# Attachment 5

## Biodiversity

# Phoenix Pumped Hydro Energy Storage

## EPBC Project Referral – Attachment 5

### Introduction

This Attachment outlines the biodiversity surveys undertaken across the Project Site, key findings from these surveys, and the database searches. A likelihood of occurrence and impact assessment for threatened species and communities listed under the EPBC Act are also outlined, with the results informing the EPBC Referral.

Preliminary assessments of significance are presented to inform the EPBC Referral. These are based on the current Indicative Disturbance Footprint for the Proposed Action, and may change as the project is further refined during the design process and preparation of the EIS and BDAR.

### Surveys undertaken to date

Surveys are ongoing within the Project Site and have been undertaken by GHD (2023) and Niche (2024).

The surveys that have been completed and adopted to inform the Referral include:

- Vegetation mapping has been completed across the Project Site and Plant Community Types (PCTs) have been assigned in line with the BAM.
- Targeted threatened flora surveys for species with an appropriate survey timing of October across the Project Site (October 2023, September/October 2024).
- Mapping of habitat features across the Project Site including hollow bearing trees, stick nests, rocky habitat and aquatic habitat.
- BAM plots within the core infrastructure area component of the Project Site (September 2023).
- Diurnal bird surveys, Koala SAT, grasshopper surveys and reptile searches within the core infrastructure area (July, September, October 2023, October 2024).
- Spotlighting and call playback surveys targeting Powerful Owl, Barking Owl, Masked Owl, Bush Stone-curlew, Koala, Squirrel Glider and Greater Glider within the core infrastructure area (July, September, October 2023, July 2024).
- Deployment of audio recording and ultrasonic call recording units within the core infrastructure area (September, October 2023).

Surveys recently completed with field data still being processed are listed below. This data will be applied to the Proposed Action's Biodiversity Development Assessment Report (BDAR).

- Diurnal bird surveys across the Project Site (November and December 2024 and February 2025).
- Deployment of audio recording and ultrasonic call recording units across the Project Site (November 2024 – January 2025).
- Deployment of camera devices across the Project Site (December 2024 – February 2025).
- Faecal pellet surveys for Koala and Brush-tailed Rock Wallaby across the Project Site (January-February 2025).
- Spotlighting and call playback surveys targeting Powerful Owl, Barking Owl, Masked Owl, Bush Stone-curlew, Koala, Squirrel Glider and Greater Glider within the Project Site (November 2024, February 2025).
- Detailed vegetation surveys including BAM plots and assessment of EPBC TEC alignment across the Project Site (January 2025).

Remaining surveys within the Project Site will include:

- Field surveys by Species Experts for threatened frogs (Booroolong Frog, Yellow-spotted Tree Frog and Southern Bell Frog), Bathurst Grassland Earless Dragon and Pink-tailed Legless Lizard (February and March 2025).

## Database searches

A review of relevant databases was conducted to identify Matters of National Environmental Significance (MNES) with potential to occur within the Project Site. Database searches were undertaken within the locality of the Project Site (a 10km buffer of the Project Site) on 21 October 2024. Databases interrogated include:

- NSW BioNet Atlas Database (NSW DCCEEW, 2024) for spatial records of threatened species listed under the BC Act.
- EPBC Act Protected Matters Search Tool (Cth DCCEEW, 2024a) for MNES or their habitat that may occur within the locality of the Project Site.

The Species Profile and Threats Database (SPRAT) (Cth DCCEEW, 2024b) was also consulted as part of this assessment to confirm habitat associations and species distribution.

## Threatened species and ecological communities

A number of threatened species and ecological communities listed under the EPBC Act have been recorded within the Project Site during surveys undertaken to date. These include:

### Ecological communities

- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

### Flora

- *Leucochrysum albicans* subsp. *tricolor* (Hoary Sunray)

### Fauna

- *Calyptorhynchus lathami lathami* (South-eastern Glossy Black-Cockatoo)
- *Climacteris picumnus victoriae* (Brown Treecreeper – South-eastern)
- *Melanodryas cucullata cucullata* (South-eastern Hooded Robin)
- *Phascolarctos cinereus* (Koala - combined populations of Qld, NSW and the ACT)
- *Pteropus poliocephalus* (Grey-headed Flying Fox)

Additional potential MNES within the Project Site were identified using the results of the PMST search. These MNES, and their likelihood of occurrence and impact are detailed in Table 1. Where relevant, BioNet records for each threatened entity are also included.

Table 1 MNES likelihood of occurrence and impact within the Project Site

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| Threatened ecological communities | | | | | | | |
| Natural Temperate Grassland of the South Eastern Highlands | - | CE | N/A | Nil - not recorded during surveys | Nil | Nil | No – not mapped within the Project Site during rapid vegetation survey. |
| Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia | - | E | N/A | Nil - not recorded during surveys | Nil | Nil | No – not mapped within the Project Site during rapid vegetation survey. |
| White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | - | CE | N/A | Known | High - direct impacts to occur. | High | Mapped within the Project Site during rapid vegetation survey. |
| Threatened species | | | | | | | |
| Flora | | | | | | | |
| *Austrostipa wakoolica* | - | E | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - outside species known range, no suitable habitat present. | Low | Low | No - no surveys required. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Dichanthium setosum* | Bluegrass | V | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - associated plant community types do not occur within the project footprint | Low | Low | No - no surveys required. |
| *Euphrasia arguta* | - | CE | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - no species recorded within locality | Low | Low | No - no surveys required. |
| *Homoranthus darwinioides* | - | V | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - no species recorded within locality | Low | Low | No - no surveys required. |
| *Lepidium aschersonii* | Spiny Peppercress | V | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - outside species known range, no suitable habitat present. | Low | Low | No - no surveys required. |
| *Leucochrysum albicans* subsp. *tricolor* | Hoary Sunray, Grassland Paper-daisy | E | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Known | High - direct or indirect impacts likely to occur. | High | Recorded – approximately 45 individuals along road reserve. |
| *Ozothamnus tesselatus* | - | V | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - outside species known range | Low | Low | No - no surveys required. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Prasophyllum petilum* | Tarengo Leek Orchid | E | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - not recorded during targeted surveys | Low | Low | No - Surveyed |
| *Prasophyllum sp. Wybong (C.Phelps ORG 5269)* | a leek-orchid | CE | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - not recorded during targeted surveys | Low | Low | No - Surveyed |
| *Swainsona recta* | Small Purple-pea, Mountain Swainson-pea, Small Purple Pea | E | 66 records within 10km, last recorded 2022 (NSW DCCEEW 2024); Species or species habitat known to occur within area (10km) (Cth DCCEEW 2024a) | Low - not recorded during targeted surveys | Low | Low | No - Surveyed |
| *Thesium australe* | Austral Toadflax, Toadflax | V | Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Low - associated plant community types do not occur within the project footprint | Low | Low | No - no surveys required. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Vincetoxicum forsteri* | - | E (listed as Tylophora linearis) | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - associated plant community types do not occur within the project footprint | Low | Low | No - no surveys required. |
| *Zieria obcordata* | Granite Zieria | E | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - not recorded during targeted surveys | Low | Low | No - surveyed |
| Fauna | | | | | | | |
| Birds | | | | | | | |
| *Anthochaera phrygia* | Regent Honeyeater | CE | 15 records within 10km, last recorded 2001 (NSW DCCEEW 2024); Species or species habitat known to occur within area (10km) (Cth DCCEEW 2024a) | High - suitable habitat on site. | Moderate | Moderate | No – surveys ongoing. Project Site is not within mapped Important Habitat for the species so is unlikely to be significant to the species. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Aphelocephala leucopsis* | Southern Whiteface | V | 42 records within 10km, last recorded 2001 (NSW DCCEEW 2024); Species or species habitat known to occur within area (10km) (Cth DCCEEW 2024a) | High - suitable habitat on site. | Moderate | Moderate | No – surveys ongoing. |
| *Botaurus poiciloptilus* | Australasian Bittern | E | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable habitat within locality. | Low | Low | No - no surveys required. |
| *Calidris acuminata* | Sharp-tailed Sandpiper | V | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable habitat within the locality. | Low | Low | No - no surveys required. |
| *Calidris ferruginea* | Curlew Sandpiper | CE | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable habitat within the locality. | Low | Low | No - no surveys required. |
| *Callocephalon fimbriatum* | Gang-gang Cockatoo | E | Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Moderate - suitable habitat within the locality. | Moderate - (removal of breeding hollows) | Moderate | No – surveys ongoing. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Calyptorhynchus lathami lathami* | South-eastern Glossy Black-Cockatoo | V | 5 records within 10km, last recorded 2014 (NSW DCCEEW 2024) | Known | High - (removal of breeding hollows) | High | Known – Recorded during surveys |
| *Climacteris picumnus victoriae* | Brown Treecreeper (south-eastern) | V | 71 records within 10km, last recorded 2024 (NSW DCCEEW 2024); Species or species habitat known to occur within area (10km) (NSW DCCEEW 2024) | Known | High | High | Known – Recorded during surveys |
| *Falco hypoleucos* | Grey Falcon | V | Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable habitat within the locality. | Low | Low | No - no surveys required. |
| *Gallinago hardwickii* | Latham's Snipe, Japanese Snipe | V | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable habitat within the locality. | Low | Low | No - no surveys required. |
| *Grantiella picta* | Painted Honeyeater | V | Species or species habitat known to occur within area (10km) (Cth DCCEEW 2024a) | Moderate - suitable habitat within the locality. | Moderate | Moderate | No – surveys ongoing. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Hirundapus caudacutus* | White-throated Needletail | V | 11 records within 10km, last recorded 2001 (NSW DCCEEW 2024); Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Moderate - however the species is almost exclusively aerial and unlikely to utilise habitat on site | Moderate – collision risk (transmission line) | Low | No – surveys ongoing. |
| *Lathamus discolor* | Swift Parrot | CE | 6 records within 10km, last recorded 2021 (NSW DCCEEW 2024); Species or species habitat known to occur within area (10km) (Cth DCCEEW 2024a) | Moderate - suitable habitat within the locality. | Moderate | Moderate | No – surveys ongoing. Project Site is not within mapped Important Habitat for the species so is unlikely to be significant to the species. |
| *Leipoa ocellata* | Malleefowl | V | Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Low - associated plant community types do not occur within the project footprint | Low | Low | No - no surveys required. |
| *Lophochroa leadbeateri leadbeateri* | Major Mitchell's Cockatoo (eastern) | E | Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Low - associated plant community types do not occur within the project footprint | Low | Low | No - no surveys required. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Melanodryas cucullata cucullata* | South-eastern Hooded Robin, Hooded Robin (south-eastern) | E | 65 records within 10km, last recorded 2024 (NSW DCCEEW 2024); Species or species habitat known to occur within area (10km) (Cth DCCEEW 2024a) | Known | High | High | Known – Recorded during surveys |
| *Neophema chrysostoma* | Blue-winged Parrot | V | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable habitat within the locality. | Low | Low | No - no surveys required. |
| *Polytelis swainsonii* | Superb Parrot | V | 6 records within 10km, last recorded 2022 (NSW DCCEEW 2024); Species or species habitat known to occur within area (10km) (Cth DCCEEW 2024a) | High - suitable habitat on site and records within the locality. | Moderate - (removal of breeding hollows) | Moderate | No – surveys ongoing. |
| *Pycnoptilus floccosus* | Pilotbird | V | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - outside species known range. | Low | Low | No - no surveys required. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Rostratula australis* | Australian Painted Snipe | E | Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable (wetland) habitat present within the site | Low | Low | No - no surveys required. |
| *Stagonopleura guttata* | Diamond Firetail | V | 205 records within 10km, last recorded 2013 (NSW DCCEEW 2024); Species or species habitat known to occur within area (10km) (Cth DCCEEW 2024a) | High - suitable habitat on site and records within the locality. | High | High | No – surveys ongoing. |
| Fish | | | | | | | |
| *Bidyanus bidyanus* | Silver Perch, Bidyan | E | Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Moderate - species known to occur in river system. | Moderate | Moderate | No |
| *Galaxias rostratus* | Flathead Galaxias | CE | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - outside species known range. | Low | Low | No |
| *Maccullochella macquariensis* | Trout Cod | E | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Moderate - species known to occur in river system. | Low | Low | No |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Maccullochella peelii* | Murray Cod | V | Species or species habitat known to occur within area (10km) (Cth DCCEEW 2024a) | Moderate – species known to occur in river system. | Moderate | Moderate | No |
| *Macquaria australasica* | Macquarie Perch | E | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - outside species known range | Low | Low | No |
| Mammals | | | | | | | |
| *Chalinolobus dwyeri* | Large-eared Pied Bat, Large Pied Bat | E | Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable habitat on site. | Low | Low | No - no surveys required. |
| *Dasyurus maculatus maculatus (SE mainland population)* | Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) | E | Species or species habitat known to occur within area (10km) (Cth DCCEEW 2024); 1 record within 10km, last recorded 1996 (NSW DCCEEW 2024) | Low - associated plant community types do not occur within the project footprint | Low | Low | No - no surveys required. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Nyctophilus corbeni* | Corben's Long-eared Bat, South-eastern Long-eared Bat | V | Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Low - associated plant community types do not occur within the project footprint | Low | Low | No - no surveys required. |
| *Petauroides volans* | Greater Glider (southern and central) | E | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Moderate - some suitable habitat present on site | Moderate | Moderate | No – surveys ongoing. |
| *Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)* | Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) | E | Species or species habitat known to occur within area (10km) (Cth DCCEEW 2024); 9 records within 10km, last recorded 2022 (NSW DCCEEW 2024) | Known - suitable habitat present on site. | High | High | Known – recorded during surveys |
| *Pseudomys novaehollandiae* | New Holland Mouse, Pookila | V | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low | Low | Low | No - no surveys required. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Pteropus poliocephalus* | Grey-headed Flying-fox | V | Foraging, feeding or related behaviour likely to occur within area (10km) (Cth DCCEEW 2024a) | Known | High - likelihood of impact to foraging habitat. No impact to breeding habitat (not present within the Project Site) | High - likelihood of impact to foraging habitat. | Known – recorded during surveys |
| Reptiles | | | | | | | |
| *Aprasia parapulchella* | Pink-tailed Worm-lizard, Pink-tailed Legless Lizard | V | Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Moderate - suitable habitat present on site, surveys ongoing | Moderate | Moderate | Not recorded to date – surveys ongoing |
| *Tympanocryptis mccartneyi* | Bathurst Grassland Earless Dragon | CE | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - outside species known range | Low | Low | No – surveys ongoing. |
| Migratory species | | | | | | | |
| *Gallinago hardwickii* | Latham's Snipe, Japanese Snipe | V / Migratory Wetlands | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable (wetland) habitat present within the site | Low | Low | No - no surveys required. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Apus pacificus* | Fork-tailed Swift | Migratory Marine Birds | 2 records within 10km, last recorded 1999 (NSW DCCEEW 2024); Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Moderate – however, the species is almost exclusively aerial and unlikely to utilise habitat on site | Moderate – collision risk (transmission line) | Low | No – surveys ongoing |
| *Hirundapus caudacutus* | White-throated Needletail | V / Migratory Terrestrial | 11 records within 10km, last recorded 2001 (NSW DCCEEW 2024); Species or species habitat likely to occur within area (10km) (Cth DCCEEW 2024a) | Moderate - however the species is almost exclusively aerial and unlikely to utilise habitat on site | Moderate – collision risk (transmission line) | Low | No – surveys ongoing |
| *Calidris melanotos* | Pectoral Sandpiper | Migratory Wetlands | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable (wetland) habitat present within the site | Low | Low | No - no surveys required. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Calidris acuminata* | Sharp-tailed Sandpiper | V / Migratory Wetlands | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable (wetland) habitat present within the site | Low | Low | No - no surveys required. |
| *Actitis hypoleucos* | Common Sandpiper | Migratory Wetlands | 1 record within 10km, last recorded 1984 (NSW DCCEEW 2024); Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable (wetland) habitat present within the site | Low | Low | No - no surveys required. |
| *Calidris ferruginea* | Curlew Sandpiper | CE / Migratory Wetlands | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Low - no suitable (wetland) habitat present within the site | Low | Low | No - no surveys required. |

| Scientific name | Common name | EPBC Act status | Source | Likelihood to occur | Likelihood of direct impact | Likelihood of indirect impact | Recorded during surveys |
|---|---|---|---|---|---|---|---|
| *Motacilla flava* | Yellow Wagtail | Migratory Terrestrial | Species or species habitat may occur within area (10km) (Cth DCCEEW 2024a) | Moderate – suitable habitat present within the site | Moderate | Moderate | No – surveys ongoing. |

## Species likely to occur

For EPBC listed entities with a moderate or higher likelihood of occurrence within the Project Site, the area of potential suitable habitat within the Disturbance Footprint is detailed in Table 2. As surveys are ongoing, the exact area of suitable habitat is not known and therefore a conservative approach has been taken and areas have been calculated based of all potential habitat (associated PCTs or vegetation formation). As more surveys are completed, the number of entities with a moderate or higher likelihood of occurrence and these areas of habitat are likely to decrease.

Table 2 Potential suitable habitat for species with a moderate or higher likelihood of occurrence

| Scientific name | Common name | EPBC Act status | Suitable habitat | Area (ha) potential suitable habitat within Disturbance Footprint |
|---|---|---|---|---|
| Threatened ecological communities | | | | |
| White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | - | CE | PCT 3376, 3387, 3406 and 3396 in low (partial) moderate and high condition | 540 ha comprising:<br>- 122 ha in high condition<br>- 201 ha in moderate condition<br>- 217 ha in low condition |
| Threatened species | | | | |
| Flora | | | | |
| *Leucochrysum albicans* subsp. *tricolor* | Hoary Sunray, Grassland Paper-daisy | E | n/a | 58 individuals recorded |
| Fauna | | | | |
| Birds | | | | |
| *Anthochaera phrygia* | Regent Honeyeater | CE | Dry sclerophyll forests and grassy woodlands | 743 |
| *Aphelocephala leucopsis* | Southern Whiteface | V | Dry sclerophyll forests and grassy woodlands | 743 |
| *Callocephalon fimbriatum* | Gang-gang Cockatoo | E | PCTs 85, 3376, 3387, 3396, 3406, 3534, 3535, 3734, 4081, 4088, 4152 in low, moderate and high condition | 733 |
| *Calyptorhynchus lathami lathami* | South-eastern Glossy Black-Cockatoo | V | PCTs 3376, 3387, 3396, 3406, 3534, 3535, 3734, 4081, 4088, 4152 in low, moderate and high condition | 732 |
| *Climacteris picumnus victoriae* | Brown Treecreeper (south-eastern) | V | Dry sclerophyll forests and grassy woodlands | 743 |
| *Grantiella picta* | Painted Honeyeater | V | Dry sclerophyll forests and grassy woodlands | 743 |

| Scientific name | Common name | EPBC Act status | Suitable habitat | Area (ha) potential suitable habitat within Disturbance Footprint |
|---|---|---|---|---|
| *Lathamus discolor* | Swift Parrot | CE | Dry sclerophyll forests and grassy woodlands | 743 |
| *Melanodryas cucullata cucullata* | South-eastern Hooded Robin, Hooded Robin (south-eastern) | E | Grassy woodlands | 557 |
| *Polytelis swainsonii* | Superb Parrot | V | PCTs 85, 3387 3396, 3406, 3535, 3734, 4081, 4088, 4152 in low, moderate and high condition | 588 |
| *Stagonopleura guttata* | Diamond Firetail | V | Grassy woodlands | 557 |
| Fish | | | | |
| *Bidyanus bidyanus* | Silver Perch, Bidyan | E | Rivers and streams within the Project Site | N/A |
| *Maccullochella macquariensis* | Trout Cod | E | Rivers and streams within the Project Site | N/A |
| *Maccullochella peelii* | Murray Cod | V | Rivers and streams within the Project Site | N/A |
| Mammals | | | | |
| *Petauroides volans* | Greater Glider (southern and central) | E | PCTs 3376, 3387, 3534,3535, 3734, 4152 in low, moderate and high condition | 259 |
| *Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)* | Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) | E | PCTs 85, 3376, 3387, 3396, 3406, 3534, 3535, 3734, 4081, 4088, 4152 in low, moderate and high condition | 733 |
| *Pteropus poliocephalus* | Grey-headed Flying-fox | V | All areas of PCTs 85, 3376, 3387, 3396, 3406, 3534, 3535, 3734, 4081, 4088, 4152 | 752 |
| Reptiles | | | | |
| *Aprasia parapulchella* | Pink-tailed Worm-lizard, Pink-tailed Legless Lizard | V | PCTs 3376, 3387, 3406, 3534, 3535 3734, 4152 in low, moderate and high condition | 713 |
| Migratory species | | | | |
| *Apus pacificus* | Fork-tailed Swift | Migratory Marine Birds | N/A | N/A - collision risks only |

| Scientific name | Common name | EPBC Act status | Suitable habitat | Area (ha) potential suitable habitat within Disturbance Footprint |
|---|---|---|---|---|
| *Hirundapus caudacutus* | White-throated Needletail | V / Migratory Terrestrial | N/A | N/A - collision risks only |
| *Motacilla flava* | Yellow Wagtail | Migratory Terrestrial | Grassy woodlands | 557 |

## Preliminary assessments of significance

Threatened Ecological Communities

*An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:*

- *Reduce the extent of an ecological community*

The Proposed Action would remove up to 540 ha of potential Box Gum Woodland. The national extent of Box Gum Woodland is approximately 416,326 ha, with 250,729 ha (60%) occurring in NSW (DECCW, 2010a). The Proposed Action would impact less than 0.13% of extant Box Gum Woodland on a national scale, and 0.22% of extant Box Gum Woodland in NSW.

As such, the Proposed Action would impact upon a relatively small proportion of Box Gum Woodland present within NSW and across its range however it would still result in a reduction of the extent of the CEEC.

- *Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines*

EPBC Act Box Gum Woodland situated within the Project Site is already subject to considerable fragmentation as a result of existing land use within the locality.

Of the Box Gum Woodland occurring within the Indicative Disturbance Footprint, approximately 37% is in moderate condition, 23% is in high condition and 40% is in low condition. Despite the existing condition of Box Gum Woodland within the Indicative Disturbance Footprint, the Proposed Action is likely to result in further fragmentation and degradation of this TEC given the scale of the Proposed Action and the proportion of the Indicative Disturbance Footprint that comprises the transmission line. Linear infrastructure (including transmission lines and roads) is known to cause ecosystem fragmentation (Nayak et al., 2020). This in turn leads to habitat and biodiversity loss, as well as edge effects, alterations to hydrology patterns and the disruption of ecosystem processes (Nayak et al., 2020; Laurance et al., 2009; Goosem, 2007). It is unlikely that proposed clearing would result in the complete isolation of any Box Gum Woodland remnants.

Rather, the size of remaining fragments would be further reduced making these more susceptible to ongoing degradation and stochastic events and may potentially compromise long-term viability.

- *Adversely affect habitat critical to the survival of an ecological community*

The "White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland National Recovery Plan" (DECCW, 2010a) advises that all areas of Box Gum Woodland which meet minimum condition criteria as well as some degraded areas should be considered critical to the survival of the Box Gum Woodland. The Proposed Action may directly impact up to 540 ha of Box Gum Woodland (0.22% of extant Box Gum Woodland within NSW) (TSSC, 2006). Remaining Box Gum Woodland remnants may be subject ongoing indirect impacts through mechanisms such as edge effects, resource partitioning, changes in

community structure and reduced genetic exchange (Goosem, 2007; Laurance et al., 2009). Therefore, the Proposed Action would likely adversely affect habitat considered critical to the survival of Box Gum Woodland.

- *Interfere with the recovery of an ecological community.*

Recovery and threat abatement actions for Box Gum Woodland includes (TSSC, 2006):

- Protection, expansion and connection of remnants of the ecological community
- Avoiding the use of fertilisers or soil disturbance in or near remnants
- In very small derived grassland sites, avoiding planting trees as they may reduce the floral diversity through competition for light, nutrients and water
- Planting and other rehabilitation-focussed disturbance focussed on the edge of patches, expanding them, rather than within the patches
- Exclusion of continuous grazing from remnants, strategic grazing in areas containing diverse native understorey and burning/slashing to allow tree seedlings, forbs and shrubs to establish.

The Proposed Action is considered likely to interfere with the abovementioned recovery actions given it would result in further direct and indirect impacts to Box Gum Woodland.

Threatened species: South-eastern Glossy Black-Cockatoo, Gang-gang Cockatoo, Koala, Superb Parrot, Greater Glider, Pink-tailed Legless Lizard

*An action is likely to have a significant impact on a species if there is a real change or possibility that it will:*

- *Lead to a long-term decrease in the size of a population**

As the number of individuals and size of any populations of these threatened species within the Project Site are currently unknown, it is considered possible that there could be a large enough number which would be impacted and therefore lead to a long-term decrease in the size of a population.

- *Reduce the area of occupancy of the species/important population**

The Proposed Action has the potential to reduce the area of occupancy of an important population of Glossy Black-Cockatoo via the removal of suitable nesting hollows within the Indicative Disturbance Footprint.

The Proposed Action has the potential to reduce the area of occupancy of the Gang-gang Cockatoo across the species range. This is due to the removal of up to 731 ha of potential foraging and breeding habitat within the Indicative Disturbance Footprint.

Due to the removal of up to 588 ha of potential foraging and breeding habitat within the Indicative Disturbance Footprint, there is the potential that the Proposed Action would reduce the area of occupancy of an important population of Superb Parrot.

The area of occupancy of the Greater Glider is estimated at 1,531,600 ha and the species distribution extends from around Proserpine in Queensland, south through NSW and the Australian Capital Territory, to Wombat State Forest in central Victoria. Given that the Indicative Disturbance Footprint is entirely located within NSW and not near the outer limits of the species range, it is likely that any impacts on the area of occupancy of the species, as a result of the Proposed Action, would be negligible. The Proposed Action may reduce the area of occupancy for Greater Glider by up to 0.02%.

The area of occupancy for Koala is estimated at 1,940,000 ha and the distribution of the listed population extends from the coastal and inland areas of Queensland, through New South Wales and the Australian Capital Territory. Other populations, which are not listed as threatened under the EPBC Act, occur to the south, in Victoria and South Australia. Given that the Indicative Disturbance Footprint is not located near the outer limits of the species range, it is likely that any impacts on the area of occupancy of the species as a result

of the Proposed Action would be negligible. The Proposed Action may reduce Koala area of occupancy by up to 0.04%.

The national area of occupancy for the Pink-tailed Legless Lizard is unknown (TSSC, 2015c). The Indicative Disturbance Footprint intersects the species likely distribution, both at the edges and entirely within the distribution. Any population of the Pink-tailed Legless Lizard would be considered part of an important population. The clearing associated with the Proposed Action may impact up to 713 ha of potential habitat for the Pink-tailed Legless Lizard, which is considered to be a significant amount given that there is no data on the area of occurrence for this species, and populations are typically disjunct and small.

Therefore, the Proposed Action may reduce the area of occupancy of an important population of Pink-tailed Legless Lizard if present.

- *Fragment an existing population* into two or more populations*

The Proposed Action would increase fragmentation of remnants of vegetation, through the removal of native vegetation for the proposed reservoirs, transmission line and associated infrastructure. Furthermore, areas of contiguous bushland would be intersected by the Proposed Action. This will impact the threatened species in different ways as outlined below.

The Glossy Black-Cockatoo, Gang-gang Cockatoo and Superb Parrot are all highly mobile species. The Proposed Action comprises the construction of reservoirs, a transmission line, access roads and associated infrastructure which would be considered highly permeable for most fauna species. As the proposed infrastructure is considered permeable for these highly mobile species, the Proposed Action is unlikely to pose any significant barriers that would limit the species use of potential foraging and breeding habitat within or outside the Indicative Disturbance Footprint. Therefore, the fragmentation of an existing important population of either Glossy Black-Cockatoo or Superb Parrot, into two or more populations as a result of the Proposed Action is considered unlikely. Similarly, the fragmentation of an existing population of Gang-gang Cockatoo into two or more populations as a result of the Proposed Action is considered unlikely.

As Greater Glider populations are sensitive to fragmentation, the species has little ability to traverse between cleared fragments and population viability is low in small remnants (Commonwealth DCCEEW, 2022l). Given the overall size of vegetation clearing within the Indicative Disturbance Footprint and the area of habitat impacted, it is considered possible that the Proposed Action may fragment an existing population into two or more populations.

Koala populations are of low density, widespread and fragmented in many locations. The Proposed Action would increase fragmentation of remnants of vegetation, through the removal of native vegetation for the proposed reservoirs, transmission line and associated infrastructure. Furthermore, areas of contiguous bushland would be intersected by the Proposed Action. Koala has a large home range, and the area of clearing for the Proposed Action is relatively narrow when compared to adjacent similar habitat and therefore may not significantly impede movement for the species. However, given the length of the Indicative Disturbance Footprint, size of the proposed reservoirs, and consideration of additional Proposed Actions in the locality, the increase in fragmentation may influence Koala movement and habitat use throughout the region. Given this, fragmentation of an existing Koala population into two or more populations is considered possible.

Due to significant clearing within their natural distribution, habitat fragmentation is considered to be a key threat for Pink-tailed Legless Lizard. Any population of this species present in the Indicative Disturbance Footprint would be considered part of an important population. Therefore if recorded, the Proposed Action may result in the fragmentation of an existing important population into two or more populations.

- *Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Within the Indicative Disturbance Footprint, the Proposed Action would result in the removal of up to 732 ha of potential foraging and breeding habitat the Glossy Black-Cockatoo. The removal of suitable hollow-bearing trees within the Indicative Disturbance Footprint in potential foraging and breeding habitat, coupled with the species' exclusive requirement for one or two feed trees in a region, has the potential to decrease the availability of habitat to such that the species may decline.

The removal of up to 733 ha of potential foraging and breeding habitat within the Indicative Disturbance Footprint has the potential to decrease the availability of habitat to such an extent that the Gang-gang Cockatoo may decline.

The Proposed Action would result in the clearing of up to 588 ha of potential foraging and breeding habitat within the Indicative Disturbance Footprint. Therefore, the Proposed Action has the potential to modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that Superb Parrot may decline.

Considering the Proposed Action may impact up to 259 ha of suitable habitat for the Greater Glider, compared to the habitat available in the surrounding environment, it is likely that the Proposed Action would decrease habitat to the extent that the species may decline.

The Proposed Action would result in the clearing of up to 733 ha of potential habitat for Koala, including Koala use trees (used for sheltering, dispersal, foraging and potentially breeding). The species is known to use paddock trees and small remnants to move between patches, however, clearing of native vegetation has the potential to increase the risk of over-browsing (overuse of trees leading to defoliation), disease, predation, vehicle strike and altered movement corridors. Given the Proposed Action will present a barrier to fauna movement as well as permanently remove foraging and shelter resources, the action is likely to decrease the extent of habitat for Koala that the species may decline in the region.

The Proposed Action may directly impact Pink-tailed Legless Lizard and its habitat through the removal of grassland habitats and surface rock, and there may be localised impacts to habitat connectivity. Therefore, the Proposed Action may remove the availability of habitat to the extent that the species is likely to decline.

- *Interfere with the recovery of the species.*

Conservation Advice (Commonwealth DCCEEW, 2022j) details strategies to achieve the recovery objectives for the Glossy Black-Cockatoo. The removal of known and potential habitat including breeding hollows may impede or interfere with targeted recovery actions directed at minimising habitat clearance and increase competition for nest hollows.

There are no made or adopted Recovery Plans for the Gang-gang Cockatoo, although the SPRAT database indicates a Recovery Plan is required. The species has been assigned a landscape-managed species by the Saving Our Species (SOS) program, which suggests specific management practices at a site, regional and state scale. As the Proposed Action may result in the removal of up to 732 ha of potential foraging and breeding habitat, using the descriptions outlined by the SOS program, the Proposed Action is considered to have the potential to interfere with the recovery of the species.

Although various avoidance and mitigation measures would be implemented to reduce the impact on the Superb Parrot (such as pre-clearing surveys, survey for and avoidance of nest trees where possible), the Proposed Action may result in the clearing of up to 588 ha of potential foraging and breeding habitat within the Indicative Disturbance Footprint. These areas may contain potential nest trees and preferred foraging habitat. There is therefore the potential that the Proposed Action would interfere with the recovery of the Superb Parrot.

Although various avoidance and mitigation measures would be implemented to reduce the impact on the Greater Glider, the Proposed Action would result in the clearing of potential habitat. As outlined in the

approved conservation advice for the Greater Glider (Commonwealth DCCEEW, 2022l), this habitat is considered critical to the survival of the species. It is therefore considered likely that the Proposed Action would interfere with the recovery of the species.

There is a National Recovery Plan for the Koala (DAWE, 2022e), which identifies the specific objectives and strategies to meet conservation objectives. The Proposed Action has the potential for clearing in native forests and to remove important habitat and increase fragmentation. These effects would be greatest at the local level and would not affect the species across its entire range. The Proposed Action is therefore unlikely to interfere with the recovery strategies detailed in the Recovery Plan.

There is no current national Recovery Plan for the Pink-tailed Legless Lizard. Conservation objectives are outlined in the previous Recovery Plan for the Pink-tailed Legless Lizard (Osborne & Jones, 1995). The Proposed Action may impede or interfere with any of targeted recovery actions for the species through the potential reduction in habitat and population numbers.

*For species listed as vulnerable, this criteria relates to an important population.

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