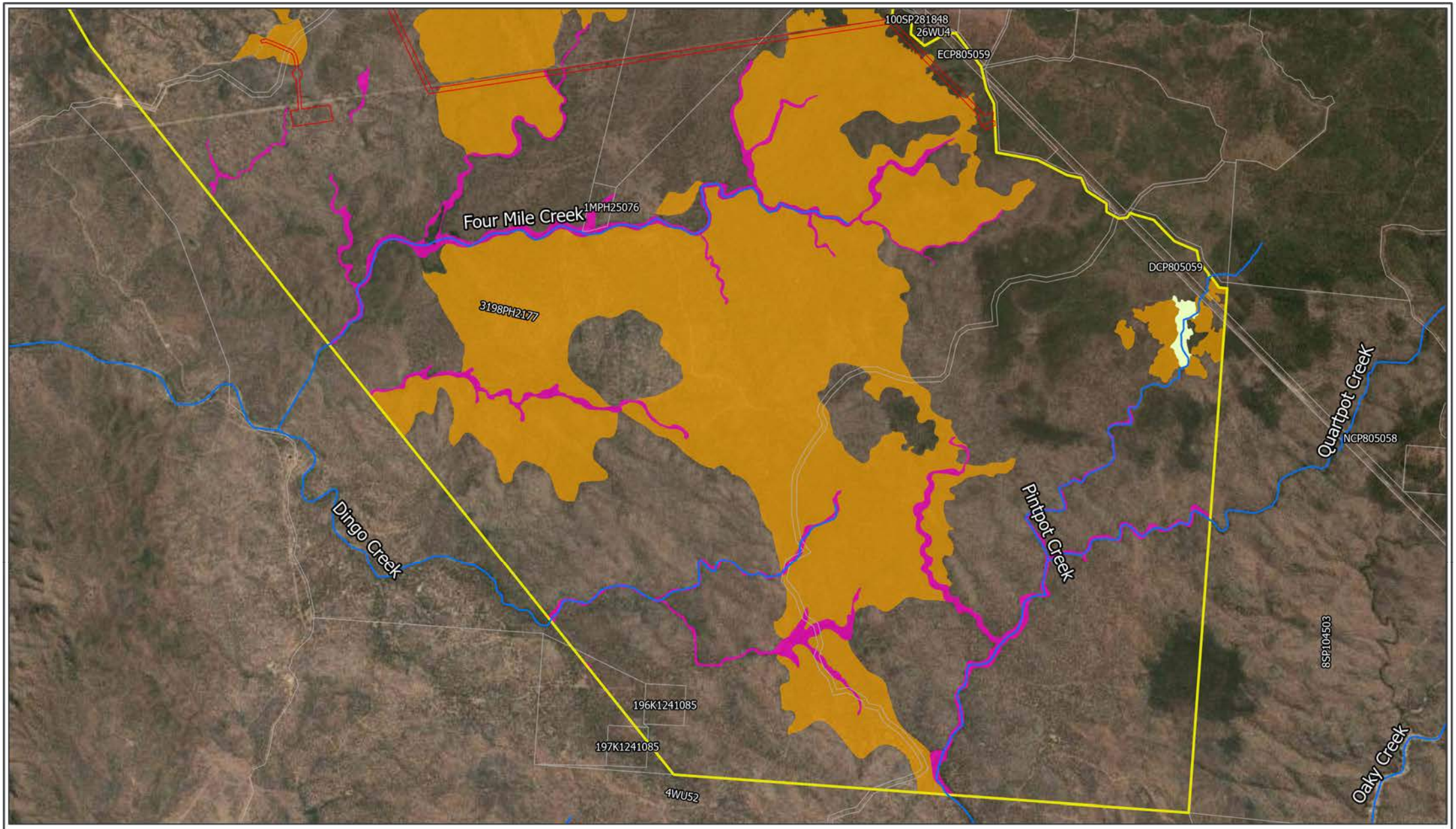
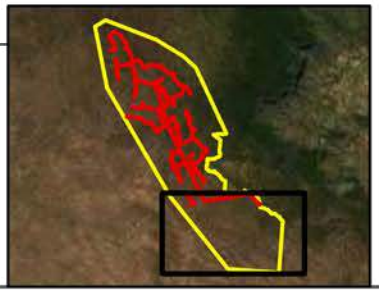



## Figure 10 : Threatened flora potential habitat (forbs)

- Disturbance footprint
- Project area
- Cadastral boundaries
- Watercourses

Potential threatened flora habitat

- *Oenanthe javanica* (water celery)
- *Corybas cerasinus* (red helmet orchid)
- *Solanum graniticum* (granite nightshade)
- *Glossocardia orthochaeta*
- *Commersonia reticulata*



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Datum/Projection:
GDA2020 MGA Zone 55
Project: 20906-MD Date: 1/07/2022

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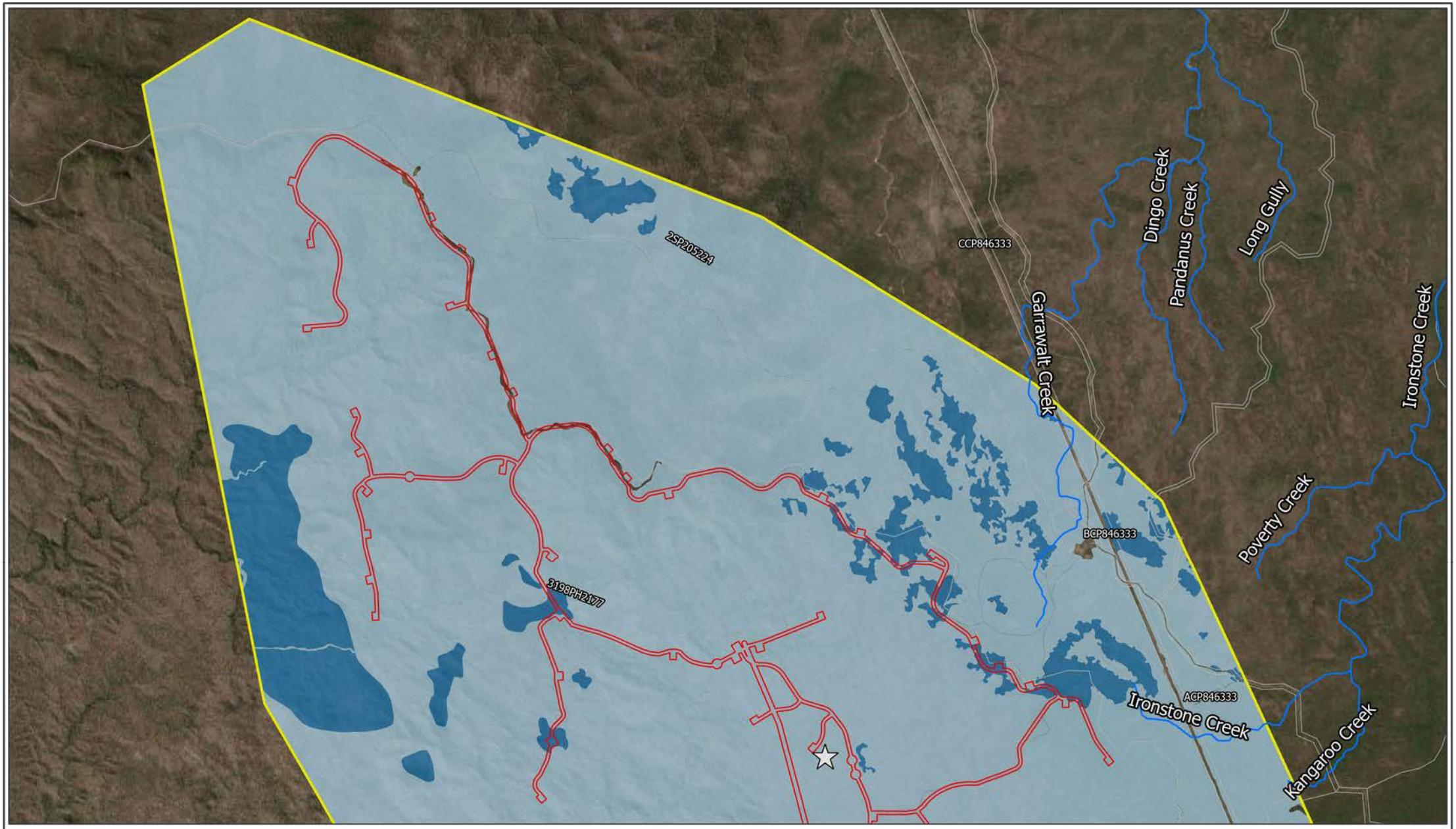
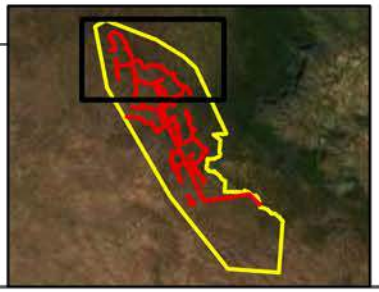



**Figure 11 : Koala records and habitat - North**

Disturbance footprint
Project area
Cadastral boundaries
Watercourses

ELA Threatened species records
Koala

Koala habitat
Species habitat
Species marginal habitat



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Project: 20906-MD Date: 1/07/2022

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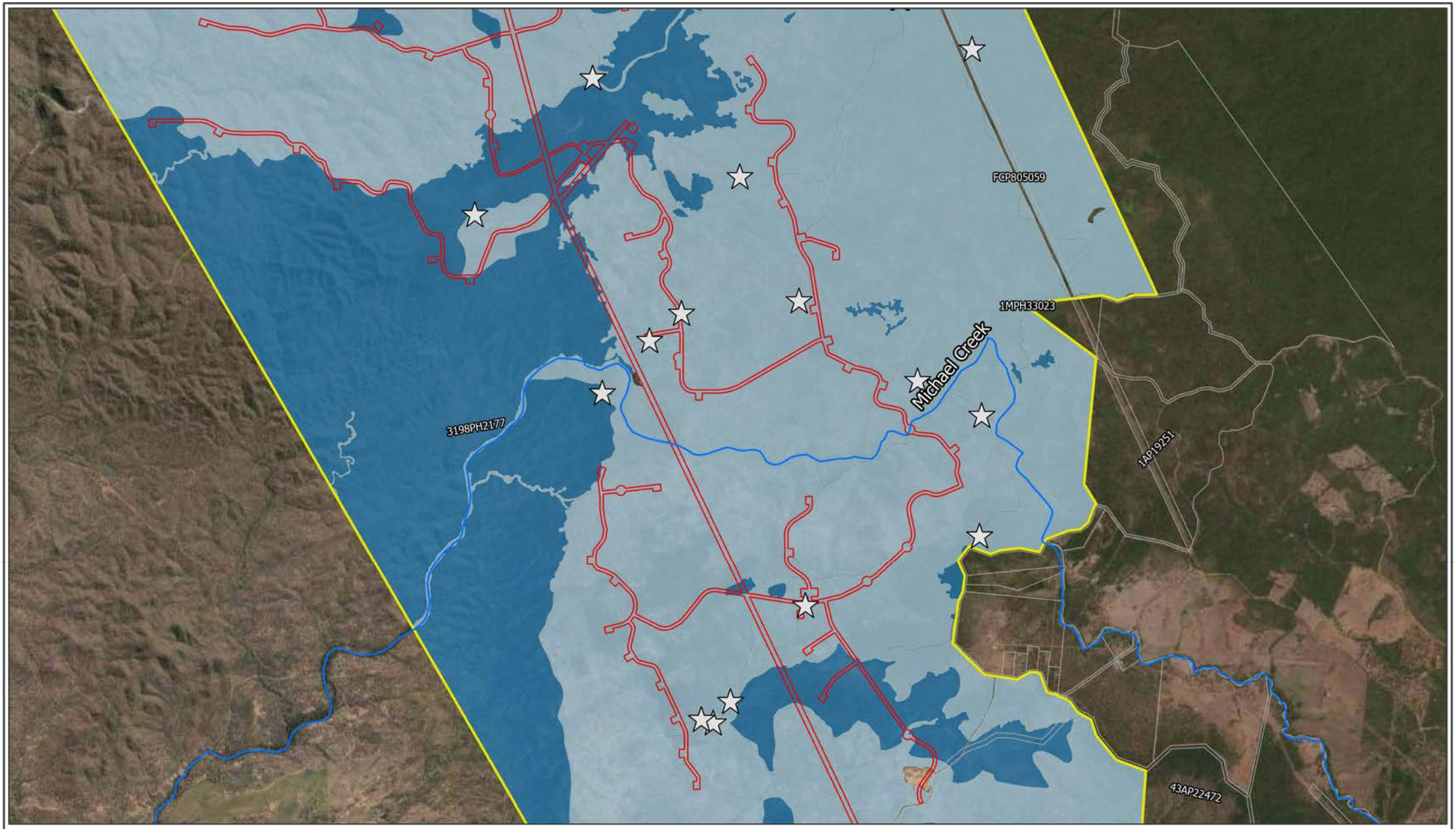
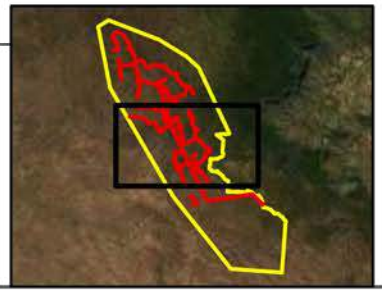



**Figure 11 : Koala records and habitat - Centre**

Disturbance footprint
Project area
Cadastral boundaries
Watercourses

ELA Threatened species records
Koala

Koala habitat
Species habitat
Species marginal habitat



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Datum/Projection:
GDA2020 MGA Zone 55
Project: 20906-MD Date: 1/07/2022

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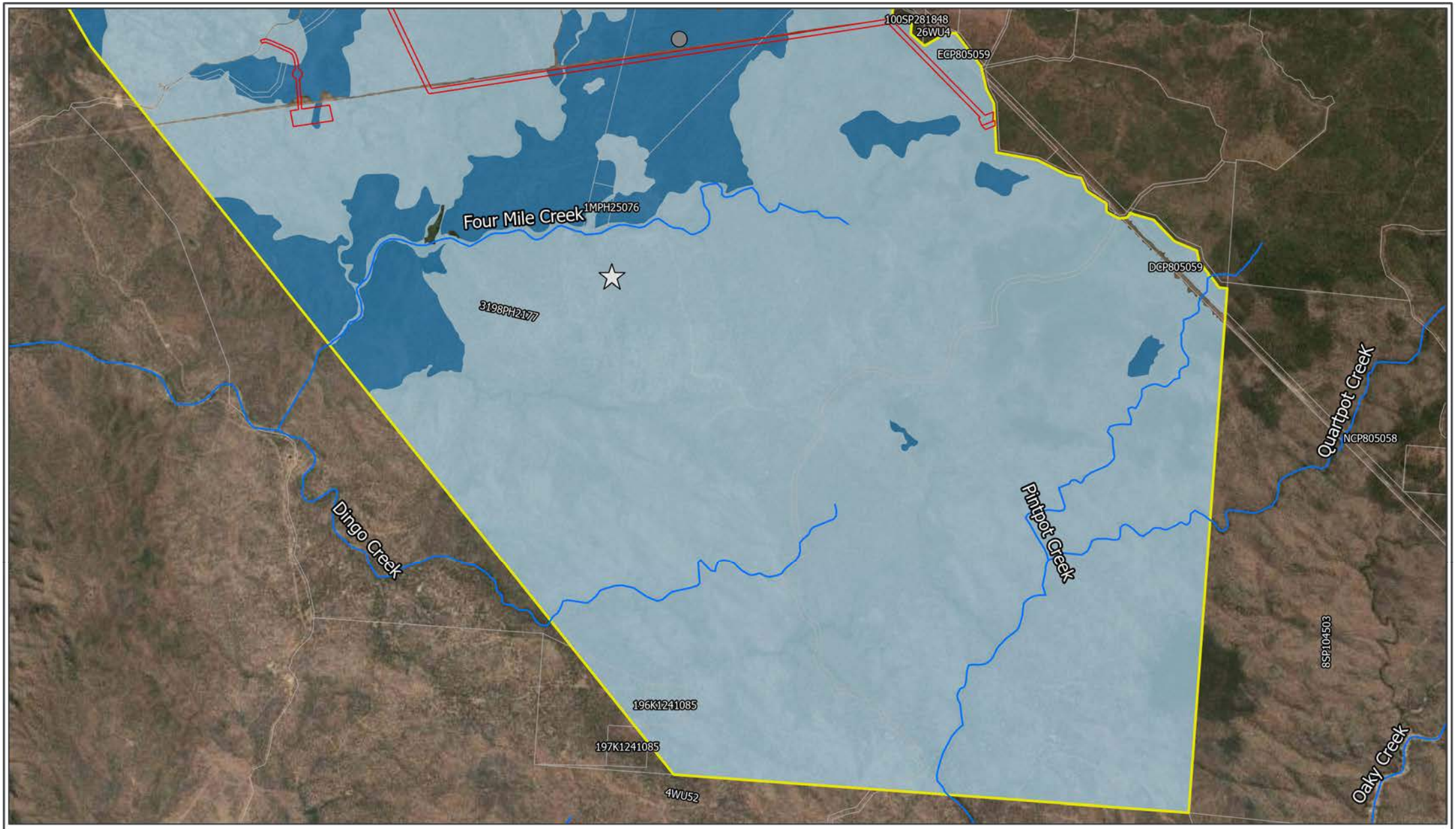


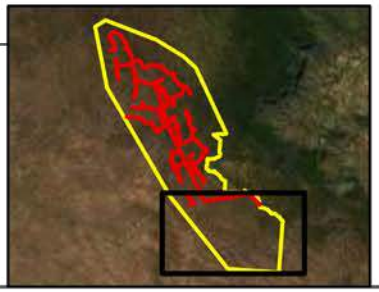

**Figure 11 : Koala records and habitat - South**

- Disturbance footprint
- Project area
- Cadastral boundaries
- Watercourses

ELA Threatened species records
- ☆ Koala

ALA Threatened species records
- ● Koala

Koala habitat
- Species habitat
- Species marginal habitat



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GDA2020 MGA Zone 55
Project: 20906-MD Date: 1/07/2022

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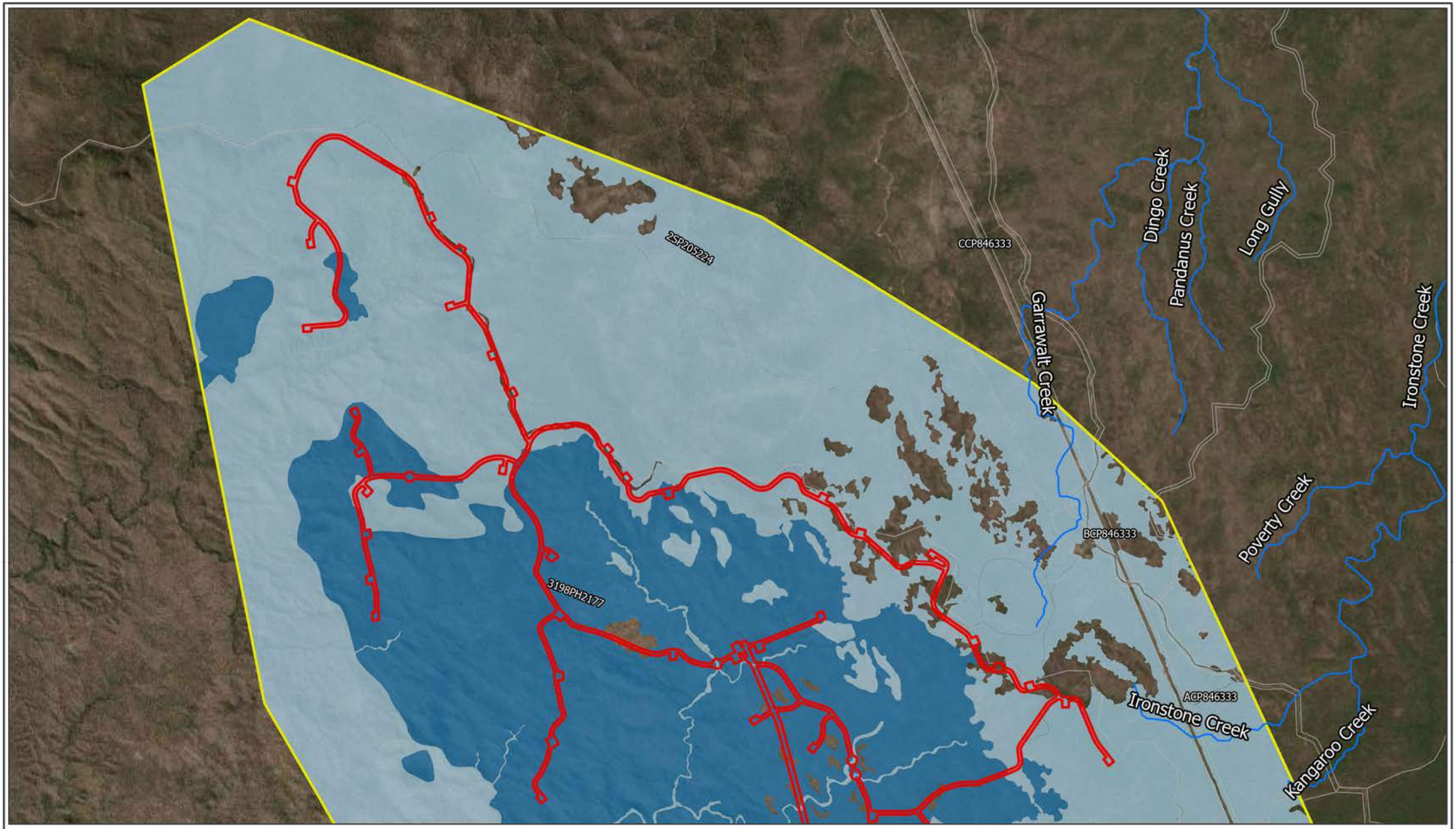
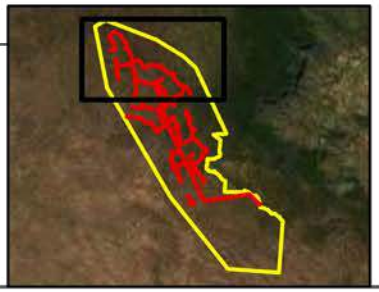



**Figure 12 : Greater glider records and habitat - North**

- Disturbance footprint
- Project area
- Cadastral boundaries
- Watercourses

Greater glider habitat

- Species habitat
- Species marginal habitat



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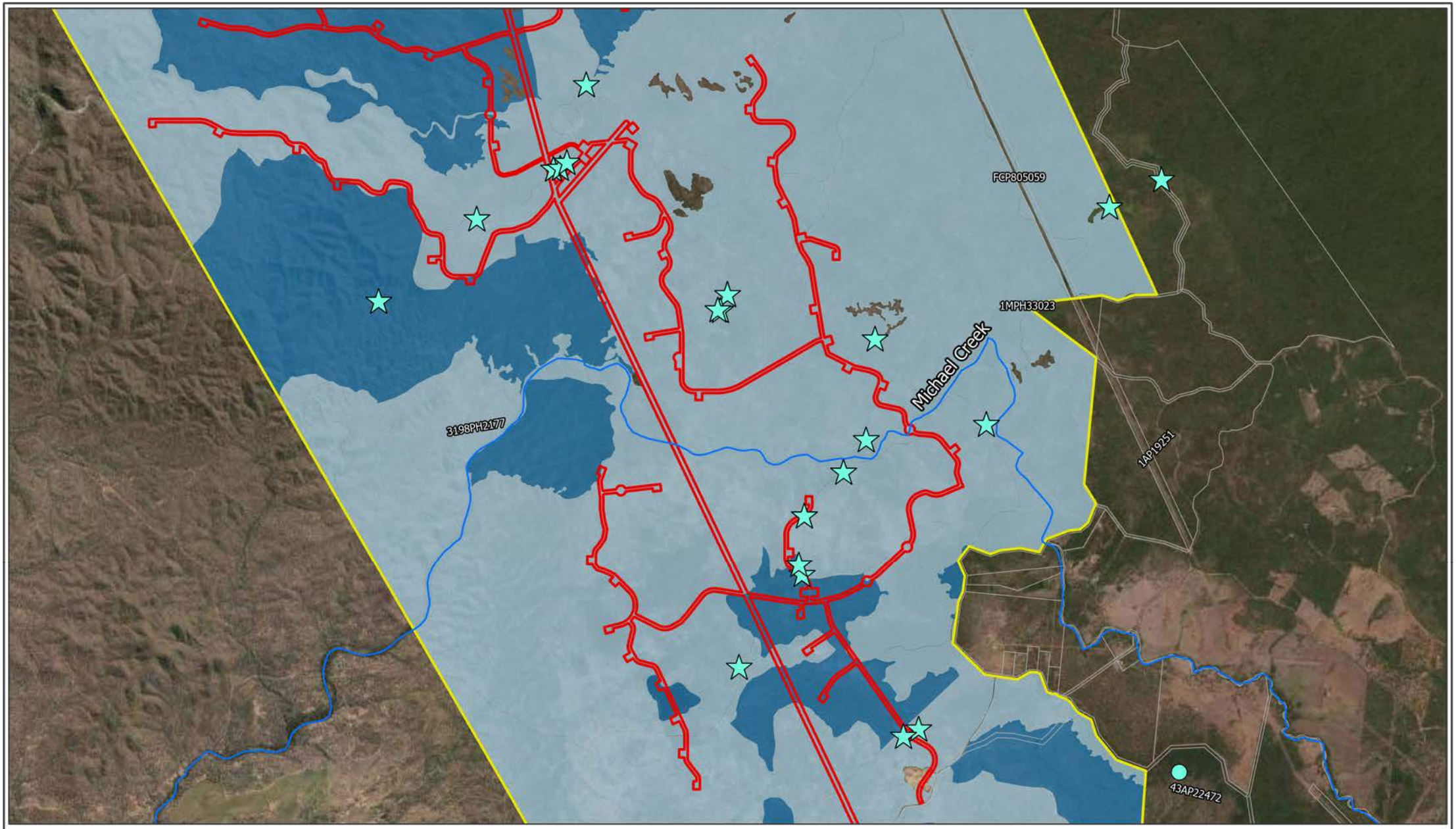


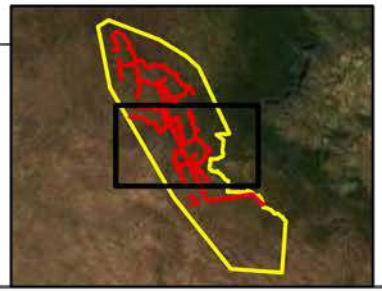

**Figure 12 : Greater glider records and habitat - Centre**

Disturbance footprint
Project area
Cadastral boundaries
Watercourses

ELA Threatened species records
Greater Glider

ALA Threatened species records
Greater Glider

Greater glider habitat
Species habitat
Species marginal habitat



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Project: 20906-MD Date: 1/07/2022

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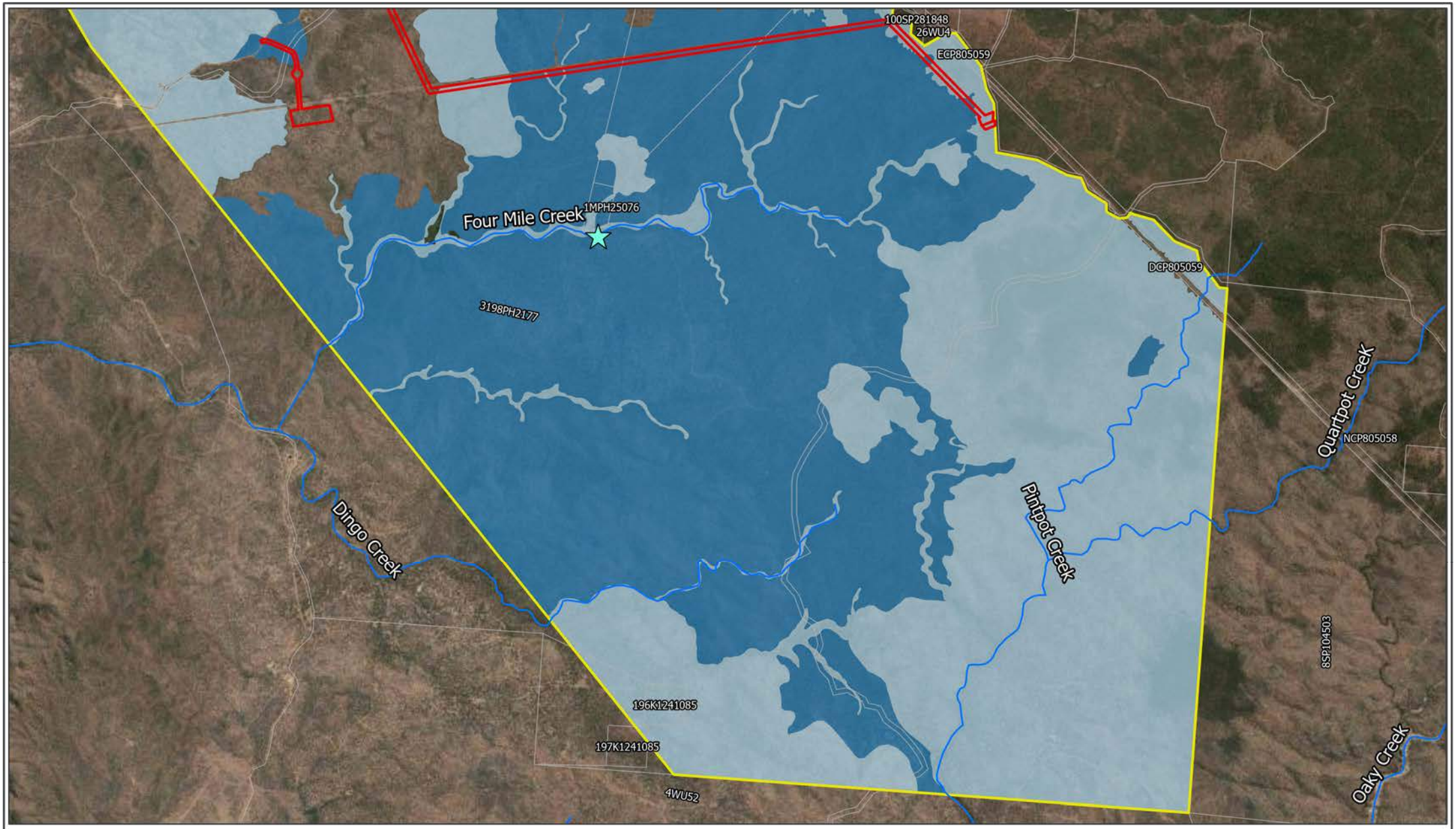



**Figure 12 : Greater glider records and habitat - South**

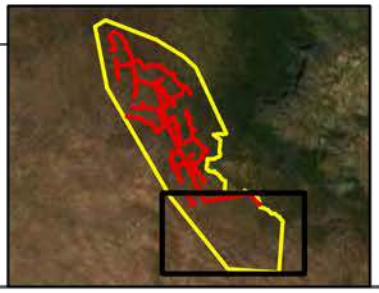
- Disturbance footprint
- Project area
- Cadastral boundaries
- Watercourses

ELA Threatened species records

- Greater Glider

Greater glider habitat

- Species habitat
- Species marginal habitat



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Project: 20906-MD Date: 1/07/2022

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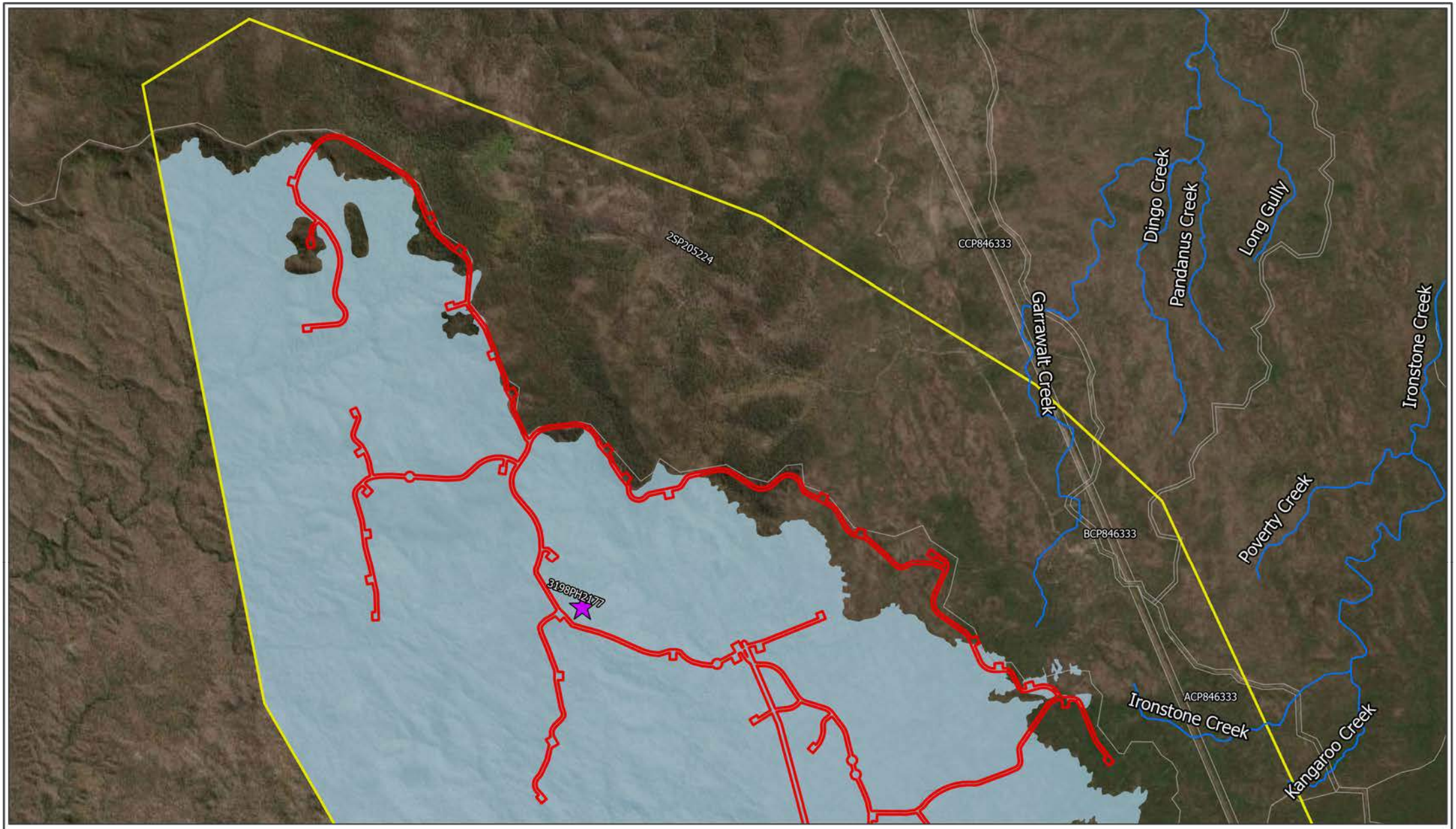
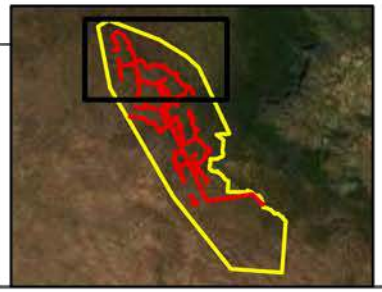



**Figure 13 : Sharman's rock-wallaby records and habitat - North**

Disturbance footprint
Project area
Cadastral boundaries
Watercourses

ELA Threatened species records
Sharman's Rock Wallaby

Sharman's rock-wallaby habitat
Species habitat
Species marginal habitat



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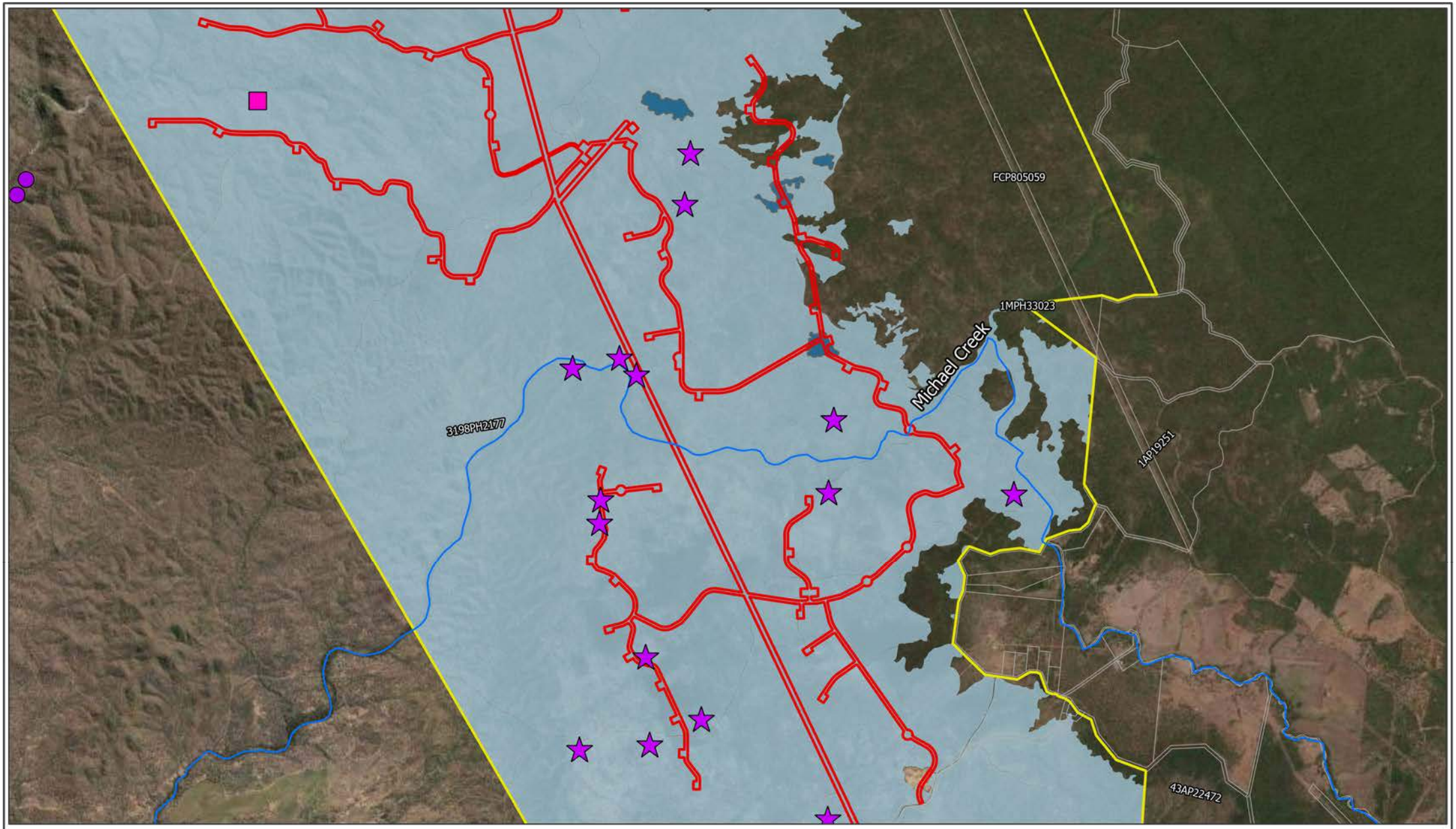



## Figure 13 : Sharman's rock-wallaby records and habitat - Centre

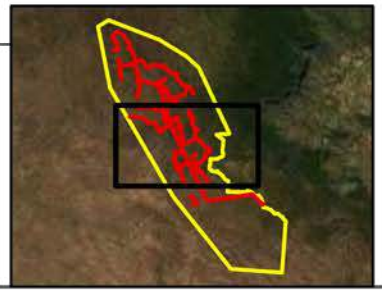
Disturbance footprint
Project area
Cadastral boundaries
Watercourses

ELA Threatened species records
Sharman's Rock Wallaby

ALA Threatened species records
Sharman's Rock-wallaby

Nature Advisory Records 2022
Sharman's Rock-wallaby

Sharman's rock-wallaby habitat
Species habitat
Species marginal habitat



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Datum/Projection:
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Project: 20906-MD Date: 1/07/2022

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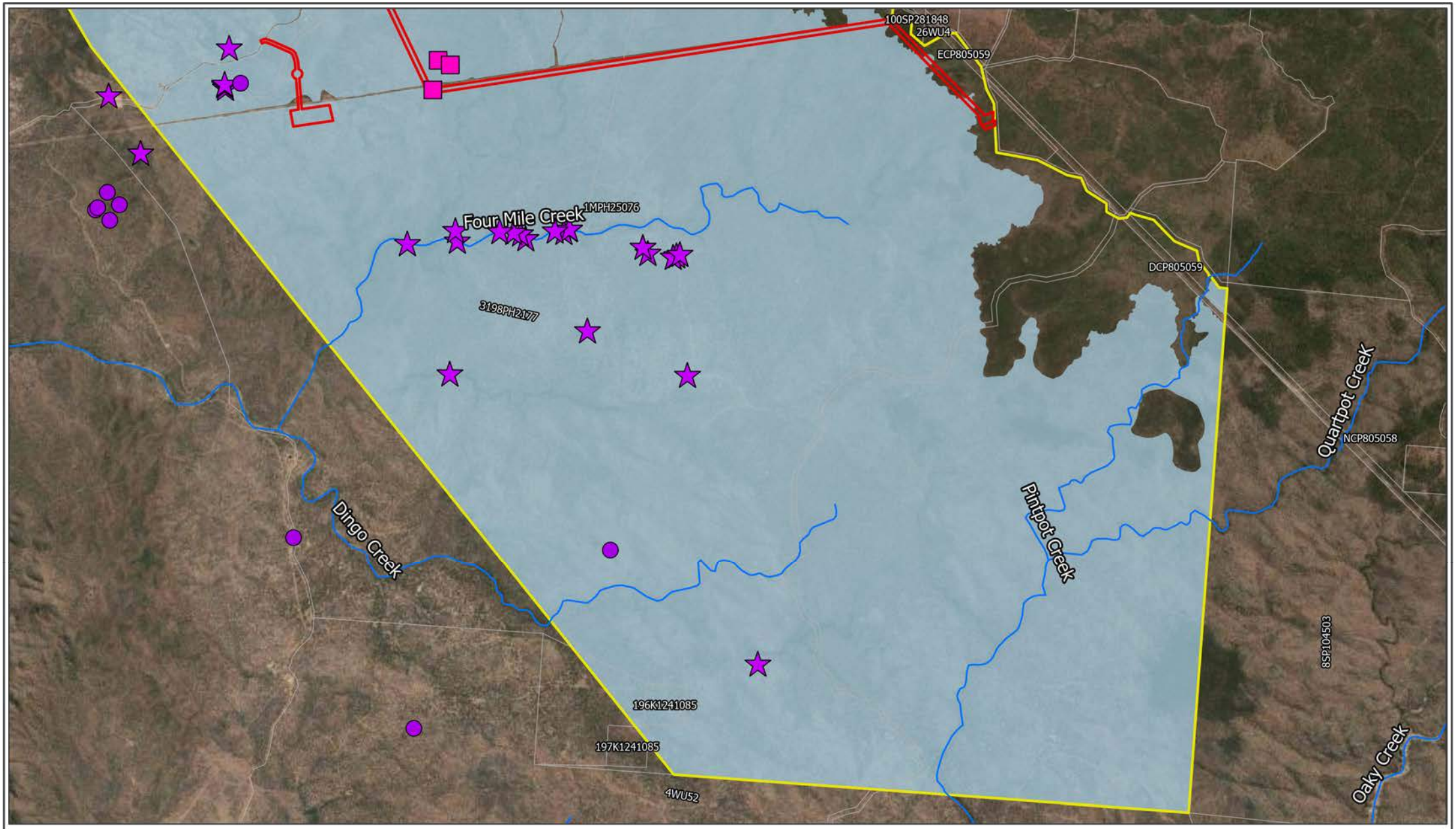



## Figure 13 : Sharman's rock-wallaby records and habitat - South

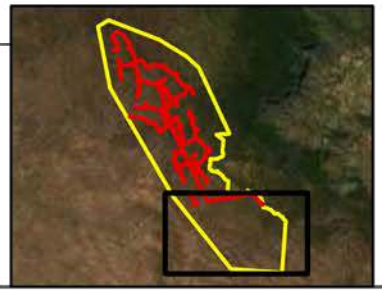
Disturbance footprint
Project area
Cadastral boundaries
Watercourses

ELA Threatened species records
Sharman's Rock Wallaby

ALA Threatened species records
Sharman's Rock-wallaby

Nature Advisory Records 2022
Sharman's Rock-wallaby

Sharman's rock-wallaby habitat
Species habitat
Species marginal habitat



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Project: 20906-MD Date: 1/07/2022

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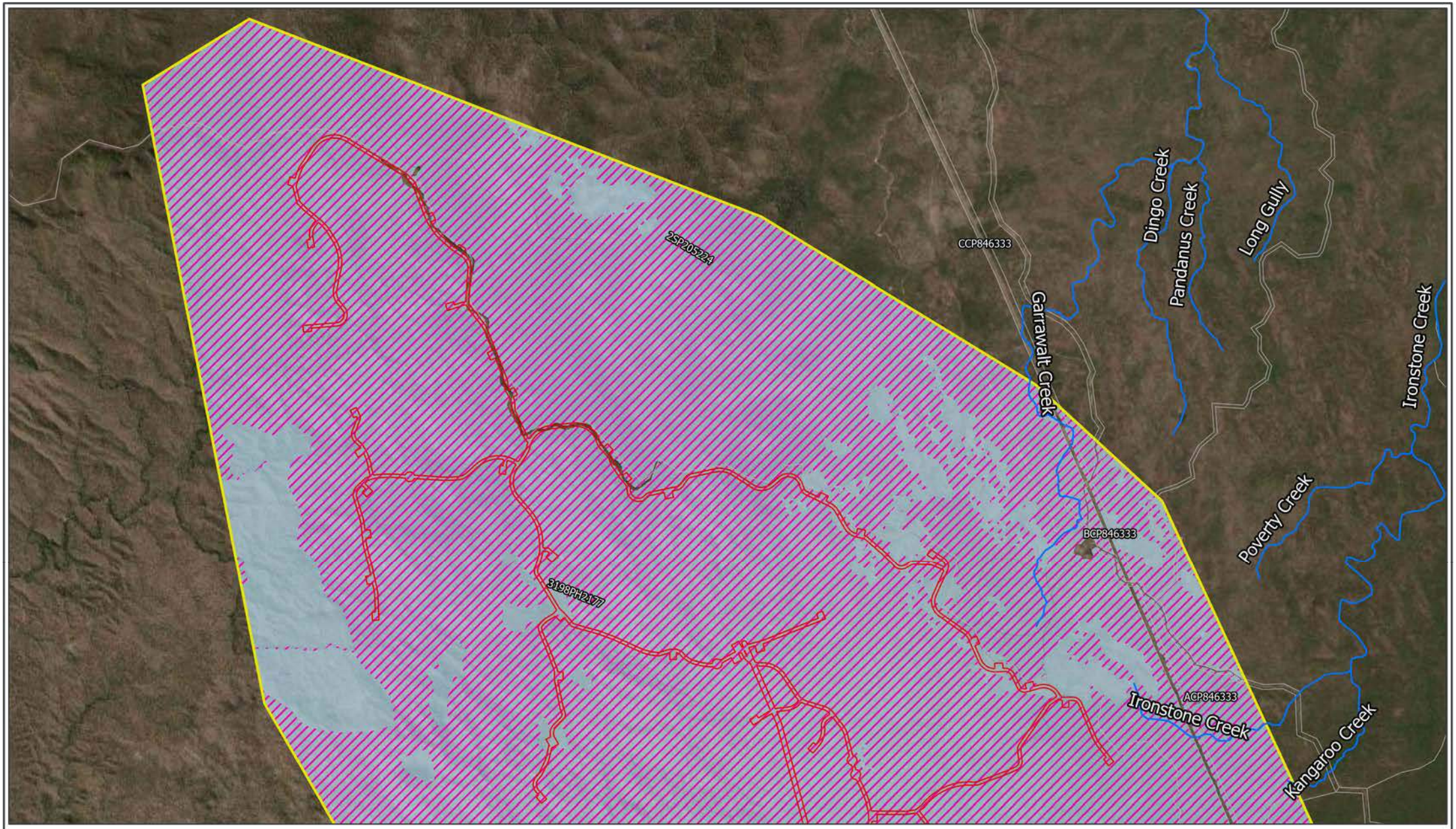


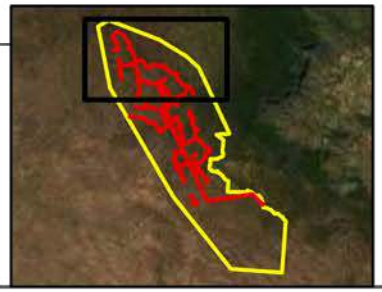

## Figure 14: Threatened micro- and mega-bat records and habitat - North

- Disturbance footprint
- Project area
- Cadastral boundaries
- Watercourses

Micro and mega bat habitat

- Grey-headed flying-fox (*Pteropus poliocephalus*)
- Spectacled flying-fox (*Pteropus conspicillatus*)

- Bare-rumped sheath-tailed bat (*Saccolaimus saccolaimus nudicluniatus*)
- Diadem leaf-nosed bat (*Hipposideros diadema reginae*)
- Greater large-eared horseshoe bat (*Rhinolophus robertsi*)



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Datum/Projection:
GDA2020 MGA Zone 55
Project: 20906-MD Date: 1/07/2022

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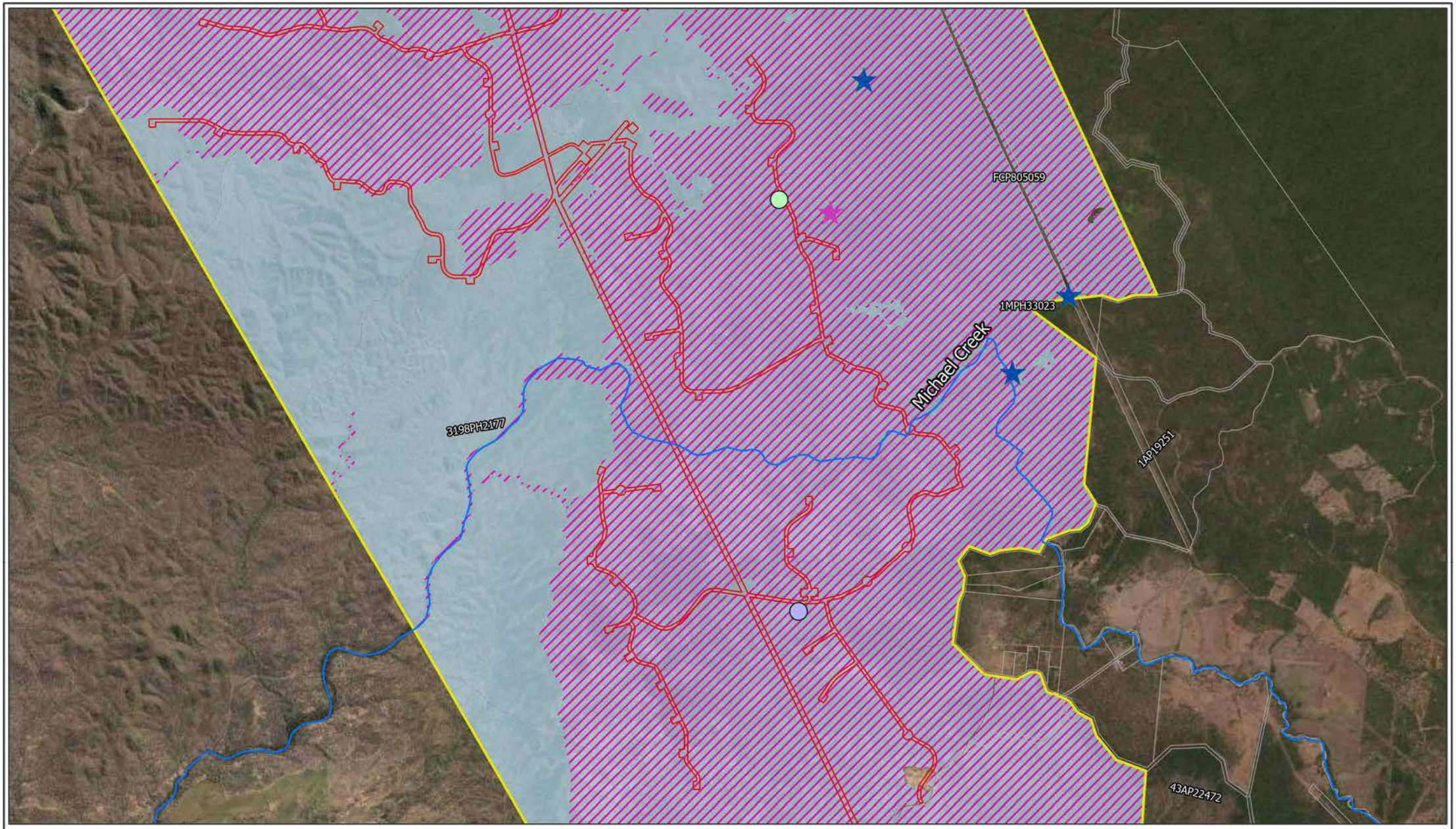


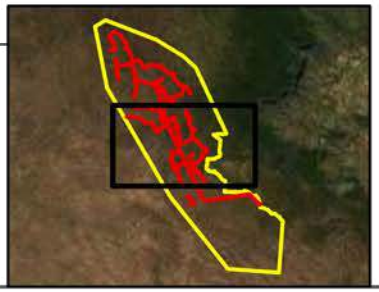

## Figure 14: Threatened micro- and mega-bat records and habitat - Centre

Disturbance footprint
Project area
Cadastral boundaries
Watercourses

Micro and mega bat habitat
Grey-headed flying-fox (*Pteropus poliocephalus*)
Spectacled flying-fox (*Pteropus conspicillatus*)
Bare-rumped sheath-tailed bat (*Saccolaimus saccolaimus nudicluniatus*)
Diadem leaf-nosed bat (*Hipposideros diadema reginae*)
Greater large-eared horseshoe bat (*Rhinolophus robertsi*)

ELA Threatened species records
Bare-rumped Sheathtail Bat
Diadem leaf-nosed bat
Greater large-eared horseshoe bat

Nature Advisory Records 2022
Bare-rumped Sheath-tailed Bat
Bare-rumped Sheath-tailed Bat (Potential)
Diadem Leaf-nosed Bat



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Datum/Projection:
GDA2020 MGA Zone 55
Project: 20906-MD Date: 1/07/2022

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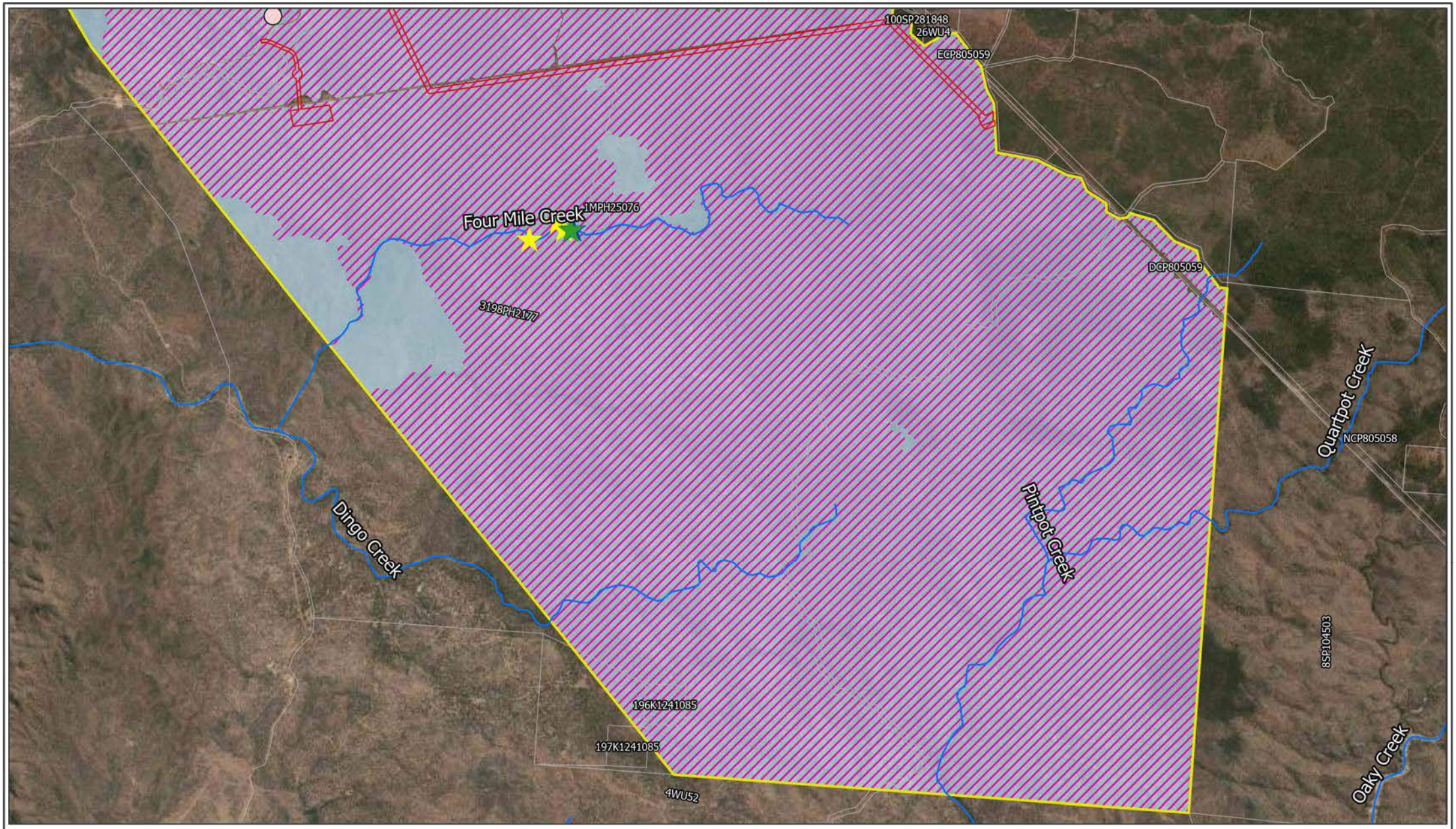



## Figure 14: Threatened micro- and mega-bat records and habitat - South

- Disturbance footprint
- Project area
- Cadastral boundaries
- Watercourses

Micro and mega bat habitat

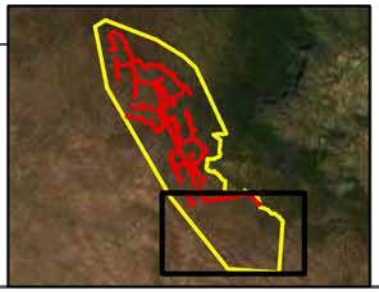
- Grey-headed flying-fox (*Pteropus poliocephalus*)
- Spectacled flying-fox (*Pteropus conspicillatus*)
- Bare-rumped sheath-tailed bat (*Saccolaimus saccolaimus nudicluniatus*)
- Diadem leaf-nosed bat (*Hipposideros diadema reginae*)
- Greater large-eared horseshoe bat (*Rhinolophus robertsi*)

ELA Threatened species records

- Bare-rumped Sheathtail Bat
- Greater large-eared horseshoe bat
- Spectacled flying fox

Nature Advisory Records 2022

- Bare-rumped Sheath-tailed Bat



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Project: 20906-MD Date: 1/07/2022

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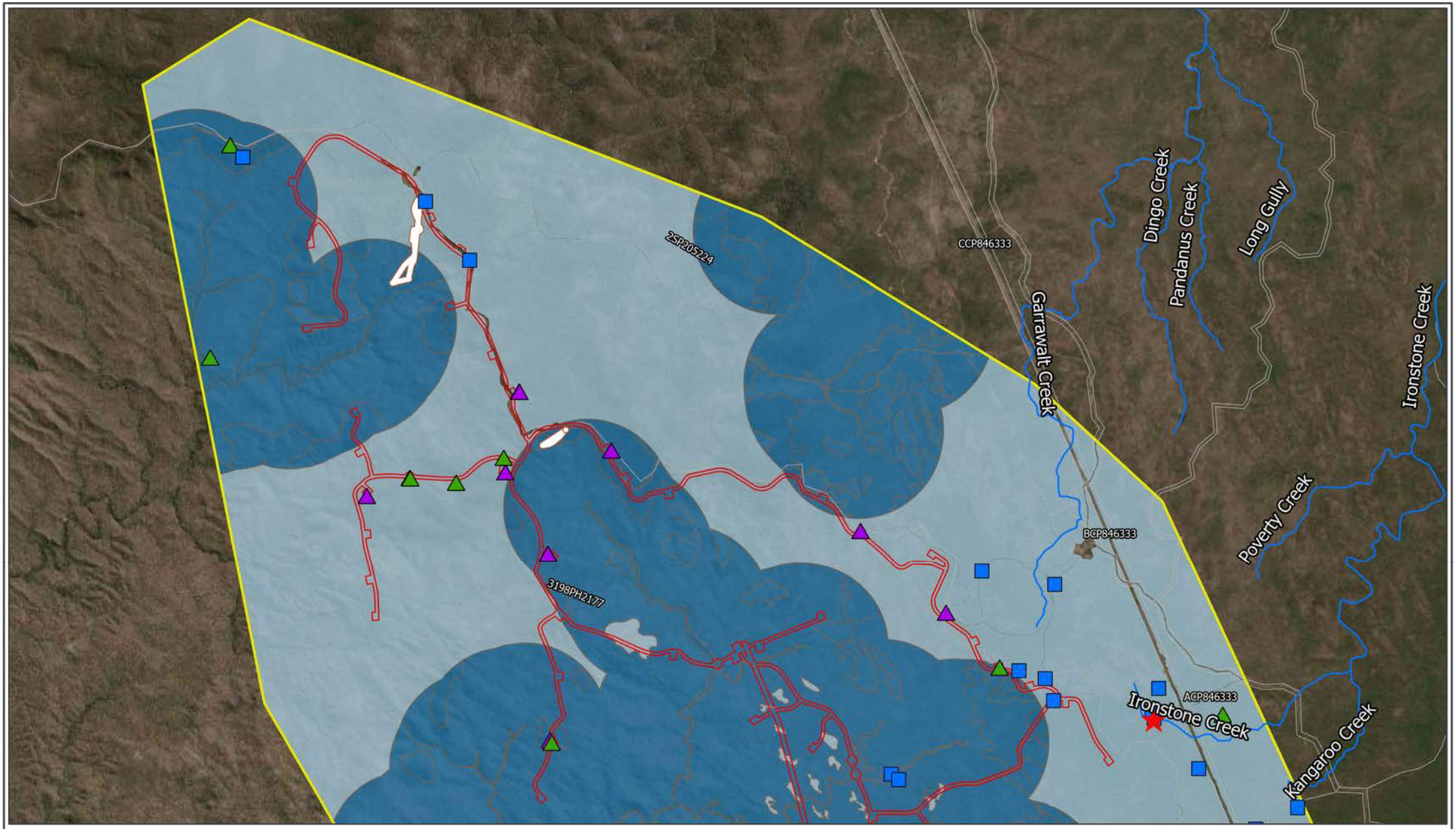


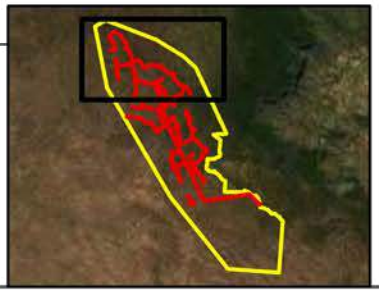

**Figure 15 : Red goshawk records and habitat - North**

- Disturbance footprint
- Project area
- Cadastral boundaries
- Watercourses

ELA Threatened species records
- Goshawk Red

Red Goshawk
- Species foraging habitat
- Potential nesting and foraging habitat - 1 km buffer to permanent water

Survey sites
- Bird Survey
- Red Goshawk Microhabitat
- Red Goshawk Habitat Quality
- Drone survey



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Datum/Projection:
GDA2020 MGA Zone 55
Project: 20906-MD Date: 1/07/2022

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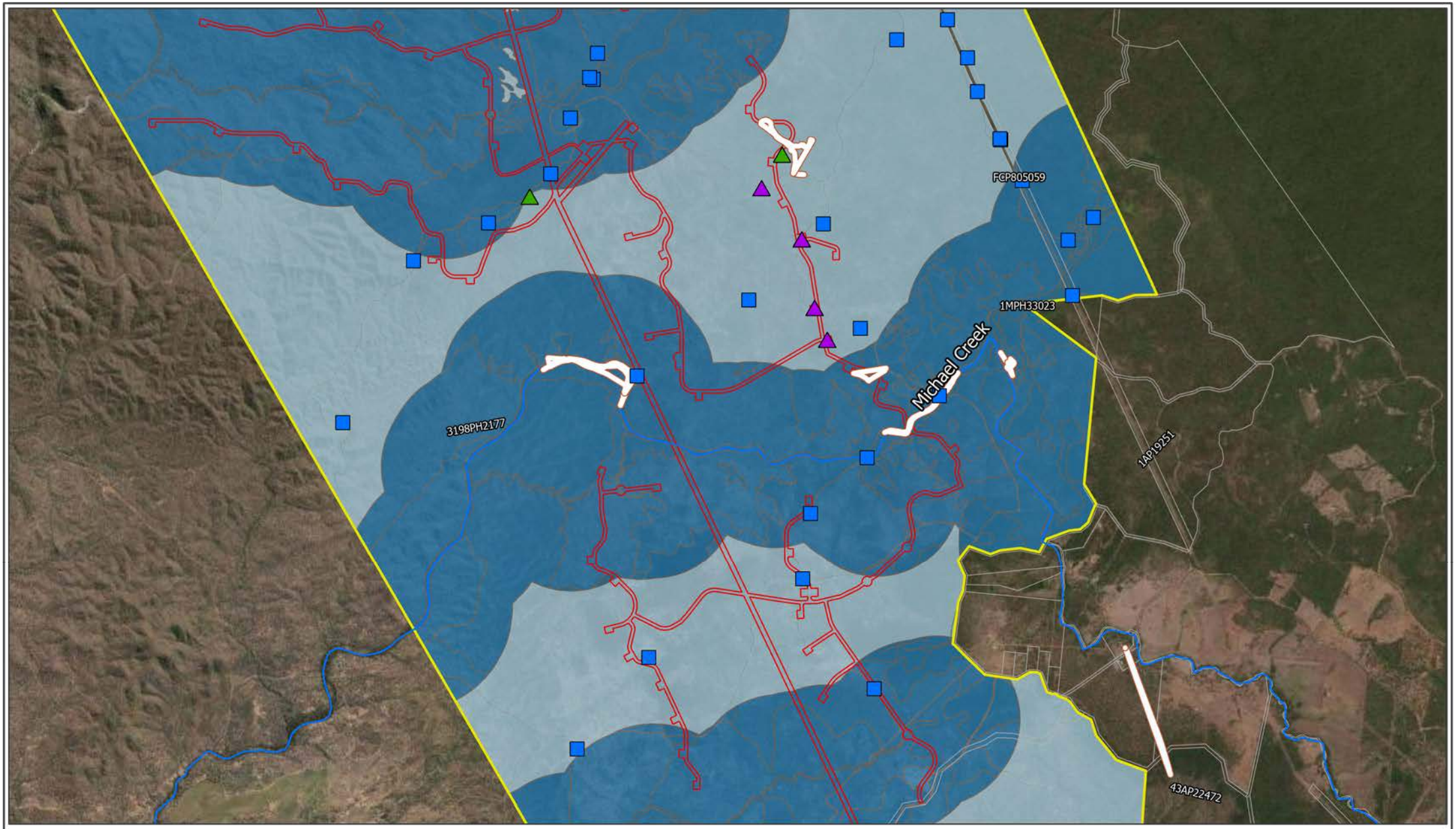
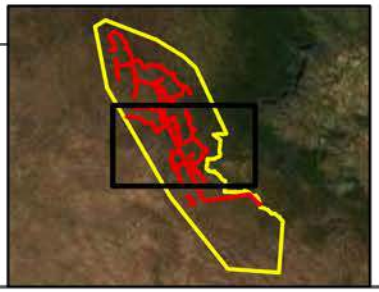



**Figure 15 : Red goshawk records and habitat - Centre**

Disturbance footprint
Project area
Cadastral boundaries
Watercourses

Red Goshawk
Species foraging habitat
Potential nesting and foraging habitat - 1 km buffer to permanent water

Survey sites
Bird Survey
Red Goshawk Microhabitat
Red Goshawk Habitat Quality
Drone survey



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Datum/Projection:
GDA2020 MGA Zone 55
Project: 20906-MD Date: 1/07/2022

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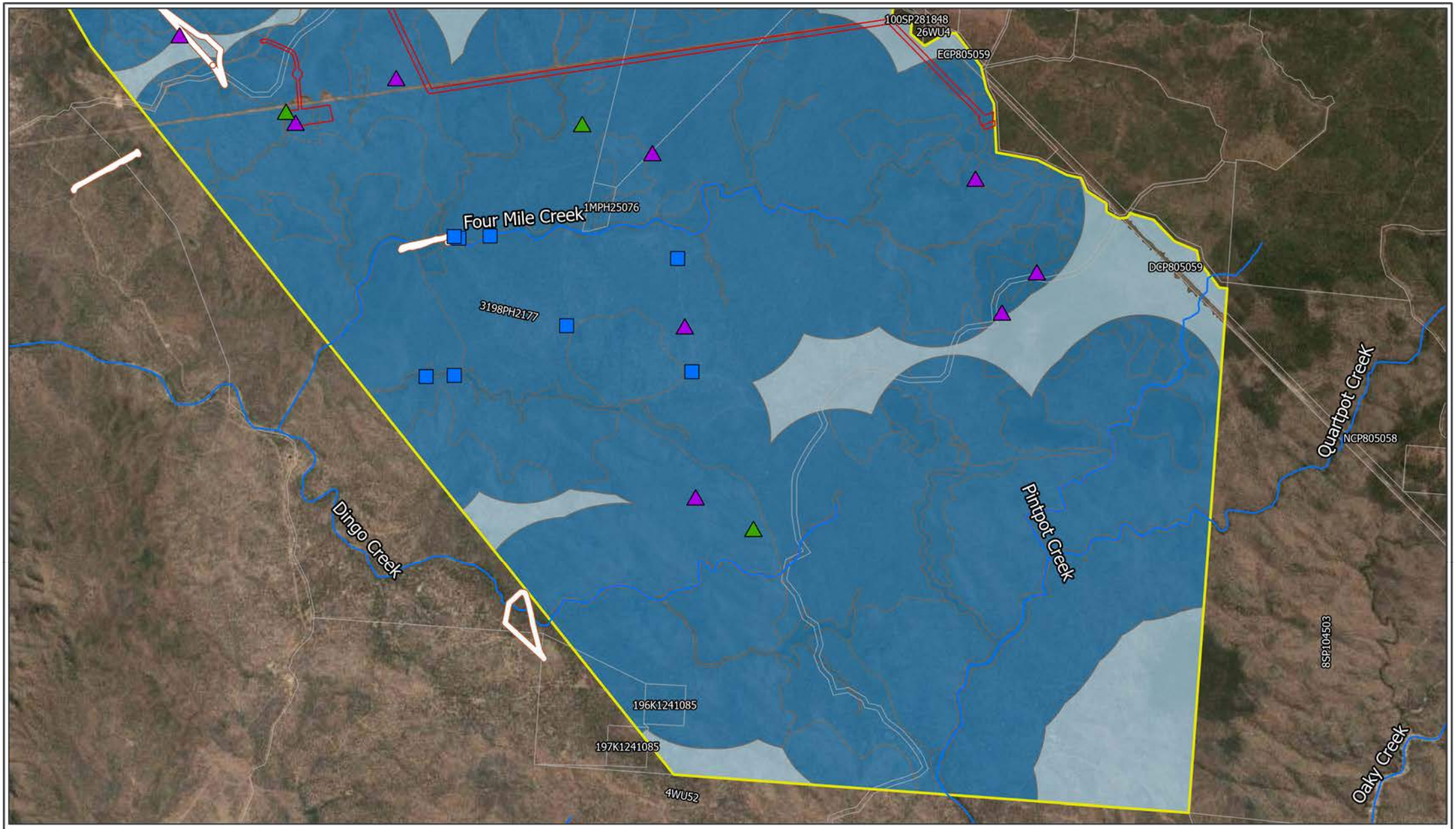



**Figure 15 : Red goshawk records and habitat - South**

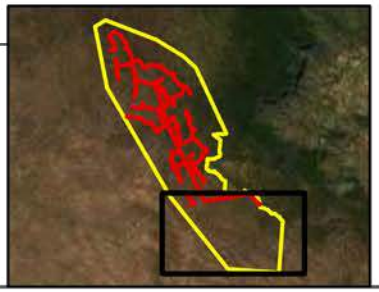
- Disturbance footprint
- Project area
- Cadastral boundaries
- Watercourses

Red Goshawk

- Species foraging habitat
- Potential nesting and foraging habitat - 1 km buffer to permanent water

Survey sites

- Bird Survey
- Red Goshawk Microhabitat
- Red Goshawk Habitat Quality
- Drone survey



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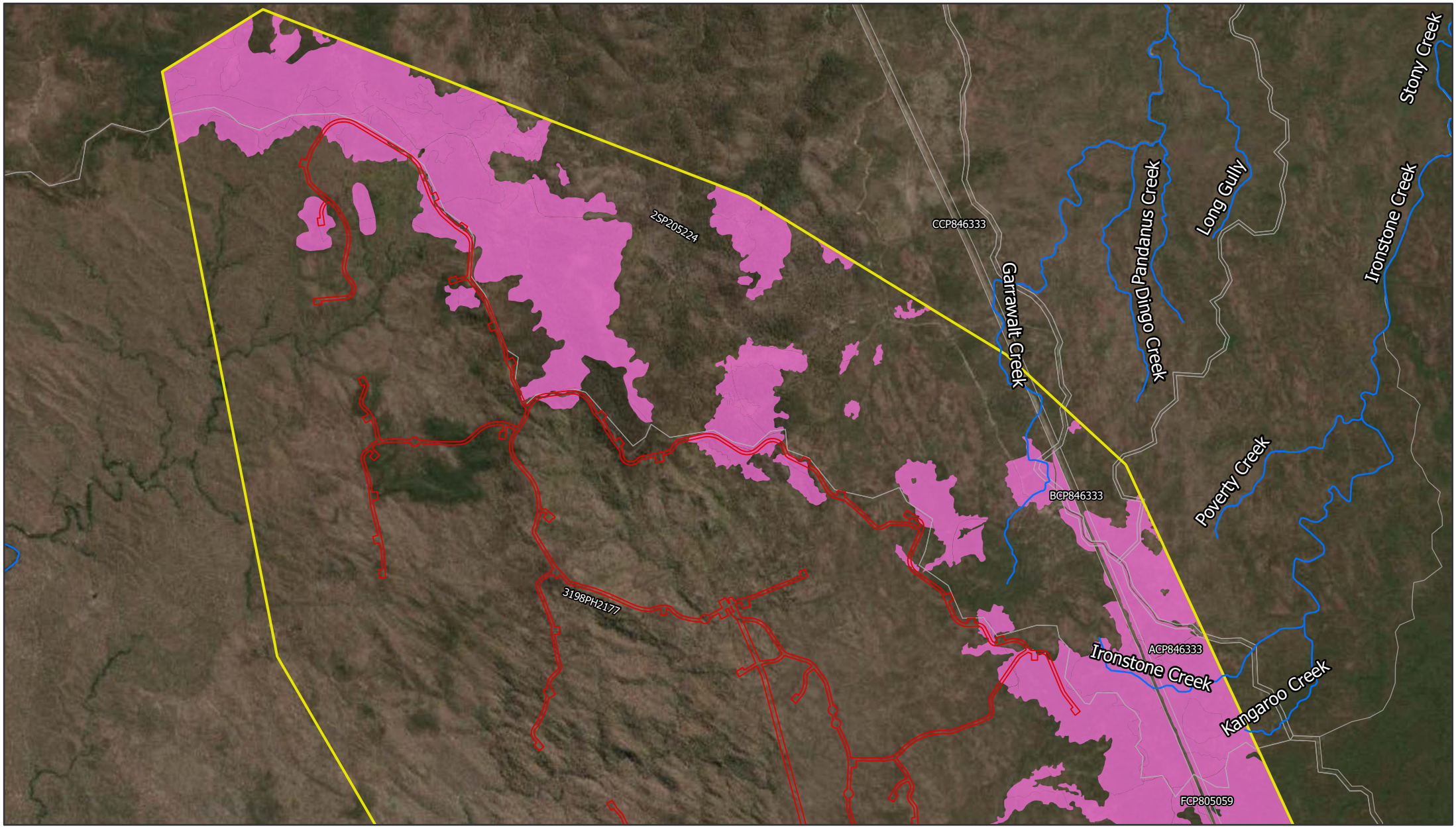



**Figure 16 : Glossy black cockatoo potential habitat - North**

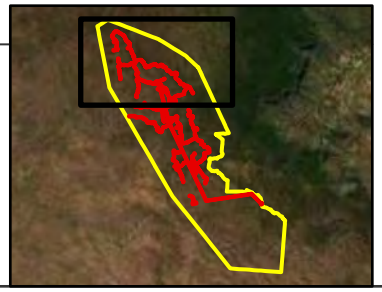
Disturbance footprint

Project area

Cadastral boundaries

Watercourses

Glossy black-cockatoo (*Calyptorhynchus lathami erebus*)



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Datum/Projection:
GDA2020 MGA Zone 55
Project: 20906-MD Date: 26/07/2022

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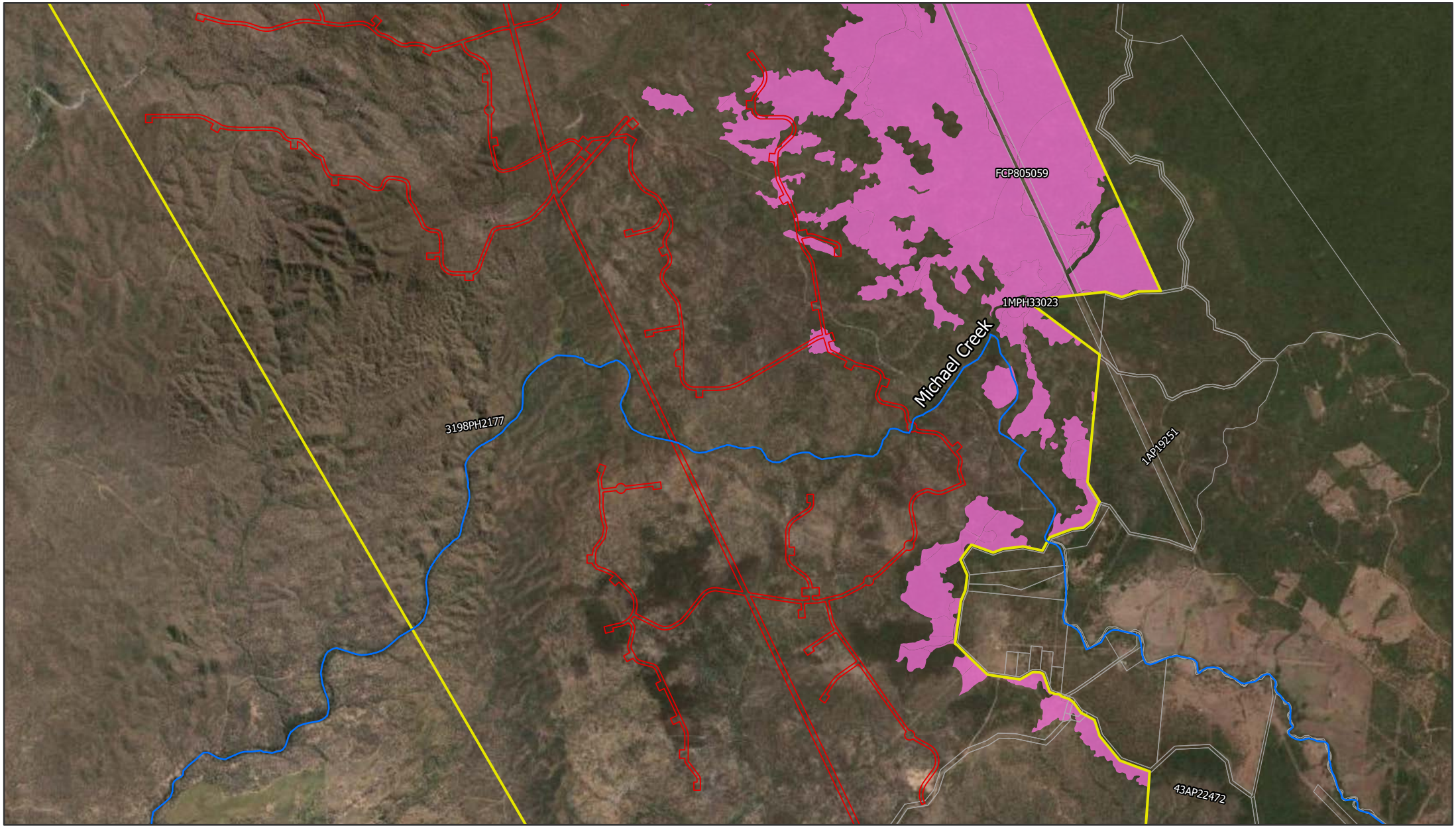
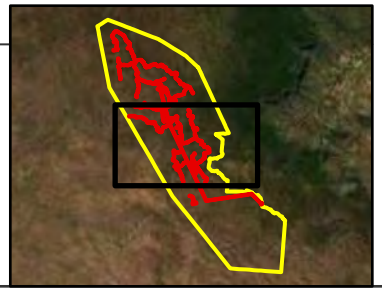



**Figure 16 : Glossy black cockatoo potential habitat - Centre**

Disturbance footprint
Project area
Cadastral boundaries
Watercourses
Glossy black-cockatoo (*Calyptorhynchus lathami erebus*)



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Metres

Datum/Projection:
GDA2020 MGA Zone 55
Project: 20906-MD Date: 26/07/2022

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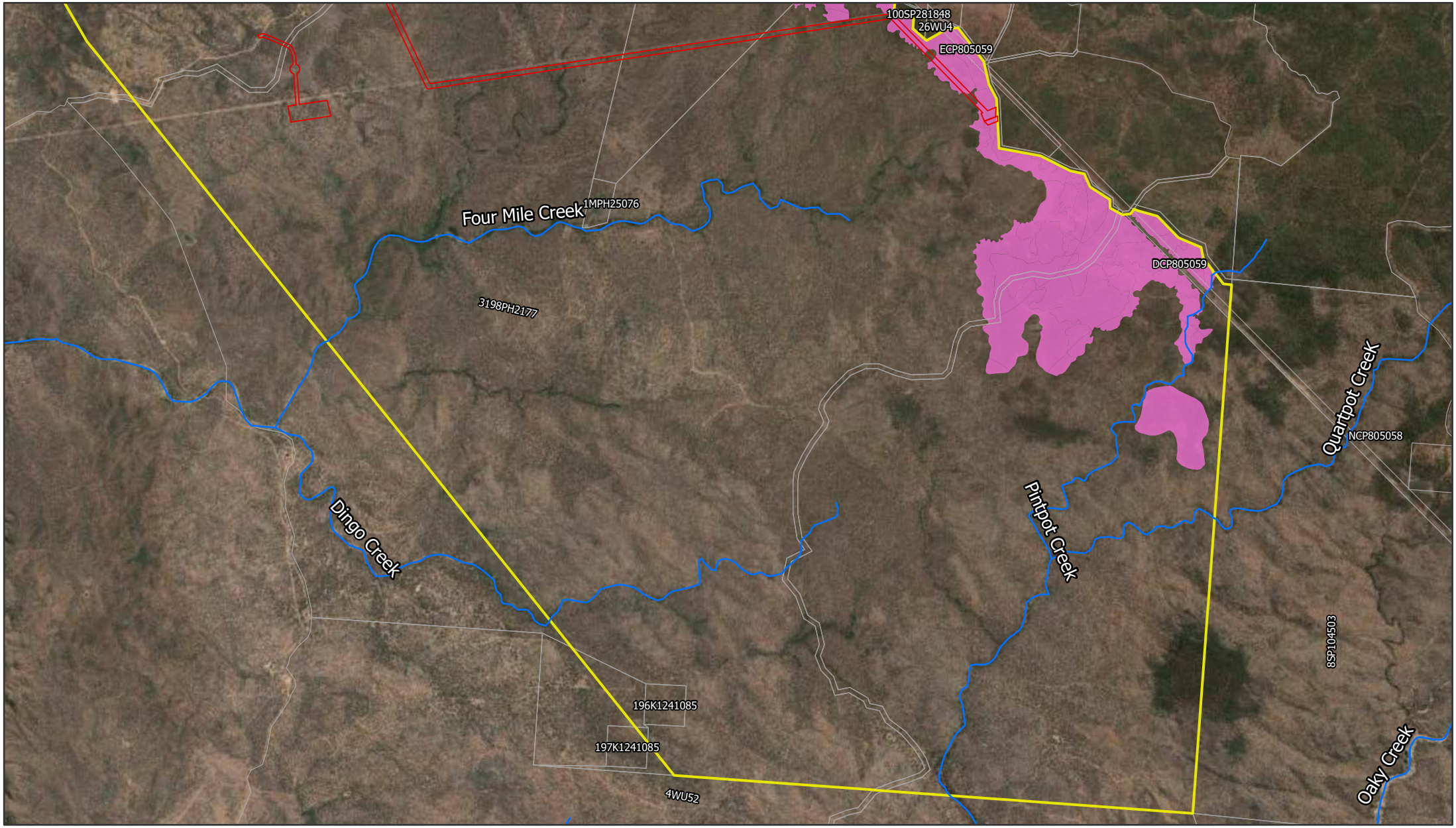
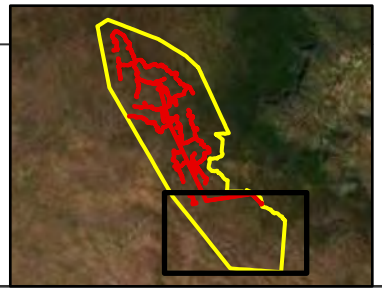



**Figure 16 : Glossy black cockatoo potential habitat - South**

- Disturbance footprint
- Project area
- Cadastral boundaries
- Watercourses
- Glossy black-cockatoo (*Calyptorhynchus lathami erebus*)



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Datum/Projection:
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Project: 20906-MD Date: 26/07/2022

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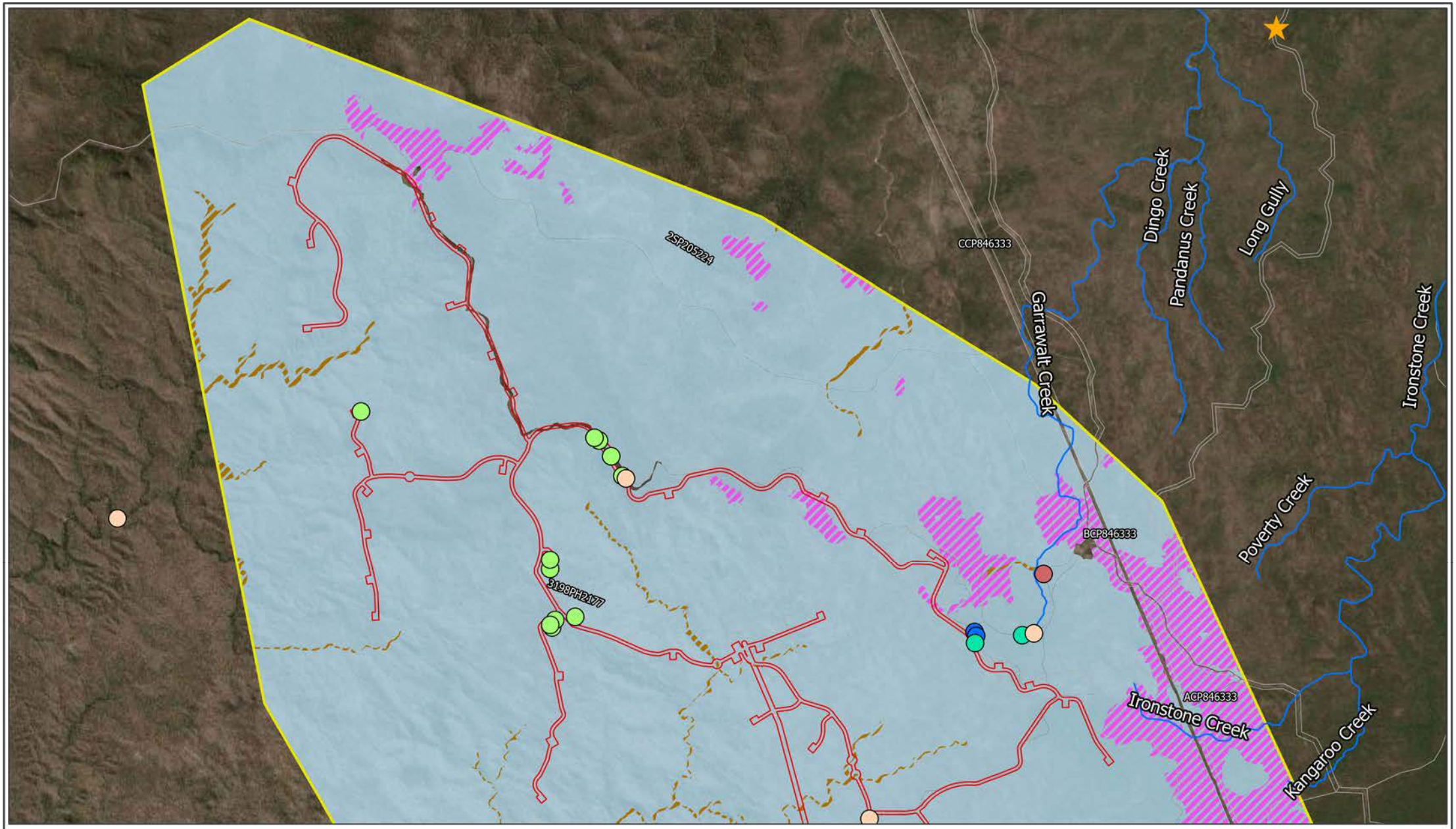



## Figure 17 : Migratory birds and Special least concern species records and habitat - North

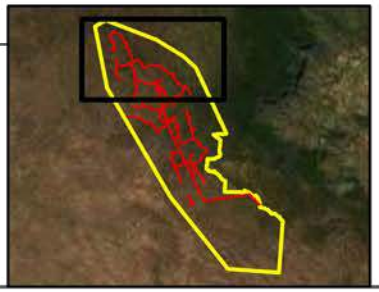
Disturbance footprint
Project area
Cadastral boundaries
Watercourses

Migratory species
Species habitat for Oriental cuckoo, barn swallow, spectacled monarch, satin flycatcher and rufous fantail
Species habitat for satin flycatcher and rufous fantail

Special least concern
Short-beaked echidna (*Tachyglossus aculeatus*)

ELA Migratory and Special Least Concern records
Oriental cuckoo

Nature Advisory Records 2022
Fork-tailed Swift
Oriental Cuckoo
Rufous Fantail
Satin Flycatcher
White-throated Needletail



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Project: 20906-MD Date: 1/07/2022

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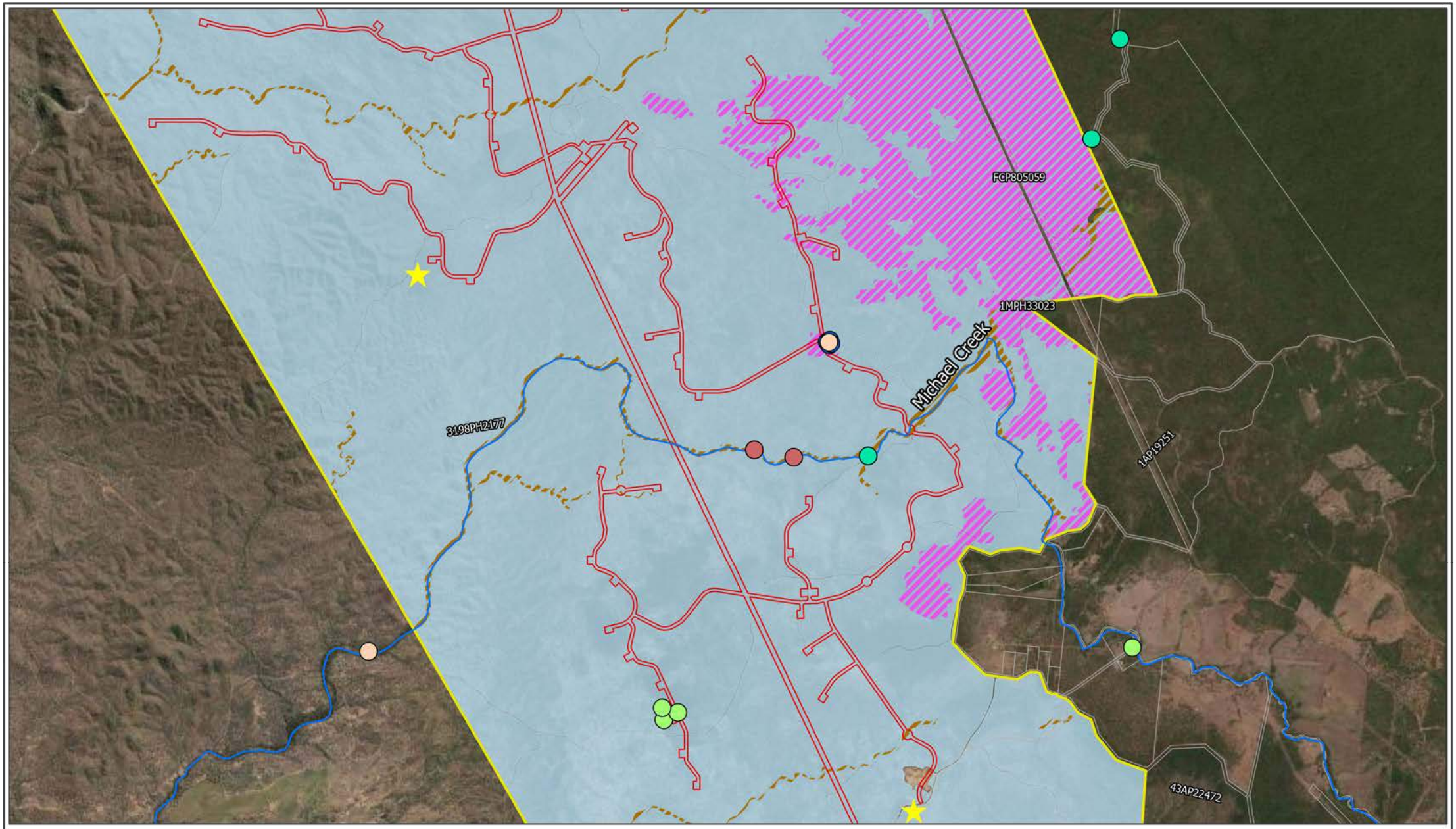



## Figure 17 : Migratory birds and Special least concern species records and habitat - Centre

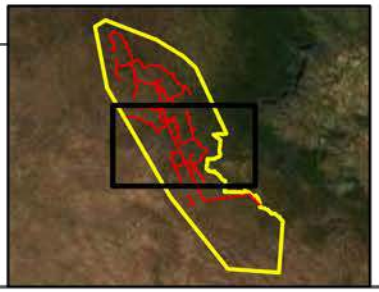
Disturbance footprint
Project area
Cadastral boundaries
Watercourses

Migratory species
Species habitat for Oriental cuckoo, barn swallow, spectacled monarch, satin flycatcher and rufous fantail
Species habitat for satin flycatcher and rufous fantail

Special least concern
Short-beaked echidna (*Tachyglossus aculeatus*)

ELA Migratory and Special Least Concern records
Short-Beaked Echidna

Nature Advisory Records 2022
Fork-tailed Swift
Oriental Cuckoo
Rufous Fantail
Satin Flycatcher
White-throated Needletail



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Project: 20906-MD Date: 1/07/2022

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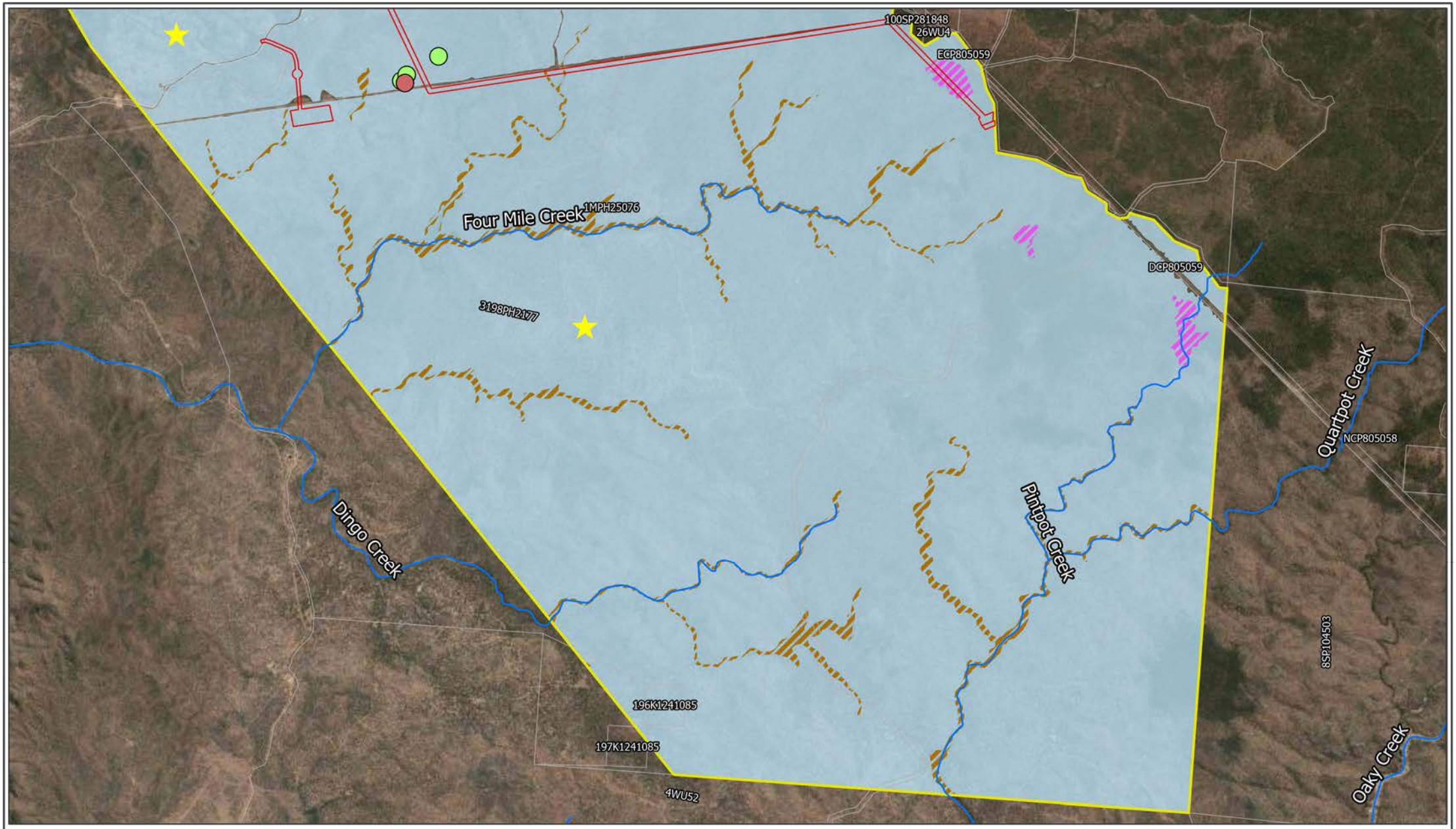



## Figure 17 : Migratory birds and Special least concern species records and habitat - South

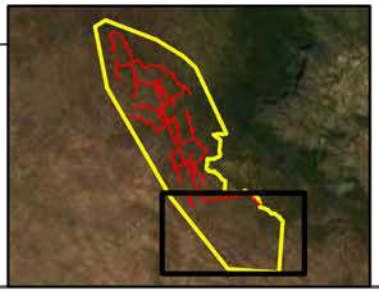
Disturbance footprint
Project area
Cadastral boundaries
Watercourses

Migratory species
Species habitat for Oriental cuckoo, barn swallow, spectacled monarch, satin flycatcher and rufous fantail
Species habitat for satin flycatcher and rufous fantail

Special least concern
Short-beaked echidna (*Tachyglossus aculeatus*)

ELA Migratory and Special Least Concern records
Short-Beaked Echidna

Nature Advisory Records 2022
Fork-tailed Swift
White-throated Needletail



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Project: 20906-MD Date: 1/07/2022

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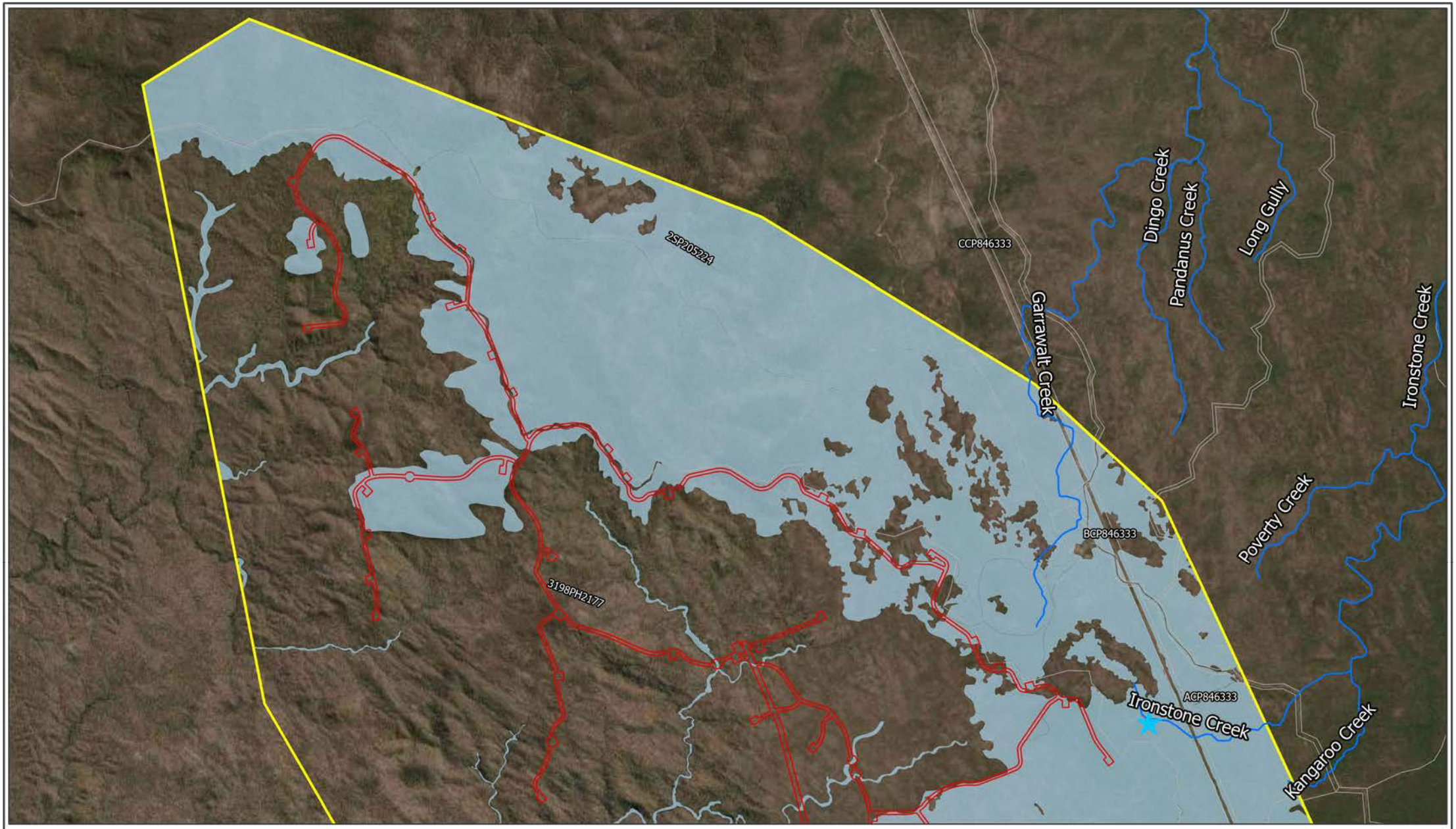
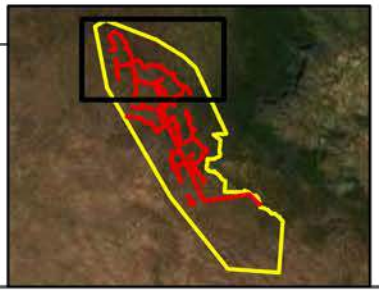



**Figure 18 : Masked owl records and habitat - North**

Disturbance footprint
Project area
Cadastral boundaries
Water courses

ELA Threatened species records
Owl Masked (northern)

Masked owl (northern) (Tyto novaehollandiae kimberli)
Species habitat



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Project: 20906-MD Date: 1/07/2022

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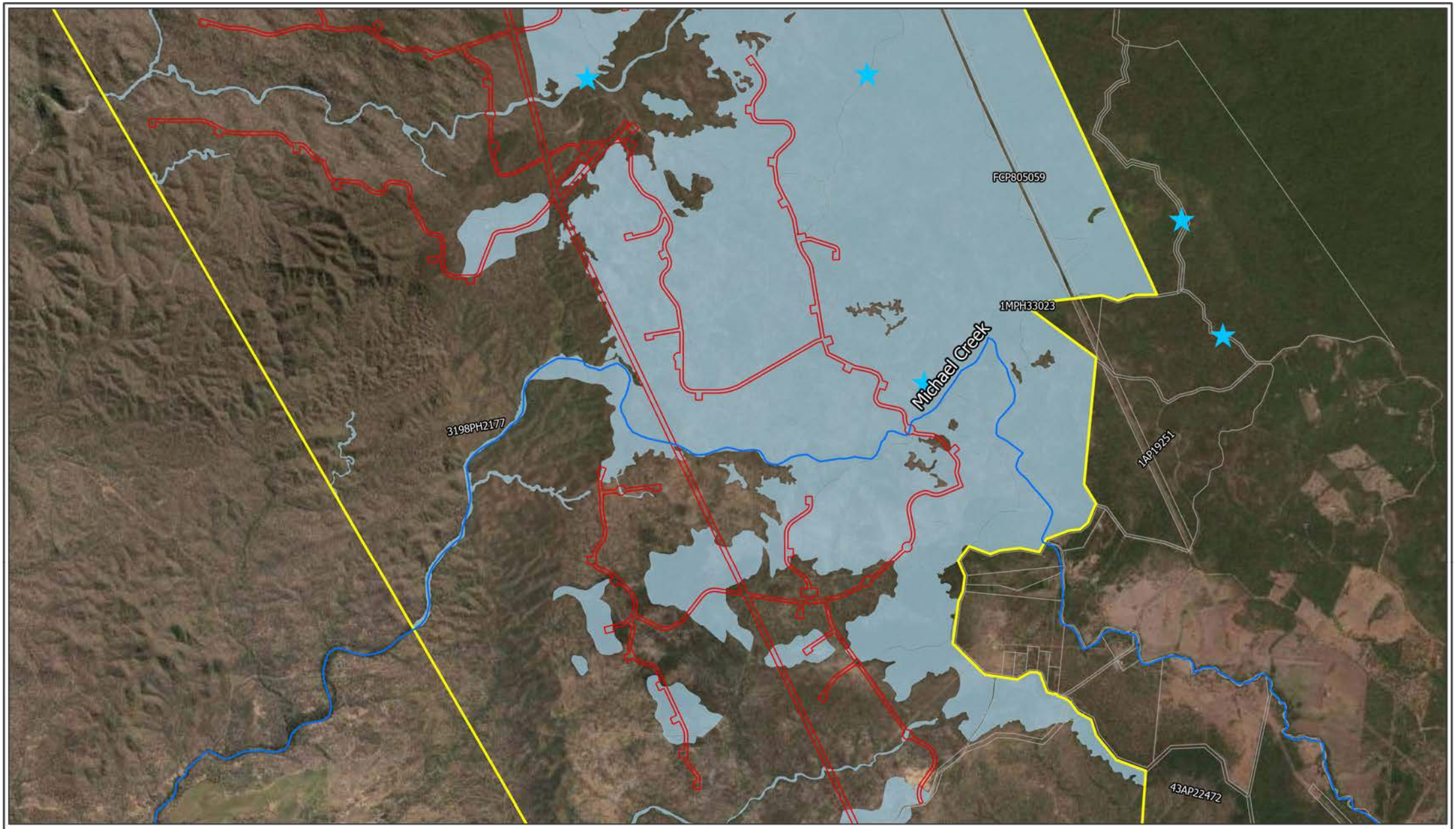
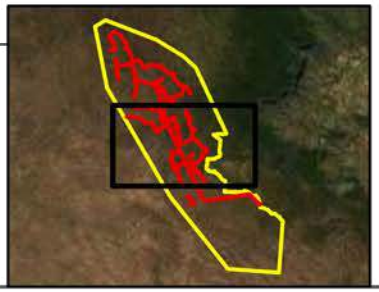



**Figure 18 : Masked owl records and habitat - Centre**

Disturbance footprint
Project area
Cadastral boundaries
Water courses

ELA Threatened species records
Owl Masked (northern)

Masked owl (northern) (Tyto novaehollandiae kimberli)
Species habitat



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Project: 20906-MD Date: 1/07/2022

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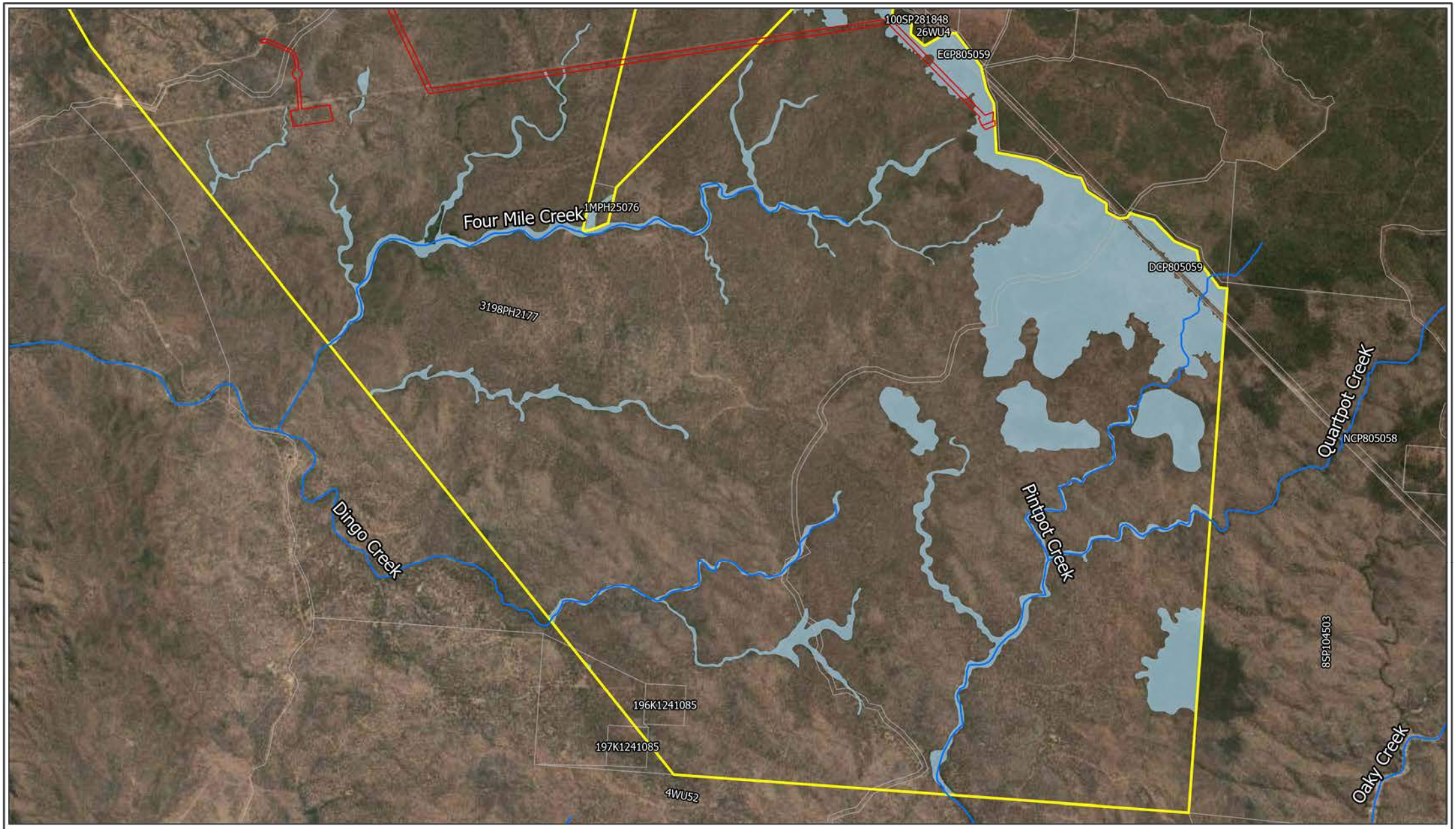
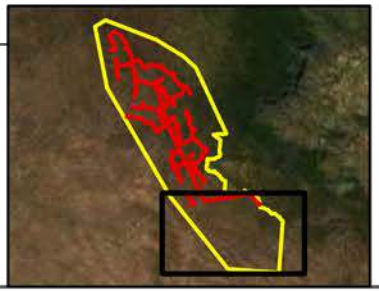



**Figure 18 : Masked owl records and habitat - South**

Disturbance footprint
Project area
Cadastral boundaries
Water courses

Masked owl (northern) (Tyto novaehollandiae kimberli)
Species habitat



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Project: 20906-MD Date: 1/07/2022

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# Appendix B - Database searches

Australian Government
Department of Agriculture, Water and the Environment

# 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: 18-May-2022

# Summary

## Matters of National Environment Significance

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

| | |
|---|---|
| World Heritage Properties: | 1 |
| National Heritage Places: | 2 |
| Wetlands of International Importance (Ramsar | None |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | None |
| Listed Threatened Ecological Communities: | 2 |
| Listed Threatened Species: | 51 |
| Listed Migratory Species: | 20 |

## 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

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 http://www.environment.gov.au/heritage

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

| | |
|---|---|
| Commonwealth Lands: | None |
| Commonwealth Heritage Places: | None |
| Listed Marine Species: | 25 |
| Whales and Other Cetaceans: | None |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Australian Marine Parks: | None |
| Habitat Critical to the Survival of Marine Turtles: | None |

## Extra Information

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

| | |
|---|---|
| State and Territory Reserves: | 8 |
| Regional Forest Agreements: | None |
| Nationally Important Wetlands: | 2 |
| EPBC Act Referrals: | 6 |
| Key Ecological Features (Marine): | None |
| Biologically Important Areas: | None |
| Bioregional Assessments: | None |
| Geological and Bioregional Assessments: | None |

# Details

## Matters of National Environmental Significance

### World Heritage Properties [ Resource Information ]

| Name | State | Legal Status |
|---|---|---|
| Wet Tropics of Queensland | QLD | Declared property |

### National Heritage Places [ Resource Information ]

| Name | State | Legal Status |
|---|---|---|
| Indigenous | | |
| Wet Tropics World Heritage Area (Indigenous Values) | QLD | Within listed place |
| Natural | | |
| Wet Tropics of Queensland | QLD | Listed place |

### 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 |
|---|---|---|
| Broad leaf tea-tree (Melaleuca viridiflora) woodlands in high rainfall coastal north Queensland | Endangered | Community likely to occur within area |
| Lowland tropical rainforest of the Wet Tropics | Endangered | Community likely to occur within 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 |
|---|---|---|
| BIRD | | |
| Botaurus poiciloptilus | | |
| Australasian Bittern [1001] | Endangered | Species or species habitat may occur within area |
| Calidris ferruginea | | |
| Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area |

| Scientific Name | Threatened Category | Presence Text |
|---|---|---|
| Casuarius casuarius johnsonii<br>Southern Cassowary, Australian Cassowary, Double-wattled Cassowary [25986] | Endangered | Species or species habitat known to occur within area |
| Charadrius leschenaultii<br>Greater Sand Plover, Large Sand Plover [877] | Vulnerable | Species or species habitat likely to occur within area |
| Erythrotriorchis radiatus<br>Red Goshawk [942] | Vulnerable | Species or species habitat known to occur within area |
| Erythrura gouldiae<br>Gouldian Finch [413] | Endangered | Species or species habitat may occur within area |
| Falco hypoleucos<br>Grey Falcon [929] | Vulnerable | Species or species habitat likely to occur within area |
| Hirundapus caudacutus<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area |
| Neochmia ruficauda ruficauda<br>Star Finch (eastern), Star Finch (southern) [26027] | Endangered | Species or species habitat likely to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area |
| Poephila cincta cincta<br>Southern Black-throated Finch [64447] | Endangered | Species or species habitat likely to occur within area |
| Rostratula australis<br>Australian Painted Snipe [77037] | Endangered | Species or species habitat likely to occur within area |
| Turnix olivii<br>Buff-breasted Button-quail [59293] | Endangered | Species or species habitat likely to occur within area |

| Scientific Name | Threatened Category | Presence Text |
|---|---|---|
| [Tyto novaehollandiae kimberli](#)<br>Masked Owl (northern) [26048] | Vulnerable | Species or species habitat known to occur within area |
| **FISH** | | |
| [Stiphodon semoni](#)<br>Opal Cling Goby [83909] | Critically Endangered | Species or species habitat may occur within area |
| **FROG** | | |
| [Litoria dayi](#)<br>Australian Lace-lid, Lace-eyed Tree Frog, Day's Big-eyed Treefrog [86707] | Vulnerable | Species or species habitat known to occur within area |
| [Pseudophryne covacevichae](#)<br>Magnificent Brood Frog [64385] | Vulnerable | Species or species habitat known to occur within area |
| **MAMMAL** | | |
| [Bettongia tropica](#)<br>Northern Bettong [214] | Endangered | Species or species habitat likely to occur within area |
| [Dasyurus hallucatus](#)<br>Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331] | Endangered | Species or species habitat likely to occur within area |
| [Dasyurus maculatus gracilis](#)<br>Spotted-tailed Quoll (North Queensland), Yarri [64475] | Endangered | Species or species habitat likely to occur within area |
| [Hipposideros semoni](#)<br>Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat [180] | Vulnerable | Species or species habitat may occur within area |
| [Macroderma gigas](#)<br>Ghost Bat [174] | Vulnerable | Species or species habitat likely to occur within area |
| [Mesembriomys gouldii rattoides](#)<br>Black-footed Tree-rat (north Queensland), Shaggy Rabbit-rat [87620] | Vulnerable | Species or species habitat likely to occur within area |

| Scientific Name | Threatened Category | Presence Text |
|---|---|---|
| Petauroides volans<br>Greater Glider [254] | Vulnerable | Species or species habitat known to occur within area |
| Petaurus gracilis<br>Mahogany Glider [26775] | Endangered | Species or species habitat known to occur within area |
| Petrogale sharmani<br>Mount Claro Rock Wallaby, Sharman's Rock Wallaby [59281] | Vulnerable | Species or species habitat known to occur within area |
| Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)<br>Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104] | Endangered | Species or species habitat known to occur within area |
| Pteropus conspicillatus<br>Spectacled Flying-fox [185] | Endangered | Species or species habitat known to occur within area |
| Pteropus poliocephalus<br>Grey-headed Flying-fox [186] | Vulnerable | Foraging, feeding or related behaviour likely to occur within area |
| Rhinolophus robertsi<br>Large-eared Horseshoe Bat, Greater Large-eared Horseshoe Bat [87639] | Vulnerable | Species or species habitat likely to occur within area |
| Saccolaimus saccolaimus nudicluniatus<br>Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889] | Vulnerable | Species or species habitat likely to occur within area |
| Xeromys myoides<br>Water Mouse, False Water Rat, Yirrkoo [66] | Vulnerable | Species or species habitat likely to occur within area |
| PLANT | | |
| Bulbophyllum globuliforme<br>Miniature Moss-orchid, Hoop Pine Orchid [6649] | Vulnerable | Species or species habitat known to occur within area |
| Canarium acutifolium<br>[23956] | Vulnerable | Species or species habitat likely to occur within area |

| Scientific Name | Threatened Category | Presence Text |
|---|---|---|
| Corymbia leptoloma<br>Yellowjacket [64101] | Vulnerable | Species or species habitat known to occur within area |
| Cycas platyphylla<br>a cycad [55796] | Vulnerable | Species or species habitat known to occur within area |
| Cyperus cephalotes<br>[10265] | Endangered | Species or species habitat likely to occur within area |
| Dichanthium setosum<br>bluegrass [14159] | Vulnerable | Species or species habitat known to occur within area |
| Diplazium cordifolium<br>[15585] | Vulnerable | Species or species habitat may occur within area |
| Homoranthus porteri<br>[55196] | Vulnerable | Species or species habitat known to occur within area |
| Lindsaea pulchella var. blanda<br>[20842] | Vulnerable | Species or species habitat likely to occur within area |
| Marsdenia brevifolia<br>[64585] | Vulnerable | Species or species habitat known to occur within area |
| Myrmecodia beccarii<br>Ant Plant [11852] | Vulnerable | Species or species habitat likely to occur within area |
| Phaius australis<br>Lesser Swamp-orchid [5872] | Endangered | Species or species habitat may occur within area |
| Phaius pictus<br>[22564] | Vulnerable | Species or species habitat likely to occur within area |

| Scientific Name | Threatened Category | Presence Text |
|---|---|---|
| Phalaenopsis rosenstromii listed as Phalaenopsis amabilis subsp. rosenstromii | | |
| Native Moth Orchid [15984] | Endangered | Species or species habitat may occur within area |
| Solanum graniticum | | |
| Granite Nightshade [84819] | Endangered | Species or species habitat known to occur within area |
| Tephrosia leveillei | | |
| [16946] | Vulnerable | Species or species habitat known to occur within area |
| Zeuxine polygonoides | | |
| Velvet Jewel Orchid [46794] | Vulnerable | Species or species habitat likely to occur within area |

| REPTILE | | |
|---|---|---|
| Delma mitella | | |
| Atherton Delma, Legless Lizard [25931] | Vulnerable | Species or species habitat known to occur within area |
| Egernia rugosa | | |
| Yakka Skink [1420] | Vulnerable | Species or species habitat likely to occur within area |

| Listed Migratory Species | | [ Resource Information ] |
|---|---|---|
| Scientific Name | Threatened Category | Presence Text |
| Migratory Marine Birds | | |
| Apus pacificus | | |
| Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |

| Migratory Marine Species | | |
|---|---|---|
| Crocodylus porosus | | |
| Salt-water Crocodile, Estuarine Crocodile [1774] | | Species or species habitat likely to occur within area |
| **Migratory Terrestrial Species** | | |
| Cuculus optatus | | |
| Oriental Cuckoo, Horsfield's Cuckoo [86651] | | Species or species habitat known to occur within area |
| Hirundapus caudacutus | | |
| White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area |

| Scientific Name | Threatened Category | Presence Text |
| --- | --- | --- |
| Hirundo rustica<br>Barn Swallow [662] | | Species or species habitat likely to occur within area |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species habitat known to occur within area |
| Motacilla cinerea<br>Grey Wagtail [642] | | Species or species habitat may occur within area |
| Motacilla flava<br>Yellow Wagtail [644] | | Species or species habitat likely to occur within area |
| Myiagra cyanoleuca<br>Satin Flycatcher [612] | | Species or species habitat known to occur within area |
| Rhipidura rufifrons<br>Rufous Fantail [592] | | Species or species habitat known to occur within area |
| Symposiachrus trivirgatus as Monarcha trivirgatus<br>Spectacled Monarch [83946] | | Species or species habitat known to occur within area |
| Migratory Wetlands Species | | |
| Actitis hypoleucos<br>Common Sandpiper [59309] | | Species or species habitat likely to occur within area |
| Calidris acuminata<br>Sharp-tailed Sandpiper [874] | | Species or species habitat likely to occur within area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area |
| Calidris melanotos<br>Pectoral Sandpiper [858] | | Species or species habitat may occur within area |

| Scientific Name | Threatened Category | Presence Text |
|---|---|---|
| Charadrius leschenaultii<br>Greater Sand Plover, Large Sand Plover [877] | Vulnerable | Species or species habitat likely to occur within area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Species or species habitat known to occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area |
| Pandion haliaetus<br>Osprey [952] | | Species or species habitat known to occur within area |
| Tringa nebularia<br>Common Greenshank, Greenshank [832] | | Species or species habitat may occur within area |

## Other Matters Protected by the EPBC Act

| Listed Marine Species | | [ Resource Information ] |
|---|---|---|
| Scientific Name | Threatened Category | Presence Text |
| Bird | | |
| Actitis hypoleucos<br>Common Sandpiper [59309] | | Species or species habitat likely to occur within area |
| Anseranas semipalmata<br>Magpie Goose [978] | | Species or species habitat may occur within area overfly marine area |
| Apus pacificus<br>Fork-tailed Swift [678] | | Species or species habitat likely to occur within area overfly marine area |
| Bubulcus ibis as Ardea ibis<br>Cattle Egret [66521] | | Species or species habitat may occur within area overfly marine area |

| Scientific Name | Threatened Category | Presence Text |
| --- | --- | --- |
| Calidris acuminata<br>Sharp-tailed Sandpiper [874] | | Species or species habitat likely to occur within area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area overfly marine area |
| Calidris melanotos<br>Pectoral Sandpiper [858] | | Species or species habitat may occur within area overfly marine area |
| Chalcites osculans as Chrysococcyx osculans<br>Black-eared Cuckoo [83425] | | Species or species habitat likely to occur within area overfly marine area |
| Charadrius leschenaultii<br>Greater Sand Plover, Large Sand Plover [877] | Vulnerable | Species or species habitat likely to occur within area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Species or species habitat known to occur within area overfly marine area |
| Haliaeetus leucogaster<br>White-bellied Sea-Eagle [943] | | Species or species habitat known to occur within area |
| Hirundapus caudacutus<br>White-throated Needletail [682] | Vulnerable | Species or species habitat known to occur within area overfly marine area |
| Hirundo rustica<br>Barn Swallow [662] | | Species or species habitat likely to occur within area overfly marine area |
| Merops ornatus<br>Rainbow Bee-eater [670] | | Species or species habitat may occur within area overfly marine area |

| Scientific Name | Threatened Category | Presence Text |
| --- | --- | --- |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species habitat known to occur within area overfly marine area |
| Motacilla cinerea<br>Grey Wagtail [642] | | Species or species habitat may occur within area overfly marine area |
| Motacilla flava<br>Yellow Wagtail [644] | | Species or species habitat likely to occur within area overfly marine area |
| Myiagra cyanoleuca<br>Satin Flycatcher [612] | | Species or species habitat known to occur within area overfly marine area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area |
| Pandion haliaetus<br>Osprey [952] | | Species or species habitat known to occur within area |
| Rhipidura rufifrons<br>Rufous Fantail [592] | | Species or species habitat known to occur within area overfly marine area |
| Rostratula australis as Rostratula benghalensis (sensu lato)<br>Australian Painted Snipe [77037] | Endangered | Species or species habitat likely to occur within area overfly marine area |
| Symposiachrus trivirgatus as Monarcha trivirgatus<br>Spectacled Monarch [83946] | | Species or species habitat known to occur within area overfly marine area |
| Tringa nebularia<br>Common Greenshank, Greenshank [832] | | Species or species habitat may occur within area overfly marine area |

| Scientific Name | Threatened Category | Presence Text |
|---|---|---|
| Reptile | | |
| Crocodylus porosus<br>Salt-water Crocodile, Estuarine Crocodile [1774] | | Species or species habitat likely to occur within area |

## Extra Information

| State and Territory Reserves | | [ Resource Information ] |
|---|---|---|
| Protected Area Name | Reserve Type | State |
| Girringun | National Park | QLD |
| Girringun | Indigenous Protected Area | QLD |
| Liefway | Nature Refuge | QLD |
| Messmate | Nature Refuge | QLD |
| Mount Zero - Taravale | Private Nature Reserve | QLD |
| Mount Zero - Taravale | Nature Refuge | QLD |
| Paluma Range | National Park | QLD |
| Range View | Nature Refuge | QLD |

| Nationally Important Wetlands | [ Resource Information ] |
|---|---|
| Wetland Name | State |
| Herbert River Floodplain | QLD |
| Herbert River Gorge | QLD |

| EPBC Act Referrals | | | [ Resource Information ] |
|---|---|---|---|
| Title of referral | Reference | Referral Outcome | Assessment Status |
| | | | |
| WITHDRAWN BEFORE VALIDATION Hells Gates Dam and Irrigation Scheme | 2021/8880 | | Referral Validation |
| Controlled action | | | |
| Mt Fox Energy Park Wind Farm, QLD | 2021/8910 | Controlled Action | Assessment Approach |
| Powerlink Queensland Genex Kidston Connection Project | 2021/9060 | Controlled Action | Assessment Approach |

| Title of referral | Reference | Referral Outcome | Assessment Status |
|---|---|---|---|
| Controlled action | | | |
| Upper Burdekin Wind Farm, QLD | 2021/9066 | Controlled Action | Guidelines Issued |
| | | | |
| Not controlled action | | | |
| Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia | 2015/7522 | Not Controlled Action | Completed |
| Mt Moss iron ore mining project in mining lease ML 10171 | 2007/3287 | Not Controlled Action | Completed |

# Caveat

## 1 PURPOSE

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

The report contains the mapped locations of:

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

## 2 DISCLAIMER

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

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

## 3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

## 4 LIMITATIONS

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

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

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

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

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

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

# Acknowledgements

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

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

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

Please feel free to provide feedback via the Contact Us page.



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Queensland Government

# WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: Native
Queensland status: Rare and threatened species
Records: All
Date: All
Latitude: -18.7703
Longitude: 145.7424
Distance: 30
Email: lorena@ecoaus.com.au
Date submitted: Thursday 02 Jun 2022 16:46:50
Date extracted: Thursday 02 Jun 2022 16:50:03

The number of records retrieved = 24

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---|---|---|---|---|---|---|---|---|
| animals | amphibians | Hylidae | *Litoria dayi* | Australian lacelid | | V | V | 4/3 |
| animals | amphibians | Hylidae | *Litoria nannotis* | waterfall frog | | E | | 1/1 |
| animals | amphibians | Hylidae | *Litoria serrata* | tapping green eyed frog | | V | | 4/4 |
| animals | birds | Apodidae | *Hirundapus caudacutus* | white-throated needletail | | V | V | 3 |
| animals | birds | Cacatuidae | *Calyptorhynchus lathami erebus* | glossy black-cockatoo (northern) | | V | | 1 |
| animals | birds | Casuariidae | *Casuarius casuarius johnsonii (southern population)* | southern cassowary (southern population) | | E | E | 41 |
| animals | birds | Columbidae | *Geophaps scripta scripta* | squatter pigeon (southern subspecies) | | V | V | 1 |
| animals | birds | Psittacidae | *Cyclopsitta diophthalma macleayana* | Macleay's fig-parrot | | V | | 3 |
| animals | mammals | Macropodidae | *Petrogale sharmani* | Sharman's rock-wallaby | | V | V | 48/33 |
| animals | mammals | Petauridae | *Petaurus gracilis* | mahogany glider | | E | E | 57/2 |
| animals | mammals | Phascolarctidae | *Phascolarctos cinereus* | koala | | E | E | 15 |
| animals | mammals | Pseudocheiridae | *Petauroides minor* | northern greater glider | | V | V | 19 |
| animals | mammals | Pteropodidae | *Pteropus conspicillatus* | spectacled flying-fox | | E | E | 1 |
| plants | land plants | Apiaceae | *Oenanthe javanica* | | | NT | | 1/1 |
| plants | land plants | Apocynaceae | *Leichhardtia brevifolia* | | | V | V | 1/1 |
| plants | land plants | Asteraceae | *Glossocardia orthochaeta* | | | E | | 1/1 |
| plants | land plants | Byttneriaceae | *Commersonia reticulata* | | | V | | 2/2 |
| plants | land plants | Leguminosae | *Acacia tingoorensis* | | | V | | 4/4 |
| plants | land plants | Myrtaceae | *Corymbia leptoloma* | | | V | V | 2/2 |
| plants | land plants | Myrtaceae | *Homoranthus cummingii* | | | CR | | 1/1 |
| plants | land plants | Myrtaceae | *Rhodamnia sessiliflora* | | | E | | 1/1 |
| plants | land plants | Orchidaceae | *Corybas cerasinus* | | | NT | | 3/3 |
| plants | land plants | Sapindaceae | *Dodonaea uncinata* | | | NT | | 2/2 |
| plants | land plants | Solanaceae | *Solanum graniticum* | granite nightshade | | E | E | 1/1 |

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.*
The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.*
The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).
This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

# Appendix C - Likelihood of Occurrence Table

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| **Threatened Birds** | | | | | | |
| *Botaurus poiciloptilus* | Australasian Bittern | E | E | Inhabits shallow permanent freshwater and brackish swamps with dense vegetation, can inhabited bore drains and saltmarshes. Nests in dense reed clumps within swamps up to 1m deep water. | Unlikely | Species identified in PMST as 'species or species habitat may occur within the area'. Three ALA records exist within 30 km, however, records are located east of the study in lowland habitat. No suitable swamp habitat was identified within the disturbance footprint. |
| *Calidris ferruginea* | Curlew sandpiper | CE | CE, Mi | Coastal species that forages and roosts in intertidal mudflats, sheltered coastal areas including estuaries, bays, inlets, lagoons and non-tidal swamps, lakes and lagoons close to the coast, ponds in saltworks and sewage farms. | Unlikely | Identified in the PMST as 'species or species habitat may occur within the area'. Suitable habitat such as swamps and lagoons were not identified within the disturbance footprint, and no known ALA records exists within 30 km. |
| *Charadrius leschenaultii* | Greater sand plover | V | V | Inhabits coastal and estuarine habitats along sheltered sandy and mudflap shores, the range can extend into salt marshes and brackish swamps. During drought the species can be found in sparse grass paddocks more than 1km from a water source. | Unlikely | No coastal or estuarine habitat occur within the disturbance footprint. Species records are associated with the coastline and associated sandy and intertidal zones. |
| *Calyptorhynchus lathami erebus* | Glossy black-cockatoo | V | - | Prefers woodland areas dominated by she-oak *Allocasuarina*, or open sclerophyll forests and woodlands with a stratum of *Allocasuarina* beneath *Eucalyptus*, *Corymbia* or *Angophora*. Have also been observed in mixed *Allocasuarina*, *Casuarina*, *Callitris* and *Acacia harpophylla* woodland assemblages (Glossy Black Conservancy 2010). Feeds almost exclusively on the seeds of nine species of *Allocasuarina* and *Casuarina* species throughout their range. | Potential | The species prefers *Allocasuarina* open forest to woodlands. Suitable *Allocasuarina* spp. and woodlands occur within the disturbance footprint and the species is known to occur in Paluma ranges. No ALA records within 30 km. |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| *Cyclopsitta diophthalma macleayana* | Macleay's fig parrot | V | - | Associated with the presence of fig trees in lowland and upland forest types, riparian corridors, farmland and urban environments. | Unlikely | Species was identified in the Wild Net search. A single historical ALA records exists, dated in 1770 and located at Wallaman falls north-east of the disturbance footprint. Habitat within the vicinity of the record is dominated by rainforest. |
| *Casuarius casuarius johnsonii* | Southern cassowary | E | E | Generally, requires dense tropical rainforest (such as complex/non-complex notophyll/mesophyll vine forest) and associated mangrove *Melaleuca*, eucalypt woodland, swamp and swamp forest, that provides a year-round supply of fleshy fruit. There are 91 regional ecosystems identified as important vegetation types associated with essential habitat for the species.<br>The distribution of the species is constrained by the availability of habitat which can provide a year-round supply of fleshy fruits and access to permanent freshwater for drinking and bathing. | Unlikely | While the species has the potential to occur in the wider project area, no rainforest occurs within the disturbance footprint. Only a small portion of rainforest is present in the broader project area and there are some species records within the wetter forests associated western edges of Lannercost State Forest. Numerous records of the species within 15 km to the east of the project impact area associated with Girringun National Park (ALA, 2022). Whilst the species may occasionally occur in eucalypt woodlands, a sufficient supply of year-round fleshy fruits and associated core species habitat (rainforest) is not present within the disturbance footprint making its presence unlikely. |
| *Erythrotriorchis radiatus* | Red goshawk | E | V | Prefers a mix of vegetation types with its habitat including tall open forest, woodland, lightly treed savannah and the edge of rainforest. In partly cleared parts of eastern Queensland, it is associated with gorge and escarpment country. | Known | One red goshawk was observed flying low over a *Corymbia intermedia* in the open forest to woodland on uplands habitat type in the broader Project area during July 2020 surveys (ELA, 2020). Additionally, publicly available records occur south of the Burdekin River approximately 25 km north-west of the project impact area. Suitable species habitat required for both foraging as well as nesting occurs throughout the disturbance footprint.<br>Additionally, a potential red goshawk nest was observed |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| *Charadrius leschenaultii* | Greater sand plover | V | V | Inhabits coastal and estuarine habitats along sheltered sandy and mudflap shores, the range can extend into salt marshes and brackish swamps. During drought the species can be found in sparse grass paddocks more than 1km from a water source. | Unlikely | No coastal or estuarine habitat occur within the disturbance footprint. Species records are associated with the coastline and associated sandy and intertidal zones. |
| *Erythrura gouldiae* | Gouldian finch | E | E | Sparsely distributed across northern Australia between the Kimberley and north-central Queensland, the Gouldian finch was historically observed in flocks of thousands. Inhabiting open woodlands dominated by eucalyptus with annual and perennial grasses, particularly sorghum. Breeding hollows require unburnt eucalyptus trees with a nearby water source. | Unlikely | Identified in the PMST as 'species or species habitat may occur within area'. Most species records within Queensland are limited to areas around Georgetown and west of Cairns.<br>No species records occur within 30 km of the disturbance footprint. Despite bird surveys conducted throughout various survey events (September 2019, July 2020, March-May 2022), no observations were made of the species. |
| *Falco hypoleucos* | Grey falcon | V | V | Prefers timbered lowland plains, particularly acacia shrublands crossed by tree-lined water courses and has also been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter. | Unlikely | The species occurs in arid to semi-arid Australia (areas where annual rainfall is less than 500 mm. A historic record (with no date) occurs within 30 km of the project impact area. Given the species is known to prefer inland environments, it is unlikely to be present within the disturbance footprint which is situated approximately 50 km from the eastern coastline of Australia. Despite bird surveys conducted throughout various survey events (September 2019, July 2020, March-May 2022), no observations were made of the species. |
| *Geophaps scripta scripta* | Squatter pigeon (southern subspecies) | V | V | Open-forests to sparse, open-woodlands and scrub that are mostly dominated in the overstorey by *Eucalyptus*, *Corymbia*, *Acacia* or *Callitris* species; remnant, regrowth or partly modified vegetation communities within 3km of water. | Unlikely | *Geophaps scripta peninsulae* (northern subspecies) was observed on several occasions throughout the disturbance footprint and the surrounding region, via direct observations and on remote cameras (refer to Appendix E). These findings are also consistent with Nature Advisory (2022) bird surveys were they also |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| | | | | | | confirmed the northern subspecies. The subspecies *G. scripta scripta* are unlikely to overlap in the disturbance footprint and therefore *G. scripta scripta* is unlikely to occur. |
| *Hirundapus caudacutus* | White-throated needletail | V | V, Ma, Mi | Most white-throated needletails spend the non-breeding season in Australia. Each year, the species arrives in Australia in September and departs again between mid-March to April. In Australia, almost exclusively aerial (1-1000 m above ground) yet occurs over a variety of habitats with a preference for wooded areas. In Queensland the range extends from to coastline to the wester mountains along the Great Dividing Range. | Known | The species was identified within the Disturbance footprint and the Project area in 2022 by Nature Advisory. Various public species records exist (ALA). The species would utilise habitat within the Disturbance footprint that is characteristic of inland open grasslands, foothills, and cliffs for suitable foraging resources during migratory passage. |
| *Neochmia ruficauda ruficauda* | Star finch (eastern), star finch (southern) | E | E | Occurs in grasslands and grassy woodlands, near permanent water, and often in or near cleared suburban areas. Also reported along riverbanks dominated by native grasses and sedges. Distribution is poorly known with population thought to be extinct. | Unlikely | Other common *Neochmia* species (*N. phaeton, N. temporalis*) have been observed within the broader Project area, however, no *N. ruficauda ruficauda* have been observed within 30 km of the disturbance footprint. Despite bird surveys conducted throughout various survey events (September 2019, July 2020, March-May 2022), no observations were made of the species. |
| *Numenius madagascariensis* | Eastern curlew | E | CE, Mi | Sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes use the mangroves. The birds are also found in saltworks and sewage farms. | Unlikely | Species identified in PMST as 'species or species habitat may occur within the area'. Given the species is primarily observed along the coastline and intertidal zones, no suitable habitat (coastal environments) within the disturbance footprint. One species record is present nearly 30 km away from the Project impact within proximity to the coastline (ALA, 2022). |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| *Poephila cincta cincta* | Southern black-throated finch | E | E | Inhabits grassy open woodlands and forests, typically characterised by *Eucalyptus*, *Acacia* and *Melaleuca*. It is usually found within a few kilometres of water. It sometimes forages in modified habitats such as grassy roadsides, rail corridors, and beneath powerlines where these occur near more-or-less intact woodlands. Rarely found in highly modified peri-urban environments. Absent from urban areas. Known from open forest and ridges, and grassy hillsides. | Unlikely | Historical records (no date) exist from within the Project impact area, however, the species has undergone a significant range retraction in recent years and the disturbance footprint is unlikely to be within the species' current distribution (known populations are limited to around Townsville and Clermont, Qld). Despite bird surveys conducted throughout various survey events (September 2019, July 2020, March-May 2022), no observations were made of the species. |
| *Rostratula australis* | Australian painted snipe | E | E | Species is dependent on wetlands including shallow terrestrial freshwater (occasionally brackish) wetlands, temporary and permanent lakes, swamps and claypans. Preferred wetland habitat is characterised by emergent vegetation (including tussocks, grasses, sedges, rushes, reeds, canegrass and/or paperbarks) where nesting will occur. Artificial habitats that are occasionally used include reservoirs, farm dams, sewage ponds, inundated grasslands, and leaking irrigation channels. | Unlikely | The species is dependent on wetlands. No suitable habitat (wetlands) occur within the disturbance footprint and are infrequent throughout the broader Project area. The species is unlikely to be present within the disturbance footprint. |
| *Turnix olivii* | Buff-breasted button-quail | E | E | This poorly known species appears to have a very small population despite a moderately large distributional range. The buff-breasted button-quail is known to occur in the rocky, grassy savannah woodlands and stringybark forests of north-eastern Queensland from the Coen area south to Chillagoe (Mathieson, M.T. and Smith, G.C., 2009.). They are also reported from grassland areas within rainforest patches within this range. There has been a recent, unsubstantiated report of the species from south-east of Charters Towers. Most frequently reported | unlikely | The species is one of the least known avian species in the country and therefore available information on the species ecology is lacking. Recently published research addressing the current and historical status and distribution of the buff-breasted buttonquail has acknowledge historical confusion of identification between the species and the painted button quail (Turnix varius) (Webster, P.D. et al., 2022). Majority of recent records, including those of the Atherton tablelands were re-examined for confirmation of species (Webster, P.D. et al., 2022). At the present |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| | | | | from stony and / or grassy woodlands and forests, often with Broad-leaved Paperbark *Melaleuca viridiflora* and / or Small Leafed Paperbark *M. minutifolia* in the midstory. Sparsely-wooded, well-drained, slightly sloping bases of hills that support this vegetation appear critical during the breeding season. Also reported from grassy clearings within and adjacent to rainforest patches. | | time no confirmed specimens occur outside of the Cape York Peninsula, and the species is believed to be a Cape York specialist (Webster, P.D. et al., 2022). The species is therefore considered unlikely to occur throughout the region.<br>Bird surveys conducted throughout various survey events (September 2019, July 2020, March-May 2022) did not detect the species. |
| *Tyto novaehollandiae kimberli* | Masked owl (northern) | V | V | Mostly in coastal and upland areas. Sclerophyll forest and woodland, often near ecotones with open areas, such as grassland, heath or cane fields, and typically grassy or with a mosaic of sparse and dense ground-cover. | Known | The species has been observed in proximity to the disturbance footprint and surrounding environment on several occasions. Suitable habitat is present throughout the disturbance footprint, although largely confined to areas of wetter forest to the north-east. |
| **Mammals** | | | | | | |
| *Bettongia tropica* | Northern bettong | E | E | The preferred habitat is tall and medium open eucalypt forest with grassy understorey. These habitats occur as a narrow-fragmented strip along the western edge of wet tropical rainforests. Habitat consists of a cline (gradual change) of eucalypt forest types from very tall and wet *Eucalyptus grandis* dominated forests through tall *E. resinifera-Syncarpia glomulifera* dominated forests to medium height and drier *E. citriodora* or *E. platyphylla* dominated forests. Northern Bettongs prefer ridges rather than gullies. | Unlikely | Species is currently only known from two locations in far north Queensland, Lamb Range and Mount Spurgeon.<br>All records that occur within 30 km of the project impact occur consist of the former northern bettong population in the Coane Range within the Australian Wildlife Conservancy Mount Zero – Taravale, situated approximately 30 km south-east of the project impact area.<br>Despite 1,183 remote camera trap nights across three survey events, the species was not detected within the disturbance footprint or broader Project area. |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| *Dasyurus hallucatus* | Northern quoll | LC | E | Habitat features include high relief areas that have shallower soils, boulders and rocky areas for denning, low fire impact and close to permanent water. The species occupies a diversity of habitats across its range including Eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrubland, grasslands and desert. Habitat generally encompasses some form of rocky area for denning purposes with surrounding vegetated habitats used for foraging and dispersal. Rocky habitats are usually of high relief, often rugged and dissected but can also include fields or caves in low lying areas. Eucalypt forest or woodland habitats usually have a high structural diversity containing large diameter trees, termite mounds or hollow logs for denning purposes. Dens are made in rock crevices, tree holes or occasionally termite mounds. | Unlikely | No ALA records within 30 km of the disturbance footprint. Although suitable habitat occurs within the disturbance footprint (rocky areas) the species is considered unlikely due to historical strychnine baiting and the current high density of feral predators (cats) in the project impact area.<br>Despite this, camera traps were deployed for 1,183 nights over three survey events, including the optimal season (July 2020), the species was not detected. |
| *Dasyurus maculatus gracilis* | Spotted-tailed quoll (North Queensland) | E | E | The subspecies is mostly confined to the relatively cool, wet and climatically equable upland closed-forests (mostly above 900 m altitude) that occur in the upper catchments of rivers draining east and west of the Eastern Escarpment in the Wet Tropics bioregion of north-eastern Queensland. The species also occurs in lower altitude notophyll, mesophyll and wet sclerophyll forests in lesser numbers. Vegetation types typical of this habitat are simple and complex notophyll vine forest, simple microphyll vine-fern forest and simple microphyll vine-fern thicket. | Unlikely | No suitable habitat (wet forests above 900 m altitude) are present in the project impact area. Species limited to the eastern escarpments of the Wet Tropics bioregion, therefore, outside the disturbance footprint. No species records occur within 30 km of the disturbance footprint. |
| *Hipposideros diadema reginae* | Diadem leaf-nosed bat | NT | - | Roosts in caves and old mines in lowland rainforest, Melaleuca forests, eucalypt woodland, deciduous | Known | Calls of the species were recorded amongst open forest of *C. intermedia* and *E. portuensis* near the |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| | | | | vine thickets, and open woodland. Foraging typically occurs along vegetation edges or gaps adjacent to open spaces, within 2.5 km of the roost. | | disturbance footprint. Potential roosting (caves within rocky areas) are in close proximity to the disturbance footprint. Given its capability of foraging within 2.5 km of roost, and the presence of suitable habitat (eucalypt woodland), the species is likely to forage within the disturbance footprint. Roosting habitat is largely absent from the disturbance footprint due to the location of these features being avoided through project design. The species is considered to occur within the Disturbance footprint. |
| *Hipposideros semoni* | Semon's leaf-nosed bat | E | V | Captured in rainforest in both wet and seasonally wet environments. Also recorded in tall eucalypt forest and open woodland. | Unlikely | No suitable habitat (rainforest) occurs within the disturbance footprint nor do species records occur within 30 km of the Project impact rea (ALA, 2022). Additionally, a total of 153 ultrasonic detector survey nights did not identify the species within the Disturbance footprint and wider Project area. |
| *Macroderma gigas* | Ghost bat | E | V | Many habitats - from hot and dry mulga country to wet tropical forests. Generally, species forage within 1-2 km of their daytime roost site. | Unlikely | Marginal habitat (wet sclerophyll forest) occur in the east of the Project area, however, there are no known records within 30 km of the disturbance footprint (ALA, 2022).<br>Additionally, a total of 153 ultrasonic detector survey nights did not identify the species within the Disturbance footprint and wider Project area. |
| *Mesembriomys gouldii rattoides* | Black-footed tree-rat | - | V | In north Queensland, this species mostly occurs in eucalypt forests and woodlands, especially where hollows are relatively plentiful. | Unlikely | No ALA records within 30 km of the disturbance footprint. Suitable eucalypt forest and woodland habitat exists within the disturbance footprint, however the species was not detected despite 1,183 targeted trap nights. |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| *Murina florium* | Tube-nosed insectivorous bat | V | - | This species occurs in Wet Tropics region of north-east Queensland from the Paluma Range to Shiptons Flat at elevations from near sea level to 1200 m. Species is found in upland and lowland tropical rainforest, including microphyll fern-vine, notophyll vine, and mesophyll forests. The species also occurs in gallery forest and wet sclerophyll forests dominated by flooded gum *Eucalyptus grandis* with or without rainforest understorey. | Unlikely | Identified in the Wild Net search, however, no ALA records exist within 30 km of the disturbance footprint (ALA, 2022). No suitable habitat (rainforest, vine forests or flooded gum forests) occur in the disturbance footprint. Additionally, a total of 153 ultrasonic detector survey nights did not identify the species within the Disturbance footprint and wider Project area. |
| *Petauroides minor* | Greater glider (northern) | V | V | Largely restricted to eucalypt forest and woodlands, with a preference for old growth with abundant large tree hollows (den habitat). | Known | Species was observed on numerous occasions during previous field surveys within a range of eucalyptus forests and woodlands within the Project area. Records are within close proximity to the disturbance footprint, and habitat in which sightings were recorded is presented within. Multiple known records occur in proximity to the disturbance footprint (ALA, 2022). |
| *Petaurus gracilis* | Mahogany glider | E | E | Mixed open forest or woodland below 120 m elevation. These forests are a mix of different tree species, providing complex structure and diversity. Greater than 20 tree and shrub species, including eucalypts, bloodwoods, melaleucas, acacia, *Albizia procera* and *Xanthorrhoea* form essential habitat. Fire maintains the complexity and reduces density. | Unlikely | The species is restricted to open forest or woodlands below 120 m elevation. Given elevation of disturbance footprint exceeds this threshold, the disturbance footprint location is therefore outside of the species range. |
| *Petrogale sharmani* | Sharman's rock-wallaby | V | V | Boulder piles, rocky slopes and gullies, rocky outcrops, cliffs, and gorges in tropical woodland or open forest with a grassy understorey. | Known | Species was observed on a remote camera positioned near proposed Turbine 20N (see Appendix E), in proximity to the disturbance footprint. The species has also been previously observed on numerous occasions within the Project area on remote camera images and on during field surveys around boulder piles, rocky slopes and gullies and rocky outcrops. |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| | | | | | | Woodlands with rocky areas provide habitat for this species and is widespread throughout the project impact area. Mount Claro, the namesake of the species alternative name, Mount Claro Rock Wallaby is situated at the south of the Project area in which several species records occur (ALA, 2022). |
| *Phascolarctos cinereus* | Koala | E | E | Occurs in a range of temperate, tropical and sub-tropical forests as well as woodland and semi-arid communities dominated by *Eucalyptus* species. | Known | Species was observed on numerous occasions in various eucalypt woodlands within the Project area during previous field surveys. Records are within close proximity to the disturbance footprint, and habitat in which sightings were recorded is presented within. |
| *Pteropus conspicillatus* | Spectacled flying fox | E | E | Associated with, but not restricted to, tropical rainforests. Also uses eucalypt forests, melaleuca swamps, littoral and coastal mixed forests and mangroves, farmlands, and urban and suburban gardens. Colonies tend to be within or near rainforest. One study showed that the Spectacled Flying fox roosts within 6.5 km of rainforest, although a roost 16 km from rainforest has also been observed. The Mabi Forest (Complex Notophyll Vine Forest 5b) is considered a key habitat for the Spectacled Flying fox. | Known | Species was observed during previous field surveys foraging in Burdekin plum (*Pleiogynium timorense*) and fig (*Ficus* spp.) trees within the south of the Project area. The species forages on a range of flowering and fruiting flora, including *Eucalyptus, Melaleuca,* Burdekin plum and fig species. Eucalypt forests dominate the project impact areas, creeklines intersperse and fruiting trees were observed scattered throughout the disturbance footprint, all providing seasonal food resources for the species. No camps of the species were observed within the disturbance footprint or surrounding Project area. Whilst small patches of rainforest occurs in the east of the Project area, the species is more likely to roost in large areas of rainforest and surrounding habitat presence in the Wet Tropics situated further east of the Project area.<br>A review of the national flying-fox monitoring viewer revealed that low numbers (<499 individuals) were observed at the Ingham camp during the last |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| | | | | | | monitoring event in 2020 and during the preceding 8 years, and that the species was absent at the camp during 2017 and 2018. |
| *Pteropus poliocephalus* | Grey-headed flying fox | LC | V | Typically camps in closed forests > 8 m high, > 1 ha in area, and dominated by rainforest, Broad-leaved Paperbark *Melaleuca quinquenervia*, mangrove, or *Casuarina* spp. Colonies also use highly modified vegetation in urban and suburban areas. Camps are generally within 50 km of the coast or < 65m elevation, near water, and on level ground or gentle slopes. This species feeds in a variety of forest and woodland communities, and urban and production landscapes. A diverse range of vegetation communities is required to access year-round food supplies. | Potential | Small areas of paperbark or *Casuarina sp.,* forest fringing riparian zones in which the species is known to roost and forage occurs in the disturbance footprint, however, no ALA (2022) records within 30 km of the disturbance footprint. The species is approximately 50 km inland from the coast. Given the species generally camps within 50 km of the coast, the likelihood of camps being established are low. Whilst establishment of camps is considered low, the species may forage due to its presence at the Nationally Important Flying-fox Camp at Ingham.<br>A review of the national flying-fox monitoring viewer revealed that low numbers (<499 individuals) were observed at the Ingham camp during the last monitoring event in 2020 and for most of the preceding 8 years. |
| *Rhinolophus robertsi* | Greater large-eared horseshoe bat | E | V | The Greater Large-eared Horseshoe Bat is found in lowland rainforest, along gallery forest-lined creeks within open eucalypt forest, *Melaleuca* forest with rainforest understorey, open savannah woodland and tall riparian woodland of *Melaleuca*, Forest Red Gum (*E. tereticornis*) and Moreton Bay Ash (*E. tessellaris*). They forage mainly in open forest and wattle-dominated ridges in rainforest. | Known | The species was observed in the wetter portions of the Project area during 2019 and 2020 surveys. Given the species was recorded within 1 km to proposed turbines (16S, 59N) and this habitat is continuous in to the easter portion of the disturbance footprint, the species is likely to occur within open eucalypt forest and *Melaleuca* forest. The species was not identified in the ultrasonic recording devices deployed in the 2022 survey. Given the species has previously been recorded, and suitable does exist within the Disturbance footprint, it is still considered to occur within the Disturbance footprint. |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| *Saccolaimus saccolaimus nudicluniatus* | Bare-rumped sheath-tailed bat | E | V | Confined to coastal strip within 40 km of the ocean. Occurs mostly in lowland areas, typically in a range of woodland, forest and open environments. Habitat adjacent to roosts include: Poplar Gum (*Eucalyptus platyphylla*), Carbeen (*Corymbia. tessellaris*) and Ghost Gum (*E. papuana*) woodlands at Ayr; Darwin Stringybark woodland (*E. tetrodonta*) with Clarkson's Bloodwood (*Corymbia clarksoniana*) and Carbeen, and gallery forest and rainforest at Iron Range; and at riverine vine forest with adjacent open forest/woodland at Coen. The Bare-rumped Sheathtail Bat has been suggested to forage over habitat edges such as the edges of rainforest and forest clearings. | Known | The species was observed in eucalypt forests of the Project area during 2019 and 2020 surveys. The species was not reliably identifiable in the ultrasonic data collected in the 2022 survey. A series of calls were identified as belonging to either *Saccolaimus saccolaimus* or *S. flaviventris* (see Appendix F for full results analysis). Despite not being identified with complete certainty in the recent 2022 survey, the species is still considered to occur within the Disturbance footprint given other confirmed records in surrounding habitat. |
| *Tachyglossus aculeatus* | Short-beaked echidna | SL | - | Occurs throughout Australia, inhabiting open woodlands, savannas, agriculture areas, semi-arid and arid regions. Associated with abundant termite mounds and other areas where prey (ants) is abundant. | Known | The species was recorded during several times during previous surveys, with evidence of the species occurrence (diggings, scats) also collected nearby the disturbance footprint during recent surveys. Given the species occupies a wide range of habitat, all vegetated areas within the disturbance footprint is suitable habitat. |
| *Xeromys myoides* | Water mouse | V | V | Inhabiting mangroves, lagoons, swamps, and lakes, occasional can be found in riparian areas inland. They require water and large amounts of leaves and muddy soil to build termite shaped nests. | Unlikely | No records of the species are present within 30 km (ALA, 2022). Several records in Cairns and Mackay are the closest known populations. |
| **Reptiles** | | | | | | |
| *Delma mitella* | Atherton delma | NT | V | The Atherton Delma is known only from tall open forests and rainforest interfaces. Grass cover in | Unlikely | The species has a small known range, known only from Herberton, Ravenshoe and Paluma districts. |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| | | | | known locations is Kangaroo Grass *Themeda triandra*, Blady Grass *Imperata cylindrica*, and *Mnesithea rottboellioides*. | | Whilst some potentially suitable habitat occurs, consisting of tall open forest often dominated by *C. intermedia* and/or *E. portuensis,* with a Kangaroo Grass Blady Grass and/or *Mnesithea rottboellioides* understory, all species records are situated in wetter environments to the disturbance footprint, such as those along on Paluma range (ALA, 2022). The closest known record is approximately 32 km south-east within this range. The species was originally considered to occur in the wider Project area which intersects in the high rainfall zone of the Wet Tropics. Since the Disturbance footprint avoides this habitat, the species is now considered unlikely to occur. |
| *Egernia rugosa* | Yakka skink | V | V | Found in a variety of vegetation types, commonly in cavities under and between partly buried rocks, logs or tree stumps, root cavities and abandoned animal burrows. The species often takes refuge in large hollow logs and has been known to excavate deep burrow systems, sometimes under dense ground vegetation. | Unlikely | Known records of the species in northern Queensland are scattered. The disturbance footprint is outside the clusters of known species records, with the closest known cluster being north near Cairns. |
| **Frogs** | | | | | | |
| *Litoria dayi* | Australian lacelid | V | V | Rainforest specialist associated with rainforests and rainforest margins with fast-flowing rocky streams or slower watercourses where ample vegetation exists along the margins. At low elevations, the Lace-eyed Tree Frog favours rock soaks, narrow ephemeral streams and rock outcrops in larger watercourses. It may also be found on rocks, boulders and vegetation in or adjacent to rainforest streams. Once present at elevations 0m to 1200m, | Unlikely | Suitable rainforest habitat with fast flowing or large streams is not present in the disturbance footprint and the small patch of rainforest that is located in the broader Project area is above the elevation at which Australian lacelid occurs. The species is thought to have disappeared from elevations above 500 m as a result of chytrid fungus (*Batrachochytrium dendrobatidis*). Species records occur within 30 km to the north of the disturbance footprint, however these |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| | | | | the species is now thought to be restricted to elevations below 500 m. | | are associated with Wallaman Falls, where suitable habitat is present (ALA, 2022). |
| *Litoria nannotis* | Waterfall frog | E | - | Rainforests and sclerophyll forests. Occurs throughout the Wet Tropics Bioregion, North Queensland, from Paluma to Cooktown, but only has stable populations at lowland sites (180-400 m). It is restricted to rocky stream habitats in rainforest or wet sclerophyll forest where there is fast flowing water, waterfalls and cascades. Male and female Waterfall Frogs use the stream as primary habitat throughout the year. Adults and juveniles sometimes form small aggregations (4-6 individuals) amongst large boulders behind waterfalls. Tadpoles of the Waterfall Frog are predominantly found in fast flowing sections of streams, in riffles or torrents, adhering to rocks. | Unlikely | Suitable habitat of rainforest or wet sclerophyll forest with fast flowing water, waterfalls and cascades is not present in the disturbance footprint. The disturbance footprint is above the elevation at which this species occurs. There are no records within 30 km (ALA, 2022). |
| *Litoria serrata* | Tapping green eyed frog | V | - | Known to inhabit rainforests and adjacent wet sclerophyll forest, as well as gallery forest and paperbark woodland. Usually found near creeks or seepages, often in association with mosses or lichens. | Unlikely | Suitable habitat (rainforests) is not present in the disturbance footprint. The closest ALA record is approximately 10 kms north-east of the disturbance footprint, near Wallaman Falls. |
| *Pseudophryne covacevichae* | Magnificent brood frog | V | V | Appears to be restricted to specific habitats with all records being from the rhyolites of the Glen Gordon Volcanics. Found in areas of seepage along rocky slopes, in open eucalypt forests with an understorey comprised of *Themeda triandra*, *Xanthorrhoea* sp., *Gahnia* sp., *Lophostemon suaveolens*, *Allocasuarina littoralis* and *A. torulosa*. The species distributional range was extended after the discovery of a small population in Paluma range. All species records occur above 890 m above sea level. | Potential | The species strictly occurs in areas of seepage, often around rocky substrate in open Eucalypt Forest. Potential habitat occurs within the Project area and the Disturbance footprint as open eucalypt forests with an understorey comprised of *Themeda triandra*, *Xanthorrhoea* sp., *Gahnia* sp., *Lophostemon suaveolens*, *Allocasuarina littoralis* and *A. torulosa*. Habitat is therefore identifiable on a smaller-scale (seepage, opposed to creeks), and is seasonally dependant. No areas within the Project area or |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| | | | | | | Disturbance footprint extend beyond 790 m above sea level (100 meters less than the lowest elevation the species has been recorded at). The eastern portion of the disturbance footprint has the most potential to support possible habitat, however, no species records occur within 30 km (ALA, 2022). Given the lack of literature and public records regarding the species habitat and distribution, the precautionary principle has been applied and the species is considered to have the potential to occur. |
| **Fish** | | | | | | |
| *Stiphodon semoni* | Opal cling goby | - | CE | Confined to a limited number of rainforest streams in far north-east Queensland, with an estimated population of 10-30 mature individuals. The species occurs in fast-flowing coastal streams. | Unlikely | The disturbance footprint is not associated with the known river reaches for the population, with no records within 30 km (ALA, 2022). |
| **Migratory Marine Birds** | | | | | | |
| *Apus pacificus* | Fork-tailed swift | SLC | Ma, Mi | The Fork-tailed Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. They are more widespread west of the Great Divide and are commonly found west of the line joining Chinchilla and Hughenden. | Known | The species was detected by Nature Advisory in both the Disturbance footprint and the wider Project area (Nature Advisory, 2022a; Nature Advisory, 2022b). The species was observed in both riparian habitats and open woodlands. |
| **Migratory Marine Species** | | | | | | |
| *Crocodylus porosus* | Salt-water crocodile | - | Ma, Mi | It can be found in in a variety of habitats which include coastal waters, estuaries, freshwater sections of lakes, inland swamps and marshes. The species can be found up to 150 km inland from the coast and prefers to nest in freshwater swamps without tidal movement and with floating rafts of vegetation to construct nests. They can occupy fresh | Unlikely | Suitable habitat is not present within the disturbance footprint. A single ALA record was identified within 30 km of the disturbance footprint, at Herbert River north-west of the disturbance footprint, however, Wallaman Falls is between the sighting and the Project area. |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| | | | | and salt water and are occasionally observed in the open sea. | | |
| **Migratory Terrestrial Species** | | | | | | |
| *Cuculus optatus* | Oriental cuckoo | SLC | Mi | Monsoon forest, rainforest edges, leafy trees in paddocks, river flats, riverside trees, roadsides, mangroves, islands. | Known | The species was confirmed during field surveys of the broader Project area (ELA, 2022) and within the Disturbance footprint (Nature Advisory, 2022a). The species was detected in open woodland and riparian habitat. There are multiple species records within 20 km of the disturbance footprint including associated with Girringun Forest Reserve (ALA, 2022). |
| *Hirundo rustica* | Barn swallow | SLC | Ma, Mi | Open country in coastal lowlands, often near water, towns and cities. Also freshwater wetlands, paperbark Melaleuca woodland, mesophyll shrub thickets and tussock grassland. | Potential | Suitable habitat in the form of *Melaleuca* spp. occurs within the disturbance footprint, and the disturbance footprint is within species known distribution (ALA, 2022). |
| *Monarcha melanopsis* | Black-faced monarch | SLC | Ma, Mi | Mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/shrubland, warm temperate rainforest, dry (monsoon) rainforest and (occasionally) cool temperate rainforest. Also known from gullies in mountain areas or coastal foothills, softwood scrub dominated by Brigalow (*Acacia harpophylla*), coastal scrub dominated by Coast Banksia (*Banksia integrifolia*) and Southern Mahogany (*Eucalyptus botryoides*), occasionally among mangroves, sometimes in suburban parks and gardens and selectively logged and 20—30 years old regrowth rainforest. Breeds in rainforest | Unlikely | Suitable habitat (rainforest) is not present within the disturbance footprint. Species records adjacent to the disturbance footprint (ALA, 2022). |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| | | | | habitat. Feeds mostly in rainforest but also in open eucalypt forest. | | |
| *Monarcha trivirgatus* (syn. *Symposiachrus trivirgatus*) | Spectacled monarch | SLC | Ma, Mi | This species prefers areas with thick understorey such as wet gullies, rainforests and mangroves. | Likely | Species was identified in surveys of the Project area surrounds, with the closest record less than 1 km from the Project area boundary (ELA, 2022; Nature Advisory, 2022a). The species was identified in the wetter components (far east) of the Project area surrounds. Suitable habitat is limited to small areas of riparian zones within the disturbance footprint where they are in proximity to wetter forests. These are limited to the eastern portion of the disturbance footprint. The species was previously considered to potentially occur (ELA, 2020), however, is now consider to likely occur given the presence of suitable habitat and proximity of recent records. |
| *Motacilla cinerea* | Grey wagtail | SLC | Ma, Mi | The species is a rare non-breeding summer visitor to northern Australia. On migration they may forage on rocky tidal flats, with all records associated with water.<br>Near running water in disused quarries, sandy and rocky streams in escarpments and rainforests, sewage ponds, ploughed fields, airfields. | Unlikely | The species has a strong association with water, with all confirmed Australian records being associated with water; especially creeks, rivers and waterfalls (DoE, 2015). Whilst some creeks intersect the disturbance footprint, these are considered marginal habitat and given the species rarity in the region and lack of records within 30 km of the disturbance footprint (ALA, 2022). The closest known records are in association with Lake Paluma and along the coastline. |
| *Motacilla flava* | Yellow wagtail | SLC | Ma, Mi | Short grass and bare ground, swamp margins, sewage ponds, saltmarshes, playing fields, airfields, ploughed land, town lawns. | Unlikely | Suitable habitat (swampy marshes / saltmarshes) is not present in the disturbance footprint, with expert distribution occurring nearer the coast and south of the disturbance footprint (ALA, 2022). |
| *Myiagra cyanoleuca* | Satin flycatcher | SLC | Ma, Mi | Satin Flycatchers mainly inhabit eucalypt forests, often near wetlands or watercourses. Often occurs in gullies. Also occurs in eucalypt woodlands with | Known | Species was identified on multiple occasions within the Disturbance footprint, wider Project area and surrounds (ELA, 2020; Nature Advisory 2022a). |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| | | | | open understorey and grass ground cover and are generally absent from rainforest. Mainly recorded in eucalypt forests, especially wet sclerophyll forest, often dominated by eucalypts such as Brown Barrel, *Eucalyptus fastigiata*, Mountain Gum, *E. dalrympleana*, Mountain Grey Gum, Narrow-leaved Peppermint, Messmate or Manna Gum, or occasionally Mountain Ash, *E. regnans*. They sometimes also occur in dry sclerophyll forests and woodlands, usually dominated by eucalypts such as Blakely's Red Gum, *E. blakelyi*, Mugga Ironbark, *E. sideroxylon*, Yellow Box, White Box, *E. albens*, Manna Gum or stringybarks, including Red Stringybark, *E. macrorrhyncha* and Broad-leaved Stringybark, usually with open understorey. | | Suitable habitat (eucalypt forest and riparian forests) exists throughout the disturbance footprint. |
| *Rhipidura rufifrons* | Rufous fantail | SLC | Ma, Mi | In east and south-east Australia, it usually inhabits wet sclerophyll forests usually with a dense shrubby understorey often including ferns. It can also be found in subtropical and temperate rainforests, and occasionally in drier sclerophyll forests during migration. In the north, it occurs in tropical rainforest and monsoon rainforests, including semi-evergreen mesophyll vine forests, semi-deciduous vine thickets or thickets of Paperbarks (*Melaleuca* spp.) (Higgins et al. 2006). They occasionally occur in secondary regrowth, following logging or disturbance in forests or rainforests. | Known | Species was identified throughout the wider Project area and surrounds, and within the Disturbance footprint (Nature Advisory, 2022a). Preferrable habitat is limited to small areas of riparian zones and within wetter forests located in the eastern extent of the disturbance footprint. The species was recorded on several occasions within proximity to watercourses during bird surveys undertaken by Nature Advisory in the surrounding Project area, as well as in open woodlands within the Disturbance footprint (Nature Advisory, 2022a; Nature Advisory, 2022b). |
| **Migratory Wetlands Species** | | | | | | |
| *Actitis hypoleucos* | Common sandpiper | SLC | Ma, Mi | It can use a wide range of wetland habitats, of varying levels of salinity. Forages in shallow water and on bare soft mud at the edges of wetlands. | Unlikely | Suitable habitat (muddy wetlands) is not present in the disturbance footprint, with no records within 30 km (ALA, 2022). |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| *Calidris acuminata* | Sharp-tailed sandpiper | SLC | Ma, Mi | Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. 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 saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. Sometimes occur on rocky shores and rarely on exposed reefs. | Unlikely | Suitable habitat (coastal environments / wetlands) is not present in the disturbance footprint, with no records within 30 km (ALA, 2022). |
| *Calidris melanotos* | Pectoral sandpiper | SLC | Ma, Mi | Prefers shallow fresh to saline wetlands. Found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. Usually found in coastal or near coastal habitat but occasionally found further inland. Also recorded in swamp overgrown with lignum. | Unlikely | Suitable habitat (coastal environments) is not present in the disturbance footprint, with no records within 30 km (ALA, 2022). |
| *Gallinago hardwickii* | Latham's snipe | SLC | Ma, Mi | Occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity. Various other freshwater habitats can be used including bogs, waterholes, billabongs, | Unlikely | Observed approximately 4 km outside the Project area during previous field surveys (ELA, 2020). Habitat in the form of brackish wetlands and dams does not occur within the Disturbance footprint. The Disturbance footprint is relatively undisturbed land, and where water habitat does occur is it is in the form of riparian forest with seasonally flowing streams. |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| | | | | lagoons, lakes, creek or river margins, river pools and floodplains. | | |
| *Pandion haliaetus* | Osprey | SLC | Ma, Mi | Littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. Require extensive areas of open fresh, brackish or saline water for foraging. Frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes. | Unlikely | Suitable habitat (extensive areas of open water) is not present in the disturbance footprint, with no records within 30 km (ALA, 2022). |
| *Tringa nebularia* | Common greenshank | SLC | Ma, Mi | Occurs in all types of wetlands. Typical habitat for this species a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. Sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass and uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats. | Unlikely | Suitable habitat (wetlands) is not present in the disturbance footprint, with a single record around 30 km to the west of the disturbance footprint (ALA, 2022). |
| **Plants** | | | | | | |
| *Acacia longipedunculata* | - | NT | - | Grows in open forests on shallow, sandy and rocky soils. Restricted north-eastern Queensland distribution, with records near Herberton and in the Paluma Range. | Potential | Some suitable habitat for the species occurs within the disturbance footprint, including within open forests growing on sandy / rocky soils.<br>Several species records occur within 30 km of the disturbance footprint (ALA, 2022). |
| *Acacia tingoorensis* | Tingoorensis wattle | V | - | Present at altitude between 400-500 m in eucalypt woodlands or forest. Forms dense stands within road reserves. Recorded to grow on a variety of soils which include deep red loams, shallow loamy/sandy soils and gravelly soils. Fragmented populations | Likely | The species is known to occur within the Project area where it grows within *C. citriodora* and *E. portuensis, dominant woodlands on granite soils* adjacent to Mount Fox Road (ALA, 2022) (approx. 1km from the project impact area). No other populations of the |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
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| | | | | exist near Kingaroy in the Burnett District as well as in South-East Queensland | | species were observed in the disturbance footprint, however, suitable species habitat is widespread throughout. |
| *Bulbophyllum globuliforme* | Miniature moss-orchid | NT | V | Grows only on hoop pine (*Araucaria cunninghamii*), colonising the upper branches of mature trees in upland rainforest. Occurs in north-east NSW and south east Queensland. Specimens have also been collected near Hidden Valley, south of Ingham in north Queensland. | Unlikely | The species only grows on hoop pine. No hoop pine, or upland rainforest in which hoop pine grows occurs in the disturbance footprint. No records occur within 30 km of the disturbance footprint (ALA, 2022). |
| *Canarium acutifolium* | - | V | V | *Canarium acutifolium* is a tree to 40 m tall. The majority of the species distribution occurs north of Cardwell to the Daintree National Park. Collections have been made in mesophyll vine forest along rivers and creeks at altitudes of 5 to 200 m. | Unlikely | The PMST has indicated that the species or species habitat is likely to occur within 30 km of the disturbance footprint due to small areas of occurrence mapped in the Girringun National Park, however, no records occur within 30 km of the disturbance footprint (ALA, 2022). No suitable habitat (mesophyll vine forest along rivers and creeks at altitudes of 5 to 200 m) is present within the disturbance footprint. |
| *Commersonia reticulata* | - | V | - | The species native range is in north-east Queensland. The species is a low root suckering clumping shrub with bluish glaucous leaves. The species has been observed growing on rock pavements amongst eucalyptus forests. | Likely | The species was observed growing in close proximity to proposed turbine 27N, however, outside the disturbance footprint. An additional record of the species was observed on an adjacent property to the east of the disturbance footprint (within approx. 6 km). Both records were observed growing on rock pavements with either *C. leichhardtii* and ironbark spp., or *E. exserta* with scattered *C. citriodora* or dense thickets of *A. leptostachya.* In both populations, the species was growing in clusters. |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| *Corchorus subargenteus* | - | V | - | Specimens obtained near Ewan and Paluma, North Kennedy pastoral district, north Queensland. Considered to prefer *Corymbia leichhardtii / Eucalyptus granitica* woodland on granite-derived soils. | Unlikely | Suitable habitat (*Corymbia leichhardtii / Eucalyptus granitica* woodland on granite-derived soils) is present within the Project area, however, outside the disturbance footprint and the localised dominance of *Corymbia leichhardtii* in which it can occur is infrequent throughout. The majority of records occur in association with the Mt Zero-Taravale. |
| *Corybas cerasinus* | Red helmet orchid | NT | - | Found in northern Queensland Australia on exposed ridges in moist to wet forests and on moist sheltered slopes in drier forests at elevations of 10 to 1000 meters. Records exist in northern Queensland from Cooktown to the Herbert River (near Ingham), as well as Dunk Island. | Potential | Marginal habitat in the form of moist to wet forests occur in the eastern portion of the disturbance footprint, however, some records occur within 30 km of the disturbance footprint (WildNet, 2022). |
| *Corymbia leptoloma* | Yellowjacket | V | V | The species grows in wet sclerophyll forest in association with turpentine (*Syncarpia glomulifera*), red mahogany (*Eucalyptus resinifera*) and pink bloodwood (*Corymbia intermedia*) in gullies or on hill slopes. It occurs in coarse sandy soils derived from granite. *Corymbia leptoloma* is known only from a small area north-west of Townsville, Queensland. The best-known population occurs along the Paluma–Hidden Valley road. | Potential | Some suitable habitat (wet sclerophyll forest) occurs in the eastern portion of the disturbance footprint.<br>A record occurs approximately 10 km south of the disturbance footprint (ALA, 2022), with recent additional records observed within a nearby proposed Project area (4 Elements Consulting, 2021). |
| *Cycas platyphylla* | - | V | V | *Cycas platyphylla* occurs in sparse *Eucalyptus sideroxylon* woodland with a grassy understorey, often on rocky slopes in shallow red stony loams. The main population is from the Petford district, west of the Atherton Tableland, Queensland. There are three smaller quite disjunct populations recorded from Taravale, Wandovale, and at White Mountains, north of Torrens Creek. | Unlikely | Cycads are distinct flora species. No *Cycas platyphylla* were observed during field surveys, nor was *E. sideroxylon* in which the species is known to grow. The closest known records near Herberton to the north or in Mount Zero – Taravale to the south, with no records occurring 30 km of the disturbance footprint (ALA, 2022). |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| *Cyperus cephalotes* | - | E | E | *Cyperus cephalotes* grows in aquatic habitats. It has been recorded growing in wetlands with Salvinia sp. | Unlikely | Whilst some creeks occur in the disturbance footprint that may hold water seasonally, not wetlands are present. Additionally, no records occur within 30 km of the disturbance footprint (ALA, 2022). |
| *Dichanthium setosum* | Bluegrass | - | V | *Dichanthium setosum* occurs in heavy soils (predominantly cracking clays or alluvium, often in gilgai) in woodland or open woodland usually dominated by *Acacia* (brigalow) and/or *Eucalyptus* species. In Queensland it is known to occurs in Leichhardt, Moreton, North Kennedy and Port Curtis. | Unlikely | Whilst some marginal habitat occurs in basalt soils limited to a small portion in the eastern section of the disturbance footprint, no records occur within 30 km of the disturbance footprint. The species is not known to occur north of Townsville, and the closest record occurs south-east of Charters Towers (ALA, 2022). Preferable habitat such as that of cracking clays with gilgais, does not occur within the Disturbance footprint or surrounds. Further, post-summer rainfall 2022 vegetation surveys (when identifiable reproductive parts are likely to be observable) in both the Disturbance footprint and surrounds did not detect the species. |
| *Diplazium cordifolium* | - | V | V | This species is found around Cairns, Herberton, and Wooroonooran. *Diplazium cordifolium* is found in rainforest, along creek banks. It is usually found below 80-100 m altitude, although one population in Palmerston valley grows at 475 m altitude. | Unlikely | Suitable species habitat (rainforest) is not present within the disturbance footprint. Additionally, no records occur within 30 km of the disturbance footprint (ALA, 2022). |
| *Dodonaea uncinata* | - | NT | - | Occurs in open forests on sandstone soils. Records for species exist in Hidden Valley/Mt Spec, a small area to the north west of Townsville | Unlikely | Suitable habitat (open forests on sandstone soils) are not present within the disturbance footprint. |
| *Glossocardia orthochaeta* | - | E | - | Occurs on steep rocky granite country with boulder stacks and open granite pavements. Found on granitic lithosols on the edge of tall open woodlands of *Araucaria cunninghamii* with a dense shrub layer of *Labichea nitida* and *Acacia leptostachya*, with a | Potential | Suitable habitat (rock pavement habitats) are present within the disturbance footprint, with one record within 30 km (ALA, 2022). |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| | | | | sparse grassy ground cover *Digitaria* sp. and *Eriachne pallescens*. Known to occur in the North Kennedy District, west to south west of Ingham, north Queensland. | | |
| *Homoranthus cummingii* | - | CR | - | Known only from the vicinity of Mount Zero ~85 km west of Townsville, Queensland. Plants grow in shallow, sandy soils among granite rocks. | Potential | The species is currently known only from the Mount Zero, with the closest record occurring approximately 32 km, however, given the rarity of this plant, and its potential to occur within rock pavements, the species has precautionarily been included as potentially occurring. Searches to date within the rock pavements have not revealed the presence of the species. |
| *Homoranthus porteri* | - | V | V | This species occurs on sandstone pavement / rhyolite, rocky outcrops, hillsides and scree slopes in open eucalypt woodland. Species recorded from Mt Mulligan, west of Mareeba, southwards to near Ravenshoe and 80 km north-west of Townsville in Queensland. | Potential | Known populations of the species are further than 30 km from the disturbance footprint (ALA, 2022), however, suitable rock pavement habitats and open eucalypt woodlands contain rhyolite are present throughout the disturbance footprint. Although searches to date within the rock pavements has not revealed the presence of the species. |
| *Lindsaea pulchella* var. *blanda* | - | - | V | This is a poorly known taxon in Australia with exceptionally few records of uncertain locality but thought to possible occur in the Rockingham Bay Range (Wet Tropics), Queensland. Described as epiphytic, occurring among mosses, on trees and tree ferns at likely altitudes of 1500 -2570 m. | Unlikely | No 1,500 – 2,570 m high elevation habitats present in the disturbance footprint, and no records occur within 30 km of the disturbance footprint (ALA, 2022). |
| *Marsdenia brevifolia* | - | V | V | Occurring in north and central Queensland, near Townsville, Springsure and north of Rockhampton. Plants have also been recorded at Springsure in woodlands dominated by *Corymbia erythrophloia* and *Eucalyptus crebra*, with dense *Themeda triandra* understorey on basalt. Around Townsville | Potential | Suitable habitat, including woodlands dominated by *Corymbia erythrophloia* and *Eucalyptus crebra*, with dense *Themeda triandra* understorey on basalt and woodland on granite soils are present throughout the |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| | | | | *M. brevifolia* has been recorded to grow on granite soils in woodlands dominated by Granite Ironbark (*E. granitica*), Rustyjacket (*C. leichhardtii*) and White Mahogany (*E. portuensis*). It is also found on Magnetic Island where species occurs in open forest on dark acid agglomerate soils dominated by Narrow-leafed Ironbark (*E. drepanophylla*) communities. | | disturbance footprint. Species records occur within 30 km of the disturbance footprint (ALA, 2022). |
| *Myrmecodia beccarii* | Beccarri's ant plant | V | V | Occurs in open woodland dominated by *Melaleuca viridiflora* or mangroves. Recorded in coastal woodlands between Cooktown and Ingham in Queensland. | Unlikely | The species is associated with coastal woodlands. This habitat is not present within the disturbance footprint. Additionally, no records occur within 30 km of the disturbance footprint (ALA, 2022). |
| *Oenanthe javanica* | Water celery | NT | - | Naturally occurs in Queensland as well as South East Asia, generally occurring at elevations greater than 600 m. Favours ponds, marshlands, lakeshores, muddy stream banks and shallow water. | Potential | Some marginal habitat (shallow streams, although with sandy substrate) occur within the disturbance footprint.<br>Species records occur within 30 km of the disturbance footprint (ALA, 2022). |
| *Phaius australis* | Lesser swamp - orchid | E | E | This species is associated with coastal wet heath/sedge wetlands, swampy grassland or swampy forest and often where Broad-leaved Paperbark (*Melaleuca quinquenervia*) or Swamp Mahogany (*Eucalyptus robusta*) are found. Less commonly, the species has been found in drier forest near the coast. Distribution encompasses both north-east/ eastern Queensland and northern New South Wales, however, there is a large discontinuity in species range. | Unlikely | Suitable coastal swamp habitat is not present within the disturbance footprint, with no species records within 30 km, and the closest records exist from Cardwell up through Atherton tablelands to Cairns (ALA, 2022). |
| *Phaius pictus* | - | V | V | Restricted to rainforests from 0–600 m altitude, usually occurs in sheltered humid sites close to streams and seepage among forest litter on | Unlikely | Suitable habitat (rainforests) are not present within the disturbance footprint, with no species records |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| | | | | boulders. Recorded in north-east Queensland, sporadically from the McIlwraith Range, Bloomfield River to Kirrama Range. | | within 30 km, and closest records north-west of Tully up to north of Cairns (ALA, 2022). |
| *Phalaenopsis amabilis* subsp. *rosenstromii* | Native moth orchid | E | E | The species is known to grow in trees, rarely on rocks, in humid airy situations on sheltered slopes and in gullies, in deep gorges and close to streams in rainforests, at altitudes from 200–500 m. Occurs in north-east Queensland, sporadically from the Iron Range in the north and as far south as the Paluma Ranges. This species has been recorded in Daintree National Park, Iron Range National Park and Mt Spec National Park. | Unlikely | Suitable habitat (rainforests) are not present within the disturbance footprint, with no species records within 30 km (ALA, 2022). The closest records are from Townsville through north to Cairns, within proximity to coast (ALA, 2022). |
| *Solanum graniticum* | Granite nightshade | E | E | *Solanum graniticum* grows in open eucalypt woodland on hillsides with shallow soil derived from granite or granodiorite. Associated species include *Eucalyptus drepanophylla* and *Corymbia erythrophloia.* | Potential | Suitable habitat (ironbarks and *C. erythrophloia* on granite soils) occur throughout the disturbance footprint and a species record occurs within 30 kms (ALA, 2022). |
| *Rhomboda polygonoides* (syn. *Zeuxine polygonoides*) | Velvet jewel orchid | - | V | Occurs at altitudes of 450-60 m on rainforest floor, notably in notophyll vine forest, growing on tops of granite boulders, on flat rocks and among the rotting wood of fallen trees. Total population size and extent remain unknown. All known records exist within the Wet Tropic region. | Unlikely | Suitable habitat (vine forests on granite) is not present within the disturbance footprint. Additionally, no species records occur within 30 km (ALA, 2022). |
| *Rhodamnia sessiliflora* | Iron Malletwood | E | - | Endemic to north-east Queensland, widespread throughout the area. Altitudinal range from near sea level to 1000 m. Grows in lowland and upland rain forest on a variety of sites, also found in drier rain forest often associated with Kauri Pine (*Agathis robusta*). | Unlikely | Suitable habitat (lowland and upland rainforest) is not present within the disturbance footprint. The closest known records are those in association with areas of rainforest in protected areas to the east of the disturbance footprint (ALA, 2022). |

| Scientific Name | Common Name | NC Act Status* | EPBC Act Status* | Habitat Description+ | Likelihood | Justification |
|---|---|---|---|---|---|---|
| *Tephrosia leveillei* | - | - | V | Recorded growing on alluvial plains in *Eucalyptus cullenii* woodland with *Corymbia erythrophloia, Erythrophleum chlorostachys* and *Grevillea glauca*, and in tall open forest of *Eucalyptus* and *Corymbia* species over dense *Heteropogon contortus* on red sand. Current known distribution between Chillagoe and Forty Mile Scrub as well as further south, near Ravenswood. | Unlikely | Suitable alluvial plains with red sandy soils is not present within the disturbance footprint, and no species records occur within 30 km (ALA, 2022). The closest records are near Georgetown and west of Cairns. |
| **Threatened Ecological Communities** | | | | | | |
| Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland | | - | E | Broad leaf tea-tree *(Melaleuca viridiflora)* dominated woodland is restricted to the Wet Tropics and Central Mackay Coast bioregions in Queensland. The structure includes a canopy of broad leaf tea-tree and a diverse ground layer of grasses, sedges and forbs. Corresponds with RE 7.3.8a, RE7.3.8b, RE7.3.8d, and RE7.5.4g in correct condition. | Unlikely | The disturbance footprint is at the very western extent of this TEC. The Regional Ecosystem 7.5.4 is considered to correspond with this threatened ecological community and occurs in the broader Project area, however, is not present within the disturbance footprint. Two vegetation communities were ground truthed as 7.5.4a and 7.5.4f within the Project area, however, *M. viridiflora* was not found to be dominate in either. |
| Lowland tropical rainforest of the Wet Tropics | | - | E | Lowland Tropical Rainforest is restricted to the Wet Tropics Bioregion and the Starke Coastal Lowlands subregion in the Cape York Peninsula Bioregion. It occurs principally on fertile soils, which may be derived from alluvium, basalt, metamorphic and granite substrates. The ecological community is typically confined to land east of the coastal ranges and below 80 – 100 m above sea level. | Unlikely | This community was identified in the PMST as "community likely to occur within the area". However, no vegetation within the disturbance footprint was ground truthed as lowland tropical rainforest of the Wet Tropics that correspond with this TEC, as per the approved conservation advice. This community is therefore considered unlikely to occur. |

# Appendix D - Survey effort

| Target species | Survey guideline | Recommendation – season, survey method and effort | Review of survey effort from 2019, 2020 and 2022 |
|---|---|---|---|
| **Threatened fauna** | | | |
| Bare-rumped sheath-tailed bat<br>*Saccolaimus saccolaimus nudicluniatus* | Survey guidelines for Australia's threatened bats (Department of the Environment Water Heritage and the Arts, 2010b) | Little is known about the seasonal movements of the species, however most records are collected during the period of August to April. Consequently, surveys should be conducted between August and April.<br>Recommended survey techniques:<br>• Mist nets:<br>o 16 mist-net nights over a minimum of 4 nights in areas <50 ha.<br>• Unattended bat detectors:<br>o 16 detector nights over a minimum of 4 nights in areas <50 ha.<br>• Tree roost survey/inspection:<br>o 1-2 hours per survey day | The following survey methods were conducted for the species:<br>• Habitat assessments<br>• Bat-call detection<br>• Harp trapping and mist-netting.<br>15 harp trap nights, 5 mist net nights and bat-call detection (388 recording nights across 26 sites) were conducted for the species.<br>Most species records are confirmed during August to April, which coincided with two out of the three surveys conducted. The species has been confirmed, and whilst tree roost surveys/inspections were not conducted to determine occupants of hollows, habitat assessments were used as a surrogate for determining potential suitable hollows that may be roosts of the species. Given the species has been detected and the bat detector survey effort exceed those recommended, survey effort is deemed sufficient for detecting the presence of the species. |
| Diadem leaf-nosed bat<br>*Hipposideros diadema reginae* | Targeted species survey guidelines – Diadem leaf-nosed bat *Hipposideros diadema reginae* (Hourigan, 2011) | There are no known seasonal considerations for this species.<br>Recommended survey techniques:<br>• Passive monitoring: 16 detector nights over a minimum of 4 nights | The following survey methods were conducted for the species:<br>• Habitat assessments<br>• Bat-call detection<br>• Harp trapping and mist-netting. |

| Target species | Survey guideline | Recommendation – season, survey method and effort | Review of survey effort from 2019, 2020 and 2022 |
|---|---|---|---|
| | | • Active monitoring: 8 detector nights over a minimum of 4 nights<br>• Harp traps: 8 trap nights over a minimum of 4 nights<br>• Mist netting: 8 mist net hours over a minimum of 4 nights<br>• Roost searches: 2 hours per survey day | 15 harp trap nights, 5 mist net nights and bat-call detection (388 recording nights across 26 sites) were conducted for the species.<br>There are no known seasonal considerations for this species. However, the species has been detected during field surveys, therefore, survey effort is deemed sufficient for determining the presence of the species |
| Glossy black-cockatoo<br>*Calyptorhynchus lathami* | Targeted species survey guidelines: Glossy black-cockatoo (Hourigan, 2012) | Surveys can be carried out at any time of the year but may be most successful in the peak breeding season (March to August).<br>Recommended survey techniques (per 50 ha site):<br>• Diurnal surveys – 5 hours over 1 day<br>• Search for foraging and nesting signs – 20 hours over 4 days | The following survey methods were conducted for the species:<br>• Habitat assessments<br>• Bird surveys (area searches)<br>32 days (> 80 hours) looking for direct sightings or indirect evidence (nests & foraging resources) and 20 Bird Utilisation Surveys has been conducted.<br>The recommended survey effort has been exceeded. Two out of three surveys were conducted during the peak breeding season of this species. The species was not detected, however, potential habitat determined. |
| Greater glider<br>*Petauroides minor* | Species-specific guidelines for survey for the greater glider are not currently available, however, the species is readily detectable by spotlighting (Lindenmayer et al., 2001)<br>Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (Eyre et al., 2018) were used in the absence of species-specific guidelines. | There are no seasonal considerations for this species.<br>Recommended survey techniques:<br>• Spotlighting transects (100 x 100 m) per 30-person minutes. | The following survey methods were conducted for the species:<br>• Habitat assessments<br>• Spotlighting in suitable habitat<br>There are no known seasonal considerations for this species, however, the species has been detected during all three field surveys, therefore, survey effort is deemed sufficient for determining the presence of the species. |

| Target species | Survey guideline | Recommendation – season, survey method and effort | Review of survey effort from 2019, 2020 and 2022 |
|---|---|---|---|
| Greater large-eared horseshoe bat<br>*Rhinolophus robertsi* | Survey guidelines for Australia's threatened bats (Department of the Environment Water Heritage and the Arts, 2010b) | There are no known seasonal considerations for this species.<br>Recommended survey techniques:<br>• Harp traps:<br>o 16 harp trap nights<br>• Unattended bat detectors:<br>o 16 detector nights over a minimum of 4 nights<br>• Attended bat detectors:<br>o 6 detector hours<br>• Roost searches:<br>• Evening watches at potential roost sites to identify species as it emerges. | The following survey methods were conducted for the species:<br>• Habitat assessments<br>• Bat-call detection<br>• Harp trapping and mist-netting.<br>15 harp trap nights, 5 mist net nights and bat-call detection (388 recording nights across 26 sites) were conducted for the species.<br>There are no known seasonal considerations for this species. However, the species has been detected during field surveys, therefore, survey effort is deemed sufficient for determining the presence of the species |
| Grey-headed flying fox<br>*Pteropus poliocephalus* | Survey guidelines for Australia's threatened bats (Department of the Environment Water Heritage and the Arts, 2010b) | The occupation of camps is highly seasonal, with camp movements dependent upon seasonal fruiting and flowering of food plants.<br>Recommended survey techniques:<br>• No survey effort has been specified for this species | As per the above. |
| Koala<br>*Phascolarctos cinereus* | Survey guidelines for Australia's threatened mammals (Department of Sustainability Environment Water Population and Communities, 2011)<br>EPBC Act referral guidelines for the vulnerable koala (Department of the Environment, 2014) | Optimal time period for direct observation surveys is between August and January, as this is when koala activity is generally at a peak, and resident breeding females with back-young are most easily observed.<br>Recommended survey techniques:<br>• Spotlighting with call playback within suitable habitat: survey effort determined on a case-by-case basis.<br>• Remote cameras: survey effort determined on a case-by-case basis. | The following survey methods were conducted for the species:<br>• Habitat assessments<br>• Remote cameras<br>• Diurnal active searches for scats<br>• Spotlighting in suitable habitat with call playback<br>The species has been detected during two out of the three field surveys, with detection types including on cameras, direct sightings and from scat. Survey effort exceeded the |

| Target species | Survey guideline | Recommendation – season, survey method and effort | Review of survey effort from 2019, 2020 and 2022 |
|---|---|---|---|
| | | • SATs (Philips & Callaghan 2011) – sampling of a minimum of 30 koala food trees within suitable habitat. | recommended survey techniques, with cameras set at 83 sites (1,183 trap nights), 35 days of searches, and 18 nights of spotlighting with call playback. |
| Masked owl (northern)<br>*Tyto novaehollandiae kimberli* | Survey guidelines for Australia's threatened birds (Department of the Environment Water Heritage and the Arts, 2017) | March-October (breeding season)<br>Recommended survey techniques:<br>• Broadcast call playback in suitable habitat. | The following survey methods were conducted for the species:<br>• Habitat assessments<br>• Spotlighting and call playback in suitable habitat<br>The species has been confirmed within the disturbance footprint and surrounding Project area.<br>Given the species was detected on multiple occasions, survey effort is deemed sufficient for determining the presence of the species. Further, all surveys have been conducted in the known breeding season of this species. |
| Red goshawk<br>*Erythrotriorchis radiatus* | Survey guidelines for Australia's threatened birds (Department of the Environment Water Heritage and the Arts, 2017) | Breeding season (April-December with egg laying around May-October in north).<br>Red goshawks are very secretive, so scanning for nests is the most effective way to detect the species presence.<br>Recommended survey techniques:<br>• Area searches<br>• 80 hours over 10 days<br>• Search in groups of tall trees and in trees along riverbanks for nests | The following survey methods were conducted for the species:<br>• Habitat assessments<br>• Bird surveys (area searches)<br>• Drone surveys looking for presence of potential nests in suitable nesting habitat<br>The species was previously confirmed during July surveys (ELA, 2020). Areas searches exceed 32 days (> 80 hours), 20 bird utilisation surveys, drone surveys over 44 km of potential breeding habitat searching for nests, acoustic recording for 178 recording days.<br>The recommended survey effort has been exceeded. Further, all surveys have been |

| Target species | Survey guideline | Recommendation – season, survey method and effort | Review of survey effort from 2019, 2020 and 2022 |
|---|---|---|---|
| | | | conducted during the known breeding season for this species. |
| Sharman's rock-wallaby<br>*Petrogale sharmani* | Targeted species survey guidelines: Sharman's rock-wallaby *Petrogale sharmani* (Venz and Rowland, 2013) | A secretive species, surveys are best undertaken during cooler weather and encompassing a dawn and/or dusk period when the species is most likely to be active. Surveys should avoid the summer months or hot weather.<br>Recommended survey techniques:<br>• Searching for signs (2 hrs per survey day)<br>• Infra-red camera trapping (5 cameras, at least 14 nights)<br>• Observation surveys (4 hrs per survey day)<br>• Other inferential evidence (1 hr per survey day). | The following survey methods were conducted for the species:<br>• Habitat assessments<br>• Remote cameras<br>• Diurnal active searches for scats<br>• Spotlighting in suitable habitat<br>• Drone surveys<br>The species has been detected during all three field surveys, with detection including on cameras, direct sightings and from scat. Survey effort exceeded the recommended survey techniques, with cameras set at 83 sites (1,183 trap nights), 35 days of searches, and 18 nights of spotlighting. |
| Spectacled flying fox<br>*Pteropus conspicillatus* | Survey guidelines for Australia's threatened bats (Department of the Environment Water Heritage and the Arts, 2010b) | The occupation of camps is highly seasonal, with camp movements dependent upon seasonal fruiting and flowering of food plants.<br>Recommended survey techniques:<br>• Day surveys – 6 hrs per 50 ha<br>• Night surveys – 5 hrs per 50 ha | The following survey methods were conducted for the species:<br>• Habitat assessments<br>• Diurnal active searches for roosts<br>• Spotlighting in suitable habitat<br>No preferred season. However, was previously confirmed during September surveys (ELA, 2020) and may be recorded if flowering food plants are present. Survey effort exceeded the recommended survey techniques, with 35 days of searches, and 18 nights of spotlighting. |
| **Migratory birds** | | | |
| Aerial swifts:<br><br>Fork-tailed Swift | Species-specific guidelines for survey for the fork-tailed swift and white-throated needletail are not | Migratory – survey between October and April<br>eBird records for the Cairns region indicate species presence: | The following survey methods were conducted for the species:<br>• Habitat assessments |

| Target species | Survey guideline | Recommendation – season, survey method and effort | Review of survey effort from 2019, 2020 and 2022 |
|---|---|---|---|
| *Apus pacificus*<br>White-throated Needletail<br>*Hirundapus caudacutus* | currently available, however, the draft referral guidelines for 14 birds listed as migratory species under the EPBC Act (Department of the Environment, 2015) provides some recommendations. | Fork-tailed Swift: All year, peak summer months<br>White-throated Needletail: September – mid-June<br>These species are mostly aerial (Fork-tailed Swift exclusively) over Australia and are high-flying. These species are often associated with storm fronts. | • Bird surveys<br>Specific BUS surveys were not part of this scope, however, supplementary to previous survey efforts. |
| Migratory woodland species:<br>Oriental Cuckoo<br>*Cuculus optatus*<br>Satin Flycatcher<br>*Myiagra cyanoleuca*<br>Rufous Fantail<br>*Rhipidura rufifrons*<br>Spectacled Monarch<br>*Symposiachrus trivirgatus* | No specific guideline, information sourced from Species Profile and Threats Database (Department of Agriculture Water and the Environment, 2022) for each species. | eBird records for the Cairns region indicate species presence:<br>Oriental Cuckoo: November – May<br>Satin Flycatcher: October, April<br>Rufous Fantail: All year, peak April – December<br>Spectacled Monarch: All year, peak May – September<br>Black-faced Monarch: All year<br>These species use a range of habitats when on migration.<br>No recommended survey techniques exist for these species. | The following survey methods were conducted for the species:<br>• Habitat assessments<br>• Bird surveys<br>Specific BUS surveys were not part of this scope, however, supplementary to previous survey efforts. |
| **Threatened flora** | | | |
| *Acacia longipedunculata* | No specific guideline. | No specific guideline. However, area searches within suitable species habitat should be conducted to detect the species. | The following survey methods were conducted for the species:<br>• Habitat assessments via tertiary assessments<br>• Opportunistic searches in suitable habitat<br>Whilst no specific survey guidelines are provided, the species is distinctive species with long phyllodes and peduncles, therefore, should be identifiable throughout the year. Suitably qualified botanists familiar with the area were involved in flora surveys. |

| Target species | Survey guideline | Recommendation – season, survey method and effort | Review of survey effort from 2019, 2020 and 2022 |
|---|---|---|---|
| *Acacia tingoorensis* (Tingoorensis wattle) | No specific guideline. | *Acacia tingoorensis* flowers in August and September.<br>No specific guideline. However, area searches within suitable species habitat should be conducted to detect the species. | The following survey methods were conducted for the species:<br>• Habitat assessments via tertiary assessments<br>• Opportunistic searches in suitable habitat<br>The species was observed during March / May 2022 field surveys, therefore, likely detectable during field surveys. Suitably qualified botanists familiar with the area were involved in flora surveys. |
| *Commersonia reticulata* | No specific guideline. | No specific guideline is available for this species. Area searches within suitable species habitat should be conducted to detect the species. | The following survey methods were conducted for the species:<br>• Habitat assessments via tertiary assessments<br>• Opportunistic searches in suitable habitat<br>The species was recorded during March / May 2022 field surveys and during July 2020 field surveys, therefore, likely detectable during field surveys. The species was flowering on all occasions that it was recorded. Suitably qualified botanists familiar with the area were involved in flora surveys. |
| *Corybas cerasinus* (Red helmet orchid) | No specific guideline. | No specific guideline is available for this species. Area searches within suitable species habitat should be conducted to detect the species. | The following survey methods were conducted for the species:<br>• Habitat assessments via tertiary assessments<br>• Opportunistic searches in suitable habitat |

| Target species | Survey guideline | Recommendation – season, survey method and effort | Review of survey effort from 2019, 2020 and 2022 |
|---|---|---|---|
| | | | This species was not identified during any of the survey events. Given the species is small, and suitable habitat is present, the precautionary principle was applied. |
| *Corymbia leptoloma* (yellow jacket) | No specific guideline. | No specific guideline is available for this species. Area searches within suitable species habitat should be conducted to detect the species. | The following survey methods were conducted for the species:<br>• Habitat assessments via tertiary assessments<br>• Opportunistic searches in suitable habitat<br>This species was not identified during any of the survey events. The species is distinctive with glossy leaves, therefore, should be identifiable during surveys, including those three conducted. Suitably qualified botanists familiar with the area were involved in flora surveys |
| *Glossocardia orthochaeta* | No specific guideline. | No specific guideline is available for this species. Area searches within suitable species habitat should be conducted to detect the species. | The following survey methods were conducted for the species:<br>• Habitat assessments via tertiary assessments<br>• Opportunistic searches in suitable habitat<br>This species was not identified during any of the survey events. Suitably qualified botanists familiar with the area were involved in flora surveys. |
| *Homoranthus cummingii* / *Homoranthus porteri* | No specific guideline. | No specific guideline is available for this species. Area searches within suitable species habitat should be conducted to detect the species. | The following survey methods were conducted for the species:<br>• Habitat assessments via tertiary assessments |

| Target species | Survey guideline | Recommendation – season, survey method and effort | Review of survey effort from 2019, 2020 and 2022 |
|---|---|---|---|
| | | | • Opportunistic searches in suitable habitat<br>This species was not identified during any of the survey events. Suitably qualified botanists familiar with the area were involved in flora surveys. |
| *Marsdenia brevifolia* | No specific guideline, information sourced from Species Profile and Threats Database (Department of Agriculture Water and the Environment, 2022) | Plant should be identifiable year-round.<br>Flowers have been recorded from November to February with fruits from January to June. | The following survey methods were conducted for the species:<br>• Habitat assessments via tertiary assessments<br>• Opportunistic searches in suitable habitat<br>The species should be identifiable year-round, with three surveys conducted during periods where the species should be identifiable. |
| *Oenanthe javanica* (water celery) | No specific guideline. | No specific guideline is available for this species. Area searches within suitable species habitat should be conducted to detect the species. | The following survey methods were conducted for the species:<br>• Habitat assessments via tertiary assessments<br>• Opportunistic searches in suitable habitat<br>This species was not identified during any of the survey events. Suitably qualified botanists familiar with the area were involved in flora surveys. |
| *Solanum graniticum* (granite nightshade) | No specific guideline. | The species has been recorded flowering in February and March.<br>No specific guideline is available for this species. Area searches within suitable species habitat should be conducted to detect the species. | The following survey methods were conducted for the species:<br>• Habitat assessments via tertiary assessments<br>• Opportunistic searches in suitable habitat |

| Target species | Survey guideline | Recommendation – season, survey method and effort | Review of survey effort from 2019, 2020 and 2022 |
|---|---|---|---|
| | | | This species was not identified during any of the survey events, despite one survey event coinciding with potential flowering events. Suitably qualified botanists familiar with the area were involved in flora surveys. |

# Appendix E - Evidence of species and/or habitat


**Plate 3: Northern subspecies of squatter pigeon, identified by the red-eye ring, as opposed to the threatened subspecies that has a blue eye-ring.**


**Plate 4: Sharman's rock-wallaby captured on a remote camera positioned near proposed Turbine N20**

**Plate 5: *Commersonia reticulata* observed on an adjacent property to the east of the project area (Paul Williams, 2022)**


**Plate 4: Koala**

**Plate 5: *Acacia tingoorensis* recorded alongside Mount Fox Road, approximately 1 km from the disturbance footprint.**

# Appendix F – Bat-call analysis

# Microbat Call Identification Report

| | |
|---|---|
| **Prepared for ("Client"):** | Eco Logical Australia |
| **Survey location/project name:** | Mount Fox, NE Qld |
| **Survey dates:** | 2-19 September 2019 |
| **Client project reference:** | |
| **Job no.:** | ELA-1915 |
| **Report date:** | 9 January 2020 |

## Methods

### Data received and survey summary

*Balance! Environmental* received 27736 ultrasonic acoustic data files and associated log files recorded on three Anabat Swift bat-detectors deployed in the Mount Fox area, south-west of Ingham, over 17 consecutive nights (3rd – 18th September 2019). Deployment details, derived from the detector log files and cross-checked against information provided by the client, are presented in **Table 1**. Detector locations are shown in **Figure 1**.

### Call identification

Call analysis and identification was performed in *Anabat Insight*, with all files scanned, classified according to (mainly frequency-based) zero-crossing parameters, and assigned a tentative species-label using the Decision Tree analysis process. The Decision Tree analysis also applied a "noise" filter to exclude any files that contained only non-bat background noise. During the manual call review process (see below), additional noise files that were missed by the filter and poor-quality bat calls that were of no use for identification (too short/fragmented/weak) were excluded from the analysis.

All Decision-Tree-classified calls were reviewed manually in spectrogram view and species identities confirmed or adjusted following comparison of the spectrograms and derived call metrics with those from regionally relevant reference calls and/or with published call descriptions (*e.g.* Pennay *et al*. 2004). Identification was also guided by considering probability of species' occurrence based on published distribution information (*e.g.* Churchill 2008; van Dyck *et al.* 2013) and on-line database records (e.g. http://www.ala.org.au).

Where calls could not be reliably allocated to a single species due to overlapping characteristics ("unresolved calls"), they were assigned to a multi-species group.

### 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 Jackson & Groves (2015).

**Table 1** Bat-detector deployment summary for the Mount Fox survey, 2-19 September 2019.

| Detector ID | Site* | Location | | Deployment dates | | Detector-nights | | Output | |
|---|---|---|---|---|---|---|---|---|---|
| | | Latitude | Longitude | Set | Collected | Total | With calls | Total files recorded | No. calls identified |
| SN497996 | AB01 | -18.758647 | 145.730813 | 2/9 | 6/9 | 4 | 3 | 744 | 342 |
| SN497996 | AB02 | -18.769291 | 145.761180 | 6/9 | 15/9 | 9 | 9 | 7231 | 3814 |
| SN497996 | AB03 | -18.869575 | 145.788353 | 15/9 | 18/9 | 4 | 4 | 1778 | 642 |
| SN513971 | AB04 | -18.745763 | 145.769413 | 3/9 | 6/9 | 3 | 3 | 1055 | 670 |
| SN513971 | AB05 | -18.738551 | 145.779424 | 6/9 | 12/9 | 6 | 5 | 1390 | 35 |
| SN513971 | AB06 | -18.796340 | 145.765140 | 13/9 | 19/9 | 6 | 1 | 784 | 798 |
| SN514008 | AB07 | -18.808037 | 145.715070 | 2/9 | 5/9 | 3 | 3 | 5818 | 3300 |
| SN514008 | AB08 | -18.850470 | 145.748255 | 5/9 | 12/9 | 7 | 6 | 4401 | 724 |
| SN514008 | AB09 | -18.754652 | 145.765410 | 12/9 | 17/9 | 5 | 5 | 2677 | 1039 |
| SN514008 | AB10 | -18.787265 | 145.782140 | 17/9 | 19/9 | 2 | 2 | 1858 | 349 |

***** Site number applied by Balance! Environmental to simplify presentation of results for this analysis.

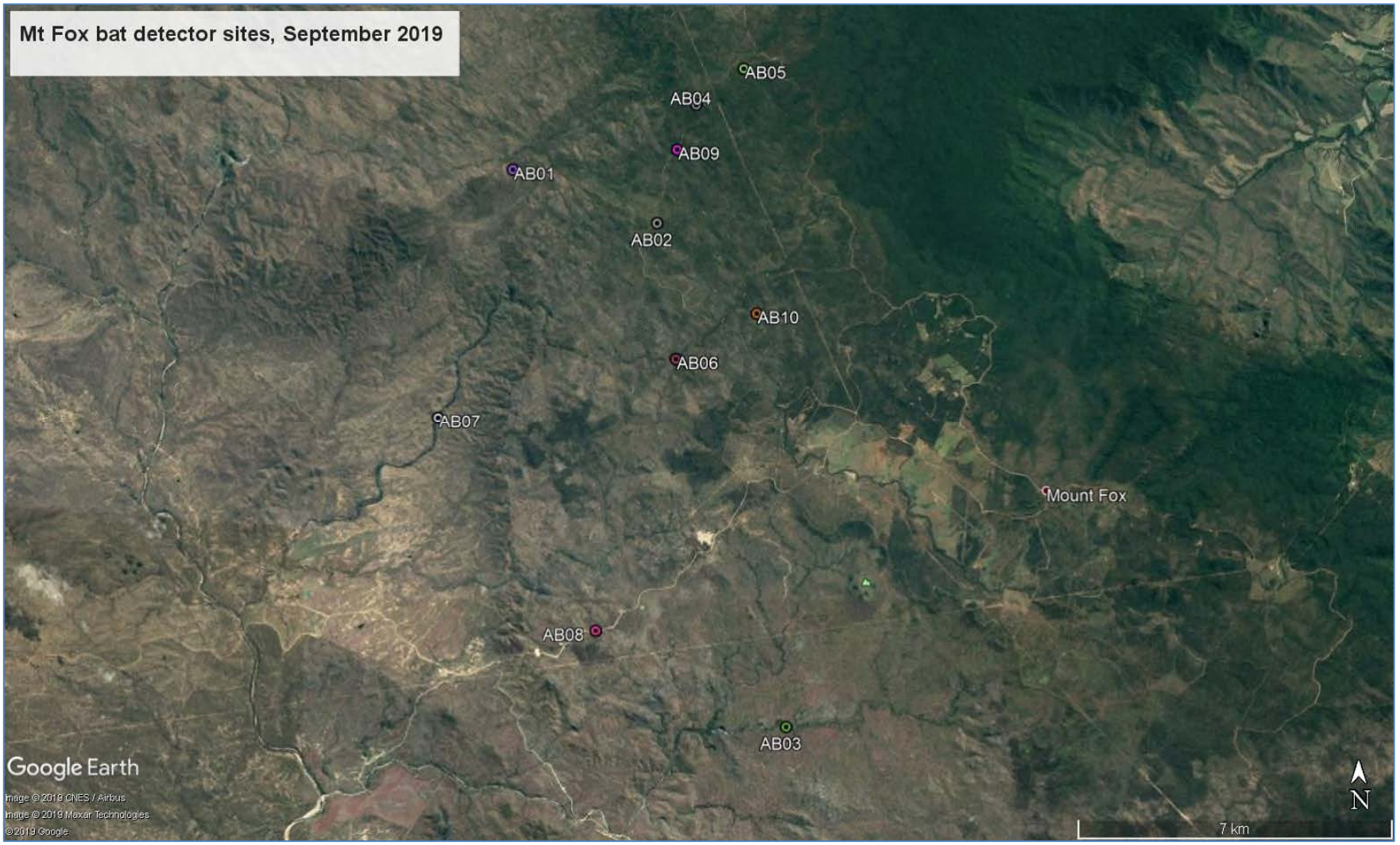


**Figure 1** Bat detection sites in the Mt Fox study area; sampled 2-19 September 2019

## Results & Discussion

The first-pass noise-filtration excluded 10921 files from the original dataset; and manual noise filtering and removal of useless calls excluded another 5449 files from further analysis. From the remaining 11366 files, a total of 11713 bat calls were identified. **Appendix 1** provides a breakdown of the numbers of calls recorded per species at each site.

At least 17 and up to 21 species were recorded during the September 2019 Mount Fox surveys (see **table 2**). Some 65% (7561) of the identifiable calls were positively attributed to one of 16 species (see upper portion of **Appendix 2**), two of which are listed threatened species under the national *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*). The remaining 4152 'unresolved' calls had characteristics that were potentially attributable to two or more species and were assigned to one of six multi-species groups (see lower portion of **Appendix 2**). Where 'unresolved' calls were identified, all group members are listed as "possible" in **Table 1** unless other calls were more reliably identified to one or more group members for the relevant site.

Two of the 'unresolved' groups potentially represented additional taxa that were not otherwise recognised. These calls were allocated to the following groups:

- ***Myotis macropus* / *Nyctophilus* species**
  - Both species produce steep, almost-linear FM calls that are difficult to differentiate.
  - Many calls of this type were positively attributed to *M. macropus*. based on their relatively narrow band-width and somewhat erratic nature of the pulse structure within a sequence.
  - Weaker and/or less well-defined calls, or those with more uniform pulse structure and broader band-width, were assigned to the undifferentiated group
  - Up to three *Nyctophilus* species potentially occur in the study area, including: *N. bifax; N. geoffroyi;* and *N. gouldi*..
- ***Scotorepens orion* / *Scoteanax rueppellii***
  - These species' calls have curvilinear FM-qCF pulses with characteristic frequencies (Fc) of 33-37 kHz that can sometimes be confused with the calls of *Chalinolobus gouldii* (note additional 'unresolved group including this species in **Appendix 1**)
  - It is very likely that *S.* rueppellii is present in the study area, so this species is most likely responsible for the calls allocated to the group.
  - The occurrence of *S. orion* is less certain, but an isolated population of that species occurs on the nearby Atherton Tableland (Churchill 2008) and the two species often co-exist in south-eastern Australia, so *S. orion* could also be present in the Mount Fox area

The other 'unresolved' groups all represented species that were also positively identified for most sites.

**Table 2** Bat species recorded during the Mount Fox survey, 2-19 September 2019

♦ = 'definite' - at least one call was attributed unequivocally to the species

□ = 'possible' - calls similar to those of the species were recorded, but were not reliably identified

**Bold** font denotes *EPBC Act* threatened species.

| Site: | AB01 | AB02 | AB03 | AB04 | AB05 | AB06 | AB07 | AB08 | AB09 | AB10 |
|---|---|---|---|---|---|---|---|---|---|---|
| *Hipposideros diadema* | | ♦ | | | | | | | | |
| *Rhinolophus megaphyllus* | | ♦ | ♦ | ♦ | ♦ | | ♦ | ♦ | ♦ | ♦ |
| ***Rhinolophus robertsi*** | | ♦ | ♦ | | | | | | ♦ | ♦ |
| *Chalinolobus gouldii* | ♦ | ♦ | ♦ | ♦ | | □ | ♦ | ♦ | ♦ | □ |
| *Chalinolobus nigrogriseus* | □ | ♦ | □ | □ | □ | ♦ | ♦ | □ | □ | ♦ |
| Scoteanax rueppellii | | □ | □ | | | | □ | □ | □ | □ |
| Scotorepens orion | | □ | □ | | | | □ | □ | □ | □ |
| *Scotorepens sanborni* | ♦ | ♦ | ♦ | □ | □ | ♦ | ♦ | ♦ | □ | □ |
| *Myotis macropus* | | ♦ | ♦ | ♦ | □ | ♦ | ♦ | □ | | ♦ |
| *Nyctophilus sp.* | | □ | | □ | □ | | □ | □ | | □ |
| *Vespadelus troughtoni* | | | | | | | | ♦ | | |
| *Miniopterus australis* | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ |
| *Miniopterus oceanensis* | ♦ | ♦ | ♦ | ♦ | | ♦ | ♦ | ♦ | ♦ | ♦ |
| *Austronomus australis* | | ♦ | ♦ | | | | ♦ | ♦ | ♦ | ♦ |
| *Chaerephon jobensis* | | ♦ | ♦ | ♦ | | | ♦ | ♦ | ♦ | ♦ |
| *Ozimops lumsdenae* | | ♦ | ♦ | | | ♦ | ♦ | ♦ | ♦ | ♦ |
| *Ozimops ridei* | ♦ | ♦ | ♦ | | | ♦ | ♦ | ♦ | ♦ | ♦ |
| *Saccolaimus flaviventris* | | ♦ | ♦ | | | | ♦ | ♦ | | |
| ***Saccolaimus saccolaimus*** | | | ♦ | | | | | | | |

## References


Churchill, S. (2008). *Australian Bats*. Jacana Books, Allen & Unwin; Sydney.

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Pennay, M., Law, B. and Reinhold, L. (2004). *Bat Calls of New South Wales*. Department of Environment and Conservation, Hurstville.

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.

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

## Glossary

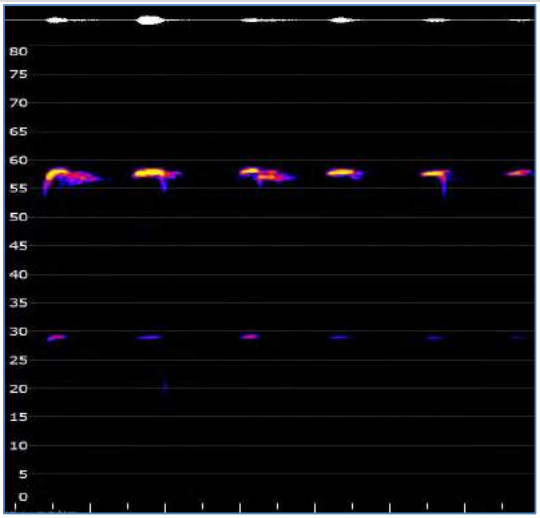
Technical terms used in this report are described in the following table.

| | |
|---|---|
| Approach phase | The part of a bat *call* emitted as the bat starts to home in on a detected prey item; a transitional series of *pulses* between the *search phase* and *feeding buzz*, that become progressively steeper and shorter in duration. |
| Call | Refers to a single bat call, made up of a series of individual sound *pulses* in one or more *phases* (*search, approach, feeding buzz*). |
| CF (=Constant Frequency) | A type of *pulse* in which the dominant component consists of a more-or-less 'pure tone' of sound at a Constant Frequency; with *shape* appearing flat on the sonogram. Often also contains a brief *FM* component at the beginning and/or end of the CF component (*viz.* FM-CF-FM). |
| Characteristic frequency (Fc) | The frequency of the flattest part of a *pulse*; usually the lowest frequency reached in the *qCF* component of a pulse. This is often the primary diagnostic feature for species identification. |
| Duration | The time period from the beginning of a *pulse* to the end of the pulse. |
| Feeding buzz | The terminal part of a *call*, following the *approach phase*, emitted as the bat catches a prey item; a distinctive, rapid series of very steep, very short-duration pulses. |
| FM (=Frequency Modulated) | A type of *pulse* in which there is substantial change in frequency from beginning to end; *shape* ranges from almost vertical and linear through varying degrees of curvature. |
| FC range | Refers to the range of frequencies occupied by the *characteristic frequency* section of *pulses* within a call or set of calls. |
| Frequency sweep or "band-width" | The range of frequencies through which a *pulse* sweeps from beginning to end; Maximum frequency (Fmax) – minimum frequency (Fmin). |
| Knee | The transitional part of a *pulse* between the initial (usually steeper) frequency sweep and the *characteristic frequency* section (usually flatter); time to knee (Tk) and frequency of knee (Fk) can be diagnostic for some species. |
| Pulse | An individual pulse of sound within a bat *call*; the *shape*, *duration* and *characteristic frequency* of a pulse are the key diagnostic features used to differentiate species. |
| Pulse body | The part of the *pulse* between the *knee* and *tail* and containing the *characteristic frequency* section. |
| Pulse shape | The general appearance of a *pulse* on the sonogram, described using relative terms related to features such as slope and degree of curvature. See also *CF, qCF* and *FM*. |
| qCF (=quasi Constant Frequency) | A type of *pulse* in which there is very little change in frequency from beginning to end; *shape* appears to be almost flat. Some pulses also contain an *FM* component at the beginning and/or end of the qCF component (*viz.* FM-qCF). |
| Search phase | The part of a bat *call* generally required for reliable species diagnosis. A consistent series of *pulses* emitted by a bat that is searching for prey or and/or navigating through its habitat. Search phase pulses generally have longer duration, flatter slope and more consistent shape than *approach phase* and *feeding buzz* pulses. |
| Sequence | Literally, a sequence of *pulses* that may be from one or more bats; but generally refers to a *call* or part (e.g. *phase*) of a call. |
| Tail | The final component of a *pulse*, following the *characteristic frequency* section; may consist of a short or long sweep of frequencies either upward or downward from the Fc; or may be absent. |

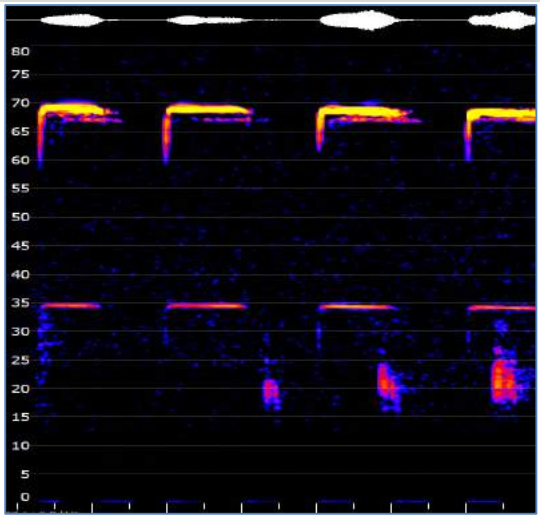
**Appendix 1** Bats recorded during the Mount Fox survey, 2-19 September 2019
Number of calls allocated per species or unresolved group per site.

| Site: | AB01 | AB02 | AB03 | AB04 | AB05 | AB06 | AB07 | AB08 | AB09 | AB10 | Species total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Positively identified calls** | | | | | | | | | | | |
| *Hipposideros diadema* | | 2 | | | | | | | | | 2 |
| *Rhinolophus megaphyllus* | | 54 | 8 | 121 | 8 | | 2 | 9 | 39 | 1 | 242 |
| *Rhinolophus robertsi* | | 8 | 41 | | | | | | 3 | 4 | 56 |
| *Chalinolobus gouldii* | 3 | 31 | 6 | 5 | | | 46 | 48 | 109 | | 248 |
| *Chalinolobus nigrogriseus* | | 2 | | | | 16 | 16 | | | 1 | 35 |
| *Scotorepens sanborni* | 5 | 2 | 4 | | | 5 | 1 | 43 | | | 60 |
| *Myotis macropus* | | 1 | 2 | 1 | | 2 | 559 | | | 2 | 567 |
| *Vespadelus troughtoni* | | | | | | | | 1 | | | 1 |
| *Miniopterus australis* | 61 | 1021 | 58 | 392 | 24 | 40 | 257 | 321 | 166 | 23 | 2363 |
| *Miniopterus oceanensis* | 20 | 1197 | 140 | 54 | | 582 | 200 | 86 | 481 | 183 | 2943 |
| *Austronomus australis* | | 10 | 2 | | | | 8 | 4 | 9 | 5 | 38 |
| *Chaerephon jobensis* | | 66 | 22 | 1 | | | 33 | 94 | 4 | 18 | 238 |
| *Ozimops lumsdenae* | | 30 | 128 | | | 1 | 63 | 31 | 1 | 22 | 276 |
| *Ozimops ridei* | 7 | 216 | 29 | | | 15 | 143 | 3 | 13 | 27 | 453 |
| *Saccolaimus flaviventris* | | 4 | 22 | | | | 2 | 3 | | | 31 |
| *Saccolaimus saccolaimus* | | | 8 | | | | | | | | 8 |
| **Unresolved calls** | | | | | | | | | | | |
| *C. gouldii / O. ridei* | 6 | 5 | 5 | | | 1 | 87 | 11 | 30 | | 145 |
| *C. nigrogriseus / S. sanborni* | 240 | 1145 | 129 | 94 | 1 | 136 | 1825 | 66 | 78 | 59 | 3773 |
| *M. oceanensis / S. sanborni* | | 1 | | | | | | 1 | 2 | | 4 |
| *M. macropus / Nyctophilus* sp. | | 5 | | 2 | 2 | | 52 | 1 | | 1 | 63 |
| *Scotorepens orion / Scoteanax rueppellii* | | 14 | 32 | | | | 6 | 2 | 78 | 2 | 134 |
| *S. orion / S. rueppellii / C. gouldii* | | | 6 | | | | | | 26 | 1 | 33 |
| Site total | 342 | 3814 | 642 | 670 | 35 | 798 | 3300 | 724 | 1039 | 349 | 11713 |

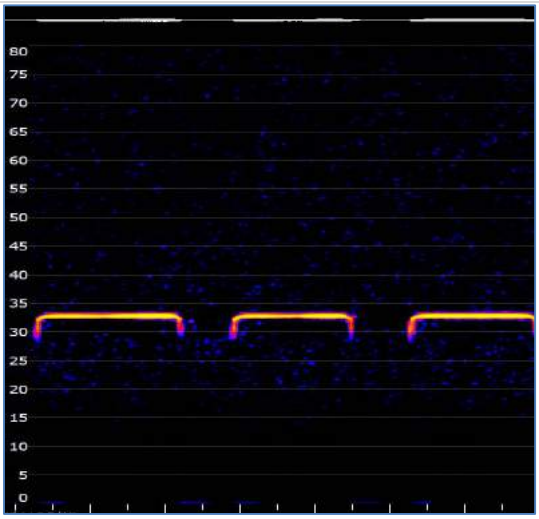
**Appendix 2** Representative call sequences from the Mount Fox survey, 2-19 September 2019.
*x*-axis (time) = 0.025 sec per tick; *y*-axis = frequency (kHz)



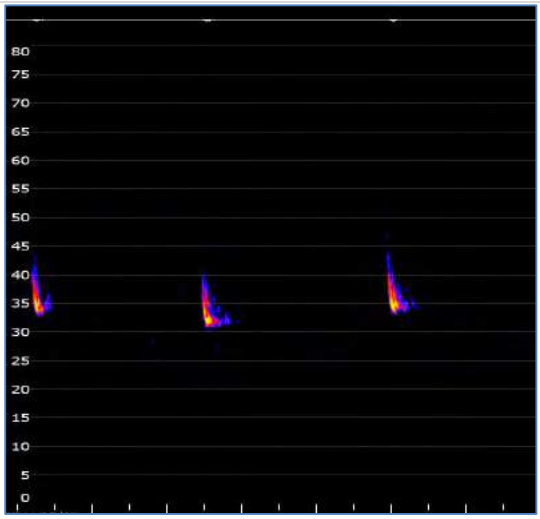

*Hipposideros diadema*



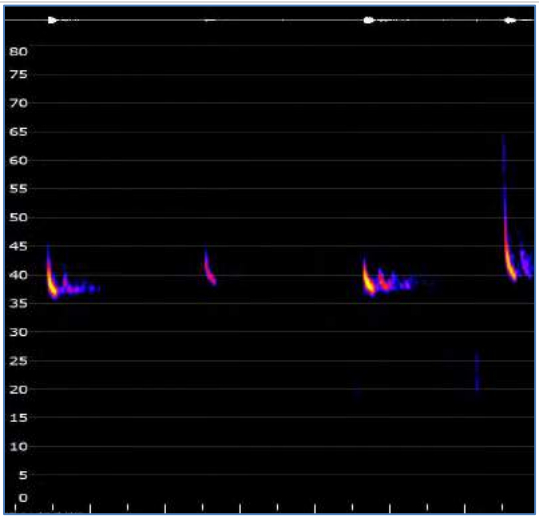

*Rhinolophus megaphyllus*



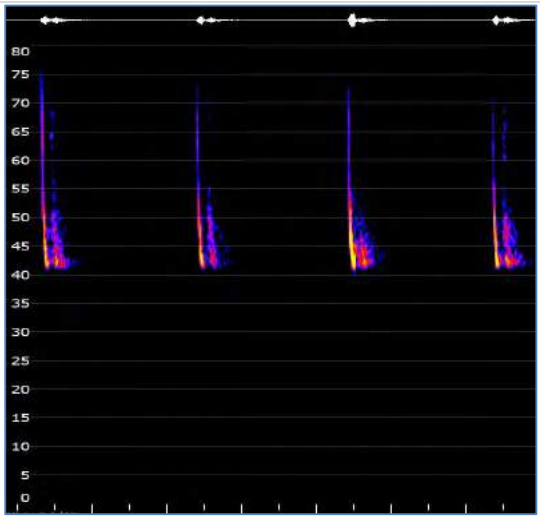

*Rhinolophus robertsi*



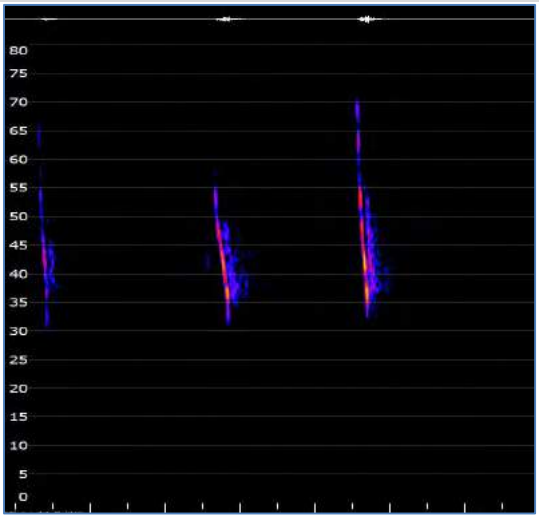

*Chalinolobus gouldii*



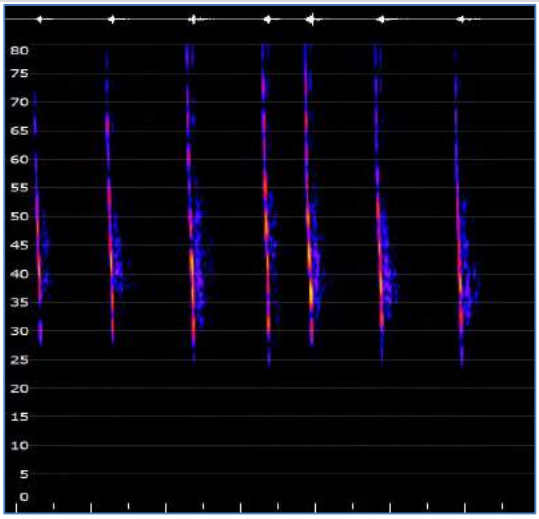

*Chalinolobus nigrogriseus*



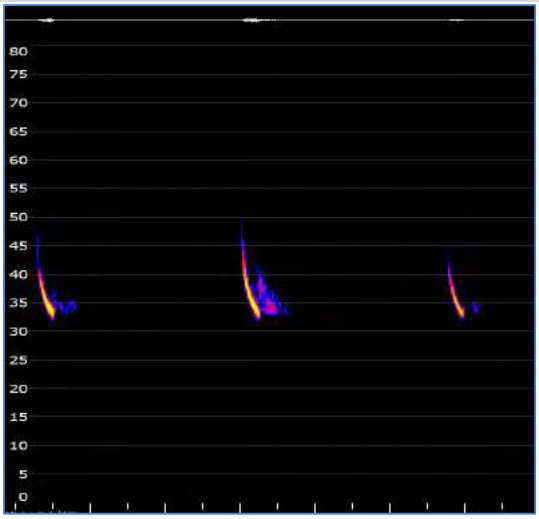

*Scotorepens sanborni*



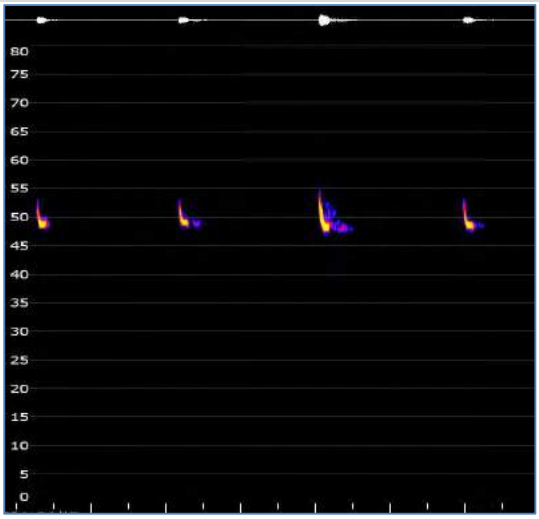
*Myotis macropus*



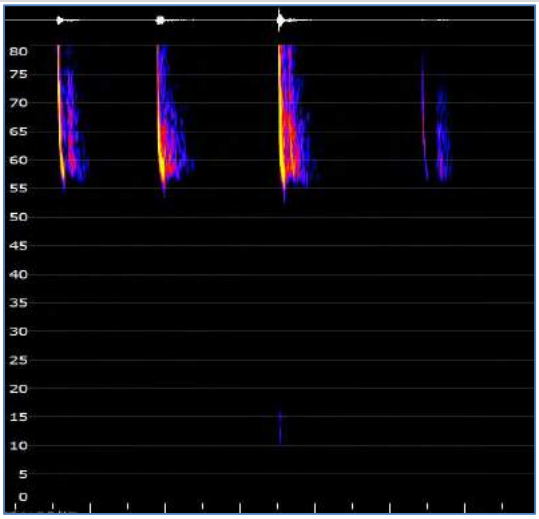
*M. macropus / Nyctophilus sp.*



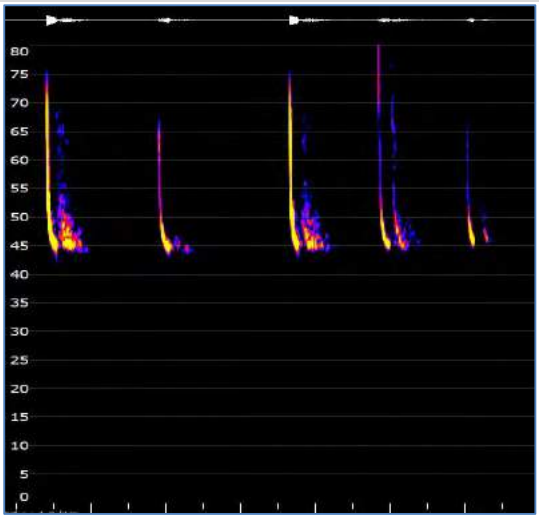
*Scotorepens orion / Scoteanax rueppellii*



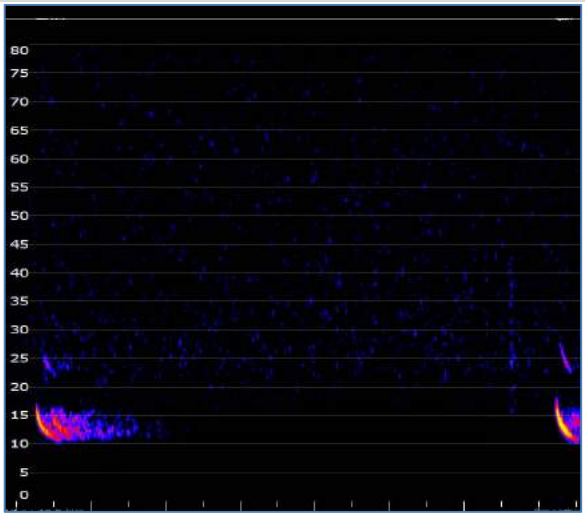
*Vespadelus troughtoni*



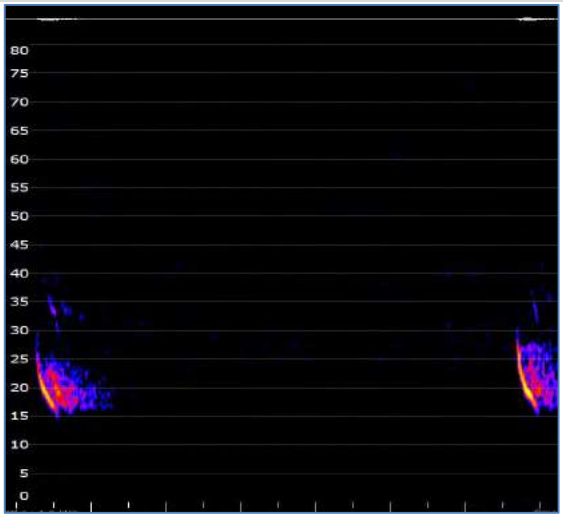
*Miniopterus australis*



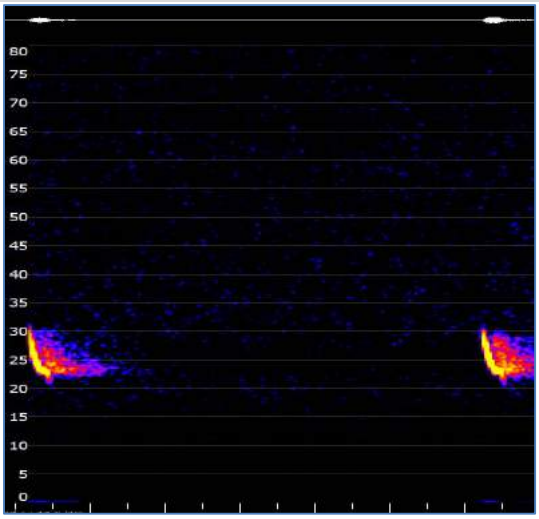
*Miniopterus oceanensis*



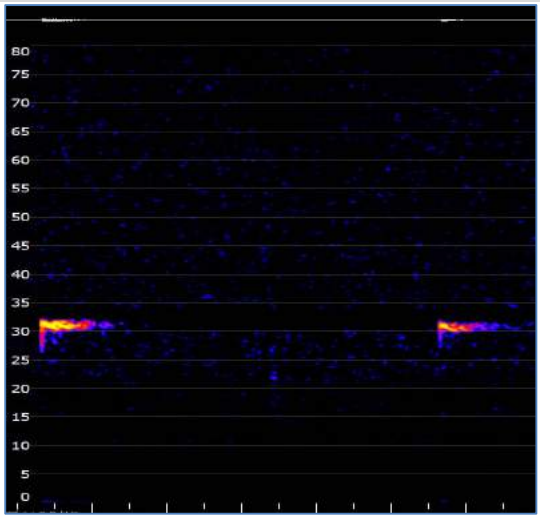

*Austronomus australis*



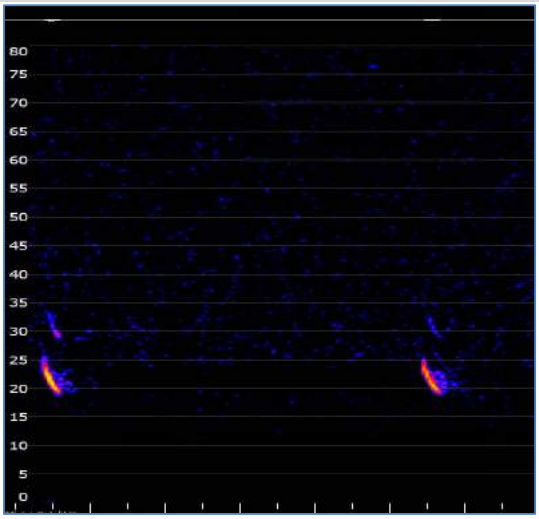

*Chaerephon jobensis*



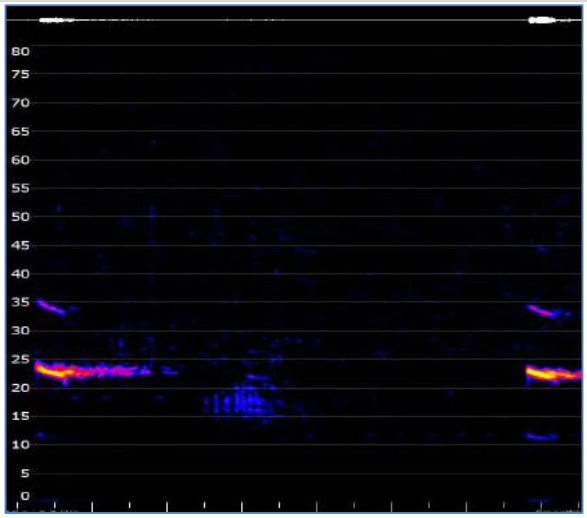

*Ozimops lumsdenae*




*Ozimops ridei*




*Saccolaimus flaviventris*




*Saccolaimus saccolaimus*

# Microbat Call Identification Report

| | |
|---|---|
| **Prepared for ("Client"):** | Eco Logical Australia |
| **Cape Bedford** | Mount Fox, NE Qld |
| **Survey dates:** | 7th – 28th July 2020 |
| **Client project reference:** | |
| **Job no.:** | ELA-2004 |
| **Report date:** | 21 August 2020 |

## Methods

### Data received

*Balance! Environmental* received nine SD cards containing 7439 WAV files recorded on five Anabat Swift detectors (Titley Scientific, Brisbane). Metadata extracted from the acoustic files indicates that 15 sites were sampled over a 21-night period (7th – 28th July 2020) with sampling duration per site ranging from one night to 11 consecutive nights. **Table 1** summarises detector deployment locations as indicated by the GPS metadata recorded by each unit. Site locations are also shown on **Figure 1**.

### Call identification

Call analyses were performed in *Anabat Insight* (Titley Scientific, Brisbane). All WAV files were passed through a Decision Tree analysis to filter out files with only non-bat noise and group detected bat-calls based on a combination of call metrics derived from zero-crossing analysis, such as characteristic frequency (Fc), time between calls (TBC), slope (S1 and Sc) and pulse curvature.

The preliminary call identities applied by the Decision Tree process were then confirmed or adjusted manually by comparing the call spectrograms and derived metrics with those of reference calls from northern Queensland and/or with published call descriptions (e.g. Reinhold *et al.* 2001; Milne 2002). Consideration was also given to the probability of species' occurrence based on published distribution information (e.g. Churchill 2008; van Dyck et al. 2013) and on-line database records (e.g. **http://www.ala.org.au**).

### 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 Jackson & Groves (2015).

**Table 1** Site locations (derived from WAV file metadata) and detector data output for the Eco Logical Australia Mount Fox surveys, 7-28 July 2020.

| Site-code | Latitude | Longitude | Dates surveyed | Detector serial number | SD card label | No. WAV files | No. files with noise only | No. files with calls | Total no. calls identified | Total detector-nights | Mean no. calls per d-n |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AB01 | -18.7874 | 145.7692 | 25-27 July | SN497991 | Saddlebag Gate | 670 | 422 | 248 | 253 | 3 | 84.33 |
| AB02 | -18.77041 | 145.72146 | 7-13 July | SN497996 | not labelled | 1200 | 0 | 1200 | 1210 | 7 | 172.86 |
| AB03 | -18.82688 | 145.74041 | 14-24 July | SN497996 | not labelled | 370 | 10 | 360 | 363 | 11 | 33.00 |
| AB04 | -18.67064 | 145.67799 | 8 July | SN536907 | chomped | 154 | 153 | 1 | 1 | 6 | 0.17 |
| AB05 | -18.88574 | 145.77413 | 22-25 July | SN536907 | COFF02 - Swift SM3-1 Creek | 612 | 147 | 465 | 471 | 4 | 117.75 |
| AB06 | -18.73032 | 145.7503 | 26-27 July | SN536907 | COFF02 - Swift SM3-1 Creek | 710 | 1 | 709 | 718 | 2 | 359.00 |
| AB07 | -18.77573 | 145.71336 | 7-11 July | SN567914 | Golden-Tipped Locn | 122 | 19 | 103 | 103 | 5 | 20.60 |
| AB08 | -18.7318 | 145.76351 | 12-22 July | SN567914 | Golden-Tipped Locn | 1587 | 39 | 1548 | 1553 | 11 | 141.18 |
| AB09 | -18.77897 | 145.78919 | 24-25 July | SN567914 | Steele's WalkIn | 406 | 130 | 276 | 277 | 2 | 138.50 |
| AB10 | -18.75429 | 145.7338 | 26-27 July | SN567914 | Steele's WalkIn | 186 | 57 | 129 | 127 | 2 | 63.50 |
| AB11 | -18.72421 | 145.74724 | 28 July | SN567914 | Steele's WalkIn | 21 | 16 | 5 | 5 | 1 | 5.00 |
| AB12 | -18.66476 | 145.65748 | 8-11 July | SN567955 | Steele's Stick Gate | 64 | 63 | 1 | 0 | 4 | 0.00 |
| AB13 | -18.74296 | 145.77194 | 12-23 July | SN567955 | Steele's Stick Gate | 987 | 32 | 955 | 956 | 11 | 86.91 |
| AB14 | -18.77041 | 145.78404 | 24-25 July | SN567955 | Steele's Stick Gate | 57 | 0 | 57 | 57 | 2 | 28.50 |
| AB15 | -18.71337 | 145.751 | 26-28 July | SN567955 | Steele's Stick Gate | 293 | 0 | 293 | 294 | 3 | 98.00 |
| | | | | | **Totals** | 7439 | 1089 | 6350 | 6388 | 74 | 86.32 |


**Figure 1** Bat detector deployment locations for the Mount Fox July 2020 survey. Refer Table 1 for site details.

## Results & Discussion

Noise filtration excluded 1059 WAV files from further analysis, with the remaining 6350 files containing 6388 identifiable bat calls (see **Table 1**). Bat detection rates varied substantially between sites, ranging from zero detections at AB12 to 359 calls per detector-night at AB06. Site AB04 detected only one bat call before the microphone was damaged. Sites with longer detector deployments generally recorded more species, although only 1-2 additional species were added beyond the first four detector-nights (**Figure 2**).

Most of the calls (5397 = 84%) were positively identified and attributed to one of 17 distinct taxa, including 15 individual species and two undifferentiated congeneric species pairs. The other 991 calls had characteristics intermediate between two or more unrelated species and were allocated to one of three unresolved multi-species groups, all of which represent species that were otherwise positively identified from more definitive calls. **Table 2** provides a summary of the species detected at each site. Where "unresolved" calls were detected, all relevant group members are listed as "possible" unless they were also positively identified from other calls. A full breakdown of the number of calls allocated per species or unresolved group per site appears at **Appendix 2**.

Sample spectrograms of all identified call types are provided at **Appendix 1**.

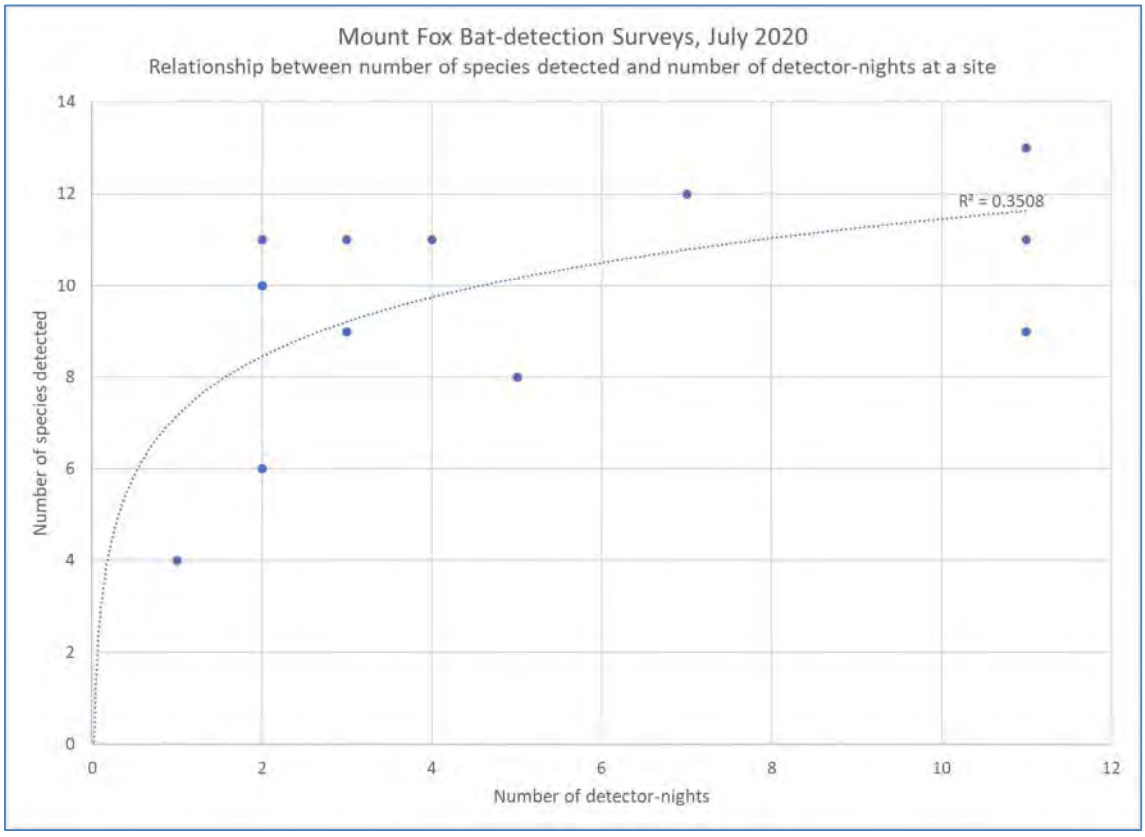



**Figure 2** Relationship between the number of species detected and number of nights a detector was deployed at a site. Two failed sites (AB04 and AB12) excluded from the data.

### Threatened species

Two threatened species were reliably identified, including:

- *Saccolaimus saccolaimus* – Bare-rumped Sheath-tailed Bat
    - Endangered under the Queensland *Nature Conservation Act 1992* (NCA)
    - Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC)
    - Seven (7) calls detected between 6:30 PM and 8:00 PM on the night of 25th July
- *Rhinolophus robertsi* – Large-eared Horseshoe Bat ("large form")
    - Endangered under both NCA and EPBC
    - Identified from a single call detected at "AB09" at 4:27 AM on 25th July

## References


Churchill, S. (2008). *Australian Bats*. Jacana Books, Allen & Unwin; Sydney.

Jackson, S. and Groves, C. (2015). *Taxonomy of Australian Mammals*. CSIRO Publishing, Melbourne.

Reardon, T. (2003). Standards in bat detector based surveys. *Australasian Bat Society Newsletter* **20**, 41-43.

Milne, D.J. (2002). *Key to the Bat Calls of the Top End of the Northern Territory*. Technical Report No. 71, Parks and Wildlife Commission of the Northern Territory, Darwin.

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.

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

**Table 2 Bats recorded during the Mount Fox surveys, 7th – 28th July 2020.**

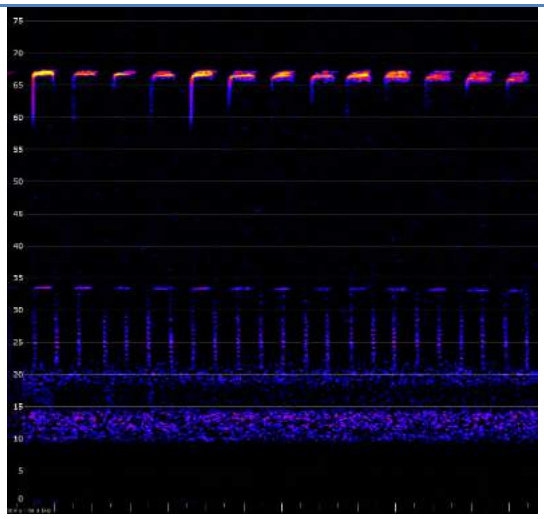
♦ = 'definite' - at least one call was attributed unequivocally to the species at the site

□ = 'possible' - calls like those of the species were recorded, but were not reliably identified

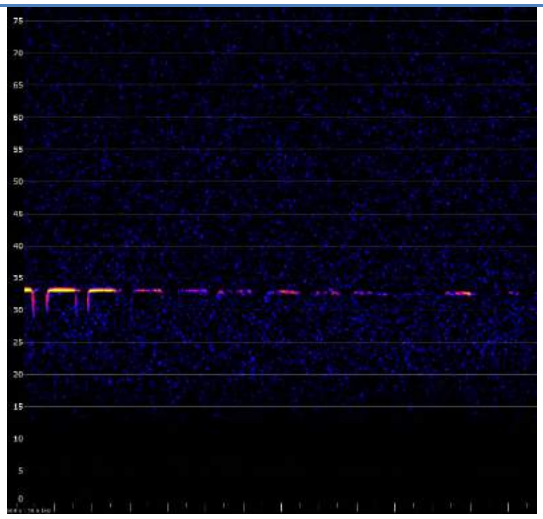
Threatened species shown in bold font.

| Site-code | AB01 | AB02 | AB03 | AB04 | AB05 | AB06 | AB07 | AB08 | AB09 | AB10 | AB11 | AB12 | AB13 | AB14 | AB15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Rhinolophus megaphyllus* | ♦ | | ♦ | | | ♦ | | ♦ | ♦ | ♦ | ♦ | | ♦ | ♦ | |
| ***Rhinolophus robertsi*** | | | | | | | | | ♦ | | | | | | |
| *Chalinolobus gouldii* | ♦ | ♦ | ♦ | | ♦ | | ♦ | | ♦ | | | | | | ♦ |
| *Chalinolobus nigrogriseus* | ♦ | ♦ | ♦ | | ♦ | ♦ | ♦ | ♦ | | ♦ | ♦ | | | | ♦ |
| *Myotis macropus* | | ♦ | | | ♦ | | | □ | | | | | | □ | □ |
| *Nyctophilus bifax / N geoffroyi* | ♦ | ♦ | | | ♦ | | | ♦ | ♦ | ♦ | | | ♦ | ♦ | □ |
| *Scoteanax rueppellii* | ♦ | ♦ | | | ♦ | ♦ | | ♦ | | ♦ | | | ♦ | | |
| *Scotorepens greyii* | ♦ | ♦ | ♦ | | ♦ | ♦ | ♦ | ♦ | | ♦ | | | | ♦ | |
| *Scotorepens sanborni* | ♦ | ♦ | ♦ | | ♦ | | ♦ | ♦ | | ♦ | | | | | |
| *Vespadelus pumilus / V. troughtoni* | | | | | | ♦ | | | ♦ | | | | ♦ | | |
| *Miniopterus australis* | ♦ | ♦ | ♦ | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | ♦ | ♦ | ♦ |
| *Miniopterus orianae* | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | ♦ | ♦ | ♦ |
| *Austronomus australis* | | | ♦ | | | ♦ | ♦ | ♦ | | | ♦ | | ♦ | | ♦ |
| *Chaerephon jobensis* | ♦ | ♦ | ♦ | | ♦ | ♦ | | ♦ | ♦ | ♦ | | | ♦ | | ♦ |
| *Ozimops lumsdenae* | | ♦ | ♦ | | | | | ♦ | ♦ | | | | | | |
| *Ozimops ridei* | ♦ | ♦ | ♦ | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | | ♦ | | ♦ |
| ***Saccolaimus saccolaimus*** | | | | | | | | | ♦ | | | | | | |

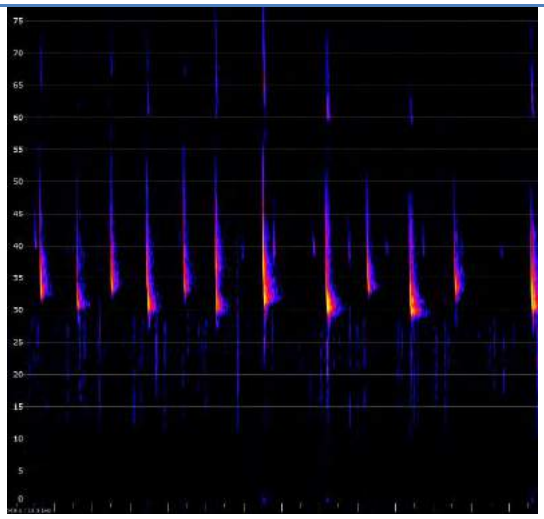
**Appendix 1** Representative call sequences from the Mount Fox survey, 7-28 July 2020.
true-time display; *x*-axis 50 milliseconds per tick-mark



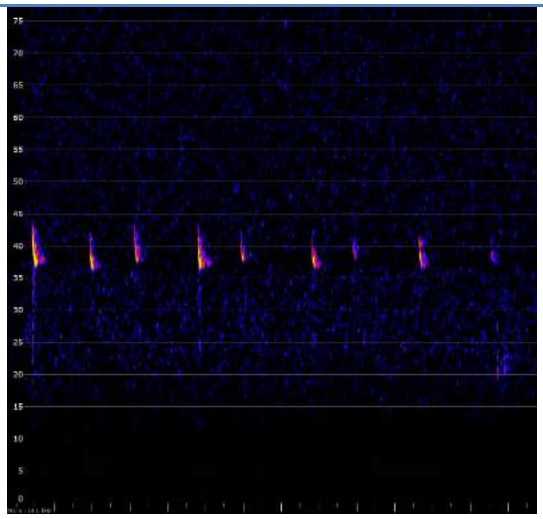
*Rhinolophus megaphyllus*



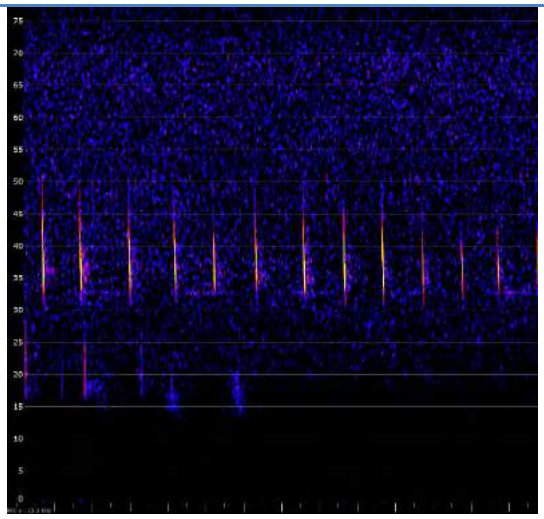
*Rhinolophus robertsi*



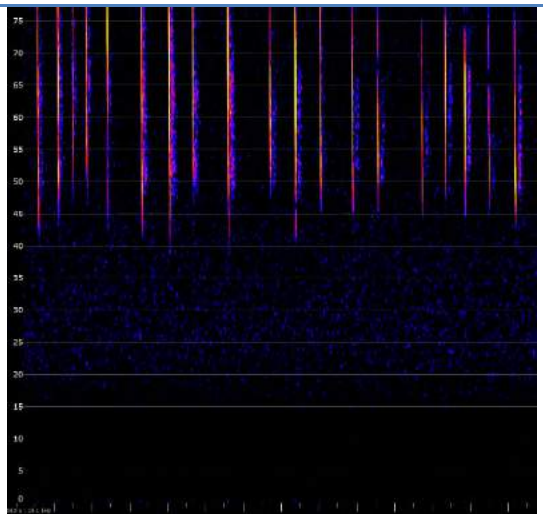
*Chalinolobus gouldii*



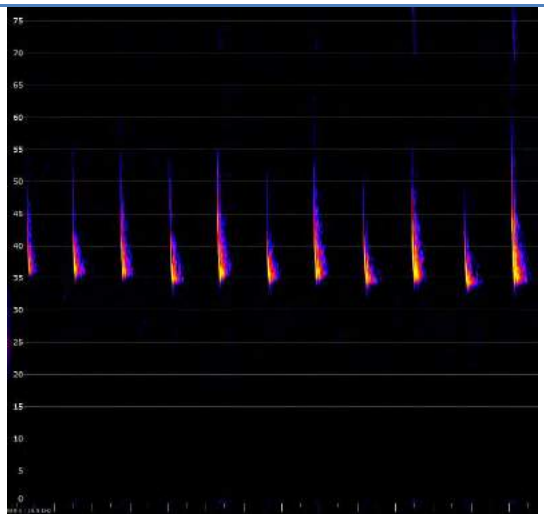
*Chalinolobus nigrogriseus*



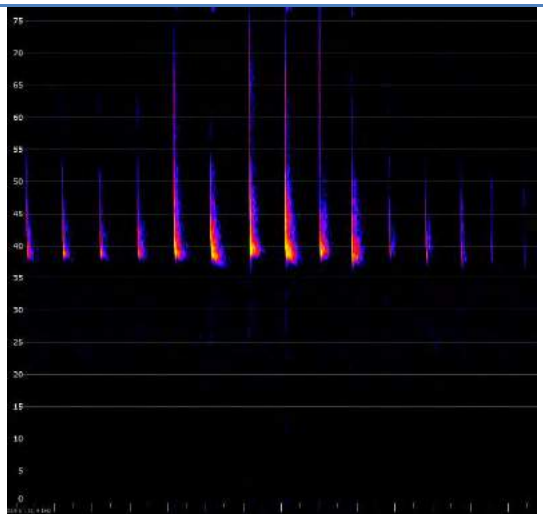
*Myotis macropus*



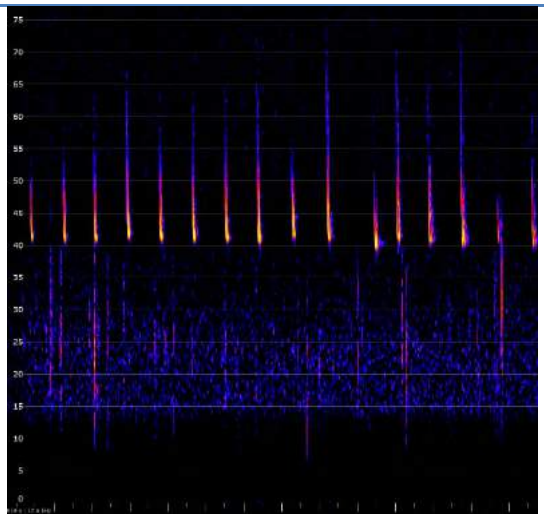
*Nyctophilus bifax / N geoffroyi*



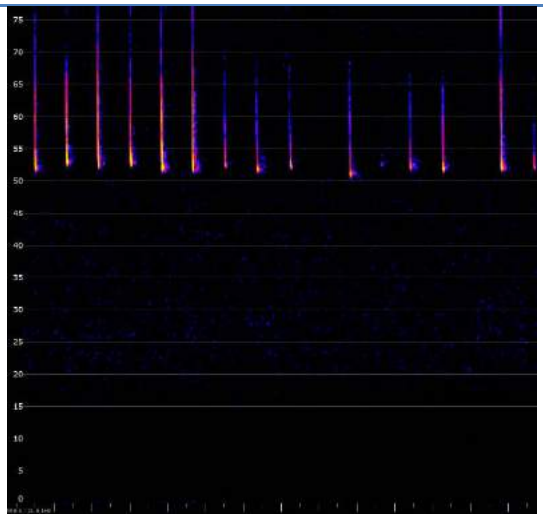
*Scoteanax rueppellii*



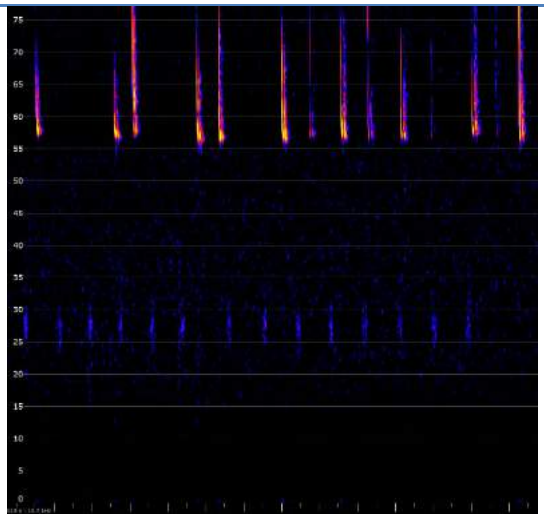
*Scotorepens greyii*



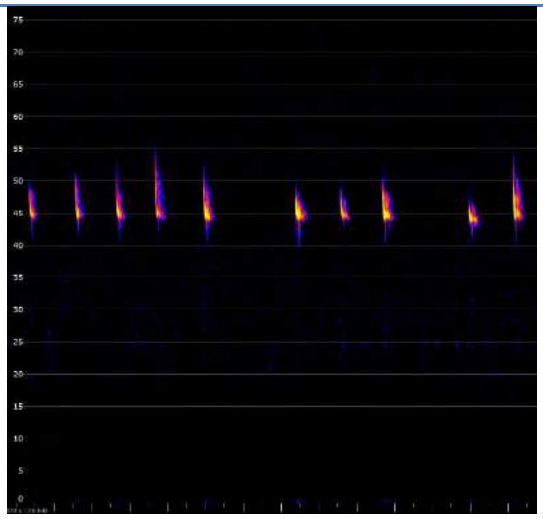
*Scotorepens sanborni*



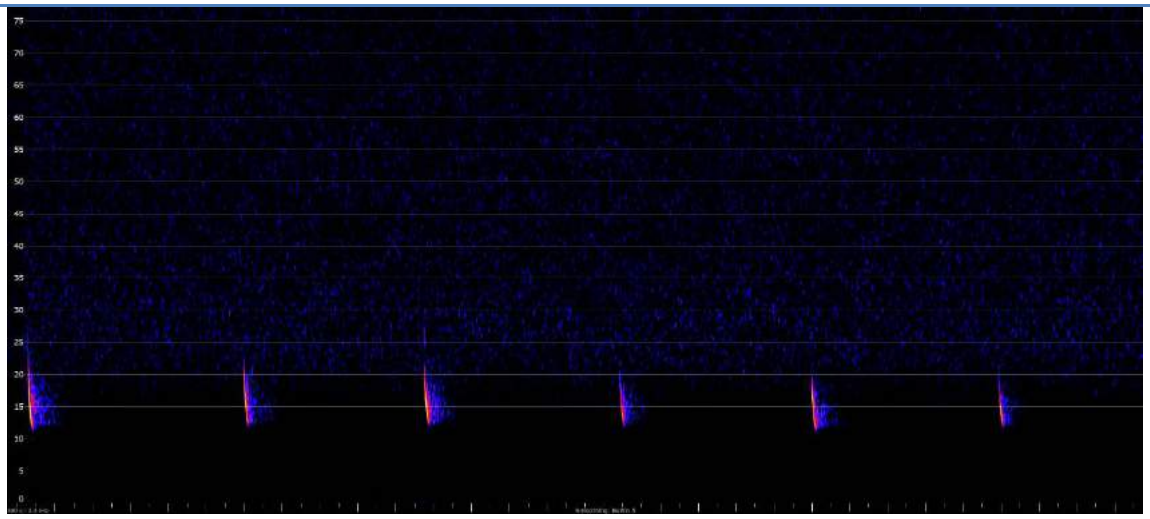
*Vespadelus pumilus / V. troughtoni*



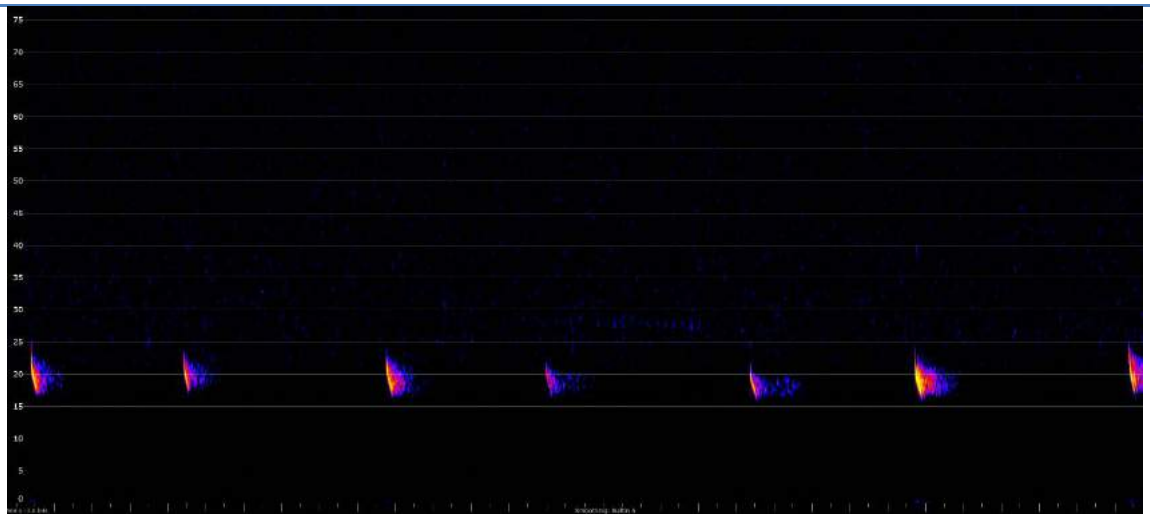
*Miniopterus australis*



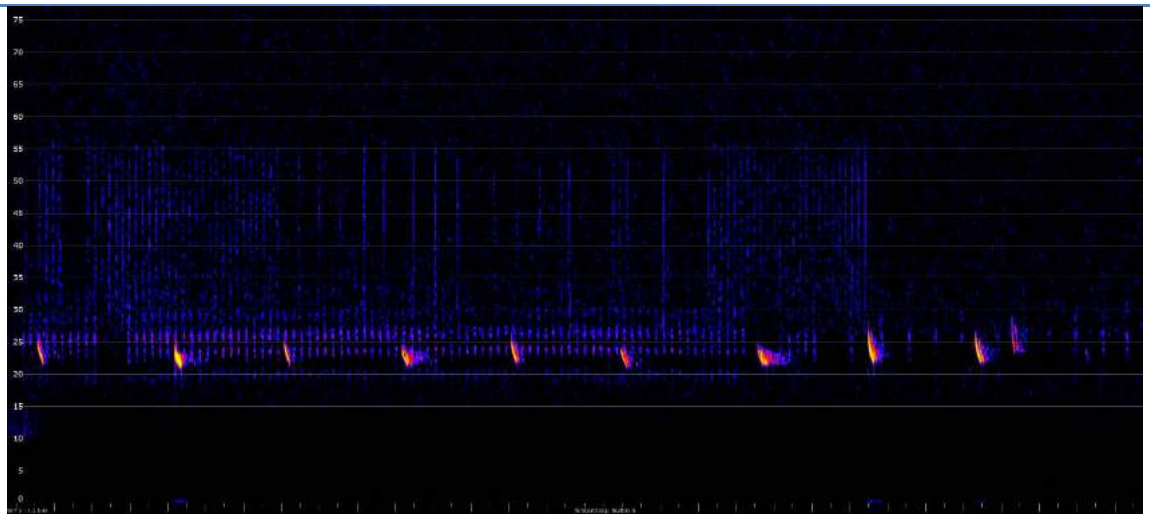
*Miniopterus orianae*



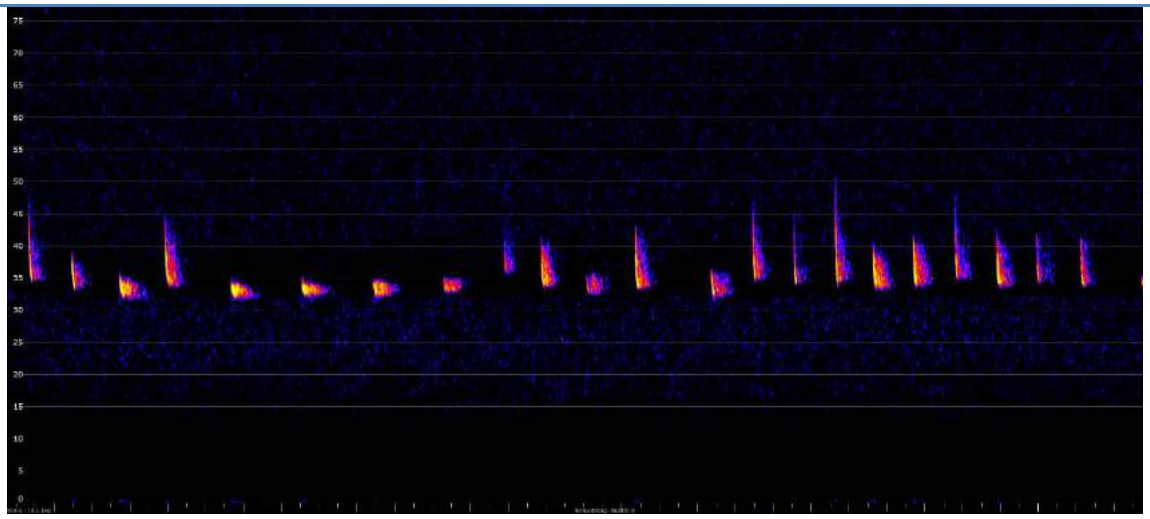
*Austronomus australis*



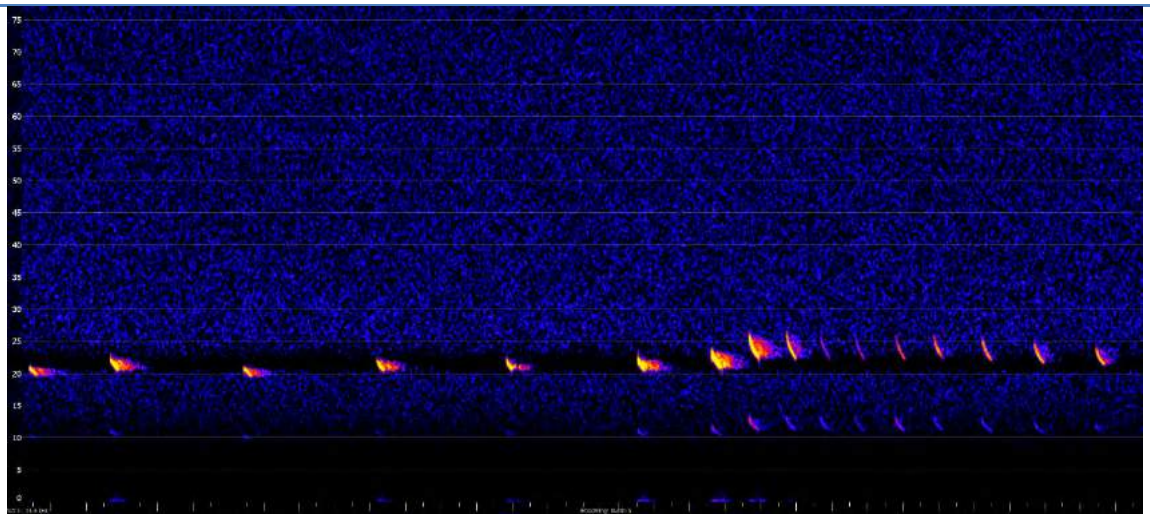
*Chaerephon jobensis*



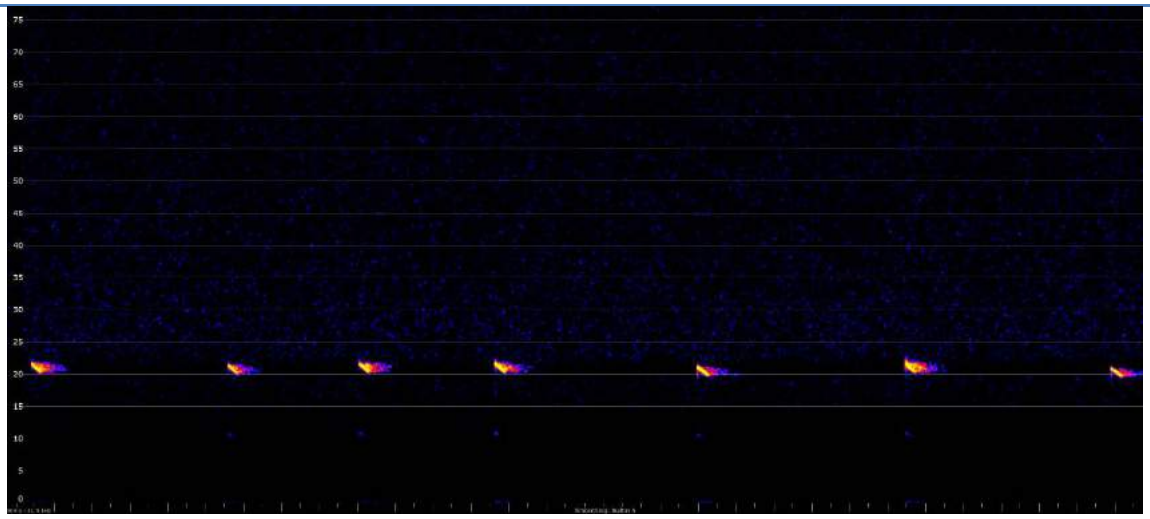
*Ozimops lumsdenae*



*Ozimops ridei*



*Saccolaimus saccolaimus*



*Saccolaimus saccolaimus*

**Appendix 2** Number of bat calls detected per species per site: Mount Fox surveys, 7th – 28th July 2020

| Site-code | AB01 | AB02 | AB03 | AB04 | AB05 | AB06 | AB07 | AB08 | AB09 | AB10 | AB11 | AB12 | AB13 | AB14 | AB15 | Species total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Positively identified calls** | | | | | | | | | | | | | | | | |
| *Rhinolophus megaphyllus* | 1 | | 1 | | | 10 | | 37 | 110 | 1 | 1 | | 47 | 3 | | 211 |
| *Rhinolophus robertsi* | | | | | | | | | 1 | | | | | | | 1 |
| *Chalinolobus gouldii* | 4 | 56 | 7 | | 19 | | 11 | | 5 | | | | | | 1 | 103 |
| *Chalinolobus nigrogriseus* | 3 | 5 | 15 | | 10 | 88 | 10 | 1 | | 1 | 1 | | | | 11 | 145 |
| *Myotis macropus* | | 11 | | | 5 | | | | | | | | | | | 16 |
| *Nyctophilus bifax / N geoffroyi* | 2 | 3 | | | 2 | | | 3 | 1 | 1 | | | 1 | 1 | | 14 |
| *Scoteanax rueppellii* | 17 | 5 | | | 1 | 3 | | 9 | | 2 | | | 2 | | | 39 |
| *Scotorepens greyii* | 13 | 22 | 14 | | 20 | 4 | 5 | 3 | | 4 | | | | 2 | | 87 |
| *Scotorepens sanborni* | 35 | 20 | 3 | | 9 | | 2 | 2 | | 6 | | | | | | 77 |
| *Vespadelus pumilus / V. troughtoni* | | | | | | 3 | | | 1 | | | | 15 | | | 19 |
| *Miniopterus australis* | 34 | 107 | 128 | | 191 | 549 | 22 | 1437 | 117 | 17 | 2 | | 858 | 49 | 256 | 3767 |
| *Miniopterus orianae* | 5 | 75 | 145 | 1 | 122 | 5 | 6 | 27 | 6 | 9 | | | 3 | 1 | 6 | 411 |
| *Austronomus australis* | | | 5 | | | 1 | 1 | 5 | | | 1 | | 4 | | 1 | 18 |
| *Chaerephon jobensis* | 1 | 1 | 22 | | 2 | 2 | | 3 | 3 | 6 | | | 6 | | 2 | 48 |
| *Ozimops lumsdenae* | | 14 | 1 | | | | | 1 | 4 | | | | | | | 20 |
| *Ozimops ridei* | 56 | 130 | 8 | | 4 | 41 | 19 | 21 | 22 | 77 | | | 20 | | 16 | 414 |
| *Saccolaimus saccolaimus* | | | | | | | | | 7 | | | | | | | 7 |
| **Unresolved calls** | | | | | | | | | | | | | | | | |
| *C. gouldii / O. ridei* | | 9 | | | | | 6 | | | | | | | | | 15 |
| *C. nigrogriseus / S. greyii* | 82 | 752 | 14 | | 86 | 12 | 21 | 2 | | 3 | | | | | | 972 |
| *M. macropus / Nyctophilus* sp. | | | | | | | | 2 | | | | | | 1 | 1 | 4 |
| Site total | 253 | 1210 | 363 | 1 | 471 | 718 | 103 | 1553 | 277 | 127 | 5 | 0 | 956 | 57 | 294 | 6388 |

# Microbat Call Identification Report

| | |
|---|---|
| **Prepared for ("Client"):** | Eco Logical Australia |
| **Survey location/project name:** | Mount Fox, NE Qld |
| **Survey dates:** | March-April 2022 |
| **Client project reference:** | |
| **Job no.:** | ELA-2203 |
| **Report date:** | 2 July 2022 |

## Methods

### Data received

*Balance! Environmental* received five SD cards containing raw acoustic data from three detectors (1 x Song Meter SM3 and 2 x Anabat Swift). Location information provided by the client with the data indicates three sites were sampled, with each detector deployed at a single site for the duration of the survey. **Table 1** shows the deployment schedule and data output for each detector.

An initial scan of the data on the SD cards revealed that the Song Meter was set to record in acoustic, rather than ultrasonic mode, so no bat data were recorded.

### Bat-call analysis

Analyses were performed in *Anabat Insight* (Version 2.0.3; Titley Scientific, Brisbane). All Anabat 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. All groups were then reviewed manually to confirm and/or reassign correct species identities.

Manual species confirmation was achieved 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., Armstrong *et al.*, 2021; Milne, 2002; 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; van Dyck *et al.* 2013).

### 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 schedule: Mt Fox, March-April 2022.

| **Detector name** | **Song Meter SM3** SD card #1 | **Song Meter SM3** SD card #2 | **Anabat - #497991** 2 x SD cards | **Anabat - #4855** 1 x SD card |
|---|---|---|---|---|
| **Serial number** (from metadata) | not recorded | SM304374 | SN497996 | SN583086 |
| **Location** (stated by client) | -18.7441, 145.6060 | -18.7441, 145.6060 | -18.7816, 145.6592 | -18.7083, 145.7328 |
| **First night** (with data) | 25/03/2022 | 13/10/2021 | 22/03/2022 | 24/03/2022 |
| **Last night** (with data) | 3/04/2022 | 15/10/2021 | 26/03/2022 | 17/04/2022 |
| **Total detector-nights** | 3 (25-27/3) plus 1 (3/4) | 3 | 5 | 25 |
| **File type** | ZC | WAV | WAV | ZC |
| **Total files** | 2690 | 324 | 6937 | 4802 |
| **No. files with calls** | 0 | 0 | 133 | 665 |
| **Comments** | all files appear to have been recorded in acoustic mode, not ultrasonic | presume not associated with this dataset - different dates; all files recorded in acoustic mode, not ultrasonic | | |

## Results & Discussion

The Song Meter data were excluded from analysis because all files contained only audible-frequency (<20kHz) sounds. Most (10,947) of the Anabat Swift files were also excluded by the noise-filtration process. The remaining 798 files contained 809 identifiable bat calls, 78% (627) of which were positively identified to individual species. The other 182 "unresolved" calls each potentially represented two or more species and were assigned to several multi-species groups.

At least 14, possibly 16 species were recorded (see **Table 2**). In addition to the 14 positively identified call types, several of the unresolved call types potentially represented another two species.

Sample spectrograms of each identified call type are presented in **Appendix 1** and a full breakdown of the number of calls assigned per species per site is provided in **Appendix 2**.

The bare-rumped sheath-tailed bat (*Saccolaimus saccolaimus*) was not reliably identified in this dataset; however, 15 calls recorded by Anabat SN497996 may have been from that species. Fourteen of those calls were reliably attributable to *Saccolaimus*, but had characteristics intermediate between *S. flaviventris* and *S. saccolaimus*. The other was comparable to *Ozimops lumsdenae*, but one out of the eight pulses in the call sequence appears to have an upper harmonic at ~34 kHz, with another extremely weak harmonic at ~11 kHz, which is consistent with *S. saccolaimus*.

**Table 2** Bats detected at two sites during the Mount Fox survey, March-April 2022

♦ = definitely present – at least one call identified unequivocally for the site

□ = possibly present – calls like those of the species were recorded but not reliably identifiable

| **Detector:** | Anabat_SN497996 | Anabat_SN583086 |
|---|---|---|
| *Hipposideros diadema* | ♦ | |
| *Rhinolophus megaphyllus* | ♦ | ♦ |
| *Chalinolobus gouldii* | ♦ | ♦ |
| *Chalinolobus nigrogriseus* | ♦ | ♦ |
| *Scoteanax rueppellii* | | ♦ |
| *Scotorepens greyii* | □ | □ |
| *Scotorepens sanborni* | | ♦ |
| *Miniopterus australis* | ♦ | ♦ |
| *Miniopterus orianae* | | ♦ |
| *Austronomus australis* | | ♦ |
| *Chaerephon jobensis* | ♦ | ♦ |
| *Ozimops lumsdenae* | ♦ | |
| *Ozimops ridei* | ♦ | ♦ |
| *Saccolaimus flaviventris* | ♦ | ♦ |
| *Saccolaimus saccolaimus* | □ | |
| *Taphozous troughtoni* | | ♦ |

## References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Armstrong, K. N., Broken-Brow, J., Hoye, G., Ford, G., Thomas, M. and Corben, C. (2021). Effective detection and identification of sheath-tailed bats of Australian forests and woodlands. *Australian Journal of Zoology*, **68**, 346-363.

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Churchill, S. (2008). *Australian Bats.* Jacana Books, Allen & Unwin; Sydney.

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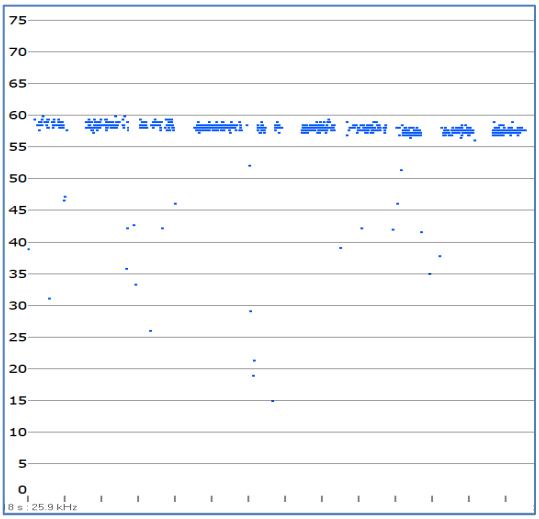
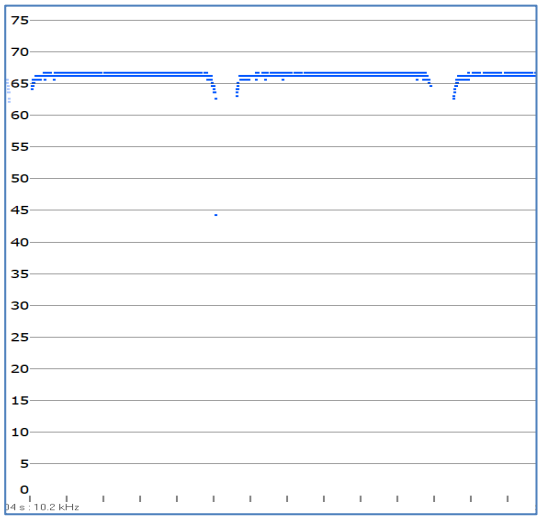
Reinhold, L., Law, B., Ford, G. and Pennay, M. (2001). *Key to the bat calls of south-east Queensland and north-east New South Wales*. Department of Natural Resources and Mines, Brisbane.

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

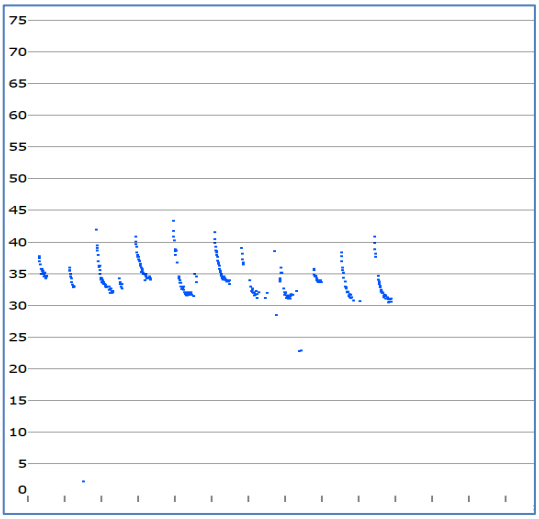
**Appendix 1** Representative call sequences from the Mount Fox dataset.
*x*-axis = 10 ms per tick-mark; time between pulses removed ("compressed")



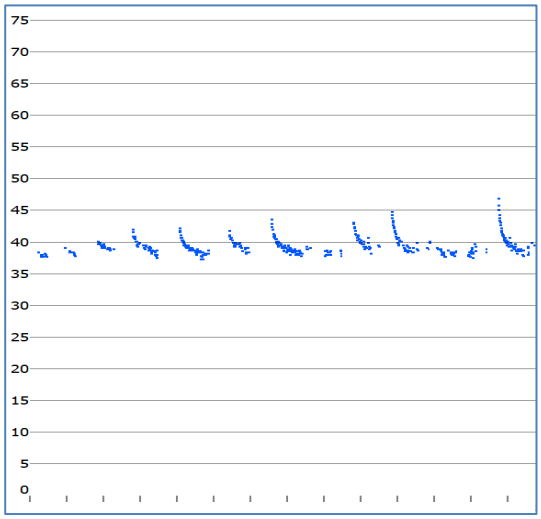
*Hipposideros diadema*



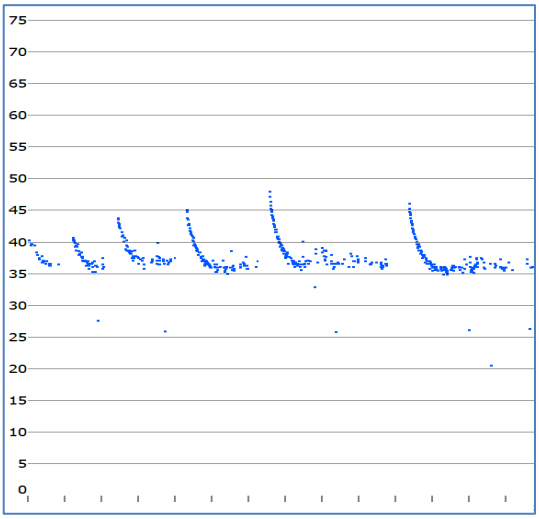
*Rhinolophus megaphyllus*



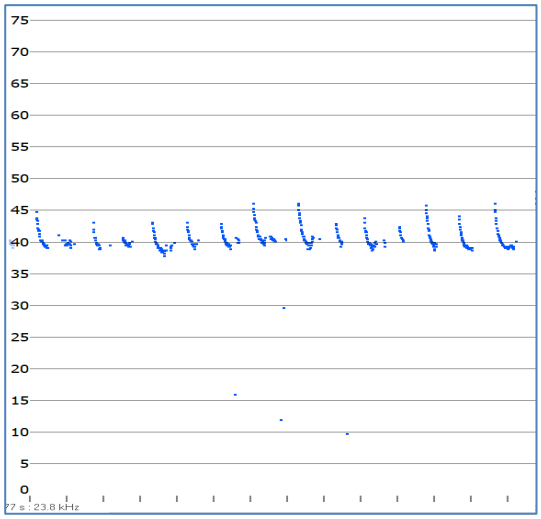
*Chalinolobus gouldii*



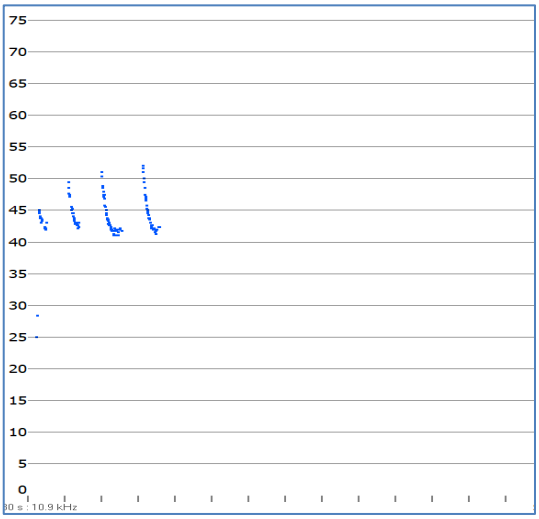
*Chalinolobus nigrogriseus*



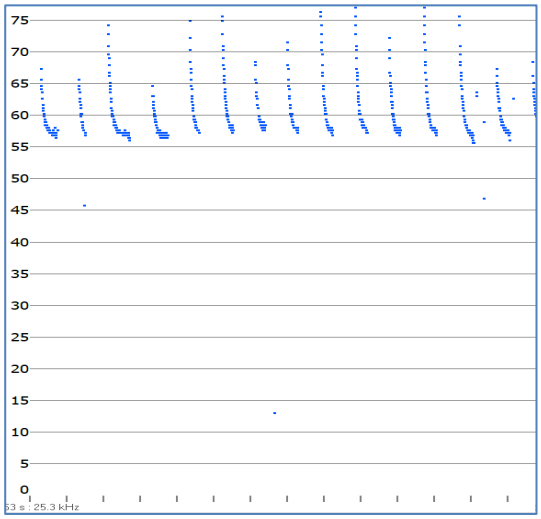
*Scoteanax rueppellii*



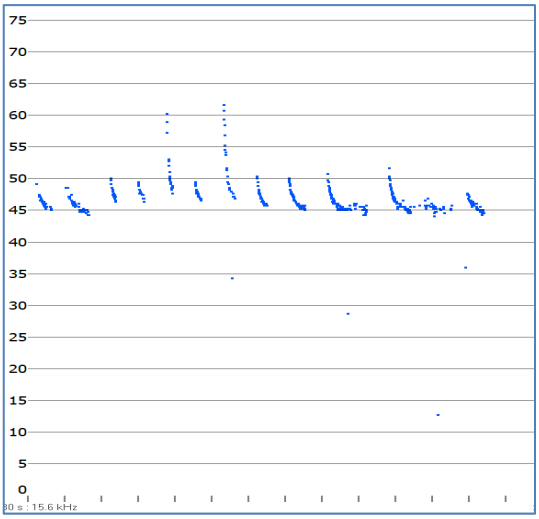
Possibly *Scotorepens greyii*



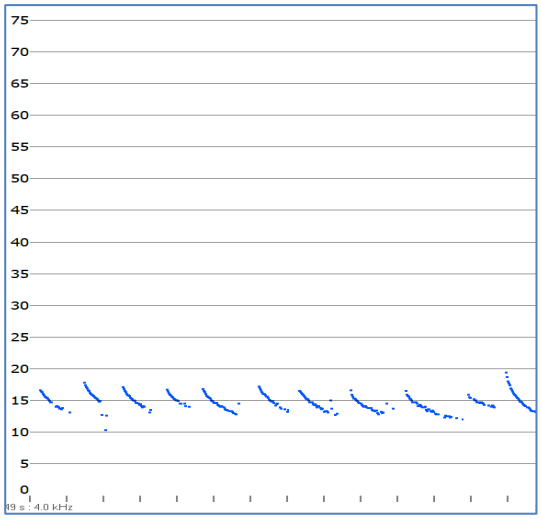
*Scotorepens sanborni*



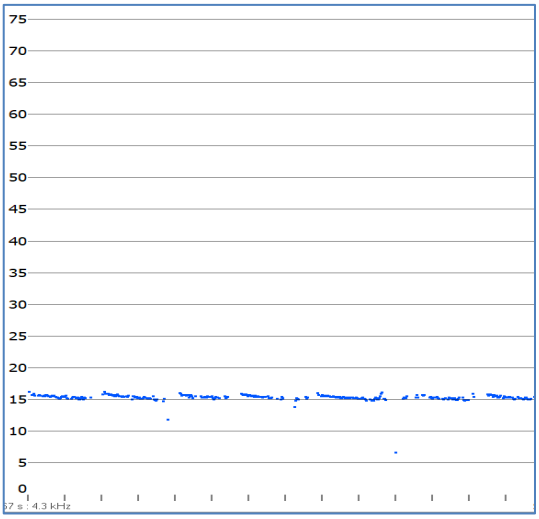
*Miniopterus australis*



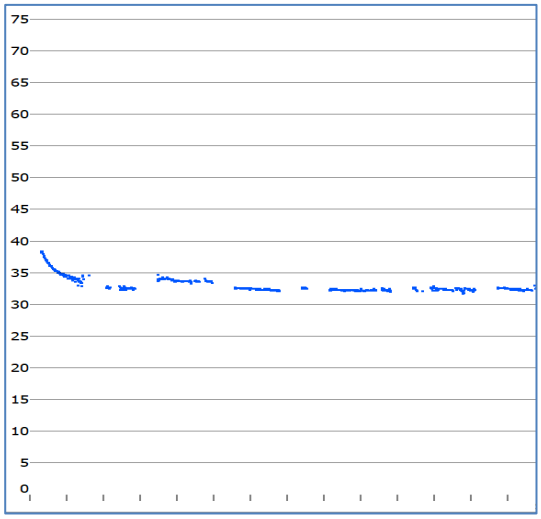
*Miniopterus orianae*



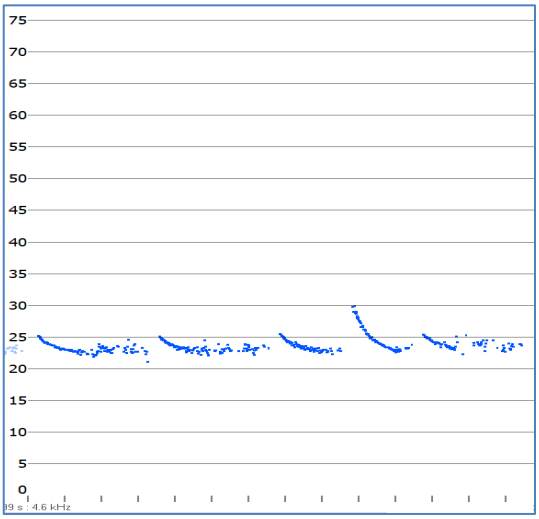
*Austronomus australis*



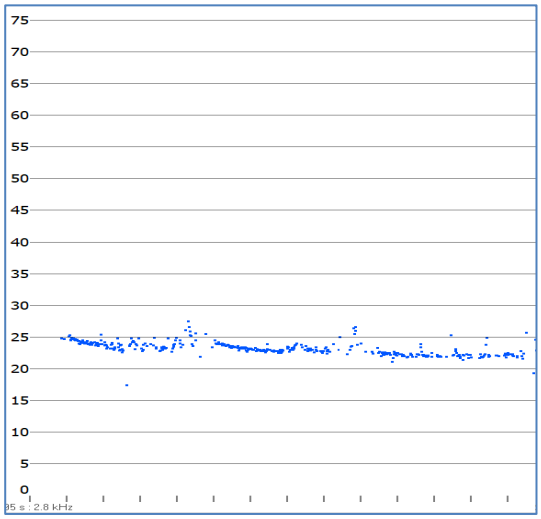
*Chaerephon jobensis*



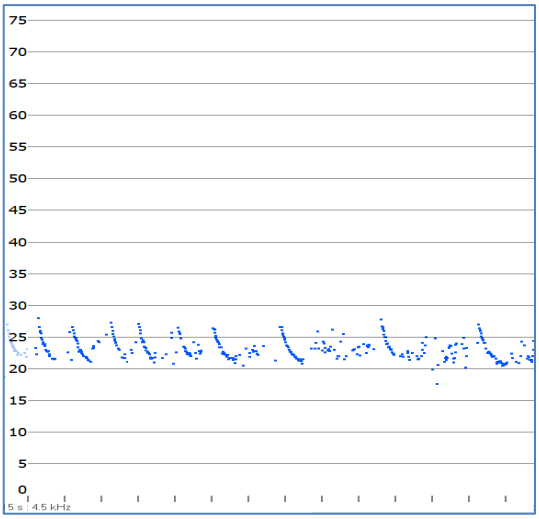
*Ozimops ridei*



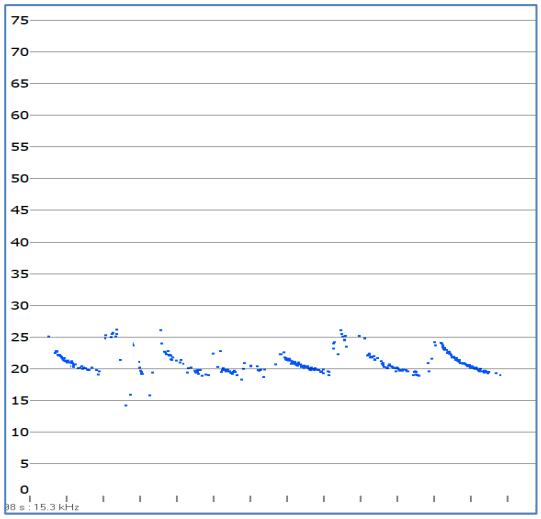

*Ozimops lumsdenae*



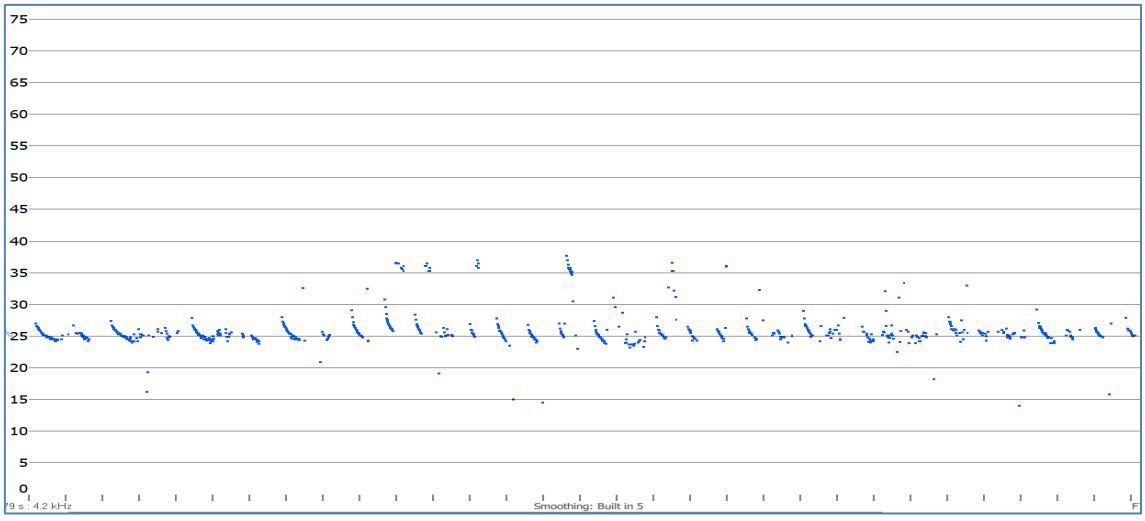

*O. lumsdenae* or *Saccolaimus saccolaimus*




*Saccolaimus flaviventris*

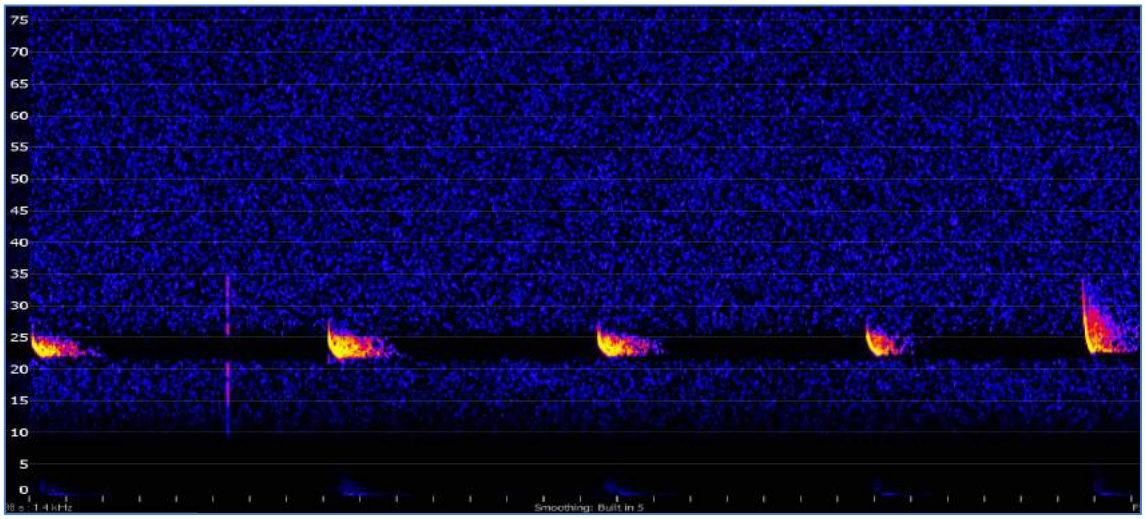



*S. flaviventris* or *S. saccolaimus*

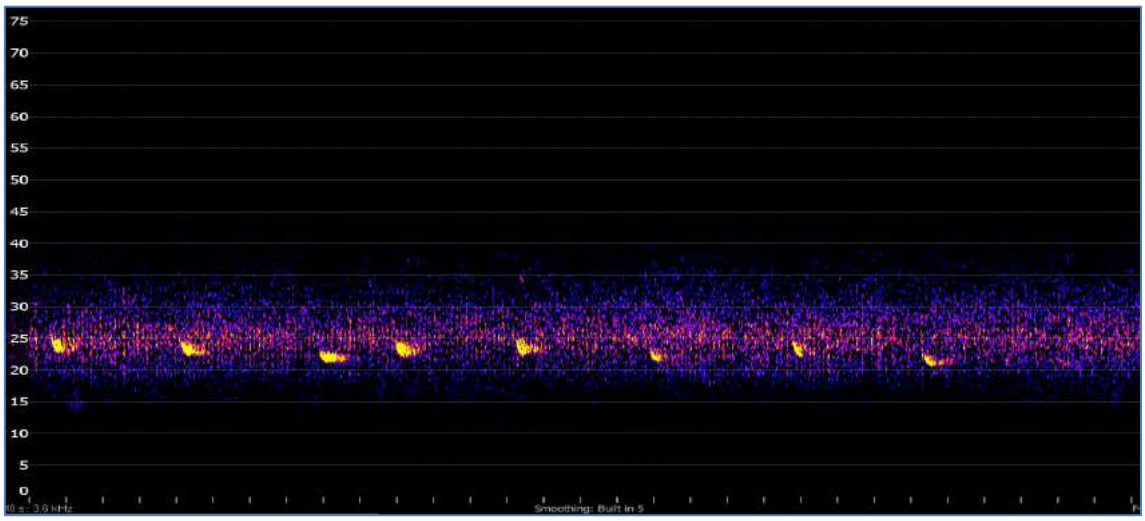



*Taphozous troughtoni*

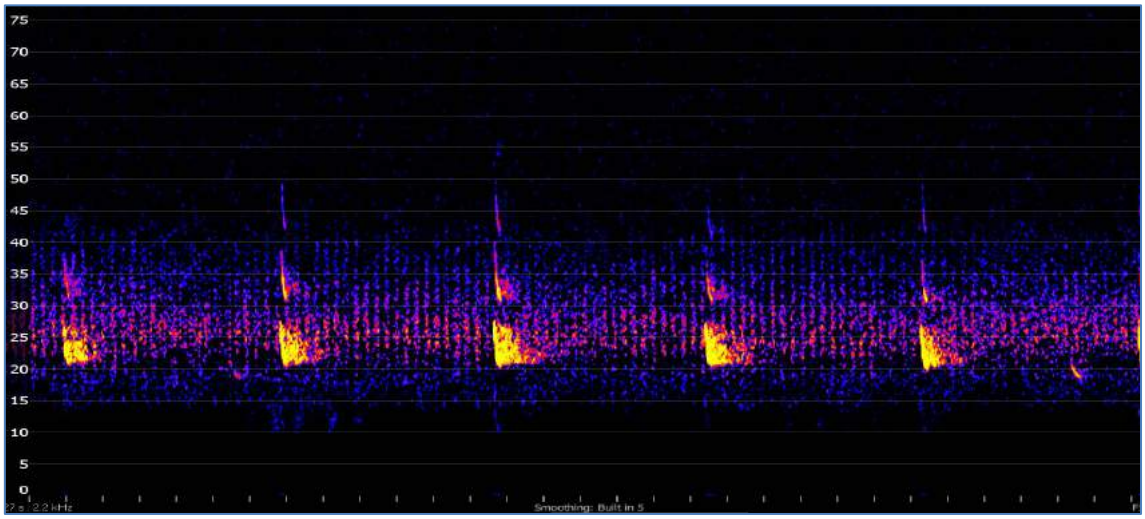
The following spectrograms show the same call for each species as those depicted in the above zero-crossing profiles, but in full-spectrum uncompressed mode at timescale = 25ms/tick. Harmonic patterns visible in the full-spectrum display are a key diagnostic feature for *Saccolaimus* spp.



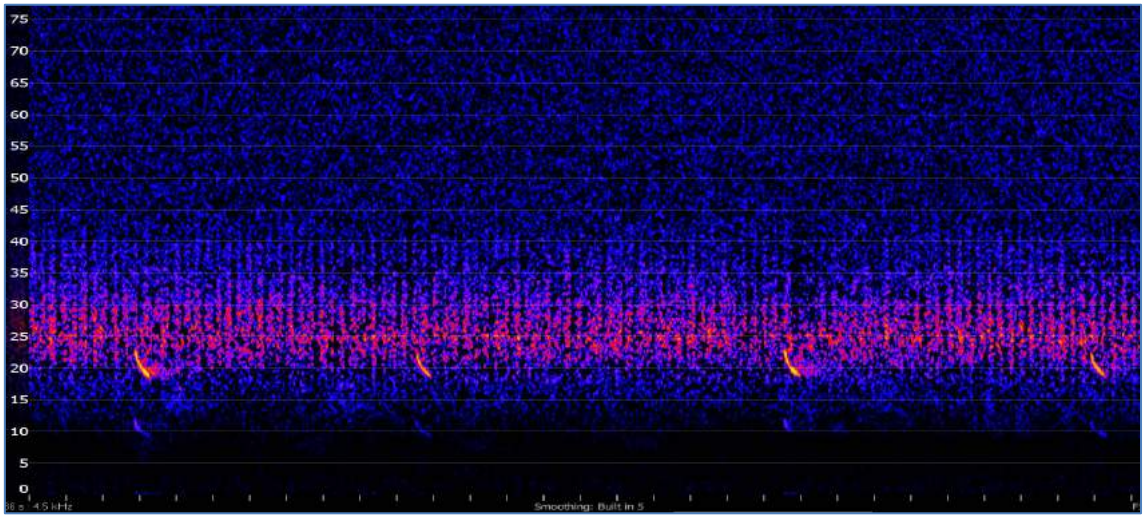

*Ozimops lumsdenae*




*O. lumsdenae* or *S. saccolaimus*




*Saccolaimus flaviventris*




*S. flaviventris* or *S. saccolaimus*

**Appendix 2** Microbat species recorded during the Mount Fox survey, March – April 2022. Number of calls allocated per species or unresolved group per site.

| Detector: | Anabat_SN497996 | Anabat_SN583086 | Species Total |
|---|---|---|---|
| **Positively identified calls** | | | |
| *Hipposideros diadema* | 1 | | 1 |
| *Rhinolophus megaphyllus* | 2 | 5 | 7 |
| *Chalinolobus gouldii* | 1 | 13 | 14 |
| *Chalinolobus nigrogriseus* | 3 | 251 | 254 |
| *Scoteanax rueppellii* | | 53 | 53 |
| *Scotorepens sanborni* | | 1 | 1 |
| *Miniopterus australis* | 48 | 9 | 57 |
| *Miniopterus orianae* | | 30 | 30 |
| *Austronomus australis* | | 5 | 5 |
| *Chaerephon jobensis* | 37 | 30 | 67 |
| *Ozimops lumsdenae* | 16 | | 16 |
| *Ozimops ridei* | 4 | 91 | 95 |
| *Saccolaimus flaviventris* | 2 | 12 | 14 |
| *Taphozous troughtoni* | | 12 | 12 |
| **Unresolved calls** | | | |
| *C. gouldii / O. ridei* | | 30 | 30 |
| *C. nigrogriseus / Scotorepens* sp. | | 114 | 114 |
| *S. rueppellii / O. ridei* | | 8 | 8 |
| *S. sanborni / S. greyii* | 2 | 2 | 4 |
| *C. jobensis / S. flaviventris* | 3 | 9 | 12 |
| *S. flaviventris / S. saccolaimus* | 14 | | 14 |
| *S. saccolaimus / O. lumsdenae* | 1 | | |
| Site Total | 134 | 675 | 809 |

# Appendix G - Threatened Species Records

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/9066 | 145.782344 | -18.787163 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Rhinolophus robertsi | Greater large-eared horseshoe bat | ELA | UBWF | Anabat 00363 in a melaleuca near the swimming hole |
| 2021/9066 | 145.765312 | -18.754649 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Rhinolophus robertsi | Greater large-eared horseshoe bat | ELA | UBWF | Anabat 00363 in open forest dominated by tereticornis, Allocasuarina t, lophostemon sauveolans |
| 2021/9066 | 145.761283 | -18.769312 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Hipposideros diadema | Diadem leaf-nosed bat | ELA | UBWF | Ultrasonic recorder |
| 2021/9066 | 145.713242 | -18.775849 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Tachyglossus aculeatus | Echidna Short-Beaked | ELA | UBWF | Remote camera V11 |
| 2021/9066 | 145.770518 | -18.835681 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Tachyglossus aculeatus | Echidna Short-Beaked | ELA | UBWF | Remote camera V9 |
| 2021/9066 | 145.742612 | -18.847557 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Tachyglossus aculeatus | Echidna Short-Beaked | ELA | UBWF | |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.761283 | -18.769312 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Rhinolophus robertsi | Greater large-eared horseshoe bat | ELA | UBWF | Anabat SN497996 |
| 2021/90066 | 145.788408 | -18.869521 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Rhinolophus robertsi | Greater large-eared horseshoe bat | ELA | UBWF | Anabat SN497996 |
| 2021/90066 | 145.769437 | -18.745578 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Remote camera M2 |
| 2021/90066 | 145.745876 | -18.825364 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Remote camera M20 |
| 2021/90066 | 145.772086 | -18.788203 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Tyto novaehollandiae kimberli | Owl Masked (northern) | ELA | UBWF | Recorded on BAR |
| 2021/90066 | 145.73314 | -18.754195 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Tyto novaehollandiae kimberli | Owl Masked (northern) | ELA | UBWF | Recorded on SM3 |
| 2021/90066 | 145.762096 | -18.72926 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Tyto novaehollandiae kimberli | Owl Masked | ELA | UBWF | Recorded on SM3 |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | (northern) | | | |
| 2021/9066 | 145.739845 | -18.828153 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera V15 |
| 2021/9066 | 145.731666 | -18.828617 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera V19 |
| 2021/9066 | 145.790199 | -18.88065 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera ELA00319 |
| 2021/9066 | 145.748745 | -18.849082 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M16. Mother with joey |
| 2021/9066 | 145.736655 | -18.785211 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M7 |
| 2021/9066 | 145.748178 | -18.853251 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M9 |
| 2021/9066 | 145.7312 | -18.786278 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M14 |
| 2021/9066 | 145.744375 | -18.768262 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M17 |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.745071 | -18.762595 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M18 |
| 2021/90066 | 145.745876 | -18.825364 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M20 |
| 2021/90066 | 145.739452 | -18.818415 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M24 |
| 2021/90066 | 145.782425 | -18.800588 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M26 |
| 2021/90066 | 145.734189 | -18.803493 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M28 |
| 2021/90066 | 145.74819 | -18.8531 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M29 |
| 2021/90066 | 145.760506 | -18.836455 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M40 |
| 2021/90066 | 145.760869 | -18.800278 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera M43 |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.809773 | -18.917785 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | |
| 2021/90066 | 145.680359 | -18.839384 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera 4 |
| 2021/90066 | 145.797298 | -18.872158 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera 2 |
| 2021/90066 | 145.600391 | -18.741487 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera 13 |
| 2021/90066 | 145.580249 | -18.770425 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera 8 |
| 2021/90066 | 145.796723 | -18.871485 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera 1 |
| 2021/90066 | 145.696301 | -18.715983 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera seven |
| 2021/90066 | 145.74262 | -18.722736 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby - possible scat | ELA | UBWF | Scat AK11 |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.801025 | -18.872299 | GDA94 | 5 | 2022 | 3 | 23 | 2022 | 5 | 5 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | |
| 2021/90066 | 145.777481 | -18.652305 | GDA94 | 5 | 2022 | 3 | 23 | 2022 | 5 | 5 | Cuculus opatus | Oriental cuckoo | ELA | UBWF | |
| 2021/90066 | 145.802146 | -18.770361 | GDA94 | 5 | 2022 | 3 | 23 | 2022 | 5 | 5 | Tyto novaehollandiae kimberli | Owl Masked (northern) | ELA | UBWF | |
| 2021/90066 | 145.734687 | -18.854286 | GDA94 | 5 | 2022 | 3 | 23 | 2022 | 5 | 5 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | |
| 2021/90066 | 145.606642 | -18.743985 | GDA94 | 5 | 2022 | 3 | 23 | 2022 | 5 | 5 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Remote camera 14 |
| 2021/90066 | 145.786187 | -18.642836 | GDA94 | 5 | 2022 | 3 | 23 | 2022 | 5 | 5 | Monarcha trivirgatus | Spectacled monarch | ELA | UBWF | |
| 2021/90066 | 145.602689 | -18.794773 | GDA94 | 5 | 2022 | 3 | 23 | 2022 | 5 | 5 | Tachyglossus aculeatus | Echidna Short-Beaked | ELA | UBWF | |
| 2021/90066 | 145.618737 | -18.746484 | GDA94 | 5 | 2022 | 3 | 23 | 2022 | 5 | 5 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.616686 | -18.746448 | GDA94 | 5 | 2022 | 3 | 23 | 2022 | 5 | 5 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | |
| 2021/90066 | 145.603112 | -18.794722 | GDA94 | 5 | 2022 | 3 | 23 | 2022 | 5 | 5 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | |
| 2021/90066 | 145.659013 | -18.782143 | GDA94 | 5 | 2022 | 3 | 23 | 2022 | 5 | 5 | Saccolaimus saccolaimus | Bare-rumped Sheathtail Bat | ELA | UBWF | only potential observation. detection belonged to a Saccolaimus spp. S. s or S. flaviventris |
| 2021/90066 | 145.659894 | -18.781115 | GDA94 | 5 | 2022 | 3 | 23 | 2022 | 5 | 5 | Hipposideros diadema | Diadem leaf-nosed bat | ELA | UBWF | detected on Anabat swift 497991 in 2022 survey |
| 2021/90066 | 145.771305 | -18.787932 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Recorded on the BAR |
| 2021/90066 | 145.799843 | -18.765887 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | |
| 2021/90066 | 145.733772 | -18.754175 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Recorded on SM3-1 |
| 2021/90066 | 145.788917 | -18.778716 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Saccolaimus saccolaimus nudicluniatus | Bare-rumped Sheathtail Bat | ELA | UBWF | Swift device 567914 |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.788325 | -18.869525 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Saccolaimus saccolaimus nudicluniatus | Bare-rumped Sheathtail Bat | ELA | UBWF | Anabat SN497996 |
| 2021/90066 | 145.788939 | -18.778649 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Rhinolophus robertsi | Greater large-eared horseshoe bat | ELA | UBWF | Swift device 567914 |
| 2021/90066 | 145.738605 | -18.787101 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | |
| 2021/90066 | 145.789904 | -18.880205 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Tachyglossus aculeatus | Echidna Short-Beaked | ELA | UBWF | Echidna scat |
| 2021/90066 | 145.769313 | -18.870902 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Mother ship, check aerial. 500m from drone spot at rainforest |
| 2021/90066 | 145.775124 | -18.870658 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | |
| 2021/90066 | 145.681771 | -18.839235 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Myiagra cyanoleuca | Flycatcher Satin | ELA | UBWF | |
| 2021/90066 | 145.774148 | -18.885325 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Sheltering in steep rock face |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.749276 | -18.823403 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | |
| 2021/90066 | 145.793096 | -18.874706 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | |
| 2021/90066 | 145.788157 | -18.869464 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Sharmans |
| 2021/90066 | 145.800637 | -18.872446 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Sharmans |
| 2021/90066 | 145.762651 | -18.728947 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Erythrotriorchis radiatus | Red Goshawk | ELA | UBWF | Observed flying low over Corymbia intermedia in proximity to tall trees and creekline |
| 2021/90066 | 145.791533 | -18.870275 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Tesselaris, 40dbh, <25m |
| 2021/90066 | 145.787548 | -18.869445 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Pteropus conspicillatus | Spectacled flying fox | ELA | UBWF | Spectacled flying fox in ficus sp. |
| 2021/90066 | 145.786832 | -18.868627 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Pteropus conspicillatus | Spectacled flying fox | ELA | UBWF | Spectacled flying fox in a ficus |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/9066 | 145.750309 | -18.819614 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | |
| 2021/9066 | 145.747249 | -18.825771 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Granitica, 30dbh, <20 tall |
| 2021/9066 | 145.734619 | -18.789044 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Crebra/granitica, 25dbh, 20m tall |
| 2021/9066 | 145.734341 | -18.800902 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Sharmans |
| 2021/9066 | 145.749262 | -18.778248 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | |
| 2021/9066 | 145.748421 | -18.78 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Granitica, 30dbh, >20m |
| 2021/9066 | 145.748129 | -18.779927 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Tereticornis, 50dbh, >25m tall |
| 2021/9066 | 145.757578 | -18.778996 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Mum and Joey, tereticornis, 35dbh, >25m tall |
| 2021/9066 | 145.743898 | -18.780275 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Granita, 40dbh, <20m tall |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.74016 | -18.783266 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Citriodora, 15dbh, 15m tall |
| 2021/90066 | 145.765679 | -18.753962 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Tyto novaehollandiae kimberli | Owl Masked (northern) | ELA | UBWF | 2 heard - call and response. Bloodwoods, tereticornis, lophostemon sauveolans, Allocasuarina torulosa. Quite sparse shrub layer. |
| 2021/90066 | 145.806857 | -18.783154 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Tyto novaehollandiae kimberli | Owl Masked (northern) | ELA | UBWF | Masked owl eating a tawny frogmouth. |
| 2021/90066 | 145.788181 | -18.869427 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Saw while spotlighting |
| 2021/90066 | 145.786516 | -18.869613 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Sharmans |
| 2021/90066 | 145.783092 | -18.87044 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Sharmans Observed while spotlighting |
| 2021/90066 | 145.782482 | -18.869908 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | |
| 2021/90066 | 145.781684 | -18.869734 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Sharmans Observed while spotlighting |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.780075 | -18.869634 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Sharmans Observed while spotlighting |
| 2021/90066 | 145.774927 | -18.869486 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Sharmans Observed while spotlighting |
| 2021/90066 | 145.783516 | -18.87055 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Pteropus conspicillatus | Spectacled flying fox | ELA | UBWF | Spectacled flying fox in Burdekin plum |
| 2021/90066 | 145.708685 | -18.778712 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Citriodora, 30cm dbh, >25m |
| 2021/90066 | 145.720161 | -18.769705 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Mollucana, 25dbh, >20m |
| 2021/90066 | 145.729127 | -18.764263 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Ironbark, 25cm dbh, <20m tall |
| 2021/90066 | 145.729922 | -18.764162 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Citriodora, 40cm dbh, 16m tall |
| 2021/90066 | 145.730697 | -18.763514 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Citriodora, 45 dbh, >25m |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.719943 | -18.769232 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Mollucana, 15dbh, 15m tall |
| 2021/90066 | 145.787532 | -18.869758 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Stone Henge. Good habitat right next to a creek. 2 Sharmans seen |
| 2021/90066 | 145.771146 | -18.826598 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Tereticornis 60cm dbh >25m tall |
| 2021/90066 | 145.769371 | -18.827401 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Tereticornis, 60cm dbh, >25m tall |
| 2021/90066 | 145.757702 | -18.809397 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Pink blood wood, 40cm dbh, >20m tall |
| 2021/90066 | 145.757347 | -18.808263 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Citriodora, 30dbh, >20m tall |
| 2021/90066 | 145.758018 | -18.802839 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Citriodora, 40dbh, >20m tall |
| 2021/90066 | 145.762621 | -18.798017 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Pink bloodwood |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.765271 | -18.794437 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Ironbark, 20dbh, >15m tall |
| 2021/90066 | 145.766393 | -18.783283 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | E. Portuensis, 45dbh, >20m |
| 2021/90066 | 145.758075 | -18.812824 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | 2 in an ironbark, dbh 40cm, >20m tall |
| 2021/90066 | 145.761533 | -18.792209 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Fleeting glimpse of back end of small dark browny grey macropod with thin tail. Not M. abolish or M. parryi. In granite boulder pile |
| 2021/90066 | 145.800235 | -18.872612 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Saw them at both rock piles |
| 2021/90066 | 145.801804 | -18.885661 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | At the water tanks. Heaps of habitat. |
| 2021/90066 | 145.733015 | -18.75492 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | Corymbia intermedia 15cm dbh. Also present possum with backrider. |
| 2021/90066 | 145.750795 | -18.765237 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | E. Tereticortis |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.731319 | -18.744198 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | E. Crebra most likely, 15 dbh, 8m tall tree |
| 2021/90066 | 145.779266 | -18.792831 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | In Corymbia intermediate |
| 2021/90066 | 145.778388 | -18.80519 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Male koala in a blue gum of dbh 15cm. Surrounded by stringybarks and Allocausarina and bloodwoods |
| 2021/90066 | 145.778739 | -18.79183 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | To the east |
| 2021/90066 | 145.734638 | -18.854285 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | WP10. Scats, Scat confirmed for peterogale or Thylogale sp. |
| 2021/90066 | 145.79377 | -18.76888 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petauroides volans | Glider Greater | ELA | UBWF | In River Red Gum |
| 2021/90066 | 145.77791 | -18.751275 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | In River Red Gum amongst allocasuarinas and bloodwoods. Dbh of 50 Cm trunk. |
| 2021/90066 | 145.769675 | -18.745587 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Acoustic recorder BAR, recorded between 4-10pm and after 5am |

| Referral ID | X | Y | Source datum | Precision | Year start | Month start | Day start | Year end | Month end | Day end | Scientific name | Common name | Source institution | Site / visit identifier | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021/90066 | 145.748274 | -18.853532 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | WP4. Scats and fur collected from site, Scat and hair sample confirmed for P.sharmani |
| 2021/90066 | 145.738348 | -18.860663 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Petrogale sharmani | Sharman's Rock Wallaby | ELA | UBWF | Seen from road side. 8 am. Basking in northern facing sun |
| 2021/90066 | 145.684744 | -18.844089 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Gallinago hardwickii | Snipe Latham | ELA | UBWF | |
| 2021/90066 | 145.769663 | -18.745587 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | Acoustic recorder BAR, recorded after 10pm |
| 2021/90066 | 145.724428 | -18.732753 | GDA94 | 5 | 2019 | 9 | 1 | 2020 | 7 | 29 | Phascolarctos cinereus | Koala | ELA | UBWF | |

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