Onslow Rare Earth Plant Detailed Fauna Assessment

Hastings Technology Metals Ltd

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Template 2.8.1

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Abbreviations

Abbreviation	Description
ANSIA	Ashburton North Strategic Industrial Area
BAM Act	State *Biosecurity and Agriculture Management Act 2007*
BoM	Bureau of Meteorology
DAWE	Department of Agriculture, Water and the Environment
DBCA	Department of Biodiversity, Conservation and Attractions
DEC	Department of Environment and Conservation
DPIRD	Department of Primary Industries and Regional Development
ELA	Eco Logical Australia
EN	Endangered
EPA	Environmental Protection Authority
EPBC Act	Commonwealth *Environment Protection and Biodiversity Act 1999*
IBRA	Interim Biogeographical Regionalisation for Australia
MI	Migratory
P	Priority
TSSC	Threatened Species Scientific Committee
VU	Vulnerable
WAM	Western Australian Museum

Executive Summary

Eco Logical Australia was engaged by Hastings Technology Metals Ltd to undertake a Detailed fauna assessment within Lot 502 of the Ashburton North Strategic Industrial Area. The current project area is 213.9 ha and located 15 km south-west of Onslow, Western Australia. It includes BCE (2021; 80.5 ha) and Ecoscape (2019; 30.1 ha) survey areas and includes an unsurveyed extrapolation area.

The field survey was conducted from 21 to 28 June 2021 in accordance with the Environmental Protection Authority *Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* 2020. BCE (2021) fauna habitat mapping and aerial imagery was examined prior to the survey to select indicative locations for fauna trapping sites, to ensure that sites were placed across each fauna habitat type. The survey was undertaken using a variety of sampling techniques, both systematic and opportunistic. A total of two trapping sites were established over seven nights.

A total of three vegetation and substrate associations (VSAs) or fauna habitat types, defined by BCE (2021), were delineated and mapped within the BCE (2021) survey area. During the survey, three fauna habitat types (defined by BCE [2021]) were found to extend into the extrapolation area. The BCE (2021) survey area and extrapolation area had comparable fauna habitat types to those delineated and mapped within the Ecoscape (2019) survey area. Approximately 50% of the project area was made up of a dune habitat type (either 'VSA1: Undulating dunes' defined by BCE [2021] or 'Red sandy dunes' defined by Ecoscape [2019]).

During the survey, a total of 66 vertebrate fauna species were recorded in the project area, including two amphibians, six reptiles, 51 birds, and seven mammals. Introduced fauna species recorded comprised of; cat (*Felis catus*), Dog/Dingo (*Canis familiaris familiaris*/ *Canis familiaris dingo*) and European cattle (*Bos primigenius taurus*).

No conservation significant fauna listed under the Commonwealth *Environment Protection and Biodiversity Act 1999* (EPBC Act) or State *Biodiversity Conservation Act 2016* (BC Act), or by Department of Biodiversity, Conservation and Attractions (DBCA) were observed during the field survey. A total of five conservation significant species were identified in a likelihood assessment by BCE (2021) and assessed to be potentially resident or regular visitors:

- Pilbara Olive Python (*Liasis olivaceus barroni*; Vulnerable under the EPBC Act and BC Act) – assessed to be a regular visitor;
- Barn Swallow (*Hirundo rustica*; Migratory under the EPBC Act and BC Act) – assessed to be a regular visitor;
- *Lerista planiventralis maryani* (Priority 1 by DBCA) – assessed to be resident;
- Brush-tailed Mulgara (*Dasycercus blythi*; Priority 4 by DBCA) – assessed to be a regular visitor; and
- Short-tailed mouse (*Leggadina lakedownensis*; Priority 4 by DBCA) – assessed to be resident.

Ecoscape (2019) recorded two conservation significant vertebrate fauna species:

- Common Sandpiper (*Actitis hypoleucos*; listed as Migratory under the EPBC Act and BC Act) – observed in Quick Mud Creek; and

- Gull-billed Tern (*Gelochelidon nilotica*; listed as Migratory under the EPBC Act and BC Act) – flying over salt marsh habitat.

In addition to the above, 12 migratory bird species and one mammal species (Northern Quoll [*Dasyurus hallucatus*]; listed as Endangered under the EPBC Act and BC Act) were determined by Ecoscape (2019) to have a high likelihood of occurrence. The likelihood of occurrence of the Night Parrot (*Pezoporus occidentalis*; listed as Endangered under the EPBC Act and Critically Endangered under the BC Act) could not be determined as there was a lack of records within the region (Ecoscape 2019).

This survey assessed the Short-tailed mouse and *Lerista planiventralis maryani* as likely to utilise the project area, however the habitat types they would occur in (i.e., specifically VSA1: Undulating dunes and VSA2: Sandy loam flats) are not restricted to the project area. The Northern Quoll could potentially utilise all three fauna habitat types in the project area for foraging and traversing, and termite mounds for denning purposes. This closest record of this species is 7 km west of the project area from 2013 (DBCA 2007-2021). Based on previous record locations and habitat within the project area, the Brush-tailed mulgara and Pilbara Olive Python are considered unlikely to utilise the project area, but rather occasionally pass through. There are no recent or historical records of Night Parrot in the Onslow area, despite multiple past surveys, so this species is considered unlikely to occur in the project area. The Barn Swallow and other Migratory birds may fly over the project area but not solely rely on it.

1. Introduction

1.1. Project background

Hastings Technology Metals Ltd (Hastings) is looking to develop a hydrometallurgical processing plant located at the Onslow Rare Earths Plant within Lot 502 of the Ashburton North Strategic Industrial Area (ANSIA). Extensive fauna assessments have been undertaken across the region, including a Basic fauna survey recently conducted by BCE (2021) over 289.2 ha and fauna habitat mapping undertaken by Ecoscape (2019) over 729.66 ha.

The current project area is 213.9 ha and located 15 km south-west of Onslow, Western Australia. It includes BCE (2021; 80.5 ha) and Ecoscape (2019; 30.1 ha) survey areas and includes an unsurveyed extrapolation area (Figure 1; 103.3 ha).

Eco Logical Australia (ELA) was engaged by Hastings to undertake a Detailed fauna assessment within the project area.

1.2. Scope of works

The purpose of this report is to provide an assessment of the environmental values of the project area to support the environmental assessment and approvals process. The scope of works specifically included:

- An assessment of vertebrate fauna in accordance with the requirements of the Environmental Protection Authority (EPA) *Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA 2020);
- Extrapolate BCE (2021) fauna habitat mapping into the unsurveyed extrapolation area;
- Compilation of a list of vertebrate fauna species recorded during the field survey via trapping, direct or indirect observations within the project area; and
- Record any conservation listed fauna species (Threatened species listed under the Commonwealth *Environment Protection and Biodiversity Act 1999* [EPBC Act] or State *Biodiversity Conservation Act 2016* [BC Act] or Priority listed by Department of Biodiversity, Conservation and Attractions [DBCA]) within the project area.

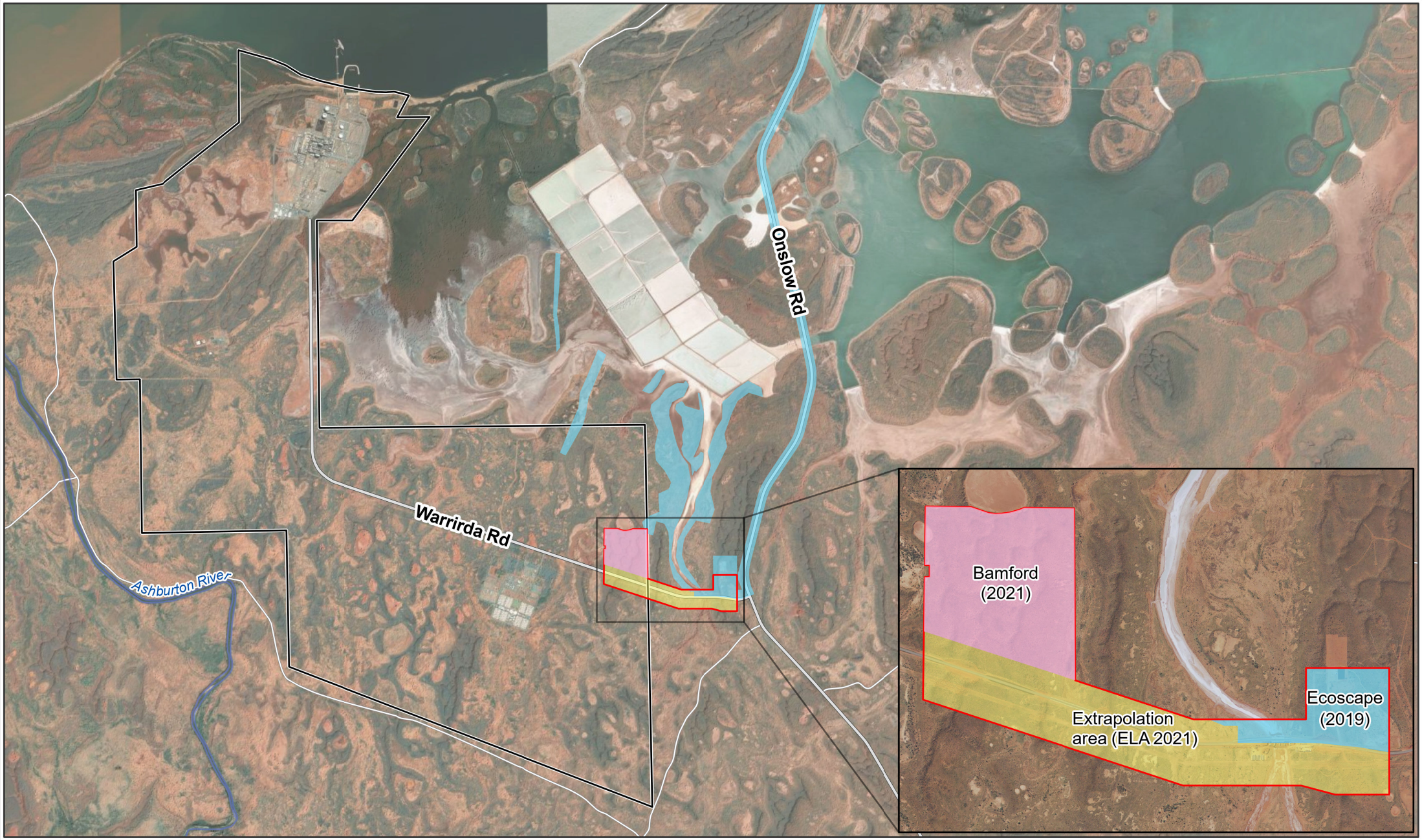

Figure 1: The project area

- Project area
- Ashburton North Strategic Industrial Area (ANSIA)
- Extrapolation area (ELA 2021)
- Bamford (2021) survey area
- Ecoscape (2019) survey area

N

0 0.5 1 2
Kilometers

Datum/Projection:
GDA 1994 MGA Zone 50

Project: 19406-GM Date: 28/07/2021

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2. Environmental setting

2.1. Regional context

BCE (2021) undertook a review of background environmental information. Broad environmental values for the region relevant to the project area are presented in Table 1.

Table 1: Environmental values of the region

Existing environmental attributes	Project area
Interim Biogeographical Regionalisation for Australia (IBRA) Bioregion (DAWE 2021, Kendrick and Mau 2002)	Cape Range (CAR01) subregion of the Carnarvon bioregion – consists of a mosaic of saline alluvial plains with samphire and saltbush low shrublands, Bowgada low woodland on sandy ridges and plains, Snakewood scrub on clay flats, and tree to shrub steppe over hummock grasslands on and between red sand dune fields.
Geology, landform and soils (DPIRD 2021)	Dune land system - Dune fields supporting soft spinifex grasslands. Onslow Land System – Undulating sandplains, dunes and level clay plains supporting soft spinifex grasslands and minor tussock grasslands.
Pre-European vegetation mapping (DBCA 2019, DPIRD 2019)	Cape Yannare Coastal Plain 670 - Hummock grassland with scattered shrubs or mallee Triodia spp. Acacia spp., Grevillea spp. Eucalyptus spp. (99.99% remaining in CAR01).
Sensitive sites	There are no known RAMSAR sites, Important Wetlands, Threatened Ecological Communities, Bush Forever Sites, Key Biodiversity Areas or Environmental Sensitive Areas within the project area.

3. Methodology

3.1. Desktop review

BCE (2021) undertook an extensive desktop review of database searches and literature to determine environmental values relating to the survey area. BCE (2021) included four study sites (289.2 ha), including one overlapping the current project area (BCE [2021] survey area; Figure 1).

An additional previous survey was added to the BCE (2021) literature review list for this report; *Onslow Reconnaissance Flora and Fauna Surveys – Dry Season* (Ecoscape 2019). Ecoscape (2019) overlapped the eastern section of the project area (Ecoscape [2019] survey area; Figure 1).

3.2. Field survey

3.2.1. Survey team and timing

The Detailed fauna survey was conducted by Briana Wingfield (Ecologist) and Maitland Ely (Graduate Ecologist) from 21st to 28th June 2021. The survey team's relevant qualifications and experience are provided in Table 2 below.

Table 2: Survey team

Name	Qualification	Relevant experience
Briana Wingfield	BSc. Conservation and Wildlife Biology and Environmental Science (Hons)	Briana has over eight years' experience conducting fauna surveys across Western Australia, including five years specifically in the Pilbara region conducting Detailed and Targeted fauna surveys.
Maitland Ely	BSc Conservation Biology and Botany	Maitland is a graduate ecologist with experience assisting a trapping survey on the Swan Coastal Plain and in South Australia.

Rainfall from the nearby Onslow Airport weather station (station number 005017, located approximately 12 km north-east of the project area) recorded a total of 6.6 mm during the current survey, with 6.4 mm recorded on the first day of the survey (BoM 2021). In the three months prior to the survey (March to May), a total of 218 mm of rainfall was recorded. This is more than the long-term average for the same time period (130.5 mm; BoM 2021).

3.2.2. Animal ethics

The Detailed fauna survey was conducted as per EPA (2020), DBCA authorisation to take or disturb threatened species (authorisation number: TFA 2021-0070) under Section 40 of the State *Biodiversity Conservation Act* (BC Act) 2016, fauna taking (biological assessment) licence under Regulation 27 (BA27000452) of the Biodiversity Conservation Regulations 2018 and the following Standard Operating Procedures:

- *Aluminium box traps for capture of terrestrial vertebrates* (DEC 2018a);
- *Cage traps for live capture of terrestrial vertebrates* (DEC 2018b);
- *Dry pitfall trapping for vertebrates* (DEC 2018c);
- *Funnel trapping for terrestrial fauna* (DEC 2018d); and
- *Animal handling and restraint using soft containment* (DEC 2017).

Under these procedures, a set of methods and conditions were adhered to in order to minimise harm or stress to fauna. Animal ethics considerations focus on the following:

- Minimising the duration of time that fauna are in traps by closing the traps during the day;
- Minimising trapped fauna exposure to harmful environmental conditions (i.e. heat and cold);
- Minimising the risk of introducing or spreading known fauna pathogens between populations;
- Appropriate and minimal animal handling; and
- Appropriate release conditions.

All vertebrate fauna captured during the fauna survey were identified in the field and released at the point of capture.

3.2.3. Habitat assessment and site selection

BCE (2021) fauna habitat mapping and aerial imagery was examined prior to the current survey to select indicative locations for fauna trapping sites, to ensure that sites were placed across each fauna habitat type. Trap placement to ensure traps were concealed from public view was also taken into consideration. The location of the fauna trapping sites is provided in Figure 2 and Appendix B.

Additional fauna habitat mapping was undertaken by walking throughout the extrapolation area, taking photographs and habitat notes. Fauna habitat mapping was extrapolated from BCE (2021). The north-east corner of the project area was mapped by Ecoscape (2019).

3.2.4. Sampling methods

The fauna survey was undertaken using a variety of sampling techniques, both systematic and opportunistic. Systematic sampling refers to data methodically collected over a fixed time period in a discrete habitat type or location, using an equal or standardised sampling effort across multiple sample locations (EPA 2020). This approach provides a range of detection methods that cover the full suite of vertebrate fauna assemblages. Opportunistic sampling includes data collected non-systematically from both fixed sampling sites and as opportunistic records from chance encounters with fauna. This method generally accounts for the majority of bird species.

3.2.4.1. Trapping

A total of two trapping sites were established over seven nights. At each trapping site, the following were established (trap nights presented in Table 3):

- Ten 20 litre pit traps set approximately 20 m intervals and set with flywire mesh drift fence;
- Ten funnel traps set approximately 20 m intervals and set with flywire mesh drift fence;
- Twenty-three (23) small aluminium box traps set approximately 10-20 m intervals;
- Two cage traps set approximately 10-20 m intervals;
- One Song Meter SM2 ultrasonic recorder; and
- One motion camera.

All small aluminium box traps, cage traps and motion camera traps were set with universal bait made from a mixture of rolled oats, peanut butter and sardines.

3.2.4.2. Spotlighting

Nocturnal survey involves the use of head torches to detect active nocturnal fauna by eye shine or movement. Searching was conducted by traversing the project area, particularly focusing on termite mounds. The nocturnal survey occurred on 22 June and 27 June from approximately 19:00 to 20:30.

3.2.4.3. Observation

Bird surveys were undertaken during peak activity periods, namely after dawn. Birds were identified by visual detection and by call within an approximately 20 m radius of each trapping site. Birds are less active in wet, windy and extremely hot conditions.

Opportunistic observations were made at all times during the field survey. Calls, tracks, diggings, scats, dens, burrows and other signs of fauna activity were recorded where observed.

Active searches involved the use of hand rakes to search within microhabitats for inactive reptiles. Search locations included beneath leaf litter, logs and other ground debris.

3.2.4.4. Acoustic surveys – ultrasonic calls

A SM2 recorder was established at both trapping sites and opportunistic sites in representative habitat. Specialist software is able to visualise ultrasonic bat echolocation calls recorded on the SM2 into corresponding graphical representation for analysis. Most bat species have a unique call which appears as a 'fingerprint' graph output. Bat calls were analysed by comparing recorded calls with reference calls by Bob Bullen at Bat Call WA, who specialises in bat survey and identification.

3.2.4.5. Camera traps

A camera trap was established at both trapping sites and opportunistic sites in representative habitat. A camera trap is a digital camera that captures an image or video using an infrared sensor when an animal moves into a detection zone. Bait stations filled with universal bait was used to attract fauna to the camera traps.

3.2.5. Fauna identification and nomenclature

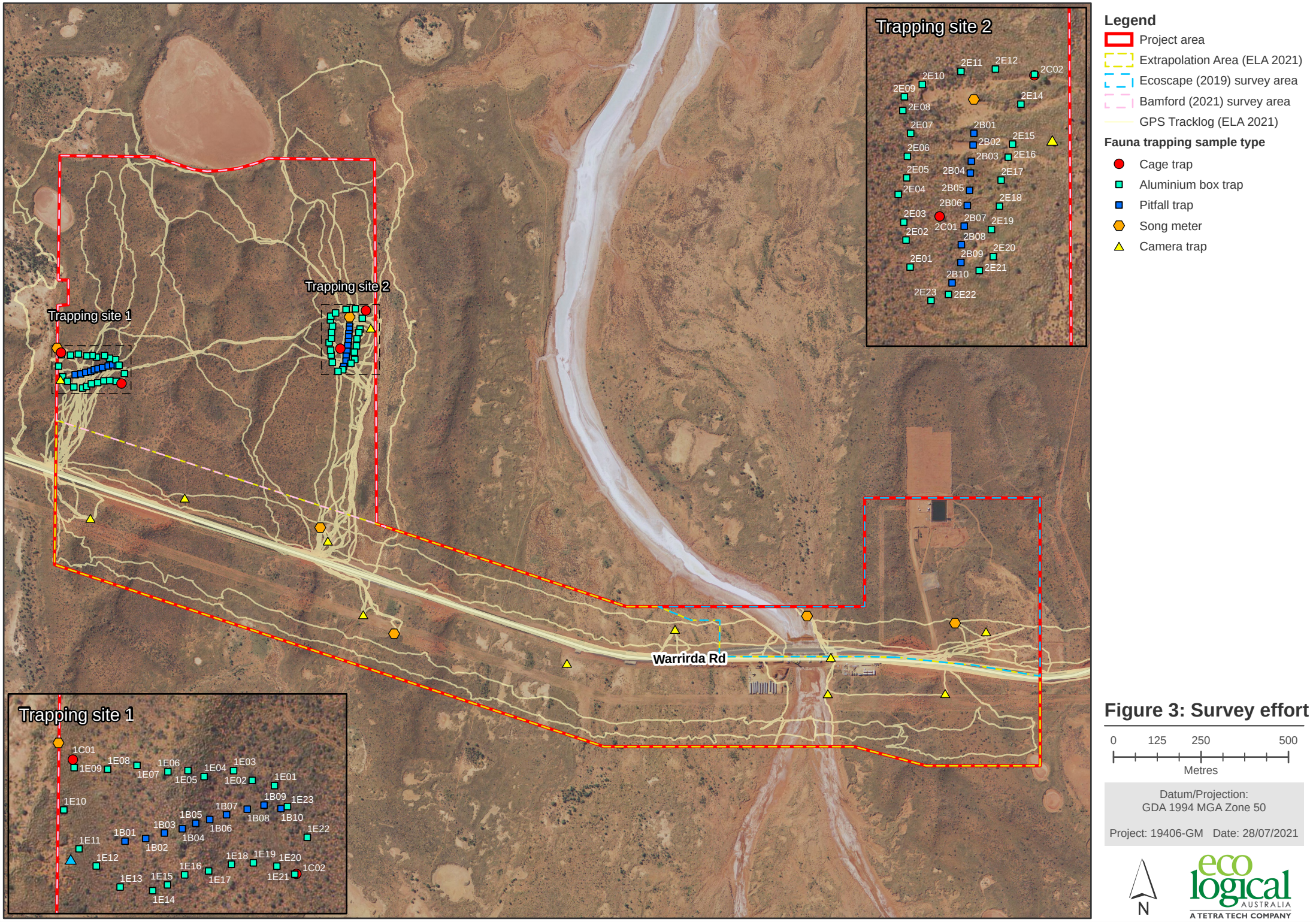
The following field guides were used to identify vertebrate fauna species during the current survey:

- Amphibians: Sanders (2021);
- Reptiles: Wilson and Swan (2021);
- Birds: Morcombe (2020); and
- Mammals: Van Dyck *et. al*. (2012).

Nomenclature used for the vertebrate fauna species within this report follows the *Checklist of the Terrestrial Vertebrate Fauna of Western Australia* (WAM 2021) which was updated in June 2021.

Table 3: Trapping nights

Trap line	Pit traps	Funnel traps	Small aluminium box traps	Cage traps	Spotlighting	Observation (e.g. bird surveys, active searching, opportunistic)	Acoustic surveys – ultrasonic calls	Camera traps
ELA01	70	70	161	14	Yes	Yes	1	1
ELA02	70	70	161	14	Yes	Yes	1	1
Opportunistic	-	-	-	-	Yes	Yes	4	4
Total	**140**	**140**	**322**	**28**	**-**	**-**	**6**	**6**



Legend

- Project area
- Extrapolation Area (ELA 2021)
- Ecoscape (2019) survey area
- Bamford (2021) survey area
- GPS Tracklog (ELA 2021)

Fauna trapping sample type

- Cage trap
- Aluminium box trap
- Pitfall trap
- Song meter
- Camera trap

Figure 3: Survey effort

0 125 250 500

Metres

Datum/Projection:
GDA 1994 MGA Zone 50

Project: 19406-GM Date: 28/07/2021

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3.3. Limitations

EPA (2020) recommends the discussion of constraints and limitations of the survey methods used. Constraints and limitations of the Detailed fauna survey for the project area are summarised in Table 4. No survey constraints were identified.

Table 4: Survey limitations

Constraint	Limitations
Sources of information	**Not a constraint** The Carnarvon bioregion has been well surveyed. A number of flora and fauna surveys have been undertaken in and surrounding the project area (see BCE [2021] literature review) which have been utilised for this survey. Broad-scale vegetation mapping at a scale of 1:1,000,000 was available. Land system mapping at a scale of 1:2,000,000 and soil and landform mapping was also available.
Scope of work	**Not a constraint** The survey requirement for a Detailed fauna survey in accordance with the EPA (2020) recommends at least two survey phases appropriate to the bioregion. This survey was only undertaken over one-phase, June (winter), however given the previous surveys in and around the project area (see BCE [2021] literature review) including four trapping surveys, the fauna assemblage is well understood.
Completeness of survey	**Not a constraint** The area was surveyed to the satisfaction of the scope of works e.g. over seven trapping nights.
Intensity of survey	**Not a constraint** Survey effort was considered adequate to meet objectives of the scope of works. Two trapping sites was considered appropriate to cover the fauna habitats types present within the 213.9 ha project area.
Timing, weather, season, cycle	**Not a constraint** The project area falls into the Eremaean climatic region based on Beard (1980) botanical provinces, and fauna activity is closely linked with the seasons in this region. Recommended survey timing for amphibians and birds is immediately after significant rain events, which occurred prior to the current survey, and for reptiles, September to April. However, as mentioned above, given the previous surveys in and around the project area (see BCE [2021] literature review) including four trapping surveys, the fauna assemblage is well understood. The rainfall in the three months prior to the survey was more than the long-term average.
Disturbances	**Not a constraint** Disturbances within the project area included the presence of a major road, weeds and gas pipeline. These disturbances did not negatively impact the ability to meet objectives outlined in the scope of works.
Resources	**Not a constraint** The more senior personnel conducting this field survey (Briana Wingfield) was suitably qualified to identify specimens, having over eight years' experience, namely in the Pilbara region.
Accessibility	**Not a constraint** All relevant areas of the project area were easily accessed and able to be surveyed.

4. Results

4.1. Desktop review

4.1.1. Conservation significant fauna

A desktop review was undertaken in BCE (2021) to identify conservation significant fauna species recorded within, or nearby to, their four study sites (current and historic). No conservation significant fauna species were recorded in the Basic survey undertaken by BCE (2021) on the 30 September and 1 October 2020. A total of 41 conservation significant vertebrate fauna species were determined by BCE (2021) as possibly occurring, with five species identified as resident or regular visitors:

- Pilbara Olive Python (*Liasis olivaceus barroni*; Vulnerable [VU] under the EPBC Act and BC Act) – assessed to be a regular visitor;
- Barn Swallow (*Hirundo rustica*; Migratory [MI] under the EPBC Act and BC Act) – assessed to be a regular visitor;
- *Lerista planiventralis maryani* (Priority [P]1 by DBCA) – assessed to be resident;
- Brush-tailed Mulgara (*Dasycercus blythi*; P4 by DBCA) – assessed to be a regular visitor; and
- Short-tailed mouse (*Leggadina lakedownensis*; P4 by DBCA) – assessed to be resident.

Ecoscape (2019) recorded two conservation significant vertebrate fauna species:

- Common Sandpiper (*Actitis hypoleucos*; listed as MI under the EPBC Act and BC Act) – observed in Quick Mud Creek; and
- Gull-billed Tern (*Gelochelidon nilotica*; listed as MI under the EPBC Act and BC Act) – flying over salt marsh habitat.

In addition to the above, 12 migratory bird species and one mammal species (Northern Quoll [*Dasyurus hallucatus*]; listed as Endangered [EN] under the EPBC Act and BC Act) were determined by Ecoscape (2019) to have a high likelihood of occurrence. The likelihood of occurrence of the Night Parrot (*Pezoporus occidentalis*; listed as EN under the EPBC Act and Critically Endangered under the BC Act) could not be determined as there was a lack of records within the region (Ecoscape 2019).

The framework for conservation significant fauna ranking is presented in Appendix A.

4.2. Fauna survey

The following sections discuss the fauna values of the project area.

4.2.1. Fauna habitats

A total of three vegetation and substrate associations (VSAs) or fauna habitat types, defined by BCE (2021), were delineated and mapped within the BCE (2021) survey area (Table 5; Figure 3). During the current survey, three fauna habitat types (defined by BCE [2021]) were found to extend into the extrapolation area (Figure 3). The BCE (2021) survey area and extrapolation area had comparable fauna habitat types to those delineated and mapped within the Ecoscape (2019) survey area.

Two trapping sites were established across the three fauna habitat types defined by BCE [2021]. Site photos presented in Appendix B and coordinates of sampling effort presented in Appendix C.

Approximately 50% of the project area comprised a dune habitat type (either 'VSA1: Undulating dunes' defined by BCE [2021] or 'Red sandy dunes' defined by Ecoscape [2019]). Approximately 8% of the project area comprised claypans (either 'VSA3: Claypans' defined by BCE [2021] or 'Clay flats' and 'Seasonally inundated flats' defined by Ecoscape [2019]); these areas were mostly associated with Quick Mud Creek.

Table 5: Fauna habitats in the project area

Fauna habitats	Description	Trapping sites	Project area			Total (ha)
			Extent within the extrapolation area (ha)	Extent within the Bamford (2021) survey area (ha)	Extent within the Ecoscape (2019) survey area (ha)	
BCE (2021) and ELA (2021)						
VSA 1: Undulating dunes	Undulating sandy dunes with scattered shrubs (Acacia and Hakea) over spinifex on sand and sandy loam in valleys.	Trapping site 1	31	62.5	N/A	**93.5**
VSA 2: Sandy loam flats with termite mounds	Sandy loam flats tending towards clay with some chenopod shrubs, and a few areas with termite mounds.	Trapping site 1 & 2	50.9	17	N/A	**67.9**
VSA 3: Claypans	Claypans; mostly bare ground of clayey loam subject to inundation. Some areas also have chenopod shrubs.	Trapping site 2	7.4	1	N/A	**8.4**
		Cleared	14	0	N/A	**14**
Ecoscape (2019)						
Hummock grassland	*Triodia epactia* grassland with sparsely scattered *Acacia* spp. shrubs and termitaria. Substrate varies in clay content ranging from firm to moderately loose.	N/A for this survey scope	N/A	N/A	10.1	**10.1**
Red sandy dunes	Sparse Acacia and Grevillea shrub species over *Scaevola sericophylla*, *Adriana tomentosa* and *Triodia* spp. hummocks on loose red sands.	N/A for this survey scope	N/A	N/A	6.8	**6.8**
Seasonally inundated flats/intertidal areas	Permanently and seasonally inundated areas with minimal vegetation, occasionally samphires and chenopods. Substrate is composed of silts and clays often with a high salt content. Habitat type includes both intertidal areas and unvegetated clay pans.	N/A for this survey scope	N/A	N/A	2.1	**2.1**
Clay flats	Samphires (*Tecticornia* spp.) with low tussock grasses and Chenopods on firm clay substrate.	N/A for this survey scope	N/A	N/A	5.7	**5.7**
		Cleared	N/A	N/A	5.4	**5.4**
		Total	**103.3**	**80.5**	**30.1**	**213.9**

4.2.2. Fauna species

A total of 66 vertebrate fauna species were recorded during the current survey in the project area, including two amphibians, six reptiles, 51 birds, and seven mammals. The consolidated vertebrate fauna list (including previous surveys) is provided in Appendix D and raw trapping data is provided in Appendix E.

4.2.2.1. Mammals

Seven mammal species were recorded in the project area during the current survey, comprising four native species and three introduced species. The three introduced species included; cat (*Felis catus*), recorded on motion camera at Quick Mud Creek, Dog/Dingo (*Canis familiaris familiaris/ Canis familiaris dingo*), recorded by tracks, and European cattle (*Bos primigenius taurus*), recorded from scats in the project area.

The Lesser Hairy-footed Dunnart (*Sminthopsis youngsoni*) was recorded at both trapping site 1 and 2 in a pitfall trap. The SM2 recorded two bat species; Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*) and Greater Northern Free-tailed Bat (*Chaerephon jobensis colonicus*).

4.2.2.2. Birds

A total of 51 bird species were recorded in the project area during the current survey, during the daily bird census at each trapping site and opportunistically. Birds recorded during the current survey include birds of prey, nectar feeders and large omnivorous species. Budgerigars (*Melopsittacus undulatus*) were the most commonly observed birds across the project area.

4.2.2.3. Reptiles

Six reptile species were recorded in the project area during the current survey, comprising one snake, one gecko and four skinks. The majority of the reptile specimens were considered to be in good physical condition.

Reptile captures were greater in pitfalls (78.57%) compared to funnel traps (21.43%). The most commonly occurring species trapped across the project area was *Ctenotus hanloni*.

4.2.2.4. Amphibians

Two amphibians were recorded in the project area during the current survey; Northern Burrowing Frog (*Neobatrachus aquilonius*) and Desert Spadefoot (*Notaden nichollsi*). These frogs were recorded on the first trapping night and seventh trapping night after overnight rainfall.

4.2.3. Conservation significant fauna

No conservation significant fauna listed under the EPBC Act or BC Act, or by DBCA were observed during the current survey. Possibly occurring conservation significant fauna, identified in the desktop review, is presented in Section 4.1.1.

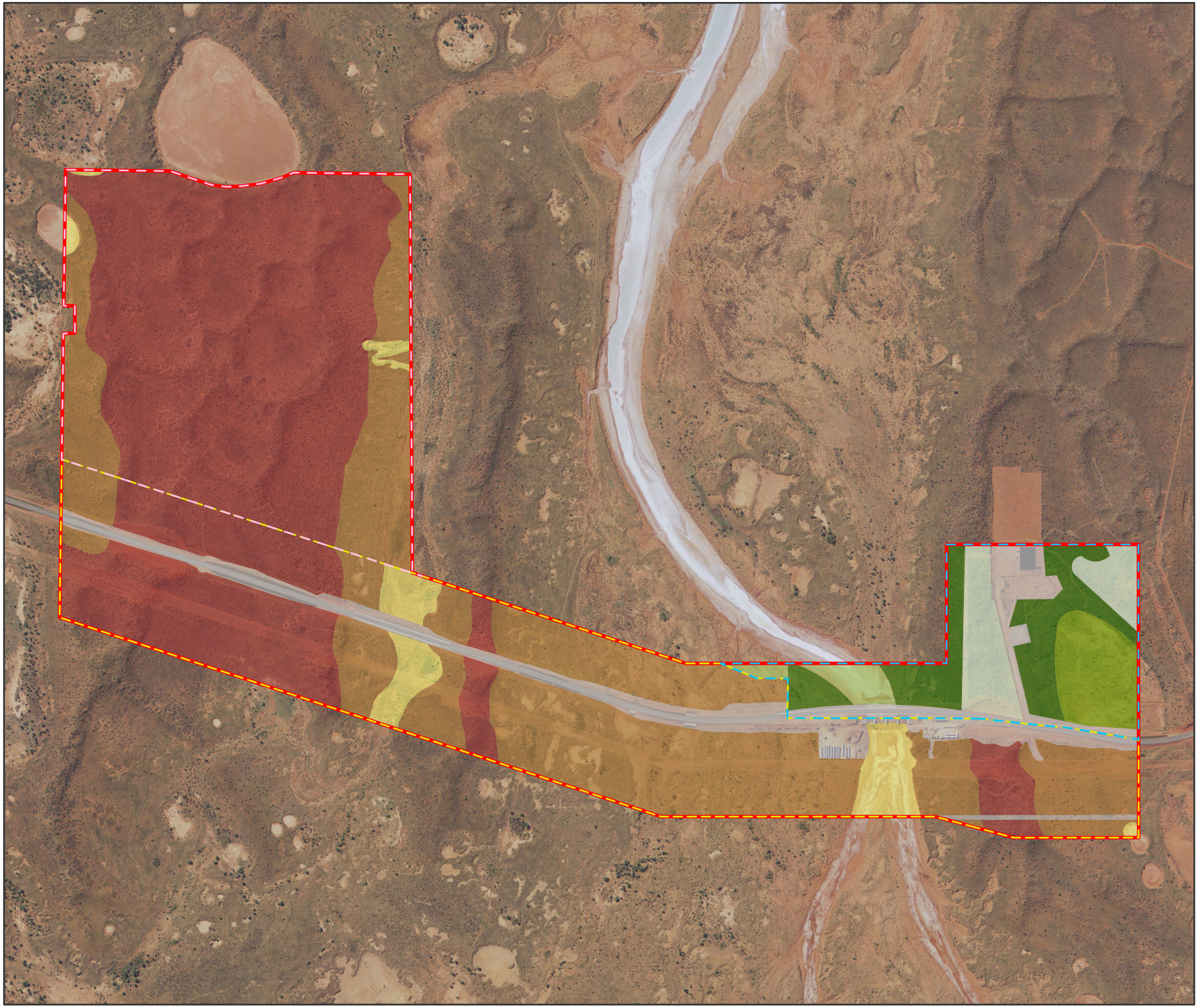

Figure 3: Fauna habitats recorded within the project area

5. Discussion

A total of three fauna habitat types, defined by BCE (2021), were delineated and mapped within the BCE (2021) survey area and extrapolation area. These survey areas have comparable fauna habitat types to those delineated and mapped within the Ecoscape (2021) survey area. All habitat types are known to extend into the surrounding ANSIA area (Bamford 2021, Ecoscape 2019) suggesting these habitats are likely not restricted to the project area.

The three fauna habitat types, defined by BCE (2021), could potentially support populations of conservation significant fauna in the project area. The Short-tailed mouse, assessed to be resident by BCE (2021), shows a preference for sandy clay soils supporting a variety of vegetation types across its range (Van Dyck *et. al*. 2012). The closest record of this species is 2 km south-west of the project area from 2016 (DBCA 2007-2021). *Lerista planiventralis maryani*, also assessed to be resident by BCE (2021), shows a preference for sand dunes, specifically around the coast (Wilson and Swan 2021). The project area is less than 10 km south of the coast. Both species are considered likely to utilise the project area, however the habitat types they would occur in (i.e., specifically VSA1: Undulating dunes and VSA2: Sandy loam flats) are not restricted to the project area.

The Northern Quoll, assessed as having a high likelihood to occur by Ecoscape (2019), occupies a diverse range of habitats including rocky areas, eucalypt forest and woodlands, shrubland and grassland (TSSC 2005). The closest record of this species is 7 km west of the project area from 2013 (DBCA 2007-2021). This species could potentially utilise all three fauna habitat types in the project area for foraging and traversing, and termite mounds for denning purposes. All three habitat types are not restricted to the project area.

The Brush-tailed mulgara, assessed to be a regular visitor by BCE (2021), is found on dunes or in mature spinifex grasslands on sandy loam soils (Van Dyck *et. al*. 2012). The closest record of this species is over 80 km south from 2006 (DBCA 2007-2021). The Pilbara Olive Python, assessed to be a regular visitor by BCE (2021), prefers deep gorges and water holes in the range of the Pilbara region (DEWHA 2008). Most records of this species are known from over 90 km east of the project area (DBCA 2007 – 2021). Based on previous record locations and fauna habitat within the project area, both species are considered unlikely to utilise the project area, but rather occasionally pass through.

Limited information is known about the Night Parrot, and it is only known from a very small number of records (TSSC 2016). There are no recent or historical records in the Onslow area, despite multiple past surveys. This species is therefore considered unlikely to occur in the project area.

Migratory waterbirds may occur across a range of habitats throughout Australia, including wetlands, coasts, rivers, lakes and mudflats. These species were considered to be irregular visitors by BCE (2021), as the claypan habitat type is comprised of coarse, sandy material unlikely to support an abundance of aquatic invertebrates. In flood, the project area may support small numbers of waterbirds, however this habitat type is not restricted to the project area and is more abundant to the north.

The Barn Swallow, assessed to be a regular visitor by BCE (2021), appears to regularly visit the Onslow townsite in summer (BCE 2021). Individuals may fly over the project area but not solely rely on it.

The project area is situated within the bounds of several larger fauna surveys. Similar terrestrial fauna species have been recorded across these surveys. The current survey recorded 66 terrestrial fauna species, which is comparable to other surveys given the smaller size (e.g., 77 fauna species recorded by Thompson [2020], and 67 species recorded by BCE [2018]). Based on the current survey and previous surveys in the area, the known fauna assemblage for the project area is likely to be complete and would only be limited by additional fauna habitats (i.e., major drainage lines and rocky habitats) which do not occur in the project area.

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Appendix A Framework for conservation significant flora and fauna ranking

CATEGORIES OF THREATENED SPECIES UNDER THE ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBC ACT)

Threatened fauna and flora may be listed in any one of the following categories as defined in Section 179 of the EPBC Act. Species listed as 'conservation dependent' and 'extinct' are not Matters of National Environmental Significance and therefore do not trigger the EPBC Act.

Category	Definition
Extinct (EX)	There is no reasonable doubt that the last member of the species has died.
Extinct in the Wild (EW)	Taxa known to survive only in captivity or as a naturalised population well outside its past range; or taxa has not been recorded in its known and/or expected habitat at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically Endangered (CE)	Taxa considered to be facing an extremely high risk of extinction in the wild.
Endangered (EN)	Taxa considered to be facing a very high risk of extinction in the wild.
Vulnerable (VU)	Taxa considered to be facing a high risk of extinction in the wild.
Near Threatened (NT)	Taxa has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.
Least Concern (LC)	Taxa has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.
Data Deficient (DD)	There is inadequate information to make a direct, or indirect, assessment of taxa's risk extinction based on its distribution and/or population status.
Not Evaluated (NE)	Taxa has not yet been evaluated against the criteria.
Migratory (M)	Not an IUCN category. Species are defined as migratory if they are listed in an international agreement approved by the Commonwealth Environment Minister, including: • the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animal) for which Australia is a range state; • the agreement between the Government of Australian and the Government of the People's Republic of China for the Protection of Migratory Birds and their environment (CAMBA); • the agreement between the Government of Japan and the Government of Australia for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (JAMBA); or • the agreement between Australia and the Republic of Korea to develop a bilateral migratory bird agreement similar to the JAMBA and CAMBA in respect to migratory bird conservation and provides a basis for collaboration on the protection of migratory shorebirds and their habitat (ROKAMBA).

CONSERVATION CODES FOR WESTERN AUSTRALIA FLORA AND FAUNA

The Wildlife Conservation (Specially Protected Fauna) Notice 2018 and the Wildlife Conservation (Rare Flora) Notice 2018 have been transitioned under regulations 170, 171 and 172 of the Biodiversity Conservation Regulations 2018 to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the *Biodiversity Conservation Act 2016* (BC Act).

Specially protected fauna or flora are species which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such.

Threatened species (T)
Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the BC Act.

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for Threatened Fauna.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

Category	Code	Description
Critically Endangered species	CR	Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for critically endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for critically endangered flora.
Endangered species	EN	Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for endangered flora.
Vulnerable species	VU	Threatened species considered to be "facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for vulnerable flora.

Specially protected species

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

Category	Code	Description
Migratory species	MI	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act). Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species. Published as migratory birds protected under an international agreement under schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.
Species of special conservation interest (conservation dependent fauna)	CD	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act). Published as conservation dependent fauna under schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.
Other specially protected species	OS	Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act). Published as other specially protected fauna under schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.

Priority species (P)

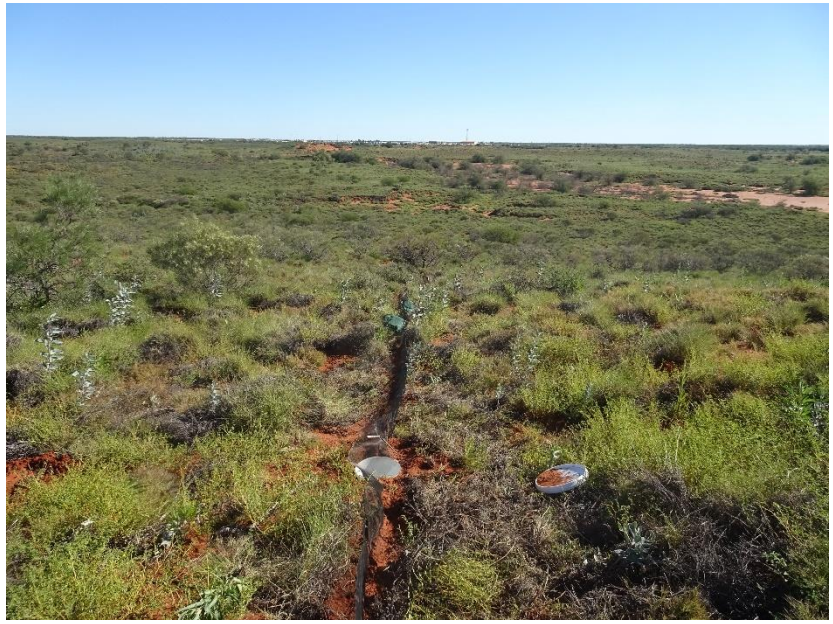
Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

Category	Code	Definition
Priority 1	P1	*Poorly-known species* 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	P2	*Poorly-known species* 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	P3	*Poorly-known species* 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	P4	*Rare, Near Threatened and other species in need of monitoring* (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.

Appendix B Fauna trapping site photos

Trapping site	Photo	Photo
Trapping site 1		

Trapping site	Photo	Photo
Trapping site 2		

Appendix C Fauna trap locations

Trap name	Easting	Northing	Sampling method
1B 01	299366	7590906	Pitfall trap and funnel traps
1B 02	299382	7590908	Pitfall trap and funnel traps
1B 03	299396	7590913	Pitfall trap and funnel traps
1B 04	299410	7590916	Pitfall trap and funnel traps
1B 05	299420	7590920	Pitfall trap and funnel traps
1B 06	299431	7590923	Pitfall trap and funnel traps
1B 07	299444	7590927	Pitfall trap and funnel traps
1B 08	299460	7590931	Pitfall trap and funnel traps
1B 09	299473	7590934	Pitfall trap and funnel traps
1B 10	299486	7590932	Pitfall trap and funnel traps
1E 01	299481	7590949	Small aluminium box trap
1E 02	299464	7590953	Small aluminium box trap
1E 03	299450	7590961	Small aluminium box trap
1E 04	299427	7590956	Small aluminium box trap
1E 05	299414	7590961	Small aluminium box trap
1E 06	299399	7590960	Small aluminium box trap
1E 07	299375	7590965	Small aluminium box trap
1E 08	299352	7590962	Small aluminium box trap
1E 09	299326	7590963	Small aluminium box trap
1E 10	299318	7590931	Small aluminium box trap
1E 11	299330	7590900	Small aluminium box trap
1E 12	299343	7590887	Small aluminium box trap
1E 13	299362	7590871	Small aluminium box trap
1E 14	299387	7590868	Small aluminium box trap
1E 15	299398	7590873	Small aluminium box trap
1E 16	299412	7590880	Small aluminium box trap
1E 17	299430	7590883	Small aluminium box trap
1E 18	299448	7590889	Small aluminium box trap
1E 19	299465	7590890	Small aluminium box trap
1E 20	299483	7590887	Small aluminium box trap
1E 21	299497	7590881	Small aluminium box trap
1E 22	299506	7590909	Small aluminium box trap
1E 23	299491	7590933	Small aluminium box trap
1C 01	299325	7590969	Cage trap
1C 02	299498	7590881	Cage trap

Trap name	Easting	Northing	Sampling method
2B 01	300150	7591045	Pitfall trap and funnel traps
2B 02	300149	7591036	Pitfall trap and funnel traps
2B 03	300148	7591023	Pitfall trap and funnel traps
2B 04	300147	7591014	Pitfall trap and funnel traps
2B 05	300146	7591001	Pitfall trap and funnel traps
2B 06	300145	7590989	Pitfall trap and funnel traps
2B 07	300142	7590973	Pitfall trap and funnel traps
2B 08	300140	7590959	Pitfall trap and funnel traps
2B 09	300140	7590945	Pitfall trap and funnel traps
2B 10	300133	7590929	Pitfall trap and funnel traps
2E 01	300100	7590941	Small aluminium box trap
2E 02	300097	7590962	Small aluminium box trap
2E 03	300096	7590976	Small aluminium box trap
2E 04	300091	7590998	Small aluminium box trap
2E 05	300098	7591010	Small aluminium box trap
2E 06	300098	7591027	Small aluminium box trap
2E 07	300101	7591045	Small aluminium box trap
2E 08	300095	7591062	Small aluminium box trap
2E 09	300096	7591073	Small aluminium box trap
2E 10	300110	7591083	Small aluminium box trap
2E 11	300140	7591093	Small aluminium box trap
2E 12	300166	7591094	Small aluminium box trap
2E 13	300197	7591090	Small aluminium box trap
2E 14	300186	7591067	Small aluminium box trap
2E 15	300180	7591036	Small aluminium box trap
2E 16	300176	7591026	Small aluminium box trap
2E 17	300171	7591009	Small aluminium box trap
2E 18	300169	7590989	Small aluminium box trap
2E 19	300163	7590970	Small aluminium box trap
2E 20	300165	7590950	Small aluminium box trap
2E 21	300154	7590939	Small aluminium box trap
2E 22	300130	7590920	Small aluminium box trap
2E 23	300117	7590916	Small aluminium box trap
2C 01	300123	7590981	Cage trap
2C 02	300196	7591090	Cage trap

Appendix D Fauna species list

Family	Species	Common name	Conservation status		Previous studies										
			EPBC Act	BC Act / DBCA	ALA	BCE-(2005)	BCE-(2009)	BCE-(2018)	Biota (2010)	ENV-(2012)	Naturemap	Thompson-(2020)	BCE (2021)	Ecoscape (2019)	This survey
Frogs															
Pelodryadidae	*Cyclorana maini*	Sheep frog			X	X	X		X	X	X	X			
Pelodryadidae	*Cylorana occidentalis*	Western Water-holding frog									X	X		X	
Pelodryadidae	*Litoria caerulea*	Green Tree Frog									X				
Pelodryadidae	*Litoria rubella*	Little Red Tree Frog			X	X	X		X	X	X	X			
Limnodynastidae	*Neobatrachus aquilonius*	Northern Burrowing Frog			X	X	X		X	X	X	X			X
Limnodynastidae	*Neobatrachus fulvus*	Tawny Trilling Frog							X		X	X			
Limnodynastidae	*Notaden nichollsi*	Desert Spadefoot			X	X	X		X	X	X	X			X
Limnodynastidae	*Platyplectrum spenceri*	Centralian Burrowing Frog				X									
Reptiles															
Carphodactylidae	*Nephrurus levis occidentalis*				X	X			X	X	X	X			
Diplodactylidae	*Crenadactylus occidentalis*	Western Clawless Gecko				X	X								

Family	Species	Common name	Conservation status		Previous studies										
			EPBC Act	BC Act / DBCA	ALA	BCE-(2005)	BCE-(2009)	BCE-(2018)	Biota (2010)	ENV-(2012)	Naturemap	Thompson-(2020)	BCE (2021)	Ecoscape (2019)	This survey
Diplodactylidae	*Crenadactylus pilbarensis*	Pilbara Clawless Gecko				X	X								
Diplodactylidae	*Diplodactylus bilybara*	Western Fat-tailed Gecko			X							X		X	
Diplodactylidae	*Diplodactylus pulcher*				X				X	X	X				
Diplodactylidae	*Lucasium stenodactylus*	Western Sandplain Gecko			X				X	X	X	X			
Diplodactylidae	*Rhynchoedura ornata*	Western Beaked Gecko			X				X	X	X				
Diplodactylidae	*Strophurus jeanae*				X	X	X		X	X	X	X			
Diplodactylidae	*Strophurus strophurus*				X	X			X	X	X	X			
Gekkonidae	*Gehyra crypta*							X							
Gekkonidae	*Gehyra pilbara*				X	X			X	X	X	X		X	X
Gekkonidae	*Gehyra purpurascens*				X				X	X	X				
Gekkonidae	*Gehyra variegata*				X	X			X	X	X	X		X	
Gekkonidae	*Heteronotia binoei*	Bynoe's Gecko			X	X	X		X	X	X	X		X	
Pygopodidae	*Delma borea*					X	X								
Pygopodidae	*Delma butleri*				X				X		X	X			
Pygopodidae	*Delma nasuta*					X	X		X	X	X				
Pygopodidae	*Delma pax*					X	X		X	X					
Pygopodidae	*Delma tincta*				X	X	X		X	X	X	X			

Family	Species	Common name	Conservation status		Previous studies										
			EPBC Act	BC Act / DBCA	ALA	BCE-(2005)	BCE-(2009)	BCE-(2018)	Biota (2010)	ENV-(2012)	Naturemap	Thompson-(2020)	BCE (2021)	Ecoscape (2019)	This survey
Pygopodidae	*Lialis burtonis*	Burton's Legless-Lizard			X	X	X		X	X	X	X			
Pygopodidae	*Pygopus nigriceps*	Hooded Scaleyfoot			X	X	X		X	X	X	X			
Agamidae	*Ctenophorus clayi*	Collared Dragon				X									
Agamidae	*Ctenophorus femoralis*	Dune Dragon			X	X	X		X	X	X	X		X	
Agamidae	*Ctenophorus isolepis isolepis*	Central Military Dragon			X	X	X		X	X	X	X	X	X	X
Agamidae	*Ctenophorus nuchalis*	Central Netted Dragon			X	X	X		X	X	X	X		X	
Agamidae	*Ctenophorus reticulatus*	Western Netted Dragon				X	X			X					
Agamidae	*Ctenophorus rubens*	Red Dragon			X	X	X		X	X	X	X			
Agamidae	*Diporiphora adductus*	Carnarvon Dragon			X	X	X		X	X	X	X			
Agamidae	*Gowidon longirostris*	Long-nosed Dragon				X			X	X	X	X			
Agamidae	*Lophognathus gilberti*	Ta-Ta or Gilbert's Dragon										X			
Agamidae	*Pogona minor minima*	Dwarf Bearded Dragon												X	
Agamidae	*Pogona minor minor*	Western Bearded Dragon			X	X	X		X	X	X	X			
Scincidae	*Tympanocryptis cephalus*	Coastal Pebble-mimic Dragon				X			X						
Scincidae	*Carlia munda*					X	X								
Scincidae	*Cryptoblepharus plagiocephalus*					X	X								

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Scincidae	*Ctenotus calurus*								X	X	X	X			
Scincidae	*Ctenotus duricola*					X	X		X	X					
Scincidae	*Ctenotus grandis titan*				X	X	X		X	X	X	X			
Scincidae	*Ctenotus hanloni*				X	X	X		X	X	X	X			X
Scincidae	*Ctenotus helenae*					X	X		X	X					
Scincidae	*Ctenotus iapetus*				X	X	X		X	X	X	X			
Scincidae	*Ctenotus maryani*				X	X	X		X	X	X	X			
Scincidae	*Ctenotus pantherinus ocellifer*				X	X	X		X	X	X	X	X		X
Scincidae	*Ctenotus rufescens*					X	X		X	X	X	X			
Scincidae	*Ctenotus saxatilis*	Rock Ctenotus				X	X		X	X	X				
Scincidae	*Ctenotus schomburgkii*					X	X		X	X	X				
Scincidae	*Ctenotus serventyi*					X	X								
Scincidae	*Cyclodomorphus melanops melanops*					X	X		X	X					
Scincidae	*Egernia depressa*	Southern Pygmy Spiny-tailed Skink							X						
Scincidae	*Eremiascincus isolepis*				X	X			X	X					

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Scincidae	*Eremiascincus pallidus*	Western Narrow-banded Skink			X	X	X		X	X	X	X			
Scincidae	*Lerista baynesi*									X	X				
Scincidae	*Lerista bipes*				X	X	X		X	X	X	X		X	
Scincidae	*Lerista clara*				X				X	X	X	X			
Scincidae	*Lerista elegans*				X	X	X		X	X	X				
Scincidae	*Lerista muelleri*											X			
Scincidae	*Lerista onsloviana*				X	X			X	X	X	X			
Scincidae	*Lerista planiventralis maryani*			P1	X	X	X		X	X	X				
Scincidae	*Lerista uniduo*				X				X	X	X				
Scincidae	*Menetia greyii*	Dwarf Skink			X	X	X		X	X	X	X			
Scincidae	*Morethia ruficauda exquisita*				X	X	X		X	X	X				
Scincidae	*Notoscincus ornatus ornatus*					X	X		X						
Scincidae	*Tiliqua multifasciata*	Central Blue-tongue			X	X	X		X	X	X	X		X	
Varanidae	*Varanus acanthurus*	Spiny-tailed Goanna				X	X		X		X	X			
Varanidae	*Varanus brevicauda*	Short-tailed Pygmy Goanna			X	X	X		X	X	X	X			

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Varanidae	*Varanus caudolineatus*								X	X	X	X			
Varanidae	*Varanus eremius*	Pygmy Desert Goanna			X	X	X	X	X	X	X	X	X		X
Varanidae	*Varanus gouldii*	Bungarra or Sand Goanna			X	X	X		X	X	X	X		X	
Varanidae	*Varanus panoptes rubidus*	Spotted Monitor				X	X		X	X	X	X	X		
Varanidae	*Varanus tristis tristis*	Tree Goanna			X	X	X		X	X	X				
Typhlopidae	*Anilios ammodytes*				X	X			X	X		X			
Typhlopidae	*Anilios grypus*				X	X			X	X		X			
Typhlopidae	*Anilios hamatus*				X	X			X	X		X			
Typhlopidae	*Anilios pilbarensis*											X			
Pythonidae	*Antaresia perthensis*	Pygmy Python				X	X			X					
Pythonidae	*Antaresia stimsoni stimsoni*	Stimson's Python			X	X	X		X	X	X	X			
Pythonidae	*Aspidites melanocephalus*	Black-headed Python				X	X		X	X	X	X			
Pythonidae	*Liasis olivaceus barroni*	Pilbara Olive Python	VU	VU					X		X				
Elapidae	*Acanthophis pyrrhus*	Desert Death Adder										X			
Elapidae	*Acanthophis wellsi*	Pilbara Death Adder				X	X								

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Elapidae	*Brachyurophis approximans*					X	X								
Elapidae	*Demansia psammophis cupreiceps*	Yellow-faced Whipsnake			X	X	X		X	X	X	X			
Elapidae	*Demansia rufescens*	Rufous Whipsnake				X	X		X						
Elapidae	*Furina ornata*	Moon Snake			X	X			X	X	X	X			
Elapidae	*Pseudechis australis*	Mulga Snake			X	X	X		X	X	X	X			
Elapidae	*Pseudonaja mengdeni*	Gwardar; Western Brown Snake			X						X	X			X
Elapidae	*Pseudonaja modesta*	Ringed Brown Snake			X	X	X		X	X	X				
Elapidae	*Simoselaps anomalus*	Desert Banded Snake			X	X	X		X	X	X	X			
Elapidae	*Suta fasciata*	Rosen's Snake				X	X				X	X			
Elapidae	*Suta punctata*	Spotted Snake			X	X	X		X	X	X	X			
Birds															
Casuariidae	*Dromaius novaehollandiae*	Emu			X	X	X		X		X				X
Anatidae	*Cygnus atratus*	Black Swan					X								
Anatidae	*Dendrocygna eytoni*	Plumed Whistling-Duck			X										
Anatidae	*Malacorhynchus membranaceus*	Pink-eared Duck			X										

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Anatidae	*Tadorna tadornoides*	Australian Shelduck								X					
Anatidae	*Aythya australis*	Hardhead			X			X		X	X				
Anatidae	*Anas superciliosa*	Pacific Black Duck			X	X	X	X	X	X	X				
Anatidae	*Anas gracilis*	Grey Teal			X	X	X		X	X	X				
Anatidae	*Chenonetta jubata*	Australian Wood Duck			X					X	X				
Phasianidae	*Coturnix pectoralis*	Stubble Quail			X	X	X		X		X				
Phasianidae	*Coturnix ypsilophora*	Brown Quail			X	X	X				X			X	
Podicipedidae	*Tachybaptus novaehollandiae*	Australasian Grebe			X	X	X		X	X	X				
Podicipedidae	*Poliocephalus poliocephalus*	Hoary-headed Grebe			X					X	X				
Columbidae	*Geophaps plumifera*	Spinifex Pigeon			X	X	X		X	X	X				X
Columbidae	*Phaps chalcoptera*	Common Bronzewing			X		X			X	X			X	X
Columbidae	*Phaps histrionica*	Flock Bronzewing			X		X	X		X	X			X	
Columbidae	*Ocyphaps lophotes*	Crested Pigeon			X	X	X	X	X	X	X		X	X	X
Columbidae	*Geopelia cuneata*	Diamond Dove			X	X	X	X	X	X	X			X	X
Columbidae	*Geopelia striata*	Peaceful Dove			X	X	X	X	X	X	X				X
Columbidae	*Geopelia humeralis*	Bar-shouldered Dove			X	X	X		X	X	X				
Cuculidae	*Centropus phasianinus*	Pheasant Coucal			X					X	X				

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Cuculidae	*Chalcites basalis*	Horsfield's Bronze-Cuckoo			X	X	X	X	X	X	X				X
Cuculidae	*Chalcites osculans*	Black-eared Cuckoo					X			X	X				
Cuculidae	*Heteroscenes pallidus*	Pallid Cuckoo			X	X	X			X	X				
Otididae	*Ardeotis australis*	Australian Bustard			X	X	X	X	X	X	X		X	X	X
Podargidae	*Podargus strigoides*	Tawny Frogmouth					X				X				
Caprimulgidae	*Eurostopodus argus*	Spotted Nightjar			X	X	X			X	X				
Aegothelidae	*Aegotheles cristatus*	Australian Owlet-nightjar			X		X		X	X	X				X
Apodidae	*Apus pacificus*	Fork-tailed Swift	MI	MI	X		X		X	X	X				
Rallidae	*Tribonyx ventralis*	Black-tailed Native-hen			X		X			X	X				
Gruidae	*Antigone rubicunda*	Brolga			X		X	X			X				
Burhinidae	*Burhinus grallarius*	Bush Stone-curlew					X				X				
Recurvirostridae	*Cladorhynchus leucocephalus*	Banded Stilt			X					X	X				
Recurvirostridae	*Recurvirostra novaehollandiae*	Red-necked Avocet			X					X	X				
Recurvirostridae	*Himantopus leucocephalus*	Pied Stilt			X			X		X	X				
Charadriidae	*Pluvialis squatarola*	Grey Plover	MI	MI	X					X	X				
Charadriidae	*Pluvialis fulva*	Pacific Golden Plover	MI	MI	X					X	X				

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Charadriidae	*Charadrius ruficapillus*	Red-capped Plover			X					X	X			X	
Charadriidae	*Charadrius mongolus*	Lesser Sand Plover	EN	EN	X					X	X				
Charadriidae	*Charadrius leschenaultii*	Greater Sand Plover	VU	VU	X					X	X				
Charadriidae	*Charadrius veredus*	Oriental Plover	MI	MI	X					X	X				
Charadriidae	*Elseyornis melanops*	Black-fronted Dotterel			X			X		X	X				
Charadriidae	*Vanellus tricolor*	Banded Lapwing			X		X								
Charadriidae	*Erythrogonys cinctus*	Red-kneed Dotterel			X			X		X	X				
Scolopacidae	*Numenius phaeopus*	Whimbrel	MI	MI	X					X	X				
Scolopacidae	*Numenius minutus*	Little Curlew	MI	MI	X					X	X				
Scolopacidae	*Numenius madagascariensis*	Eastern Curlew	CR	CR	X					X	X				
Scolopacidae	*Limosa lapponica*	Bar-tailed Godwit	MI	MI	X			X		X	X				
Scolopacidae	*Limosa limosa*	Black-tailed Godwit	MI	MI	X					X	X				
Scolopacidae	*Calidris tenuirostris*	Great Knot	CR	CR	X					X	X				
Scolopacidae	*Calidris canutus*	Red Knot	EN	EN	X					X	X				
Scolopacidae	*Calidris falcinellus*	Broad-billed Sandpiper	MI	MI	X					X	X				
Scolopacidae	*Calidris acuminata*	Sharp-tailed Sandpiper	MI	MI	X					X	X				
Scolopacidae	*Calidris ferruginea*	Curlew Sandpiper	CR	CR	X					X	X				

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Scolopacidae	*Calidris subminuta*	Long-toed Stint	MI	MI	X					X	X				
Scolopacidae	*Calidris ruficollis*	Red-necked Stint	MI	MI	X					X	X				
Scolopacidae	*Calidris melanotos*	Pectoral Sandpiper	MI	MI	X					X	X				
Scolopacidae	*Xenus cinereus*	Terek Sandpiper	MI	MI	X					X	X				
Scolopacidae	*Actitis hypoleucos*	Common Sandpiper	MI	MI	X					X	X			X	
Scolopacidae	*Tringa nebularia*	Common Greenshank	MI	MI	X					X	X				
Scolopacidae	*Tringa glareola*	Wood Sandpiper	MI	MI	X					X	X				
Scolopacidae	*Tringa stagnatilis*	Marsh Sandpiper	MI	MI	X					X	X				
Scolopacidae	*Phalaropus lobatus*	Red-necked Phalarope	MI	MI	X					X	X				
Turnicidae	*Turnix velox*	Little Button-quail			X		X	X	X	X	X		X	X	X
Glareolidae	*Stiltia isabella*	Australian Pratincole			X		X								
Glareolidae	*Glareola maldivarum*	Oriental Pratincole	MI	MI	X	X	X			X	X				
Laridae	*Larus novaehollandiae*	Silver Gull			X	X	X	X	X	X	X				X
Laridae	*Gelochelidon nilotica*	Common Gull-billed Tern	MI	MI	X	X	X		X	X	X			X	
Laridae	*Hydroprogne caspia*	Caspian Tern	MI	MI	X	X	X		X	X	X				
Laridae	*Chlidonias hybrida*	Whiskered Tern			X	X	X			X	X				
Laridae	*Chlidonias leucopterus*	White-winged Black Tern	MI	MI	X	X	X			X	X				

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Ciconiidae	*Ephippiorhynchus asiaticus*	Black-necked Stork			X	X	X			X	X				
Ardeidae	*Bubulcus coromandus*	Cattle Egret			X		X			X					
Ardeidae	*Ardea pacifica*	White-necked Heron			X	X	X	X		X	X				X
Ardeidae	*Ardea alba*	Great Egret			X	X	X	X		X	X				
Ardeidae	*Ardea intermedia*	Intermediate Egret			X	X	X			X	X				
Ardeidae	*Egretta novaehollandiae*	White-faced Heron			X	X	X	X		X	X			X	
Ardeidae	*Egretta garzetta*	Little Egret			X	X	X			X	X				
Threskiornithidae	*Threskiornis moluccus*	Australian White Ibis			X		X								
Threskiornithidae	*Threskiornis spinicollis*	Straw-necked Ibis			X	X	X	X		X	X				
Threskiornithidae	*Platalea flavipes*	Yellow-billed Spoonbill			X	X	X			X	X				
Threskiornithidae	*Platalea regia*	Royal Spoonbill			X	X	X	X		X	X				
Threskiornithidae	*Plegadis falcinellus*	Glossy Ibis	MI	MI	X										
Accipitridae	*Elanus axillaris*	Black-shouldered Kite			X	X	X		X	X	X			X	
Accipitridae	*Hamirostra melanosternon*	Black-breasted Buzzard			X	X	X		X	X	X				
Accipitridae	*Hamirostra isura*	Square-tailed Kite			X						X				X
Accipitridae	*Aquila audax*	Wedge-tailed Eagle			X	X	X		X	X	X				X

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Accipitridae	*Hieraaetus morphnoides*	Little Eagle			X	X	X		X	X	X				X
Accipitridae	*Circus approximans*	Swamp Harrier			X	X	X		X	X	X				
Accipitridae	*Circus assimilis*	Spotted Harrier			X	X	X		X	X	X			X	
Accipitridae	*Accipiter fasciatus*	Brown Goshawk			X		X			X	X				X
Accipitridae	*Accipiter cirrocephalus*	Collared Sparrowhawk			X	X	X	X		X	X				
Accipitridae	*Haliastur sphenurus*	Whistling Kite			X	X	X	X	X	X	X		X	X	X
Accipitridae	*Milvus migrans*	Black Kite			X	X	X	X	X	X	X				
Tytonidae	*Tyto javanica*	Barn Owl			X		X		X	X	X				
Strigidae	*Ninox connivens*	Barking Owl			X		X			X					
Strigidae	*Ninox novaeseelandiae*	Southern Boobook			X	X	X		X	X					
Meropidae	*Merops ornatus*	Rainbow Bee-eater			X	X	X	X	X	X	X		X		X
Alcedinidae	*Todiramphus sanctus*	Sacred Kingfisher			X	X	X		X	X	X				
Alcedinidae	*Todiramphus pyrrhopygius*	Red-backed Kingfisher			X	X	X	X		X	X				
Alcedinidae	*Dacelo leachii*	Blue-winged Kookaburra			X	X	X		X	X	X				X
Falconidae	*Falco cenchroides*	Nankeen Kestrel			X	X	X	X	X	X	X		X	X	X
Falconidae	*Falco longipennis*	Australian Hobby			X	X	X	X	X	X	X				X
Falconidae	*Falco berigora*	Brown Falcon			X	X	X	X		X	X			X	X

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Falconidae	*Falco hypoleucos*	Grey Falcon	VU	VU			X								
Falconidae	*Falco subniger*	Black Falcon			X				X	X	X				
Falconidae	*Falco peregrinus*	Peregrine Falcon	OS	OS	X		X			X	X				
Cacatuidae	*Nymphicus hollandicus*	Cockatiel			X	X	X		X	X	X				X
Cacatuidae	*Eolophus roseicapillus*	Galah			X	X	X	X	X	X	X				
Cacatuidae	*Cacatua sanguinea*	Little Corella			X	X	X	X	X	X	X				
Psittaculidae	*Barnardius zonarius*	Australian Ringneck			X	X	X	X	X	X	X				
Psittaculidae	*Pezoporus occidentalis*	Night Parrot	EN	CR			X			X	X				
Psittaculidae	*Melopsittacus undulatus*	Budgerigar			X	X	X		X	X	X				X
Maluridae	*Malurus assimilis*	Variegated Fairy-wren			X	X	X		X	X	X		X		X
Maluridae	*Malurus splendens*	Splendid Fairy-wren									X				
Maluridae	*Malurus leucopterus*	White-winged Fairy-wren			X	X	X	X	X	X	X		X	X	X
Meliphagidae	*Sugomel niger*	Black Honeyeater			X		X		X	X					
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater			X	X	X	X	X	X	X			X	X
Meliphagidae	*Certhionyx variegatus*	Pied Honeyeater			X		X	X		X	X				
Meliphagidae	*Epthianura tricolor*	Crimson Chat			X	X	X	X	X	X	X			X	X
Meliphagidae	*Epthianura aurifrons*	Orange Chat			X	X	X		X	X	X			X	

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Meliphagidae	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater			X		X				X				
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater			X	X	X	X	X	X	X		X		X
Meliphagidae	*Ptilotula keartlandi*	Grey-headed Honeyeater			X	X	X		X	X					X
Meliphagidae	*Ptilotula penicillata*	White-plumed Honeyeater			X	X	X	X	X	X					X
Meliphagidae	*Manorina flavigula*	Yellow-throated Miner			X	X	X	X	X	X	X				X
Pardalotidae	*Pardalotus rubricatus*	Red-browed Pardalote			X		X	X		X	X				X
Pardalotidae	*Pardalotus striatus*	Striated Pardalote					X								
Acanthizidae	*Calamanthus campestris*	Rufous Fieldwren									X			X	
Acanthizidae	*Gerygone fusca*	Western Gerygone			X	X	X			X					
Acanthizidae	*Smicrornis brevirostris*	Weebill			X		X			X	X				X
Acanthizidae	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill					X								
Pomatostomidae	*Pomatostomus temporalis*	Grey-crowned Babbler			X	X	X	X	X	X	X				
Neosittidae	*Daphoenositta chrysoptera*	Varied Sittella			X										
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike			X	X	X	X	X	X	X				

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Campephagidae	*Lalage tricolor*	White-winged Triller			X	X	X	X	X	X	X				
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler			X		X			X					
Pachycephalidae	*Colluricincla harmonica*	Grey Shrike-thrush					X			X	X				X
Oreoicidae	*Oreoica gutturalis*	Crested Bellbird			X	X	X	X	X	X	X				
Psophodidae	*Psophodes occidentalis*	Chiming Wedgebill			X	X	X	X	X	X	X			X	X
Artamidae	*Gymnorhina tibicen*	Australian Magpie			X	X	X		X	X	X				X
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird			X	X	X	X	X	X	X				
Artamidae	*Cracticus torquatus*	Grey Butcherbird			X		X		X	X	X				
Artamidae	*Artamus personatus*	Masked Woodswallow			X	X	X		X	X	X				
Artamidae	*Artamus cinereus*	Black-faced Woodswallow			X	X	X	X	X	X	X		X	X	X
Artamidae	*Artamus leucorynchus*	White-breasted Woodswallow			X	X	X	X	X	X	X				
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail			X	X	X	X	X	X	X				X
Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail			X		X				X				
Corvidae	*Corvus orru*	Torresian Crow			X	X	X	X	X	X	X			X	X
Corvidae	*Corvus bennetti*	Little Crow			X	X	X	X	X	X	X			X	X
Monarchidae	*Grallina cyanoleuca*	Magpie-lark			X	X	X	X	X	X	X				X
Petroicidae	*Petroica goodenovii*	Red-capped Robin					X								X

Family	Species	Common name	Conservation status		Previous studies										
			EPBC Act	BC Act / DBCA	ALA	BCE-(2005)	BCE-(2009)	BCE-(2018)	Biota (2010)	ENV-(2012)	Naturemap	Thompson-(2020)	BCE (2021)	Ecoscape (2019)	This survey
Petroicidae	*Melanodryas cucullata*	Hooded Robin					X								
Dicaeidae	*Dicaeum hirundinaceum*	Mistletoebird			X		X								
Estrildidae	*Emblema pictum*	Painted Finch			X	X	X		X	X	X				X
Estrildidae	*Neochmia ruficauda*	Star Finch			X	X	X		X	X	X				
Estrildidae	*Taeniopygia guttata*	Zebra Finch			X	X	X	X	X	X	X			X	X
Motacillidae	*Anthus australis*	Australian Pipit			X	X	X	X	X	X	X		X	X	X
Alaudidae	*Mirafra javanica*	Horsfield's Bushlark			X	X	X	X	X	X	X		X	X	X
Passeriformes	*Cincloramphus cruralis*	Brown Songlark			X	X	X	X	X	X					X
Passeriformes	*Cincloramphus mathewsi*	Rufous Songlark			X	X	X	X	X	X			X	X	X
Passeriformes	*Poodytes carteri*	Spinifexbird			X	X	X	X	X		X		X		X
Hirundinidae	*Cheramoeca leucosterna*	White-backed Swallow			X	X	X		X	X	X				
Hirundinidae	*Petrochelidon ariel*	Fairy Martin			X	X	X	X	X	X	X		X	X	X
Hirundinidae	*Petrochelidon nigricans*	Tree Martin			X	X	X	X	X	X	X				
Hirundinidae	*Hirundo neoxena*	Welcome Swallow			X	X	X	X	X	X	X				
Hirundinidae	*Hirundo rustica*	Barn Swallow	MI	MI	X	X	X			X					
Mammals															

Family	Species	Common name	Conservation status		Previous studies										
			EPBC Act	BC Act / DBCA	ALA	BCE-(2005)	BCE-(2009)	BCE-(2018)	Biota (2010)	ENV-(2012)	Naturemap	Thompson-(2020)	BCE (2021)	Ecoscape (2019)	This survey
Tachyglossidae	*Tachyglossus aculeatus acanthion*	Short-beaked Echidna				X	X		X	X	X	X			
Dasyuridae	*Dasycercus blythi*	Brush-tailed Mulgara		P4		X	X			X					
Dasyuridae	*Dasykaluta rosamondae*	Kaluta			X	X	X		X	X	X	X			
Dasyuridae	*Dasyurus hallucatus*	Northern Quoll	EN	EN		X	X				X	X			
Dasyuridae	*Ningaui timealeyi*	Pilbara Ningaui			X	X	X		X	X	X				
Dasyuridae	*Planigale 'species 1'*	Pilbara Planigale										X			
Dasyuridae	*Sminthopsis macroura stalkeri*	Stripe-faced Dunnart			X	X			X	X	X	X			
Dasyuridae	*Sminthopsis youngsoni*	Lesser Hairy-footed Dunnart			X	X	X		X	X	X	X			X
Phalangeridae	*Trichosurus vulpecula hypoleucus*	Brushtail Possum					X								
Macropodidae	*Osphranter robustus erubescens*	Euro, Biggada				X		X	X	X	X	X			
Macropodidae	*Osphranter rufus*	Red Kangaroo, Marlu			X			X	X	X	X	X			
Muridae	*Leggadina lakedownensis*	Short-tailed Mouse		P4	X	X	X		X	X	X	X			
Muridae	*Mus musculus*	*House Mouse			X	X	X		X	X	X	X			
Muridae	*Notomys alexis alexis*	Spinifex Hopping-mouse			X	X			X	X	X	X			

Family	Species	Common name	Conservation status		Previous studies										
			EPBC Act	BC Act / DBCA	ALA	BCE-(2005)	BCE-(2009)	BCE-(2018)	Biota (2010)	ENV-(2012)	Naturemap	Thompson-(2020)	BCE (2021)	Ecoscape (2019)	This survey
Muridae	*Pseudomys delicatulus*	Delicate Mouse					X		X	X					
Muridae	*Pseudomys desertor*	Desert Mouse					X		X	X	X	X			
Muridae	*Pseudomys hermannsburgensis*	Sandy Inland Mouse			X	X	X		X	X	X	X			
Muridae	*Rattus rattus*	*Black Rat				X	X				X	X			
Muridae	*Zyzomys argurus*	Common Rock-rat				X	X		X						
Leporidae	*Oryctolagus cuniculus*	*Rabbit								X	X				
Pteropodidae	*Pteropus alecto gouldii*	Black Flying-fox							X						
Pteropodidae	*Pteropus scapulatus*	Little Red Flying-fox					X				X				
Rhinonycteridae	*Rhinonicteris aurantia (Pilbara)*	Pilbara Leaf-nosed Bat	VU	VU		X			X						
Emballonuridae	*Saccolaimus flaviventris*	Yellow-bellied Sheath-tailed Bat							X	X					X
Emballonuridae	*Taphozous georgianus*	Common Sheath-tailed Bat					X								
Molossinae	*Austronomus australis*	White-striped Free-tailed Bat			X	X			X	X					
Molossinae	*Chaerephon jobensis colonicus*	Greater Northern Free-tailed Bat							X		X				X

Family	Species	Common name	Conservation status		Previous studies										
			EPBC Act	BC Act / DBCA	ALA	BCE-(2005)	BCE-(2009)	BCE-(2018)	Biota (2010)	ENV-(2012)	Naturemap	Thompson-(2020)	BCE (2021)	Ecoscape (2019)	This survey
Molossinae	*Ozimops cobourgianus*	Northern Coastal Free-tailed Bat							X						
Molossinae	*Ozimops lumsdenae*	Northern Free-tailed Bat													
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat				X	X		X	X	X				
Vespertilionidae	*Nyctophilus arnhemensis*	Arnhem Long-eared Bat					X								
Vespertilionidae	*Nyctophilus geoffroyi geoffroyi*	Lesser Long-eared Bat							X		X				
Vespertilionidae	*Scotorepens greyii*	Little Broad-nosed Bat					X		X	X					
Vespertilionidae	*Vespadelus finlaysoni*	Finlayson's Cave-bat				X	X		X	X					
Canidae	*Canis familiaris dingo*	*Dingo						X	X	X		X		X	X
Canidae	*Canis familiaris familiaris*	*Dog						X	X		X			X	X
Canidae	*Vulpes vulpes*	*Red Fox					X		X	X	X	X			
Felidae	*Felis catus*	*Cat				X	X	X	X	X	X	X	X	X	X
Equidae	*Equus caballus*	*Horse							X		X				
Bovidae	*Bos taurus*	*European Cattle							X	X	X				X
Bovidae	*Capra hircus*	*Goat					X		X	X					
				Total	**219**	**183**	**208**	**67**	**181**	**235**	**232**	**77**	**20**	**45**	**66**

Appendix E Raw trapping data

Date	Trap number	Trap type	Scientific name	Common name	Number of individuals
22/06/2021	1B02	Bucket	*Sminthopsis youngsoni*	Lesser Hairy-footed Dunnart	1
22/06/2021	1B08	Bucket	*Ctenotus hanloni*		1
22/06/2021	1B08	Bucket	*Neobatrachus aquilonius*	Northern Burrowing Frog	1
22/06/2021	1B08	Bucket	*Notaden nichollsi*	Desert Spadefoot	1
22/06/2021	1B09	Bucket	*Neobatrachus aquilonius*	Northern Burrowing Frog	1
22/06/2021	1B10	Bucket	*Neobatrachus aquilonius*	Northern Burrowing Frog	1
22/06/2021	1B10	Bucket	*Ctenotus hanloni*		1
22/06/2021	2B10	Bucket	*Notaden nichollsi*	Desert Spadefoot	4
22/06/2021	2B08	Bucket	*Neobatrachus aquilonius*	Northern Burrowing Frog	3
22/06/2021	2B08	Bucket	*Ctenophorus isolepis isolepis*	Central Military Dragon	1
22/06/2021	2B06-07	Funnel	*Ctenotus hanloni*		1
22/06/2021	2B06	Bucket	*Neobatrachus aquilonius*	Northern Burrowing Frog	1
22/06/2021	2B05	Bucket	*Neobatrachus aquilonius*	Northern Burrowing Frog	1
22/06/2021	2B04	Bucket	*Notaden nichollsi*	Desert Spadefoot	1
22/06/2021	2B03	Bucket	*Notaden nichollsi*	Desert Spadefoot	2
22/06/2021	2B02	Bucket	*Notaden nichollsi*	Desert Spadefoot	1
22/06/2021	2B01-02	Funnel	*Turnix velox*	Little Button-quail	1
23/06/2021	1B02	Bucket	*Varanus eremius*	Pygmy Desert Goanna	1
23/06/2021	1B05-06	Funnel	*Ctenotus hanloni*		1
23/06/2021	2B01-02	Funnel	*Turnix velox*	Little Button-quail	1
24/06/2021	2B10	Bucket	*Ctenotus hanloni*		1
24/06/2021	2B03	Bucket	*Sminthopsis youngsoni*	Lesser Hairy-footed Dunnart	1
24/06/2021	2B03-04	Funnel	*Ctenotus pantherinus ocellifer*	Leopard Ctenotus	1
24/06/2021	1B04	Bucket	*Varanus eremius*	Pygmy Desert Goanna	1
25/06/2021	1B05	Bucket	*Ctenophorus isolepis isolepis*	Central Military Dragon	1
26/06/2021	2B09	Bucket	*Sminthopsis youngsoni*	Lesser Hairy-footed Dunnart	1
27/06/2021	1B03	Bucket	*Varanus eremius*	Pygmy Desert Goanna	1
28/06/2021	2B06	Bucket	*Notaden nichollsi*	Desert Spadefoot	1
28/06/2021	2B01	Bucket	*Notaden nichollsi*	Desert Spadefoot	1
28/06/2021	1B03	Bucket	*Ctenotus hanloni*		1
28/06/2021	1B09	Bucket	*Ctenotus pantherinus ocellifer*	Leopard Ctenotus	1
28/06/2021	1B05	Bucket	*Notaden nichollsi*	Desert Spadefoot	1
28/06/2021	1B10	Bucket	*Ctenotus hanloni*		1

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