Terrestrial Vertebrate Fauna Survey
Salt Water Gully Combined and Extended

Prepared for Talison Lithium
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EXECUTIVE SUMMARY

Talison Lithium Pty Ltd (Talison) currently operates a lithium mine at Greenbushes, situated approximately 250 km south of Perth in south-west Western Australia. Talison is proposing to increase output from the Greenbushes Mine and has proposed construction of a new water storage and waste rock landform to accommodate additional process water requirements and storage of waste rock from mining operations; herein this is referred to as the 'study area'. To support environmental approvals, Onshore Environmental Consultants Pty Ltd (Onshore Environmental) was commissioned by Talison to review data from all previous fauna surveys and undertake additional basic field surveys and targeted searches for conservation significant fauna.

Previous survey work within the study area included a two-phase detailed vertebrate fauna survey undertaken in October 2022 and April 2023 (Onshore Environmental 2023a). The southern extent of an adjacent single phase detailed fauna survey in November and December 2023 also intersected the drainage line habitat along the eastern sector of the study area (Onshore Environmental 2024a).

There was a total of 103 vertebrate fauna species recorded during the previous field surveys, including seven amphibians, nine reptiles, 71 birds and 16 mammals.

Three vertebrate fauna species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Western Australian *Biodiversity Conservation Act 2016* (BC Act) were recorded from the study area: Forest Red-tailed Black-cockatoo *(Calyptorhynchus banksii naso)* listed as Vulnerable, and Baudin's Black-cockatoo *(Zanda baudinii)* and Carnaby's Black-cockatoo *(Zanda latirostris)* both listed as Endangered. The Forest Red-tailed Black-cockatoo was the most common of the three Black-cockatoo species recorded, with Baudin's Black-cockatoo occurring less commonly within the same forest habitat. The Carnaby's Black-cockatoo was only recorded foraging within the Pine plantation in May 2024.

The Australasian Bittern *(Botaurus poiciloptilus)* listed as Endangered under the EPBC Act and the BC Act, was recorded along the main drainage channel of Salt Water Gully approximately 160 metres (m) outside the south-eastern boundary of the study area. It is likely to utilise tributaries of the Blackwood River but prefers areas of dense riparian vegetation. Riparian vegetation within the study area has been heavily disturbed historical and the current condition is rated as degraded.

One species listed as Conservation Dependant under the BC Act was recorded from the study area: Brush-tailed Phascogale *(Phascogale tapoatafa wambenger).* This species occurs within the Jarrah-Marri Forest on hillslope habitat as it is reliant on hollow-bearing trees.

Additionally, two Priority 4 fauna species, as recognised by the Department of Biodiversity Conservation and Attractions (DBCA), were recorded from the study area: Rakali/Water Rat *(Hydromys chrysogaster)* and Quenda *(Isoodon fusciventer).* The Water Rat was recorded around man-made dams and drainage lines within an area of Salt Water Gully. Quenda were more widely distributed through forested areas, lower slopes and drainage flats.

Two other conservation significant fauna species were determined from the desktop review as being likely to occur within the study area, but were not recorded during the field surveys: Chuditch *(Dasyurus geoffroii)* listed as Vulnerable under the EPBC Act and BC Act, and

Western Brush Wallaby *(Notamacropus irma)* listed as Priority 4 by DBCA. The Western Brush Wallaby has been recorded from two nearby survey areas and is almost certain to occasionally utilise the study area. The Chuditch was recorded on a motion sensor camera in February 2018 from a sandy drainage flat 4.4 km west of the study area. It has not been recorded during any of the 14 subsequent fauna surveys conducted around the Greenbushes mining operations, including a recent survey that targeted the original location (Onshore Environmental 2024b). Chuditch was not recorded in the study area during a two-phase detailed fauna survey or associated surveys that have included 19 motion sensor cameras deployed within the study area. Hence, is unlikely that Chuditch occurs within the study area.

Three introduced fauna species (feral animals) were recorded within the study area during the field survey: European Rabbit (*Oryctolagus cuniculus*), Red Fox (*Vulpes vulpes)* and Black Rat *(Rattus rattus).*

The largest proportion of the study area comprised cleared farmland with annual pasture for grazing domestic stock and parkland cleared areas (351.8 ha or 68.5%of the study area), with a smaller area that had been planted to plantation (46.3 ha or 9% of the study area). There were two naturally occurring fauna habitats within the study area; Jarrah-Marri Forest on hillslopes (71.1 ha or 13.8% of the study area) where condition was rated as very good to degraded, and Drainage lines (34.4 ha or 6.7% of the study area) where vegetation condition was rated as degraded.

Remnant native vegetation occurring across the study area was deemed to be high quality foraging habitat for all three species of black-cockatoos. Two trees within the study area contained hollows with chew marks and were classified as *known nesting trees*. An additional 19 trees were identified as *suitable nesting trees* for use by Black-cockatoos.

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1.0 INTRODUCTION

1.1 Background

Talison is a Western Australian mining company with operations based adjacent to the town of Greenbushes in south-west Western Australia. The Greenbushes Mine is located approximately 250 km south of Perth and 80 km south-east of the port of Bunbury (Figure 1). The site comprises a number of open cut mining operations for tantalum, tin and spodumene (lithium). An underground tantalum operation has also been developed but is currently under care and maintenance. The Greenbushes pegmatitie is the world's largest hard rock tantalum resource and the largest and highest-grade lithium minerals resource in the world. Minerals produced at Talison's Greenbushes Mine can be found in many different applications including mobile phones, computers, surgical implants, electronic devices, glassware, ceramics and batteries.

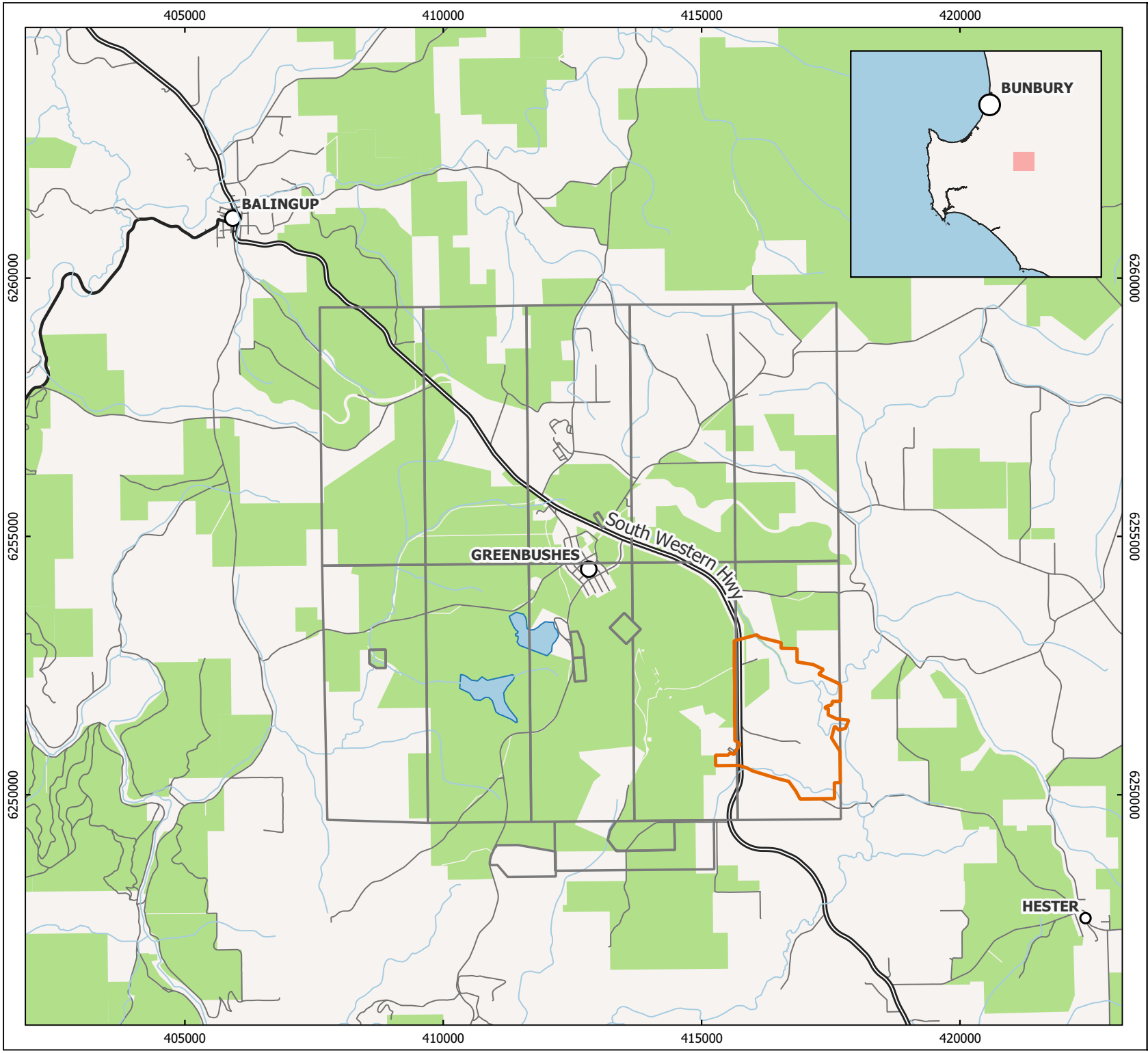
Talison is proposing an expansion at the Greenbushes Mine aimed at increasing supply of lithium to the world market. Longer term mine planning has identified the requirement for additional process water supply and storage capacity for waste rock from mining operations. The study area is located to the east of Floyd's Waste Rock Landform and intersects the South Western Highway, Greenbushes State Forest and privately owned farmland (Figure 1).

A two phase detailed vertebrate fauna survey was recently completed across a large portion of the study area supporting native vegetation (Onshore Environmental 2023c), with the southern extent of a second single phase detailed vertebrate fauna survey intersecting the eastern sector of the study area (Onshore Environmental 2024a). The two surveys are listed below:

- Onshore Environmental (2023a) New Water Storages Detailed Vertebrate Fauna Survey: a two phase detailed vertebrate fauna survey with field survey work completed in October 2022 and April 2023; and
- Onshore Environmental (2024a) Detailed Vertebrate Fauna Survey, Additional Areas North: a single phase detailed vertebrate fauna survey with field survey work completed in November-December 2023.

1.2 Survey Objective

To support future environmental approvals, Onshore Environmental was commissioned by Talison to undertake a basic level vertebrate fauna survey aimed at collating data from all previous survey work within the revised study area boundary, and undertaking basic and targeted field surveys to review currency of previously recorded data. Two additional field visits were undertaken in May and November 2024.



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TALISON LITHIUM
Salt Water Gully

Figure 1
Location of Study Area

Legend

- SWG Study Area
- Talison Lithium Tenements
- State Forest

0 1 2 3 4 km

1:100,000

Datum: GDA 2020
Projection: MGA Zone 50

Date: 12/12/2024
Status: Final
Figure: 1
Sheet Size: A4
File Name Reference: TA_SWG_Fig1_location.pdf
Drawn by: JW
Requested by: DB
Data sources: Data WA - Legislated Lands and Waters (DBCA-011), Mining Tenements (DMIRS-003), Geoscience Australia Surface Hydrology Polygons and lines

2.0 EXISTING ENVIRONMENT

2.1 Climate

The study area occurs on a boundary between the dry Mediterranean region to the north which experiences six dry months per year, and the moderate Mediterranean region to the south which experiences four dry months per year (Beard 1981). The Greenbushes region has cool wet winters and hot dry summers. Average annual rainfall for the town of Greenbushes is 923.0 mm (1893-2021) (Bureau of Meteorology [BOM] 2024), with the majority of falls occurring during the winter months of June and July associated with cold fronts moving across the south-west of Western Australia. No rainfall data from 2022 onwards was recorded at the Greenbushes weather station. The nearest available rainfall data is from Bridgetown (approximately 10 km south-east of the study area). Average annual rainfall for Bridgetown is 723.4 mm (1998-2024) (Bureau of Meteorology [BOM] 2024).

Annual rainfall at Bridgetown between 2018 and 2023 has ranged from 585.4 mm to 945.2 mm, with four of the six years recording below average annual totals. The 2023/2024 Summer and Autumn period at Bridgetown was very dry with just 7.6 mm recorded for the five-months from December 2023 to April 2024, compared to the long-term average of 114.5 mm for the same period (Figure 2). Above average rainfall was received in June, August and November 2024 (Figure 2).

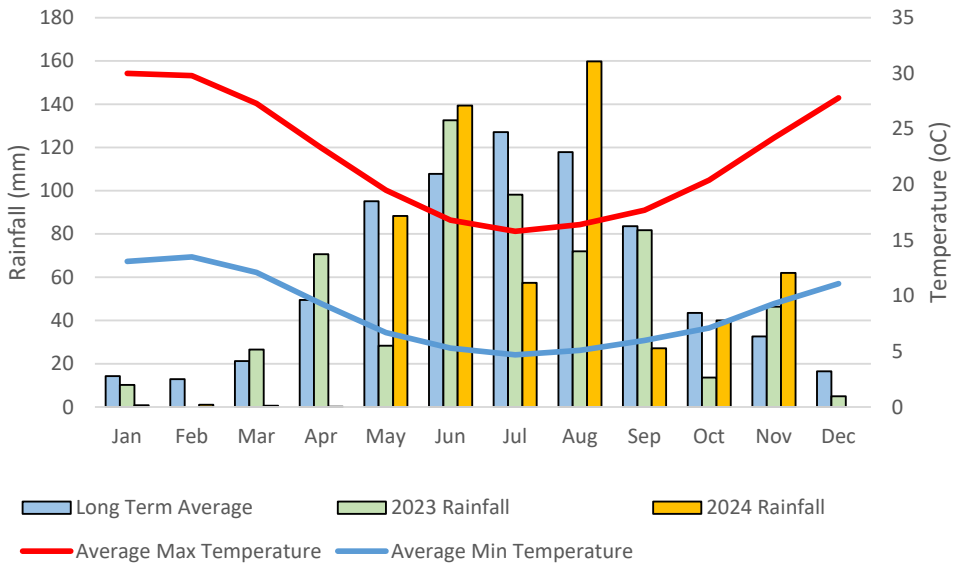


Figure 2 Rainfall and temperature data from the Bridgetown Weather Station (Bureau of Meteorology 2024).

2.2 Biogeographic Regions

The latest version of the Interim Biogeographic Regionalisation for Australia divides Australia into 89 bioregions based on climate, geology, landform, native vegetation and species information, and includes 419 sub-regions (Department of the Environment and Energy 2018). The bioregions and sub-regions are the reporting unit for assessing the status of native ecosystems and their level of protection in the National Reserve System. The study area is located within the Southern Jarrah Forest (JF2) sub-region within the Jarrah Forest bioregion. The Southern Jarrah Forest sub-region is described as "Duricrusted plateau of Yilgarn Craton characterised by Jarrah-Marri forest on laterite gravels and, in the eastern part, by Marri-Wandoo woodlands on clayey soils. Eluvial and alluvial deposits support *Agonis* shrublands. In areas of Mesozoic sediments, Jarrah forests occur in a mosaic with a variety of species-rich shrublands. The climate is Warm Mediterranean" (Hearn, Comer and Beecham 2002). The vegetation of the sub-region is described as "Jarrah-Marri forest in the west grading to Marri and Wandoo woodlands in the east. There are extensive areas of swamp vegetation in the south-east, dominated by Paperbarks and Swamp Yate. The understorey component of the forest and woodland reflects the more mesic nature of this area. The majority of the diversity in the communities occurs on the lower slopes or near granite soils where there are rapid changes in site conditions" (Hearn *et al*. 2002).

2.3 Land Use

The major land uses in the Greenbushes region are state forest, residential, mining and agriculture. The study area intersects the Greenbushes State Forest, with the northern sector excised for the current MDE. There are privately owned rural lots occurring in the southwest and eastern sector of the study area, all predominantly cleared for annual pasture. Nearby towns include Bridgetown (10 km to the south-east) and Balingup (10 km to the north-west).

2.4 Landforms and Soils

Tille (1996) has mapped soils of the Wellington-Blackwood District, which includes the town sites of Greenbushes and Bridgetown on its southern boundary. The study area occurs within the Hester Sub-system of the Darling Plateau System, and consists of undulating ridges and hill crests formed on laterite and gneiss which typically slope downwards off the main plateau into the surrounding Lowden Valleys System. The soils are mostly loamy gravels, sandy gravels and loamy earths.

The geology of the Greenbushes area is described as Archean granite of the Yilgarn Block (Wilde and Walker 1982) and the major soil types have been mapped by Tille (1996). The study area intersects four subsystems, all of the Darling Plateau system within the Western Darling Range zone:

- Dwellingup subsystem (DW) - broad, undulating lateritic divides with gravels and sands;
- Grimwade (GR) - valleys (30-70 m deep) with low gradients (5-20%), loams and loamy gravels;
- Hester (HR) - lateritic and granitic ridges and hill crests with gravels and loams; and

- Yarragil (YG) - minor valleys in lateritic terrain with gentle to low slopes and swampy floors. Soils are mainly loamy gravels and sandy gravels with some loamy earths and deep sands.

2.5 Flora and Vegetation

The study area occurs in the Menzies Sub-district of the Darling Botanical District, in the South-West Botanical Province (Beard 1981). The Menzies Sub-district (Southern Jarrah Forest) covers a total area of 26,572 km^2, of which 18,715 km^2 (70%) originally supported jarrah and jarrah-marri forest (Beard 1990). It is estimated that approximately 61% of the total area has been cleared since European settlement, mainly in the valleys which are free of laterite, leaving the forest intact on laterised higher plateau levels.

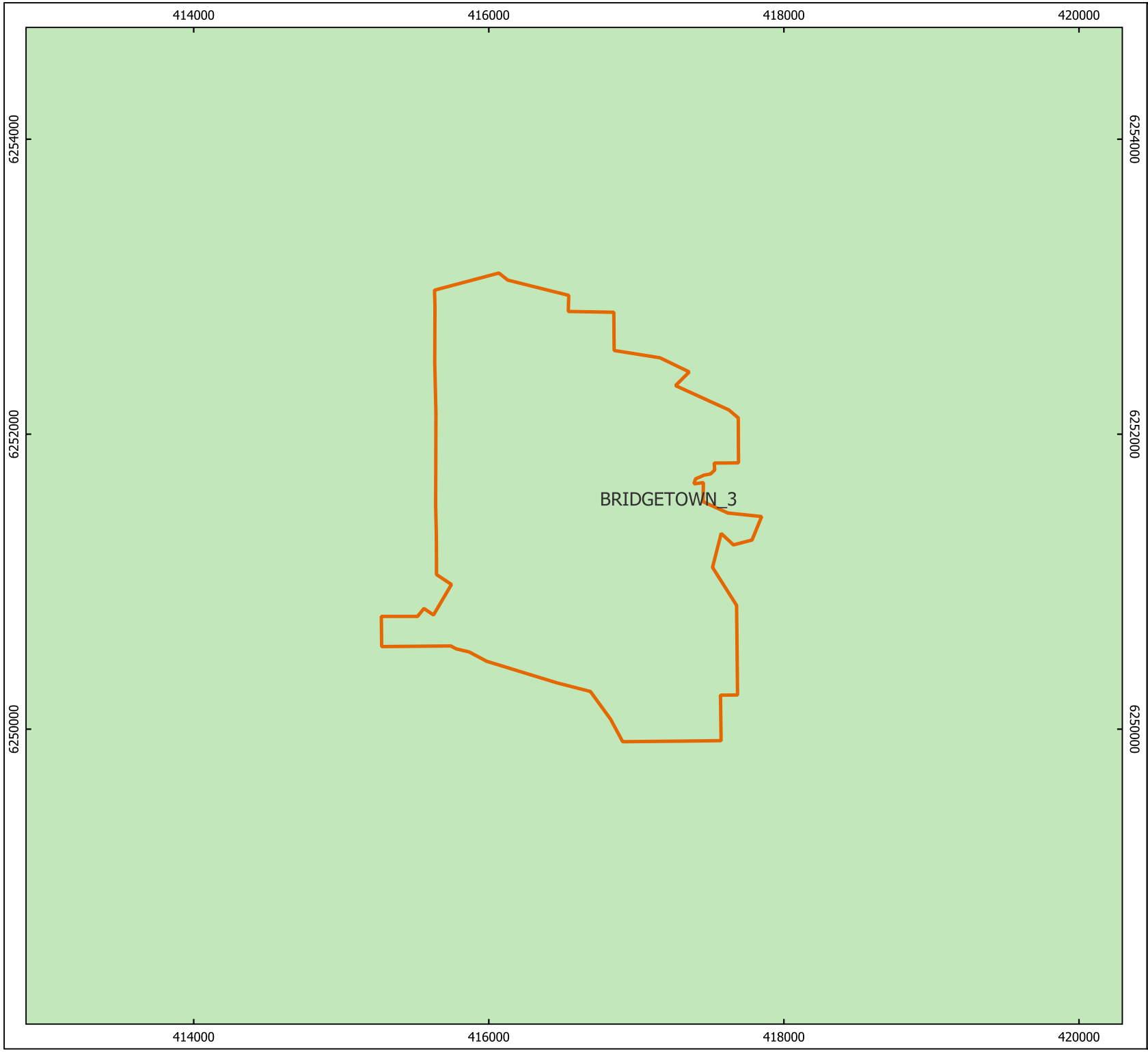
The Menzies Sub-district is characterised by Jarrah stands on laterite with some Marri and Wandoo woodlands. Valley soils are often richer and Blackbutt (*Eucalyptus patens)* is more dominant in these areas. Flooded Gum (*Eucalyptus rudis)* is common along stream banks and Bullich (*Eucalyptus megacarpa)* is also present in some areas. Within the Greenbushes area vegetation is dominated by Jarrah *(Eucalyptus marginata)* and Marri *(Corymbia calophylla)* forest over the tall shrubs bull banksia *(Banksia grandis)* and snotty gobble *(Persoonia longifolia).* The lower understorey strata generally contains a range of plant genera including *Hakea, Acacia, Xanthorrhoea, Adenanthos, Hovea, Macrozamia, Leucopogon, Bossiaea, Daviesia, Grevillea, Patersonia, Styphelia* and *Kennedia.*

Vegetation of the study area was mapped by Beard during mapping of the Swan area (Beard 1981, Figure 3). Vegetation forms part of the Bridgetown 3 vegetation association described as Medium Jarrah-Marri forest.

Vegetation complexes of the southern jarrah forest have most recently been defined by Heddle *et al.* (1980) and updated by Mattiske and Havel (1998). Mattiske and Havel (1998) describe the study area as occurring within the Dwellingup, Hester, Balingup, Catterick and Grimwade complexes (Table 1, Figure 4). Vegetation of these complexes is generally Open Forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on lateritic uplands with *Eucalyptus rudis* and *Banksia littoralis* on valley floors.

Table 1 Vegetation complexes occurring within the study area (Mattiske and Havel 1998).

Complex	Description
Dwellingup	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on lateritic uplands in mainly humid and subhumid zones.
Hester	Tall open forest to open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on lateritic uplands in perhumid and humid zones.
Balingup	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on slopes and woodland of *Eucalyptus rudis* on the valley floor in the humid zone.
Catterick	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* mixed with *Eucalyptus patens* on slopes, *Eucalyptus rudis* and *Banksia littoralis* on valley floors in the humid zone.
Grimwade	Tall open forest to open forest of *Corymbia calophylla-Eucalyptus marginata* subsp. *marginata* with *Eucalyptus patens* on slopes and *Eucalyptus rudis* over some *Agonis flexuosa* on lower slopes in the humid zone.



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TALISON LITHIUM
Salt Water Gully

Figure 3
Beard (1981) vegetation associations represented within the study area

Legend

Study Area

Beard Vegetation Associations

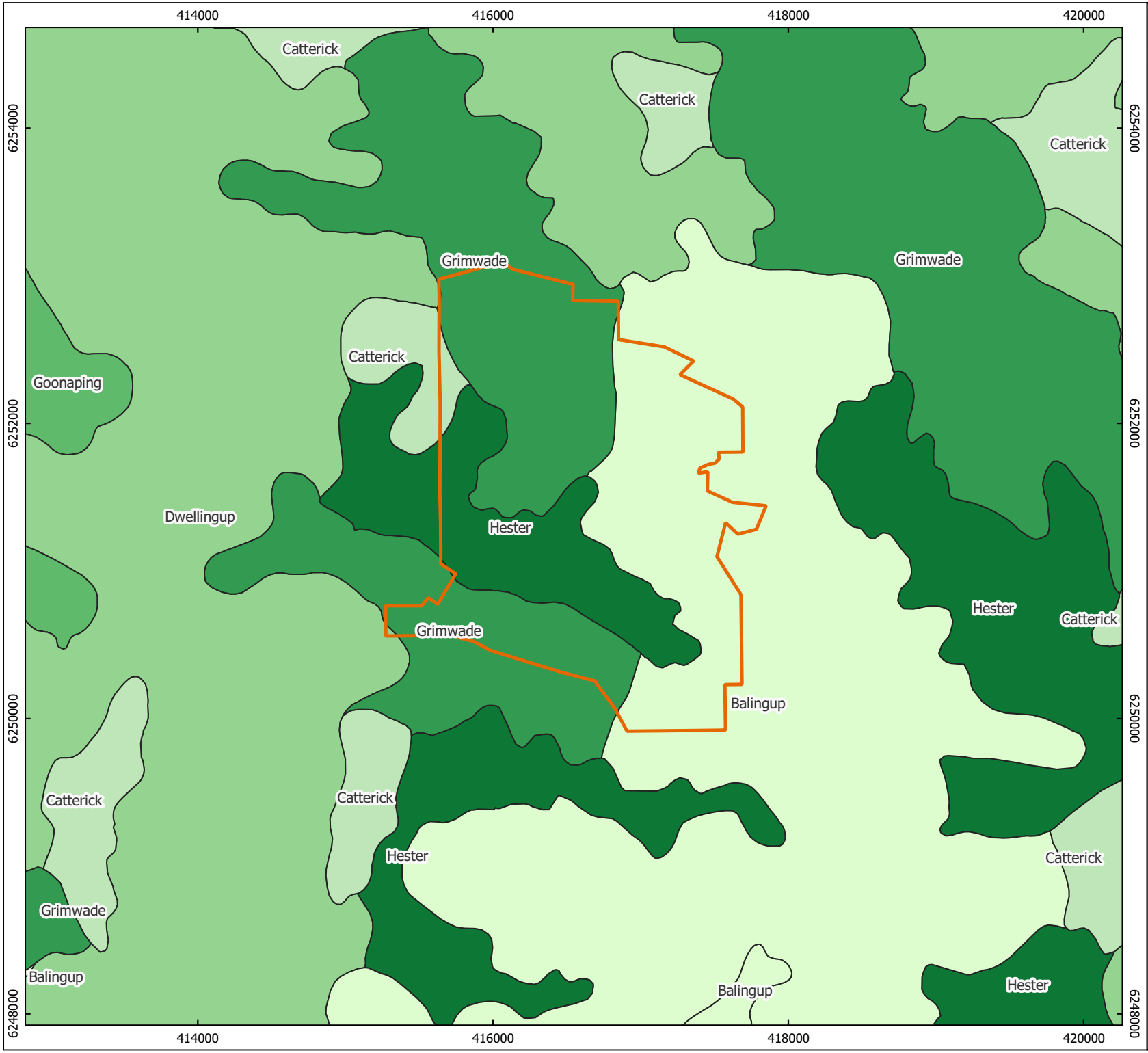
BRIDGETOWN_3

0 0.5 1 1.5 km

1:35,000

Datum: GDA 94
Projection: MGA Zone 50

Date: 12/12/2024
Status: Final
Figure: 3
Sheet Size: A4
File Name Reference: TA_SWG_Fig3_beard.pdf
Drawn by: JW
Requested by: DB
Data sources: Data WA - Pre-European Vegetation (DPIRD-006)



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TALISON LITHIUM
Salt Water Gully

Figure 4
Mattiske and Havel (1998) vegetation complexes represented within the study area.

Legend

- Study Area

Vegetation Complexes

- Balingup
- Catterick
- Dwellingup
- Goonaping
- Grimwade
- Hester

0 0.5 1 1.5 km

1:35,000

Datum: GDA 94
Projection: MGA Zone 50

Date: 12/12/2024
Status: Final
Figure: 4
Sheet Size: A4
File Name Reference: TA_SWG_Fig4_mattiske.pdf
Drawn by: JW
Requested by: DB

3.0 METHODOLOGY

3.1 Legislation and Guidance Statements

The detailed vertebrate fauna survey was carried out in a manner that was compliant with EPA requirements for the environmental surveying and reporting of vertebrate fauna in Western Australia:

- Statement of Environmental Principles, Factors and Objectives (EPA 2020a);
- Technical Guidance - Terrestrial vertebrate fauna surveys for environmental impact assessment (EPA 2020b); and
- Environmental Factor Guideline Terrestrial Fauna (EPA 2016).

Other guidelines relevant to the survey include:

- Department of the Environment, Water, Heritage and the Arts (DEWHA) (2010a) Survey Guidelines for Australia's Threatened Bats;
- DEWHA (2010b) Survey Guidelines for Australia's Threatened Birds;
- DCCEEW (2022) Referral guidelines for three WA threatened Black-cockatoo species;
- DEWHA (2010c) Survey Guidelines for Australia's Threatened Frogs;
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) (2011a) Survey Guidelines for Australia's Threatened Mammals; and
- DSEWPC (2011b) Survey Guidelines for Australia's Threatened Reptiles.

3.2 Desktop Assessment

3.2.1 Literature Review

A review of all relevant publicly available literature in close proximity to the study area was undertaken, including a search of the Department of Water and Environmental Regulation's Index of Biodiversity Surveys for Assessment (DWER 2022). Previous surveys were reviewed to provide context for the survey and to inform an assessment of habitat types potentially occurring within the study area.

Two detailed vertebrate fauna surveys intersect the study area (Onshore Environmental 2023a, 2024a). The current fauna survey has collated relevant data from the two previous surveys, and included basic level field surveys aimed at updating previous mapping content. It also included additional targeted conservation significant fauna searches using infra-red motion sensor cameras and black-cockatoo habitat assessments.

Another 20 previous vertebrate fauna surveys have been completed within the Greenbushes mining leases between 2011 and 2024 which provide excellent context for fauna potentially occurring within the study area. Results from all previous surveys are described in more detail in Section 4.1.1. In addition to the above fauna survey work, Onshore Environmental has recently undertaken a detailed flora and vegetation survey within the study area (Onshore Environmental 2022). This survey provided fine scale vegetation type mapping which was used to inform habitat mapping and the positioning of motion sensor cameras during the May

2024 fauna assessment.

3.2.2 Database Searches

The desktop assessment included searches of several databases relating to significant fauna previously collected or described within, or in close proximity to, the study area. For this report the search was extended beyond the study area to place fauna values into a local and regional context. The following databases were searched:

- DBCA (2022) Threatened and Priority Fauna database search (30 km radial search);
- EPBC Act Protected Matters database (50 km radial search) (DCCEEW 2024);
- DBCA (2024) Dandjoo Biodiversity Repository (50 km radial search);
- BirdLife Australia (2024) Birdata dataset (50 km radial search); and
- Atlas of Living Australia (2024) database (50 km radial search).

The results from the above database searches and the literature review were compiled to provide a list of fauna species that could potentially occur within or surrounding the study area.

3.2.3 Assessment of Likelihood of Occurrence in the Study Area

A list of conservation significant species occurring within a 50 km radius of the study area was compiled from the above database searches and literature review. The likelihood of each conservation significant species occurring within the study area was assessed based on habitat availability, the age, proximity and number of previous records, previous assessments and the regional occurrence of the species. Habitat availability and suitability was assessed based on aerial imagery and previous knowledge of the study area and surrounds.

3.2.4 Assessment of Conservation Significance

The conservation significance of fauna and ecological communities are classified at a Commonwealth, State and Local level on the basis of various Acts and Agreements, including:

International Level:

- IUCN: The IUCN ‘Red List’ lists species at risk under nine categories (status codes) (Appendix 1); and
- International Conventions: Migratory taxa listed under the Japan-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA), Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA), and Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Commonwealth Level:

- EPBC Act: The DCCEEW lists Threatened fauna, which are determined by the Threatened Species Scientific Committee according to criteria set out in the Act. The Act lists fauna that are considered to be of conservation significance under one of six categories (Appendix 1).

State Level:

- Biodiversity Conservation (BC) Act: At a State level, native fauna species are protected under the BC Act – Wildlife Conservation Notice. A number of species are assigned an additional level of conservation significance based on a limited number of known populations and the perceived threats to these locations (Appendix 1); and

- DBCA Priority list: DBCA produces a list of Priority species that have not been assigned statutory protection under the BC Act. Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added under Priorities 1, 2 or 3. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been removed from the threatened species list for other taxonomic reasons, are placed in Priority 4. These species require regular monitoring (see Appendix 1).

Local Level:

- Species may be considered of local conservation significance because of their patterns of distribution and abundance. Although not formally protected by legislation, such species are acknowledged to be in decline as a result of threatening processes, primarily habitat loss through land clearing.

3.3 Survey Methodology

3.3.1 Timing

A two phase detailed vertebrate fauna survey occurring entirely within the study area was undertaken between the 18th and 28th of October 2022 and the 12th and 20th of April 2023 (Onshore Environmental 2023a). A second single phase detailed vertebrate fauna survey was undertaken predominantly to the north-east, intersecting the eastern sector of the study area (Onshore Environmental 2024a). Both surveys are described in more detail in Section 4.1.1. A basic fauna assessment was completed between the 17th and 19th of May 2024, noting that motion sensor cameras remained in place through to the 19th of June 2024. An additional site visit was undertaken on the 8th November 2024.

3.3.2 Surveying of Study Area

The combination of fauna surveys employed a variety of systematic and opportunistic sampling techniques. Systematic sampling refers to data methodically collected over a fixed time period in a discrete habitat type, using an equal or standardised sampling effort. Opportunistic sampling includes data collected non-systematically within and outside fixed sampling sites. Sampling techniques included a combination of trapping, opportunistic searching, bird censusing, nocturnal surveying, and specialist equipment that included bioacoustics audio recorders (to detect bat echolocation calls) and infra-red motion sensor cameras.

The entire study area was ground truthed and assessed over multiple site visits to document habitat characteristics and record any observations of fauna species via primary or secondary evidence. Targeted searches (as detailed below) were also undertaken for conservation significant fauna species identified during the database review.

3.3.3 Targeted Fauna Searches

Targeted searches were undertaken for conservation significant fauna species throughout the study area. The study area was traversed on foot, providing an opportunity to opportunistically record evidence of Threatened and Priority listed fauna and undertake closer examination of specific habitat features likely to support conservation significant fauna. The following parameters were recorded for all conservation significant fauna:

- Co-ordinate location;

- Description of habitat in which the species was located; and
- Photograph of the species, evidence of species and/or habitat.

Further details of specific methods used to target conservation significant species are described below.

3.3.4 Camera Traps

Motion cameras were set up throughout the study area. Cameras were strategically placed to target habitat features that were most likely to be utilised by species of conservation significance, including potential den sites (Chuditch), trees with suitable hollows (Phascogales), and dense undergrowth in drainage areas (Quenda). Motion cameras were baited with universal bait. A total of 19 motion sensor cameras were installed throughout the study area between 2022 and 2024 including seven in October 2022 and five in April 2023 (Onshore Environmental 2023a), one in November-December 2023 (Onshore Environmental 2024a), and six in May-June 2024 (Figure 5).

3.3.5 Trapping Program

A two phase detailed vertebrate fauna survey was undertaken between the 18th and 28th of October 2022 and the 12th and 20th of April 2023 (Onshore Environmental 2023a). Four trapping sites were established within the study area (Figure 5), with two sites within each of the habitat types. Trap location was chosen to target high quality habitat with consideration of habitat features likely to support a variety of species. Each trapping site consisted of split trap lines comprising five drift fences. Trap lines were split to provide greater spatial representation within the habitat and to target areas of high-quality microhabitats (i.e. areas with shade, dense vegetation cover, logs and leaf litter cover). Each drift fence comprised two pit-fall traps (20 litre buckets), two funnel traps and one small Elliot (Elliot A) trap. Pit fall traps were located approximately four meters apart, with funnels at each end of the drift fence. A small Elliot trap was strategically located at each trap line. Funnel traps were covered with branches and debris was placed in the bottom of pit fall traps to provide shade for captures. Traps were checked early in the day and were cleared within four hours of sunrise.

A total of 100 traps (40 pit-falls, 40 funnel and 20 small Elliot) were deployed for eight nights across two sites (Sites 1 and 2) and seven nights at two sites (Sites 3 and 4) during the first phase of the survey. During the second phase of the survey a total of 100 traps were deployed for eight nights across the four sites.

3.3.6 Fauna Habitat Mapping

Habitat assessments were undertaken throughout the study area to document habitat characteristics and map the fauna habitat types. The fauna habitat mapping utilised high-resolution aerial photography of the study area at a scale of 1:10,000. Ground-truthing of the study area was completed during the survey with habitat characteristics recorded. Vegetation type mapping undertaken by Onshore Environmental during a previous survey was utilised to further aid in characterising habitat mapping across the full extent of the study area (Onshore Environmental 2022a). The suitability of habitat and presence of habitat features for species of conservation significance was noted as part of the habitat assessment.

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TALISON LITHIUM
Salt Water Gully

Figure 5
Locations ofsample sites within the study area.

Legend

- Study Area
- Sample SItes
  - Camera
  - Trapping

0 250 500 750 m

1:20,000

Datum: GDA 94
Projection: MGA Zone 50

Date: 12/12/2024
Status: Final
Figure: 5
Sheet Size: A4
File Name Reference: TA_SWG_Fig5_sites.pdf
Drawn by: JW
Requested by: DB

3.3.7 Tree Hollow Searches and Tree Density Assessments

The DCCEEW provides guidelines for the study of actions that may result in impact to Black-cockatoos (for assessment under the EPBC Act). The survey and analysis reported here has been conducted with reference to the existing guidelines (DAWE 2022).

The suitability of habitat for breeding was assessed by recording known, suitable and potential nesting trees for Black-cockatoos within the study area. A ranking system developed by Onshore Environmental was utilised, with scores later converted to match categories as described within the EPBC Act referral guidelines for Black-cockatoos (DAWE 2022, Table 2). The field survey focused on identifying breeding habitat for Black-cockatoos assessed by targeting habitat trees that had a diameter at breast height (DBH) of 50 cm or greater (or 30 cm or greater for *Eucalyptus wandoo)*. Due to the large size of the study area all trees >50 cm were not identified and marked. The survey focused on identifying trees of a size and structure likely to support large hollows. Target tree species included Marri, Jarrah and any other *Corymbia* and *Eucalyptus* species of a suitable size. Large trees with the potential to contain hollows were marked using a handheld GPS. These trees were examined using binoculars to identify the presence of hollows and evidence of use by Black-cockatoos (e.g. chewing around hollow entrance, scarring and scratch marks on trunks and branches).

Where suitable or chewed hollows were identified, trees were further inspected using a drone where possible to further assess the suitability of hollows for nesting and to confirm signs of use. The following data was recorded:

- tree location;
- tree species;
- DBH; and
- Nest tree rank and corresponding category defined in the EPBC Act referral guidelines for Black-cockatoos (DAWE 2022, Table 2).

Additionally, in order to determine approximate densities of potential future breeding habitat (i.e. trees with a DBH ≥50 cm, or ≥30 cm for *Eucalyptus wandoo*), tree counts were conducted at randomly located points within the study area. Tree counts provide an indication of the current and future value of fauna habitats for use as Black-cockatoo breeding habitat. Tree counts were conducted within a 0.25 hectare area and tree numbers within these areas were then extrapolated to provide an average density per hectare.

Table 2 **Ranking system used for the assessment of potential nest trees for Black-cockatoos** (adapted from Bamford Consulting Ecologists 2020) and equivalent category defined in the federal referral guideline (DAWE 2022).

Adapted from Bamford Consulting Ecologists (2020)		**Referral guideline for 3 WA threatened Black-cockatoo species (DAWE 2022)**	
Category	**Description**	**Category**	**Description**
Used	Black-cockatoo breeding activity recorded	Known nesting trees	Trees (live or dead but still standing) which contains a hollow where Black-cockatoo breeding has been recorded or which demonstrates evidence of breeding (i.e. showing evidence of use through scratches, chew marks or feathers).
Chewed	Hollow of suitable size and orientation for use by Black-cockatoos and shows evidence of chew marks on edge of hollow or trunk indicating likely recent or historical usage.		
Suitable	Tree with a hollow of suitable size and orientation considered to be of sufficient depth for use by Black-cockatoos. However, there is no evidence of use.	Suitable nesting trees	Trees with suitable nesting hollows present, although no evidence of use. Note that any species of tree may develop suitable hollows for breeding.
		Suitable nest hollow	Any hollow with dimensions suitable for use for nesting by Black-cockatoos. Characteristics of hollows used by each species is available in the SPRAT database. Suitable nest hollows are only found in live trees with a DBH of at least 500 mm.
Potentially suitable	Tree contains a hollow that is potentially suitable for nesting i.e. diameter of 10 cm or greater. However, these hollows are considered unlikely to be used by Black-cockatoos as nesting sites for one or more of the following reasons: • small entrance (generally <20cm); • deemed unlikely to have a large internal space for nesting, or sufficient depth inside the hollow (i.e. less than 0.5 m); • evidence of use by other competitive species i.e. bees or other birds; • orientation of the hollow; • and/or the presence of branches or other obstructions. While these hollows are not currently high-quality nest sites they have the potential to become nest sites in the future and may support other species of conservation significance.	Potential nesting trees	Trees that have a suitable DBH to develop a nest hollow, but do not currently have hollows. Trees suitable to develop a nest hollow in the future are 300-500 mm DBH. Note that many species of eucalypt may develop suitable hollows for breeding.
Unsuitable	Tree contains hollows unsuitable for nesting due to hollow entrance diameter <10cm or hollow examined by drone and determined to be unsuitable for nesting. These hollows may be utilised by other species and have the potential to become Black-cockatoo nest sites in the longer term.		

3.3.8 Assessment of Black-cockatoo Foraging Habitat

Vegetation within the study area was assessed for foraging value. Black-cockatoos forage widely in suitable vegetation in the southwest region and leave distinctive marks on dropped feeding material such as Marri fruit. Targeted searches were made for these signs throughout the study area, and the location of recent feeding residue was recorded. Results from the field survey were used to calculate foraging habitat scores using two different methodologies:

- the foraging quality scoring tool template recommended within the EPBC Act referral guidelines for black-cockatoos (DAWE 2022); and
- the foraging habitat score recently developed by the DCCEEW in consultation with species experts in Western Australia and used to calculate the value of an offset site.

Foraging Habitat Quality Score - EPBC Act referral guidelines for black cockatoos (DAWE 2022)

The foraging quality scoring tool has been developed to allow habitat quality to be quantified. The tool identifies habitat as high-quality foraging habitat (score of 5-10) or lower quality foraging habitat (score of 0-4). If the survey area contains native vegetation used for foraging at any time by one or more of the Black-cockatoo species, and is larger than one hectare in size, it is considered at face value to be of very high quality, important for recovery and therefore as having a score of ten. The scoring tool then considers the following five contextual factors that may lessen the quality of that habitat (Appendix 2):

- Foraging potential;
- Connectivity;
- Proximity to breeding;
- Proximity to night roosting; and
- Impacts from significant plant disease.

To provide a final habitat quality score points are subtracted (from the starting score of ten) for each of the contextual factors where the required evidence is not proven to occur at the site.

Offset Habitat Scoring System - DCCEEW in consultation with species experts in WA

The score used to calculate the value of an offset provides a numerical value that reflects the significance of vegetation as foraging habitat for each of the black cockatoo species, and was recently developed by the DCCEEW in consultation with species experts in Western Australia. The foraging value of the vegetation depends upon the type, percentage foliar cover and health of trees and/or vegetation condition, and can be influenced by the context of the site such as the availability of foraging habitat nearby. The scoring system has three components drawn from the DCCEEW offset calculator (DCCEEW 2020, see Appendix 3):

- A score between zero and seven relating to site condition;
- A score between zero and three relating to site context; and
- Species stocking rate which is related to confirmation of presence or absence at the site for each of the three species of black cockatoo.

Site condition is considered the key factor in determining the quality of habitat for the three black cockatoo species. Species stocking rate is considered only in terms of presence or

absence of the species and does not add to the total score. The species, or strong indicators of the species, must be present for an offset to be considered suitable.

3.3.9 Survey Constraints

The EPA Technical Guidance (EPA 2020b) list potential limitations that field surveys may encounter. Limitations associated with the detailed vertebrate fauna survey are addressed in Table 3.

Table 3 Relevance of limitations, as identified by EPA (2020b), to the vertebrate fauna survey.

Variable	Impact on Survey Outcomes
Availability of data and information	NOT A LIMITATION The desktop searches provided an extensive species list, background information and regional context for the study area. Twenty vertebrate fauna surveys have been completed in close proximity to the study area, including a combination of detailed, basic and targeted level surveys previously completed by Onshore Environmental. No significant issues with the reliability or accuracy of the desktop searches or previous surveys were identified. However, it is acknowledged that there may be errors in the data presented from these sources. Where required species lists from previous surveys and database searches were reviewed and nomenclature and conservation significance were updated.
Experience levels	The personnel who executed the survey are practitioners suitably qualified in their respective fields; Mr Mike Brown (Principal Zoologist >fifteen years' experience) and Ms Jessica Waters (Principal Ecologist >10 years' experience). Both have undertaken numerous surveys in close proximity to the study area and throughout Western Australia.
Scope (fauna groups sampled)	NOT A LIMITATION All allocated tasks were achieved during the survey, with trapping, acoustic surveys, foraging, nocturnal surveys, bird surveys and targeted searches undertaken.
Timing, weather, and season.	NOT A LIMITATION The study area has been covered by a two phase detailed fauna survey and follow-up basic fauna survey. The first phase of the detailed survey was undertaken in October 2022 which is within the primary survey period for the region for reptiles, birds and mammals (EPA 2020b). The second phase of the detailed survey was undertaken in April 2023. Additional basic surveys were completed in May-June, November 2024. Timing and seasonality was within recommended periods.
Disturbance to site which may affect survey results	NOT A LIMITATION None of the disturbances within the study area were a constraint to the completeness of the survey.
Adequacy of the survey intensity and proportion of survey achieved	NOT A LIMITATION Trapping was completed over two phases with seven or eight nights for all sites as recommended under the technical guidelines (EPA 2020b). Additional tasks completed from the scope of works included camera trapping, nocturnal surveys, bioacoustics recordings and habitat mapping across the extent of the study area.
Remoteness and/or access	NOT A LIMITATION There were no access restrictions experienced during the survey. The study area was accessible by vehicle and on foot.
Proportion of fauna identified, recorded or collected	NOT A LIMITATION A large proportion of the total fauna present is likely to have been recorded within the study area given the two phase detailed level survey supported by follow-up basic fauna surveys.

Variable	Impact on Survey Outcomes
Problems with data and analysis, including sampling biases	NOT A LIMITATION There were no problems encountered with the collection or analysis of survey data. All previous survey data recorded at the Greenbushes mining operations has recently been collated into a single consistent database which will vastly improve the ability to analyse data and identify trends.

4.0 RESULTS

4.1 Desktop Review

4.1.1 Previous Fauna Surveys

Twenty fauna-related surveys have been completed within the active mining area and surrounding leases held by Talison between 2011 and 2024 (Table 4, Figure 6). Two of the surveys intersect the current study area (Onshore Environmental 2023a, 2024a). The results from previous vertebrate fauna surveys completed within the vicinity of the study area are summarised below and presented in Table 4.

Black-cockatoo Surveys

Numerous surveys for Black-cockatoos have been undertaken within Talison leases and in the surrounding areas. In 2018 Kirkby undertook a Black-cockatoo survey with the aim of locating and documenting feeding, breeding and roosting habitat used by Black-cockatoos within the proposed mining extension areas at the Greenbushes Mine (Kirkby 2018). Evidence of feeding residues for Forest Red-tailed Black-cockatoo, Baudin's Cockatoo and Carnaby's Cockatoo were observed within the area surveyed.

Harewood (2018a) undertook a review of previously identified hollows within and near the Mine Development Envelope (MDE). Trees with hollows previously identified as being suitable for use by Black-cockatoos were examined using a drone. The hollows were photographed and assessed to determine the potential to represent actual or possible Black-cockatoo breeding hollows. A total of 70 trees were re-inspected with 14 positively identified as showing evidence of previous use by Black-cockatoos in the form of chew marks. An additional 16 trees were assessed as being possibly suitable but showed no conclusive evidence of actual use for nesting purposes. The remaining 40 trees inspected did not appear to have suitable hollows for Black-cockatoo use.

Significant habitat tree surveys were conducted by Onshore Environmental in areas surrounding the MDE in 2018 (Onshore Environmental 2018). Significant habitat tree density was estimated by walking transects and identifying all trees with a diameter at breast height (DBH) >50 cm within the transect area. Significant tree density within state forest outside the MDE ranged from 10.6 to 21.7 trees per hectare with between 7% and 34% of significant trees supporting hollows or potential hollows.

A single known nesting hollow used by Red-tailed Black-cockatoos occurred within the TSF4 area (approximately 2 km east of the study area) within the Greenbushes leases (Onshore Environmental *unpublished data*). The hollow has since been cleared under approval as part of the TSF4 development in 2022.

Numerous additional targeted surveys for Black-cockatoo breeding hollows have been completed within the vicinity of the study area between 2013 to 2020. These surveys generally identified a small proportion of trees with DBH >50 cm and supporting hollows that were potentially suitable for nesting by Black-cockatoos. None of the surveys identified any hollows with chew marks consistent with use by Black-cockatoos as nesting trees. These surveys are listed below:

- Ecoedge (2018) Gavins Road Gravel Pit and Offset Area Fauna Survey Report;

- Ecoedge (2014) Level 1 Fauna Survey – Grimwade Road and Scrubbird Gravel Pit, Wilga West;
- Ecoedge (2016) Report of a Level 1 Fauna Survey at the proposed expanded Grimwade-Palmer Gravel Pit;
- Harewood (2020) Habitat Tree Assessment of Proposed Clearing Areas (CPS 8967/1);
- Astron Environmental Services (2013) Greenbushes to Kirup Pipeline Route Vegetation, Flora and Fauna Assessment;
- GHD (2017) Water Corporation Greenbushes to Kirup Link Biological Assessment;
- GHD (2018) Water Corporation Greenbushes to Kirup Link Additional Flora and Fauna Survey and Targeted Black-cockatoo Assessment;
- Harewood (2018a) Black-cockatoo Habitat Tree Assessment CPS 8158/1 Lot 8749 Yornup; and
- Harewood (2019) Black-cockatoo Habitat Tree Survey CPS 8178/1 Crooked Brook Rd Shire of Dardanup.

Western Ringtail Possum Surveys

Harewood (2018c) was commissioned to undertake a preliminary Western Ringtail Possum (*Pseudocheirus occidentalis*) survey within and around the Greenbushes MDE. Day time and nocturnal surveys were completed with no conclusive evidence of Western Ringtail Possums found during the survey. Much of the vegetation observed was assessed as representing poor or marginal habitat for Western Ringtail Possums. Large areas of forest surrounding the MDE have been historically logged and therefore lack a coherent mid-storey component which is a structural unit favoured by Western Ringtail Possums.

Recent Trapping Programs

As part of vegetation clearing works for the ongoing expansion of the Greenbushes Mine, Onshore Environmental has recently undertaken several pre-clearing trapping programs. The following species have been caught, relocated or observed during these trapping programs and fauna spotting for clearing works (Onshore Environmental *unpublished data*).

Mammals:

- Southern Brush-tailed Phascogale (*Phascgale tapaotafa wambenger*) - Conservation Dependant;
- Quenda (*Isoodon fusciventer*) - Priority 4;
- Common Brushtail Possum (*Trichosurus vulpecula*);
- Western Grey Kangaroo (*Macropus fuliginosus*);
- Rabbit (*Oryctolagus cuniculus*);
- Red Fox (*Vulpes vulpes*);
- Cat (*Felis catus*); and
- Pig (*Sus scrofa*).

Reptiles:

- Marbled Gecko (*Christinus marmoratus*);
- Shrubland Pale-flecked Morethia (*Morethia obscura*);
- Western Bobtail (*Tiliqua rugosa*);
- Heath Monitor (*Varanus rosenbergii*);

- South-western Crevice Skink (*Egernia napoleonis*);
- Four-toed Mulch Skink (*Hemiergis peronii peronii*); and
- Dugite (*Pseudonaja affinis*).

Birds:

- Australian Ringnecks (*Barnardius zonarius*).

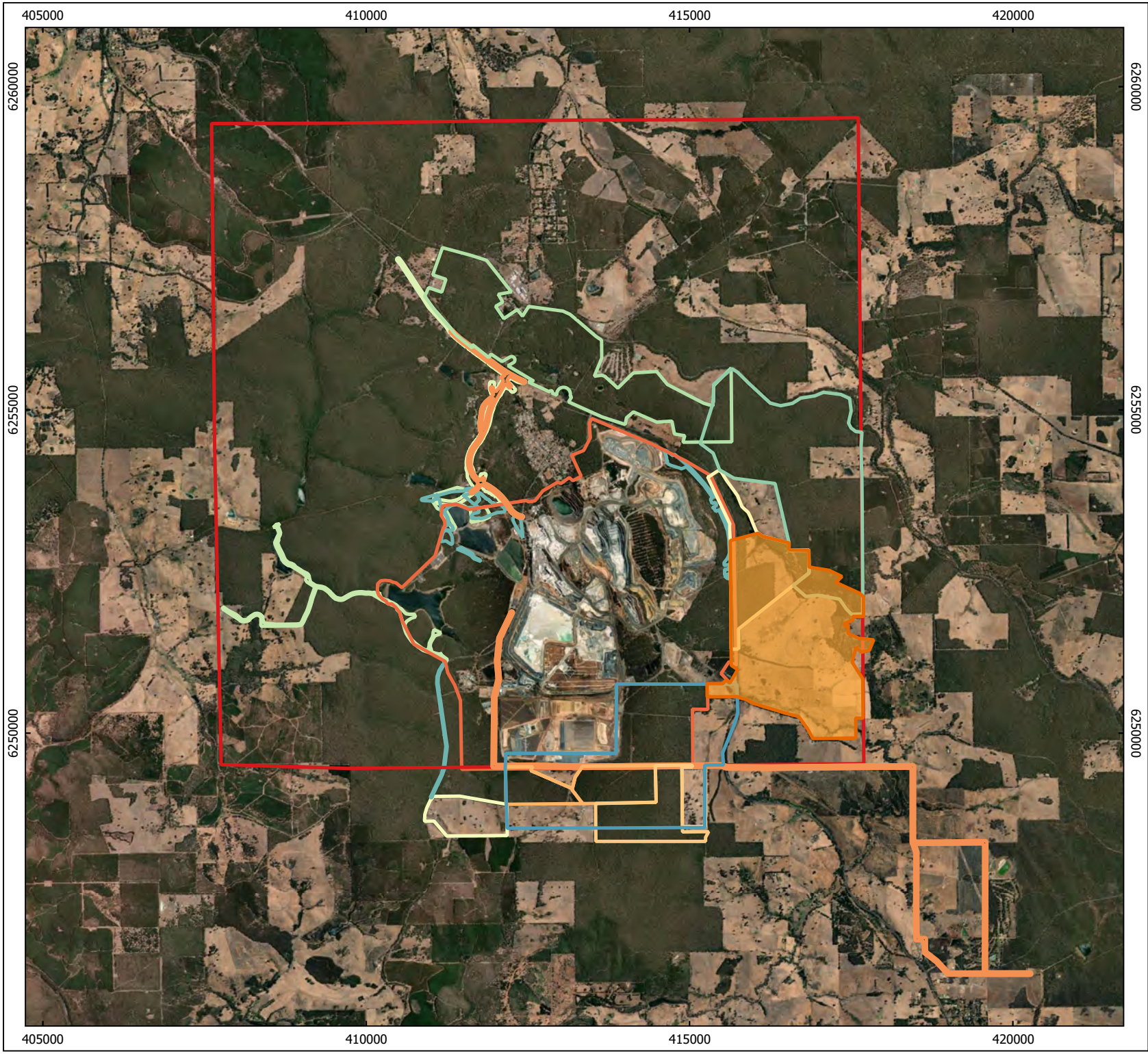
Table 4 Results from vertebrate fauna surveys previously completed within the vicinity of the study area. Shaded rows indicate surveys that intersect the study area.

Survey	Field Survey Date	Survey Level	Conservation Significant Fauna Species
Greenbushes Level 1 Fauna Survey (Biologic 2011)	13 - 17 October 2011	Basic	South-western Brush-tailed Phascogale- BC Act Conservation Dependant Forest Red-tailed Black-cockatoo - EPBC Act and BC Act Vulnerable Baudin's Cockatoo - EPBC Act and BC Act Endangered Carnaby's Cockatoo - EPBC Act and BC Act Endangered
Black-cockatoo Survey (Kirkby 2018)	22 January - 12 February 2018	Targeted	Forest Red-tailed Black-cockatoo - EPBC Act and BC Act Vulnerable Baudin's Cockatoo - EPBC Act and BC Act Endangered Carnaby's Cockatoo - EPBC Act and BC Act Endangered
Greenbushes Black-cockatoo Tree Hollow Review (Harewood 2018a)	11 - 19 June 2018	Targeted	14 known nesting trees 16 suitable nesting trees
Greenbushes Preliminary Western Ringtail Possum Surveys (Harewood 2018c)	11, 13 and 15 June 2018	Targeted	South-western Brush-tailed Phascogale - BC Act Conservation Dependant
Greenbushes Vertebrate Fauna, SRE and Subterranean Fauna Desktop Assessment (Biologic 2018a)	Not relevant	Desktop	Not recorded
Greenbushes Targeted Vertebrate and SRE Invertebrate Fauna Survey (Biologic 2018b)	12 - 21 February 2018	Targeted	Chuditch - EPBC Act and BC Act Vulnerable Western Ringtail Possum - EPBC Act and BC Act Critically Endangered[1] South-western Brush-tailed Phascogale - BC Act Conservation Dependant Quenda - DBCA Priority 4 Western Brush Wallaby - DBCA Priority 4 Forest Red-tailed Black-cockatoo - EPBC Act and BC Act Vulnerable
Targeted Western Ringtail Possum Survey Greenbushes Mine (Onshore Environmental 2018)	20-22 September , 3-5 November 2018	Targeted WRP	None
Significant Tree Survey (Onshore Environmental 2019a)	10-11 September 2018	Black-cockatoo Habitat Tree Assessment	Recording potential habitat tree density

[1] This record is of scats possibly belonging to the species, and therefore the record is unconfirmed.

Survey	Field Survey Date	Survey Level	Conservation Significant Fauna Species
Level 1 Vertebrate Fauna Survey Greenbushes Infrastructure Corridors (Onshore Environmental 2019b)	4 - 7 October 2018	Basic	One suitable nesting tree
Black-cockatoo Habitat Tree Assessment Greenbushes Mine Rehabilitation Materials Stockpiles (Onshore Environmental 2022a)	22 August 2022	Black-cockatoo Habitat Tree Assessment	Cleared farmland with no suitable nesting trees No Black-cockatoos recorded by direct observation
Basic Vertebrate Fauna Survey Greenbushes Mine Expansion Area 2 and Area 4 (Onshore Environmental 2022b)	26 October - 2 November, 29 November 2021	Basic	Forest Red-tailed Black-cockatoo - EPBC Act and BC Act Vulnerable Carnaby's Black-cockatoo - EPBC Act and BC Act Endangered South-western Brush-tailed Phascogale - BC Act Conservation Dependant Western Brush Wallaby - DBCA Priority 4
New Water Storages Detailed Vertebrate Fauna Survey (Onshore Environmental 2023a)	18-28 October 2022, 12-20 April 2023	Detailed	Forest Red-tailed Black-cockatoo - Vulnerable Baudin's Cockatoo - Endangered Australasian Bittern - Endangered (500 m outside the study area) South-western Brush-tailed Phascogale - Conservation Dependent Quenda - DBCA Priority 4 Rakali/Water Rat - DBCA Priority 4
Floyd's Waste Rock Landform Extension Detailed Vertebrate Fauna Survey (Onshore Environmental 2023b)	18-28 October 2022, 12-20 April 2023	Detailed (two phase)	Forest Red-tailed Black-cockatoo - EPBC Act and BC Act Vulnerable South-western Brush-tailed Phascogale - BC Act Conservation Dependant Quenda - DBCA Priority 4
Mine Rehabilitation Stockpile and Haul Road Black-cockatoo Habitat Tree Assessment (Onshore Environmental 2023c)	10 October 2023	Black-cockatoo Habitat Tree Assessment	One suitable nesting tree Forest Red-tailed Black-cockatoo - EPBC Act and BC Act Vulnerable Baudin's Cockatoo - EPBC Act and BC Act Endangered
Targeted Camera Trap Fauna Survey New Zealand Gully (Onshore Environmental 2023d)	3 October, 4 November 2023	Targeted	South-western Brush-tailed Phascogale - Conservation Dependent Quenda - DBCA Priority 4
New Zealand Gully Black-cockatoo Habitat Tree Assessment (Onshore Environmental 2023e)	3-6 & 9 October 2023	Black-cockatoo Habitat Tree Assessment	Forest Red-tailed Black-cockatoo - Vulnerable Carnaby's Cockatoo - Endangered Baudin's Cockatoo - Endangered
Black-cockatoo Habitat Tree Assessment Additional Clearing Areas at Water Storages (Onshore Environmental 2023f)	8-9 & 15-16 December 2022	Black-cockatoo Habitat Tree Assessment	Forest Red-tailed Black-cockatoo - Vulnerable

Survey	Field Survey Date	Survey Level	Conservation Significant Fauna Species
Detailed Vertebrate Fauna Survey, Additional Areas North (Onshore Environmental 2024a)	25 November - 5 December 2023	Detailed	Forest Red-tailed Black-cockatoo - Vulnerable Carnaby's Cockatoo - Endangered Baudin's Cockatoo - Endangered Quenda - DBCA Priority 4 Rakali/Water Rat - DBCA Priority 4 Western Brush Wallaby - DBCA Priority 4
Greenbushes Operations Upcoming Clearing Approvals Targeted Vertebrate Fauna Survey (Onshore Environmental 2024b)	27 April - 6 May 2024	Targeted	South-western Brush-tailed Phascogale - Conservation Dependent Quenda - DBCA Priority 4
Greenbushes Operations Upcoming Clearing Approvals Black-cockatoo Habitat Assessment (Onshore Environmental 2024c)	28 March - 5 April 2024	Black-cockatoo Habitat Tree Assessment	Forest Red-tailed Black-cockatoo - Vulnerable Baudin's Cockatoo - Endangered



ONSHORE ENVIRONMENTAL

TALISON LITHIUM
Salt Water Gully

Figure 6
Previous flora and vegetation surveys intersecting or nearby the study area.

Legend

- Salt Water Gully Study Area

Previous Surveys

- Onshore Environmental 2012
- Onshore Environmental 2018
- Onshore Environmental 2019a
- Onshore Environmental 2021
- Onshore Environmental 2022a
- Onshore Environmental 2022b
- Onshore Environmental 2022c
- Onshore Environmental 2022d
- Onshore Environmental 2022e
- Onshore Environmental 2023a
- Onshore Environmental 2023b
- Onshore Environmental 2024a
- Onshore Environmental 2024b
- Onshore Environmental 2024c

0 1 2 3 4 km

1:80,000

Datum: GDA 94
Projection: MGA Zone 50

Date: 12/12/2024
Status: Final
Figure: 6
Sheet Size: A4
File Name Reference: TA_SWG_Fig6_surveys.pdf
Drawn by: JW
Requested by: DB

4.1.2 Potentially Occurring Significant Fauna Species

Database searches were undertaken around the study area (as detailed in Section 3.2.2) to identify conservation significant vertebrate fauna previously collected or identified within, or in the vicinity of, the study area.

The EPBC database search identified a total of 16 fauna species listed as Threatened Fauna under the EPBC Act or listed as Migratory species (DCCEEW 2024).

The DBCA searches identified a total of 30 significant fauna species including 15 species listed as Threatened Fauna under the BC Act, one species listed as Extinct, three Migratory bird species and eleven species listed as Priority Fauna or other specially protected fauna under the BC Act (DBCA 2022).

A total of 40 conservation significant species were identified from the combined desktop assessments, comprising 13 mammals, 21 birds, four fish, one reptile and one amphibian. Based on the literature review, five of these species had previously been recorded within the study area:

- Forest Red-tailed Black-cockatoo (*Calyptorhynchus banksii naso*) listed as Vulnerable under the EPBC Act and BC Act;
- Baudin's Cockatoo (*Zanda baudinii*) listed as Endangered under the EPBC Act and BC Act;
- South-western Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) listed as Conservation Dependant under the BC Act;
- Quenda (*Isoodon fusciventer*) listed as Priority 4 by the DBCA; and
- Water Rat/Rakali (*Hydromys chrysogaster*) listed as Priority 4 by the DBCA.

Based on the known distribution and habitat preference of these species and comparison with the habitats identified and mapped within the study area, four additional species were determined as *likely* to occur within the study area (Table 5):

- Carnaby's Cockatoo (*Zanda latirostris*) listed as Endangered under the EPBC Act and BC Act;
- Australasian Bittern *(Botaurus poiciloptilus)* listed as Endangered under the EPBC Act and the BC Act;
- Chuditch (*Dasyurus geoffroii)* listed as Vulnerable under the EPBC Act and BC Act; and
- Western Brush Wallaby (*Notamacropus irma*) listed as Priority 4 by the DBCA.

Further discussion of the suitability of habitat for these species is provided in Section 4.5. An additional nine species were determined as "possibly" occurring within the study area with the remaining 22 species identified as "unlikely" to occur in the study area (Table 5).

Table 5 Significant fauna previously recorded from desktop searches surrounding the study area.

Taxon Name	Common Name	EPBC Act	BC Act	DBCA	Habitat Preference	Suitable Habitat Present	Likelihood in the study area	Rationale
AMPHIBIANS								
Geocrinia lutea	Walpole Frog			P4	Dense vegetation of swamps	Yes	Unlikely	Only known from the Walpole Nornalup area. Nearby record is historical.
BIRDS								
Actitis hypoleucos	Common Sandpiper	Mi			Edge of sheltered waters, salt or fresh, estuaries, river pools, claypans, drying swamps (Johnstone & Storr 1998)	Yes	Possible	May occasionally utilise the study area. Nearest record 23 km south-east.
Botaurus poiciloptilus	Australasian Bittern	EN	EN		Reedbeds, and other vegetation in water such as cumbungi, lignum and sedges	Yes	Likely	Small amount of suitable habitat. A single nearby record is historical.
Calidris ferruginea	Curlew Sandpiper	CR & MI			Intertidal mudflats and ephemeral and permanent lakes	Yes	Unlikely	No records in close proximity.
Calyptorhynchus banksii naso	Forest Red-tailed Black-cockatoo	VU	VU		Eucalypt forests, areas of seeding Marri, Jarrah, Blackbutt, Karri and Sheoak (Johnstone & Storr 1998)	Yes	Recorded	Recent records in close proximity.
Zanda baudinii	Baudin's Black-cockatoo	EN	EN		Eucalypt forest, areas of Marri, Karri and Wandoo (Johnstone & Storr, 1998, Johnstone & Kirkby 2008)	Yes	Recorded	Recent records in close proximity.
Zanda latirostris	Carnaby's Black-cockatoo	EN	EN		Eucalypt woodlands and forests and adjacent areas of *Proteaceous* scrubs and heaths (Johnstone & Storr 1998)	Yes	Likely	Recent records in close proximity.
Chlidonias leucopterus	White-winged Tern	Mi			Coastal and inland wetlands, estuaries, salt fields, coasts, sewage ponds	Yes	Unlikely	Record 13km north-east near Balingup. Small amount of marginal habitat. May occur occasionally.
Dasyornis broadbenti litoralis	South-western Rufous Bristlebird	EX	EX		Poorly known, likely dense low coastal heath (DPAW 2014)	No	Unlikely	Presumed Extinct.

Taxon Name	Common Name	EPBC Act	BC Act	DBCA	Habitat Preference	Suitable Habitat Present	Likelihood in the study area	Rationale
Falco hypoleucos	Grey Falcon	VU	VU		Shrubland, grassland and wooded watercourses, wetlands	No	Unlikely	No suitable habitat or recent records in close proximity.
Falco peregrinus	Peregrine Falcon		OS		Inhabits areas with cliffs, gorges, timbered watercourses, drainage lines, rivers, wetlands, plains and open woodlands	Yes	Possible	Records in the general area. May occasionally utilise the study area.
Ixobrychus flavicollis australis	Black Bittern			P2	Shadowy leafy waterside trees in areas like tidal creeks, sheltered mudflats and oyster-slats	Yes	Unlikely	Historical record at Bridgetown.
Leipoa ocellata	Malleefowl	VU	VU		Semi-arid mallee scrub on the fringes of the relatively fertile areas of southern Australia	No	Unlikely	No suitable habitat or recent records in close proximity.
Lewinia pectoralis	Lewin's Rail		EX		Swamp woodlands, rushes, reeds, swamps, creeks and saltmarshes	No	Unlikely	Presumed Extinct.
Numenius madagascariensis	Eastern Curlew	CR & MI			Tidal mudflats, also reef flats, sandy beaches (Johnstone & Storr 1998)	No	Unlikely	No suitable habitat.
Oxyura australis	Blue-billed Duck			P4	Well vegetated dams, lakes and swamps	Yes	Possible	Records in the general area. Not recently recorded in close proximity.
Pandion haliaetus	Osprey	Mi			Sheltered seas around islands, tidal creeks, estuaries and saltwork ponds, and large river pools (Johnstone et al. 2013)	No	Unlikely	No suitable habitat.
Plegadis falcinellus	Glossy Ibis	Mi			Lakes and wetlands	Yes	Unlikely	Non-breeding visitor to the south-west. May occasionally occur within the study area.
Thalasseus bergii	Crested Tern	Mi			Ocean beaches, offshore islands, pelagic waters, estuaries, bays, harbours, coastal lagoons, inland on major rivers	No	Unlikely	No suitable habitat.

Taxon Name	Common Name	EPBC Act	BC Act	DBCA	Habitat Preference	Suitable Habitat Present	Likelihood in the study area	Rationale
Tringa glareola	Wood Sandpiper	Mi			Lakes and wetlands	Yes	Possible	Uncommon migrant. May occasionally utilise study area.
Tringa nebularia	Common Greenshank	Mi			Intertidal mudflats and ephemeral and permanent lakes	No	Unlikely	No suitable habitat.
Tyto novaehollandiae	Masked Owl			P3	Forests, woodlands, timbered waterways and open country	Yes	Possible	Multiple records in close proximity, however has not recently been recorded in the area.
FISH								
Galaxiella munda	Mud Minnow		VU		Permanent streams, favouring small, gently flowing creeks and streams	Yes	Unlikely	No records in close proximity.
Galaxiella nigrostriata	Black-stripe Minnow	EN			Ephemeral wetlands of the south-west (Bray and Gomon 2020)	Yes	Unlikely	Nearby records are historical.
Lepidogalaxias salamandroides	Salamanderfish		EN		Generally recorded from highly acidic, shallow, temporary pools and swamps in coastal heathland	No	Unlikely	Nearby records are historical.
Nannatherina balstoni	Balston's Pygmy Perch	VU	VU		Coastal peat flats, rivers	Yes	Unlikely	No records in close proximity.
MAMMALS								
Bettongia penicillata ogilbyi	Woylie	EN	CR		Woodlands and adjacent heaths with a dense understorey of shrubs (Woinarski et al. 2014)	Yes	Possible	Scattered records exist in the area, however most are >20 years old.
Dasyurus geoffroii	Chuditch	VU	VU		Jarrah forest, in moist, densely vegetated, steeply sloping forest and drier, open, gently sloping forest particularly in riparian vegetation (Orell & Morris 1994)	Yes	Likely	Recorded nearby (Biologic 2018a).
Falsistrellus mackenziei	Western False Pipistrelle			P4	Wet sclerophyll forests of Karri, Jarrah and Tuart eucalypts	Yes	Possible	Multiple records in the general area, no recent records in close proximity
Hydromys chrysogaster	Water Rat			P4	Permanent bodies of fresh or brackish water, subalpine streams to lakes and farm dams (Van Dyck & Strahan 2008)	Yes	Recorded	Recent record 1km east of the study area.

Taxon Name	Common Name	EPBC Act	BC Act	DBCA	Habitat Preference	Suitable Habitat Present	Likelihood in the study area	Rationale
Isoodon fusciventer	Quenda			P4	Jarrah forest and swamp habitats, preferring dense vegetation around wetland fringes and heathland (Woinarski et al. 2014)	Yes	Recorded	Previous records in close proximity (Biologic 2018a, Onshore Environmental unpublished data).
Macrotis lagotis	Bilby	VU	VU		Mixture of woodland including Jarrah, Marri and Wandoo in the south-west (Abbott 2001)	Yes	Unlikely	Not within current known distribution. No recent records in close proximity.
Myrmecobius fasciatus	Numbat	EN	EN		Eucalypts forests and woodland, notably wandoo and jarrah woodland (Van Dyck & Strahan 2008)	Yes	Unlikely	Recorded <10km to the north-west of the study area in 2006 (DBCA 2022). Additional records in the general area, however none are recent.
Notamacropus eugenii derbianus	Tammar Wallaby			P4	Dense, low vegetation for daytime shelter and open grassy areas for feeding. This species inhabits coastal scrub, heath, dry sclerophyll forest and thickets in mallee and woodland (Maxwell et al. 1996)	Yes	Possible	Records within 50km.
Notamacropus irma	Western Brush Wallaby			P4	Wide-range of habitats including low Banksia woodlands, Jarrah/Marri woodlands and moist Melaleuca lowlands, favours open, grassy areas (Wann & Bell 1997, Woinarski et al. 2014)	Yes	Likely	Recorded nearby (Biologic 2018a, Onshore 2022).
Phascogale calura	Red-tailed Phascogale	VU	CD		Wandoo-rock sheoak uplands, and lowland habitat with riverine fringing vegetation of swamp sheoak, York Gum and Wandoo (Short et al. 2011)	No	Unlikely	No suitable habitat.
Phascogale tapoatafa wambenger	Brush-tailed Phascogale		CD		Dry sclerophyll forests and open woodlands that contain hollow-bearing trees with a sparse ground cover (Woinarski *et al.* 2014)	Yes	Recorded	Recorded nearby (Biologic 2018a, Onshore 2022).

Taxon Name	Common Name	EPBC Act	BC Act	DBCA	Habitat Preference	Suitable Habitat Present	Likelihood in the study area	Rationale
Pseudocheirus occidentalis	Western Ringtail Possum	CR	CR		Coastal *Agonis flexuosa* forest or eucalypt woodland or forest with a mid-story of *Agonis flexuosa* (DPaW 2017, Jones et al. 1994). Additionally, inland forest areas that have been unlogged and unburnt for long periods (Wayne et al. 2006)	Yes	Unlikely	Scats possibly identified by Biologic (2018a), however targeted surveys have failed to locate the species and indicated that habitat in the general area is marginal for this species. Most recent confirmed record is 4.5km west of the study area in 2014 (DBCA 2022).
Setonix brachyurus	Quokka	VU	VU		Habitat varies, but prefer Acacia and Melaleuca thickets. Associated with *Taxandria linearifolia* in Jarrah Forest (de Tores 2008)	Yes	Possible	Recent records within 20km, however habitat within the study area is limited.
REPTILES								
Ctenotus delli	Darling Range South-west Ctenotus			P4	Jarrah and Marri woodlands with shrub dominated understorey on laterite, sand or clay soils (Bush *et al* 2010)	Yes	Possible	Historical record in close proximity.

4.2 Fauna Habitats

4.2.1 Fauna Habitat Types

Two naturally occurring fauna habitats were mapped and described within the study area during the field survey: 'Jarrah-Marri Forest on hillslopes' and 'Drainage lines' (Tables 6 and 7, Figure 7). Remaining parts of the study area have been cleared or highly disturbed and comprise a mixture of farmland supporting annual pasture for grazing and parkland cleared areas (351.8 ha or 68.5% of the study area), and plantation (46.3 ha or 9% of the study area) (Tables 8 and 9, Figure 7). These areas had reduced habitat value for native fauna species, noting that Carnaby's Black-cockatoo was observed foraging within the Pine plantation in May 2024.

The 'Jarrah-Marri Forest on hillslopes' fauna habitat occurs over 71.1 ha (13.8% of the study area). Vegetation is Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*) forest with a variable understorey comprising shrubs and sedges. This habitat supports a developed tree canopy with logs and dense leaf litter at ground level. Large trees within this habitat support hollows representing potential nesting habitat for black-cockatoos and habitat for Brush-tailed Phascogales.

The 'Drainage lines' habitat dissects the north-eastern and southern fringes of the study area occurring over 34.4 ha (6.7% of the study area). The drainage line supports permanent water (man-made dams with standing water cover 1.7 ha) with fringing vegetation including large trees of Flooded Gum (*Eucalyptus rudis*), Marri (*Corymbia calophylla*) and Blackbutt (*Eucalyptus patens*). Much of the habitat has been heavily disturbed and there are areas of historical rehabilitation and Blackberry infestation. The habitat provides several different structural elements creating a variety of refuges for small mammals and birds. These areas include small reed beds and dense sedges and *Taxandria* thicket. The drainage line provides potential habitat for conservation significant species including Chuditch (Vulnerable), Water Rat/Rakali (Priority 4) and Quenda (Priority 4). Various species of waterbird were noted within this habitat and pools and dams may also occasionally support migratory or conservation significant waterbirds.

Table 6 Summary of the Jarrah-Marri Forest on hillslopes fauna habitat.

Name	Description	
Hillslopes	Jarrah/Marri Forest on hillslopes with brown sandy loam	
Area (ha)	71.7 ha (13.8% of the study area)	
Landform	Hillslopes and hillcrests	
Vegetation Description	Forest of *Eucalyptus marginata* and *Corymbia calophylla* with Open Dwarf Scrub C *Macrozamia riedlei* and *Styphelia propinqua,* Open Dwarf Scrub D of *Leucopogon capitellatus, Bossiaea ornata* and *Hibbertia commutata* with Very Open Low Sedges of *Lepidosperma leptostachyum* and *Netrostylis* sp. Jarrah Forest (R. Davis 7391) on brown sandy loam on hill crests and hill slopes	
% GroundCover	Rock	<2%
	Leaf Litter	30-70%
	Logs	2-10%
	Vegetation	30-70%
Rocks	Type	Laterite
	Size	1-5 cm
Soil	Type	Sandy-loam
	Colour	Brown
Habitat Features Habitat includes areas with moderate logs and dense leaf litter, larger trees occur within this habitat providing some hollows.	Slope	Low
	Water	None
	Woody Debris	Minor
	Peeling Bark	Minor
	Rock Crevices	Absent
	Burrowing Suitability	Poor
	Tree Hollows (<10cm)	Present
	Tree Hollows (>10cm)	Present
Condition	Condition	Good-Very Good
	Disturbances	Mining Exploration, fire, roads/access tracks, bike tracks, logging, firewood cutting, rubbish, weeds, feral animals.
	Fire Age	Moderate-Old




Table 7 Summary of the Drainage line fauna habitat.

Name	Description	
Drainage line	Drainage line and wetlands with *Eucalyptus rudis*	
Area (ha)	34.4 ha (6.7% of the study area)	
Landform	Wetlands, dams and drainage line	
Vegetation Description	Forest of *Eucalyptus rudis* and *Corymbia calophylla* over Heath A of *Pteridium esculentum* and **Rubus anglocandicans* with Low Woodland A of *Acacia saligna, Banksia littoralis* and *Callistachys lanceolata* and Open Scrub of *Taxandria linearifolia* with Very Open Tall Sedges of *Lepidosperma effusum* on brown loam wetlands and drainage lines	
% GroundCover	Rock	<2%
	Leaf Litter	30-70%
	Logs	<2%
	Vegetation	30-70%
Rocks	Type	Laterite
	Size	1-5 cm
Soil	Type	Loam, clay loam
	Colour	Brown
Habitat Features Dams contain permenant water, dense sedges and shrubs occuring along some banks, some large trees surrounding drainage line. Small areas of reed beds. Large areas have been historically mined and rehabilitated.	Slope	Low
	Water	None
	Woody Debris	Minor
	Peeling Bark	Minor
	Rock Crevices	Absent
	Burrowing Suitability	Poor
	Tree Hollows (<10cm)	Occasional
	Tree Hollows (>10cm)	Occasional
Condition	Condition	Good
	Disturbances	Altered drainage, mining exploration and rehabilitation, access tracks, logging, firewood cutting, rubbish, weeds, feral animals.
	Fire Age	Old




Table 8 Summary of the Cleared farmland fauna habitat.

Name Cleared Farmland	Description Cleared Farmland (annual pasture with small parkland cleared remnants)	
Area (ha)	339 ha (66% of the study area)	
Landform	Hill slopes and hill crests (undulating hills)	
Vegetation Description	Cleared annual pasture (majority of the area). Small localised remnants comprising Forest (to Woodland) of *Eucalyptus marginata* subsp. *marginata* and *Corymbia calophylla* over introduced pasture grasses (parkland cleared).	
% GroundCover	Rock	<2%
	Leaf Litter	<2% (pasture), 2-10% (remnants)
	Logs	<2%
	Vegetation	<2% (pasture), 30-70% (remnants)
Rocks	Type	Laterite
	Size	1-5 cm
Soil	Type	Sandy-loam
	Colour	Brown
Habitat Features Habitat includes areas with moderate logs and dense leaf litter, larger trees occur within this habitat providing some hollows.	Slope	Low to Moderate
	Water	Main tributaries have dams with standing water
	Woody Debris	Minor
	Peeling Bark	Minor
	Rock Crevices	Absent
	Burrowing Suitability	Poor
	Tree Hollows (<10cm)	Present (in remnants)
	Tree Hollows (>10cm)	Potentially present in remnants
Condition	Condition	Completely Degraded

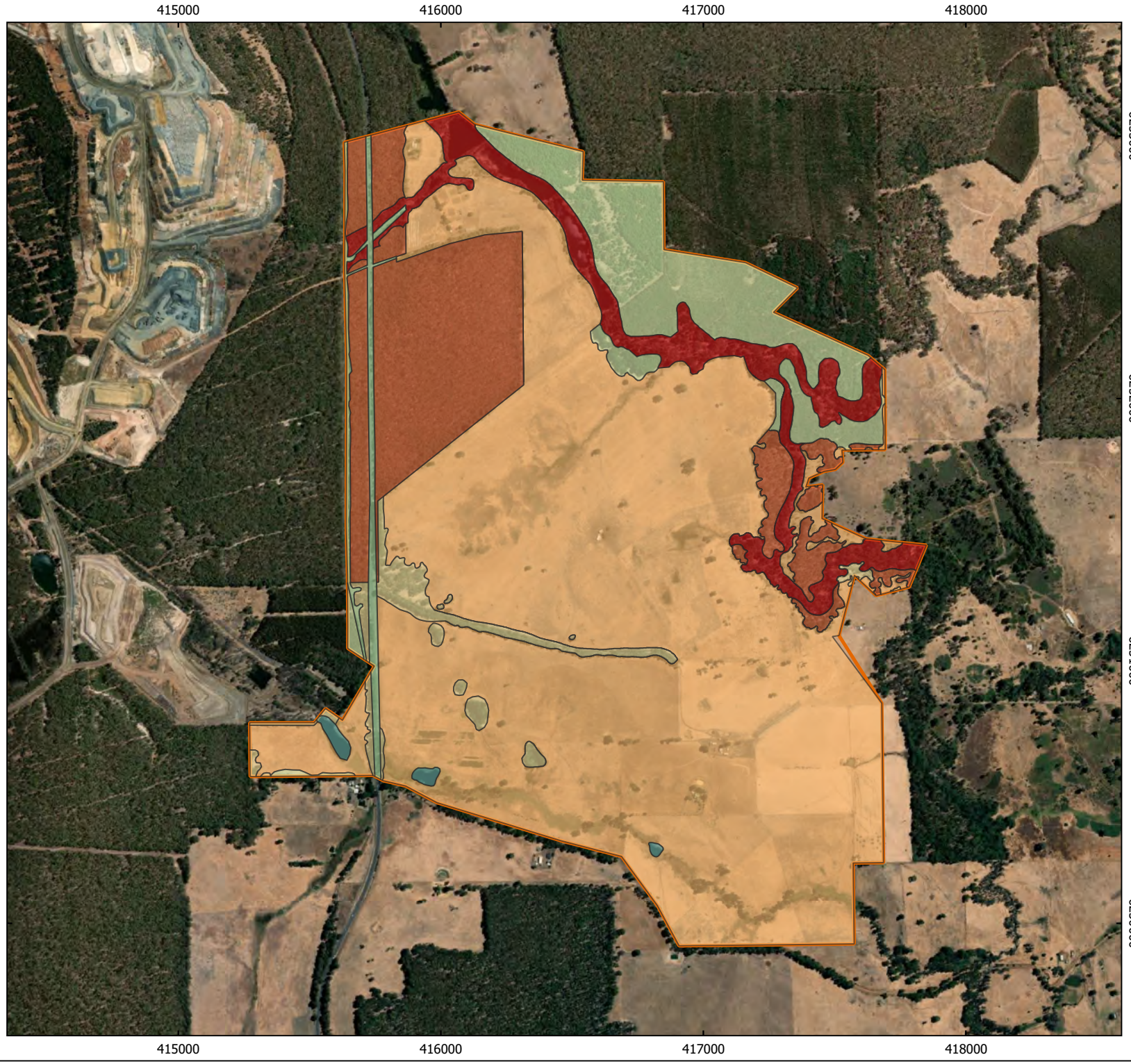
Table 9 Summary of the Plantation fauna habitat.

Name	Description	
Plantation	Plantation including pine, eucalypt and oak	
Area (ha)	46.2 ha (9% of the study area)	
Landform	Hill slopes (lower sandy slopes)	
Vegetation Description	Dense Low Forest A of **Pinus radiata* and *Eucalyptus* Plantation and other planted species	
% GroundCover	Rock	<2%
	Leaf Litter	>70% (pine needles)
	Logs	2-10%
	Vegetation	<2%
Rocks	Type	Laterite
	Size	1-5 cm
Soil	Type	Sand
	Colour	Grey-brown
Habitat Features Habitat includes areas with moderate logs and dense leaf litter, larger trees occur within this habitat providing some hollows.	Slope	Low to Moderate
	Water	Man-made dams along the main channel of Salt Water Gully fringing on the south-east side of the plantation.
	Woody Debris	Minor
	Peeling Bark	Minor
	Rock Crevices	Absent
	Burrowing Suitability	Good
	Tree Hollows (<10cm)	Absent
	Tree Hollows (>10cm)	Absent, Note: Provides foraging habitat for Carnaby's Black-cockatoo (present)
Condition	Condition	Completely Degraded

4.2.2 Fauna Habitat Condition

Habitat condition for native vegetation on hill slopes within State forest was rated as ‘very good to degraded, with condition rated as ‘degraded’ along the Drainage line habitat (Figure 8). Cleared farmland and Pine plantation were both rated as ‘completely degraded’.

The major disturbances were related to historical clearing for agriculture, uncontrolled grazing by domestic stock, harvesting of hardwood timber, edge effects around cleared farmland and plantation timber, and historical alluvial tin mining of drainage lines. The western fringe of the study area was also dissected by the South Western Highway with associated edge effects within the adjacent road reserve.



ONSHORE ENVIRONMENTAL

TALISON LITHIUM
Salt Water Gully

Figure 7
Fauna habitats occuring within the study area

Legend

- SWG Study Area

Fauna Habitats

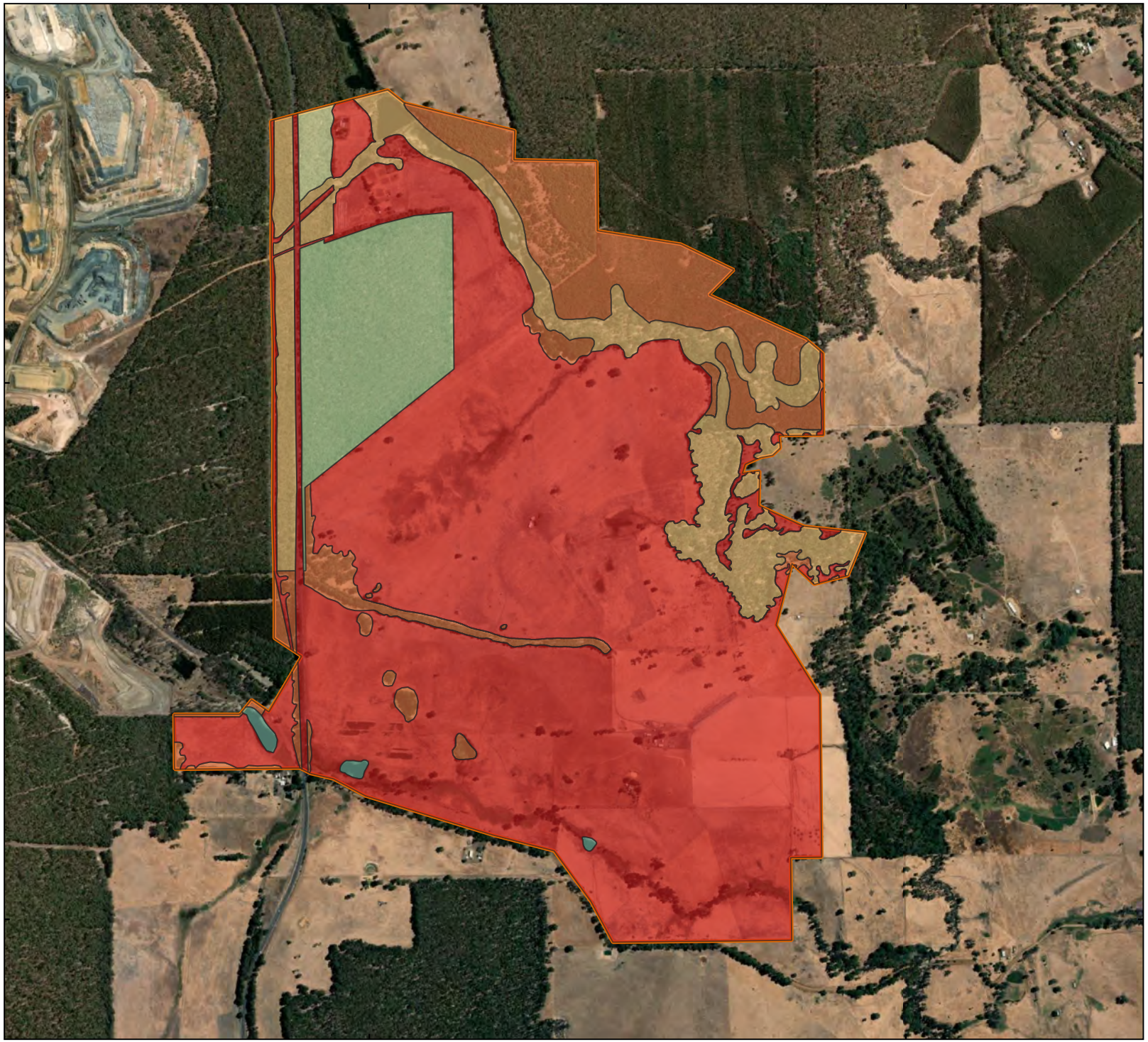
- Drainage line
- Jarrah-Marri Forest on Hillslopes
- Paddocks
- Parkland Cleared
- Plantation
- Roads/tracks
- Water Bodies / Dams

0 250 500 750 m

1:20,000

Datum: GDA 94
Projection: MGA Zone 50

Date: 11/12/2024
Status: Final
Figure: 7
Sheet Size: A4
File Name Reference: TA_SWG_Fig7_habitats.pdf
Drawn by: JW
Requested by: DB



TALISON LITHIUM
Salt Water Gully

Figure 8
Habitat conditon map for the study area

Legend

- Study Area

Habitat Condition

- Cleared
- Completely Degraded
- Degraded
- Good
- Good-Very Good
- Water

0 250 500 750 m

1:20,000

Datum: GDA 94
Projection: MGA Zone 50

Date: 11/12/2024
Status: Final
Figure: 8
Sheet Size: A4
File Name Reference: TA_SWG_Fig8_cond.pdf
Drawn by: JW
Requested by: DB

4.3 Vertebrate Fauna Assemblage

4.3.1 Fauna Assemblage

The combined desktop searches identified a total of 291 vertebrate fauna taxa including 17 amphibians, 26 reptiles, 210 birds and 38 mammals (see Appendix 4). The database results were reviewed, and 91 species were excluded as they were considered unlikely to occur within the study area due to absence of habitat or other factors. The remaining list comprised 200 species that potentially occur within the study area including nine amphibians, 128 birds, 37 mammals and 26 reptiles.

A total of 103 vertebrate fauna species were recorded during the combined field surveys, including seven amphibians, nine reptiles, 71 birds and 16 mammals. A list of all vertebrate fauna species recorded during the field survey is provided in Appendix 5. A comparison of the species recorded from the desktop searches and those recorded within the study area is presented in Appendix 6.

4.3.2 Motion Sensitive Cameras

Twenty fauna species were identified from motion sensitive cameras within the study area including ten birds, nine mammals and one reptile. One bird species listed as Endangered under the EPBC Act and BC Act was recorded: Carnaby's Black-cockatoo *(Zanda latirostris).* The mammals identified from the cameras included three species of conservation significance: Brush-tailed Phascogale (Conservation Dependent), Quenda (Priority 4) and Water Rat (Priority 4). Three introduced species were also recorded from the motion sensitive cameras: Red Fox (*Vulpes vulpes*), Black Rat (*Rattus rattus*) and Rabbit (*Oryctolagus cuniculus*).

4.4 Fauna of Conservation Significance

4.4.1 Threatened Fauna listed under the EPBC Act and BC Act

Three vertebrate fauna species listed under the Commonwealth EPBC Act and the Western Australian BC Act were recorded from the study area: Carnaby's Black-cockatoo listed as Endangered, Forest Red-tailed Black-cockatoo listed as Vulnerable, and Baudin's Black-cockatoo listed as Endangered (Figure 9).

One other species listed as Endangered under the Commonwealth EPBC Act and the Western Australian BC Act was recorded from approximately 160 m outside of the study area (to the east): the Australasian Bittern (*Botaurus poiciloptilus)* (Figure 9).

Additionally, one species listed as Conservation Dependant fauna under the Western Australian BC Act was recorded from the study area: Brush-tailed Phascogale *(Phascogale tapoatafa wambenger)* (Figure 9).

The occurrence of the above five species within the study area is discussed further below.

ONSHORE ENVIRONMENTAL

TALISON LITHIUM
Salt Water Gully

Figure 9
Significant Fauna occuring within the study area

Legend

- Study Area

Significant Fauna

- Australasian Bittern
- Baudin's Black Cockatoo
- Carnaby's Black Cockatoo
- Forest Red-tailed Black Cockatoo
- Quenda
- Rakali
- South-western Brush-tailed Phascogale

0 250 500 750 m

1:20,000

Datum: GDA 94
Projection: MGA Zone 50

Date: 11/12/2024
Status: Final
Figure: 9
Sheet Size: A4
File Name Reference: TA_SWG_Fig9_sig_fauna.pdf
Drawn by: JW
Requested by: DB

Carnaby's Black-cockatoo

Carnaby's Black-cockatoo is one of two white-tailed Black-cockatoos listed as Endangered under the EPBC Act and BC Act. This species occurs in south-western Western Australia extending from Kalbarri to Cape Arid and inland to the Wheatbelt. Breeding habitat for the species generally occurs within the Wheatbelt region in hollows provided by smooth barked Eucalyptus species such as Wandoo and Salmon Gum (Saunders 1982). More recently there has been an expansion in the breeding range of Carnaby's Black-cockatoo to the west and south with breeding recorded from the Darling Scarp and as far south as Capel (Johnstone and Kirby 2019).

Carnaby's Black-cockatoo was recorded in May 2024 foraging on cones amongst Pine trees in the north-east sector of the study area, and was also recorded on one motion sensor camera (Figure 9). Feeding residue (Pine cones) was also evident in the same area, recorded at five locations (Figure 9). Carnaby's Black-cockatoo infrequently uses the study area likely attracted by the Pine plantation and adjacent dams (drinking water).

Baudin's Black-cockatoo

Baudin's Black-cockatoo is currently listed as Critically Endangered on the international IUCN Red List, and Endangered under the Commonwealth EPBC Act and Western Australian BC Act. It occurs throughout the south western humid and subhumid zones, extending from the northern Darling Range and adjacent far east of the Swan Coastal Plain (south of the Swan River), south to Bunbury and east to Albany (Johnstone and Storr 1998). Baudin's Cockatoo usually occur in small flocks of up to 30 birds, occasionally up to 50 birds, or rarely in aggregations of up to 1,200 birds (Johnstone and Kirkby 2008). The total population of Baudin's Cockatoo is estimated to be about 15,000 birds (Johnstone and Kirkby 2008).

This species forages primarily in eucalypt forest, where it feeds on Marri seeds, flowers, nectar and buds (Johnstone and Kirkby 2008). Baudin's Cockatoo also feed on a wide range of seeds of *Eucalyptus, Banksia* and *Hakea,* as well as the fruits of apples, pears, persimmons and beetle larvae from under the bark of trees (Johnstone and Kirkby 2008, Johnstone and Storr 1998). Marri seed provides a high energetic yield and Baudin's Cockatoo are able to quickly extract the seeds from the nut using their long bill (Cooper *et al.* 2002). Baudin's Cockatoo nests in tree hollows in the deep southwest of Western Australia. Primary nesting trees are Karri, Marri, and Wandoo. Baudin's Cockatoo is mostly a postnuptial nomad (Johnstone and Kirkby 2008) breeding from around October to December. After breeding, Baudin's Cockatoos leave nesting areas and amalgamate to form large foraging flocks. These flocks generally migrate north to the main non breeding wintering area in the northern Darling Range between Collie and Mundaring (Johnstone and Kirkby 2008).

Baudin's Black-cockatoo has been directly observed on two occasions (ten birds) within the study area, recorded from calls at three locations, with evidence of recent feeding residue at two locations (Figure 9). It is likely to infrequently use the study area for foraging.

Forest Red-tailed Black-cockatoo

The Forest Red-tailed Black-cockatoo is currently listed as Least Concern on the international IUCN Red List, and Vulnerable under the Commonwealth EPBC Act and Western Australian BC Act. It occurs throughout the south western humid and subhumid zones, extending from Gingin in the north through the Darling Ranges and throughout the southwest from approximately Bunbury to Albany (Johnstone and Storr 1998). Their population has been estimated at approximately 15,000 birds (Johnstone and Kirkby 1999). Although not nomadic
like Carnaby's and Baudin's Cockatoos, the Forest Red-tailed Black-cockatoo has been known to exhibit extreme population fluctuations in response to food availability and fire. The Forest Red-tailed Black-cockatoo occurs in pairs or small flocks, or occasionally large flocks of up to 200 birds (Johnstone and Storr 1998). It inhabits dense Jarrah, Karri and Marri forests that receive more than 600 mm average annual rainfall (DSEWPaC 2012), and breeds (producing one or two eggs) in the southwest of Western Australia between October and November.

The Forest Red-tailed Black-cockatoo feeds primarily on Marri and Jarrah fruit (DSEWPaC 2012). They have also been known to feed on Blackbutt *(Eucalyptus patens),* Albany Blackbutt *(Eucalyptus staeri),* Karri, Sheoak *(Allocasuarina fraseriana)* and Snottygobble *(Persoonia longifolia).* Marri and Jarrah make up 90% of their diet (Johnstone and Kirkby 1999).

The Forest Red-tailed Black-cockatoo has been directly observed on ten occasions (18 birds) within the study area, recorded from feathers at one location, with evidence of recent feeding residue at twelve locations (Figure 9). It is the most common of the three Black-cockatoo species and was recorded during all four fauna surveys. This species is resident within the study area utilising the hillslope and drainage line habitats for foraging and breeding within the hillslope habitat.

Australasian Bittern

The Australasian Bittern is listed as Endangered under the EPBC Act and BC Act. It occurs in the south west of Western Australia with a separate sub-population extending between south-eastern South Australia to southern Queensland and in Tasmania. Australasia Bitterns are heron-like birds that inhabit wetlands and floodplains favoring areas of dense vegetation, reed beds and sedges. Breeding occurs between September to December with the nest situated over water in reeds or other dense vegetation.

This species was detected from calls heard within the downstream Salt Water Gully drainage line habitat approximately 160 m outside the south-eastern boundary of the study area (Figure 9). It prefers dense riparian vegetation in freshwater swamps and wetlands and is likely to occur along Salt Water Gully and other tributaries of the Blackwood River. Nocturnal surveys during the detailed surveys of the study area did not detect calls of this species from dams or drainage lines within the study area but it may utilise drainage line habitats within the study area.

Brush-tailed Phascogale

The Brush-tailed Phascogale is listed as conservation dependant fauna under the Western Australian BC Act. Its present distribution is believed to have been reduced to approximately 50 percent of its former range with the current distribution extending

west of a line from Perth to Albany. It occurs at low densities in the northern Jarrah forest and at highest densities in the Perup/Kingston area, Collie River valley, and near Margaret River and Busselton. Records are less common from wetter forests.

The Brush-tailed Phascogale has been observed in dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover. It relies on tree hollows as nest sites. The home range for a female is estimated at between 20 ha and 70 ha, whilst that for males is estimated as twice that of females. In addition, they tend to utilise a large number (approximately 20) of different nest sites throughout their range (Soderquist and Rhind 2008).

Brush-tailed Phascogales were recorded from seven locations within hillslope habitat associated with State forest and the adjacent South Western Highway road reserve (Figure 9). Hillslope habitat contains an abundance of hollow bearing trees suitable as nest sites for this species.

4.4.2 Priority Fauna recognised by the DBCA

Two Priority 4 fauna species, as recognised by the DBCA, were recorded from the study area; Quenda (*Isoodon fusciventer*) and Water Rat/Rakali (*Hydromys chrysogaster*) (Figure 9).

Quenda

The Quenda (or Southern Brown Bandicoot) is listed as a Priority 4 fauna species by the DBCA. It has a wide but patchy distribution in the south-west of Western Australia, extending from Cervantes in the north to Esperance in the south and inland as far as Hyden. The species inhabits dense scrubby, often swampy, vegetation with dense cover up to 1 m high. It often feeds in adjacent forest and woodland that is burnt on a regular basis, and in areas of pasture and cropland lying close to dense cover. Populations inhabiting Jarrah and Wandoo forests are usually associated with watercourses.

Quenda were recorded from eight locations within the study area (Figure 9). The records were from motion sensitive cameras and an opportunistic observation of an individual. This species was recorded from the drainage line habitat (five records) and the hillslope habitat (three records).

Water Rat

The Water Rat is listed as Priority 4 by the DBCA. The species is widely distributed around Australia and its offshore islands, New Guinea and some adjacent islands. It occurs in fresh or brackish water habitats in the south-west of Western Australia, and marine environments along the Pilbara coastline and offshore islands. Surveys in the south-west suggest this species is relatively common and widespread, though difficult to capture (Christensen *et al.* 1985, How *et al.* 1987). The Water Rat occupies habitat near permanent water, including fresh brackish or marine. It is likely to occur in all major rivers and most of the larger streams, as well as bodies of permanent water in the lower south west (Christensen *et al.* 1985).

A single Water Rat was recorded from a motion sensor camera during the first phase of the detailed fauna survey, occurring in the drainage line habitat around Salt Water Gully in the north-east sector (Figure 9). This species was also recorded from the drainage line in the north-east of the study area on a motion sensitive camera and from tracks (Onshore Environmental 2024a).

4.4.3 Threatened and Priority Fauna Potentially Occurring

Eight species of conservation significance were identified from the desktop searches as likely to occur within the study area, with six of these species recorded from the study area during the field survey. The suitability of habitat for the species not recorded during the survey is discussed below.

Chuditch

The Chuditch inhabits Jarrah forest, in moist, densely vegetated, steeply sloping forest and drier, open, gently sloping forest particularly in riparian vegetation (Orell and Morris 1994). Habitat within the study area is suitable for this species and it has been recorded in close proximity to the study area (Biologic Environmental Services 2018a). The fragmented nature of vegetation and extent of historical disturbances have reduced the likelihood that Chuditch will utilise the study area. Chuditch were not detected within the study area despite 19 motion sensor cameras being deployed across four separate survey periods, as well as a two phase trapping program. It is unlikely that this species currently occurs within the study area.

Western Brush Wallaby

The Western Brush Wallaby was assessed during the desktop assessment as likely to occur within the study area. No evidence of this species was recorded during the field surveys. The species has previously been recorded from within the MDE from Jarrah-Marri forest habitat type (Biologic Environmental Survey 2018a), and from forest south-west and north-east of the study area (Onshore Environmental 2022b, 2024a). This species is known to inhabit a wide-range of habitats including low *Banksia* woodlands, Jarrah/Marri woodlands and moist *Melaleuca* lowlands, favouring open, grassy areas (Wann and Bell 1997, Woinarski *et al.* 2014). Due to the nearby records and presence of suitable habitat, the Western Brush Wallaby is considered likely to utilise habitats within the study area on occasion.

4.5 Black-cockatoo Habitat Assessment

4.5.1 Tree Hollow Assessment

Large trees were identified and further assessed as to the suitability for breeding for Black-cockatoos as per criteria outlined in Table 2. Details of the trees and hollows assessed within the study area are provided in Appendix 7 and locations of the trees are shown in Figure 10.

Two trees within the study area were identified as *known nesting trees* (Figure 10). One tree supported a chimney hollow with extensive chewing around the bottom and sides (Plate 1). The hollow is likely used by Forest Red-tailed Black-cockatoos with a pair and juvenile observed frequently within the vicinity of the hollow in October 2022. Recent chew marks were evident at the hollow entrance during November 2024 and five Forest Red-tailed black-cockatoos were observed in the vicinity of the hollow. The second hollow is a side entry hollow identified during the November 2024 survey, a female was observed at the entrance to this hollow and chew marks were evident.

A total of 19 trees were identified as *suitable nesting trees* for use by Black-cockatoos. These hollows were considered of a size, orientation and depth to be suitable for use by Black-cockatoos as breeding hollows. Hollows were identified from the ground and not examined by drone, therefore hollows may not be of sufficient depth to support breeding.

A total of seven trees were identified as *potential nesting trees.* These trees contained hollows that were above the minimum entrance size suitable for black-cockatoos but were considered less likely to be suitable due to depth of hollow, orientation or other factors (see Table 2). A significant number of additional *potential nesting trees* (i.e. trees over 50cm) are present within the study area. Due to the size of the study area all potential nesting trees were not identified and marked. Tree density assessments provide an indication of the density of potential nesting trees within the study area (see Section 4.5.5 below).

ONSHORE ENVIRONMENTAL

TALISON LITHIUM
Salt Water Gully

Figure 10
Habitat trees occuring within the study area

Legend

- Study Area

Habitat Trees

- Known nesting hollow
- Suitable
- Potential nesting tree
- Unsuitable

0 250 500 750 m

1:20,000

Datum: GDA 94
Projection: MGA Zone 50

Date: 11/12/2024
Status: Final
Figure: 10
Sheet Size: A4
File Name Reference: TA_SWG_Fig10_trees.pdf
Drawn by: JW
Requested by: DB

Plate 1 Hollow identified as chewed at Tree 241 within the study area in October 2022.

Plate 2 Tree 241 in November 2024.

Plate 3 Female at known nesting tree in November 2024.

Additional factors may affect the suitability of the study area for breeding. These factors include the proximity of water sources and the availability of adequate foraging habitat in close proximity. The availability and connectivity of nearby foraging habitat is important for successful breeding of black-cockatoos (Saunders 1977, 1986). There is extensive foraging habitat in close proximity to the study area (discussed further below). Dams within the study area provide a reliable water resource for breeding Black-cockatoos potentially utilising the area.

4.5.2 Habitat Tree Density Assessment

A total of 29 potential habitat trees (with DBH >50 cm) were recorded across the four, 50 m by 50 m plots assessed at an average density of 29 habitat trees per hectare. Quadrats were only located within the hillslopes habitat as the drainage line habitat generally contained few large trees with the potential to form hollows. The density of potential habitat trees within the Jarrah/Marri hillslopes habitat was higher than densities recorded elsewhere in state forest outside the MDE where densities ranged from 10.6 to 21.7 habitat trees per hectare (Onshore Environmental 2018).

4.5.3 Foraging Habitat Score (DAWE 2022)

The hills and drainage line habitats within the study area provide suitable foraging habitat for all three species of black-cockatoo. Planted trees and shrubs within paddocks, rehabilitation areas and Pine plantations also provide foraging potential. Forest Red-tailed Black-cockatoos were observed foraging within the study area during the field surveys and evidence of foraging on Marri and Jarrah nuts was observed at several locations. Baudin's Black-cockatoos were also observed within the study area, with limited evidence of foraging. Carnaby's Black-cockatoos were observed feeding on Pine cones adjacent to plantations in the north-east corner of the study area in May 2024.

Based on the foraging quality scoring tool areas of the study area supporting native vegetation were given a score of eight for Carnaby's Black-cockatoos and a score of ten for Baudin's and Forest Red-tailed Black-cockatoos (Table 10). Hence the study area is considered to contain high quality foraging habitat for all three species. The lower score for Carnaby's Black-cockatoos is due to the absence of foraging evidence within native vegetation, with foraging restricted to Pine plantation in a localised are to the north-east (Table 10).

The foraging quality score tool includes an assessment of the connectivity and availability of foraging habitat within a 12 km radius and the proximity of breeding and roosting sites. Approximately 42% (22,680 ha) of the land area within a 12 km radius of the study area is native vegetation (DPIRD 2017) (Figure 11). The vast majority of this native vegetation is likely to represent suitable foraging habitat for black-cockatoos, however the surrounding native vegetation is fragmented by cleared farmland. The study area is immediately adjacent to significant areas of suitable foraging habitat which are relatively continuous to the north. Based on the proximity and connectivity of significant foraging resources, no points were deducted for connectivity.

Database searches indicate that there are 19 known roost sites within 30 km of the study area (DBCA 2022), with the nearest occurring approximately 3 km to the north-west (DBCA 2019) (Figure 11). There was no evidence of roosting observed within the

study area, however suitable habitat exists within the drainage line habitat. Baudin's and Carnaby's Black-cockatoos are known to breed within 50 km of the study area (DAWE 2022). Forest Red-tailed Black-cockatoos are known to breed in close proximity to the study area (Onshore Environmental *unpublished data).* Therefore, no points were deducted for proximity to roosting or breeding sites. No significant areas of dieback or Marri canker disease was observed within the study area and no points were deducted for impacts from significant plant disease.

Table 10 Scoring tool for determining quality of Black-cockatoo foraging habitat.

Score	Baudin's Cockatoo	Carnaby's Black-cockatoo	Forest Red-tail Black-cockatoo
Initial Score	10	10	10
Foraging evidence **Subtract 2** from your score if there is no evidence of feeding debris on your site.	0	-2	0
Connectivity **Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	0	0	0
Proximity to breeding **Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat	0	0	0
Proximity to roosting **Subtract 1** if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	0	0	0
Impact from significant plant disease **Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	0	0	0
Final Score	**10**	**8**	**10**

4.5.4 Offset Habitat Scoring

The foraging habitat scoring system for black cockatoos developed by the DCCEEW to calculate the value of an offset site (Appendix 3) was applied to each of the six fauna habitat types mapped within the study area, as well as the cleared area (Table 11).

The combined canopy foliage cover was highest within the three habitats where the native canopy had been retained in consolidated blocks: Jarrah-Marri Forest on hillslopes, Drainage Line, and Parkland Cleared. This contributed to the highest site condition scores ranging from four to seven (Table 11). A lower score of three was given to Pine Plantation which was used seasonally by Carnaby's Black-cockatoo, with paddocks and water bodies rated with site condition scores of one and zero respectively (Table 11).

A site context score of three was given to all six fauna habitat types owing to the presence of foraging and breeding habitat within close proximity to the study area. Approximately 42% (22,680 ha) of the land area within a 12 km radius of the study area is native vegetation (DPIRD 2017) (Figure 11). The vast majority of this native

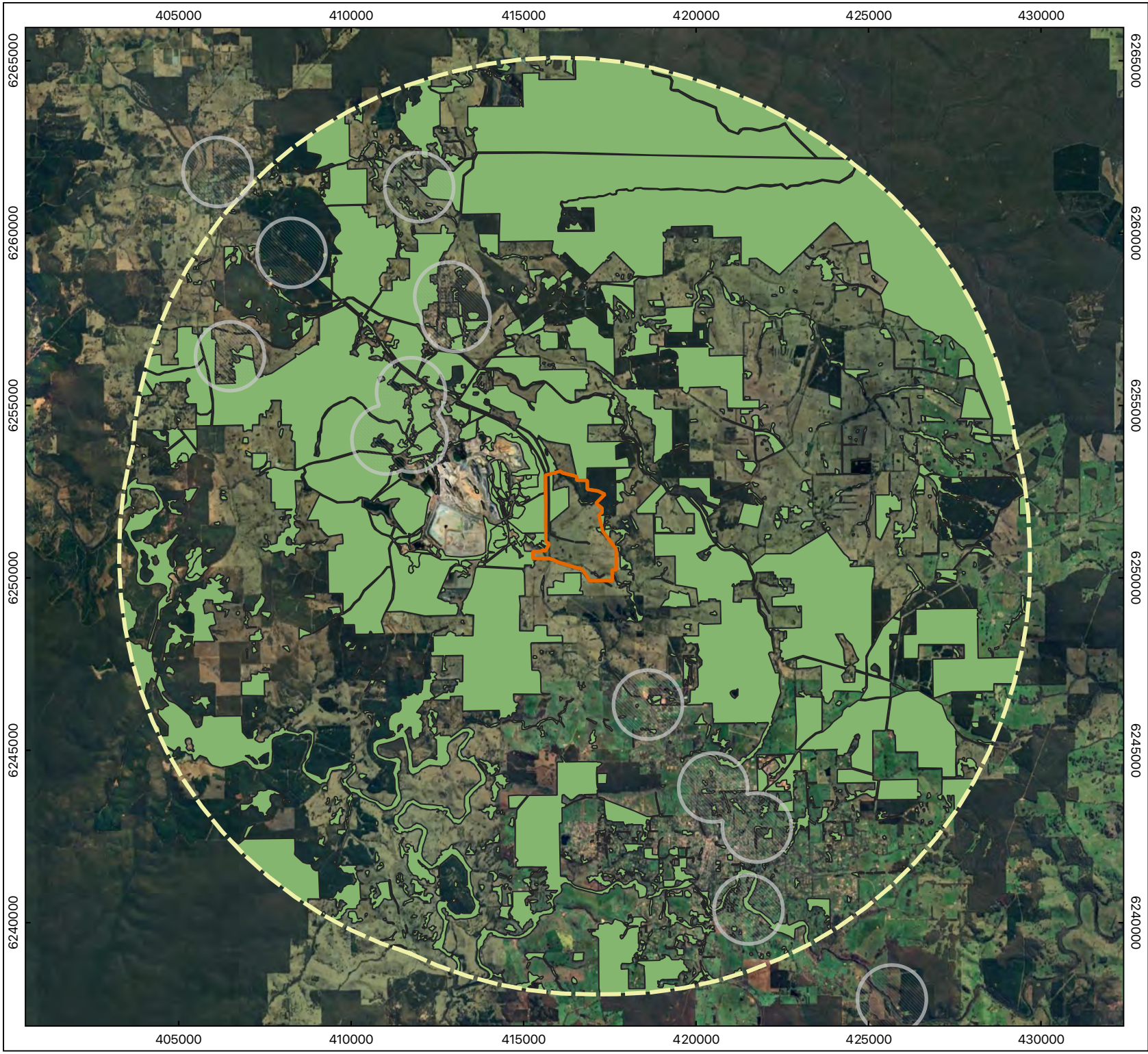
vegetation is likely to represent suitable foraging habitat for black-cockatoos, noting the surrounding native vegetation is fragmented by cleared farmland.

In order to confirm presence of black cockatoos within an area the scoring tool requires that the species is seen or reported regularly (intervals of every few days or weeks for at least several months of the year) and/or there is abundant foraging evidence, e.g. chewed nuts that can be identified as this species. There was abundant foraging evidence for Forest Red-tailed Black-cockatoos and limited foraging evidence for Baudin's Black-cockatoos within forested areas within the study area. Feeding residue for Carnaby's Black-cockatoos was limited to Pine cones within the plantation in the north-east corner of the study area.

Table 11 Foraging values of vegetation in the survey area for Baudin's, Carnaby's and Forest Red-tailed Black Cockatoos, based upon vegetation characteristics, context and species density.

SITE CONDITION									
Indicator	Score	Foraging Value	Reasoning	Impact - Drainage Line (ha)	Impact - Jarrah-Marri Forest on Hillslopes (ha)	Impact - Paddocks (ha)	Impact - Parkland Cleared (ha)	Impact - Pine Plantation (ha)	Impact - Water Bodies / Dams / Roads (ha)
Vegetation condition & structure. Habitat features.	7	Very High	Marri-Jarrah forest/woodland with >50% projected foliage cover. Low percentage (<5%) of tree deaths.		61.08				
	6	High	Marri-Jarrah-Karri, other eucalypt woodlands with >40% projected foliage cover. Low percentage (<10%) of tree deaths.	19.65					
	5	Moderate to High							
	4	Moderate	Marri-Jarrah Forest or woodlands with 20-30% projected foliage cover; or Marri-Jarrah Forest with 40-60% projected foliage cover but vegetation condition reduced due to tree deaths (up to 30-40%).				12.03		
	3	Low to Moderate	Pine plantation aged 10-30 years.					35.30 (Carnaby's only)	
	2	Low	Has been cleared within the past decade. Banksia woodland (native regeneration) with <10% projected foliage cover. Scattered food plants.						
	1	Negligible to Low	Scattered specimens of known food plants but projected foliage cover of these is <2%. May include: paddocks or urban areas with scattered foraging trees.			333.92			
	0	None	No Proteaceae, eucalypts or other potential sources of food. May include bare ground or developed sites devoid of vegetation.						10.35
			Sub-Total	6	7	1	4	3	0
SITE CONTEXT									
Proximity of the site in relation to other habitat	3	<12km of other foraging resources with site condition of at least 3, or 6km of known breeding habitat		19.65	61.08	333.92	12.03	35.30	10.35
	2	<15km of other foraging resources with site condition of at least 4, or 12 km of known breeding habitat							
	1	15-20km of other foraging resources with site condition of at least 5, or <15km of known breeding habitat							
	0	>20km from other foraging resources, or >15km of known breeding habitat							
			Sub-Total	3	3	3	3	3	3
			FINAL TOTAL	9	10	4	7	6	3

	Indicator	Species Stocking Rate	Carnaby's	Baudin's	FRTBC
Confirm presence/ absence of species	Yes	Species is seen or reported regularly and/or there is abundant foraging evidence, e.g. chewed nuts can be identified as this species. Regularly is when the species is seen at intervals of every few days or weeks for at least several months of the year.	X	X	X
	No	Species is recorded or reported very infrequently and there is little or no foraging evidence.			



ONSHORE ENVIRONMENTAL

TALISON LITHIUM

Salt Water Gully Combined and Extended

Figure 11
Black Cockatoo foraging areas and roosting sites within 12km of the study area

Legend

- Study Area
- Roosting Sites (1km buffer)
- 12km Study Area Buffer
- Native Vegetation Extent (DPIRD 2017)

0 2 4 6 8 km

1:150,000

Datum: GDA 94
Projection: MGA Zone 50

Date: 29/06/2024
Status: Final
Figure: 11
Sheet Size: A4
File Name Reference: TA_SWG_Fig11_foraging.pdf
Drawn by: JW
Requested by: DB

4.6 Introduced Fauna Species

Three introduced fauna species (feral animals) were observed within the study area during the field survey:

- European Rabbit (*Oryctolagus cuniculus*);
- Red Fox (*Vulpes vulpes*); and
- Black Rat (*Rattus rattus*).

Black Rats were detected from camera traps and Elliot traps deployed within the study area. Rabbits were observed during the survey and also recorded from camera traps. Red Foxes were detected from camera traps.

The Laughing Kookaburra (*Dacelo novaeguineae*) was also recorded during the survey. This species was previously referred to as an introduced species but is now considered naturalised in the region.

5.0 DISCUSSION

5.1 Regional Context

The vertebrate fauna assemblage recorded from the study area is typical of the bioregion with 102 out of the 103 taxa recorded from the survey identified as potentially occurring from the database searches. The species not recorded from the database searches was the South-Western Free-Tailed Bat (*Ozimops kitcheneri*). The study area is within the known distribution for the species but there were no records from the database searches in close proximity.

5.2 Proportion of Species Recorded

The two phase detailed fauna survey identified 41% of potentially occurring amphibians (seven out of 17), 33% of potentially occurring bird species (69 out of 210), 41% of potentially occurring mammal species (16 out of 39), and 35% of potentially occurring reptile species (nine of 26).

A number of factors were determined to contribute to the proportion of species recorded from the study area, compared to the number of species identified during the database searches. The list from the database searches includes migratory or vagrant species, species on the edge of their distribution, and species with specialised habitat requirements. These species would only utilise the study area occasionally or are unlikely to be found within the study area.

Disturbances present within the study area are likely to have negatively impacted the diversity and abundance of species present within the study area. These include the fragmented and disturbed nature of vegetation (particularly the drainage line habitat), the proximity to the South Western Highway, farmland and roads, and the presence of weeds and feral animals (particularly foxes).

6.0 SUMMARY

A two-phase detailed vertebrate fauna survey of the study was completed in October 2022 and April 2023, with a basic fauna survey undertaken in May 2024 and November 2024. The southern extent of an adjacent single phase detailed fauna survey in November - December 2023 also intersected the drainage line habitat along the eastern sector of the study area.

A total of 103 vertebrate fauna species were recorded during the field survey, including seven amphibians, nine reptiles, 71 birds and 16 mammals.

Six conservation significant species were recorded from the study area:

- Baudin's Black-cockatoo and Carnaby's Black-cockatoo, both listed as Endangered under the EPBC Act and BC Act;
- Forest Red-tailed Black-cockatoo, listed as Vulnerable under the EPBC Act and BC Act;
- Brush-tailed Phascogale, listed as Conservation Dependant under the BC Act;
- Water Rat and Quenda, both listed as Priority 4 by the DBCA.

An additional species of conservation significance listed as Endangered under the EPBC Act and the BC Act was recorded 160 m outside the south-east sector of the study area: the Australasian Bittern (*Botaurus poiciloptilus).* It prefers dense riparian vegetation in freshwater swamps and wetlands and is likely to occur Salt Water Gully and other tributaries of the Blackwood River.

The largest proportion of the study area comprised cleared farmland with annual pasture for grazing domestic stock (351.8 ha or 68.5% of the study area), with a smaller area that had been planted to Pine plantation (46.3 ha or 9% of the study area). There were two naturally occurring fauna habitats within the study area, Jarrah-Marri Forest on hillslopes (71 ha or 13.8% of the study area) and Drainage lines (34.4 ha or 6.7% of the study area).

Remnant native vegetation occurring across the study area was deemed to be high quality foraging habitat for all three species of Black-cockatoos, noting that Carnaby's Black-cockatoo was only recorded foraging within the Pine plantation. The Forest Red-tailed Black-cockatoo was the most common species recorded, with Baudin's Black-cockatoo occurring within the same forest habitat but less common. Two trees within the study area contained a hollow that had chew marks and were classified as *known nesting trees*. An additional 19 trees were identified as *suitable nesting trees* for use by Black-cockatoos.

7.0 STUDY TEAM

The vertebrate fauna survey was planned, co-ordinated and executed by the following personnel:

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APPENDIX 1

Conservation codes for species and communities of conservation significance

Categories used under the EPBC Act		
Status	Code	Description
Critically Endangered	Cr	Taxa considered to be facing an extremely high risk of extinction in the wild in the immediate future
Endangered	En	Taxa considered to be facing a very high risk of extinction in the wild in the near future
Vulnerable	Vu	Taxa considered to be facing a high risk of extinction in the wild in the medium-term future
Migratory	Mi	Species that migrate to, over and within Australia and its external territories

Conservation Codes used under the BC Act		
Status	Code	Description
Critically Endangered	CR	Taxa rare or likely to become extinct, as critically endangered taxa
Endangered	EN	Taxa rare or likely to become extinct, as endangered taxa
Vulnerable	VU	Taxa rare or likely to become extinct, as vulnerable taxa
Presumed Extinct	EX	Taxa presumed to be extinct
Migratory	IA	Birds subject to international agreements relating to the protection of migratory birds
Conservation Dependent	CD	Taxa of special conservation need, being species dependent on ongoing conservation intervention
Special Protection	OS	Taxa in need of special protection

Priority Flora and Fauna Under the BC Act		
Status	Code	Description
Priority 1: Poorly-known Species	P1	Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
Priority 2: Poorly-known Species	P2	Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
Priority 3: Poorly-known Species	P3	Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
Priority 4: Rare, Near Threatened and other species in need of monitoring	P4	(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands. (b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent. (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Definitions, Categories and Criteria for Threatened and Priority Ecological Communities General Definitions	
Ecological Community	A naturally occurring biological assemblage that occurs in a particular type of habitat. Note: The scale at which ecological communities are defined will often depend on the level of detail in the information source, therefore no particular scale is specified.
Threatened Ecological Community (TEC)	A threatened ecological community (TEC) is one which is found to fit into one of the following categories; “presumed totally destroyed”, “critically endangered”, “endangered” or “vulnerable”. Possible threatened ecological communities that do not meet survey criteria are added to DEC’s Priority Ecological Community (PEC) Lists under Priorities 1, 2 and 3. Ecological Communities that are adequately known, are rare but not threatened, or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.
Assemblage	An assemblage is a defined group of biological entities.
Habitat	Habitat is defined as the areas in which an organism and/or assemblage of organisms lives. It includes the abiotic factors (e.g. substrate and topography), and the biotic factors.
Occurrence	A discrete example of an ecological community, separated from other examples of the same community by more than 20 meters of a different ecological community, an artificial surface or a totally destroyed community. By ensuring that every discrete occurrence is recognised and recorded future changes in status can be readily monitored.
Adequately Surveyed	An ecological community that has been searched for thoroughly in most likely habitats, by relevant experts.
Community structure	The spatial organisation, construction and arrangement of the biological elements comprising a biological assemblage (e.g. *Eucalyptus salmonophloia* woodland over scattered small shrubs over dense herbs; structure in a faunal assemblage could refer to trophic structure, e.g. dominance by feeders on detritus as distinct from feeders on live plants).

Definitions and Criteria for Presumed Totally Destroyed, Critically Endangered, Endangered and Vulnerable Ecological Communities	
Presumed Totally Destroyed (PD)	An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future. An ecological community will be listed as presumed totally destroyed if there are no recent records of the community being extant and either of the following applies (A or B): A) Records within the last 50 years have not been confirmed despite thorough searches of known or likely habitats or B) All occurrences recorded within the last 50 years have since been destroyed
Critically Endangered (CR)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated. An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future. This will be determined on the basis of the best available information, by it meeting any one or more of the following criteria (A, B or C): A) The estimated geographic range, and/or total area occupied, and/or number of discrete occurrences since European settlement have been reduced by at least 90% and either or both of the following apply (i or ii): i) geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is imminent (within approximately 10 years); ii) modification throughout its range is continuing such that in the immediate future (within approximately 10 years) the community is unlikely to be capable of being substantially rehabilitated. B) Current distribution is limited, and one or more of the following apply (I, ii, iii) i) geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the immediate future (within approximately 10 years); ii) there are few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes; iii) there may be many occurrences but total area is very small and each occurrence is small and/or isolated and extremely vulnerable to known threatening processes. C) The ecological community exists only as highly modified occurrences that may be capable of being rehabilitated if such work begins in the immediate future (within approximately 10 years).

Definitions and Criteria for Presumed Totally Destroyed, Critically Endangered, Endangered and Vulnerable Ecological Communities	
Endangered (EN)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in an area and/or was originally of limited distribution and is in danger of significant modification throughout it range or severe modification or destruction over most of its range in the near future An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future. This will be determined on the basis of the best available information by it meeting any one or more of the following criteria (A, B, or C): A) Geographic range, and/or total area occupied, and/or number of discrete occurrences have been reduced by at least 70% since European settlement and either or both of the following apply (i or ii): i) the estimated geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is likely in the short term future (within approximately 20 years); ii) modification throughout its range is continuing such that in the short term future (within approximately 20 years) the community is unlikely to be capable of being substantially restored or rehabilitated. B) Current distribution is limited, and one or more of the following apply (I, ii, iii) i) geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the short term future (within approximately 20 years); ii) There are few occurrences, each of which is small and/or isolated and all or most occurrences are very vulnerable to known threatening processes; iii) There may be many occurrences but total area is small and all or most occurrences are small and/or isolated and very vulnerable to known threatening processes. C) The ecological community exists only as very modified occurrences that may be capable of being substantially restored or rehabilitated if such work begins in the short-term future (within approximately 20 years).
Vulnerable (VU)	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range. An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing a high risk of total destruction or significant modification in the medium (within approximately 50 years) to long-term future. This will be determined on the basis of the best available information by it meeting any one or more of the following criteria (A, B or C): A) The ecological community exists largely as modified occurrences that are likely to be capable of being substantially restored or rehabilitated. B) The ecological community may already be modified and would be vulnerable to threatening processes, is restricted in area and/or range and/or is only found at a few locations. C) The ecological community may be still widespread but is believed likely to move into a category of higher threat in the medium to long-term future because of existing or impending threatening processes.

Definitions and Criteria for Priority Ecological Communities	
Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community List under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community. Ecological communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.	
Priority 1 **Poorly-known ecological communities**	Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤ 100ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.
Priority 2 **Poorly-known ecological communities**	Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.
Priority 3 **Poorly-known ecological communities**	i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat or habitat destruction or degradation ii) communities known forma few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; iii) communities made up of large, and/or widespread occurrences, that may or not be represented in the reserve system bit are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stick, and inappropriate fire regimes Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them
Priority 4 **Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring**	a) Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands. b) Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. c) Ecological communities that have been removed from the list of threatened communities during the past five years
Priority 5 **Conservation Dependent ecological communities**	Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result int eh community becoming threatened within five years

APPENDIX 2

Foraging quality scoring tool

Table A1 Foraging quality scoring tool template

Starting score		Baudin's Cockatoo	Carnaby's Cockatoo	Forest Red-tailed Black-Cockatoo
10		**Start at a score of 10** if your site is native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly Marri, within the range of the species, including along roadsides and parkland cleared areas. Can include planted vegetation. **This tool only applies to sites equal to or larger than 1 hectare in size.**	**Start at a score of 10** if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as *Banksia* spp. (including *Dryandra* spp.), *Hakea* spp. and *Grevillea* spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. **This tool only applies to sites equal to or larger than 1 hectare in size.**	**Start at a score of 10** if your site is Jarrah or Marri woodland and/or forest, or if it is on the edge of Karri forest, or if Wandoo and Blackbutt occur on the site, within the range of the subspecies, including along roadsides and parkland cleared areas. **This tool only applies to sites equal to or larger than 1 hectare in size.**
Attribute	Sub-tractions	Context adjustor (attributes reducing functionality of foraging habitat)		
Foraging potential	**-2**	**Subtract 2** from your score if there is no evidence of feeding debris on your site.	**Subtract 2** from your score if there is no evidence of feeding debris on your site.	**Subtract 2** from your score if there is no evidence of feeding debris on your site.
Connectivity	**-2**	**Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	**Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	**Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.
Proximity to breeding	**-2**	**Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat	**Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat.	**Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat.
Proximity to roosting	**-1**	**Subtract 1** if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	**Subtract 1** if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	**Subtract 1** if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.
Impact from significant plant disease	**-1**	**Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	**Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	**Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.
Total score		*Enter score*	*Enter score*	*Enter score*
Appraisal		To support your habitat score, you should provide an overall appraisal of the habitat on the impact site and within 20km of the impact area to clearly explain and justify the score. It should include discussion on the foraging habitat's proximity to other resources (e.g. exact distance to proximate resources), frequency of use of proximate sites, the degree of evidence and description of vegetation type and condition.		

APPENDIX 3

Offset Habitat Scoring System

Habitat Scoring System for WA black cockatoo foraging habitat

This habitat scoring system describes elements indicative of suitable foraging habitat[1] for the three WA black cockatoo species (Carnaby's Black Cockatoo, Baudin's Black Cockatoo and the Forest Red-tailed Black Cockatoo) in WA. Its use must be supported by survey information and reporting, undertaken by suitably qualified and experienced ecologists.

Appropriate scores will best fit a description. Where all components of the 'detail' column description are not met, this must be specified, and justification provided for that score to be accepted by the Department.

For an offset site to be considered by the Department, the offset site must have a start score of 1 for each indicator (e.g., there must be a species stocking rate score of at least 1).

Indicator	Score	Detail	Impact site	Offset start quality	Without offset	With offset
Site Condition						
	Foraging value	Details				
Vegetation condition and structure. Habitat features	**7**	Very High	Carnaby's Black Cockatoo				
			Native kwongan heath and shrubland (>30% projected foliage cover), banksia and eucalypt woodlands with >50% projected foliage cover. Low percentage (< 5%) of tree deaths[2].				
			Baudin's Black Cockatoo				
			Marri-Jarrah Forest and woodlands with >50% projected foliage cover. Low percentage (< 5%) of tree deaths.				
			Forest Red-tailed Black Cockatoo				
			Marri-Jarrah-Karri Forest, other eucalypt woodlands, or allocasuarina woodlands, with >50% projected foliage cover. Low percentage (< 5%) of tree deaths.				
	6	High	Carnaby's Black Cockatoo				
			Native kwongan heath and shrubland (>25% projected foliage cover), banksia and eucalypt woodlands with >40% projected foliage cover. Low percentage (< 10%) of tree deaths.				
			Baudin's Black Cockatoo				
			Marri-Jarrah Forest and woodlands with >40% projected foliage cover. Low percentage (< 10%) of tree deaths.				
			Forest Red-tailed Black Cockatoo				
			Marri-Jarrah-Karri Forest, other eucalypt woodlands, or allocasuarina woodlands, with >40% projected foliage cover. Low percentage (< 10%) of tree deaths.				

[1] In some cases, an impact or offset site may contain or require both foraging and breeding habitat for one or more black cockatoos. Breeding habitat is species of trees known to support breeding within the range of the species which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow. For most species of trees, suitable DBH is 500 mm. For salmon gum and wandoo, suitable DBH is 300 mm.

[2] No tree deaths indicate robustness of habitat, unlikely for the habitat to decline in the medium-term. Tree deaths may be owing to disease, water stress, fire, etc.

Vegetation condition and structure. Habitat features	**5**	Moderate to high	Carnaby's Black Cockatoo				
			Native kwongan heath and shrubland (>20% projected foliage cover), banksia and eucalypt woodlands with 30-40% projected foliage cover; OR > 60% projected foliage cover but veg. condition reduced due to tree deaths (up to 20%).				
			Baudin's Black Cockatoo				
			Marri-Jarrah Forest or woodlands with 30-40% projected foliage cover; OR > 60% projected foliage cover but veg. condition reduced due to tree deaths (up to 20%).				
			Forest Red-tailed Black Cockatoo				
			Marri-Jarrah-Karri Forest, other eucalypt woodlands, or allocasuarina woodlands, with 30-40% projected foliage cover; OR > 60% projected foliage cover but veg. condition reduced due to tree deaths (up to 20%).				
	4	Moderate	Carnaby's Black Cockatoo				
			Native kwongan heath and shrubland, banksia or eucalypt woodlands with 20-30% projected foliage cover. Moderate percentage of tree deaths (30-40%).				
			Baudin's Black Cockatoo				
			Marri-Jarrah Forest or woodlands with 20-30% projected foliage cover; OR Marri-Jarrah Forest with 40-60% projected foliage cover but vegetation condition reduced due to tree deaths (up to 30-40%).				
			Forest Red-tailed Black Cockatoo				
			Marri-Jarrah-Karri Forest, other eucalypt woodlands, or allocasuarina woodlands with: 20-30% projected foliage cover; OR 40-60% projected foliage cover but veg. condition reduced due to tree deaths (up to 30-40%).				
	3	Low to moderate	Carnaby's Black Cockatoo				
			Native kwongan heath and shrubland, banksia or eucalypt woodlands with 10-20% projected foliage cover.				
			Baudin's Black Cockatoo				
			Marri-Jarrah Forest or woodlands with 5-20% projected foliage cover.				
			Forest Red-tailed Black Cockatoo				
			Marri-Jarrah-Karri Forest, other eucalypt woodlands, or allocasuarina woodlands with 5-20% projected foliage cover.				
	2	Low	Carnaby's Black Cockatoo				
			Native kwongan heath and shrubland, banksia and eucalypt woodlands with <10% projected foliage cover; OR Paddocks and/or urban areas with scattered foraging trees such as banksias, marri.				
			Baudin's Black Cockatoo				
			Marri-Jarrah Forest or woodlands with 1-5% projected foliage cover; OR Paddocks and/or urban areas with scattered foraging trees such as banksia, hakea, dryandra.				

Vegetation condition and structure. Habitat features			Forest Red-tailed Black Cockatoo				
			Marri-Jarrah-Karri Forest, other eucalypt woodlands, or allocasuarina woodlands with 1-5% projected foliage cover; OR Paddocks and/or urban areas with scattered food plants such as Cape Lilac, *Eucalyptus caesia* and *E. erythrocorys*.				
	1	Negligible to low	All species				
			Scattered specimens of known food plants but projected foliage cover of these is <2%. May include: paddocks or urban areas with scattered foraging trees.				
	0	None	All species				
			No Proteaceae, eucalypts or other potential sources of food. May include bare ground or developed sites devoid of vegetation (e.g. infrastructure, roads, gravel pits).				
			Totals				

Site Context								
Proximity of the site in relation to other habitat.	**3**	Site is within 6km of known breeding site.	or	Site is within 12km of other foraging resources with site condition of at least 3.				
	2	Site is within 12km of known breeding site.	or	Site is within 15km of other foraging resources with site condition of at least 4.				
	1	Site is within 15km of known breeding site.	or	Site is between 15km and 20km of other foraging resources with site condition of at least 5.				
	0	Site is further than 15km from known breeding site.	or	Site is further than 20km from other foraging resources.				
				Totals				

Final Totals				

Indicator		**Species Stocking Rate**[3]	**Impact Site**			**Offset Site**		
			CBC	**BBC**	**FRT**	**CBC**	**BBC**	**FRT**
Confirm presence/ absence of species.	**Yes**	Species is seen or reported regularly and/or there is abundant foraging evidence, e.g. chewed nuts can be identified as this species. Regularly is when the species is seen at intervals of every few days or weeks for at least several months of the year.						
	No	Species is recorded or reported very infrequently and there is little or no foraging evidence.						

[3] Species stocking rate is indicated by yes or no to confirm if any of the species is frequently present or not. If yes, the presence must be for the species being impacted by the proposal, not for a species that will not be impacted.

Legend	
	If the site scores between 0-2 (low to no value) for site condition, 0 for the site context score, or is **No** for species stocking rate, it is extremely unlikely to be considered as suitable habitat. This would not be appropriate to use as an offset site.

The metrics used to determine Site Condition, Site Context, and Species Stocking Rate were developed by the Department of Climate Change, Energy, the Environment, and Water in consultation with species experts in WA.

A standard habitat quality scoring system for a species allocates scores out of 3 for both site condition and site context, and out of 4 for species stocking rate. However, as black cockatoos are very mobile, this HQS uses a score out of 7 for site condition and a score out of 3 for site context. Site condition is considered the key factor in determining the quality of habitat for these black cockatoo species. Species stocking rate is considered only in terms of presence or absence of the species and does not add to the total score. Note that the species, or strong indicators of the species, must be present, consistent with the presence/usage description above, for an offset to be considered suitable.

APPENDIX 4

List of fauna species potentially occurring within and surrounding the study area.

Class	Scientific Name	Common Name	ALA	Biologic 2018	Bird data	Dandjoo	DBCA	PMST
Amphibians	*Crinia georgiana*	Quacking Frog	x					
Amphibians	*Crinia glauerti*	Rattling Froglet	x					
Amphibians	*Crinia insignifera*	Squelching Froglet	x					
Amphibians	*Crinia pseudinsignifera*	Bleating Froglet	x					
Amphibians	*Crinia subinsignifera*	Small Western Froglet	x					
Amphibians	*Geocrinia leai*	Ticking Frog	x					
Amphibians	*Geocrinia lutea*	Nornalup Frog	x					
Amphibians	*Geocrinia rosea*	Karri Frog	x					
Amphibians	*Heleioporus albopunctatus*	Western Spotted Frog	x					
Amphibians	*Heleioporus eyrei*	Moaning Frog	x					
Amphibians	*Heleioporus inornatus*	Whooping Frog	x					
Amphibians	*Limnodynastes dorsalis*	Western Banjo Frog	x					
Amphibians	*Litoria adelaidensis*	Slender Tree Frog	x	x				
Amphibians	*Litoria moorei*	Motorbike Frog	x	x				
Amphibians	*Metacrinia nichollsi*	Forest Toadlet	x					
Amphibians	*Myobatrachus gouldii*	Turtle Frog	x					
Amphibians	*Pseudophryne guentheri*	Gunther's Toadlet	x					
Bird	*Botaurus poiciloptilus*	Australasian Bittern	x				x	x
Bird	*Falco hypoleucos*	Grey Falcon						x
Bird	*Leipoa ocellata*	Malleefowl	x				x	x
Bird	*Numenius madagascariensis*	Eastern Curlew						x
Birds	*Acanthiza apicalis*	Inland Thornbill	x		x			
Birds	*Acanthiza chrysorrhoa*	Yellow Rumped Thornbill	x	x	x			
Birds	*Acanthiza inornata*	Western Thornbill	x		x			
Birds	*Acanthiza uropygialis*	Chestnut-rumped Thornbill	x					
Birds	*Acanthorhynchus superciliosus*	Western Spinebill	x		x			
Birds	*Accipiter cirrocephalus*	Collared Sparrowhawk	x		x			
Birds	*Accipiter fasciatus*	Brown Goshawk	x		x			
Birds	*Acrocephalus australis*	Australian Reed Warbler	x		x			
Birds	*Actitis hypoleucos*	Common Sandpiper	x		x		x	
Birds	*Aegotheles cristatus*	Australian Owlet-nightjar	x	x	x			
Birds	*Anas castanea*	Chestnut Teal	x		x			
Birds	*Anas gracilis*	Grey Teal	x		x			
Birds	*Anas platyrhynchos*	Northern Mallard	x		x			
Birds	*Anas rhynchotis*	Australasian Shoveler	x		x			
Birds	*Anas superciliosa*	Pacific Black Duck	x		x			
Birds	*Anhinga novaehollandiae*	Australasian Darter	x		x			
Birds	*Anser anser*	Greylag Goose	x		x			
Birds	*Anthochaera carunculata*	Red Wattlebird	x	x	x			
Birds	*Anthochaera lunulata*	Western Wattlebird	x		x			
Birds	*Anthus novaeseelandiae*	Australian Pipit	x		x			
Birds	*Aquila audax*	Wedge-tailed Eagle	x	x	x			
Birds	*Ardea alba*	Great Egret	x		x			
Birds	*Ardea pacifica*	White-necked Heron	x		x			

Class	Scientific Name	Common Name	ALA	Biologic 2018	Bird data	Dandjoo	DBCA	PMST
Birds	*Ardeotis australis*	Australian Bustard	x					
Birds	*Artamus cinereus*	Black-faced Woodswallow	x		x			
Birds	*Artamus cyanopterus*	Dusky Woodswallow	x	x	x			
Birds	*Artamus personatus*	Masked Woodswallow	x					
Birds	*Aythya australis*	Hardhead	x		x			
Birds	*Barnardius zonarius*	Australian Ringneck	x	x	x			
Birds	*Biziura lobata*	Musk Duck	x	x	x			
Birds	*Bubulcus ibis*	Cattle Egret	x					
Birds	*Burhinus grallarius*	Bush Stone-curlew	x					
Birds	*Cacatua pastinator*	Western Corella	x		x			
Birds	*Cacatua sanguinea*	Little Corella	x					
Birds	*Cacomantis flabelliformis*	Fan-tailed Cuckoo	x		x			
Birds	*Cairina moschata*	Muscovy Duck			x			
Birds	*Calamanthus campestris*	Rufous Fieldwren	x		x			
Birds	*Calidris ferruginea*	Curlew Sandpiper						x
Birds	*Calidris ruficollis*	Red-necked Stint	x		x			
Birds	*Calyptorhynchus banksii naso*	Forest Red-tailed Black-cockatoo	x	x	x		x	x
Birds	*Calyptorhynchus baudinii*	Baudin's Black-Cockatoo	x		x		x	x
Birds	*Calyptorhynchus latirostris*	Carnaby's Black-cockatoo	x		x		x	x
Birds	*Chalcites basalis*	Horsfield's Bronze-Cuckoo	x		x			
Birds	*Chalcites lucidus*	Shining Bronze-Cuckoo	x		x			
Birds	*Charadrius ruficapillus*	Red-capped Plover	x		x			
Birds	*Chenonetta jubata*	Australian Wood Duck	x		x			
Birds	*Chlidonias leucopterus*	White-winged Tern	x				x	
Birds	*Chroicocephalus novaehollandiae*	Silver Gull	x		x			
Birds	*Cincloramphus cruralis*	Brown Songlark	x		x			
Birds	*Cincloramphus mathewsi*	Rufous Songlark	x		x			
Birds	*Circus approximans*	Swamp Harrier	x		x			
Birds	*Circus assimilis*	Spotted Harrier	x		x			
Birds	*Cladorhynchus leucocephalus*	Banded Stilt			x			
Birds	*Climacteris rufus*	Rufous Treecreeper	x		x			
Birds	*Colluricincla harmonica*	Grey Shrike-thrush	x		x			
Birds	*Columba livia*	Rock Dove	x		x			
Birds	*Coracina maxima*	Ground Cuckoo-shrike	x					
Birds	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike	x		x			
Birds	*Corvus bennetti*	Little Crow	x					
Birds	*Corvus coronoides*	Australian Raven	x	x	x			
Birds	*Coturnix pectoralis*	Stubble Quail	x		x			
Birds	*Cracticus nigrogularis*	Pied Butcherbird	x		x			
Birds	*Cracticus torquatus*	Grey Butcherbird	x		x			
Birds	*Cygnus atratus*	Black Swan	x	x	x			
Birds	*Cygnus olor*	Mute Swan	x					
Birds	*Dacelo novaeguineae*	Laughing Kookaburra	x	x	x	x		
Birds	*Daphoenositta chrysoptera*	Varied Sittella	x		x			

Class	Scientific Name	Common Name	ALA	Biologic 2018	Bird data	Dandjoo	DBCA	PMST
Birds	*Dasyornis broadbenti litoralis*	South-western Rufous Bristlebird	x					
Birds	*Dicaeum hirundinaceum*	Mistletoebird	x		x			
Birds	*Dromaius novaehollandiae*	Emu	x	x	x	x		
Birds	*Egretta garzetta*	Little Egret	x					
Birds	*Egretta novaehollandiae*	White-faced Heron	x	x	x			
Birds	*Egretta sacra*	Eastern Reef Egret	x					
Birds	*Elanus axillaris*	Black-shouldered Kite	x		x			
Birds	*Elseyornis melanops*	Black-fronted Dotterel	x		x			
Birds	*Eolophus roseicapilla*	Galah	x		x			
Birds	*Eopsaltria griseogularis*	Western Yellow Robin	x	x	x			
Birds	*Epthianura albifrons*	White-fronted Chat	x		x			
Birds	*Erythrogonys cinctus*	Red-kneed Dotterel	x		x			
Birds	*Eurostopodus argus*	Spotted Nightjar	x					
Birds	*Falco berigora*	Brown Falcon	x		x			
Birds	*Falco cenchroides*	Nankeen Kestrel	x		x			
Birds	*Falco longipennis*	Australian Hobby	x		x			
Birds	*Falco peregrinus*	Peregrine Falcon	x		x		x	
Birds	*Falcunculus frontatus*	Crested Shrike-tit	x		x			
Birds	*Fulica atra*	Eurasian Coot	x		x			
Birds	*Gallinula tenebrosa*	Dusky Moorhen	x		x			
Birds	*Gavicalis virescens*	Singing Honeyeater	x		x			
Birds	*Gerygone fusca*	Western Gerygone	x	x	x			
Birds	*Gliciphila melanops*	Tawny-crowned Honeyeater	x					
Birds	*Glossopsitta porphyrocephala*	Purple-crowned Lorikeet			x			
Birds	*Glyciphila melanops*	Tawny-crowned Honeyeater			x			
Birds	*Grallina cyanoleuca*	Magpie-lark	x		x			
Birds	*Gymnorhina tibicen*	Australian Magpie	x	x	x			
Birds	*Haematopus fuliginosus*	Sooty Oystercatcher			x			
Birds	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	x		x			
Birds	*Haliastur sphenurus*	Whistling Kite	x		x			
Birds	*Heteroscenes pallidus*	Pallid Cuckoo	x		x			
Birds	*Hieraaetus morphnoides*	Little Eagle	x		x			
Birds	*Himantopus himantopus*	Pied Stilt	x					
Birds	*Himantopus leucocephalus*	Black-winged Stilt			x			
Birds	*Hirundo neoxena*	Welcome Swallow	x	x	x			
Birds	*Hirundo rustica*	Barn Swallow	x					
Birds	*Hypotaenidia philippensis*	Buff-Banded Rail	x		x			
Birds	*Ixobrychus dubius*	Australian Little Bittern	x		x			
Birds	*Ixobrychus flavicollis australis (southwest subpop.)*	black bittern (southwest subpop.)	x				x	
Birds	*Lalage tricolor*	White-winged Triller	x		x			
Birds	*Larus pacificus*	Pacific Gull			x			
Birds	*Lewinia pectoralis*	Lewin's Rail	x				x	
Birds	*Lichmera indistincta*	Brown Honeyeater	x		x			
Birds	*Lophoictinia isura*	Square-tailed Kite	x	x	x			

Class	Scientific Name	Common Name	ALA	Biologic 2018	Bird data	Dandjoo	DBCA	PMST
Birds	*Malacorhynchus membranaceus*	Pink-eared Duck	x		x			
Birds	*Malurus elegans*	Red-winged Fairy-wren	x	x	x	x		
Birds	*Malurus lamberti*	Variegated Fairy-wren	x					
Birds	*Malurus pulcherrimus*	Blue-breasted Fairy-wren	x					
Birds	*Malurus splendens*	Splendid Fairy-wren	x		x			
Birds	*Manorina flavigula*	Yellow-throated Miner	x		x			
Birds	*Melanodryas cucullata*	Hooded Robin	x		x			
Birds	*Melithreptus brevirostris*	Brown-headed Honeyeater	x		x			
Birds	*Melithreptus chloropsis*	Western White-naped Honeyeater	x		x			
Birds	*Melopsittacus undulatus*	Budgerigar	x					
Birds	*Merops ornatus*	Rainbow Bee-eater	x		x			
Birds	*Microcarbo melanoleucos*	Little Pied Cormorant	x		x			
Birds	*Microeca fascinans*	Jacky Winter	x		x			
Birds	*Morus serrator*	Australasian Gannet			x			
Birds	*Myiagra inquieta*	Restless Flycatcher	x		x			
Birds	*Neophema elegans*	Elegant Parrot	x		x			
Birds	*Ninox boobook*	Southern Boobook	x	x	x			
Birds	*Ninox connivens*	Barking Owl	x					
Birds	*Numida meleagris*	Helmeted Guineafowl	x		x			
Birds	*Nycticorax caledonicus*	Nankeen Night-Heron	x		x			
Birds	*Nymphicus hollandicus*	Cockatiel	x					
Birds	*Ocyphaps lophotes*	Crested Pigeon	x		x			
Birds	*Onychoprion fuscatus*	Sooty Tern	x					
Birds	*Oxyura australis*	Blue-billed Duck	x		x		x	
Birds	*Pachycephala fuliginosa*	Western Whistler	x		x			
Birds	*Pachycephala rufiventris*	Rufous Whistler	x		x			
Birds	*Pachyptila desolata*	Antarctic Prion	x					
Birds	*Pandion haliaetus*	Osprey	x		x			
Birds	*Pardalotus punctatus*	Spotted Pardalote	x		x			
Birds	*Pardalotus striatus*	Striated Pardalote	x	x	x			
Birds	*Parvipsitta porphyrocephala*	Purple-crowned Lorikeet	x	x				
Birds	*Pelecanus conspicillatus*	Australian Pelican	x	x	x			
Birds	*Petrochelidon ariel*	Fairy Martin	x		x			
Birds	*Petrochelidon nigricans*	Tree Martin	x		x			
Birds	*Petroica boodang*	Scarlet Robin	x	x				
Birds	*Petroica goodenovii*	Red-capped Robin	x		x			
Birds	*Phalacrocorax carbo*	Great Cormorant	x		x			
Birds	*Phalacrocorax sulcirostris*	Little Black Cormorant	x		x			
Birds	*Phalacrocorax varius*	Pied Cormorant	x		x			
Birds	*Phaps chalcoptera*	Common Bronzewing	x	x	x			
Birds	*Phaps elegans*	Brush Bronzewing	x		x			
Birds	*Phylidonyris niger*	White-cheeked Honeyeater	x		x			
Birds	*Phylidonyris novaehollandiae*	New Holland Honeyeater	x	x	x			
Birds	*Platalea flavipes*	Yellow-billed Spoonbill	x		x			

Class	Scientific Name	Common Name	ALA	Biologic 2018	Bird data	Dandjoo	DBCA	PMST
Birds	*Platalea regia*	Royal Spoonbill	x		x			
Birds	*Platycercus icterotis*	Western Rosella	x		x			
Birds	*Plegadis falcinellus*	Glossy Ibis	x		x			
Birds	*Podargus strigoides*	Tawny Frogmouth	x	x	x			
Birds	*Podiceps cristatus*	Great Crested Grebe	x		x			
Birds	*Poliocephalus poliocephalus*	Hoary-headed Grebe	x		x			
Birds	*Polytelis anthopeplus*	Regent Parrot	x		x			
Birds	*Pomatostomus superciliosus*	White-browed Babbler	x		x			
Birds	*Poodytes gramineus*	Little Grassbird	x		x			
Birds	*Porphyrio porphyrio*	Purple Swamphen	x		x			
Birds	*Porzana fluminea*	Spotted Crake	x					
Birds	*Porzana pusilla*	Marsh Crake	x					
Birds	*Porzana tabuensis*	Little Swamphen	x					
Birds	*Psephotus varius*	Mulga Parrot	x		x			
Birds	*Ptilotula ornata*	Yellow-plumed Honeyeater	x		x			
Birds	*Purpureicephalus spurius*	Red-capped Parrot	x		x			
Birds	*Quoyornis georgiana*	White-breasted Robin	x		x	x		
Birds	*Recurvirostra novaehollandiae*	Red-necked Avocet			x			
Birds	*Rhipidura albiscapa*	Grey Fantail	x	x	x			
Birds	*Rhipidura leucophrys*	Willie Wagtail	x	x	x			
Birds	*Rostratula australis*	Australian Painted Snipe			x			
Birds	*Sericornis frontalis*	White-browed Scrubwren	x	x	x	x		
Birds	*Smicrornis brevirostris*	Weebill	x		x			
Birds	*Stagonopleura oculata*	Red-eared Firetail	x		x			
Birds	*Stictonetta naevosa*	Freckled Duck	x		x			
Birds	*Stipiturus malachurus*	Southern Emu-wren	x		x			
Birds	*Strepera versicolor*	Grey Currawong	x		x			
Birds	*Streptopelia chinensis*	Spotted Turtle-dove	x					
Birds	*Streptopelia senegalensis*	Laughing Dove			x			
Birds	*Sturnus vulgaris*	Common Starling	x					
Birds	*Synoicus ypsilophora*	Partridge Quail	x					
Birds	*Tachybaptus novaehollandiae*	Australasian Grebe	x		x			
Birds	*Tadorna tadornoides*	Australian Shelduck	x		x			
Birds	*Taeniopygia guttata*	Zebra Finch	x					
Birds	*Thalasseus bergii*	Crested Tern	x		x			
Birds	*Thinornis cucullatus*	Hooded Plover			x			
Birds	*Threskiornis moluccus*	Australian White Ibis	x		x			
Birds	*Threskiornis spinicollis*	Straw-necked Ibis	x		x			
Birds	*Todiramphus sanctus*	Sacred Kingfisher	x		x			
Birds	*Tribonyx ventralis*	Black-tailed Native-hen	x		x			
Birds	*Tringa glareola*	Wood Sandpiper	x		x		x	
Birds	*Tringa nebularia*	Common Greenshank	x		x			
Birds	*Turdus merula*	Eurasian Blackbird	x					
Birds	*Turnix varius*	Painted Button-quail	x		x			

Class	Scientific Name	Common Name	ALA	Biologic 2018	Bird data	Dandjoo	DBCA	PMST
Birds	*Turnix velox*	Little Button-quail	x		x			
Birds	*Tyto alba*	Barn Owl	x		x			
Birds	*Tyto javanica*	Eastern Barn Owl	x					
Birds	*Tyto novaehollandiae novaehollandiae*	Masked Owl	x				x	
Birds	*Vanellus tricolor*	Banded Lapwing	x					
Birds	*Zapornia tabuensis*	Spotless Crake			x			
Birds	*Zosterops lateralis*	Silvereye	x		x	x		
Fish	*Afurcagobius tamarensis*	Tamar Goby	x					
Fish	*Bostockia porosa*	Nightfish	x					
Fish	*Galaxias maculatus*	Common Galaxias	x					
Fish	*Galaxias occidentalis*	Western Galaxias	x					
Fish	*Galaxiella munda*	Mud Minnow	x					
Fish	*Galaxiella nigrostriata*	Blackstriped Dwarf Galaxias	x				x	x
Fish	*Gambusia holbrooki*	Top Minnow	x					
Fish	*Gymnothorax woodwardi*	Woodward's Moray	x					
Fish	*Lepidogalaxias salamandroides*	Salamanderfish	x				x	
Fish	*Nannatherina balstoni*	Balston's Pygmy Perch						x
Fish	*Nannoperca vittata*	Western Pygmy Perch	x					
Fish	*Oncorhynchus mykiss*	Rainbow Trout	x					
Fish	*Pseudogobius olorum*	Bluespot Goby	x					
Mammals	*Antechinus flavipes*	Yellow-footed Antechinus	x			x		
Mammals	*Austronomus australis*	White-striped Freetail-bat	x					
Mammals	*Bettongia penicillata ogilbyi*	Woylie	x				x	x
Mammals	*Canis familiaris*	Common Dog	x					
Mammals	*Capra hircus*	Goat	x					
Mammals	*Cercartetus concinnus*	Western Pygmy-possum	x	x		x		
Mammals	*Chalinolobus gouldii*	Gould's Wattled Bat	x					
Mammals	*Chalinolobus morio*	Chocolate Wattled Bat	x					
Mammals	*Dama dama*	Fallow Deer	x					
Mammals	*Dasyurus geoffroii*	Chuditch	x	x			x	x
Mammals	*Falsistrellus mackenziei*	Western False Pipistrelle	x				x	
Mammals	*Felis catus*	Cat	x	x				
Mammals	*Hydromys chrysogaster*	Rakali	x				x	
Mammals	*Isoodon fusciventer*	Quenda	x	x			x	
Mammals	*Macropus fuliginosus*	Western Grey Kangaroo	x	x		x		
Mammals	*Macrotis lagotis*	Greater Bilby	x				x	
Mammals	*Mus musculus*	House Mouse	x	x				
Mammals	*Myrmecobius fasciatus*	Numbat	x				x	x
Mammals	*Notamacropus eugenii*	Tammar Wallaby	x					
Mammals	*Notamacropus irma*	Western Brush Wallaby	x	x			x	
Mammals	*Nyctophilus geoffroyi*	Lesser Long-eared Bat	x					
Mammals	*Nyctophilus major*	Greater Long-eared Bat	x					
Mammals	*Oryctolagus cuniculus*	Rabbit	x	x				
Mammals	*Phascogale calura*	Red-tailed Phascogale	x				x	x

Class	Scientific Name	Common Name	ALA	Biologic 2018	Bird data	Dandjoo	DBCA	PMST
Mammals	*Phascogale tapoatafa wambenger*	Brush-tailed Phascogale	x	x			x	
Mammals	*Pseudocheirus occidentalis*	Western Ringtail Possum	x	x			x	x
Mammals	*Rattus fuscipes*	Bush Rat	x			x		
Mammals	*Rattus rattus*	Black Rat	x	x		x		
Mammals	*Setonix brachyurus*	Quokka	x				x	x
Mammals	*Sminthopsis dolichura*	Little Long-tailed Dunnart	x					
Mammals	*Sminthopsis fuliginosus*	Dusky Dunnart	x					
Mammals	*Sminthopsis gilberti*	Gilbert's Dunnart	x					
Mammals	*Sus scrofa*	Pig	x	x				
Mammals	*Tachyglossus aculeatus*	Short-beaked Echidna	x					
Mammals	*Tarsipes rostratus*	Honey Possum	x					
Mammals	*Trichosurus vulpecula*	Common Brushtail Possum	x	x				
Mammals	*Vespadelus regulus*	Southern Forest Bat	x					
Mammals	*Vulpes vulpes*	Red Fox	x	x				
Reptiles	*Acritoscincus trilineatus*	Western Three-lined Skink	x					
Reptiles	*Anilios australis*	Southern Blind Snake	x					
Reptiles	*Aprasia pulchella*	Western Granite Worm-lizard	x					
Reptiles	*Chelodina colliei*	South-western Long-necked Turtle	x					
Reptiles	*Christinus marmoratus*	Marbled Gecko	x					
Reptiles	*Cryptoblepharus buchananii*	Buchanan's Snake-eyed Skink	x					
Reptiles	*Ctenotus delli*	Darling Range South-west Ctenotus	x				x	
Reptiles	*Ctenotus impar*	Odd-striped Ctenotus	x					
Reptiles	*Ctenotus labillardieri*	Common South-west Ctenotus	x					
Reptiles	*Diplodactylus lateroides*	Speckled Stone Gecko	x					
Reptiles	*Egernia kingii*	King's Skink	x					
Reptiles	*Egernia napoleonis*	South-western Crevice-skink	x	x		x		
Reptiles	*Hemiergis gracilipes*	South-western Mulch-skink	x					
Reptiles	*Hemiergis initialis*	Southwestern Earless Skink	x					
Reptiles	*Hemiergis peronii*	Four-toed Mulch Skink	x	x				
Reptiles	*Lerista distinguenda*	South-western Orange-tailed Slider	x	x				
Reptiles	*Lerista microtis*	South-western Slider	x					
Reptiles	*Menetia greyii*	Common Dwarf Skink	x					
Reptiles	*Morethia lineoocellata*	West Coast Morethia Skink	x					
Reptiles	*Morethia obscura*	Shrubland Morethia Skink	x	x				
Reptiles	*Notechis scutatus*	Tiger Snake	x	x				
Reptiles	*Pseudonaja affinis*	Dugite	x					
Reptiles	*Suta gouldii*	Gould's Hooded Snake	x					
Reptiles	*Suta nigriceps*	Mitchell's Short-tailed Snake	x					
Reptiles	*Tiliqua rugosa*	Shingle-back	x	x		x		
Reptiles	*Varanus rosenbergi*	Heath Monitor	x	x		x		

APPENDIX 5

Vertebrate fauna list from the study area

Group	Taxon Name	Common Name
Amphibians	*Crinia georgiana*	Quacking Frog
Amphibians	*Crinia glauerti*	Clicking Frog
Amphibians	*Geocrinia leai*	Ticking Frog
Amphibians	*Heleioporus eyrei*	Moaning Frog
Amphibians	*Limnodynastes dorsalis*	Western Banjo Frog
Amphibians	*Litoria adelaidensis*	Slender Tree Frog
Amphibians	*Litoria moorei*	Motorbike Frog
Birds	*Acanthiza apicalis*	Inland Thornbill (Broad-tailed Thornbill)
Birds	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill
Birds	*Acanthiza inornata*	Western Thornbill
Birds	*Acrocephalus australis*	Australian Reed Warbler
Birds	*Aegotheles cristatus*	Australian Owlet-nightjar
Birds	*Anas superciliosa*	Pacific Black Duck
Birds	*Anhinga novaehollandiae*	Australasian Darter
Birds	*Anthochaera carunculata*	Red Wattlebird
Birds	*Anthochaera lunulata*	Western Little Wattlebird (Western Wattlebird)
Birds	*Aquila audax*	Wedge-tailed Eagle
Birds	*Artamus cyanopterus*	Dusky Woodswallow
Birds	*Barnardius zonarius*	Australian Ringneck
Birds	*Biziura lobata*	Musk Duck
Birds	*Botaurus poiciloptilus*	Australasian Bittern[2]
Birds	*Cacatua pastinator*	Western Corella
Birds	*Cacomantis flabelliformis*	Fan-tailed Cuckoo
Birds	*Calyptorhynchus banksii naso*	Forest Red-tailed Black-cockatoo
Birds	*Chalcites basalis*	Horsfield's Bronze-Cuckoo
Birds	*Chalcites lucidus*	Shining Bronze Cuckoo
Birds	*Chenonetta jubata*	Australian Wood Duck
Birds	*Climacteris rufus*	Rufous Treecreeper
Birds	*Colluricincla harmonica*	Grey Shrike-thrush
Birds	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike
Birds	*Corvus coronoides*	Australian Raven
Birds	*Cracticus torquatus*	Grey Butcherbird
Birds	*Dacelo novaeguineae*	Laughing Kookaburra
Birds	*Dromaius novaehollandiae*	Emu
Birds	*Egretta novaehollandiae*	White-faced Heron
Birds	*Eolophus roseicapilla*	Galah
Birds	*Eopsaltria griseogularis*	Western Yellow Robin
Birds	*Fulica atra*	Eurasian Coot
Birds	*Gallinula tenebrosa*	Dusky Moorhen
Birds	*Gerygone fusca*	Western Gerygone
Birds	*Grallina cyanoleuca*	Magpie-lark
Birds	*Gymnorhina tibicen*	Australian Magpie
Birds	*Haliaeetus leucogaster*	White-bellied Sea-Eagle
Birds	*Haliastur sphenurus*	Whistling Kite
Birds	*Hieraaetus morphnoides*	Little Eagle
Birds	*Hirundo neoxena*	Welcome Swallow

[2] Recorded from outside the study area.

Group	Taxon Name	Common Name
Birds	*Lichmera indistincta*	Brown Honeyeater
Birds	*Malurus elegans*	Red-winged Fairy-wren
Birds	*Malurus splendens*	Splendid Fairy-wren
Birds	*Melithreptus chloropsis*	Western White-naped Honeyeater
Birds	*Microcarbo melanoleucos*	Little Pied Cormorant
Birds	*Ninox boobook*	Southern Boobook Owl
Birds	*Pachycephala fuliginosa*	Western Whistler
Birds	*Pachycephala rufiventris*	Rufous Whistler
Birds	*Pardalotus punctatus*	Spotted Pardalote
Birds	*Pardalotus striatus*	Striated Pardalote
Birds	*Parvipsitta porphyrocephala*	Purple-crowned Lorikeet
Birds	*Petrochelidon nigricans*	Tree Martin
Birds	*Petroica boodang*	Scarlet Robin
Birds	*Phalacrocorax sulcirostris*	Little Black Cormorant
Birds	*Phaps chalcoptera*	Common Bronzewing
Birds	*Phylidonyris novaehollandiae*	New Holland Honeyeater
Birds	*Platycercus icterotis*	Western Rosella
Birds	*Podargus strigoides*	Tawny Frogmouth
Birds	*Porphyrio melanotus*	Purple Swamphen
Birds	*Purpureicephalus spurius*	Red-capped Parrot
Birds	*Quoyornis georgianus*	White-breasted Robin
Birds	*Rhipidura albiscapa*	Grey Fantail
Birds	*Rhipidura leucophrys*	Willie Wagtail
Birds	*Sericornis maculatus*	Spotted Scrubwren
Birds	*Smicrornis brevirostris*	Weebill
Birds	*Stagonopleura oculata*	Red-eared Firetail
Birds	*Strepera versicolor*	Grey Currawong
Birds	*Tadorna tadornoides*	Australian Shelduck
Birds	*Todiramphus sanctus*	Sacred Kingfisher
Birds	*Zanda baudinii*	Baudin's Cockatoo
Birds	*Zanda latirostris*	Carnaby’s Black-cockatoo
Birds	*Zosterops lateralis*	Grey-breasted White-eye
Mammals	*Austronomus australis*	White-striped Freetail-bat
Mammals	*Chalinolobus gouldii*	Gould's Wattled Bat
Mammals	*Chalinolobus morio*	Chocolate Wattled Bat
Mammals	*Hydromys chrysogaster*	Rakali
Mammals	*Isoodon fusciventer*	Quenda
Mammals	*Macropus fuliginosus melanops*	Western Grey Kangaroo
Mammals	*Nyctophilus geoffroyi geoffroyi*	Lesser Long-eared Bat
Mammals	*Nyctophilus major major*	Greater Long-eared Bat
Mammals	*Oryctolagus cuniculus*	Rabbit
Mammals	*Ozimops kitcheneri*	South-Western Free-Tailed Bat
Mammals	*Phascogale tapoatafa wambenger*	Brush-tailed Phascogale
Mammals	*Rattus fuscipes fuscipes*	Western Bush Rat
Mammals	*Rattus rattus*	Black Rat
Mammals	*Trichosurus vulpecula hypoleucus*	Common Brushtail Possum
Mammals	*Vespadelus regulus*	Southern Forest Bat
Mammals	*Vulpes vulpes*	Red Fox
Reptiles	*Acritoscincus trilineatus*	Western Three-lined Skink
Reptiles	*Anilios australis*	Southern Blind Snake
Reptiles	*Chelodina colliei*	South-western Long-necked Turtle

Group	Taxon Name	Common Name
Reptiles	*Egernia napoleonis*	South-western Crevice Skink
Reptiles	*Hemiergis peronii*	Four-toed Mulch Skink
Reptiles	*Menetia greyii*	Common Dwarf Skink
Reptiles	*Morethia obscura*	Shrubland Morethia Skink
Reptiles	*Pseudonaja affinis*	Dugite
Reptiles	*Tiliqua rugosa*	Shingle-back

APPENDIX 6

Comparison of species recorded during the desktop assessment and field survey

Class	Scientific Name	Common Name	Recorded	Database
Amphibians	*Crinia georgiana*	Quacking Frog	x	x
Amphibians	*Crinia glauerti*	Rattling Froglet	x	x
Amphibians	*Crinia insignifera*	Squelching Froglet		x
Amphibians	*Crinia pseudinsignifera*	Bleating Froglet		x
Amphibians	*Crinia subinsignifera*	Small Western Froglet		x
Amphibians	*Geocrinia leai*	Ticking Frog	x	x
Amphibians	*Geocrinia lutea*	Nornalup Frog		x
Amphibians	*Geocrinia rosea*	Karri Frog		x
Amphibians	*Heleioporus albopunctatus*	Western Spotted Frog		x
Amphibians	*Heleioporus eyrei*	Moaning Frog	x	x
Amphibians	*Heleioporus inornatus*	Whooping Frog		x
Amphibians	*Limnodynastes dorsalis*	Western Banjo Frog	x	x
Amphibians	*Litoria adelaidensis*	Slender Tree Frog	x	x
Amphibians	*Litoria moorei*	Motorbike Frog	x	x
Amphibians	*Metacrinia nichollsi*	Forest Toadlet		x
Amphibians	*Myobatrachus gouldii*	Turtle Frog		x
Amphibians	*Pseudophryne guentheri*	Gunther's Toadlet		x
Birds	*Acanthiza apicalis*	Inland Thornbill	x	x
Birds	*Acanthiza chrysorrhoa*	Yellow Rumped Thornbill	x	x
Birds	*Acanthiza inornata*	Western Thornbill	x	x
Birds	*Acanthiza uropygialis*	Chestnut-rumped Thornbill		x
Birds	*Acanthorhynchus superciliosus*	Western Spinebill		x
Birds	*Accipiter cirrocephalus*	Collared Sparrowhawk		x
Birds	*Accipiter fasciatus*	Brown Goshawk		x
Birds	*Acrocephalus australis*	Australian Reed Warbler	x	x
Birds	*Actitis hypoleucos*	Common Sandpiper		x
Birds	*Aegotheles cristatus*	Australian Owlet-nightjar	x	x
Birds	*Anas castanea*	Chestnut Teal		x
Birds	*Anas gracilis*	Grey Teal		x
Birds	*Anas platyrhynchos*	Northern Mallard		x
Birds	*Anas rhynchotis*	Australasian Shoveler		x
Birds	*Anas superciliosa*	Pacific Black Duck	x	x
Birds	*Anhinga novaehollandiae*	Australasian Darter	x	x
Birds	*Anser anser*	Greylag Goose		x
Birds	*Anthochaera carunculata*	Red Wattlebird	x	x
Birds	*Anthochaera lunulata*	Western Wattlebird	x	x
Birds	*Anthus novaeseelandiae*	Australian Pipit		x
Birds	*Aquila audax*	Wedge-tailed Eagle	x	x
Birds	*Ardea alba*	Great Egret		x
Birds	*Ardea pacifica*	White-necked Heron		x
Birds	*Ardeotis australis*	Australian Bustard		x
Birds	*Artamus cinereus*	Black-faced Woodswallow		x
Birds	*Artamus cyanopterus*	Dusky Woodswallow	x	x
Birds	*Artamus personatus*	Masked Woodswallow		x
Birds	*Aythya australis*	Hardhead		x
Birds	*Barnardius zonarius*	Australian Ringneck	x	x
Birds	*Biziura lobata*	Musk Duck	x	x
Birds	*Botaurus poiciloptilus*	Australasian Bittern	x	x
Birds	*Bubulcus ibis*	Cattle Egret		x
Birds	*Burhinus grallarius*	Bush Stone-curlew		x

Class	Scientific Name	Common Name	Recorded	Database
Birds	*Cacatua pastinator*	Western Corella	x	x
Birds	*Cacatua sanguinea*	Little Corella		x
Birds	*Cacomantis flabelliformis*	Fan-tailed Cuckoo	x	x
Birds	*Cairina moschata*	Muscovy Duck		x
Birds	*Calamanthus campestris*	Rufous Fieldwren		x
Birds	*Calidris ferruginea*	Curlew Sandpiper		x
Birds	*Calidris ruficollis*	Red-necked Stint		x
Birds	*Calyptorhynchus banksii naso*	Forest Red-tailed Black-cockatoo	x	x
Birds	*Chalcites basalis*	Horsfield's Bronze-Cuckoo	x	x
Birds	*Chalcites lucidus*	Shining Bronze-Cuckoo	x	x
Birds	*Charadrius ruficapillus*	Red-capped Plover		x
Birds	*Chenonetta jubata*	Australian Wood Duck	x	x
Birds	*Chlidonias leucopterus*	White-winged Tern		x
Birds	*Chroicocephalus novaehollandiae*	Silver Gull		x
Birds	*Cincloramphus cruralis*	Brown Songlark		x
Birds	*Cincloramphus mathewsi*	Rufous Songlark		x
Birds	*Circus approximans*	Swamp Harrier		x
Birds	*Circus assimilis*	Spotted Harrier		x
Birds	*Cladorhynchus leucocephalus*	Banded Stilt		x
Birds	*Climacteris rufus*	Rufous Treecreeper	x	x
Birds	*Colluricincla harmonica*	Grey Shrike-thrush	x	x
Birds	*Columba livia*	Rock Dove		x
Birds	*Coracina maxima*	Ground Cuckoo-shrike		x
Birds	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike	x	x
Birds	*Corvus bennetti*	Little Crow		x
Birds	*Corvus coronoides*	Australian Raven	x	x
Birds	*Coturnix pectoralis*	Stubble Quail		x
Birds	*Cracticus nigrogularis*	Pied Butcherbird		x
Birds	*Cracticus torquatus*	Grey Butcherbird	x	x
Birds	*Cygnus atratus*	Black Swan		x
Birds	*Cygnus olor*	Mute Swan		x
Birds	*Dacelo novaeguineae*	Laughing Kookaburra	x	x
Birds	*Daphoenositta chrysoptera*	Varied Sittella		x
Birds	*Dasyornis broadbenti litoralis*	South-western Rufous Bristlebird		x
Birds	*Dicaeum hirundinaceum*	Mistletoebird		x
Birds	*Dromaius novaehollandiae*	Emu	x	x
Birds	*Egretta garzetta*	Little Egret		x
Birds	*Egretta novaehollandiae*	White-faced Heron	x	x
Birds	*Egretta sacra*	Eastern Reef Egret		x
Birds	*Elanus axillaris*	Black-shouldered Kite		x
Birds	*Elseyornis melanops*	Black-fronted Dotterel		x
Birds	*Eolophus roseicapilla*	Galah	x	x
Birds	*Eopsaltria griseogularis*	Western Yellow Robin	x	x
Birds	*Epthianura albifrons*	White-fronted Chat		x
Birds	*Erythrogonys cinctus*	Red-kneed Dotterel		x
Birds	*Eurostopodus argus*	Spotted Nightjar		x
Birds	*Falco berigora*	Brown Falcon		x
Birds	*Falco cenchroides*	Nankeen Kestrel		x
Birds	*Falco hypoleucos*	Grey Falcon		x
Birds	*Falco longipennis*	Australian Hobby		x

Class	Scientific Name	Common Name	Recorded	Database
Birds	*Falco peregrinus*	Peregrine Falcon		x
Birds	*Falcunculus frontatus*	Crested Shrike-tit		x
Birds	*Fulica atra*	Eurasian Coot	x	x
Birds	*Gallinula tenebrosa*	Dusky Moorhen	x	x
Birds	*Gavicalis virescens*	Singing Honeyeater		x
Birds	*Gerygone fusca*	Western Gerygone	x	x
Birds	*Gliciphila melanops*	Tawny-crowned Honeyeater		x
Birds	*Grallina cyanoleuca*	Magpie-lark	x	x
Birds	*Gymnorhina tibicen*	Australian Magpie	x	x
Birds	*Haematopus fuliginosus*	Sooty Oystercatcher		x
Birds	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	x	x
Birds	*Haliastur sphenurus*	Whistling Kite	x	x
Birds	*Heteroscenes pallidus*	Pallid Cuckoo		x
Birds	*Hieraaetus morphnoides*	Little Eagle	x	x
Birds	*Himantopus himantopus*	Pied Stilt		x
Birds	*Himantopus leucocephalus*	Black-winged Stilt		x
Birds	*Hirundo neoxena*	Welcome Swallow	x	x
Birds	*Hirundo rustica*	Barn Swallow		x
Birds	*Hypotaenidia philippensis*	Buff-Banded Rail		x
Birds	*Ixobrychus dubius*	Australian Little Bittern		x
Birds	*Ixobrychus flavicollis australis (southwest subpop.)*	black bittern (southwest subpop.)		x
Birds	*Lalage tricolor*	White-winged Triller		x
Birds	*Larus pacificus*	Pacific Gull		x
Birds	*Leipoa ocellata*	Malleefowl		x
Birds	*Lewinia pectoralis*	Lewin's Rail		x
Birds	*Lichmera indistincta*	Brown Honeyeater	x	x
Birds	*Lophoictinia isura*	Square-tailed Kite		x
Birds	*Malacorhynchus membranaceus*	Pink-eared Duck		x
Birds	*Malurus assimilis*	Purple-backed Fairy-wren		x
Birds	*Malurus elegans*	Red-winged Fairy-wren	x	x
Birds	*Malurus pulcherrimus*	Blue-breasted Fairy-wren		x
Birds	*Malurus splendens*	Splendid Fairy-wren	x	x
Birds	*Manorina flavigula*	Yellow-throated Miner		x
Birds	*Melanodryas cucullata*	Hooded Robin		x
Birds	*Melithreptus brevirostris*	Brown-headed Honeyeater		x
Birds	*Melithreptus chloropsis*	Western White-naped Honeyeater	x	x
Birds	*Melopsittacus undulatus*	Budgerigar		x
Birds	*Merops ornatus*	Rainbow Bee-eater		x
Birds	*Microcarbo melanoleucos*	Little Pied Cormorant	x	x
Birds	*Microeca fascinans*	Jacky Winter		x
Birds	*Morus serrator*	Australasian Gannet		x
Birds	*Myiagra inquieta*	Restless Flycatcher		x
Birds	*Neophema elegans*	Elegant Parrot		x
Birds	*Ninox boobook*	Southern Boobook	x	x
Birds	*Ninox connivens*	Barking Owl		x
Birds	*Numenius madagascariensis*	Eastern Curlew		x
Birds	*Numida meleagris*	Helmeted Guineafowl		x
Birds	*Nycticorax caledonicus*	Nankeen Night-Heron		x
Birds	*Nymphicus hollandicus*	Cockatiel		x
Birds	*Ocyphaps lophotes*	Crested Pigeon		x

Class	Scientific Name	Common Name	Recorded	Database
Birds	*Onychoprion fuscatus*	Sooty Tern		x
Birds	*Oxyura australis*	Blue-billed Duck		x
Birds	*Pachycephala occidentalis*	*Western Golden Whistler*	x	x
Birds	*Pachycephala rufiventris*	Rufous Whistler	x	x
Birds	*Pachyptila desolata*	Antarctic Prion		x
Birds	*Pandion haliaetus*	Osprey		x
Birds	*Pardalotus punctatus*	Spotted Pardalote	x	x
Birds	*Pardalotus striatus*	Striated Pardalote	x	x
Birds	*Parvipsitta porphyrocephala*	Purple-crowned Lorikeet	x	x
Birds	*Pelecanus conspicillatus*	Australian Pelican		x
Birds	*Petrochelidon ariel*	Fairy Martin		x
Birds	*Petrochelidon nigricans*	Tree Martin	x	x
Birds	*Petroica boodang*	Scarlet Robin	x	x
Birds	*Petroica goodenovii*	Red-capped Robin		x
Birds	*Phalacrocorax carbo*	Great Cormorant		x
Birds	*Phalacrocorax sulcirostris*	Little Black Cormorant	x	x
Birds	*Phalacrocorax varius*	Pied Cormorant		x
Birds	*Phaps chalcoptera*	Common Bronzewing	x	x
Birds	*Phaps elegans*	Brush Bronzewing		x
Birds	*Phylidonyris niger*	White-cheeked Honeyeater		x
Birds	*Phylidonyris novaehollandiae*	New Holland Honeyeater	x	x
Birds	*Platalea flavipes*	Yellow-billed Spoonbill		x
Birds	*Platalea regia*	Royal Spoonbill		x
Birds	*Platycercus icterotis*	Western Rosella	x	x
Birds	*Plegadis falcinellus*	Glossy Ibis		x
Birds	*Podargus strigoides*	Tawny Frogmouth	x	x
Birds	*Podiceps cristatus*	Great Crested Grebe		x
Birds	*Poliocephalus poliocephalus*	Hoary-headed Grebe		x
Birds	*Polytelis anthopeplus*	Regent Parrot		x
Birds	*Pomatostomus superciliosus*	White-browed Babbler		x
Birds	*Poodytes gramineus*	Little Grassbird		x
Birds	*Porphyrio porphyrio*	Purple Swamphen	x	x
Birds	*Porzana fluminea*	Spotted Crake		x
Birds	*Porzana pusilla*	Marsh Crake		x
Birds	*Porzana tabuensis*	Little Swamphen		x
Birds	*Psephotus varius*	Mulga Parrot		x
Birds	*Ptilotula ornata*	Yellow-plumed Honeyeater		x
Birds	*Purpureicephalus spurius*	Red-capped Parrot	x	x
Birds	*Quoyornis georgiana*	White-breasted Robin	x	x
Birds	*Recurvirostra novaehollandiae*	Red-necked Avocet		x
Birds	*Rhipidura albiscapa*	Grey Fantail	x	x
Birds	*Rhipidura leucophrys*	Willie Wagtail	x	x
Birds	*Rostratula australis*	Australian Painted Snipe		x
Birds	*Sericornis frontalis*	White-browed Scrubwren	x	x
Birds	*Smicrornis brevirostris*	Weebill	x	x
Birds	*Stagonopleura oculata*	Red-eared Firetail	x	x
Birds	*Stictonetta naevosa*	Freckled Duck		x
Birds	*Stipiturus malachurus*	Southern Emu-wren		x
Birds	*Strepera versicolor*	Grey Currawong	x	x
Birds	*Streptopelia chinensis*	Spotted Turtle-dove		x

Class	Scientific Name	Common Name	Recorded	Database
Birds	*Streptopelia senegalensis*	Laughing Dove		x
Birds	*Sturnus vulgaris*	Common Starling		x
Birds	*Synoicus ypsilophora*	Partridge Quail		x
Birds	*Tachybaptus novaehollandiae*	Australasian Grebe		x
Birds	*Tadorna tadornoides*	Australian Shelduck	x	x
Birds	*Taeniopygia guttata*	Zebra Finch		x
Birds	*Thalasseus bergii*	Crested Tern		x
Birds	*Thinornis cucullatus*	Hooded Plover		x
Birds	*Threskiornis moluccus*	Australian White Ibis		x
Birds	*Threskiornis spinicollis*	Straw-necked Ibis		x
Birds	*Todiramphus sanctus*	Sacred Kingfisher	x	x
Birds	*Tribonyx ventralis*	Black-tailed Native-hen		x
Birds	*Tringa glareola*	Wood Sandpiper		x
Birds	*Tringa nebularia*	Common Greenshank		x
Birds	*Turdus merula*	Eurasian Blackbird		x
Birds	*Turnix varius*	Painted Button-quail		x
Birds	*Turnix velox*	Little Button-quail		x
Birds	*Tyto alba*	Barn Owl		x
Birds	*Tyto javanica*	Eastern Barn Owl		x
Birds	*Tyto novaehollandiae novaehollandiae*	Masked Owl		x
Birds	*Vanellus tricolor*	Banded Lapwing		x
Birds	*Zanda baudinii*	Baudin's Black-Cockatoo	x	x
Birds	*Zanda latirostris*	Carnaby's Black-cockatoo	x	x
Birds	*Zapornia tabuensis*	Spotless Crake		x
Birds	*Zosterops lateralis*	Silvereye	x	x
Mammals	*Antechinus flavipes*	Yellow-footed Antechinus		x
Mammals	*Austronomus australis*	White-striped Freetail-bat	x	x
Mammals	*Bettongia penicillata ogilbyi*	Woylie		x
Mammals	*Canis familiaris*	Common Dog		x
Mammals	*Capra hircus*	Goat		x
Mammals	*Cercartetus concinnus*	Western Pygmy-possum		x
Mammals	*Chalinolobus gouldii*	Gould's Wattled Bat	x	x
Mammals	*Chalinolobus morio*	Chocolate Wattled Bat	x	x
Mammals	*Dama dama*	Fallow Deer		x
Mammals	*Dasyurus geoffroii*	Chuditch		x
Mammals	*Falsistrellus mackenziei*	Western False Pipistrelle		x
Mammals	*Felis catus*	Cat		x
Mammals	*Hydromys chrysogaster*	Rakali	x	x
Mammals	*Isoodon fusciventer*	Quenda	x	x
Mammals	*Macropus fuliginosus*	Western Grey Kangaroo	x	x
Mammals	*Macrotis lagotis*	Greater Bilby		x
Mammals	*Mus musculus*	House Mouse		x
Mammals	*Myrmecobius fasciatus*	Numbat		x
Mammals	*Notamacropus eugenii*	Tammar Wallaby		x
Mammals	*Notamacropus irma*	Western Brush Wallaby		x
Mammals	*Nyctophilus geoffroyi*	Lesser Long-eared Bat	x	x
Mammals	*Nyctophilus major*	Greater Long-eared Bat	x	x
Mammals	*Oryctolagus cuniculus*	Rabbit	x	x
Mammals	Ozimops kitcheneri	South-Western Free-Tailed Bat	x	
Mammals	*Phascogale calura*	Red-tailed Phascogale		x

Class	Scientific Name	Common Name	Recorded	Database
Mammals	*Phascogale tapoatafa wambenger*	Brush-tailed Phascogale	x	x
Mammals	*Pseudocheirus occidentalis*	Western Ringtail Possum		x
Mammals	*Rattus fuscipes*	Bush Rat	x	x
Mammals	*Rattus rattus*	Black Rat	x	x
Mammals	*Setonix brachyurus*	Quokka		x
Mammals	*Sminthopsis dolichura*	Little Long-tailed Dunnart		x
Mammals	*Sminthopsis fuliginosus*	Dusky Dunnart		x
Mammals	*Sminthopsis gilberti*	Gilbert's Dunnart		x
Mammals	*Sus scrofa*	Pig		x
Mammals	*Tachyglossus aculeatus*	Short-beaked Echidna		x
Mammals	*Tarsipes rostratus*	Honey Possum		x
Mammals	*Trichosurus vulpecula*	Common Brushtail Possum	x	x
Mammals	*Vespadelus regulus*	Southern Forest Bat	x	x
Mammals	*Vulpes vulpes*	Red Fox	x	x
Reptiles	*Acritoscincus trilineatus*	Western Three-lined Skink	x	x
Reptiles	*Anilios australis*	Southern Blind Snake	x	x
Reptiles	*Aprasia pulchella*	Western Granite Worm-lizard		x
Reptiles	*Chelodina colliei*	South-western Long-necked Turtle	x	x
Reptiles	*Christinus marmoratus*	Marbled Gecko		x
Reptiles	*Cryptoblepharus buchananii*	Buchanan's Snake-eyed Skink		x
Reptiles	*Ctenotus delli*	Darling Range South-west Ctenotus		x
Reptiles	*Ctenotus impar*	Odd-striped Ctenotus		x
Reptiles	*Ctenotus labillardieri*	Common South-west Ctenotus		x
Reptiles	*Diplodactylus lateroides*	Speckled Stone Gecko		x
Reptiles	*Egernia kingii*	King's Skink		x
Reptiles	*Egernia napoleonis*	South-western Crevice-skink	x	x
Reptiles	*Hemiergis gracilipes*	South-western Mulch-skink		x
Reptiles	*Hemiergis initialis*	Southwestern Earless Skink		x
Reptiles	*Hemiergis peronii*	Four-toed Mulch Skink	x	x
Reptiles	*Lerista distinguenda*	South-western Orange-tailed Slider		x
Reptiles	*Lerista microtis*	South-western Slider		x
Reptiles	*Menetia greyii*	Common Dwarf Skink	x	x
Reptiles	*Morethia lineoocellata*	West Coast Morethia Skink		x
Reptiles	*Morethia obscura*	Shrubland Morethia Skink	x	x
Reptiles	*Notechis scutatus*	Tiger Snake		x
Reptiles	*Pseudonaja affinis*	Dugite	x	x
Reptiles	*Suta gouldii*	Gould's Hooded Snake		x
Reptiles	*Suta nigriceps*	Mitchell's Short-tailed Snake		x
Reptiles	*Tiliqua rugosa*	Shingle-back	x	x
Reptiles	*Varanus rosenbergi*	Heath Monitor		x

APPENDIX 7

Details of tree hollows assessed within the study area.

Hollow Rank	DBH	Alive/Dead	Species	Easting	Northing
Known nesting hollow	700		Marri	415754	6252034
Suitable nesting tree	1200		Jarrah	415834	6252004
Suitable nesting tree	1200		Jarrah	415837	6251686
Suitable nesting tree	1100		Jarrah	415842	6252278
Suitable nesting tree	750		Jarrah	415865	6252190
Suitable nesting tree	1050		Jarrah	415868	6252014
Suitable nesting tree	800	Dead	Jarrah	415914	6252098
Suitable nesting tree	1100	Dead	Jarrah	415938	6252404
Suitable nesting tree	800		Jarrah	415955	6251892
Suitable nesting tree	1300		Jarrah	415975	6251950
Suitable nesting tree	650		Marri	415996	6252296
Suitable nesting tree	750		Marri	416005	6252288
Suitable nesting tree	1200	Dead		416030	6251929
Suitable nesting tree	1050		Jarrah	416031	6251964
Suitable nesting tree	1800		Jarrah	416044	6252076
Suitable nesting tree	610		Marri	416136	6252409
Suitable nesting tree	850		Marri	416154	6252629
Suitable nesting tree	650		Jarrah	416179	6252287
Suitable nesting tree	1100		Marri	416262	6252621
Suitable nesting tree	90		Marri	417411	6251332
Known nesting tree	80		Marri	415779	6251964