, WO). The known distribution of this species is limited to approximately 30 km south of Rockhampton as per SPRAT. Although some suitable habitat may exist within the Project Area analogous with vine thicket communities (RE 11.12.7), these areas are associated with granite hills. Microphyll communities on dark brown sandy loams was not identified within the Project Area, therefore reducing the likelihood of occurrence.
<b><i>Cycas megacarpa</i></b>	-	E	E	The species is found in woodland, open woodland and open forests, often in conjunction with a grassy understory. This species is found in habitat dominated by <i>Eucalyptus crebra</i> and <i>Corymbia citriodora</i> as well as <i>Corymbia erythrophloia</i> , <i>Eucalyptus melanophloia</i> and <i>Lophostemon confertus</i> . There are also reports that it can be found in or on the edge of rainforest habitat. 40–600 m above sea level. (Halford 1995; DEWHA 2008).	<b>Low</b> – This species has been previously recorded within the desktop search extent, with multiple contemporary records from 2023, 2020 and 2024 located up to 6 km from the Project Area. The Project Area is located within the species' 'known distribution' as per SPRAT. Based on the initial likelihood of occurrence assessments, this species was targeted as part of the threatened flora surveys in accordance with Cropper (1993) in suitable habitat (RE 11.12.1) mapped throughout the Project Area. This species is easily identifiable and despite targeted surveys, the species was not detected. Given the absence of this species during targeted surveys and the fact that the majority of suitable habitat within the Project

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					Area has been historically cleared and is now in a mature regrowth state, it is considered to have a low likelihood of occurrence due to its slow germination rates.
<i>Cycas ophiolitica</i>	-	E	E	The species occurs on hills and slopes in sparse, grassy open forest at altitude ranges from 80–400 m asl. It is frequently found on shallow, stony, infertile soils developed on sandstone and serpentinite, and is often associated with species such as <i>Blakella dallachiana</i> , <i>Corymbia erythrophloia</i> , <i>Corymbia xanthope</i> and <i>Eucalyptus fibrosa</i> . Climate in the habitat of the species is tropical with hot, humid Summers and mild, dry winters.	<b>No</b> - This species has not been previously recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia). The Project Area is located within the edge of the species' 'may occur' distribution as per SPRAT. Although the Project Area occurs within the preferred altitudinal range of the species, no indicator species were recorded throughout the Project Area, and the underlying geology does not contain sandstone and serpentinite. This species is easily identifiable and was not detected during ecological surveys, lowering the likelihood of occurrence.
<i>Dichanthium setosum</i>	Bluegrass	V	LC	The species occurs on heavy soils (predominantly cracking clays or alluvium, often in gilgai) in woodland or open woodland usually dominated by Acacia and/or Eucalyptus species. Associated climate is tropical to subtropical and seasonal, with the habitat drying out for part of the year.	<b>No</b> - This species has not been recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia). The Project Area is located within the 'species or species habitat likely to occur' range as per the SPRAT and suitable habitat may occur for this species, analogous with RE 11.3.2 on alluvium; however, there are no records for this species throughout the broader region. The closest record is located approximately 260 km west, near Rolleston. The species is considered unlikely to occur.
<i>Eucalyptus raveretiana</i>	-	V	LC	The species usually grows along watercourses, to a lesser extent river flats or open woodland at 0-300 m ASL in sub-tropical climates. Soil varies from sand to heavy clays. The species does not occur in pure stands, but is co-dominant with species including <i>Melaleuca leucadendra</i> , <i>M. fluviatilis</i> , <i>Eucalyptus tereticornis</i> , <i>Blakella</i>	<b>Low</b> – This species has not been previously recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia). The Project Area is located on the edge of the species' 'likely to occur' distribution as per SPRAT. The closest record of this species is located further north, approximately 90 km

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				<i>tessellaris</i> , and occasionally in semi evergreen vine thicket.	away. Potential suitable habitat, analogous with RE 11.3.25b is mapped within the Project Area; however, despite being easily identifiable from vegetative material, this species was not identified during targeted surveys. Due to the limited records throughout the region, this species has a reduced likelihood of occurrence.
<b><i>Fontainea venosa</i></b>	-	V	V	<i>Fontainea venosa</i> occurs in notophyll vine forest and vine thicket with a mean annual rainfall of 1000-1100 mm on soils derived from and containing abundant andesitic rocks, often on rocky outcrops or along creeks.	<b>No</b> – This species has not been previously recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia). The Project Area is located within the edge of the species’ ‘may occur’ distribution as per SPRAT. The closest record of this species is from 1985, approximately 50 km south-west of the Project Area. Suitable habitat, analogous with notophyll vine forests and vine thickets were not identified within the Project Area. The bed and banks of watercourses mapped throughout the Project Area were predominately sandy and did not contain rocky outcrops. Furthermore the average annual rainfall for the region is 784 mm (BOM, Station: 39326), therefore reducing the likelihood of occurrence of this species.
<b><i>Macadamia integrifolia</i></b>	Macadamia nut	V	V	Occurs in remnant rainforests, preferring areas with high sunlight availability such as clearings and edges. Habitat includes complex notophyll mixed forest, extremely tall, closed forest, simple notophyll mixed very tall closed forest to simple microphyll-notophyll mixed mid-high closed forest with <i>Araucaria</i> and <i>Argyrodendron</i> emergents.	<b>No</b> - This species has not been previously recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia). The Project Area is located outside of the species’ ‘may occur’ and ‘likely to occur’ distribution as per SPRAT. Suitable habitat, analogous with rainforest communities was not identified within the Project Area. Furthermore, no indicator species were recorded during field surveys.

Scientific Name	Common name	EPBC Act Status <sup>1</sup>	NC Act Status <sup>1</sup>	Preferred Habitat <sup>2</sup>	Likelihood of Occurrence
<i>Leichhardtia brevifolia</i> (syn. <i>Marsdenia brevifolia</i> )	-	V	V	The species grows on serpentine rock outcrops or crumbly black soils derived from serpentine in eucalypt woodland, often with <i>Eucalyptus fibrosa</i> and <i>Corymbia xanthope</i>	<p>This species has an unlikely likelihood of occurrence.</p> <p><b>No</b> – This species has not been previously recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia). The Project Area is located outside of the species’ ‘may occur’ and ‘likely to occur’ distribution as per the SPRAT.</p> <p>Records for this species occur near Rockhampton and Marlborough and suitable habitat associated with eucalypt woodlands of <i>E. fibrosa</i> and <i>C. xanthope</i> with underlying serpentine geology was not identified within the Project Area, reducing the likelihood of occurrence of this species.</p>
<i>Parsonsia larcomensis</i>	Mt Larcom silk pod	V	V	The species is found between 350 m and 750 m AHD (Australian Height Datum) in open heathland and shrubland at or near the summits of mountain peaks in shallow, loamy soils on cliffs or among outcrops of acid volcanic rocks and serpentinites.	<p><b>No</b>- This species has not been previously recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia). The Project Area is located outside of the species known and likely distribution as per the SPRAT.</p> <p>Records for this species in the region are restricted to Mount Larcom (632 m ASL), located approximately 35 km north-east of the Project Area. The Project Area reaches a maximum of 120 m ASL and does not support suitable habitat for the species, analogous with shrublands and heathlands.</p>
<i>Polianthion minutiflorum</i>	-	V	V	Occurs in forest and woodland on sandstone slopes and gullies with skeletal soil, or sometimes deeper sands adjacent to deeply weathered laterite. Associated species and vegetation includes: open woodland of <i>Acacia shirleyi</i> , <i>Lysicarpus angustifolius</i> , <i>Corymbia aureola</i> ; woodland of <i>Eucalyptus corynodes</i> , <i>Corymbia trachyphloia</i> , <i>E. cloeziana</i> on sandy soil over	<p><b>No</b> - This species has not been previously recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia). The Project Area is located outside of the species’ ‘may occur’ and ‘likely to occur’ distribution as per the SPRAT.</p> <p>The Project Area contained limited suitable habitat to support the species, associated with sandstone and lateritic communities</p>

Scientific Name	Common name	EPBC Act Status <sup>1</sup>	NC Act Status <sup>1</sup>	Preferred Habitat <sup>2</sup>	Likelihood of Occurrence
				sandstone.; sandstone plateau with <i>Eucalyptus dura</i> , <i>E. fibrosa</i> , <i>Angophora leiocarpa</i> , <i>E. major</i> .	(Land Zone 7). Furthermore, no indicator species were recorded throughout the Project Area during ecological field surveys. This species has an unlikely likelihood of occurrence.
<b><i>Rhaponticum australe</i></b>	Austral cornflower	V	V	The species occurs in woodland and grassland and in association with <i>Eucalyptus crebra</i> , <i>E. orgadophila</i> , <i>E. populnea</i> , <i>E. tereticornis</i> , <i>E. melanophloia</i> , <i>Angophora subvelutina</i> , <i>A. floribunda</i> , <i>Cirsium vulgare</i> , <i>Dichanthium sericeum</i> and <i>Themeda triandra</i> . Populations are often confined to roadsides and cultivation headlands. It usually grows on heavy black or red-brown clay, or clay loams derived from basalt.	<b>Low</b> – This species has not been previously recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia). The Project Area is located outside of the species’ ‘may occur’ and ‘likely to occur’ distribution as per the SPRAT. The closest record for this species is located near Monto and Coomingleh State Forest, located approximately 80 km south-west from the Project Area. Associated species, including <i>E. populnea</i> , <i>E. crebra</i> and <i>E. tereticornis</i> were identified throughout the Project Area, however the underlying geology does not contain basalt derived soils (Land Zone 8). Due to the limited number of records throughout the broader landscape, this species has a reduced likelihood of occurrence.
<b><i>Samadera bidwillii</i></b>	Quassia	V	V	The species occurs in lowland rainforest or on rainforest margins, but it can also be found in other forest types, such as open forest and woodland. It is commonly found in areas adjacent to both temporary and permanent watercourses in locations up to 510 m altitude. The species occurs on lithosols, skeletal soils, loam soils, sands, silts and sands with clay subsoils.	<b>No</b> – This species has not been previously recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia). The Project Area is located within the species’ ‘may occur’ distribution as per the SPRAT. The closest records are located approximately 25 km west, within Callide Timber Reserve, which are associated with vine thicket communities (RE 11.10.8 and eucalyptus woodlands (RE 11.10.13). Field surveys confirmed no suitable habitat, analogues with lowland rainforests occur within the Project Area. This species has low likelihood of occurrence.

Scientific Name	Common name	EPBC Act Status <sup>1</sup>	NC Act Status <sup>1</sup>	Preferred Habitat <sup>2</sup>	Likelihood of Occurrence
<i>Sophora fraseri</i>	-	V	V	The species grows in moist habitats, often in hilly terrain at altitudes from 60–660 m on shallow soils along rainforest margins in eucalypt forests or in large canopy gaps in closed forest communities.	<b>No</b> - This species has not been previously recorded within the desktop search extent (Wildlife Online, Atlas of Living Australia). The Project Area is located outside of the species known and likely distribution as per SPRAT. The field investigations confirmed that no suitable habitat, analogous with rainforest and wet sclerophyll forests were identified within the Project Area.
<b>Threatened Ecological Communities</b>					
<b>Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland</b>		E	-	This TEC occurs in coastal catchments, mostly at elevations of less than 20 m AHD which are typically found within 30 km of the coast. It is found on Quaternary age unconsolidated sediments, including alluvium. The forest to woodland community is dominated by <i>Casuarina glauca</i> (swamp oak) with a lower canopy layer of smaller swamp oak and other species including <i>Melaleuca spp.</i> or <i>Eucalyptus spp.</i> The following REs form part of, or align with this TEC: RE 12.1.1, 12.3.2.	<b>No</b> – The REs that are associated with this TEC do not occur within the same bioregion as the Project Area.
<b>Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community</b>		E	-	This ecological community occurs in coastal catchments, mostly at elevations of less than 20 m above sea-level (ASL) that are typically found within 30 km of the coast. Coastal Swamp Oak Forest is often found in association with other vegetation types such as coastal saltmarsh, mangroves, freshwater wetlands, littoral rainforests or swamp sclerophyll forests in a ‘mosaic’ of coastal floodplain communities. The following REs form part of, or align with this TEC: 12.1.1 and 11.12.20	<b>No</b> - No REs analogous to this community have been identified within the Project Area, including within State RE mapping and ground-truthed RE mapping.
<b>Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions</b>		E	-	The community is a semi-arid to humid subtropical woodland where <i>Eucalyptus coolabah subsp. coolabah</i> and/or <i>Eucalyptus largiflorens</i> are the dominant canopy species. Structure may vary from tall woodland in riparian zones to very open	<b>No</b> – No REs analogous to this community have been identified within the Project Area, including within State RE mapping and ground-truthed RE mapping.

Scientific Name	Common name	EPBC Act Status <sup>1</sup>	NC Act Status <sup>1</sup>	Preferred Habitat <sup>2</sup>	Likelihood of Occurrence
				woodland with a sparse mid layer of shrubs and a grassy ground layer. It is found on the grey, self-mulching clays of periodically waterlogged floodplains, swamp margins, ephemeral wetlands, and stream levees. It occurs in areas where annual rainfall is ~250 -700 mm. The following REs form part of, or align with this TEC: RE 11.3.3, 11.3.15, 11.3.16, 11.3.28 and 11.3.37.	Furthermore, the Project Area is located within the Brigalow Belt Northern Bioregion, which is outside of the boundary of this TEC.
<b>Lowland Rainforest of Subtropical Australia</b>		CE	-	The community is generally a moderately tall to tall closed forest. The upper, discontinuous layer includes canopy emergent. Tree species with compound notophyll to mesophyll leaves are common and there is typically a relatively low abundance of Eucalyptus, Melaleuca and Casuarina species. It occurs on basalt and alluvial soils, including sand and old/elevated alluvial soils as well as floodplain alluvia, and occasionally on historically enriched rhyolitic soils and basaltically enriched metasediments. The following REs form part of, or align with this TEC: 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.	<b>No</b> – No REs analogous to this community have been identified within the Project Area, including within State RE mapping and ground-truthed RE mapping.
<b>Poplar Box Grassy Woodland on Alluvial Plains</b>		E	-	The community is typically a grassy woodland with a canopy dominated by <i>Eucalyptus populnea</i> and understorey mostly of grasses and other herbs. The community mostly occurs in gently undulating to flat landscapes and occasionally on gentle slopes on a wide range of soil types of alluvial and depositional origins. The community may include a low density of shrubs. Since the community is typically located on alluvial plains, it experiences occasional inundation and cyclic changes in understorey density. The following REs form part of, or align with this TEC: RE 11.3.2, 11.3.17, 11.4.7, 11.4.12 and 12.3.10.	<b>Known</b> - Four patches of vegetation within the Project Area contain RE 11.3.2 and meet the key diagnostic and condition thresholds for the Poplar Box Grassy Woodlands TEC.

Scientific Name	Common name	EPBC Act Status <sup>1</sup>	NC Act Status <sup>1</sup>	Preferred Habitat <sup>2</sup>	Likelihood of Occurrence
	<b>Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions</b>	E	-	Semi-evergreen vine thicket is considered an extreme form of dry seasonal subtropical rainforest, occurring in areas with a subtropical, seasonally dry climate on soils of high to medium fertility. It is generally characterised by the prominence of trees with microphyll sized leaves (2.5–7.5cm long) and the frequent presence of <i>Brachychiton australis</i> / <i>B. rupestris</i> as emergent. Corresponding REs in the Brigalow Belt Bioregion include: 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. There are no key diagnostic or condition threshold criteria for this TEC.	<b>No</b> - No REs analogous to this community have been identified within the Project Area, including within State RE mapping and ground-truthed RE mapping.
	<b>Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions</b>	E	-	The ecological community is found on alluvial landforms, including floodplains, the riparian zones of parent rivers and other order tributaries, alluvial flats, floodplain/alluvial terraces and periodically flooded depressions. It generally occurs below 50 m above sea-level (ASL). The tree canopy is dominated by <i>Eucalyptus</i> and/ or <i>Angophora</i> , <i>Corymbia</i> , <i>Lophostemon</i> and <i>Syncarpia</i> genera). The following Res for part of, or align with this TEC: 12.3.3, 12.3.3a, 12.3.3d, 12.3.19, 12.3.20, 12.3.10, 12.3.18	<b>No</b> – No REs analogous to this community have been identified within the Project Area, including within State RE mapping and ground-truthed RE mapping.
	<b>Weeping Myall Woodlands</b>	E	-	The community ranges from open woodland to woodland, generally 4-12 m high. The overstorey is dominated by <i>Acacia pendula</i> . Other species including <i>Alectryon oleifolius subsp. elongatus</i> , <i>Eucalyptus populnea</i> or <i>Eucalyptus largiflorens</i> may form part of the overstorey. The understorey often includes an open layer of shrubs over a ground layer which includes a diversity of grasses and forbs. The following REs form part of, or align with this TEC: RE 11.3.2, 11.3.28.	<b>No</b> – Although RE 11.3.2 has been mapped within the Project Area, this community did not meet the key diagnostic criteria and condition thresholds for the Weeping Myall TEC. No <i>Acacia pendula</i> was observed within this RE.

Appendix C

# Species List



## Flora Species List

Family	Scientific Name	Common name	NC Act Status	EPBC Act Status
<b>Acanthaceae</b>	<i>Rostellularia adscendens</i>	-	C	-
<b>Aizoaceae</b>	<i>Tetragonia tetragonoides</i>	New Zealand spinach	C	-
<b>Amaranthaceae</b>	<i>Gomphrena celosioides*</i>	Gomphrena weed	-	-
	<i>Alternanthera nana</i>	Hairy joyweed	C	-
	<i>Achyranthes aspera</i>	-	C	-
	<i>Nyssanthes erecta</i>	-	C	-
	<i>Amaranthus viridis*</i>	Green amaranth	-	-
<b>Amaryllidaceae</b>	<i>Crinum flaccidum</i>	Murray lily	SL	-
<b>Apocynaceae</b>	<i>Cryptostegia grandiflora*</i>	Rubber vine	-	-
	<i>Parsonsia lanceolata</i>	Northern silkpod	C	-
	<i>Gomphocarpus fruticosus*</i>	Narrow-leaved cotton bush	-	-
	<i>Carissa ovata</i>	Currantbush	C	-
	<i>Alstonia constricta</i>	Bitterbark	C	-
<b>Araceae</b>	<i>Spirodela polyrhiza</i>	Large duckweed	C	-
<b>Aristolochiaceae</b>	<i>Aristolochia elegans*</i>	Calico-flower	-	-
<b>Asteraceae</b>	<i>Cyanthillium cinereum</i>	-	C	-
	<i>Pterocaulon ciliosum</i>	-	C	-
	<i>Calotis cuneifolia</i>	Burr daisy	C	-
	<i>Glossocardia bidens</i>	Native cobbler's pegs	C	-
	<i>Centipeda minima</i>	-	C	-
	<i>Pterocaulon redolens</i>	-	C	-
	<i>Praxelis clematidea*</i>	-	-	-
	<i>Calyptocarpus vialis*</i>	Creeping cinderella weed	-	-
	<i>Bidens pilosa*</i>	-	-	-
	<i>Erigeron bonariensis*</i>	-	-	-
	<i>Sigesbeckia orientalis</i>	Indian weed	C	-
	<i>Tridax procumbens*</i>	Tridax daisy	-	-
	<i>Chrysocephalum apiculatum</i>	Yellow buttons	C	-
	<i>Emilia sonchifolia</i> var. <i>javanica*</i>	-	-	-
	<i>Xanthium spinosum*</i>	Bathurst burr	-	-
	<i>Xanthium occidentale*</i>	-	-	-
	<i>Ageratum conyzoides</i> subsp. <i>conyzoides*</i>	-	-	-
	<i>Synedrella nodiflora*</i>	-	-	-
<b>Bignoniaceae</b>	<i>Pandorea pandorana</i>	Wonga vine	C	-
<b>Boraginaceae</b>	<i>Ehretia membranifolia</i>	Weeping koda	C	-
<b>Cactaceae</b>	<i>Opuntia stricta*</i>	-	-	-
	<i>Opuntia tomentosa*</i>	Velvety tree pear	-	-
<b>Campanulaceae</b>	<i>Wahlenbergia gracilis</i>	Sprawling bluebell	SL	-
<b>Capparaceae</b>	<i>Capparis anomala</i>	-	C	-
	<i>Capparis canescens</i>	-	C	-
	<i>Capparis lasiantha</i>	Nipan	C	-
<b>Casuarinaceae</b>	<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>	-	C	-
	<i>Casuarina cunninghamiana</i>	-	C	-

Family	Scientific Name	Common name	NC Act Status	EPBC Act Status
	<i>Casuarina cristata</i>	Belah	C	-
	<i>Allocasuarina luehmannii</i>	Bull oak	C	-
<b>Chenopodiaceae</b>	<i>Enchylaena tomentosa</i>	-	C	-
	<i>Maireana microphylla</i>	-	C	-
	<i>Sclerolaena birchii</i>	Galvanised burr	C	-
<b>Commelinaceae</b>	<i>Murdannia graminea</i>	Murdannia	C	-
	<i>Commelina lanceolata</i>	-	C	-
	<i>Commelina diffusa</i>	-	C	-
<b>Convolvulaceae</b>	<i>Evolvulus alsinoides</i>	-	C	-
<b>Cupressaceae</b>	<i>Callitris glaucophylla</i>	White cypress pine	C	-
<b>Cyperaceae</b>	<i>Cyperus gracilis</i>	-	C	-
	<i>Fimbristylis dichotoma</i>	Common fringe-rush	C	-
	<i>Bulbostylis barbata</i>	-	C	-
	<i>Carex inversa</i>	Knob sedge	C	-
	<i>Cyperus fulvus</i>	-	C	-
	<i>Cyperus flavidus</i>	-	C	-
	<i>Gahnia aspera</i>	-	C	-
	<i>Scleria mackaviensis</i>	-	C	-
	<i>Eleocharis plana</i>	Ribbed spikerush	C	-
<b>Ebenaceae</b>	<i>Diospyros humilis</i>	Small-leaved ebony	C	-
<b>Euphorbiaceae</b>	<i>Mallotus philippensis</i>	Red kamala	C	-
	<i>Croton insularis</i>	Queensland cascarilla	C	-
	<i>Acalypha eremorum</i>	Soft acalypha	C	-
	<i>Euphorbia mitchelliana</i>	-	C	-
	<i>Euphorbia heterophylla</i> *	-	-	-
	<i>Euphorbia hyssopifolia</i> *	-	-	-
<b>Goodeniaceae</b>	<i>Goodenia rotundifolia</i>	-	C	-
	<i>Goodenia racemosa</i>	-	C	-
<b>Johnsoniaceae</b>	<i>Tricoryne elatior</i>	Yellow autumn lily	C	-
<b>Juncaceae</b>	<i>Juncus sp.</i>	-	C	-
<b>Lamiaceae</b>	<i>Teucrium junceum</i>	-	C	-
<b>Laxmanniaceae</b>	<i>Eustrephus latifolius</i>	Wombat berry	C	-
<b>Leguminosae</b>	<i>Mimosa pudica</i> *	-	-	-
	<i>Aeschynomene indica</i>	Budda pea	C	-
	<i>Vachellia bidwillii</i>	-	C	-
	<i>Rhynchosia minima</i>	-	C	-
	<i>Desmodium filiforme</i>	-	C	-
	<i>Acacia salicina</i>	Doolan	C	-
	<i>Desmodium rhytidophyllum</i>	-	C	-
	<i>Erythrina vespertilio</i>	-	C	-
	<i>Acacia rhodoxylon</i>	Ringy rosewood	C	-
	<i>Lysiphyllum hookeri</i>	Queensland ebony	C	-
	<i>Glycine tomentella</i>	Woolly glycine	C	-
	<i>Indigofera polygaloides</i>	-	C	-
	<i>Galactia tenuiflora</i>	-	C	-
	<i>Chamaecrista rotundifolia</i> *	-	-	-
	<i>Acacia disparrima</i>	-	C	-
	<i>Sesbania cannabina</i>	-	C	-
	<i>Senna occidentalis</i> *	Coffee senna	-	-

Family	Scientific Name	Common name	NC Act Status	EPBC Act Status
	<i>Neptunia gracilis</i>	-	C	-
<b>Malvaceae</b>	<i>Sida cordifolia</i> *	-	-	-
	<i>Hibiscus sturtii</i>	-	C	-
	<i>Abutilon oxycarpum</i>	-	C	-
	<i>Sida hackettiana</i>	-	C	-
	<i>Sida trichopoda</i>	-	C	-
	<i>Urena lobata</i> *	Urena weed	-	-
<b>Meliaceae</b>	<i>Melia azedarach</i>	White cedar	C	-
	<i>Owenia venosa</i>	Crow's apple	C	-
<b>Menispermaceae</b>	<i>Stephania japonica</i>	-	C	-
<b>Moraceae</b>	<i>Ficus macrophylla</i>	-	C	-
	<i>Ficus coronata</i>	Creek sandpaper fig	C	-
<b>Myrtaceae</b>	<i>Eucalyptus populnea</i>	Poplar box	C	-
	<i>Eucalyptus crebra</i>	Narrow-leaved red ironbark	C	-
	<i>Eucalyptus tereticornis</i>	-	C	-
	<i>Corymbia clarksoniana</i>	-	C	-
	<i>Melaleuca fluviatilis</i>	-	C	-
	<i>Blakella tessellaris</i>	Moreton Bay ash	C	-
	<i>Melaleuca bracteata</i>	-	C	-
	<i>Eucalyptus melanophloia</i>	-	C	-
	<i>Corymbia erythrophloia</i>	Variable-barked bloodwood	C	-
	<i>Eucalyptus moluccana</i>	Gum-topped box	C	-
	<i>Angophora leiocarpa</i>	Rusty gum	C	-
	<i>Lophostemon suaveolens</i>	Swamp box	C	-
	<i>Melaleuca viridiflora</i>	-	C	-
<b>Nyctaginaceae</b>	<i>Boerhavia dominii</i>	-	C	-
<b>Oleaceae</b>	<i>Jasminum didymum</i>	-	C	-
	<i>Notelaea microcarpa</i>	-	C	-
<b>Orchidaceae</b>	<i>Cymbidium canaliculatum</i>	-	SL	-
<b>Oxalidaceae</b>	<i>Oxalis corniculata</i> *	-	-	-
<b>Passifloraceae</b>	<i>Passiflora foetida</i> *	-	-	-
<b>Petiveriaceae</b>	<i>Rivina humilis</i> *	-	-	-
<b>Phyllanthaceae</b>	<i>Phyllanthus virgatus</i>	-	C	-
	<i>Phyllanthus dallachyanus</i>	-	C	-
	<i>Breynia oblongifolia</i>	-	C	-
<b>Picrodendraceae</b>	<i>Petalostigma pubescens</i>	Quinine tree	C	-
<b>Pittosporaceae</b>	<i>Bursaria incana</i>	-	C	-
	<i>Pittosporum spinescens</i>	-	C	-
	<i>Auranticarpa rhombifolia</i>	-	C	-
<b>Poaceae</b>	<i>Chloris inflata</i> *	Purpletop chloris	-	-
	<i>Chloris divaricata</i>	-	C	-
	<i>Sporobolus caroli</i>	Fairy grass	C	-
	<i>Panicum effusum</i>	-	C	-
	<i>Paspalidium distans</i>	Shotgrass	C	-
	<i>Eriochloa crebra</i>	Spring grass	C	-
	<i>Enteropogon acicularis</i>	Curly windmill grass	C	-
	<i>Chloris ventricosa</i>	Tall chloris	C	-
	<i>Cymbopogon refractus</i>	Barbed-wire grass	C	-

Family	Scientific Name	Common name	NC Act Status	EPBC Act Status
	<i>Eragrostis brownii</i>	Brown's lovegrass	C	-
	<i>Themeda triandra</i>	Kangaroo grass	C	-
	<i>Dichanthium sericeum</i>	-	C	-
	<i>Chrysopogon fallax</i>	-	C	-
	<i>Aristida gracilipes</i>	-	C	-
	<i>Dinebra decipiens</i>	-	C	-
	<i>Panicum queenslandicum</i>	-	C	-
	<i>Chloris gayana</i> *	Rhodes grass	-	-
	<i>Sporobolus creber</i>	-	C	-
	<i>Eremochloa bimaculata</i>	Poverty grass	C	-
	<i>Tragus australianus</i>	Small burr grass	C	-
	<i>Megathyrsus maximus</i> *	-	-	-
	<i>Heteropogon contortus</i>	Black speargrass	C	-
	<i>Aristida calycina</i>	-	C	-
	<i>Bothriochloa bladhii</i>	-	C	-
	<i>Enneapogon gracilis</i>	Slender nineawn	C	-
	<i>Bothriochloa pertusa</i> *	-	-	-
	<i>Urochloa mosambicensis</i> *	Sabi grass	-	-
	<i>Eragrostis leptostachya</i>	-	C	-
	<i>Digitaria ciliaris</i> *	Summer grass	-	-
	<i>Chloris virgata</i> *	Feathertop rhodes grass	-	-
	<i>Aristida latifolia</i>	Feathertop wiregrass	C	-
	<i>Eragrostis curvula</i> *	-	-	-
	<i>Eragrostis trichophora</i> *	-	-	-
	<i>Eragrostis sororia</i>	-	C	-
	<i>Enneapogon virens</i>	-	C	-
	<i>Digitaria ammophila</i>	Silky umbrella grass	C	-
	<i>Melinis repens</i> *	Red natal grass	-	-
	<i>Cenchrus ciliaris</i> *	-	-	-
	<i>Arundinella nepalensis</i>	Reedgrass	C	-
	<i>Aristida caput-medusae</i>	-	C	-
	<i>Paspalidium caespitosum</i>	Brigalow grass	C	-
	<i>Ancistrachne uncinulata</i>	Hooky grass	C	-
	<i>Eragrostis lacunaria</i>	Purple lovegrass	C	-
	<i>Dactyloctenium radulans</i>	Button grass	C	-
	<i>Panicum coloratum</i> *	-	-	-
	<i>Thyridolepis mitchelliana</i>	Mulga mitchell grass	C	-
	<i>Austrostipa ramosissima</i>	Bamboo grass	C	-
	<i>Eriachne humilis</i>	-	C	-
	<i>Austrostipa verticillata</i>	Slender bamboo grass	C	-
	<i>Paspalum notatum</i> *	Bahia grass	-	-
	<i>Urochloa decumbens</i> *	-	-	-
	<i>Sporobolus australasicus</i>	-	C	-
	<i>Cynodon dactylon</i> *	-	-	-
	<i>Hyparrhenia rufa</i> *	-	-	-
	<i>Eragrostis parviflora</i>	Weeping lovegrass	C	-
	<i>Perotis rara</i>	Comet grass	C	-
	<i>Cymbopogon bombycinus</i>	Silky oilgrass	C	-
	<i>Eleusine indica</i>	Crowsfoot grass	-	-

Family	Scientific Name	Common name	NC Act Status	EPBC Act Status
	<i>Alloteropsis semialata</i>	Cockatoo grass	C	-
	<i>Urochloa panicoides</i> var. <i>panicoides</i> *	-	-	-
<b>Poaceae</b>	<i>Eragrostis</i> sp.	-	C	-
<b>Portulacaceae</b>	<i>Portulaca pilosa</i> *	-	-	-
<b>Proteaceae</b>	<i>Grevillea striata</i>	Beefwood	C	-
	<i>Hakea lorea</i>	-	C	-
<b>Pteridaceae</b>	<i>Cheilanthes distans</i>	Bristly cloak fern	C	-
	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	-	C	-
	<i>Cheilanthes sieberi</i>	-	C	-
<b>Rhamnaceae</b>	<i>Alphitonia excelsa</i>	Soap tree	C	-
<b>Rubiaceae</b>	<i>Spermacoce brachystema</i>	-	C	-
	<i>Nauclea orientalis</i>	Leichhardt tree	C	-
	<i>Psydrax odorata</i>	-	C	-
	<i>Psydrax attenuata</i>	-	C	-
	<i>Everistia vacciniifolia</i>	-	C	-
<b>Rutaceae</b>	<i>Geijera parviflora</i>	Wilga	C	-
	<i>Philotheca difformis</i>	-	C	-
	<i>Flindersia collina</i>	Broad-leaved leopard tree	C	-
	<i>Flindersia</i> sp.	-	C	-
<b>Santalaceae</b>	<i>Exocarpos latifolius</i>	-	C	-
<b>Sapindaceae</b>	<i>Atalaya hemiglauca</i>	-	C	-
	<i>Jagera pseudorhus</i>	-	C	-
	<i>Alectryon diversifolius</i>	Scrub boonaree	C	-
<b>Sapotaceae</b>	<i>Planchonella cotinifolia</i>	-	C	-
<b>Scrophulariaceae</b>	<i>Eremophila debilis</i>	Winter apple	C	-
	<i>Eremophila deserti</i>	-	C	-
	<i>Eremophila mitchellii</i>	-	C	-
<b>Solanaceae</b>	<i>Solanum torvum</i> *	Devil's fig	-	-
<b>Sparrmanniaceae</b>	<i>Grewia latifolia</i>	Dysentery plant	C	-
<b>Sterculiaceae</b>	<i>Brachychiton rupestris</i>	-	SL	-
<b>Verbenaceae</b>	<i>Lantana camara</i> *	Lantana	-	-
	<i>Glandularia aristigera</i> *	-	-	-
	<i>Lantana montevidensis</i> *	Creeping lantana	-	-
	<i>Verbena litoralis</i> *	Verbena	-	-

## Fauna Species List

Class	Scientific name	Common name	NC Act Status	EPBC Act Status	
<b>amphibians</b>	<i>Rhinella marina</i> *	Cane toad	-	-	
	<i>Litoria caerulea</i>	Common green treefrog	C	-	
	<i>Limnodynastes tasmaniensis</i>	Spotted grassfrog	C	-	
	<i>Litoria nasuta</i>	Striped rocketfrog	C	-	
<b>birds</b>	<i>Tachybaptus novaehollandiae</i>	Australasian grebe	C	-	
	<i>Anthus novaeseelandiae</i>	Australasian pipit	C	-	
	<i>Ardeotis australis</i>	Australian bustard	C	-	
	<i>Chenonetta jubata</i>	Australian wood duck	C	-	
	<i>Geopelia humeralis</i>	Bar-shouldered dove	C	-	
	<i>Milvus migrans</i>	Black kite	C	-	
	<i>Coracina novaehollandiae</i>	Black-faced cuckoo-shrike	C	-	
	<i>Entomyzon cyanotis</i>	Blue-faced honeyeater	C	-	
	<i>Dacelo leachii</i>	Blue-winged kookaburra	C	-	
	<i>Antigone rubicunda</i>	Brolga	C	-	
	<i>Falco berigora</i>	Brown falcon	C	-	
	<i>Cacomantis variolosus</i>	Brush cuckoo	C	-	
	<i>Scythrops novaehollandiae</i>	Channel-billed cuckoo	C	-	
	<i>Edolisoma tenuirostre</i>	Common cicadabird	C	-	
		Birds			
	<i>Eurystomus orientalis</i>	Dollarbird	C	-	
	<i>Taeniopygia bichenovii</i>	Double-barred finch	C	-	
	<i>Dromaius novaehollandiae</i>	Emu	C	-	
	<i>Petrochelidon ariel</i>	Fairy martin	C	-	
	<i>Cacomantis flabelliformis</i>	Fan-tailed cuckoo	C	-	
	<i>Todiramphus macleayii</i>	Forest kingfisher	C	-	
	<i>Eolophus roseicapilla</i>	Galah	C	-	
	<i>Cisticola exilis</i>	Golden-headed cisticola	C	-	
	<i>Anas gracilis</i>	Grey teal	C	-	
	<i>Mirafra javanica</i>	Horsfield's bushlark	C	-	
	<i>Dacelo novaeguineae</i>	Laughing kookaburra	C	-	
	<i>Myiagra rubecula</i>	Leaden flycatcher	C	-	
	<i>Meliphaga lewinii</i>	Lewin's honeyeater	C	-	
	<i>Egretta garzetta</i>	Little egret	C	-	
	<i>Philemon citreogularis</i>	Little friarbird	C	-	
	<i>Artamus personatus</i>	Masked woodswallow	C	-	
	<i>Philemon corniculatus</i>	Noisy friarbird	C	-	
	<i>Anas superciliosa</i>	Pacific black duck	C	-	
	<i>Platycercus adscitus</i>	Pale-headed rosella	C	-	
	<i>Geopelia placida</i>	Peaceful dove	C	-	
	<i>Centropus phasianinus</i>	Pheasant coucal	C	-	
<i>Dendrocygna eytoni</i>	Plumed whistling-duck	C	-		
<i>Merops ornatus</i>	Rainbow bee-eater	C	-		
<i>Trichoglossus moluccanus</i>	Rainbow lorikeet	C	-		
<i>Malurus melanocephalus</i>	Red-backed fairy-wren	C	-		
<i>Aprosmictus erythropterus</i>	Red-winged parrot	C	-		
<i>Rhipidura rufifrons</i>	Rufous fantail	C	-		
<i>Pachycephala rufiventris</i>	Rufous whistler	C	-		
<i>Todiramphus sanctus</i>	Sacred kingfisher	C	-		
<i>Dicrurus bracteatus</i>	Spangled drongo	C	-		

Class	Scientific name	Common name	NC Act Status	EPBC Act Status
	<i>Geophaps scripta scripta</i>	Squatter pigeon (southern subspecies)	V	V
	<i>Threskiornis spinicollis</i>	Straw-necked ibis	C	-
	<i>Pardalotus striatus</i>	Striated pardalote	C	-
	<i>Podargus strigoides</i>	Tawny frogmouth	C	-
	<i>Aquila audax</i>	Wedge-tailed eagle	C	-
	<i>Smicrornis brevirostris</i>	Weebill	C	-
	<i>Haliastur sphenurus</i>	Whistling kite	C	-
	<i>Coracina papuensis</i>	White-bellied cuckoo-shrike	C	-
	<i>Egretta novaehollandiae</i>	White-faced heron	C	-
	<i>Ardea pacifica</i>	White-necked heron	C	-
	<i>Gerygone olivacea</i>	White-throated gerygone	C	-
	<i>Melithreptus albogularis</i>	White-throated honeyeater	C	-
	<i>Rhipidura leucophrys</i>	Willie wagtail	C	-
	<i>Manorina flavigula</i>	Yellow-throated miner	C	-
<b>mammals</b>	<i>Pteropus alecto</i>	Black flying-fox	C	-
	<i>Felis catus</i> *	Cat	-	-
	<i>Chalinolobus morio</i>	Chocolate wattled bat	C	-
	<i>Trichosurus vulpecula</i>	Common brushtail possum	C	-
	<i>Canis familiaris</i>	Dingo	C	-
	<i>Macropus giganteus</i>	Eastern grey kangaroo	C	-
	<i>Lepus europaeus</i> *	European brown hare	-	-
	<i>Chalinolobus gouldii</i>	Gould's wattled bat	C	-
	<i>Chalinolobus nigrogriseus</i>	Hoary wattled bat	C	-
	<i>Scotorepens balstoni</i>	Inland broad-nosed bat	C	-
	<i>Miniopterus orianae oceanensis</i>	Australasian bent-wing bat	C	-
	<i>Miniopterus australis</i>	Little bent-wing bat	C	-
	<i>Scotorepens greyii</i>	Little broad-nosed bat	C	-
	<i>Chalinolobus picatus</i>	Little pied bat	C	-
	<i>Pteropus scapulatus</i>	Little red flying-fox	C	-
	<i>Nyctophilus sp.</i>	Vesper bats	C	-
	<i>Scotorepens sanborni</i>	Northern broad-nosed bat	C	-
	<i>Chaerephon jobensis</i>	Northern freetail bat	C	-
	<i>Sus scrofa</i> *	Pig	-	-
	<i>Oryctolagus cuniculus</i> *	Rabbit	-	-
	<i>Ozimops ridei</i>	Eastern free-tailed bat	C	-
	<i>Aepyprymnus rufescens</i>	Rufous bettong	C	-
	<i>Myotis macropus</i>	Southern myotis	C	-
	<i>Notamacropus parryi</i>	Whiptail wallaby	C	-
	<i>Austronomus australis</i>	White-striped free-tailed bat	C	-
	<i>Saccolaimus flaviventris</i>	Yellow-bellied sheath-tail bat	C	-
<b>reptiles</b>	<i>Pogona barbata</i>	Bearded dragon	C	-
	<i>Demansia vestigiata</i>	Lesser black whipsnake	C	-
	<i>Cryptoblepharus virgatus</i>	Striped snake-eyed skink	C	-
	<i>Diporiphora australis</i>	Tommy roundhead	C	-

Appendix D

# Threatened Species Habitat Mapping Rules

## Threatened Species Habitat Mapping Rules

Species	Likelihood of Occurrence	Modelling Criteria	Habitat Requirements	Suitable Habitat within the Project Area	REs
<b>Conservation Significant Fauna</b>					
<b>Squatter pigeon (southern)</b> <i>Geophaps scripta</i>	Known	Foraging and breeding	Any remnant or regrowth open-forest to sparse, open-woodland or scrub dominated by Eucalyptus, Corymbia, Acacia or Callitris species, on sandy or gravelly soils with patchy perennial tussock grasses or a mix of perennial tussock grasses and low shrubs and forbs (including but not limited to areas mapped as Queensland land zones 3, 5 or 7) and within 1 km of a permanent or seasonal waterbody with gently sloping banks.	Remnant and regrowth vegetation occurring on land zones 3 (no land zones 5 or 7 present within the Project Area) and 12 (given the presence of the subspecies on land zone 12 within the Project Area where microhabitat is available), within 1 km of a suitable water source (i.e. farm dams, lacustrine wetlands and watercourses with a stream order of 3 or higher).	All remnant and regrowth REs on a land zone 12 and 3 within 1 km of suitable water sources
		Foraging	Any remnant or regrowth open-forest to sparse, open-woodland or scrub dominated by Eucalyptus, Corymbia, Acacia or Callitris species, on sandy or gravelly soils with patchy perennial tussock grasses or a mix of perennial tussock grasses and low shrubs and forbs (including but not limited to areas mapped as Queensland land zones 3, 5 or 7) and within 3 km of a permanent or seasonal waterbody with gently sloping banks (i.e. farm dams, lacustrine wetlands and watercourses with a stream order of 2 or higher).	Remnant and regrowth vegetation occurring on land zones 3 (no land zone 5 or 7 present within the Project Area) and land zone 12 (given presence of the subspecies on land zone 12 within the Project Area where microhabitat is available), within 3 km of a suitable water source (i.e. farm dams, lacustrine wetlands and watercourses with a stream order of 3 or higher).	All remnant and regrowth REs on a land zone 12 and 3 within 3 km of a suitable water source
		Dispersal	Any forest or woodland occurring between patches of foraging or breeding habitat that facilitates movement between patches of foraging habitat, breeding habitat and/or waterbodies, and areas of cleared land less than 100 m wide linking areas of suitable breeding and/or foraging habitat.	Remnant and regrowth vegetation, and non-remnant areas with emergent paddock trees providing sufficient cover occurring between patches of foraging and breeding habitat and water sources. Also includes areas of cleared land less than 100 m wide linking foraging and /or breeding habitat. Also includes cleared areas within 50 m of a watercourse (stream order 3 and above) or waterbody except where a waterbody is isolated by more than 100 m.	Remnant, regrowth and non-remnant vegetation
<b>White-throated needletail</b>	Moderate	Foraging and roosting	Forests and woodlands with tall trees, dense foliage or hollows which provide a roosting opportunity.	All areas of vegetation communities which have a dense or mid-dense structural category (none present) or which contained trees that met the DBH threshold for large trees in the BioCondition	Remnant REs 11.12.1, 11.12.17, 11.3.2, 11.3.25b, 11.3.4, 11.3.4a

Species	Likelihood of Occurrence	Modelling Criteria	Habitat Requirements	Suitable Habitat within the Project Area	REs
<i>Hirundapus caudacutus</i>				benchmark (i.e. trees which are expected to bear hollows).	
		Dispersal and marginal foraging	A range of habitats, although more often over wooded areas, where it is almost exclusively aerial.	A range of habitats, although more often over wooded areas, where it is almost exclusively aerial.	All remaining habitat within the Project Area that is not characterised as roosting and foraging habitat for white-throated needletail.
<b>Yakka skink</b> <i>Egernia rugosa</i>	Moderate	Suitable habitat	Dry forests and woodlands, usually on well-drained, gritty soils, including Eucalyptus populnea, Callitris glaucophylla, Acacia harpophylla on alluvial soils and sands, Allocasuarina luehmannii, Acacia harpophylla, A. catenulata and A. aneura on sands.	All remnant and regrowth RE 11.3.2 ( <i>E. populnea</i> dominant) which supports soils suitable for burrowing. Within these RE 11.3.2 patches, the ground-layer microhabitat has been ground-verified as containing logs, stumps or other denning features.	All remnant and regrowth RE 11.3.2
<b>Koala</b> <i>Phascolarctos cinereus</i>	Moderate	Climate refugia	Forests or woodlands on drainage lines or riparian zones that are resilient to drying conditions, likely to provide a cooler refuge during periods of bushfire and heatwaves.	Riverine forest and woodland communities which occur along mapped watercourses and drainage features. These areas are characterised by remnant or regrowth condition RE 11.3.25b.	Remnant and regrowth 11.3.25b
		Breeding and foraging	Any forest or woodland that contains Locally Important Koala Trees (LIKT) and is not climate refugia.	Remnant and regrowth forests and woodlands that are not climate refugia which contain LIKTs including REs 11.12.1, 11.12.17, 11.12.3, 11.12.7, 11.3.2, 11.3.4.	Remnant and regrowth REs 11.12.1, 11.12.17, 11.12.3, 11.12.7, 11.3.2, 11.3.25b, 11.3.4
		Shelter	Any forest or woodland community which does not contain LIKTs and may or may not contain ancillary habitat trees.	Remaining forest and woodland communities which do not support climate refugia or breeding and foraging habitat. Includes remnant REs 11.3.25d and 11.3.4a.	Remnant and regrowth REs 11.3.25d and 11.3.4a
		Dispersal (with trees)	Grasslands and shrublands that support scattered trees and provide a safe intervening ground (with opportunities for predatory avoidance) for the species to move across the landscape, particularly to and from areas of potential climate refugia or breeding and foraging habitat.	Grasslands and shrublands that support scattered trees and provide a safe intervening ground (with opportunities for predatory avoidance) for the species to move across the landscape, particularly to and from areas of potential climate refugia or breeding and foraging habitat. This includes non-remnant vegetation with scattered occurrences of eucalypt paddock trees.	Non remnant vegetation
		Dispersal (without trees)	Grasslands, shrublands and cleared areas that may be opportunistically used to move across the landscape.	Non-remnant areas without scattered occurrences of eucalypt trees. Includes all remaining non-remnant areas within the Project Area including roads and other infrastructure. Excludes waterbodies.	Non-remnant vegetation

Species	Likelihood of Occurrence	Modelling Criteria	Habitat Requirements	Suitable Habitat within the Project Area	REs
<b>Greater glider (southern and central)</b> <i>Petauroides volans</i>	Moderate	Likely or current denning	Eucalypt forests and woodlands in Queensland REs considered habitat or potential habitat as per the <i>Species Specific Guidance – Greater Glider habitats in Queensland</i> (DES, 2022) containing appropriate tree species with a diameter at breast height greater than the RE threshold for large trees.	All areas of the following remnant REs which contained trees that met the DBH threshold for large trees in the BioCondition benchmark: REs 11.12.1, 11.3.2, 11.3.4 and 11.3.4a.	Remnant REs 11.12.1, 11.3.2, 11.3.4 and 11.3.4a
		Potential or future denning	Eucalypt forest and woodlands in Queensland REs considered habitat or potential habitat as per the <i>Species Specific Guidance – Greater Glider habitats in Queensland</i> (DES, 2022) containing appropriate tree species with a diameter at breast height greater than 30 cm, but less than the RE threshold for large trees.	All areas of the following regrowth REs which contained trees that had a DBH of 30 cm or greater but less than the DBH threshold for large trees in the BioCondition benchmark including REs 11.3.2, 11.12.1, 11.3.4 and 11.3.4a.	Regrowth REs 11.3.2, 11.3.4, 11.12.1 and 11.3.4a
		Foraging and dispersal	Eucalypt forest and woodlands where locally important tree species for foraging are dominant/co-dominant AND in Queensland REs considered habitat or potential habitat as per the <i>Species Specific Guidance – Greater Glider habitats in Queensland</i> (DES, 2022).	All areas of the following remnant and regrowth REs where trees present did not have a DBH greater than 30 cm and/or did not meet the DBH threshold for large trees in the BioCondition benchmark including REs 11.12.17, 11.12.3 and 11.12.7.	Remnant and regrowth REs 11.12.3, 11.12.17 and 11.12.7
<b>grey-headed flying-fox</b> <i>Pteropus poliocephalus</i>	Moderate	Foraging and dispersal	Any vegetation communities which contains important Winter/Spring flowering species ( <i>Eucalyptus tereticornis</i> , <i>E. albens</i> , <i>E. crebra</i> , <i>E. fibrosa</i> , <i>E. melliodora</i> , <i>E. paniculata</i> ,	The Project Area occurs within 28 km of a known grey-headed flying-fox camp. REs listed below in remnant and regrowth condition were ground-truthed as containing important Winter/Spring flowering species: REs 11.12.17, 11.3.4, 11.12.7, 11.3.2, 11.12.1, 11.12.3	Remnant and regrowth REs 11.12.17, 11.3.4, 11.12.7, 11.3.2, 11.12.1, 11.12.3
		Roosting	<i>E. pilularis</i> , <i>E. robusta</i> , <i>E. seeana</i> , <i>E. sideroxylon</i> , <i>E. siderophloia</i> , <i>Banksia integrifolia</i> , <i>Castanospermum australe</i> , <i>Corymbia citriodora citriodora</i> , <i>C. eximia</i> , <i>C. maculata</i> , <i>Grevillea robusta</i> , <i>Melaleuca quinquenervia</i> or <i>Syncarpia glomulifera</i> ) (as defined in the National Recovery Plan) within 40 km of known camps "	No camps (based on DCCEEW's interactive flying-fox web viewer) that fit the habitat mapping criteria are known to occur. Further, no observations of flying-fox camps have been made during the field survey effort. As such no roosting habitat has been mapped.	N/A
<b>Latham's snipe</b> <i>Gallinago hardwickii</i>	Moderate	Foraging and dispersal	Foraging habitat includes open, freshwater wetlands (permanent and ephemeral) with low, dense vegetation such as swamps, flooded grasslands or heathlands, around bogs and other water bodies. Foraging occurs at night where they disperse to feed in nearby wet	Nominal buffer distance of 20 m applied to selected wetlands (including farm dams and seasonal wetlands) where suitable low, dense vegetation skirts the waterbody and muddy margins are present or likely temporally available under	Artificial dams mapped within the Project Area

Species	Likelihood of Occurrence	Modelling Criteria	Habitat Requirements	Suitable Habitat within the Project Area	REs
			paddocks, ditches and other open flooded areas. Foraging habitats are characterised by areas of mud (either exposed or beneath a very shallow covering of water).	suitable conditions (i.e. muddy/soil substrate with shallow sloping banks). Furthermore,	
<b>Migratory fauna</b>					
<b>Oriental cuckoo</b> <i>Cuculus optatus</i>	Moderate	Foraging and Dispersal	Monsoonal rainforest, wet sclerophyll forest, vine-thicket and dense riparian vegetation. Non-breeding foraging and dispersal habitat also includes open Casuarina, Acacia and Eucalyptus woodlands.	Open eucalypt forest to woodland characterised by remnant REs 11.12.1, 11.3.2, 11.3.25b, 11.3.4. Regrowth and non-remnant vegetation excluded due to absence of microhabitat including high perches and cover from aerial predators.	Remnant REs 11.12.1, 11.3.2, 11.3.25b, 11.3.4
<b>Fork-tailed swift</b> <i>Apus pacificus</i>	Moderate	Foraging and dispersal	The air space above remnant and regrowth woodlands, open pasture grassland and non-remnant vegetation communities.	All remnant, regrowth and non-remnant vegetation included. Includes all areas above civil infrastructure and waterbodies occurring within the Project Area.	All areas within Project Area
<b>Latham's snipe</b> <i>Gallinago hardwickii</i>	Moderate	Foraging and dispersal	Foraging habitat includes open, freshwater wetlands (permanent and ephemeral) with low, dense vegetation such as swamps, flooded grasslands or heathlands, around bogs and other water bodies. Foraging occurs at night where they disperse to feed in nearby wet paddocks, ditches and other open flooded areas. Foraging habitats are characterised by areas of mud (either exposed or beneath a very shallow covering of water).	Nominal buffer distance of 20 m applied to selected wetlands (including farm dams) where suitable low, dense vegetation skirts the waterbody and muddy margins are present or likely temporarily available under suitable conditions (i.e. muddy/soil substrate with shallow sloping banks).	Artificial dams mapped within the Project Area
<b>Osprey</b> <i>Pandion haliaetus</i>	Moderate	Foraging and dispersal	Along rivers, creeks or other vegetated waterways where the waterway supports occasional pools. Farm dams also support foraging habitat for this species.	Riverine vegetation communities occurring along watercourses associated with the Calliope River including Maxwellton Creek, Doubtful Creek and Lost Springs Creek. Associated regional ecosystems along abovementioned creeks includes 11.3.25b and 11.3.25d. Artificial farm dams also considered suitable foraging habitat.	Remnant RE 11.3.25b and 11.3.25d and artificial farm dams

Appendix E

# Balance! Environmental Reports





## Microbat Call Identification Report

<b>Prepared for (“Client”):</b>	Umwelt (Australia) Pty Ltd
<b>Survey location/project name:</b>	Wooderson (Calliope area)
<b>Survey dates:</b>	9-12 October 2023
<b>Client project reference:</b>	23412
<b>Job no.:</b>	UMW-2316
<b>Report date:</b>	27 November 2023

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## Methods

### Data received

*Balance! Environmental* received 8732 full-spectrum ultrasonic acoustic files (WAV files), recorded using four Anabat Swift detectors (Titley Scientific, Brisbane), which were deployed between 9<sup>th</sup> and 13<sup>th</sup> October 2023. GPS coordinates stored in the WAV file metadata indicate that each detector sampled a single, separate site for the duration of deployment (see **Table 1**).

### Bat-call analysis

Analyses were performed in *Anabat Insight* (Version 2.0.8; Titley Scientific, Brisbane). The Decision Tree analysis tool was used to find and exclude WAV files that contained only non-bat noise and/or calls with fewer than four pulses, and to group and label the remaining files according to the similarity of bat calls contained therein. All groups were then reviewed manually to confirm and/or reassign correct species identities. Where a group contained many calls, species confirmation continued until all potential constituent species were positively identified for each site. Surplus calls in large groups retained only the group labels.

Species confirmation was achieved by comparing call spectrograms and derived metrics with those of regionally relevant reference calls and/or with published call descriptions (e.g., Reinhold *et al.* 2001). The likelihood of species' occurrence in the survey area was confirmed by referring to relevant distributional information (e.g., Australasian Bat Society 2021; Churchill 2008; Baker & Gynther 2023).

### Reporting standard

The format and content of this report follows Australasian Bat Society standards for the interpretation and reporting of bat call data (Reardon 2003), available on-line at <http://www.ausbats.org.au/>.

Species nomenclature follows Armstrong *et al.* (2020).

**Table 1** Bat detector deployment summary for the Wooderson (Calliope) survey, 9-12 October 2023.

Detector	Serial number	Nights	Latitude	Longitude
BUMBAT01	497942	11-12 Oct	-24.07191	150.87822
BUMBAT02	514022	9-11 Oct	-24.0957	150.9101
BUMBAT03	513979	9-11 Oct	-24.0933	150.8979
BUMBAT04	498053	9-12 Oct	-24.1028	150.8807

## Results & Discussion

After filtering for noise and poor-quality (short) calls, the dataset contained 6546 WAV files, within which 7156 bat calls were identified. More than 77% of the calls were positively attributed to distinct species; while the other 1640 “unresolved” calls could not be reliably identified and were assigned to several multi-species groups. **Table 2** presents a count of calls allocated per detector/site to each species and unresolved group. Sample spectrograms of each identified call type are presented in **Appendix 1**.

Fifteen taxa were reliably identified, including:

- *Chalinolobus gouldii*
- *Chalinolobus morio*
- *Chalinolobus nigrogriseus*
- *Chalinolobus picatus*
- *Nyctophilus* sp. – potentially includes two species – *N. geoffroyi*, *N. gouldi*
- *Scotorepens balstoni*
- *Scotorepens greyii*
- *Scotorepens sanborni*
- *Miniopterus australis*
- *Miniopterus oriana oceanensis*
- *Austronomus australis*
- *Chaerephon jobensis*
- *Ozimops lumsdenae*
- *Ozimops ridei*
- *Saccolaimus flaviventris*

Some 54% (3910) of all recorded calls belonged to *C. gouldii*; and another 1679 calls were attributed to *S. greyii* and/or *S. sanborni*.

Most of the unresolved calls belonged to species that were otherwise positively identified; however, two groups potentially represented two additional species, viz.:

- *Miniopterus oriana oceanensis* or *Vespadelus* species
  - Numerous calls were reliably attributed to *M. o. oceanensis*, but 20 calls with similar characteristic frequency (Fc~45-46 kHz) had pulses of much shorter duration (Dur<3ms), with pulse-shapes like those produced by the *Vespadelus* species
  - The presence of *Vespadelus* species in the study area is uncertain, but there are two potential candidates for these calls – *V. baverstocki* and *V. vulturinus*
  - There is also a remote chance that *Pipistrellus adamsi* occurs in the area and that species also produces calls of this type.
- *Nyctophilus* sp. or *Myotis macropus*
  - These species produce calls with near-linear, steep, frequency-modulated (FM) pulses, and species differentiation can be difficult
  - Foraging *M. macropus* often produce calls with a narrower band-width (~10 kHz frequency sweep) than *Nyctophilus* spp., which typically have a frequency sweep of >20 kHz
  - When actively foraging, *M. macropus* calls often also exhibit erratic variation in pulse slopes and time between pulses
  - No calls typical of foraging *M. macropus* were observed, but there was some minor evidence of slope variance and many calls, along with lower-frequency “social (?)” components that are often seen in *M. macropus* calls.
  - Since at least three of the detectors appear to have been located near watercourses or wetland habitats, it is considered probable that at least some of the calls in this group represent *M. macropus*

**Table 2** Bats recorded during the Wooderson (Calliope) survey, 9-12 October 2023.  
Number of calls allocated per species per site. Refer to **Table 1** for Site locations.

Detector:	BUMBAT01	BUMBAT02	BUMBAT03	BUMBAT04	Species Total
<b>Positively identified calls</b>					
<i>Chalinolobus gouldii</i>	367	2874	562	107	3910
<i>Chalinolobus morio</i>		1	12	2	15
<i>Chalinolobus nigrogriseus</i>	1	27	7		35
<i>Chalinolobus picatus</i>	2	11	13	34	60
<i>Nyctophilus</i> sp.			2		2
<i>Scotorepens balstoni</i>	5	9	7	1	22
<i>Scotorepens greyii</i>	8	285	46	10	349
<i>Scotorepens sanborni</i>	3	87	14	81	185
<i>Miniopterus australis</i>	63	47	143	81	334
<i>Miniopterus orianae oceanensis</i>	73	7	57	9	146
<i>Austronomus australis</i>		4			4
<i>Chaerephon jobensis</i>	28	273	6	3	310
<i>Ozimops lumsdenae</i>	1	4			5
<i>Ozimops ridei</i>	6	23	4	2	35
<i>Saccolaimus flaviventris</i>	2	64	2	36	104
<b>Unresolved calls</b>					
<i>C. gouldii</i> or <i>O. ridei</i>	17	162	17	22	218
<i>C. gouldii</i> or <i>S. balstoni</i>		1	2		3
<i>C. nigrogriseus</i> or <i>S. greyii</i>	1	37	13	1	52
<i>S. greyii</i> or <i>S. sanborni</i>	12	472	89	572	1145
<i>S. sanborni</i> or <i>C. picatus</i>		1		7	8
<i>M. o. oceanensis</i> or <i>Vespadelus</i> sp.	7		1	12	20
<i>Myotis macropus</i> or <i>Nyctophilus</i> sp.	63	3		128	194
Site Total	659	4392	997	1108	7156

#### CAUTION: INTERPRETING “NUMBER OF CALLS”

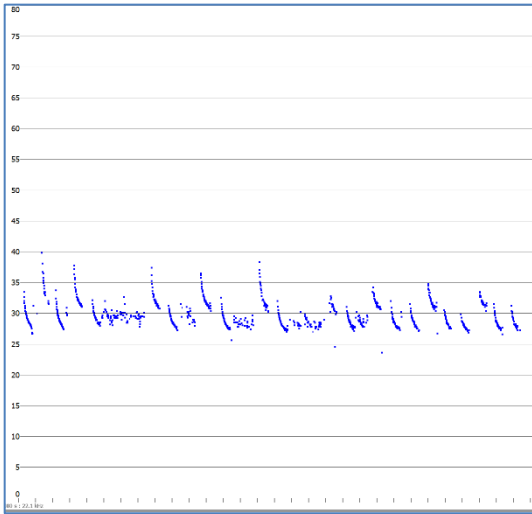
Please note that the number of calls allocated to a species **must not be interpreted as “relative abundance”** in comparison to other detected species. The detection of multiple calls does not necessarily mean that multiple individuals were present at the time of recording. E.g., 100 calls could mean a single bat passed the detector 100 times, or 100 individuals passed the detector once.

Furthermore, even comparing numbers of calls in terms of **“relative activity levels” is an unreliable interpretation of the data**, because differential foraging behaviours will result in different species spending more or less time within the detection zone. Highly agile bats that forage in frequent passes through a small air-space beneath the canopy (e.g., *Vespadelus* spp.) are likely to produce many more call recordings per unit of time than larger, less-agile bats that forage through larger spaces of canopy gaps and edges, with faster, more direct flight patterns (e.g., *Miniopterus orianae* subsp.). That is, the more agile bats are likely to remain near the detector for longer periods, resulting in more call detections, while less agile bats will pass over the detector less frequently.

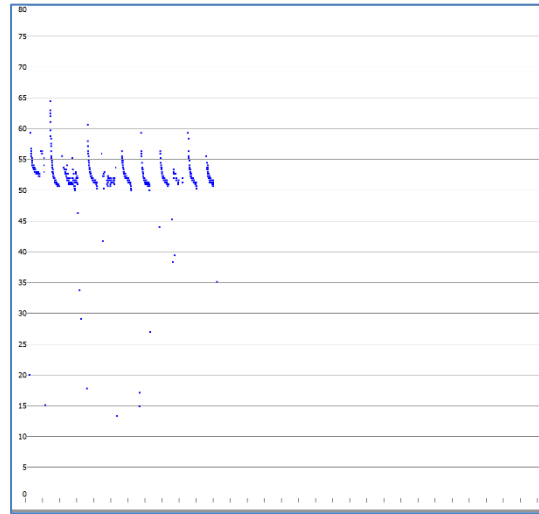
## References

- Armstrong, K.N., Reardon, T.B., and Jackson, S.M. (2020). A current taxonomic list of Australian Chiroptera. Australasian Bat Society. Version 2020-06-09.  
URL: <http://ausbats.org.au/species-list/4593775065>
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- Baker, A.M. and Gynther, I.C. (editors) (2023). *Strahan's Mammals of Australia*. Fourth Edition; Reed New Holland Publishers; Sydney.
- Churchill, S. (2008). *Australian Bats*. Jacana Books, Allen & Unwin; Sydney.
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- Reardon, T. (2003). Standards in bat detector based surveys. *Australasian Bat Society Newsletter* **20**, 41-43.
- Reinhold, L., Law, B., Ford, G. and Pennay, M. (2001). *Key to the bat calls of south-east Queensland and north-east New South Wales*. Department of Natural Resources and Mines, Brisbane.

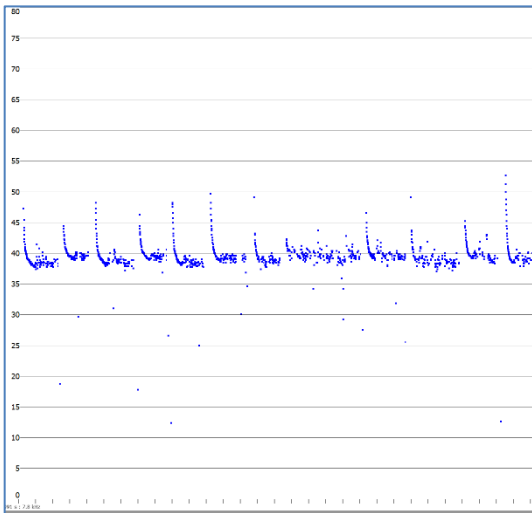
**Appendix 1** Representative bat calls recorded during the Wooderson survey, 9-12 October 2023.  
 x-axis = 10 ms per tick-mark; time between pulses removed ("compressed")



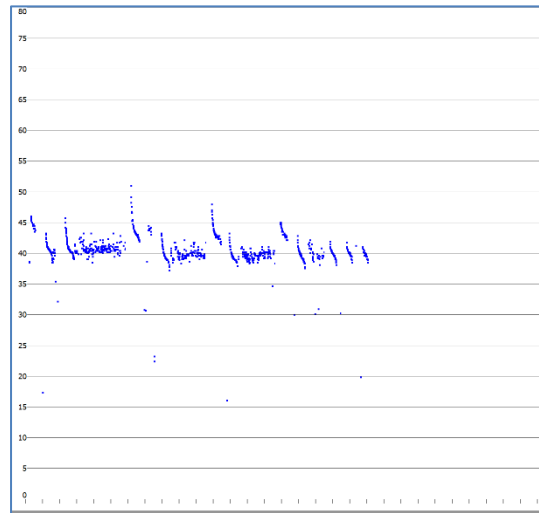
*Chalinolobus gouldii*



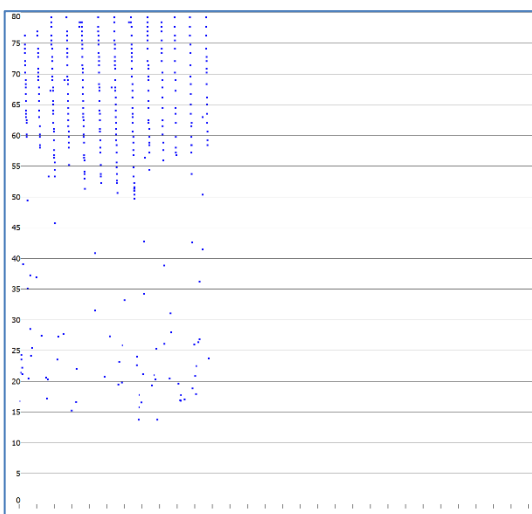
*Chalinolobus morio*



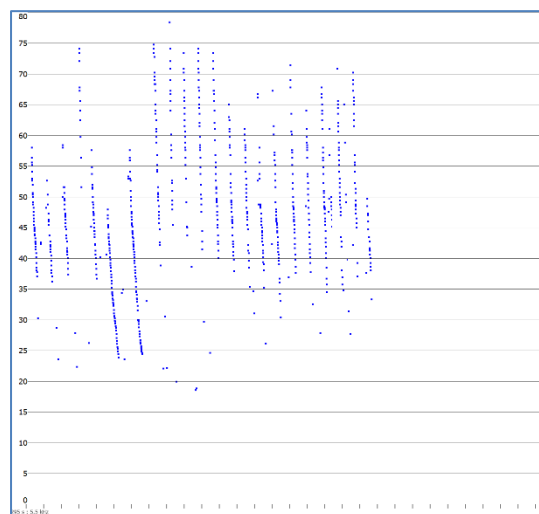
*Chalinolobus nigrogriseus*



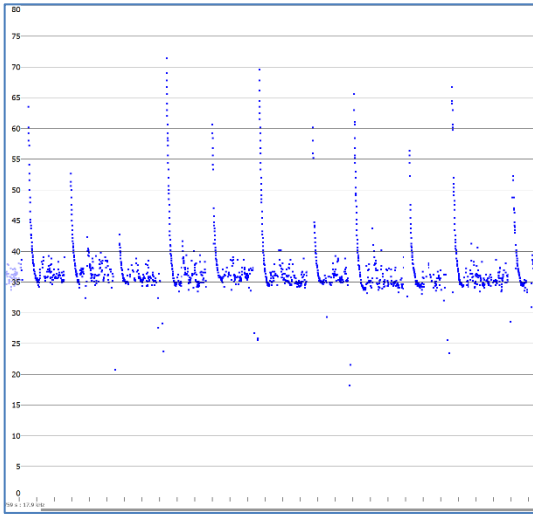
*Chalinolobus picatus*



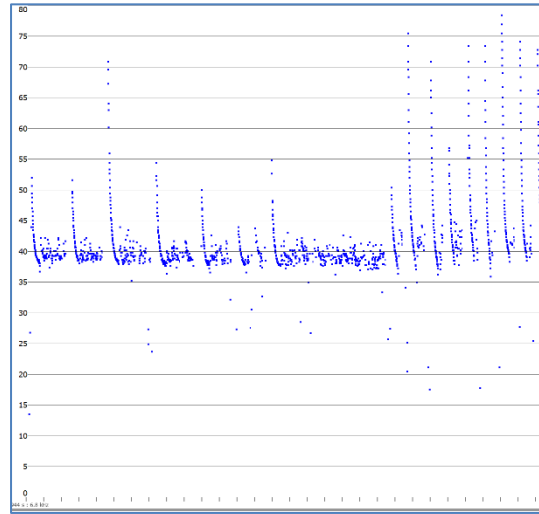
*Nyctophilus* sp.



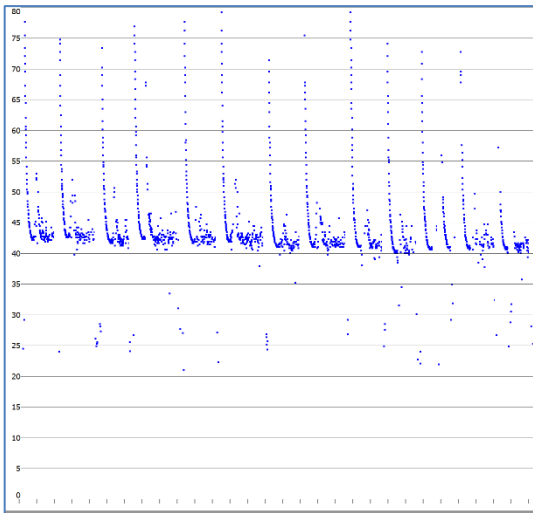
*Myotis macropus* or *Nyctophilus* sp.



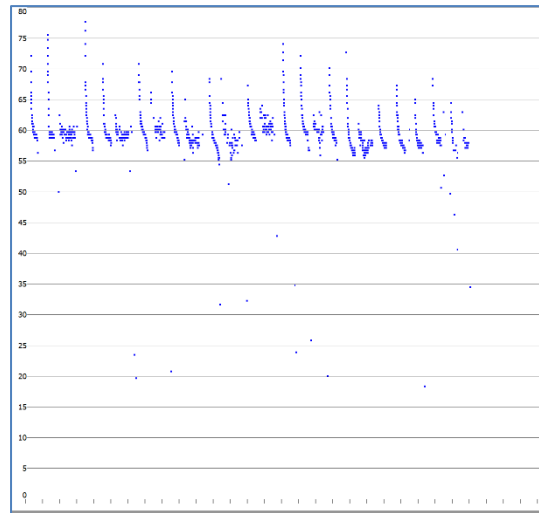
*Scotorepens balstoni*



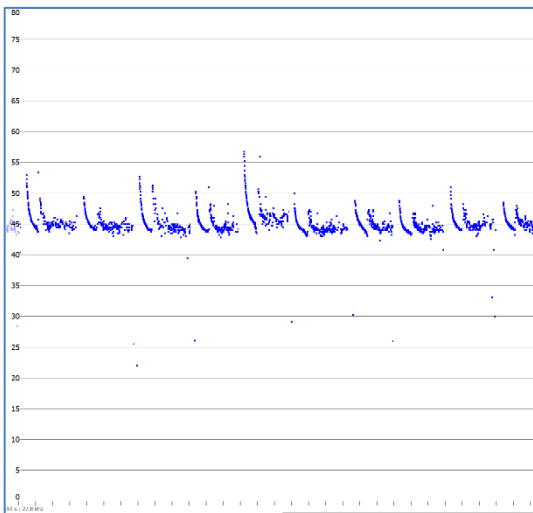
*Scotorepens greyii*



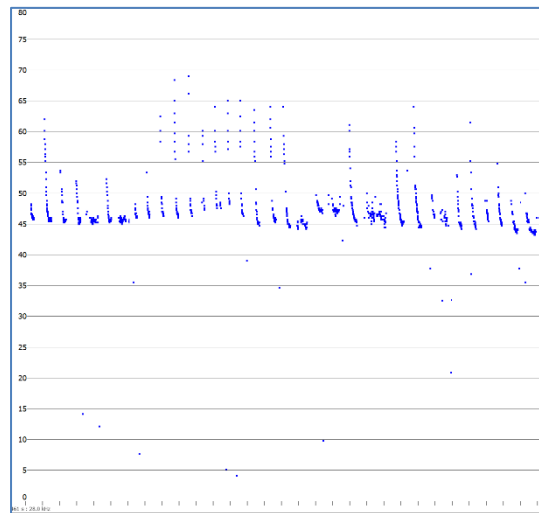
*Scotorepens sanborni*



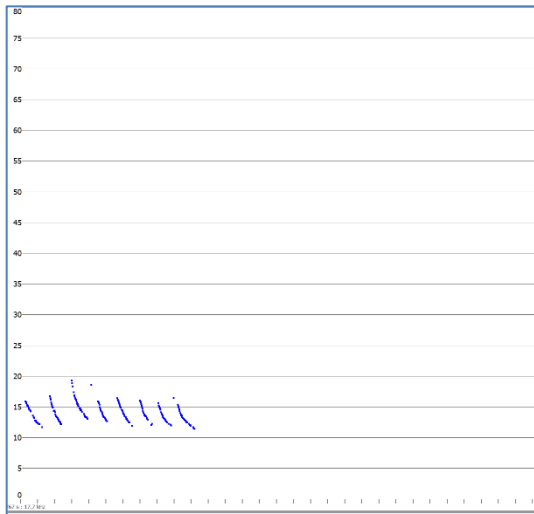
*Miniopterus australis*



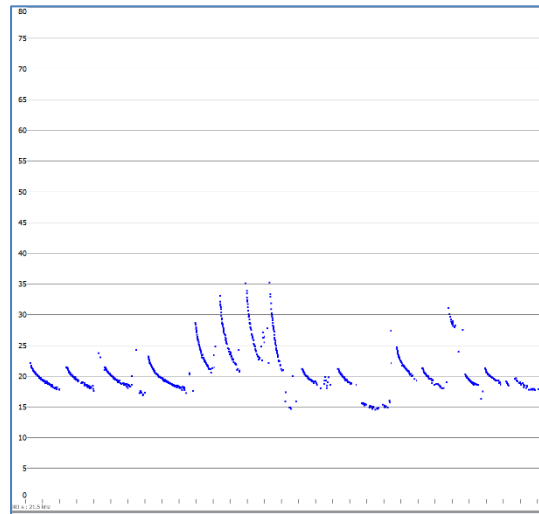
*Miniopterus orianae oceanensis*



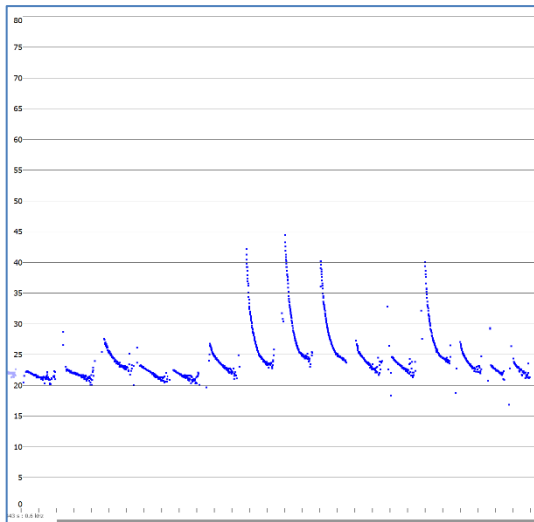
*M. o. oceanensis* or *Vespadelus* sp.



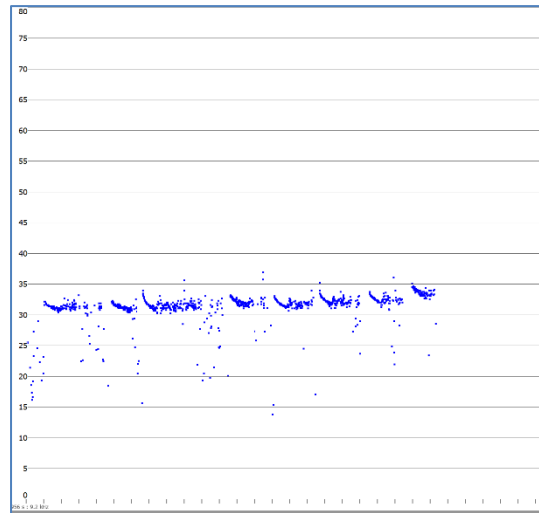
*Austronomus australis*



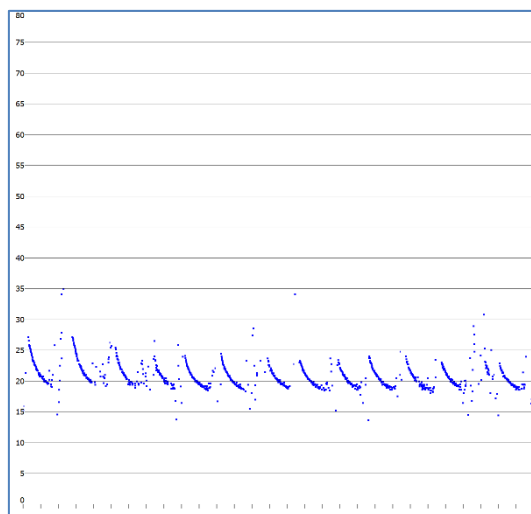
*Chaerephon jobensis*



*Ozimops lumsdenae*



*Ozimops ridei*



*Saccolaimus flaviventris*



## Microbat Call Identification Report

<b>Prepared for (“Client”):</b>	Umwelt Australia
<b>Survey location/project name:</b>	Wooderson
<b>Survey dates:</b>	20-22 February 2024
<b>Client project reference:</b>	
<b>Job no.:</b>	UMW-2412
<b>Report date:</b>	4 July 2024

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## Methods

### Data received

*Balance! Environmental* received 16,004 full-spectrum (WAV format) ultrasonic acoustic files, recorded at three sites using three Anabat Swift detectors (Titley Scientific, Brisbane). The survey was undertaken over the nights of 20<sup>th</sup> – 22<sup>nd</sup> February 2024, with each site sampled by a single detector for between two and three nights (see **Table 1**).

### Bat-call analysis

Analyses were performed in *Anabat Insight* (Version 2.1.2; Titley Scientific, Brisbane). All files were first passed through a noise filter to separate files that contained bat calls from those with only non-bat background noise. Files with bat calls were then processed with the Decision Tree analysis tool, to group similar calls and assign tentative species labels. Each group was then reviewed manually to confirm and/or reassign correct species identities.

Where a Decision Tree output group contained a large number of files, the manual species validation process only continued until all potential constituent species were identified for each site. The remaining files simply retained the multi-species group label.

Final call identification was achieved manually by comparing call spectrograms and derived metrics of labelled files with those of regionally relevant reference calls and/or with published call descriptions (e.g., Reinhold *et al.* 2001). The likelihood of species' occurrence in the survey area was confirmed by referring to relevant distributional information (e.g., Australasian Bat Society 2021; Churchill 2008; Baker & Gynther 2023).

### Reporting standard

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Species nomenclature follows Armstrong *et al.* (2020).

**Table 1** Bat detector deployment schedule: Wooderson, 20-22 February 2024.

Site coordinates derived from detector GPS metadata.

Folder	Latitude	Longitude	First night	Last night	No. detector-nights
UMBAT05	-24.0802	150.8813	20/02/2024	22/02/2024	3
UMBAT06	-24.1240	150.8643	20/02/2024	22/02/2024	3
UMBAT07	-24.1314	150.8637	21/02/2024	22/02/2024	2
Total detector-nights					8

## Results & Discussion

Noise-filtration reduced the dataset requiring analysis to just 1559 files, within which 1720 individual bat calls were identified.

Fourteen species were detected during the survey (see **Table 2**), with 40% (697) of the identified calls positively attributed to those 14 species. The remaining calls were all surplus calls representing species that were already positively identified.

More than 93% (1604) of the calls were detected at just one site (UMBAT05). Based on a review of Google Earth satellite imagery, the detector was deployed at a waterhole near the junction of two creeks. The recording of *Myotis macropus* calls at this site confirms the presence of water; and a high proportion of the other species' calls showed characteristics of bats flying in a highly-cluttered air-space and/or coming down to drink at the waterhole.

Sample spectrograms of each identified call type are presented in **Appendix 1**, while a count of calls attributed to each species and unresolved group is shown in **Appendix 2**.

**Table 2** Bats recorded at Wooderson, 20-22 February 2024.

◆ = Definite - at least one call recorded at the site was attributed unequivocally to the species

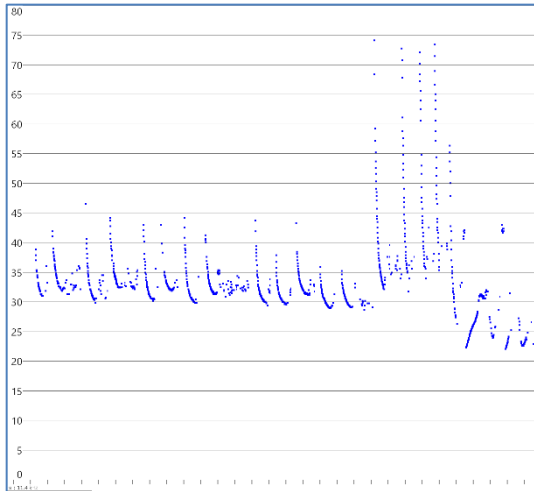
□ = Possible - calls like those of the species were recorded but could not be reliably identified

Site:	UMBAT05	UMBAT06	UMBAT07
<i>Chalinolobus gouldii</i>	◆		◆
<i>Chalinolobus morio</i>	◆		
<i>Chalinolobus nigrogriseus</i>	◆		
<i>Chalinolobus picatus</i>	◆	◆	◆
<i>Myotis macropus</i>	◆	◆	
<i>Scotorepens balstoni</i>	◆		
<i>Scotorepens greyii</i>	◆		◆
<i>Scotorepens sanborni</i>	◆	◆	◆
<i>Miniopterus australis</i>	◆		
<i>Miniopterus oriana oceanensis</i>	◆		
<i>Chaerephon jobensis</i>			◆
<i>Ozimops lumsdenae</i>	◆	◆	◆
<i>Ozimops ridei</i>	◆	◆	◆
<i>Saccolaimus flaviventris</i>	◆		◆

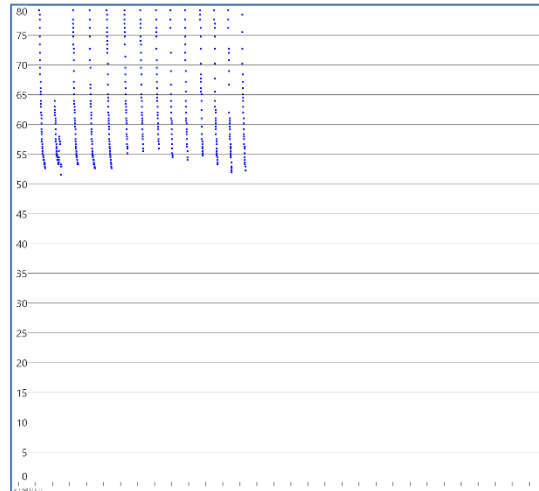
## References

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URL: <http://ausbats.org.au/species-list/4593775065>
- Australasian Bat Society (2021), *BatMap*. <http://ausbats.org.au/batmap>. Accessed 5/5/2022.
- Baker, A. and Gynther, I. (ed.) (2023). *Strahan's Mammals of Australia*. 4th edition; New Holland; Sydney.
- Churchill, S. (2008). *Australian Bats*. Jacana Books, Allen & Unwin; Sydney.
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- Reinhold, L., Law, B., Ford, G. and Pennay, M. (2001). *Key to the bat calls of south-east Queensland and north-east New South Wales*. Department of Natural Resources and Mines, Brisbane.

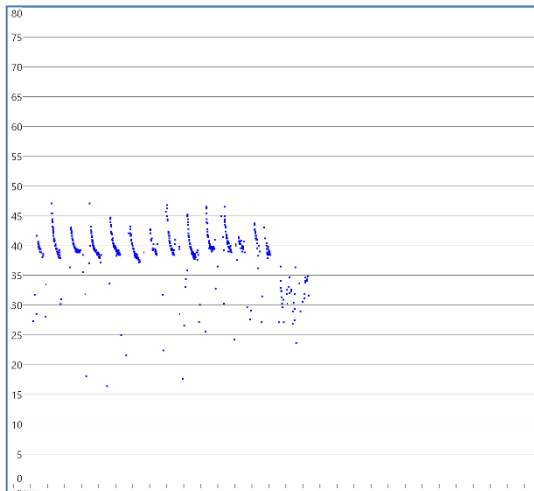
**Appendix 1** Representative calls recorded at Wooderson, 20-22 February 2024.  
 x-axis = 10 ms per tick-mark; time between pulses removed ("compressed")



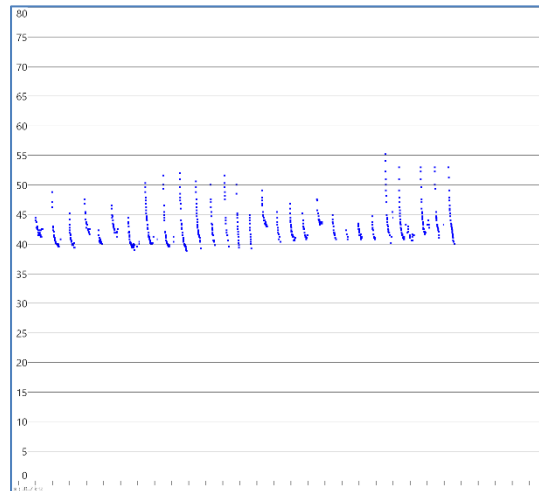
*Chalinolobus gouldii*



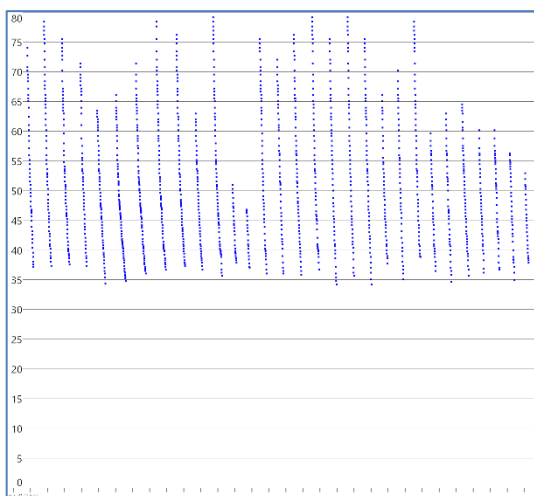
*Chalinolobus morio*



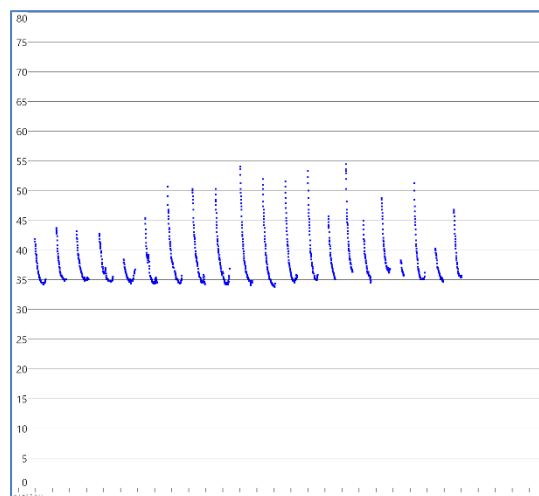
*Chalinolobus nigrogriseus*



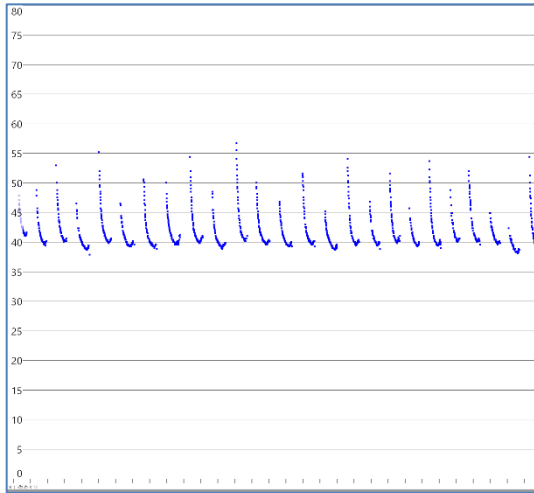
*Chalinolobus picatus*



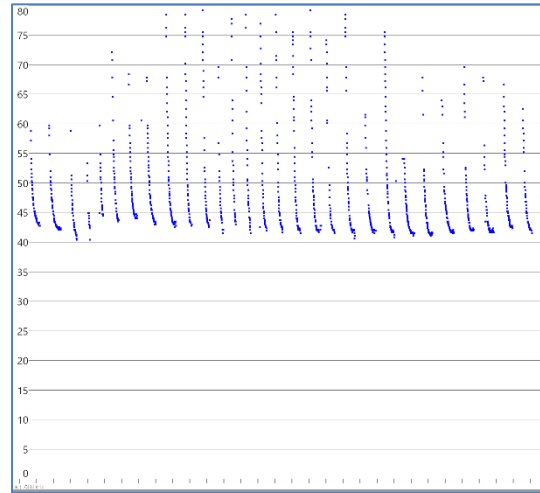
*Myotis macropus*



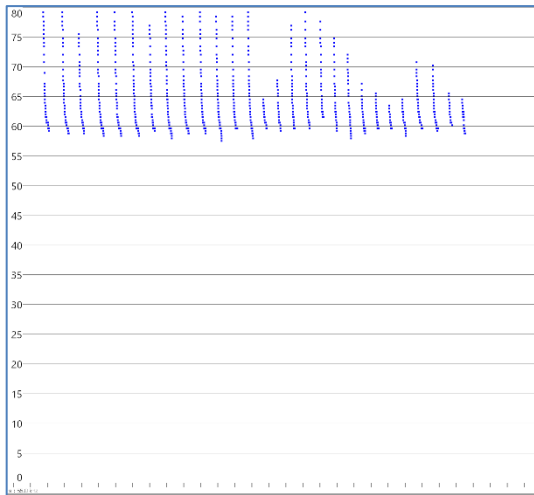
*Scotorepens balstoni*



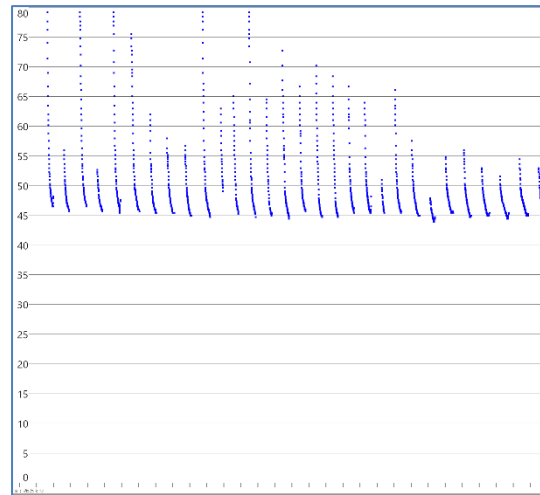
*Scotorepens greyii*



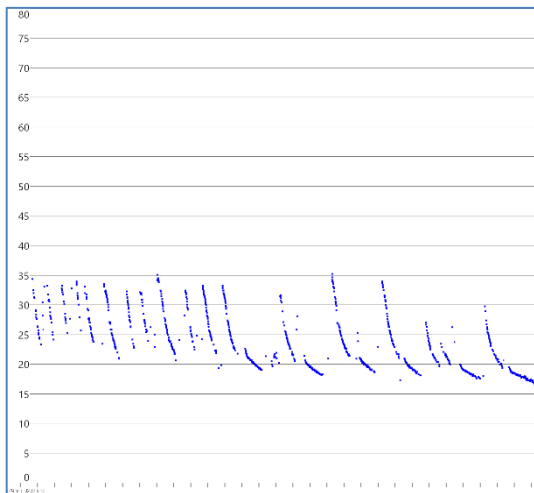
*Scotorepens sanborni*



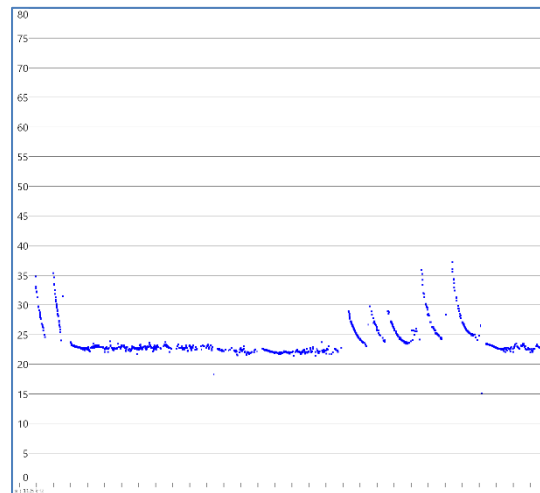
*Miniopterus australis*



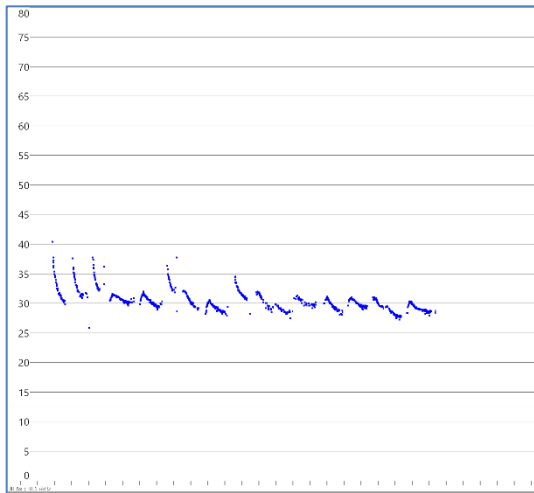
*Miniopterus orianae oceanensis*



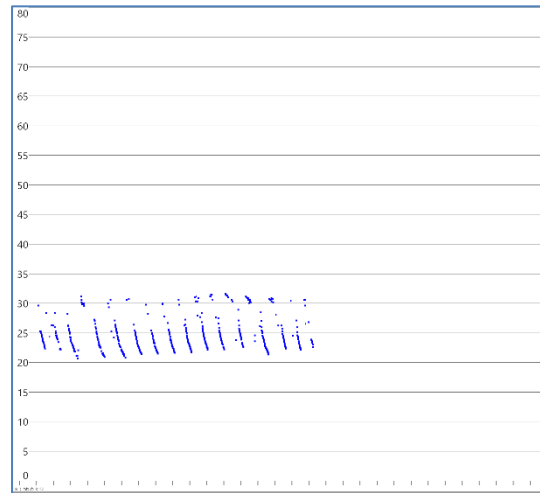
*Chaerephon jobensis*



*Ozimops lumsdenae*



*Ozimops ridei*



*Saccolaimus flaviventris*

**Appendix 2** Bats recorded at Wooderson, 20-22 February 2024.

Number of calls allocated per species per detector-night.

Site:	UMBAT05	UMBAT06	UMBAT07	Species Total
<b>Positively identified calls</b>				
<i>Chalinolobus gouldii</i>	69		58	127
<i>Chalinolobus morio</i>	2			2
<i>Chalinolobus nigrogriseus</i>	15			15
<i>Chalinolobus picatus</i>	5	1	13	20
<i>Myotis macropus</i>	74	3		77
<i>Scotorepens balstoni</i>	134			134
<i>Scotorepens greyii</i>	26		5	31
<i>Scotorepens sanborni</i>	22	8	6	36
<i>Miniopterus australis</i>	139			139
<i>Miniopterus orianae oceanensis</i>	7			7
<i>Chaerephon jobensis</i>			2	2
<i>Ozimops lumsdenae</i>	27	2	2	31
<i>Ozimops ridei</i>	61	1	3	65
<i>Saccolaimus flaviventris</i>	4		7	11
<b>Unresolved calls</b>				
<i>C. gouldii</i> / <i>O. ridei</i>			5	5
<i>C. gouldii</i> / <i>O. ridei</i> / <i>S. balstoni</i>	280			280
<i>C. nigrogriseus</i> / <i>S. greyii</i> / <i>S. sanborni</i> / <i>C. picatus</i>	739			739
Site Total	1604	15	101	1720



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