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ENVIRONMENT

FINDER EXPLORATION
ECOLOGICAL SURVEYS - CANNING BASIN (EP 493)

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ACRONYMS

BAM Act	*Biosecurity and Agriculture Management Act 2007*
BOM	Bureau of Meteorology
CALM	Department of Conservation and Land Management (now DPaW)
DAFWA	Department of Agriculture and Food Western Australia
DEC	Department of Environment and Conservation (now DPaW)
DoE	Department of Environment
DoW	Department of Water
DPaW	Department of Parks and Wildlife (formerly DEC)
DSEWPaC	Department of the Sustainability, Environment, Water, Population and Communities (now DoEE)
ESA	Environmentally Sensitive Area
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESCAVI	Executive Steering Committee for Australian Vegetation Information
IBRA	Interim Biogeographic Regionalisation for Australia
NVIS	National Vegetation Information System
PEC	Priority Ecological Community
RPS	RPS Group Pty Ltd
TEC	Threatened Ecological Community
TPFL	Threatened and Priority flora Database
TPList	Threatened and Priority flora List
WAHERB	Western Australian Herbarium
WAOL	Western Australian Organism List
WONS	Weeds of National Significance
WC Act	*Wildlife Conservation Act 1950*

1 INTRODUCTION

1.1 PROJECT BACKGROUND

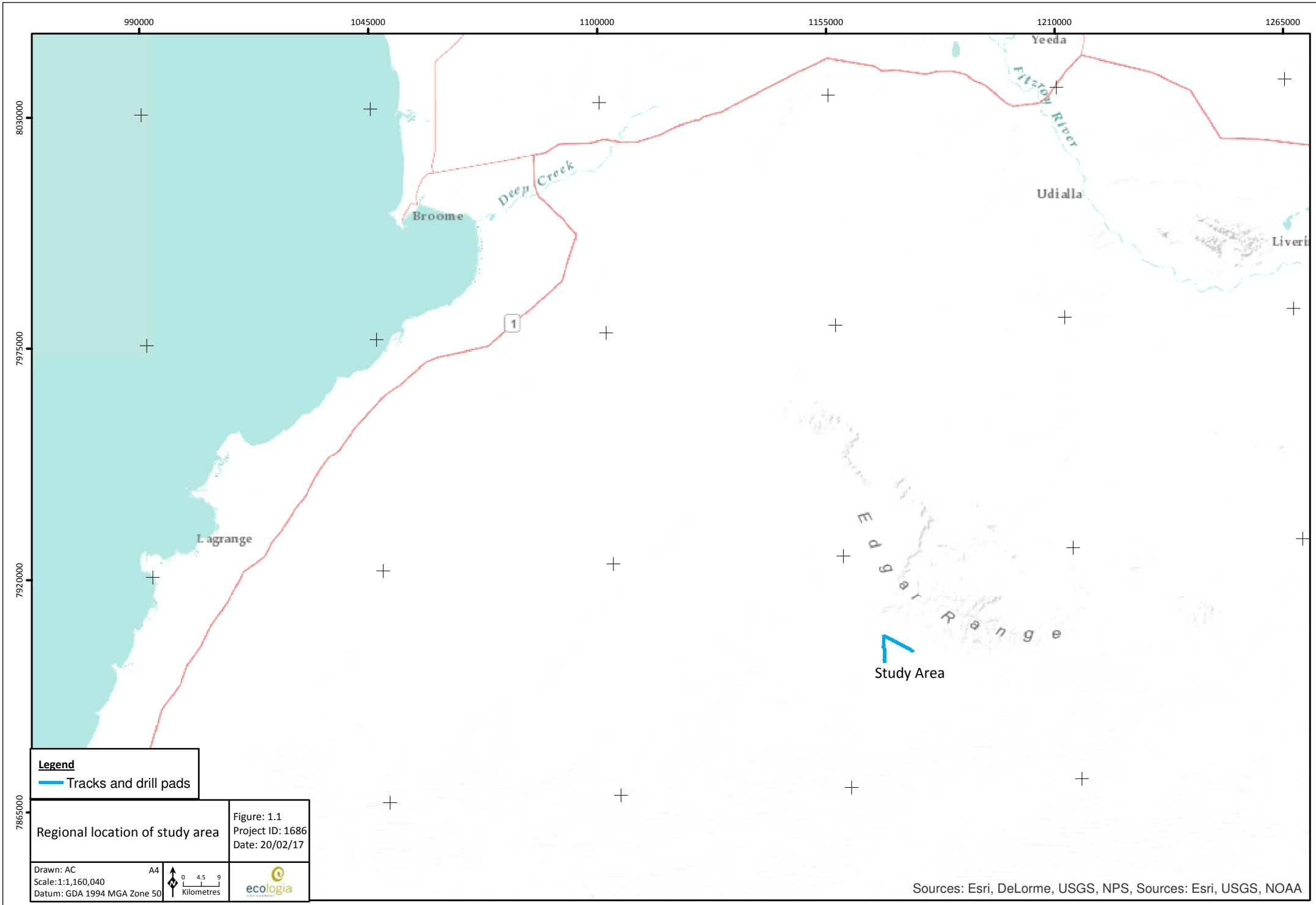
ecologia Environment (*ecologia*) was commissioned by Finder Exploration to conduct a targeted Threatened and Priority flora survey and a pre-clearance Greater Bilby and conservation significant vertebrate fauna survey (the surveys) of Finder Exploration's exploration sites in the Canning Basin, approximately 170km south-east of Broome in Western Australia (Figure 1.1). These surveys have been conducted to support Department of Mines and Petroleum (DMP) and Department of Environmental Regulation (DER) environmental approvals to clear vegetation for the construction of three new well sites, an access track and the expansion of an existing well site and exploration accommodation camp.

These sites comprise the expansion of the existing Helios 1 exploration well site and adjacent accommodation camp site, three new exploration wells (Horizontal Wells 2 and 3, and Vertical Plot Well 4), associated access tracks and water bore site on Tenement EP 493; and is defined as the 'study area' (Figure 1.2).

1.2 OBJECTIVES

The purpose of the surveys was to compile baseline information on the environmental values of the study area to support Department of Environment Regulation (DER) and Department of Mines and Petroleum (DMP) environmental approvals relating to the clearing native vegetation for construction and expansion of new and existing exploration well sites and accommodation camp area. The specific objectives of the surveys were to:

- Document the known and potentially occurring Threatened and Priority listed flora of the Study Area, by way of a Targeted flora Survey conducted as per EPA Guidance 51 (EPA 2004a) and the EPA/Department of Parks and Wildlife (DPaW) Technical Guide (2015).
- Document any evidence of the Greater Bilby *(Macrotis lagotis)* (Bilby), or potential critical habitat for the Bilby, by way of a preclearance inspection conducted in accordance with EPA Guidance 56 (EPA 2002); the EPA/DPaW Technical Guide (EPA and DEC 2010); and the DSEWPaC Survey Guidelines for Australia's Threatened Mammals (DSEWPaC 2011).
- Document the presence of any other vertebrate fauna of conservation significance or critical fauna habitat, by way of a site inspection conducted concurrently with the Bilby pre-clearance survey.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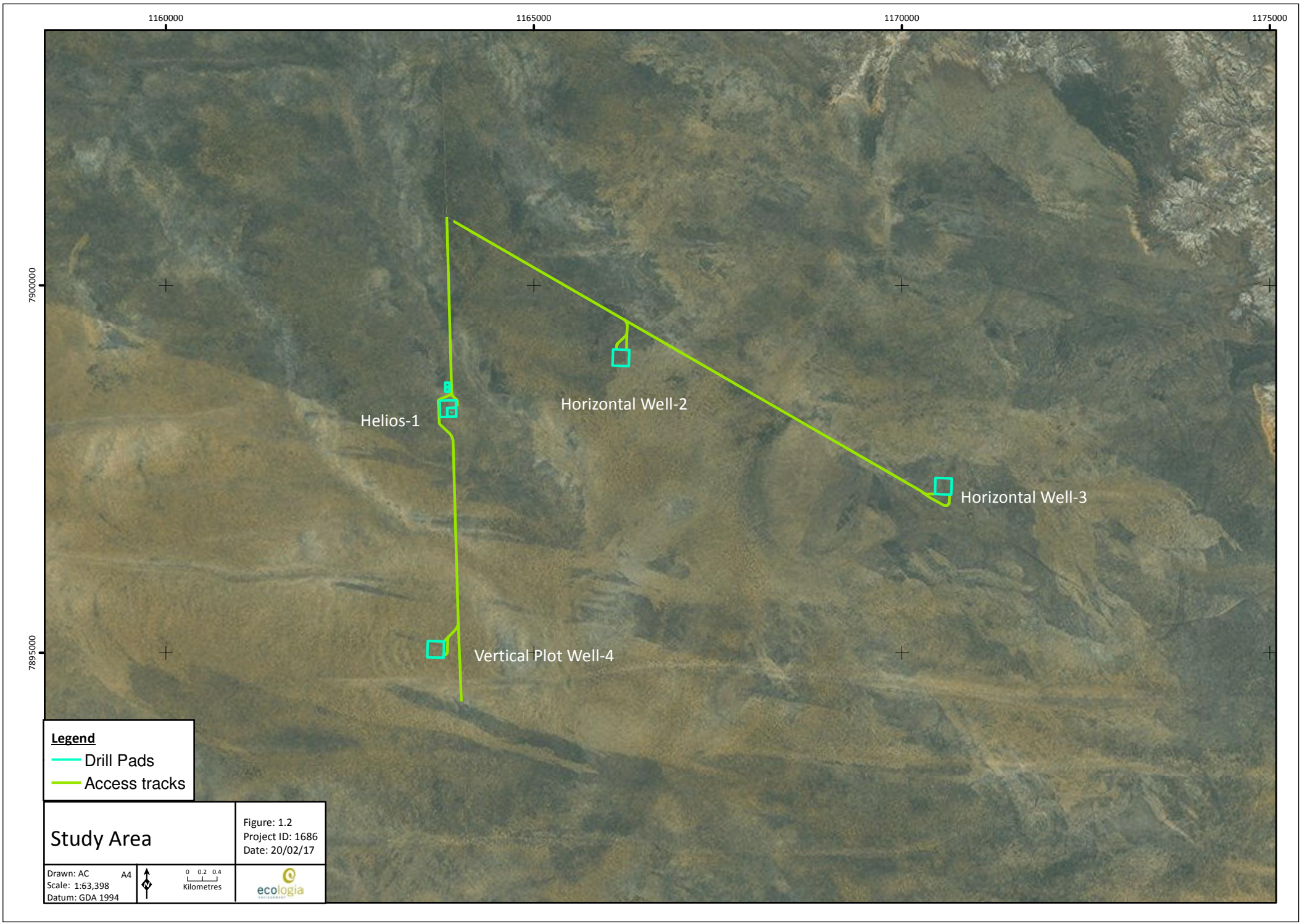
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1.3 DEFINITIONS

1.3.1 Significant Flora and Fauna

As described in EPA Guidance Statement 51 (EPA 2004a), flora may be considered conservation significant if it is declared Threatened or Priority flora (category definitions for threatened and priority flora and vegetation communities are provided in Appendix A). Other reasons that flora may be considered significant include range extensions, keystone species, relic species, potential novel or new species, and endemism.

EPA Guidance Statement 56 (EPA 2004b) and EPA/DPaW Technical Guide (EPA and DEC 2010) state that fauna may be considered conservation significant if they are Threatened or Priority fauna (Appendix A), or protected by international agreement or treaty (e.g. migratory birds). Other reasons that fauna may be considered significant include short range endemism (SREs), edges of distribution or isolated/outlying populations, and species that are undescribed.

1.3.2 Criteria to Determine Likelihood of Occurrence

After results were compiled from database searches, literature review, and field survey flora and fauna species that are listed under current legislative frameworks were identified. Three conservation lists have been developed at national (EPBC Act) and State levels (WC Act and DPaW priority list). The criteria listed in Table 1.1 were used to determine the likelihood of occurrence of significant flora, fauna within the study area as part of the literature review.

Table 1.1: Criteria used to assess the likelihood of occurrence of significant flora and vegetation

Likelihood	Significant Flora and Fauna
RECORDED	Taxon has previously been recorded in the study area.
HIGH	Due to the proximity of previous records (<5 km) and the presence of suitable habitat, the taxon is likely to occur within the study area.
MEDIUM	The habitat specificity of the taxon is broadly defined and habitat could possibly occur at the study area and there are records within 20 km of the study area, or there is insufficient information available to exclude the possibility of occurrence at the study area.
LOW	The habitat specificity of the taxon is well defined from previous records and the habitat is considered unlikely to be present within the study area; or there are no records within 20 km of the study area.

The level of available information for each species was also taken into consideration so that species were not allocated a low likelihood of occurrence because of insufficient survey information or cryptic behaviours and ecology.

2 METHODOLOGY

The survey methodology was consistent with that recommended by EPA (2002), EPA (2004a), EPA and DEC (2010), EPA and DPaW 22015) and DSEWPaC (2011) and included a:

- Desktop study and literature review to gather relevant background information on the study area;
- Targeted flora survey to assess the likelihood of conservation significant flora occurring over the study area; and a
- Targeted fauna survey to assess the likelihood of the Bilby or any other conservation significant fauna occurring over the study area.

The flora and fauna survey components were undertaken concurrently by two experienced Botanists and one experienced Zoologist (see Section 2.2)

2.1 DESKTOP STUDY

A desktop study, comprising a literature review and relevant database searches was undertaken prior to the field survey. The purpose of the desktop study was to provide context and background to the targeted surveys, and in particular, to identify conservation significant flora, vegetation, and fauna potentially occurring in the study area.

In May 2014 RPS undertook a Level 1 flora and vegetation assessment of the proposed Theia-1 exploration well (RPS 2014), and in 2015 undertook a desktop flora and vegetation assessment of the Theia-1 (now named Helios-1) ring road, camp, and associated access tracks (RPS 2015). Bamford (2014) undertook a Level 1 fauna assessment of the Finders Shale area, and a fauna survey was also conducted by Bamford and Davies (1996) in adjacent areas.

The results of these studies and existing datasets from associated literature reviews and database searches were used to inform the current targeted surveys. Location records from DPaW's Threatened and Priority databases and the Western Australian Herbarium Specimen Database (WAHERB) were undertaken as components of the recent previous studies and were not replicated here, however, updated searches for conservation significant species records were made of DPaW's NatureMap database to capture any recent updates.

2.2 FIELD SURVEY

The field survey was undertaken over a four day period between 29th November and 2nd December 2016, allowing ample coverage of all areas of the study area by foot. Participant members from *ecologia* included:

- Shaun Grein (Principal Botanist)
- Travis Doehring (Senior Botanist)
- Edward Swinhoe (Senior Zoologist)

The survey was also enhanced by the participation of several local Traditional Owners (TO's) familiar with the location.

The timing of the survey was not optimal for the identification of Threatened and Priority flora in the bioregion. However, as species previously recorded and potentially occurring were perennial species survey participants were confident in their ability to identify any species of conservation significance from vegetative material should they no longer be in flower at time of the survey. All of the study area was comprehensively searched on foot by team members. Methodology included:

- targeted searches for Threatened and Priority listed flora both previously recorded from the area, and considered likely to occur (RPS (2014), RPS (2015) and associated databases), and identification of any floristic communities of conservation significance;
- assessment of vegetation and habitat condition using the criteria provided in Appendix A

- targeted searches for evidence of Bilby's including direct observations, burrows, diggings, tracks, scats, and remains);
- use of motion-sensor cameras at any Bilby burrows, in order to verify usage;
- mapping of the locations of any Bilby records or significant Bilby habitat, with descriptions and photographs, and
- gathering evidence at all times over the study area for all other fauna species of conservation significance assessed as potentially occurring (Bamford and Davies (1996), Bamford (2014) and associated databases). Opportunistic sampling was undertaken by hand searching for cryptic species, which comprised searching beneath the bark of dead shrubs and trees, breaking open old logs, stumps and dead free-standing shrubs, investigating burrows and over-turning logs.

Prior to the commencement of survey, the preferred habitat of the conservation significant flora and fauna species that potentially occur in the study area was determined. Botanical staff members familiarised themselves with morphological characteristics of the relevant species including; *Seringia katatona*, *Croton aridus*, *Dasymalla chorisepala* and *Olax spartea*. Similarly Zoological staff familiarised themselves with tracks, scats and signs of potential fauna species of significance including, Bilby, Northern Marsupial Mole, Woma and Mulgara.

3 EXISTING ENVIRONMENT

3.1.1 Climate

Based on data from the nearest Bureau of Meteorology (BOM) weather station at Broome Airport (BOM Station No. 003003), the study area experiences an arid to tropical climate with a pronounced dry period typically experienced between June and November (Figure 2.1). Climate is arid (semi-desert) tropical with highly variable rainfall, falling mainly in summer. Cyclonic activity is significant, with several systems affecting the coast and hinterland annually. The current survey was conducted between 29th November and 2nd December 2016 after significant rainfall in August and immediately prior to a flooding event in December (Figure 2.1).

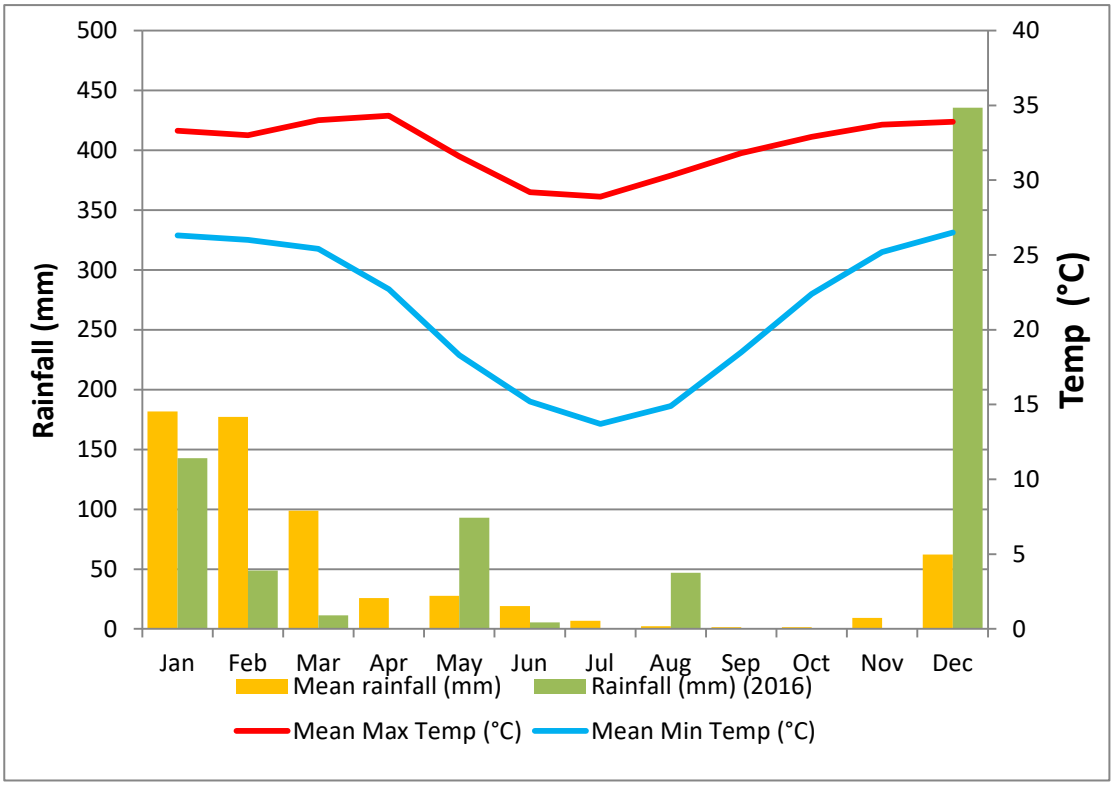


Figure 2.1: Climate data from Broome Airport BOM weather station (Station No. 3003)

3.1.2 Biogeographic Region

The Interim Biogeographic Regionalisation for Australia (IBRA) (Version 7) classifies the Australian continent into regions (bioregions) of similar geology, landform, vegetation, fauna and climate characteristics, and has currently 89 recognised regions (DSEWPaC 2012) broken down further into subregions. The study area is located on the border of the Great Sandy Desert bioregion (McLarty subregion GSD1) and the Dampierland Bioregion (Pindanland subregion DL2) and represents the northwest margin of the Canning Basin. The Vertical Pilot Well–4 is located within the Great Sandy Desert, whereas the other three pads are located within Dampierland.

The Great Sandy Desert (McLarty subregion) is predominantly tree steppe comprising scattered trees and shrubs over an open hummock grassland of *Triodia* sp. on red longitudinal sand dune fields (Graham 2001). Dampierland (Pindanland subregion) comprises sandplains of the Dampier Peninsular featuring a fine-textured sand-sheet with subdued dunes. Vegetation comprising Pindan comprises scattered trees and tall shrubs dominated by wattles, over an understorey of grasses and herbs.

Pindanland represents a transitional zone between the wetter monsoon forest to the north and the Great Sandy Desert to the south-east and therefore comprises a mix of tropical and arid species.

3.1.3 Land Systems

Payne and Schoknecht (2011) undertook a regional inventory and condition survey of the Kimberley region of Western Australia and provide a comprehensive and standardised description of the landscapes, soils and vegetation of the region. The report describes 111 Land Systems over a region of 33,007,000 ha and provides joint Land System and Land Type mapping.

The study area is wholly located within the Camelgooda Land System (Cml). The Camelgooda Land System consists of sandplains and linear dunefields with swales of stable dunes opening locally onto sandplains. There is little organised drainage, predominantly occurring as sheet-flow downslope from uplands and extending for short distances into dunefields. The system is not generally prone to degradation or erosion although recently burnt areas may have minor susceptibility to wind erosion but stabilise rapidly after rain (Payne and Schoknecht 2011). The Camelgooda Land System occurs over 1,782,600 ha of the region and is characterised by a vegetation of pindan and other low woodlands, within a Land Type of sandplains and dunes on Quaternary aeolian sands. Characteristic vegetation of dunes, swales and sandplains can consist of low woodland of *Corymbia dichromophloia/Bauhinia cunninghamii* with a tall shrub layer characterised by *Acacia* spp. over *Triodia bitextura, Triodia pungens,* and *T. bitextura - Chrysopogon sp*. A low scrubby woodland can also be present with prominent tall shrub layer of *Grevillea striata* over *Triodia bitextura-Chrysopogon* spp. (Payne and Schoknecht 2011).

3.1.4 Beard Vegetation

The vegetation of Western Australia was mapped at the 1:1,000,000 scale by Beard (1976), and the study area is located on the boundary of two Botanical Provinces: The Northern Botanical Province and the Eremaean Botanical Province. The Vertical Pilot Well–4 is located within the Eremaean Botanical Province (Great Sandy Desert), whereas the other three pads are located within the Northern Botanical Province (Dampierland). The vegetation mapping of Beard (1976) was subsequently reinterpreted and updated to reflect the National Vegetation Information System (NVIS) standards (Shepherd *et al.* 2001). Two vegetation associations of Beard (1976) have been mapped over the study area.

Within Dampierland, Association 701 consists of a shrub steppe of *Acacia pachycarpa* and *Grevillea* sp over a *Triodia pungens* and *Triodia intermedia* open hummock grassland. Within the Great Sandy Desert, Association 713 consists of an open low tree steppe of bloodwood *(Corymbia dichromophloia)* and desert walnut *(Owenia reticulate)* over *Triodia* spp. open hummock grassland.

Table 2.1: Shepherd and Beard vegetation over the study area

Association Code (Shepherd *et al.* 2001)	Vegetation Association (NVIS VI sub-association)
701	*Acacia pachycarpa, Grevillea sp.*\ shrub \ 4 \ r; G1 +*Triodia pungens, +Triodia intermedia*\hummock grass\2\i
713	*Owenia reticulata, Gardenia keartlandii, Erythrophleum chlorostachys* \tree\6\bi;M1 *Acacia pachycarpa, Acacia impressa, Hakea lorea, Grevillea refracta, Codonocarpus cotinifolius*\shrub\4\bi;G1+*Triodia pungens,+Triodia schinzii, Fimbristylis oxystachya.*

3.1.5 Soils

The study area lies within the Canning soil-landscape province described by Tille (2006). The soils within the province comprise sandplains and dunes, with some undulating plains and uplands, on the sedimentary rocks of the Canning Basin. Red deep sands and red sandy earths occur with some

shallow gravels and minor areas of red loamy earths and deep sandy gravels. Two soil units are recognised from the study area (Tille 2006).

The B28 unit occurs within Zone 116 of the Canning Province. B28 consists of largely stable linear dune fields with swales opening locally into sand plains. Dune lineation is generally east to west, or northwest. Pans and depressions may occur as well as some isolated residual sandstone hills. Chief soils are the red siliceous sands of the dune crests and flanks. Swales and sand plains consist of red earthy sands and red earths sometimes containing ironstone gravel.

The AB21 unit occurs within Zone 112 (Great Sandy Desert) of the Canning Province. AB21 represents pindan country of gently undulating sandplain with a few small rocky sandstone residuals, with no external drainage. Soils are red earthy sands with associated hummocks of siliceous sands.

4 SURVEY RESULTS

4.1 SIGNIFICANT FLORA AND VEGETATION

The survey areas occurs on sandplains and supports three broad vegetation units (RPS 2015):

- Acacia/Grevillea Tall Scrub
- *Acacia monticola* Tall Scrub
- Acacia Low Heath

The following vegetation units were described for each of the five well and camp sites during the current survey:

Helios-1 Expansion: Tall Open Shrubland *Grevillea wickhamii* subsp. *wickhamii* over *Acacia monticola, Acacia stipuligera* and *Grevillea refracta* subsp. *refracta* over closed hummock grassland of *Triodia pungens* and *Triodia schinzii* (Figure 4.1). Evidence of fire +5 years

Figure 4.1: Vegetation at Helios-1 Well Expansion Area

Camp Expansion: Tall Open Shrubland *Grevillea wickhamii* subsp. *wickhamii* over scattered *Acacia monticola, Acacia stipuligera* and *Grevillea refracta* subsp. *refracta* over closed hummock grassland dominated by *Triodia pungens* (Figure 4.2). Evidence of fire in previous 3-5 years.

Figure 4.2: Vegetation at Camp Expansion Area

Horizontal Well-2: Open Shrubland of *Grevillea refracta* subsp. *refracta* over scattered *Acacia colei* var. *colei*, *Ehretia saligna* var. *saligna* with scattered *Corymbia greeniana* over mixed hummock/tussock grassland of *Triodia pungens* and *Cymbopogon ambiguus* (Figure 4.3) No recent evidence of fire.

Figure 4.3: Vegetation at Horizontal Well-2 Area

Vertical Well-4: Open Shrubland *Acacia orthocarpa* with scattered *Grevillea wickhamii* subsp. *wickhamii*, *Acacia adoxa* subsp. *adoxa, Corymbia greeniana* over Low open shrubland *Corchorus sidoides* subsp. *sidoides* and *Solanum diversifolium* over open hummock grassland of *Triodia pungens.* Evidence of fire in the previous 3-5 years. This vegetation unit supported populations of the Priority 3 taxa *Seringia katatona* (see Figure 4.4).

Figure 4.4: Vegetation at Vertical Plot Well-4 Area

While some areas within the study area had been burnt at the time of the survey, representing several stages of pyric succession, condition was categorised between 1 and 2 based on the criteria presented in Appendix A.

No listed TECs (DPaW 2015a) or PECs (DPaW 2015b) and vegetation associations did not align with any known TEC or PEC. It is highly unlikely that any TECs or PECs, or any other significant vegetation, occurs over the study area.

One State listed Threatened (and EPBC listed Critically Endangered) flora along with several Priority listed flora species potentially occur within the study area (RPS (2014), RPS (2015) and associated databases). An assessment of the likelihood of these species occurring over the study area was undertaken using the criteria presented in Table 1.1. Results of the assessment are detailed in Table 4.1.

Table 4.1: Priority listed flora species with the potential to occur over the study area.

Species	Status (State)	Status (EPBC Act)	Likelihood of occurrence (RPS 2015)	Likelihood of occurrence (ecologia Table 1.1)
Seringia exastia	T	CR	N/A	High
Seringia katatona	P3	N/A	Recorded	Recorded
Croton aridus	P3	N/A	Likely to occur	High
Dasymalla chorisepala	P3	N/A	Possibility of occurring	Medium
Olax spartea	P2	N/A	Possibility of occurring	Medium

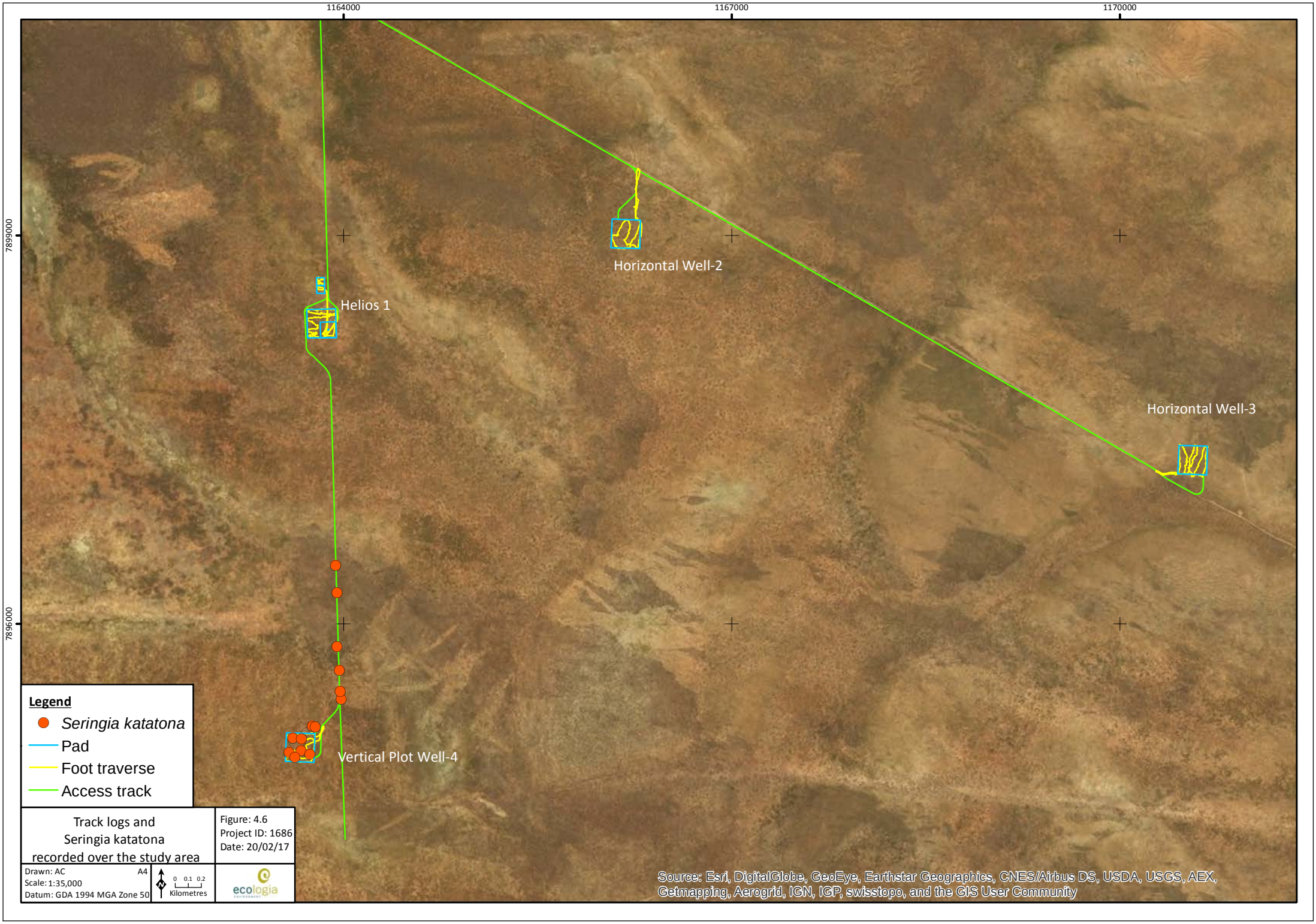
In addition to the Priority listed conservation taxa above, *Acacia pachycarpa, Corymbia grandifolia* subsp. *lamprocardia* and *Solanum beaugleholei* represent species of 'other conservation significance', and are considered range extensions. These species may also occur within the study area (RPS 2015).

The species above were targeted during searches of the study area. All foot traverses undertaken during the survey are shown in Figure 4.6. One flora species of conservation significance was recorded; the Priority 3 *Seringia katatona* (Red dune fire-bush). No other flora of conservation significance was recorded. Locations and associated photographs are presented in Appendix B.

Several individuals of the P3 *Seringia katatona* (formerly *Keraudrenia katatona*) were in flower at the time of the survey (Figure 4.5) and as a consequence were able to be taxonomically differentiated from the morphologically similar Threatened *Seringia exastia,* which is known to occur in similar habitat to *Seringia katatona* (DEC 2010). The primary difference between the two species is that the calyx lobe of *S. exastia* is longer than wider while in *S. katatona* the calyx lobe is wider rather than longer. A specimen of *S. katatona* has been vouchered with the WA Herbarium. Six small populations (1-15 plants) of *S. katatona* were recorded from the Vertical Plot Well-4 site (Figure 4.6) along with several populations of between four and ~200+ individuals recorded from along the access track between the Helios-1 and Vertical Plot Well-4 drill pads (Figure 4.6, Figure 4.7 and Appendix B).

No other flora species of conservation significance were identified from the Helios-1 drill pad, Horizontal Well-1, Horizontal Well-2, Vertical Plot Well-4, the proposed camp expansion area or the access track between Vertical Plot Well-4 and the Helios-1 drill pad (Figure 4.6).

Figure 4.5: *Seringia katatona* in flower at the time of the survey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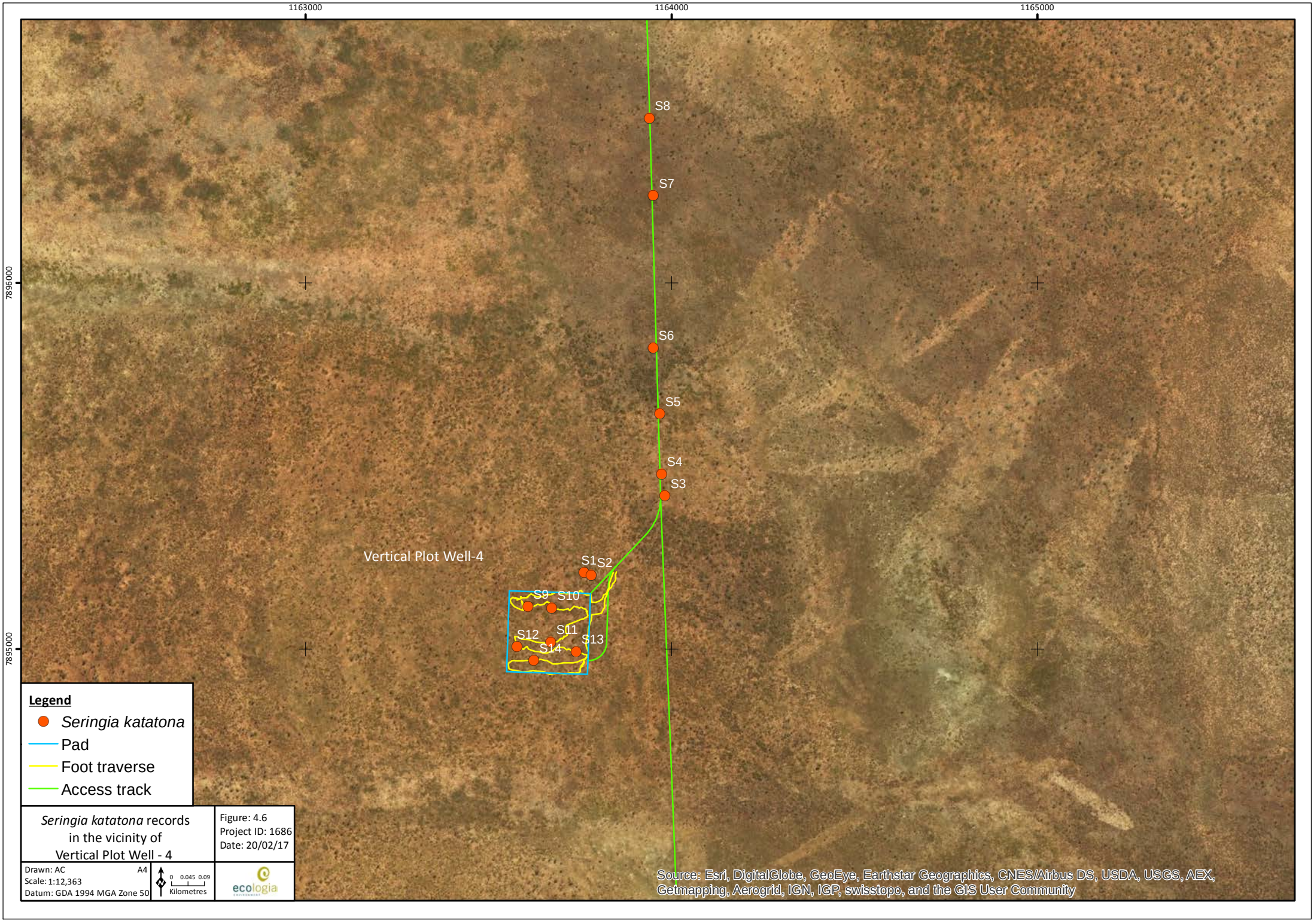
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4.2 SIGNIFICANT FAUNA

The study area consists of sandplains habitat with a representative example is provided as Figure 4.8. The majority of the study area had been burnt at the time of the survey. Nevertheless, habitat was assessed to be in very good condition based on the criteria presented in Appendix A. Vegetation generally consisted of scattered *Acacia* sp. over spinifex hummock grassland on sandy substrates (see Section 4.1 for detailed vegetation descriptions). No large hollow-bearing trees or rocky outcrops were present, and no significant habitat was identified.

Figure 4.8: Representative photograph of sandplain habitat

Bamford (2014) identified 29 vertebrate species of conservation significance that potentially occur within the study area. However, many of these are migratory waterbird and shorebird species which are unlikely to occur within the habitats present. Similarly, other species identified such as the Black-flanked Rock-Wallaby and Northern Brushtail Possum are highly unlikely to utilise the sandplain habitat present, and several changes to the conservation status have occurred in the intervening period. Significant species of note that Bamford (2014) considered likely to occur included the Bilby and 'possibly' the Northern Marsupial Mole (although habitat suitable for this species was outside the areas of impact). Bilby burrows and foraging signs were found during the site inspection of Bamford (2014).

An assessment of all the currently listed conservation significant species identified by Bamford (2014) was undertaken using the criteria of Table 1.1. Species with a Medium or higher likelihood of occurrence are presented in Table 4.2. These species were particularly targeted during searches of the study area, with all observations of fauna of significance noted.

Table 4.2: Conservation significant fauna species with the potential to occur over the study area.

Species		Status (State)	Status (EPBC Act)	Likelihood of occurrence (ecologia Table 1.1))
Greater Bilby	*Macrotis lagotis*	VU	VU	Recorded
Northern Marsupial Mole	*Notoryctes caurinus*	P4	-	Medium
Spectacled Hare Wallaby	*Lagorchestes conspicillatus*	P3	-	Medium
Mulgara	*Dasycercus blythi*	P4	-	Medium
Lakeland Downs Mouse	*Leggadina lakedownensis*	P4	-	Medium
Woma	*Aspidites ramsayi*	P1	-	High
Peregrine Falcon	*Falco peregrinus*	OS	-	High
Rainbow Bee-eater	*Merops ornatus*	IA	IA	Recorded
Fork-tailed Swift	*Apus pacificus*	IA	IA	Medium
Barn Swallow	*Hirundo rustica*	IA	IA	Medium

All foot traverses undertaken for each of the survey sites are shown in Figure 4.10 and Figure 4.11. Old secondary evidence of one conservation significant species, the Greater Bilby, was recorded during the field survey within and around the Horizontal Well–3 site (Figure 4.11). No fauna species of conservation significance, or significant habitat, was identified from the Helios-1 drill pad, planned expansion area or access track (Figure 4.10).

Only old Bilby diggings and disused burrows were recorded during the current survey (Figure 4.9). All locations and photographs are presented in Figure 4.9 and Appendix C. Although burrows were not currently active they may have been used in the last six to 12 months. Bilby's are present in the general region (Bamford 2014), however, definitive survey and monitoring for Bilby's is problemtic as they:

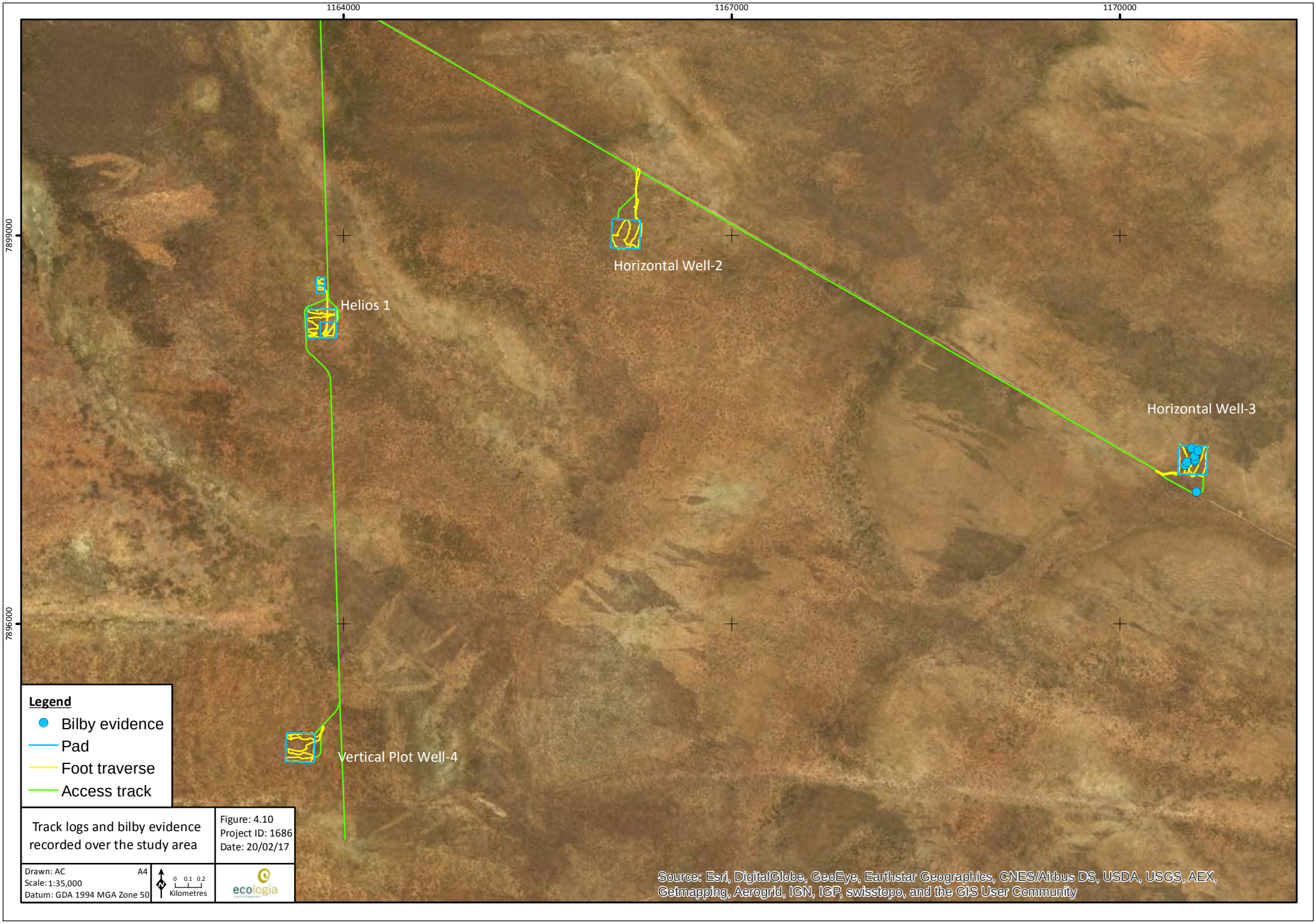
- Occur at very low densities over extensive areas of the arid zone.
- Have large home-ranges (between 1.5km² and 3km²)
- Frequently vacate areas with changes in resources (e.g. food and/or shelter influenced by fire and/or rainfall. (One reintroduced population established itself over 10 km from the release site.)
- May disappear from an area altogether (e.g. due to prolonged drought, or increases in foxes or cats).

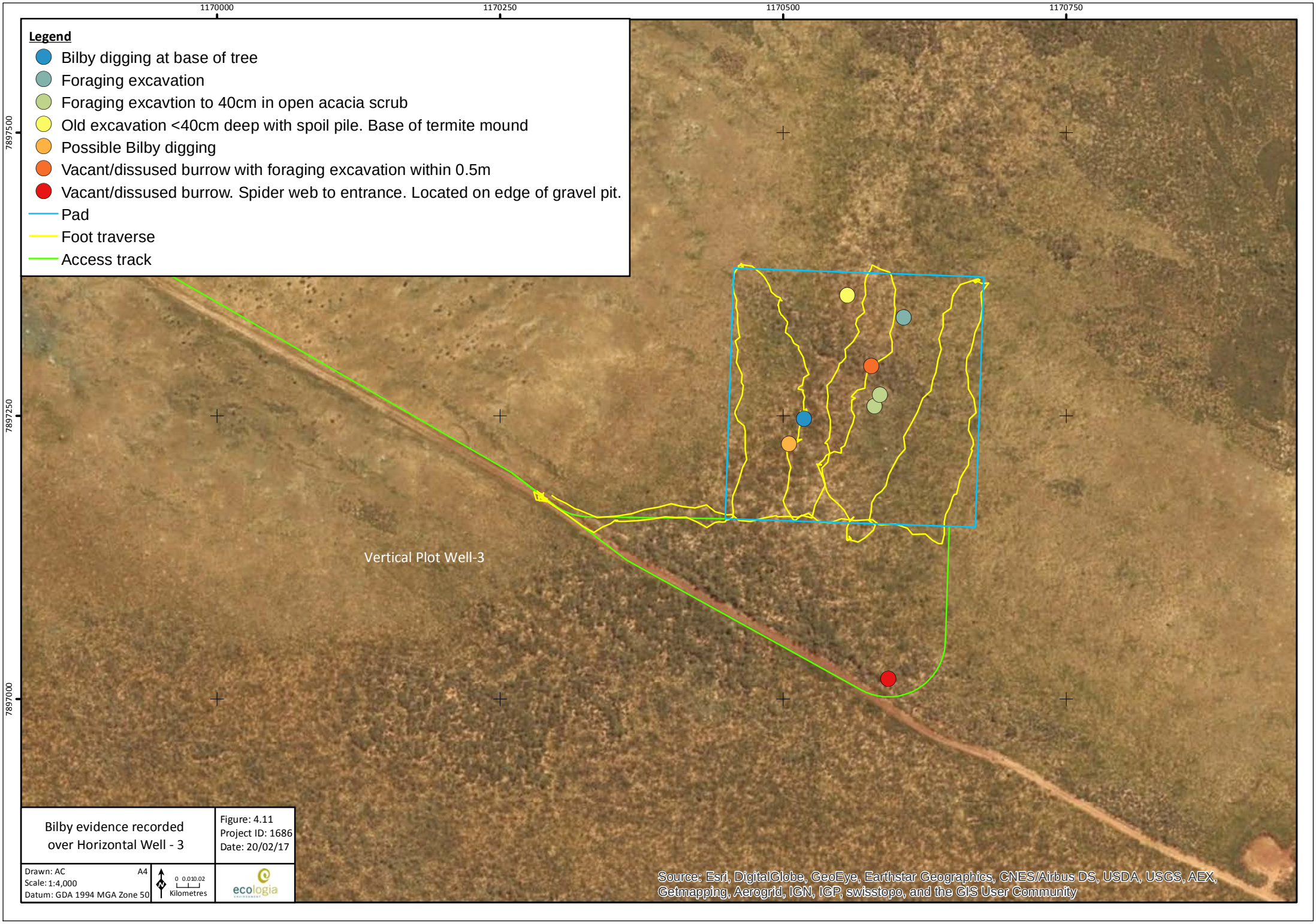
If active signs (fresh diggings, burrows systems) are recorded the species should be confirmed by:

- confirmation of genetic material (scats or hair); or
- photographic evidence by using baited remote sensor cameras set on active burrows. Ideally, cameras should be deployed for a minimum 12 night period (Paull *et al.* 2011).

As no recent or active primary or secondary evidence of Bilby was recorded during the current survey, no genetic analysis was undertaken nor were any remote sensor cameras deployed.

Figure 4.9: Disused Bilby burrow recorded at the time of the survey


1164000
1167000
1170000
7899000
7896000
Horizontal Well-2
Helios 1
Horizontal Well-3
Vertical Plot Well-4
Legend
Bilby evidence
Pad
Foot traverse
Access track
Track logs and bilby evidence recorded over the study area
Figure: 4.10
Project ID: 1686
Date: 20/02/17
Drawn: AC
A4
Scale: 1:35,000
Datum: GDA 1994 MGA Zone 50
0 0.1 0.2
Kilometres
ecologia
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


1170000
1170250
1170500
1170750
7897500
7897250
7897000
Legend
Bilby digging at base of tree
Foraging excavation
Foraging excavtion to 40cm in open acacia scrub
Old excavation <40cm deep with spoil pile. Base of termite mound
Possible Bilby digging
Vacant/dissused burrow with foraging excavation within 0.5m
Vacant/dissused burrow. Spider web to entrance. Located on edge of gravel pit.
Pad
Foot traverse
Access track
Vertical Plot Well-3
Bilby evidence recorded over Horizontal Well - 3
Figure: 4.11
Project ID: 1686
Date: 20/02/17
Drawn: AC
A4
Scale: 1:4,000
Datum: GDA 1994 MGA Zone 50
0 0.010.02
Kilometres
ecologia
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

5 CONCLUSION

ecologia was commissioned by Finder Exploration to undertake a targeted Threatened and Priority flora survey and a pre-clearance Bilby and conservation significant vertebrate fauna survey of Finder Exploration's exploration sites (on EP 493) in the Canning Basin. Methodology included:

- a desktop study and literature review to gather relevant background information;
- a targeted flora survey to assess the likelihood of conservation significant flora occurring; and
- a targeted fauna survey to assess the likelihood of the Bilby or any other conservation significant fauna occurring.

Field surveys were undertaken between 29th November and 2nd December 2016.

No listed TECs or PECs or vegetation associations aligning with any known TEC or PEC were recorded, and it is highly unlikely that any significant vegetation occurs over the study area. Similarly it is highly unlikely that any significant fauna habitat occurs over the study area.

One flora species of conservation significance was recorded during the survey; the Priority 3 *Seringia katatona* (Red dune fire-bush). Individuals of the species were in flower at the time of the survey. Six small populations (1-15 individuals) were recorded from Vertical Plot Well-4 site and several populations, comprised of between four and ~200+ individuals, were recorded from along the proposed access track between the Helios-1 and Vertical Plot Well-4 drill pads.

Secondary evidence of one conservation significant species, the threatened Bilby (Vulnerable-listed), was recorded during the field investigation from the vicinity of the Horizontal Well–3 site. Only old diggings and disused burrows were documented. Although the burrows were not currently active they may have been used in the last six to 12 months. No other fauna of conservation significance was recorded.

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APPENDIX A DEFINITIONS

Threatened (WC Act) and Priority flora Categories

Code	Definition
X	**Presumed Extinct Flora (Declared Rare Flora - Extinct)** Taxa which have been adequately searched for and there is no reasonable doubt that the last individual has died, and have been gazetted as such Schedule 2 under the *Wildlife Conservation Act 1950*).
T	**Threatened flora (Declared Rare Flora – Extant)** Flora that has been declared to be 'likely to become extinct or is rare, or otherwise in need of special protection', pursuant to section 23F(2) of the *Wildlife Conservation Act (1950)*
CR	**Critically Endangered** Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 1 of the Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
EN	**Endangered** Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 2 of the Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
VU	**Vulnerable** Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 3 of the Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
P1: Priority One	**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.
P2: Priority Two	**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.
P3: Priority Three	**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.
P4: Priority Four	**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.

Threatened flora (EPBC Act) Categories

Code	Definition
Ex	**Extinct** Taxa which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
ExW	**Extinct in the Wild** Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it 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.
CE	**Critically Endangered** Taxa which at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	**Endangered** Taxa which is not critically endangered and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	**Vulnerable** Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	**Conservation Dependent** Taxa which at a particular time if, at that time, the species is the focus of a specific conservation programme, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Definition of codes for Threatened Ecological Communities

Code	Definition
PD: Presumed Totally Destroyed	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
CR: Critically Endangered	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.
EN: Endangered	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its 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.
VU: Vulnerable	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 to long-term future.

Definition of codes for Priority Ecological Communities

Code	Definition
P1: Priority One	Ecological communities with apparently few, small occurrences, all or most not actively managed for conservation (e.g. within agricultural or Pastoral lands, urban areas, active mineral leases) and for which current threats exist. 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.
P2: Priority Two	Communities that are known from few small occurrences, all or most of which are actively managed for conservation (e.g. within national parks, conservation parks, nature reserves, State forest, unallocated Crown land, water reserves, etc.) and not under imminent threat 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.
P3: Priority Three	(i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or: (ii) Communities known from a 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, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, 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.
P4: Priority Four	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.
P5: Priority Five	Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Definition of codes for vegetation condition

Vegetation condition (EPA & DPaW 2015)	Criteria
1	Pristine or nearly so, no obvious sign of disturbance or damage caused by human activities.
2	Vegetation structure intact; disturbance affecting individual species; weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
3	Vegetation structure altered; obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires; the presence of some more aggressive weeds; dieback; logging and grazing.
4	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires; the presence of some very aggressive weeds; partial clearing; dieback and grazing.
6	Basic vegetation structure severely impacted by disturbance. Scope for regeneration by not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires; the presence of some very aggressive weeds at high density; partial clearing; dieback and grazing.
7	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as “parkland cleared” with the flora comprising weed or crop species with isolated native trees or shrubs.

Definition of codes for fauna habitat condition

Habitat Condition	Criteria
Excellent	Pristine or nearly so, no obvious sign of damage caused by modern humans or introduced fauna (cattle, feral cat, dog and rabbit). No signs of recent, extensive fires.
Very Good	Some relatively slight signs of damage caused by the activities of modern humans. eg. damage to tree trunks by repeated fires, no significant signs of introduced fauna or occasional vehicle tracks.
Good	More obvious signs of damage caused by the activities of modern humans, including some obvious impact to vegetation structure such as that caused by low levels of grazing or by selective logging. Some tracks or secondary evidence of introduced fauna. Some signs of recent fires.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of modern humans such as partial clearing or very frequent fires. Presence of introduced fauna.
Very Poor	Severely impacted by grazing, introduced fauna, fire, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management.
Completely Degraded	Areas that are completely or almost completely without vegetation communities and are heavily impacted by extensive fires and/or introduced species e.g. cow paddock

Threatened (WC Act) Fauna Categories

Category	Code	Definition	Schedule
Critically Endangered	CR	Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna.	**Schedule 1** Fauna that is rare or is likely to become extinct as critically endangered fauna
Endangered	EN	Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna.	**Schedule 2** Fauna that is rare or is likely to become extinct as endangered fauna
Vulnerable	VU	Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna.	**Schedule 3** Fauna that is rare or is likely to become extinct as vulnerable fauna
Presumed Extinct	EX	Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna.	**Schedule 4** Fauna presumed to be extinct
Migratory	IA	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 the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.	**Schedule 5** Migratory birds protected under an international agreement
Conservation Dependent	CD	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.	**Schedule 6** Fauna that is of special conservation need as conservation dependent fauna
Special Protection	OS	Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.	**Schedule 7** Other specially protected fauna

Fauna (EPBC Act) Categories

Category	Code	Definition
Extinct	Ex	Fauna not definitely located in the wild during the past 50 years
Extinct in the Wild	EW	Fauna which is known only to survive in captivity
Critically Endangered	CR	Fauna that is considered to be facing an extremely high risk of extinction in the wild in the immediate future
Endangered	EN	Fauna that is considered to be facing a very high risk of extinction in the wild in the near future
Vulnerable	VU	Fauna that is considered to be facing a high risk of extinction in the wild in the medium-term future
Conservation Dependent	CD	Fauna whose survival depends upon ongoing conservation measures. Without these measures, a conservation dependent taxon would be classified as Vulnerable or more severely threatened.
Migratory	IA	Fauna that migrates to, over and within Australia and its external territories.

Definition of codes for Priority Fauna

Code	Definition
P1: Priority One	**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.
P2: Priority Two	**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.
P3: Priority Three	**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.
P4: Priority Four	**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 LOCATIONS OF *SERINGIA KATATONA*

Map point	Taxon	Easting	Northing	Abundance
S1	*Seringia katatona*	530931.27	7907043.82	9
S2	*Seringia katatona*	530952.23	7907037.19	13
S3	*Seringia katatona*	531144.60	7907259.34	4
S4	*Seringia katatona*	531133.29	7907318.20	~60
S5	*Seringia katatona*	531122.89	7907480.71	14
S6	*Seringia katatona*	531098.96	7907659.40	~100
S7	*Seringia katatona*	531085.41	7908073.59	~100
S8	*Seringia katatona*	531067.07	7908282.86	~200
S9	*Seringia katatona*	530783.32	7906946.44	14
S10	*Seringia katatona*	530848.76	7906944.53	15
S11	*Seringia katatona*	530848.55	7906851.67	5
S12	*Seringia katatona*	530757.69	7906835.11	8
S13	*Seringia katatona*	530918.09	7906827.50	1
S14	*Seringia katatona*	530804.77	7906799.44	11

APPENDIX C LOCATIONS OF EVIDENCE OF GREATER BILBY

Site ID	Easting	Northing	Record
B01	537567	7909275	Possible Bilby digging
B02	537579	7909298	Bilby digging at base of tree
B03	537614	7909407	Old excavation <40cm deep with spoil pile. Base of termite mound
B04	537641	7909311	Foraging excavation to 40cm in open Acacia scrub
B06	537637	7909346	Vacant/disused burrow with foraging excavation within 0.5m
B05	537645	7909321	Foraging excavation to 40cm in open Acacia scrub
B07	537664	7909390	Foraging excavation
B08	537661	7909072	Vacant/disused burrow. Spider web to entrance. Located on edge of gravel pit.

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2	R Sellers/ T McCabe	S Grein	18/03/2019	S Grein	L Volkova	18/03/2019

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ACRONYMS AND GLOSSARY

BAM Act	*Biosecurity and Agriculture Management Act* 2007
BC Act	*Biodiversity Conservation Act* 2016
BOM	Bureau of Meteorology
BIF	Banded Ironstone Formation
CALM	Department of Conservation and Land Management (now DBCA and DWER)
CAMBA	China – Australia Migratory Bird Agreement
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFWA	Department of Agriculture and Food Western Australia
DBCA	Department of Biodiversity, Conservation and Attractions (previously DPaW)
DEC	Department of Environment and Conservation (now DBCA)
DWER	Department of Water and Environmental Regulation
DoEE	Department of the Environment and Energy (previously DSEWPaC)
DPaW	Department of Parks and Wildlife (now DBCA)
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DoEE)
EPA	Environment Protection Authority
EP Act	*Environment Protection Act* 1986
EPBC Act	*Environment Protection and Biodiversity Conservation Act* 1999
ESCAVI	Executive Steering Committee for Australian Vegetation Information
IA	International Agreement
IBRA	Interim Biogeographic Regionalisation for Australia
ICE	Incidence-based Coverage Estimators
IPA	Indigenous Protected Area
IUCN	International Union for Conservation of Nature
LGA	Local Government Area
NMDS	Non-metric Multidimensional Scaling
NVIS	National Vegetation Information System
PEC	Priority Ecological Community
PIP	Pilbara Infrastructure Project
SAC	Species accumulation curve
SRE	Short Range Endemic
TEC	Threatened Ecological Community
TO	Traditional Owners
TPFL	Threatened and Priority Flora database
TPFR	Threatened and Priority Flora Report form
TP List	Threatened and Priority Flora List
WA	Western Australia
WAH	Western Australian Herbarium
WAHERB	Western Australian Herbarium Specimen Database
WAOL	Western Australian Organism List
WC Act	*Wildlife Conservation Act* 1950
WONS	Weeds of National Significance

EXECUTIVE SUMMARY

In January 2019 *ecologia* Environment (*ecologia*) was engaged by Theia Energy Pty Ltd (Theia Energy) to undertake a flora and fauna desktop assessment of the Dampier Downs Road Easement (the 'study area'). The proposed road easement corridor is 140km long and is proposed to be widened by 80m from the intersection with the Great Northern Highway through to Theia Energy's proposed exploration well site on EP 493 tenement. This report identifies the ecological values of the proposed impact area and surrounds. These are used to inform a risk assessment of the impacts of the road's construction against the Department of Water and Environmental Regulation's (DWER) ten native vegetation clearing principles to assist Theia Energy in the preparation of relevant environmental approval documentation.

Threatened and Priority Ecological Communities (TECs and PECs)

Two State and Commonwealth listed TECs have been recorded within 100 km of the study area, (Roebuck Bay Mudflats and Vine thickets) along with five Priority 1, seven Priority 3 and one Priority 4 PECs within 100 km the study area. No TECs or PECs been recorded within the study area, although two Priority 3 PECs (Kimberley Vegetation Association No. 67 and No. 73) have been recorded within 4km of the western end of the study area. Based on the likely presence of vegetation types, land systems and habitat types it was determined that it is unlikely that any TECs or PECS occur within the study area.

Flora

A total of 614 vascular plant taxa (including species, infraspecific taxa, and phrase name taxa) have been recorded within 40 km of the study area. Database searches within 100 km reported two Threatened flora taxa (*Pandanus spiralis var. flammeus* and *Seringia exastia*) and 44 Priority Flora taxa. One conservation significant species has been previously recorded within the study area (*Seringia katatona* (P3)). Based on the proximity of previous records and presence of habitat two species are likely to occur within the study area *Croton aridus* (P3) and *Tephrosia pedleyi* (P3). A further 28 Priority flora taxa were considered to possibly occur within the study area.

Fauna

A total of 693 vertebrate species including 43 mammals (Seven Cetaceans, six introduced), 356 birds, 202 fish, 83 reptiles and nine amphibians were recorded in database search results occurring in the vicinity of the study area. The fish species identified will not be found within the study area. Birdlife Birdata identified 65 species within the vicinity of the study area which is more representative of species expected to be encountered.

A total of 91 vertebrate species of conservation significance were identified by database searches within 100km of the study area. Fifty-five of the bird species recorded are classified as wading, marine or migratory and the study area does not contain suitable habitat to support these species. Furthermore, search results identified two marine mammals (Sperm Whale and Dugong) and two marine reptiles (Flatback Turtle and Loggerhead Turtle) along with three fish (Freshwater Sawfish, Green Sawfish and Prince Regent Hardyhead).

Three species of conservation significance (Spectacled Hare-wallaby (mainland) (P4), Bilby (T) and Peregrine Falcon (OS)) have previously been recorded within the study area.

One Threatened species (Great Desert Skink) and one Priority species (Dampier Peninsula Goanna) were assessed as having a likelihood of occurrence rating of 'Likely (1)' based on the proximity, number and timing of previous records and the potential presence of suitable habitat within the study area. Five Threatened species (Grey Falcon, Red Goshawk, Black-footed Rock-wallaby (West Kimberley), Golden Bandicoot (mainland) and Kimberley Brush-tailed Phascogale) along with three Priority species (Princess Parrot, Yellow-lipped Cave Bat, Dampierland Burrowing Snake) and one migratory species (Fork-tailed Swift) were assessed as having a likelihood of occurrence rating of 'Possible (2).'

From the desktop information it appears that two broad fauna habitats are likely to occur over the study area;

- Pindan acacia shrublands and;
- sandplain grasslands.

Three species of conservation significance (Spectacled Hare-wallaby (mainland) (P4), Bilby (T) and Peregrine Falcon (OS)) have previously been recorded within the study area.

One Threatened species (Great Desert Skink) and one Priority species (Dampier Peninsula Goanna) were assessed as having a likelihood of occurrence rating of 'Likely (1)' based on the proximity, number and timing of previous records and the potential presence of suitable habitat within the study area. Five Threatened species (Grey Falcon, Red Goshawk, Black-footed Rock-wallaby (West Kimberley), Golden Bandicoot (mainland) and Kimberley Brush-tailed Phascogale) along with three Priority species (Princess Parrot, Yellow-lipped Cave Bat, Dampierland Burrowing Snake) and one migratory species (Fork-tailed Swift) were assessed as having a likelihood of occurrence rating of 'Possible (2).'

An assessment against the DWER's Ten Clearing Principles found that the proposed clearing associated with the widening of the Dampier Downs Road was unlikely to be at variance with any of the clearing principles.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

ecologia Environment (*ecologia*) was commissioned by Theia Energy Pty Ltd (Theia Energy) to undertake a flora and fauna desktop assessment of the proposed Dampier Downs Road Easement (the 'study area') located approximately 39 km southwest of Broome (Figure 1.1). The proposed road easement corridor is 140km long and 80m wide (40m either side of the centreline of the existing alignment of the road) commencing from the intersection with the Great Northern Highway through to proposed exploration well site on Theia's EP 493 tenement (Figure 1.2). The study area covers 1063 ha, 80% of which is on Vacant Crown Land (VCL) and the remainder on pastoral leases granted over Vacant Crown Land.

This environmental desktop assessment determines the ecological values of the proposed impact area and surrounds required to support future environmental approvals for the widening of Dampier Downs Road. This desktop assessment includes:

- Review of recent DBCA Threatened flora, fauna and Threatened/Priority Ecological Community database searches;
- Review of current DBCA NatureMap lists of flora and fauna;
- Describe the land systems of the study area;
- A review of previous biological surveys undertaken in the vicinity (if any);
- Likelihood of occurrence of any Threatened flora, fauna or ecological communities that may trigger requirement to refer proposal to Environmental Protection Authority (EPA) or Department of Environment and Energy (DoEE); and
- A risk assessment of the impacts of the road's construction against the Department of Water and Environmental Regulation's (DWER) ten native vegetation clearing principles to assist Theia Energy in the preparation of the EP.

1.2 LEGISLATVE FRAMEWORK

Amendments to Section 51C of the *Environmental Protection Act* 1986 (EP Act) in July 2004 included new provisions for the regulation of clearing of native vegetation in Western Australia, whereby clearing of native vegetation is deemed to be an offence under the EP Act unless it is conducted under the authority of a native vegetation clearing permit or where an exemption can be applied. Under Schedule 5 of the EP Act, to legally clear native vegetation an application to clear is assessed by the relevant authority against ten clearing principles (DER 2014):

(a) Native vegetation should not be cleared if it comprised a high level of biological diversity;

(b) Native vegetation should not be cleared if it comprises the whole of or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia;

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of rare flora;

(d) Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of a threatened ecological community;

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared;

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland;

(g) Native vegetation should not be cleared if the clearing is likely to cause appreciable land degradation;

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area;

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water; and

(j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause or exacerbate, the incidence or intensity of flooding.

This desktop assessment was designed to address the previous 10 clearing principles and to comply with guidelines as described in the following guidance documents prepared by the Western Australian Environmental Protection Authority (EPA):

- Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016d);
- Technical Guidance: Sampling Methods for Terrestrial Vertebrate Fauna (EPA 2016e); and
- Technical Guidance: Terrestrial Fauna Surveys (EPA 2016g).

ecologia ENVIRONMENT

Drawn: RS Project ID: 1777
Date: 1 January 2019 A4

N

0 10 20
Kilometers
Scale: 1:1,100,000
MGA94 (Zone 51)

Study area regional context

Figure: 1.1

ecologia ENVIRONMENT

Drawn: RS Project ID: 1777
Date: 20 January 2019 A4

0 4.25 8.5
Kilometers
Scale: 1:433,353
MGA94 (Zone 51)

Study area

Figure: 1.2

1.3 DESKTOP STUDY OBJECTIVES

EPA guidance documents (Section 1.2) consider flora and fauna surveys in terms of:

- Background research or 'desktop' studies that gather contextual information on an area to be surveyed from existing literature, database searches and spatial information;
- Reconnaissance surveys that provide context and gather broad information about a particular survey area;
- Targeted surveys that gather comprehensive information on significant fauna, flora, or vegetation; and
- Primary surveys (detailed or comprehensive) that provide local and regional context relative to the values of the fauna, flora or vegetation within the survey area.

The desktop assessment has been undertaken to gather background environmental information on the Dampier Downs Road easement study area by searching relevant sources for literature, data and map-based information.

A desktop assessment is typically undertaken before a decision is made on an appropriate field survey approach (reconnaissance, targeted, detailed, comprehensive) (EPA 2016c) (EPA 2016e), and information obtained can be used to provide background information for any future field survey and subsequent reporting. At the completion of a desktop assessment, there should be sufficient information to identify the potential range of fauna, flora and vegetation that may be affected by a particular proposal and their distribution in relation to the study area (EPA 2016c).

The primary objective of this flora and fauna desktop assessment is to provide information to facilitate the assessment of any impacts to flora, vegetation and fauna from the proposed widening of Dampier Downs Road, and to guide the methodologies of any future flora and fauna surveys, by providing:

- A review of background information including relevant database searches and a review of previous surveys conducted in the area;
- An inventory of vascular flora and vertebrate fauna species likely to occur at the study area; and
- An inventory of species of conservation significance (including *Wildlife Conservation Act 1950* (WA) and Environment Protection and *Biodiversity Conservation Act 1999* (Cwth) listed threatened species, specially protected fauna, DPaW Priority species, and internationally listed species) likely to occur within the study area and surrounds (see Section 5 below).

2 DEFINITIONS

2.1.1 Significant Flora

According to *EPA Factor Guideline: Flora and Vegetation* (EPA 2016a), plant species (or records) may be considered significant for a number of reasons including, but not restricted to, the following:

- Being identified as Threatened or Priority species;
- Locally endemic species or those associated with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems);
- New species or those having anomalous features that indicate a potential new species;
- Being representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range);
- Unusual species, including restricted subspecies, varieties or naturally occurring hybrids; and
- Being representative of taxonomic groups that no longer occur widely in the broader landscape (relictual species/populations).

***Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth of Australia)**

At a Commonwealth level, Threatened Flora are protected under the EPBC Act 1999, which lists species that are considered Critically Endangered, Endangered, Vulnerable, Conservation Dependant, Extinct, or Extinct in the Wild (refer to Appendix A for category definitions).

Biodiversity Conservation Act 2016

At state (Western Australia) level, as of 1 January 2019, all Threatened Flora species are protected under the *Biodiversity Conservation Act 2016* (BC Act). These are taxa which have been adequately surveyed and are deemed to be either rare, in danger of extinction, or otherwise in need of special protection in the wild and are gazetted as Threatened (Declared Rare) Flora. Threatened Flora are further categorised by DBCA according to their level of threat using the International Union for Conservation of Nature (IUCN) red list criteria (IUCN 2001)(Appendix A).These taxa are legally protected and their removal or impact to their surroundings cannot be conducted without Ministerial approval, obtained specifically on each occasion for each population.

Priority Flora (DBCA)

DBCA maintains a list of Priority Flora species, which are considered poorly known, uncommon or under threat but for which there is insufficient justification to be listed as Threatened, based on known distribution and population sizes. Priority Flora species are assigned to one of four categories, described in Appendix A.

2.1.2 Significant Vegetation

According to *EPA Factor Guideline: Flora and Vegetation* (EPA 2016a), vegetation may be considered significant for a number of reasons including, but not restricted to, the following:

- Being identified as threatened or priority ecological communities;
- Having a restricted distribution;
- The degree of historical impact from threatening processes;
- Playing a role as a refuge;
- Providing an important function required to maintain ecological integrity of a significant ecosystem.

Threatened Ecological Communities (Nationally Listed)

Ecological communities are naturally occurring biological assemblages associated with a particular type of habitat (DEC 2010). At a national level, Threatened Ecological Communities (TECs) are protected

under the Commonwealth EPBC Act. An ecological community may be categorised into one of three sub-categories: Critically Endangered, Endangered, and Vulnerable (Appendix A).

Threatened Ecological Communities (State Listed)

DBCA maintains a list of state listed TECs which are further categorised into three subcategories, reflecting those of the EPBC Act. Within the Western Australian classification, 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 to long-term future".

Priority Ecological Communities

DBCA maintains a list of Priority Ecological Communities (PEC). PECs include potential TECs that do not meet survey criteria, or that are not adequately defined. DBCA categorises PECs into five categories, P1 to P5, depending on the level of threat to the community (Appendix A).

Regional and Local Significance

Regional significance addresses the representation of habitats at a biogeographic regional level. Vegetation communities that are restricted or uncommon in a regional context are considered regionally significant. Vegetation communities supporting Threatened Flora species may also be considered regionally significant. Accurate assessment of regional significance requires sufficient regional vegetation community data to be available and described at a similar level to the current study. Locally significant vegetation may include vegetation communities that are locally restricted, contain comparatively high structural or species diversity, or contain Priority Flora species that are restricted to these vegetation communities.

2.1.3 Significant Fauna

According to *EPA Factor Guideline: Terrestrial Fauna* (EPA 2016b), terrestrial fauna may be considered significant for a number of reasons including, but not restricted to:

- Being identified as a Threatened or Priority species (Appendix A);
- Species with restricted distribution;
- Degree of historical impact from threatening processes; and
- Providing an important function required to maintain the ecological integrity of a significant ecosystem.

Additionally, as described in EPA Guidance (Environmental Protection Authority 2016b), terrestrial fauna may be considered significant for the following reasons:

- Species is protected by international agreement or treaty (i.e. migratory fauna);
- Species is a short-range endemic;
- Species has declining populations or distribution;
- Species is at the extreme of its range, or is part of an outlying population; and
- Species is undescribed.

Fauna habitats may be significant if they provide habitat important to the life history of a significant species, i.e. breeding, feeding and roosting or aggregation areas, or where they are unique or isolated habitats, for example wetlands, in the landscape or region (EPA 2016b).

***Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth of Australia)**

At the Commonwealth level, Threatened Fauna are protected under Section 178 of the EPBC Act, which may list species as: extinct, extinct in the wild, critically endangered, endangered, vulnerable, and conservation dependent. In addition, under sections 209 and 248 of the Act, some migratory and

marine species are protected under international agreements. EPBC Act conservation code definitions can be found in Appendix A.

***Biodiversity Conservation Act 2016* (Western Australia)**

At a state level, fauna species are protected under the BC Act. Threatened, Extinct and Specially Protected fauna 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. BC Act conservation code definitions can be found in Appendix A.

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. 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.

Specially protected fauna under section 13(1) of the BC Act are species that meet 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.

Priority Fauna (DBCA)

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna 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. 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. Priority conservation code definitions can be found in Appendix A.

2.1.4 Introduced Flora

Weeds of National Significance (WONS)

At a national level, there are 32 weed species listed as Weeds of National Significance (WONS). The Commonwealth National Weeds Strategy: A Strategic Approach to Weed Problems of National Significance (DSEWPaC 2012b) describes broad goals and objectives to manage these species.

Declared Pests

The purpose of the *Biosecurity and Agriculture Management Act 2007* (BAM Act) is to prevent serious animal and plant pests and diseases from entering WA and becoming established, and to minimise the spread and impact of those that are already present. The BAM Act (and associated regulations) replaces the *Agriculture and Related Resources Protection Act 1976* (and associated regulations).

The BAM regulations were enacted on 1 May 2013, placing organisms into one of five legal status categories: Declared Pest - Prohibited, Declared Pest, Permitted, Permitted – Requires Permit, and Unlisted (Appendix A). The Western Australian Organism List (WAOL) (DAFWA 2016) lists organisms in each of these categories. Unlisted organisms must not be imported (unless in accordance with an import permit and regulations). The BAM Act further categorises Declared Pests in one of three control categories: C1 Exclusion, C2 Eradication, and C3 Management (Appendix A)

Environmental Weeds

A second and much more extensive categorisation of weeds has been developed by the DBCA in the State Environmental Weed Strategy (Department of Conservation and Land Management (CALM) 1999) . Weeds listed as Environmental Weeds are ranked into four control categories; Low (L), Mild (ML), Moderate (MD) or High (H). These are described in Appendix A.

3 DESKTOP STUDY METHODOLOGY

The methodology adopted for this desktop study was consistent with that recommended by EPA (2016c), EPA (2016f), and EPA (2016g).

A review of background environmental information for the study area was conducted including previous flora, vegetation, and fauna surveys, climate (BoM), biogeography (IBRA 7) (DSEWPaC 2012a), land systems (Van Vreeswyk *et al.* 2004), soils (Northcote *et al.* 1960-1968; Tille 2006), and pre-European vegetation (Shepherd *et al.* 2001).

A search and review of all relevant reports in the vicinity of the study area was undertaken, as well as searches of mapping resources and databases listed in Table 3.1 to determine conservation significant species and communities previously recorded within the study area or vicinity. Results were reviewed on the basis of the likelihood of occurrence of relevant conservation significant species occurring within the study area with consideration given to previous records, habitat requirements, and landform.

Table 3.1: Databases searched for the literature review

Database	Search Details
EPBC Act Protected Matters Database	Records of matters of national significance under the EPBC Act within 100 km of the study area
DBCA Threatened and Priority Ecological Communities Database	Records of TEC/PECs within 100km of the study area
DBCA Threatened and Priority flora Database	Records of significant flora within 100 km of the study area
DBCA Threatened and Priority fauna Database	Records of significant fauna within 100 km of the study area
Threatened and Priority flora List (TPList)	Records of significant flora by place names within 100 km of the study area
Western Australian Herbarium Specimen Database (WAHERB)	Records of significant flora within 100 km of the study area
DBCA NatureMap	All flora records within 40 km of the study area
	All fauna records within 40 km of the study area
	All conservation significant flora taxa within 40 km of the study area
	All conservation significant fauna taxa within 40 km of the study area
Birdlife Australia Birdata	Records of birds within 50 km of the study area (excluding coastal species)

The database searches and literature review resulted in an inventory of flora, vegetation and terrestrial fauna of conservation significance with at least the potential to occur within the study area. The criteria listed in Table 3.2 were then applied to determine the likelihood of occurrence of significant species and vegetation occurring within the study area given the likely landforms and broad habitats present.

Table 3.2 Criteria used to assess the likelihood of occurrence of significant fauna, flora and vegetation

Rating	Criteria (significant flora and fauna)	Criteria (TEC/PEC)
Recorded	The species has been recorded within the study area previously or during the current survey.	The TEC/PEC (not including buffer) has previously been recorded in the study area.
Likely (1)	The species may occur within the study area as suitable habitat is known to be present and there are existing records very close to the study area (within ca. 10 km).	Due to the proximity of previous records and the likely presence of suitable habitat/geology within the study area, the TEC/PEC possibly occurs within the study area.
Possible (2)	The species may occur within the study area as there are existing records in the vicinity of the study area, and suitable habitat is likely to be present; OR The species may occur within the study area as there is insufficient information available to exclude the possibility of occurrence.	The community is broadly defined and could possibly occur at the study area and there are records in the vicinity of the study area; or there is insufficient information available to exclude the possibility of occurrence at the study area.

Rating	Criteria (significant flora and fauna)	Criteria (TEC/PEC)
Unlikely (3)	The species is unlikely to occur within the study area as suitable habitat is not present or is not likely to be present; OR Suitable habitat is present within the study area, but the taxon has not been recorded despite reasonable survey effort.	The community is well defined and suitable habitat/geology is considered unlikely to be present within the study area.

3.1 STUDY LIMITATIONS

A desktop assessment only was undertaken, and the limitations associated with this assessment are summarised in Table 3.3. Few previous fora or fauna surveys have been conducted in the immediate vicinity of the study area, consequently fewer than normal records were returned in flora and fauna database searches. Ground-truthing will be required to verify desktop results and to characterise the floristics, vegetation, habitats and fauna assemblage.

Table 3.3: Summary of assessment limitations

Constraint	Impact	Comment
Competency and experience of consultants	Nil	Personal had appropriate qualifications and several years' experience undertaking assessments of this nature.
Availability of contextual information at a regional and local scale	Nil	Broad scale bioregion, vegetation, land system, and soil, mapping data were available for the study area and adequate to provide appropriate contextual information for the study area.
Sources of information sources (e.g. historic or recent)	Minor	Comprehensive database records, including conservation significant species, were available and considered adequate. However, the region is isolated, and a large search area was required to obtain meaningful data.
Scope	Nil	The desktop study scope was well-defined. Relevant databases surrounding the study area were scrutinised for previous relevant records.
Proportion of flora and fauna identified recorded and/or collected	Major	A reconnaissance and/or detailed flora and fauna survey of the study area has not yet been undertaken. A desktop assessment only was undertaken. Few local records exist and ground-truthing would be required to characterise habitats and verify results.
Proportion of task achieved, and further work which might be needed	Nil	The assessment was conducted and completed according to an agreed scope. Ground-truthing would be required to characterise habitats and verify results.
Timing / weather / season / cycle	NA	A survey was not undertaken, and seasonality did not affect desktop results. If a survey is undertaken the 'wet season' from January to April would be recommended.
Remoteness or access restrictions within the survey area	NA	A survey was not undertaken, and remoteness and/or access restrictions did not affect desktop results.
Disturbances which may affect results of survey	NA	A survey was not undertaken, and any disturbances did not affect desktop results.
Intensity	Nil	The desktop assessment was considered adequate and was appropriate to gather background information to inform future surveys.
Completeness	Nil	The desktop assessment was considered complete and appropriate to gather background information to inform future surveys.
Resources	Nil	Resources were adequate to carry out the desktop assessment.

4 EXISTING ENVIRONMENT

4.1 CLIMATE

Data from the nearest long-term Bureau of Meteorology (BOM) weather station was obtained from Broome Airport (Station No. 003003) (BOM 2018) approximately 39 km northeast of the study area. The climate of the study area can be characterised as semi-arid to tropical monsoon with summer rain and dry the rest of the year (Figure 4.1). Temperatures rarely drop below high 20^0C. Tropical cyclones and unpredictable summer thunderstorms are the main contributors to erratic wet season downpours and high humidity.

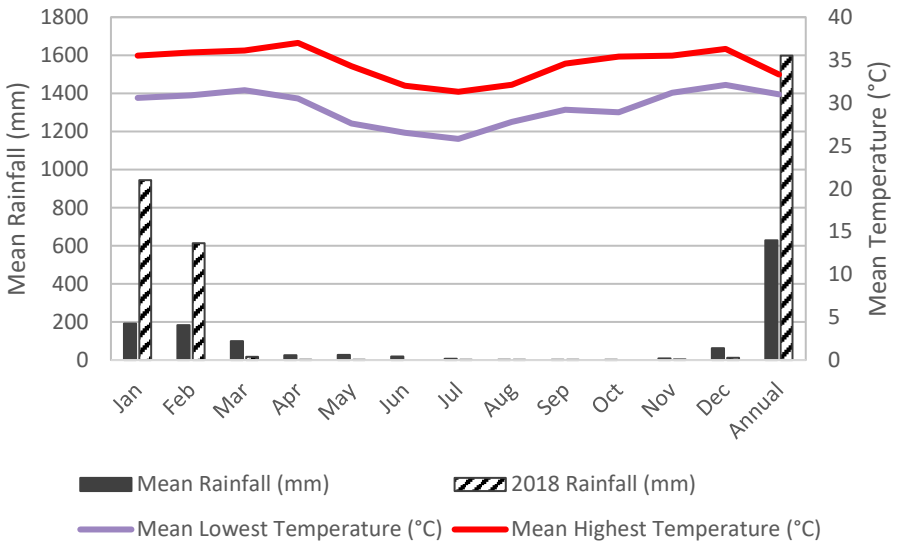

Figure 4.1 Mean Temperature and Rainfall recorded at nearest BOM station (003003)

4.2 BIOGEOGRAPHY

The Interim Biogeographic Regionalisation for Australia (IBRA) (Version 7) classifies the Australian continent into regions (bioregions) of similar geology, landform, vegetation, fauna and climate characteristics, and has currently 89 recognised regions (DSEWPaC 2012a).

The study area is located in the Pindanland subregion within the greater Dampierland bioregion (Figure 4.2). Pindanland in the western part of Dampierland forms the north-western margin of the Canning Basin (McKenzie *et al.* 2002). It is comprised of a fine-textured sand-sheet sandplains with subdued dunes and includes the paleodelta of the Fitzroy River. The landscape consists of Quaternary alluvial sandplain over Jurassic and Mesozoic sandstones with Pindan (Graham 2002). The Pindanland subregion represents a transitional zone between the wetter monsoon forest to the north. This supports tree savannahs of *Chrysopogon spp*. and *Dichanthium spp.* Grasses with scattered *Eucalyptus microtheca* and *Melaleuca spp.* fringe lines. Rainforest patches and monsoon vine thickets are of particular importance within the subregion and act as refugia and are centres of endemism to invertebrates such as Camaenid land snails (Graham 2002).

4.3 LAND TYPES AND LAND SYSTEMS

Payne and Schoknecht (2011) undertook a regional inventory and condition survey of the Kimberley region and provide a comprehensive and standardised description of the landscapes, soils and vegetation of the region. The report describes 111 land systems over a region of 33,007,000 ha and provides joint land system and land type mapping. This land mapping system describes 64% of the

study site (Figure 4.3). The remaining 36% of the site (the uncoloured area) is considered an arid zone and has not yet been mapped. The study area falls within the Camelgooda and Yeeda Land Systems (17% and 47% respectively) as described by Payne and Schoknecht (2011) (Table 4.1). The Camelgooda Land System is predominately comprised of linear dunes with uneven crests and swales and sandplains associated with deep red sands and reddish sandy soils low shruby *Acaia* woodland and *triodia bitextura* understorey. The Yeeda Land System is comprised of sandplains with shallow valleys with similar soil make up and broad vegetation.

Table 4.1 Land Systems in the study area

Land system	Land type	Description	Area (ha)
Camelgooda Land System	Sandplains and dunes with pindan woodlands and spinifex/tussock grasslands	Extensive dune fields, pindan and other low woodlands.	184
Yeeda Land System	Sandplains and dunes with pindan woodlands and spinifex/tussock grasslands	Sandplains with red and yellow sands supporting pindan acacia shrublands with emergent eucalypt trees.	492

4.4 GEOLOGY AND SOILS

The study area lies within the Nita Sandplain region in the northwest of the Canning Basin as described by Tille (2006), regional lithologies are shown in Table 4.2 and Figure 4.4. The Nita Sandplain is located in the northwest of the much larger onshore Canning Basin. Towner R. and Gibson D. L. (1983) described the onshore Canning Basin as blanketed by Cainozoic superficial sediments, drilling, and geophysical data have shown that the sequence is composed of faulted and folded Phanerozoic sedimentary rocks up to 18 km thick. These have undergone five major periods of sedimentation resulting in a mix of 'Cretaceous marine and continental shale, siltstone and sandstone; Jurassic marine and continental sandstone and siltstone; Permian marine and continental sandstone, siltstone and shale coal measures; and Carboniferous-Permian glacigene, marine and continental siliclastic sedimentary rocks (Towner R. and Gibson D. L. 1983)'.

Table 4.2 Regional geology of the study area

Symbol	Lithology	Type	Eon	Max. Age	Min. Age
Cze	Sedimentary Rocks	Cover	Phanerozoic	Paleocene	Recent

Payne and Schoknecht (2011) Describes the soil of the Camelgooda and Yeeda Land Systems as primarily composed of reddish sandy soils and deep red sands. The Atlas of Australia Soils (Northcote et al. 1960-1968) identifies 3 soil types in the study area which are shown in Table 4.3. Majority of the study area is composed soil type AB21 (76%) including the northern half and southern tip (Figure 4.4). The remainder of the southern half of the study area is comprised of B28 (23%) and a small section of JZ3. The chief soils are comprised of red earthy sands with associated hummocks of siliceous sands.

Table 4.3 Soil types of the study area (Tille 2006)

Soil Type	Description	Area (ha)
AB21	AB21 Pindan country--gently undulating sand plain with a few small rocky sandstone residuals; no external drain- age: chief soils are red earthy sands (Uc5.21), with associated (Uc5.11) and hummocks of siliceous sands (Uc1 .23)	804.75
B28	Gently undulating country derived from sandstone with some very bouldery low hills: chief soils are red earthy sands (Uc5.21) with smaller areas of yellow earthy sands (Uc5.22) on gentle slopes and crests. Other soils include siliceous sands (Uc1.2), (Gn1.12), and sandy yellow mottled soils (Dy5.42)	239.99

Soil Type	Description	Area (ha)
JZ3	Deeply dissected lateritic plateaux: main soils are ironstone gravels (KS-Uc4.2) with laterite outcrop on the plateau tops. Associated are shallow stony sandy soils (Uc4.1) and (Gn2.12) on valley floors (Uc1.4) on slopes and (Dr2.23) and (Gn2.12) on valley floors	18.90

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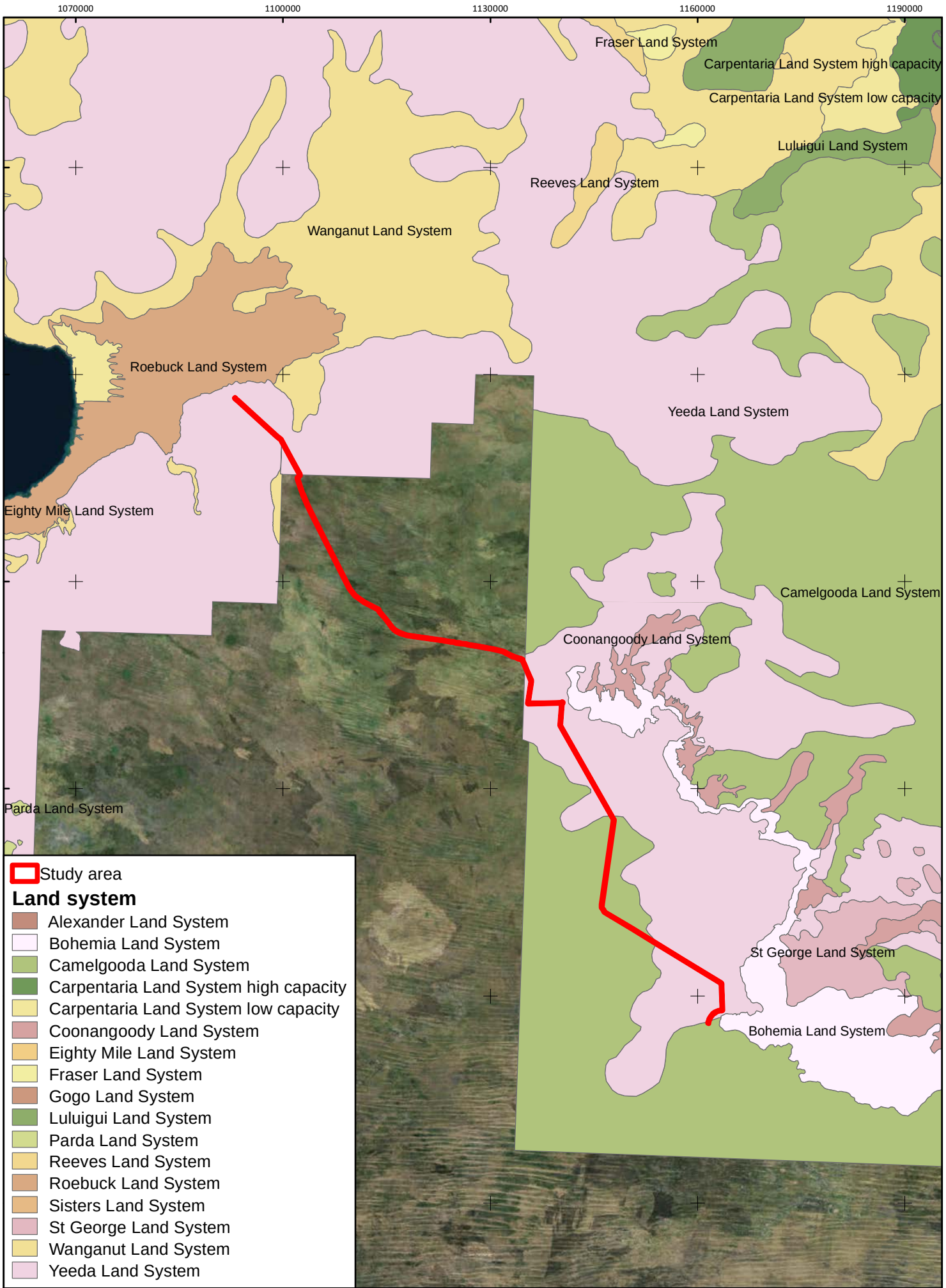
Study area IBRA subregion

Figure: 4.2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Carpentaria Land System low capacity
Luluigui Land System
Reeves Land System
Wanganut Land System
Roebuck Land System
Yeeda Land System
Eighty Mile Land System
Camelgooda Land System
Coonangoody Land System
Parda Land System
St George Land System
Bohemia Land System
Study area
Land system
Alexander Land System
Bohemia Land System
Camelgooda Land System
Carpentaria Land System high capacity
Carpentaria Land System low capacity
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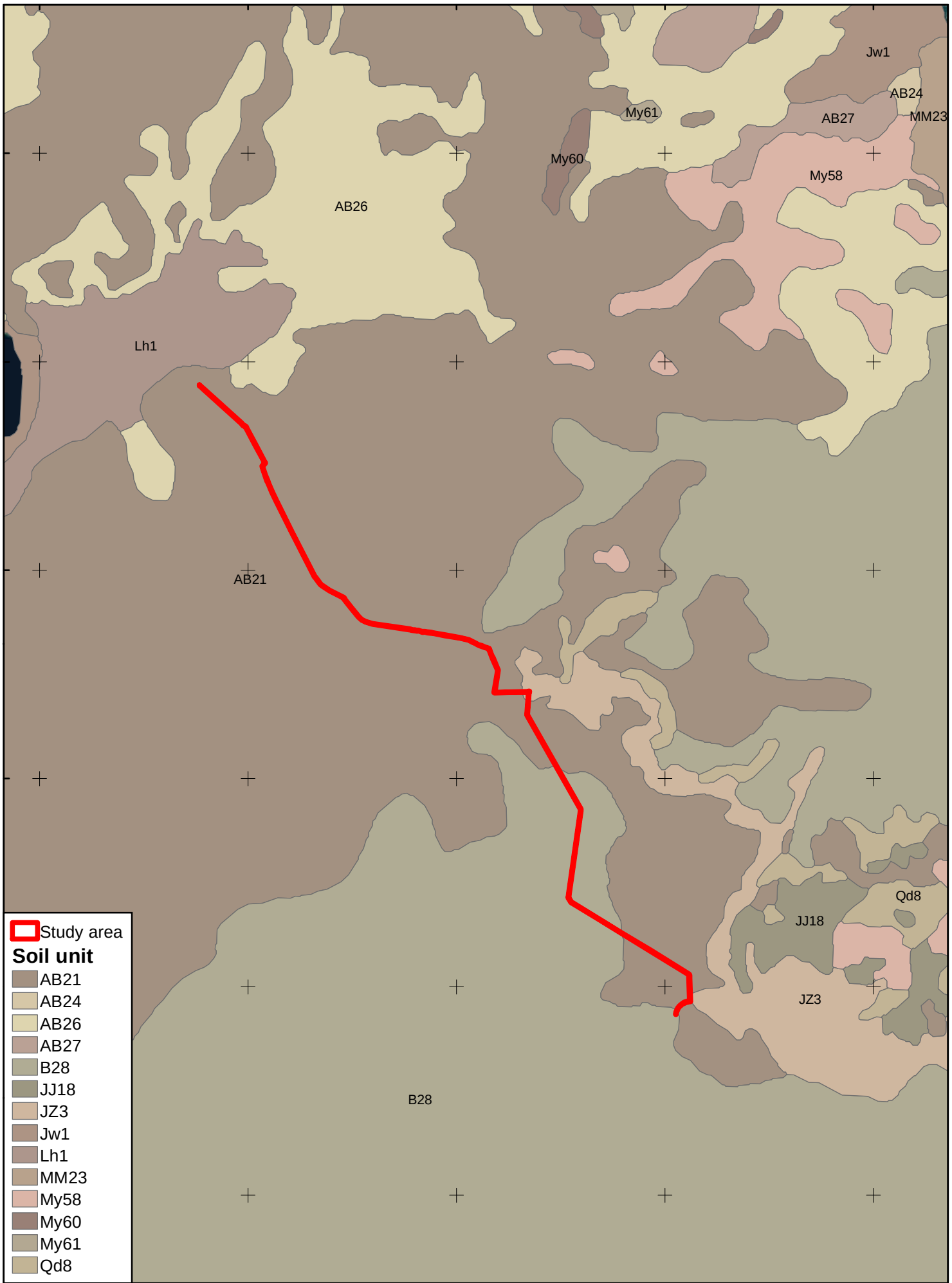
Land Systems in the study area
Figure:
4.3



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Soil units in the study area

Figure: 4.4

5 RESULTS

5.1 VASCULAR FLORA

5.1.1 Floristic Diversity

A total of 614 vascular plant taxa (including species, infraspecific taxa, and phrase name taxa) have been recorded within 40 km of the study area (NatureMap) (Appendix B). The most diverse families were Fabaceae (89 taxa), Poaceae (61 taxa) and Malvaceae (33taxa). The most diverse genus was *Acacia* (19 taxa), followed by *Ipomoea* (9 taxa) and *Cyperus* (8 taxa).

5.1.2 Significant Plant Species

A WAHERB database search identified two Threatened flora (*Pandanus spiralis var. flammeus* and *Seringia exastia*) and 44 Priority flora as having been previously recorded within 100km of the study area (Figure 5.1 and Table 5.2). A TPFL database search within 100km of the study area reported the same two Threatened Flora taxa and a subset of the WAHERB Priority Flora taxa (13). A NatureMap database search within 40km of the study area recorded the same two Threatened Flora taxa and a subset of the WAHERB Priority taxa (19)(Appendix B). An EPBC Act Protected Matters search reported one of the Threatened Flora taxa from the WAHERB search (*Pandanus spiralis* var. *flammeus*) which is listed as Endangered under the EPBC Act (Appendix D).

Habitat preferences and flowering times indicated in Table 5.2 were derived, where available, from relevant taxonomic literature, FloraBase (Western Australian Herbarium 1998-2016), Threatened species profiles (SPRATs) (Threatened Species Scientific Committee 2016), Journal Articles, or specimen data from Australia's Virtual Herbarium (AVH) (CHAH 2017). Herbarium catalogue numbers are provided if habitat information were derived from specimen data (AVH).

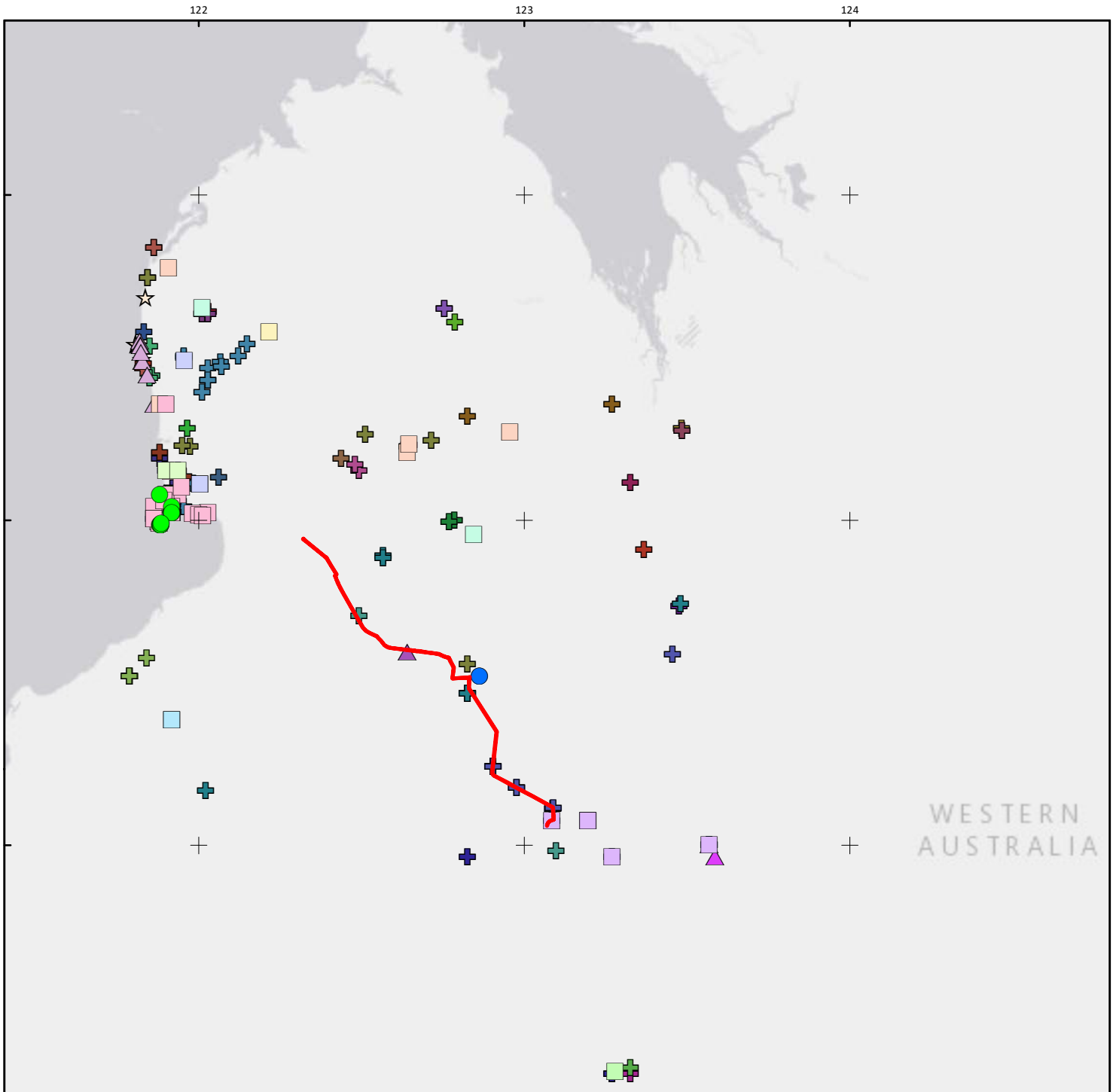
One conservation significant species have been previously recorded in the study area (*Seringia katatona* (P3)). Based on the proximity (taxa previously recorded within 10 km) and presence of habitat two species are likely to occur within the study area *Croton aridus* (P3) and *Tephrosia pedleyi* (P3) (Table 5.2). A further 28 Priority flora taxa were considered to possibly occur within the study area. These taxa have been reported more than 10 km away from the study area but may have suitable habitat within the study area.

5.1.3 Introduced plant species

A NatureMap database search identified 88 naturalised (weed) species within 40 km of the study area (Appendix G). These included two WONS species *Jatropha gossypiifolia* and *Prosopis glandulosa x velutina*. WAOL legislation rated three species as Declared Weeds (*Cryptostegia madagascariensis, Jatropha gossypiifolia* and *Pistia stratiotes*) and one Prohibited Organism (*Coccinia grandis*). The remainder of weed species were either unrated or rated as permitted (Table 5.1).

Table 5.1 WAOL rated weeds within 40km of study area

WAOL rating	Control category	Taxa in control category	Total
Prohibited Organism (s12)	Exclusion	*Coccinia grandis*	1
Declared Pest (s22)	Management	*Jatropha gossypiifolia*	1
Declared Pest (s22)	Exempt	*Cryptostegia madagascariensis*	1
Declared Pest (s22)	Eradication	*Pistia stratiotes*	1
Permitted - s11	None	Various	74
Not listed	Not rated	Various	10



Study area

Threatened

- *Pandanus spiralis var. flammeus*
- *Seringia exastia*

Priority 1

- *Acacia sp. Edgar Range (S.D. Hopper 1763)*
- *Aphyllodium beardii*
- *Aphyllodium parvifolium*
- *Atriplex eremitis*
- *Corymbia paractia*
- *Haemodorum capitatum*
- *Ipomoea tolmerana subsp. occidentalis*
- *Jacquemontia sp. Broome (A.A. Mitchell 3028)*
- *Thespidium basiflorum*

Priority 2

- *Gomphrena pusilla*
- *Olax spartea*
- *Schoenoplectiella humillima*

Priority 3

- *Acacia monticola x tumida var. kulparn*
- *Aphyllodium glossocarpum*
- *Bonamia oblongifolia*
- *Comesperma sabulosum*
- *Corchorus sp. Fitzroy Crossing (A.J. Ewart s.n. PERTH 01526790)*
- *Croton aridus*
- *Dasymalla chorisepala*
- *Eriochloa fatmensis*
- *Fimbristylis sieberiana*
- *Fuirena incrassata*
- *Fuirena nudiflora*
- *Glycine pindanica*
- *Goodenia byrnesii*
- *Goodenia sepalosa var. glandulosa*
- *Indigofera ammobia*
- *Lophostemon grandiflorus subsp. grandiflorus*
- *Nicotiana heterantha*
- *Nymphoides beaglensis*
- *Polymeria sp. Broome (K.F. Kenneally 9759)*
- *Pterocaulon xenicum*
- *Rothia indica subsp. australis*
- *Schoenus punctatus*
- *Seringia katatona*
- *Stylidium costulatum*
- *Stylidium pindanicum*
- *Tephrosia andrewii*
- *Tephrosia pedleyi*
- *Tephrosia valleculata*
- *Terminalia kumpaja*
- *Tetragonia coronata*
- *Tribulopis marliesiae*

Priority 4

- *Pittosporum moluccanum*

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Priority Flora records (DBCA) within 100 km of study area

Figure: 5.1

Table 5.2 Conservation significant flora taxa reported in database searches, likelihood of occurrence in study area.

Taxon	Status	Habitat	Flowering period	Likelihood of occurrence
Acacia monticola x tumida var. kulparn	P3	Red aeolian sand dune systems or sand plains in "Spinifex" country.	June and July.	Possible (2)
Acacia sp. Edgar Range (S.D. Hopper 1763)	P1	Alluvial white soil. Edge of breakaway, creekline in gorge.	-	Unlikely (3)
Aphyllodium beardii	P1	Desert sand hills (PERTH02627329).	-	Unlikely (3)
Aphyllodium glossocarpum	P3	-	-	Possible (2)
Aphyllodium parvifolium	P1	Sand. Sandhills.	April or July	Possible (2)
Atriplex eremitis	P1	Sand plains and a mosaic of saline plains.	August	Possible (2)
Bonamia oblongifolia	P3	Sandy or gravelly soils.	February	Possible (2)
Comesperma sabulosum	P3	Red sands and dunes, rarely on laterite and sandstone (Ford *et al.* 2017).	May to October	Possible (2)
Corchorus sp. Fitzroy Crossing (A.J. Ewart s.n. PERTH 01526790)	P3	-	-	Possible (2)
Corymbia paractia	P1	Skeletal soils. In transition zone between coastal beach dunes & red pindan soils.	April to May	Possible (2)
Croton aridus	P3	Deep red sand, pindan soil. Sandplains or ridges, spinifex sandplains.	August	Likely (1)
Dasymalla chorisepala	P3	Red sand. Dunes, spinifex plains.	June to September	Possible (2)
Eriochloa fatmensis	P3	Seasonally wet areas, clay soils, also found near estuaries.	March	Unlikely (3)
Fimbristylis sieberiana	P3	Riverine forests and vine thickets or on the edges of pools in gorges.	May to June	Unlikely (3)
Fuirena incrassata	P3	Swamps, creek beds, claypans, semi-saline lakes.	May to August	Unlikely (3)
Fuirena nudiflora	P3	Sand. Swamps, creek beds.	April to May or July	Unlikely (3)
Glycine pindanica	P3	Pindan soils.	February to March	Possible (2)
Gomphrena pusilla	P2	Fine beach sand. Behind foredune, on limestone.	March to June	Unlikely (3)
Goodenia byrnesii	P3	Sand. Edge of creek.	January to February	Unlikely (3)
Goodenia sepalosa var. glandulosa	P3	Red sand or loam.	January to December	Possible (2)
Haemodorum capitatum	P1	Pindan shrubland (PERTH08614385).	-	Possible (2)
Indigofera ammobia	P3	Red sand. Sand dunes.	-	Possible (2)
Ipomoea tolmerana subsp. occidentalis	P1	Eucalypt savannah woodland (PERTH06406386).	-	Possible (2)

Taxon	Status	Habitat	Flowering period	Likelihood of occurrence
Jacquemontia sp. Broome (A.A. Mitchell 3028)	P1	-	-	Possible (2)
Lophostemon grandiflorus subsp. Grandiflorus	P3	Damp habitats (swamps, seepages).	January to December	Unlikely (3)
Nicotiana heterantha	P3	Black clay. Seasonally wet flats. Typically associated with Melaleuca species.	March to September	Unlikely (3)
Nymphoides beaglensis	P3	Edges of permanent waterholes or in seasonally inundated claypans & depressions.	March to June	Unlikely (3)
Olax spartea	P2	Red dunes.	August	Possible (2)
Pandanus spiralis var. flammeus	T	White clay. Springs.	-	Unlikely (3)
Pittosporum moluccanum	P4	White sand. Sand dunes.	Februray to August	Unlikely (3)
Polymeria sp. Broome (K.F. Kenneally 9759)	P3	Deep red soils on pindan sandplains.	June to August	Possible (2)
Pterocaulon xenicum	P3	Open plains dominated by spinifex	August to October	Possible (2)
Rothia indica subsp. australis	P3	Sandy soils. Sandhills and sandy flats.	April to August.	Possible (2)
Schoenoplectiella humillima	P2	-	-	Possible (2)
Schoenus punctatus	P3	Watercourses.	August	Unlikely (3)
Seringia exastia	T	Red sandplain and dunes (Department of Biodiversity Conservation and Attractions 2018).	-	Possible (2)
Seringia katatona	P3	Red sandplain (Department of Biodiversity Conservation and Attractions 2018).	-	Recorded
Stylidium costulatum	P3	Sandy or clayey soils. Creeks or seasonally wet areas.	April to August.	Unlikely (3)
Stylidium pindanicum	P3	Clay flat. Open woodland with Eucalyptus tectifica over grassland (PERTH08613478).	-	Possible (2)
Tephrosia andrewii	P3	Sand. In pindan country.	April to October	Possible (2)
Tephrosia pedleyi	P3	Grows in red sand, loamy sand or sandy laterite, on gently undulating plain or among dunes.	June to September	Likely (1)
Tephrosia valleculata	P3	Sandy, often shallow, soil around sandstone. Rock outcrops.	April to September	Possible (2)
Terminalia kumpaja	P3	Sand dune of red sand (PERTH03249409).	-	Possible (2)
Tetragonia coronata	P3	Red clay loam. Calcrete outcrops.	July	Possible (2)
Thespidium basiflorum	P1	Sandy soils. Creeks.	May to August	Possible (2)
Tribulopis marliesiae	P3	Red sandplain. Pindan shrubland (PERTH08614504).	-	Possible (2)

5.2 VEGETATION

5.2.1 Pre-European Vegetation

The vegetation of Western Australia was mapped at the 1:1,000,000 scale by Beard (1976), and Vegetation Associations were subsequently reinterpreted and updated to reflect the National Vegetation Information System (NVIS) standards (Shepherd *et al.* 2001).

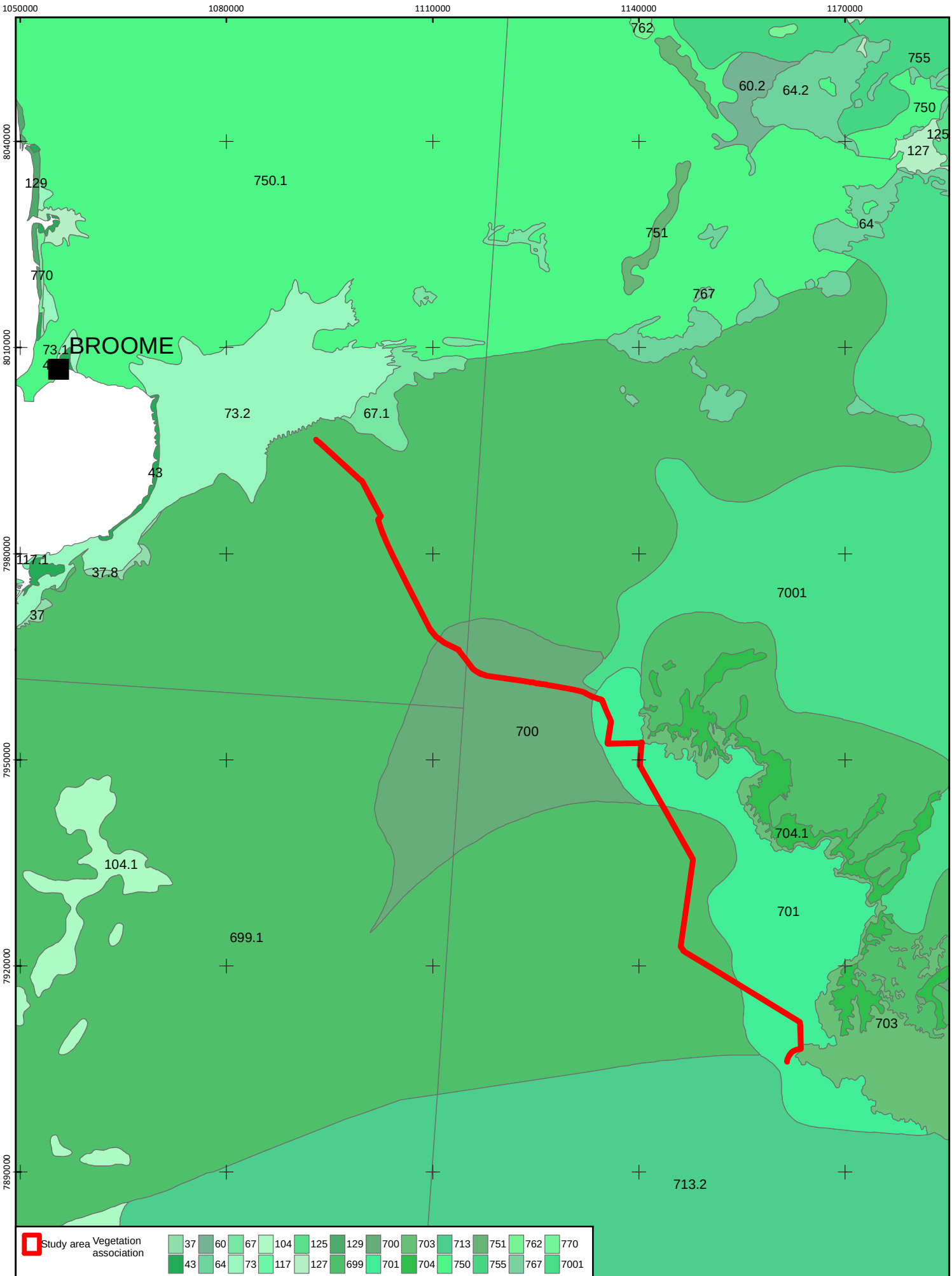
The study area is associated with four Beard vegetation associations (Table 5.3) the majority of which is located within the Dampierland IBRA region and Pindanland sub-region. All four associations have 100 or near 100 percent of their pre-European extent remaining (Government of Western Australia 2017). The statewide extent of each of the vegetation associations within the IBRA region and subregion associated with the study area are presented in Table 5.4.

Table 5.3 Beard Pre-European Vegetation Extent (Government of Western Australia 2017)

Beard Vegetation type	Vegetation Association Description	Study area (ha)
699	Shrublands, pindan; *Acacia eripoda* shrubland with scattered low bloodwood (*Eucalyptus dicromophloia*) & *E. setosa* over soft & curly spinifex on sandplain	254
700	Shrublands, pindan; *Acacia eripoda* shrubland with scattered low bloodwood & *Eucalyptus setosa* over soft & curly spinifex between dunes	158
701	Hummock grasslands, shrub steppe; *Acacia pachycarpa* & grevillea over soft spinifex & *Triodia intermedia* on sandy plateau	317
703	Hummock grasslands, low tree steppe; snappy gum over *Triodia intermedia*	5

Table 5.4 State-wide Vegetation Statistics for the vegetation associations present in the study area

IBRA region	Vegetation Association	Pre-European extent (ha)	Current extent (ha)	% remaining	% current extent protected (IUCN I - IV) for Conservation
Dampierland	699	1,976,313.51	1,974,958.06	99.93	0
	700	571,768.57	571,768.57	100.00	0
	701	108,337.72	108,337.72	100.00	0
	703	78,782.23	78,778.01	99.99	10.17
IBRA subregion	**Vegetation Association**	**Pre-European extent (ha)**	**Current extent (ha)**	**% remaining**	**% current extent protected (IUCN I - IV) for Conservation**
Pindanland	699	1,796195	1,794994	99.93	0
	700	358797	358797	100.00	0
	701	108338	108338	100.00	0
	703	64119	64115	99.99	0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Study area
Vegetation association
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Beard vegetation associations in the study area
Figure:
5.2

5.3 SIGNIFICANT ECOLOGICAL COMMUNITIES

Two State (BC Act) and Commonwealth (EPBC Act) listed TECs have been recorded within 100 km of the study area (i.e. the Roebuck Bay Mudflats and Vine thickets) (Figure 5.3, Figure 5.4). Five Priority 1, seven Priority 3 and one Priority 4 PECs have been also recorded within 100 km the study area (Figure 5.3). No TECs or PECs been recorded from the study area, although two Priority 3 PECs (Kimberley Vegetation Association No. 67 and No. 73) are relatively close (within 4km) of the western end of the study area. Kimberley Vegetation Association No. 67 is comprised of grasslands, tall bunch grass savanna, mitchell & blue grass, while Kimberley Vegetation Association No. 73 is comprised of grasslands, short bunch grass savanna, grass and salt water grassland (*Sporobolus virginicus*).

A likelihood of occurrence assessment was conducted for the 13 PECs and TECs identified during the desktop assessment. Each relevant TEC and PEC assessed as potentially occurring within the study area was assigned a likelihood of occurrence rating based on the four categories described in Table 3.2. Results were based on the likely vegetation types, land systems and habitat types outlined during the desktop survey. It has been determined that it is unlikely that any TECs or PECS occur within the study area.

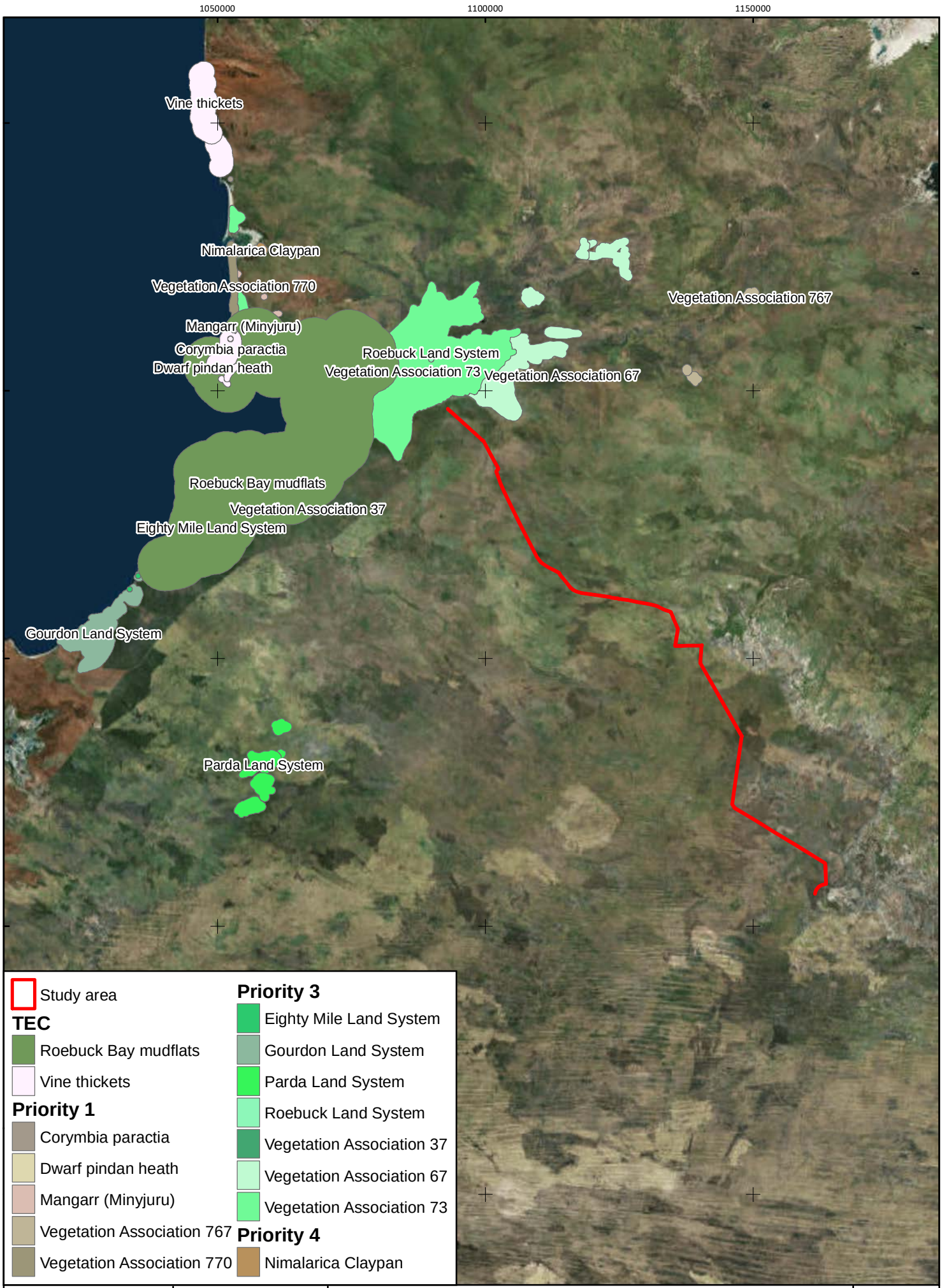
5.4 ENVIRONMENTALLY SENSITIVE AREAS

No Environmentally Sensitive Areas (ESAs) are present within the study area. Roebuck Bay Marine park (Ramsar site) is located approximately 20km west of the north-west end of the study area.

Table 5.5 TECs and PECs near the study area

Community name	Sate Category	Commonwealth Category	Description (DBCA 2017)	Total area within database search area (ha)	Area within study area (ha)	Likelihood of occurrence
Dwarf pindan heath	Priority 1		Occurs between the racecourse and Gantheame Point lighthouse. Insufficient survey outside of Broome townsite area to determine full extent. Threats include clearing, trampling, weed invasion and inappropriate fire regimes.	527	–	Unlikely
Mangarr (Minyjuru)	Priority 1		Corymbia paractia behind dunes, Broome township area, Dampier Peninsula. Transition zone where coastal dunes (with vine thickets) merge with Pindan (desert) vegetation. Also, port north of Broome. Threats include clearing, trampling, weed invasion, inappropriate fire regimes	3421	–	Unlikely
Corymbia paractia	Priority 1		A system of basalt upland gilgai plains with tussock grasslands occurs throughout the Chichester Range in the Chichester-Millstream National Park, Mungaroona Range Nature Reserve and on adjacent pastoral leases. There are a series of community types identified within the Wona Land System gilgai plains that are considered susceptible to known threats such as grazing or have constituent rare/restricted species.	8390	–	Unlikely
Kimberley Vegetation Association 767	Priority 1		Hummock grasslands, shrub steppe; Grevillea refracta over soft spinifex. Extensive threatening processes acting at landscape scales, namely altered fire regimes, over grazing, and weed invasion.	1658	–	Unlikely
Kimberley Vegetation Association 770	Priority 1		Shrublands; Wattle thicket near Broome. Extensive threatening processes acting at landscape scales, namely altered fire regimes, over grazing, and weed invasion.	2587	–	Unlikely
Kimberley Vegetation Association 67	Priority 3		Grasslands, tall bunch grass savanna, mitchell & blue grass. Extensive threatening processes acting at landscape scales, namely altered fire regimes, over grazing, and weed invasion.	24690	–	Unlikely
Kimberley Vegetation Association 73	Priority 3		Grasslands, short bunch grass savanna, grass; salt water grassland (*Sporobolus virginicus*). Extensive threatening processes acting at landscape scales, namely altered fire regimes, over grazing, and weed invasion.	91565	–	Unlikely
Parda Land System	Priority 3		Conical hills, stony ring plains, alluvial plains and shallow valleys supporting spinifex grasslands with sparse shrubs and trees (Dampierland IBRA region). Extensive threatening processes acting at landscape scales, namely altered fire regimes, over grazing, and weed invasion.	6955	–	Unlikely
Gourdon Land System	Priority 3		Sandplain and undulating lateritic country with steep coastal gullies supporting spinifex grasslands with scattered trees (Dampierland IBRA region). Extensive threatening processes acting at landscape scales, namely altered fire regimes, over grazing, and weed invasion.	9764	–	Unlikely
Kimberley Vegetation Association 37	Priority 3		Shrublands; teatree thicket. Extensive threatening processes acting at landscape scales, namely altered fire regimes, over grazing, and weed invasion.	4890	–	Unlikely
Eighty Mile Land System	Priority 3		Beach foredunes, longitudinal coastal dunes and sandy plains with tussock grasslands and spinifex grasslands. Extensive threatening processes acting at	316	–	Unlikely

Community name	Sate Category	Commonwealth Category	Description (DBCA 2017)	Total area within database search area (ha)	Area within study area (ha)	Likelihood of occurrence
			landscape scales, namely altered fire regimes, over grazing, erosion, and weed invasion (buffel grass).			
Roebuck Land System	Priority 3		Paleo-tidal coastal plains and tidal flats with saline soil supporting salt-water couch grasslands, samphire low shrublands, melaleuca thickets and mangroves. Extensive threatening processes acting at landscape scales, namely altered fire regimes, over grazing, erosion, and weed invasion (buffel grass).	158	–	Unlikely
Nimalarica Claypan	Priority 4		Nimalarica claypan is a unique, almost permanent, freshwater lake inland from Willie Creek, Broome. Threats include groundwater extraction, causeway construction, feral animals, expansion of township.	391	–	Unlikely
Roebuck Bay mudflats	Vulnerable		Species-rich faunal community of the intertidal mudflats of Roebuck Bay	141400	–	Unlikely
Vine thickets	Vulnerable	Endangered	Semi-deciduous vine thicket communities on leeward slopes of coastal sand dunes on Dampier Peninsula. Occur as discontinuous but discrete pockets of dense vegetation, ranging from a few trees to around 60 ha in size. Patches tend to be larger with increasing dune system size and are generally better developed in structure and higher in species diversity at the northern end of the peninsula. The principal upper-storey tree species include*: Cassine melanocarpa, Celtis philippinensis, Diospyros ferrea* var. humilis, *Ficus virens, Melaleuca cajuputi, M. dealbata, M. viridiflora, Mimusops elengi, Pouteria sericea*, and *Terminalia petiolaris*. The understorey comprises shrub species such as: *Croton tomentellus, Dodonaea platyptera, Exocarpos latifolius, Pandanus spiralis, Plumbago zeylanica, Santalum lanceolatum*, and *Securinega melanthesoides*. Vine species include: *Abrus precatorius, Adenia heterophylla, Caesalpinia globulorum, Gymnanthera nitida, Jacquemontia paniculata, Marsdenia cinerascens, Passiflora foetida and Tinospora smilacina*. Soils are deep dune sands, white except for a superficial dark grey organic layer, and covered by leaf litter up to 6 cm in depth (Beard and Kenneally 1993)	15217	–	Unlikely



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Threatened (TEC) and Priority Ecological Communities (PEC) within 100 km of the study area

Figure: 5.3

5.5 FAUNA

5.5.1 Fauna Habitat

The likely habitat types found within the study area after assessing desktop information include:

- Pindan acacia shrublands
- Sandplain grasslands

The Camelgooda land system is predominantly comprised of linear dunes with uneven crests and swales and sandplains associated with deep red sands and reddish sandy soils low shrubby *Acacia* woodland and *Triodia bitextura* understorey. The Yeeda land system is comprised of sandplains with shallow valleys with similar soil make up and broad vegetation. These land systems form extensive dune fields and sand plains supporting pindan acacia shrublands with emergent eucalypt trees and other low woodlands.

Soil substrates are considered to be favoured by burrowing animals and micro-habitats are known to occur in habitat similar to that expected in the study area including termite mounds, leaf litter, some tree hollows and woody debris (on the ground). Fauna may utilise these micro-habitats as refuges, and for foraging and breeding habitat, particularly for reptile species.

5.5.2 Short Range Endemic (SRE) invertebrate fauna and potential habitat

The habitat types outlined within the desktop assessment are considered common for the surrounding area and no isolated refugia, sheltered habitats or microhabitats suitable for short-range endemic (SRE) invertebrates were identified. Habitat isolates are more likely to yield SREs and extensive and contiguous habitat is unlikely to harbour short range endemic invertebrate species (Environmental Protection Authority 2016a).

No confirmed SREs were identified during desktop assessments. Two species of scorpion have been identified by Naturemap as being endemic to the query area (100km search buffer around study area) however both are considered common in the Kimberley.

5.5.3 Fauna recorded in the vicinity of the study area

A total of 693 vertebrate species were recorded from DBCA's NatureMap within a 40km buffer of the study area, including 43 mammals (including seven cetaceans, six introduced species), 356 birds, 202 fish, 83 reptiles and nine amphibians (Appendix C). All of the 202 fish species recorded are marine species and would not occur within the study area.

Majority of the 356 bird species are marine or migratory species recorded at the Broome bird observatory which fell within the search buffer. Birdlife Australia birdata search results identified 65 species of bird from land-based surveys conducted in the vicinity of the study area. This number (65 species) is a more realistic representation of the species richness expected to be found near the study area compared to the NatureMap data. A breakdown of species outlined in database searches can be seen in Table 5.6.

Table 5.6 Previous fauna recorded

Database (search buffer)	Mammals	Birds	Reptiles	Amphibians	Fish
DBCA NatureMap (40 km)	43	356	83	9	202
Birdlife Australia Birdata (~50 km)		65			
DBCA Threatened and Priority Fauna Search (100 km)	17	63	7		3
DoE Protected Matters Search (100 km)	5	16	1		1

5.5.4 Introduced Pest Species

The EPBC Act PMST search (100 km buffer) results outlined 15 invasive vertebrate feral animals including two birds (Rock Pigeon, Common Starling), one Amphibian (Cane Toad), 10 Mammals (Camel, Wild Dog, Donkey, Horse, Cat, House Mouse, Rabbit, Black Rat, Pig and Red Fox) and two reptiles (Asian House Gecko and Flowerpot Blind Snake). DBCA's NatureMap did not outline any additional introduced vertebrate pest species.

5.5.5 Significant Fauna Species

At a state level, fauna species are protected under the BC Act. Threatened, Extinct and Specially Protected fauna 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 (BC Act). At the Commonwealth level, Threatened Fauna are protected under Section 178 of the EPBC Act, which may list species as: extinct, extinct in the wild, critically endangered, endangered, vulnerable, and conservation dependent. A total of 91 vertebrate species of conservation significance were identified by database searches within 100km of the study area (Figure 5.4). Three species of conservation significance have previously been recorded within the study area (Table 5.8, Figure 5.4) including the Spectacled Hare-wallaby (mainland), Bilby and Peregrine Falcon.

The EPBC Act Protected Matters Report (Appendix D) identified 23 fauna species of conservation significance or potential habitat for these species within the a 100km search buffer around the study area (Table 5.6). DBCA threatened and priority fauna search results within 100km of the study area recorded 90 species (Table 5.6, Figure 5.4) including 63 bird species, 17 mammals, seven reptiles and three fish. Fifty-five of the bird species recorded are classified as wading, marine or migratory and the study area does not contain any suitable habitat to support these species. Furthermore, search results identified two marine mammals (Sperm Whale and Dugong) and two marine reptiles (Flatback Turtle and Loggerhead Turtle) along with three fish (Freshwater Sawfish, Green Sawfish and Prince Regent Hardyhead). As the study area does not support any permanent waterbodies, rivers or marine environments, these species will not be present.

A likelihood of occurrence assessment was undertaken for 91 conservation significant fauna species identified during the desktop assessment (Table 5.7). Each relevant conservation or biologically significant fauna species assessed as potentially occurring within the study area was assigned a likelihood of occurrence rating based on the four categories described in Table 3.2. Results were based on the likely habitat types outlined during the desktop survey.

For the relevant species, the likelihood of occurrence was determined by investigating the following:

- Fauna habitats likely to exist within the study area based on the desktop study;
- Distance of previously recorded conservation significant species based on publicly-available records;
- Frequency of occurrence of conservation significant species records; and
- Time passed since conservation significant species were recorded.

The likelihood of occurrence table (Table 5.7) identified two species of reptile (Great Desert Skink, Dampier Peninsula Goanna) as having a likelihood of occurrence rating of 'Likely (1).' Nine species were rated as having a likelihood of occurrence rating of 'Possible (2)' including four mammals, four birds and one reptile. The remaining 76 species were deemed as 'Unlikely (3)' to occur within the Dampier Downs Road study area due to a lack of suitable habitat.

Conservation significant species previously recorded within the study area and species deemed as having a likelihood of occurrence rating of 'Likely (1)' or 'Possible (2)' will be discussed in detail below. Species deemed as 'Unlikely (3)' to occur within the study area will not be discussed further.

5.5.5.1 Species previously recorded within the study area

Bilby (*Macrotis lagotis*) (Vulnerable under EPBC Act and BC Act)

Once inhabiting much of the arid and semi-arid regions of the Australian mainland, bilbies are now sparsely distributed through the Tanami Desert in the Northern Territory, west to Broome and south to Warburton in Western Australia (van Dyck and Strahan 2008). Three primary landscape types can be identified: (1) laterite, silcrete or stony rises and uplands (residual landforms); (2) drainage lines including upland creek systems, calcareous areas and broad palaeodrainage systems (fluvial landforms); and (3) flat or gently undulating plains and dune fields (Cramer *et al.* 2016). Three broad suitable habitat types are recognised by Cramer *et al.* (2016): (1) textured soils from coarse sand to light medium clay and uniform texture profiles, non-calcareous gradational soils and duplex soils including red sand and loamy sand plains and dune fields supporting woodlands of low (<10m) trees with *Eucalyptus* and *Acacias* spp. over *Triodia* hummock grasslands or Pindan woodland with hummock and tussock grasses; (2) sandy soils, sandy loams and red earths often with lateritic, small gravel, stony matrix supporting low shrub cover of Acacia spp. including mulga (*A. aneura*) over with hummock and tussock grasses; (3) sandy and sandy loam soils; alluvial and calcareous areas and salt channels and lakes supporting spinifex grasslands (mainly *Triodia basedowii, T. pungens* and *T. schinzii*) with low shrub cover of *Acacia* spp. and *Melaleuca* spp.

One Bilby was recorded within the study area in 2017 (DBCA) (Table 5.8) and a further 1313 have been recorded within 100 km of the study area (Figure 5.4).

Spectacled Hare-wallaby (Mainland) (*Lagorchestes conspicillatus leichardti*) (Priority 4 under BC Act)

Like many critical weight range (CWR) mammals the Spectacled Hare-wallaby has suffered widespread range reduction and population declines on the mainland. The species is also known from the bioregion at Barrow Island, where it is abundant, however, the mainland subspecies is an inhabitant of northern Australia with scattered populations throughout the Pilbara and Kimberley. Inappropriate fire regimes and the impacts of feral predators have impacted this species significantly, particularly in southern parts of its distribution. Burbidge and Johnson (2008) suggest that frequent broadscale fire prevents the development of spinifex hummocks large enough to provide shelter for the species. Growing to roughly 450mm (Head and body length) and weighing between 1.6 kg – 4.75 kg the Spectacled Hare-wallaby lives in Acacia shrubland and spinifex grassland (Van Dyck *et al.* 2013).

23 Spectacled Hare-wallabies have been recorded within the study area (DBCA) (Table 5.8). Twenty individuals were recorded using camera traps in 2017 and the remaining three were recorded using sign plots (DBCA). 420 individuals of this species have been recorded within 100km of the study area (Figure 5.4).

Peregrine Falcon (*Falco peregrinus*) (Schedule 7- Other Specially Listed Fauna, BC Act)

Fourteen records of the Peregrine Falcon were obtained from the search area with one old record (1976) from within the study area (Figure 5.4). This species is widespread in Australia but requires specific nesting sites. It does not build a nest but requires cliffs, rocky outcrops, or large tree hollows (Johnstone and Storr 1998). Suitable breeding habitat may occur over the study in the Napier Range, and, due to its widespread movements, the species may also overfly all habitats of the study area intermittently. Peregrine Falcons feed almost entirely on birds, especially ducks, parrots and pigeons.

5.5.5.2 Species given a likelihood of occurrence rating of 'Likely (1)'

Great Desert Skink (*Liopholis kintorei)* (Vulnerable under EPBC Act and BC Act)

One historical record of the Great Desert Skink was identified in the DBCA search results located roughly 23 km from the study area. Normally associated with eastern WA and adjacent regions in south-western NT and north-western SA, this species is found in a variety of desert habitats on sandy, clay and loamy soils (Cogger 2018). Regularly defecating in the same spot on the surface near burrows, this species has a snout vent length of 200mm (Cogger 2018). The species appears to be declining

throughout its range with many previously known sites no longer supporting populations (McAlpin 1997). With one undated record in the vicinity (Figure 5.4) and suitable sandy desert habitat present, this species has been given a likelihood of occurrence rating of 'Likely (1)'

Dampier Peninsula Goanna (*Varanus sparnus)* (Priority 1 under BC Act)

Growing to a total snout vent length of 120mm, this very small varanid inhabits seasonally dry woodland and grasslands on the Dampier Peninsula, WA (Cogger 2018). Three Coloumb Point specimens were collected in areas with alluvial or sandstone deposits, and broadly classed as 'pindan shrubland' while the holotype (WAM R168486) was associated with *Corymbia* sp. low trees over *Acacia monticola*, *A. colei, A. eriopoda* tall open scrub over mixed open grassland, on pindan soil on plain. (Doughty *et al.* 2014).

With five specimens recorded within 3.5 kms of the study area (Figure 5.4), this species was given a likelihood of occurrence rating of 'Likely (1).'

5.5.5.3 Species given a likelihood of occurrence rating of 'Possible (2)'

Dampierland Burrowing Snake (*Simoselaps minimus)* (Priority 2 under BC Act)
Presumably a sand burrowing snake like it's relatives, the Dampierland Burrowing Snake is only found on the Dampier Peninsular in the Kimberley, WA (Cogger 2018). Growing to a total length of 20cm, this species has been recorded seven times within 100 kms of the study area (Figure 5.4). Although this species has not been recorded south of Roebuck plain, it has been given a likelihood of occurrence rating of 'Possible (2)' as the study area exhibits suitable habitat.

Black-footed Rock-wallaby (West Kimberley) (*Petrogale lateralis subsp. (West Kimberley))* (Vulnerable under EPBC Act and Endangered under BC Act)

The West Kimberley race of the Black-footed Rock Wallaby is known from a few ranges wedged between the great Sandy Desert and the Kimberley region preferring sedimentary ranges of low, flat-topped hills bounded by scree and vegetated by spinifex, scattered shrubs and figs (van Dyck and Strahan 2008). There are 19 records within 20 kms of the study area (Figure 5.4) with all records from the ranges to the east of the study area. Rarely travelling more than a few hundred meters from the protection of their rocky shelters (van Dyck and Strahan 2008) the Black-footed Rock Wallaby has been given a likelihood of occurrence rating of 'Possible (2).'

Golden Bandicoot (mainland) (*Isoodon auratus auratus)* (Vulnerable under EPBC Act and BC Act)
The Golden Bandicoot has been recorded from a wide range of habitats: sand-dune and sandplain country with spinifex formations in the arid zone; sandplains with Acacia and Eucalyptus woodlands over tussock grasses in the tropical semiarid zone; rugged sand-stone-spinifex country and volcanic country of the tropical subhumid north-western Kimberley (van Dyck and Strahan 2008). Previously occurring throughout central Australia, this species is now restricted to Barrow Island and the Kimberley along with some offshore islands.

With four records within 100 km of the study area (DBCA) (Figure 5.4), the latest of which is from 2014, this species was given a likelihood of occurrence rating of 'Possible (2).'

Kimberley Brush-tailed Phascogale (*Phascogale tapoatafa kimberleyensis)* (Vulnerable under EPBC Act and BC Act)

The Kimberley Brush-tailed Phascogale is an arboreal omnivorous marsupial seldomly feeding on the ground and preferring large rough barked mature trees (van Dyck and Strahan 2008). Preferring open forest with sparse ground cover, the Brush-tailed Phascogale range contractions have occurred in the relatively unfragmented habitats of the Kimberley (van Dyck and Strahan 2008).

With one record within 100 km of the study area (Figure 5.4) in the Roebuck Plains, this species was given a likelihood of occurrence rating of 'Possible (2).'

Yellow-lipped Cave Bat (*Vespadelus douglasorum*) (Priority 2 under BC Act)

Foraging for insects in tropical open woodlands, usually along and adjacent to waterways lined with melaleuca and pandanus, the Yellow-lipped Cave Bat roosts in sandstone and limestone caves usually near water (van Dyck and Strahan 2008). This species has been found to share roosting caves with the Northern Cave Bat *(Vespadelus caurinus*) (van Dyck and Strahan 2008).

Although no waterways for foraging intersect the study area, the presence of Sandstone ranges within the vicinity provides potential roosting habitat and this species has been given a likelihood of occurrence rating of 'Possible (2).'

Princess Parrot (*Polytelis alexandrae*) (Vulnerable under EPBC Act and Priority 4 under BC Act)

The Princess Parrot usually occurs singly, in pairs, or in small flocks of up to 30 birds and is a slim, medium sized parrot that grows to 40-45 cm in length (Department of Environment and Energy 2019). The habitat preference of the Princess Parrot is lighted wooded country including desert groves *Casuarina decaiseneana*, open mallee-spinifex *Eucalyptus-Triodia* and open marble gum woodland *Eucalyptus gongylocarpa* (Johnstone and Storr 1998).

The Princess Parrot has been recorded six times within the DBCA search area (Figure 5.4). The records close to the study area are extremely old record (1911) and the latest record (1999) was recorded in the Broome townsite. This species has been deemed to have a likelihood of occurrence of 'Possible (2).'

Fork-tailed Swift (*Apus pacificus*) (Migratory under EPBC act and BC act)

The Fork-tailed Swift is a migratory, almost exclusively aerial species that, in its non-breeding area in Australia, is independent of terrestrial habitats. The Fork-tailed Swift arrives in Australia from its breeding areas in Siberia in October and leaves by the end of April (Higgins 1999). They forage along the edge of low-pressure systems which help lift insect prey and assists in flight.

The Fork-tailed Swift has been recorded 30 times within the DBCA search area (Figure 5.4). The Fork-tailed Swift therefore has the potential to overfly the entire site without specifically utilising any particular habitat and has been given a likelihood of occurrence rating of 'Possible (2)'.

Red Goshawk (*Erythrotriorchis radiatus*) (Vulnerable under EPBC Act and BC Act)

The Red Goshawk is a large, swift and powerful rufous-brown hawk, growing to a length of 45–60 cm, with a wingspan of 100–135 cm that is endemic to Australia. The Red Goshawk is suspected to occupy roughly 15% of coastal and sub-coastal northern Australia from the Kimberley, East to Central NSW where it is thought to have a very large distributional range and extent of occurrence within which it is very sparsely distributed. A Red Goshawks Diet is 95% birds and a study by Aumann and Baker-Gabb (1991) found that over 50% were Psittaciformes and 14.8% were Passeriformes.

This species prefers forest and woodland with a mosaic of vegetation types, large prey populations (birds), and permanent water. One Red Goshawk was recorded in 1976 within the DBCA search area (Figure 5.4).

Grey Falcon (*Falco hypoleucos*) (Vulnerable under BC Act)

The Grey Falcon is a poorly-known endemic of inland Australia that has a very broad but scattered distribution including the Kimberley bioregion (Garnett *et al.* 2011). The species is a resident or nomadic visitor to inland parts and occurs in lightly wooded riverine plains. The species often nests in eucalypts along watercourses and has been recorded from both River Red Gum (*Eucalyptus camaldulensis*) and Coolabah (*Eucalyptus coolabah*) habitat (Garnett *et al.* 2011).

Due to its widespread distribution and recent records in the vicinity the Grey Falcon may overfly all habitat types from time to time and a likelihood of occurrence rating of 'Possible (2)' was given.

Table 5.7 Conservation significant fauna likelihood of occurrence

Species	Common name	WA status	EPBC status	Latest Record	Notes	Likelihood of occurrence
Birds						
Numenius madagascariensis	Eastern Curlew	CR	CR & MI	2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Calidris ferruginea	Curlew Sandpiper	CR & IA	CR & MI	2017	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Calidris tenuirostris	Great Knot	CR & IA	CR & MI	2017	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Rostratula australis	Australian Painted Snipe	EN	EN	2004	Records within 20km, no suitable habitat	Unlikely (3)
Puffinus huttoni	Hutton's Shearwater	EN		2000	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Malurus coronatus	Purple-crowned Fairy-wren (western)	EN	EN	N.D.	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Charadrius mongolus	Lesser Sand Plover	EN & IA	EN & MI	2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Calidris canutus	Red Knot	EN & IA	EN & MI	2017	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Falco peregrinus	Peregrine Falcon	OS		2009	Historical records from within study area	Recorded
Limosa lapponica menzbieri	Bar-tailed Godwit (northern Siberian)	VU	CR (& MI at sp. level)	2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Falco hypoleucos	Grey Falcon	VU		2002	Records within 20km, may overfly study area without utilising any particular habitat type	Possible (2)
Erythrotriorchis radiatus	Red Goshawk	VU	VU	1976	No records within 20 km of study area, may overfly study area without utilising any particular habitat type	Possible (2)
Charadrius leschenaultii	Greater Sand Plover	VU & IA	VU & MI	2012	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Limnodromus semipalmatus	Asian Dowitcher	IA	MI	2008	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Hirundo rustica	Barn Swallow	IA	MI	2009	No records within 20 km of study area, may overfly study area without utilising any particular habitat type	Unlikely (3)
Limosa lapponica	Bar-tailed Godwit	IA	MI	2017	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Limosa limosa	Black-tailed Godwit	IA	MI	2016	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Onychoprion anaethetus	Bridled Tern	IA	MI	2001	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Limicola falcinellus	Broad-billed Sandpiper	IA	MI	1998	Records within 20km of study area, no suitable habitat available	Unlikely (3)
Sula leucogaster	Brown Booby	IA	MI	2011	No records within 20 km of study area, no suitable habitat	Unlikely (3)

Species	Common name	WA status	EPBC status	Latest Record	Notes	Likelihood of occurrence
Hydroprogne caspia	Caspian Tern	IA	MI	1911	Records within 20km of study area, no suitable habitat available	Unlikely (3)
Tringa nebularia	Common Greenshank	IA	MI	2015	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Anous stolidus	Common Noddy	IA	MI	1999	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Actitis hypoleucos	Common Sandpiper	IA	MI	2009	Records within 20km of study area, no suitable habitat available	Unlikely (3)
Sterna hirundo	Common Tern	IA	MI	2011	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Apus pacificus	Fork-tailed Swift	IA	MI	2013	No records within 20 km of study area, may overfly study area without utilising any particular habitat	Possible (2)
Plegadis falcinellus	Glossy Ibis	IA	MI	1982	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Fregata minor	Great Frigatebird	IA	MI	2012	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Pluvialis squatarola	Grey Plover	IA	MI	2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Motacilla cinerea	Grey Wagtail	IA	MI	2013	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Tringa brevipes	Grey-tailed Tattler	IA	MI	2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Gelochelidon nilotica	Gull-billed Tern	IA	MI	2012	Records within 20km of study area, no suitable habitat available	Unlikely (3)
Fregata ariel	Lesser Frigatebird	IA	MI	2011	Records within 20km of study area, no suitable habitat available	Unlikely (3)
Numenius minutus	Little Curlew	IA	MI	2015	Records within 20km of study area, no suitable habitat available	Unlikely (3)
Sternula albifrons	Little Tern	IA	MI	2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Tringa stagnatilis	Marsh Sandpiper	IA	MI	1995	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Macronectes halli	Northern Giant Petrel	IA	MI	2011	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Cuculus optatus	Oriental Cuckoo	IA	MI	2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Charadrius veredus	Oriental Plover	IA	MI	2008	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Glareola maldivarum	Oriental Pratincole	IA	MI	2008	Records within 20km of study area, no suitable habitat available	Unlikely (3)
Pandion cristatus	Osprey	IA	MI	2011	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Pluvialis fulva	Pacific Golden Plover	IA	MI	2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Calidris ruficollis	Red-necked Stint	IA	MI	2017	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Sterna dougallii	Roseate Tern	IA	MI	2001	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Arenaria interpres	Ruddy Turnstone	IA	MI	2017	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Calidris alba	Sanderling	IA	MI	2009	Records within 20km of study area, no suitable habitat available	Unlikely (3)

Species	Common name	WA status	EPBC status	Latest Record	Notes	Likelihood of occurrence
Calidris acuminata	Sharp-tailed Sandpiper	IA	MI	2009	Records within 20km of study area, no suitable habitat available	Unlikely (3)
Calonectris leucomelas	Streaked Shearwater	IA	MI	1999	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Gallinago megala	Swinhoe's Snipe	IA	MI	1900	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Xenus cinereus	Terek Sandpiper	IA	MI	2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Ardenna pacifica	Wedge-tailed Shearwater	IA	MI	1995	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Numenius phaeopus	Whimbrel	IA	MI	2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Chlidonias leucopterus	White-winged Black Tern	IA	MI	N.D.	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Oceanites oceanicus	Wilson's Storm-petrel	IA	MI	1949	Records within 20km of study area, no suitable habitat available	Unlikely (3)
Tringa glareola	Wood Sandpiper	IA	MI	2013	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Motacilla flava	Yellow Wagtail	IA	MI	2013	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Tyto novaehollandiae kimberli	Masked Owl (northern)	P1	VU	1909	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Ixobrychus flavicollis australis	Black Bittern (southwest subpop.)	P2		2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Ninox connivens	Barking Owl (southwest subpop.)	P3		2001	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Ixobrychus dubius	Australian Little Bittern	P4		1900	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Erythrura gouldiae	Gouldian Finch	P4	EN	1973	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Elanus scriptus	Letter-winged Kite	P4		1994	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Polytelis alexandrae	Princess Parrot	P4	VU	1999	Records within 20km of study area, limited suitable habitat available	Possible (2)
Pezopous occidentalis	Night Parrot	CR	EN	N.D.	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Fish						
Pristis pristis	Freshwater Sawfish	P3	VU	2016	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Pristis zijsron	Green Sawfish	VU	VU	2004	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Craterocephalus lentiginosus	Prince Regent Hardyhead	P2		2012	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Mammals						
Petrogale lateralis subsp. (West Kimberley)	Black-footed Rock-wallaby (West Kimberley)	EN	VU	2015	Recent records within 8 km of study area, no suitable rocky habitat available	Possible (2)
Dasyurus hallucatus	Northern Quoll	EN	EN	2015	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Bettongia lesueur graii	Burrowing Bettong, Boodie (inland)	EX	EX	N.D.	Records within 20km, species Extinct	Unlikely (3)

Species	Common name	WA status	EPBC status	Latest Record	Notes	Likelihood of occurrence
Dugong dugon	Dugong	OS		1995	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Macrotis lagotis	Bilby, Dalgyte, Ninu	VU	VU	2018	Recorded within study area	Recorded
Isoodon auratus	Golden Bandicoot (mainland)	VU	VU	2014	Records within 20km, limited suitable habitat available	Possible (2)
Phascogale tapoatafa kimberleyensis	Kimberley Brush-tailed Phascogale	VU	VU	N.D.	Records within 20km, limited suitable habitat available	Possible (2)
Trichosurus vulpecula arnhemensis (Kimberley)	Northern Brushtail Possum (Kimberley)	VU		2016	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Physeter macrocephalus	Sperm Whale	VU	MI	2010	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Mormopterus cobourgianus	North-western Free-tailed Bat	P1		2016	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Vespadelus douglasorum	Yellow-lipped Cave Bat	P2		1965	No records within 20 km of study area, no suitable roosting habitat, may use study area for foraging	Possible (2)
Mesembriomys macrurus	Golden-backed Tree-rat	P4	VU	N.D.	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Notoryctes caurinus	Northern Marsupial Mole	P4		1977	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Leggadina lakedownensis	Northern Short-tailed Mouse	P4		2013	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Wyulda squamicaudata	Scaly-tailed Possum	P4		1970	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	Recorded within study area	Recorded
Hydromys chrysogaster	Water-rat, Rakali	P4		1971	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Reptiles						
Liopholis kintorei	Great Desert Skink	VU	VU	N.D.	Records within 23 km of study area, suitable habitat available	Likely (1)
Ctenotus angusticeps	Northwestern coastal Ctenotus	P3	VU	2017	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Varanus sparnus	Dampier Peninsula Goanna	P1		2017	Records within 2 km of study area, suitable habitat available	Likely (1)
Simoselaps minimus	Dampierland Burrowing Snake	P2		2009	No records within 20 km of study area, limited suitable habitat available	Possible (2)
Lerista separanda	Dampierland Plain Slider	P2		2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Natator depressus	Flatback Turtle	VU	VU	2009	No records within 20 km of study area, no suitable habitat	Unlikely (3)
Caretta caretta	Loggerhead Turtle	EN	EN	2004	No records within 20 km of study area, no suitable habitat	Unlikely (3)

Table 5.8 Significant fauna recorded within the study area (DBCA)

Species	Common Name	Status		Year recorded	Count	Coordinates (GDA1994)		
		BC Act	EPBC Act			Easting	Northing	Zone
Falco peregrinus	Peregrine Falcon	OS		1976	2	1163244	7907847	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1117918	7962227	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1117918	7962227	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1117918	7962227	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1117918	7962227	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1117918	7962227	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1117918	7962227	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1117918	7962227	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1117918	7962227	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1117918	7962227	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1117918	7962227	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	3	1117920	7962261	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1111940	7966947	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1102225	7984410	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1102225	7984410	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1102225	7984410	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1102225	7984410	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1102225	7984410	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1102225	7984410	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1102225	7984410	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1102225	7984410	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1102225	7984410	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1098406	7991760	51
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby (mainland)	P4		2017	1	1093099	7996493	51
Macrotis lagotis	Bilby, Dalgyte, Ninu	VU	VU	2017	1	1109106	7970011	51

1000000 1050000 1100000 1150000 1200000

8100000 8050000 8000000 7950000 7900000 7850000 7800000 7750000

Study area

Threatened and Extint species

- Australian Painted Snipe
- Bar-tailed Godwit (northern Siberian)
- Bilby, Dalgyte, Ninu
- Black-footed Rock-wallaby (West Kimberley)
- Burrowing Bettong, Boodie (inland) (Extinct)
- Curlew Sandpiper
- Dugong
- Eastern Curlew
- Flatback Turtle
- Golden Bandicoot (mainland), Wintarru
- Great Desert Skink
- Great Knot
- Greater Sand Plover
- Green Sawfish
- Grey Falcon
- Hutton's shearwater
- Kimberley Brush-tailed Phascogale
- Lesser Sand Plover
- Loggerhead Turtle
- Northern Brushtail Possum (Kimberley)
- Northern Quoll
- Peregrine Falcon
- Purple-crowned Fairy-wren (western)
- Red Goshawk
- Red Knot
- Sperm Whale

Priority 1

- Dampier Peninsula Goanna
- Masked Owl (Kimberley)
- North-western Free-tailed Bat

Priority 2

- Black Bittern (southwest subpop.)
- Dampierland Burrowing Snake
- Dampierland Plain Slider
- Prince Regent Hardyhead
- Yellow-lipped Cave Bat

Priority 3

- Airlie Island Ctenotus, Northwestern coastal Ctenotus
- Barking owl (southwest subpop.)
- Freshwater Sawfish
- Masked Owl

Priority 4

- Australian Little Bittern
- Golden-backed Tree-rat
- Gouldian Finch
- Letter-winged Kite
- Northern Marsupial Mole, Kakarratul
- Northern Short-tailed Mouse
- Princess Parrot
- Scaly-tailed Possum
- Spectacled Hare-wallaby (mainland)
- Water-rat, Rakali

ecologia ENVIRONMENT

Drawn: TM Project ID: 1777
Date: 22 February 2019 A3

N

0 10 20
Kilometers
Scale: 1:1,000,000
MGA94 (Zone 51)

Conservation significant fauna species found within 100 km of study area (DBCA)

Figure: 5.4a

1050000 1100000 1150000

8050000 8000000 7950000 7900000

Study area

Migratory Species

- Asian dowitcher
- Bar-tailed Godwit
- Barn Swallow
- Black-tailed Godwit
- Bridled Tern
- Broad-billed Sandpiper
- Brown Booby
- Caspian tern
- Common Greenshank
- Common Noddy
- Common Sandpiper
- Common Tern
- Fork-tailed Swift
- Glossy Ibis
- Great Frigatebird
- Grey Plover
- Grey Wagtail
- Grey-tailed Tattler
- Gull-billed Tern
- Lesser Frigatebird
- Little Curlew
- Little Tern
- Marsh Sandpiper
- Northern Giant Petrel
- Oriental Cuckoo
- Oriental Plover
- Oriental Pratincole
- Osprey
- Pacific Golden Plover
- Red-necked Stint
- Roseate Tern
- Ruddy Turnstone
- Sanderling
- Sharp-tailed Sandpiper
- Streaked Shearwater
- Swinhoe's Snipe
- Terek Sandpiper
- Wedge-tailed Shearwater
- Whimbrel
- White-winged Black Tern
- Wilson's Storm-petrel
- Wood Sandpiper
- Yellow Wagtail

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Drawn: TM Project ID: 1777
Date: 22 February 2019 A3

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Kilometers
Scale: 1:550,000
MGA94 (Zone 51)

Conservation significant fauna species found within 100 km of study area (DBCA)

Figure: 5.4b

6 ASSESSMENT AGAINST TEN CLEARING PRINCIPLES

(a) Native vegetation should not be cleared if it comprised a high level of biological diversity

WAHERB database search within 100km of the study area reported two Threatened and 44 Priority Flora taxa.

One conservation significant species have been previously recorded in the study area (*Seringia katatona* P3). Based on proximity (previously recorded within 10 km) and presence of habitat, two other conservation significant species are considered likely to occur within the study area, *Croton aridus* (P3) and *Tephrosia pedleyi* (P3). And another five are considered possible including *Seringia exastia* (T).

No TEC's or PEC's have been recorded within the study area. Over 99% of the pre-European extent of the four Beard vegetation associations occurring within the study area remains. The study area itself is associated with 0.29% of Association 701 and 0.0005% of Association 703. The vegetation expected to occur within the study area is considered to be widespread. Therefore, the proposed clearing is not likely to be at variance with this principle.

(b) Native vegetation should not be cleared if it comprises the whole of or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia

The likely habitat types found within the study area after assessing desktop information include:

- Pindan acacia shrublands
- Sandplain grasslands

A total of 91 vertebrate species of conservation significance were identified by database searches as being recorded within 100 km of the study area. Three species, the Spectacled Hare-wallaby (mainland) (P4), Bilby (VU) and Peregrine Falcon, have previously been recorded within the study area. Fifty-five of the bird species recorded are classified as wading, marine or migratory and the study area does not contain any suitable habitat to support these species. The likelihood of occurrence assessment identified two species of reptile (Great Desert Skink, Dampier Peninsula Goanna) as having a likelihood of occurrence rating of 'Likely (1)' while nine species were rated as having a likelihood of occurrence rating of 'Possible (2)' including four mammals, four birds and one reptile. The remaining 77 species were deemed as 'Unlikely (3)' to occur within the Dampier Downs Road study area due to a lack of suitable habitat.

While the assessment area is likely to contain habitat suitable for supporting fauna indigenous to Western Australia, including the Spectacled Hare-wallaby and Bilby, given the narrow, linear nature and relatively small area of the proposed clearing, the vegetation unlikely to comprise the whole or part of, or be necessary for the maintenance of significant habitat and is therefore unlikely to be at variance with clearing principle (b).

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

The native vegetation in the study area may include the Threatened taxa (*Seringia exastia)* which has been recorded approximately 40 km from the study area. Information on the habitat for *Seringia exastia* is very limited, and as such it could occur within the study area. On this basis it has been given a likelihood of occurrence of 'Possible (2).' It will require field survey to determine if this is at variance with clearing principle (c). Since this taxon has been recorded in several other

locations the vegetation in the assessment area is unlikely to be necessary for the continued existence of, rare flora and the proposed clearing is not likely to be at variance with clearing principle (c).

(d) Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of a threatened ecological community

According to the database search results no TEC's or PEC's have been recorded within the study area. The closest TEC to the study area is the Kimberley Vegetation Association No. 73 and the Kimberley Vegetation Association No. 67 which are approximately 1.8 km and 4 km respectively from the western end of the study area. The vegetation of the study area is not considered consistent with the description of the TEC's and given the distance from the TEC's, the proposed clearing will not impact either of these TEC's. Therefore, the proposed clearing is not likely to be at variance with clearing principle (d).

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

The national objectives and targets for biodiversity conservation in Australia have a target to prevent the clearing of vegetation communities, including IBRA bioregions and vegetation associations, which have less than 30% of their Pre-European extent remaining. The study area is located within the Dampierland IBRA region which has more than 99% of its Pre-European extent remain. The assessment area is also associated with Beard vegetation association 699, 700, 701 and 703 all of which more than 99% of the pre-European extent remains. Given the extent of native vegetation within the area and the extent of Dampierland IBRA and vegetation association 699 remaining are significantly greater than the national target, it is unlikely that the vegetation within the assessment area is significant as a remnant of native vegetation in an extensively cleared area. Therefore, the clearing is not likely to be at variance with clearing principle (e).

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

No wetlands or watercourses are mapped within the study area. Therefore, any proposed clearing within the study area is not likely to be at variance with principle (f).

(g) Native vegetation should not be cleared if the clearing is likely to cause appreciable land degradation.

While the sandplain soils of the study area are highly susceptible to wind erosion, the narrow, linear nature of the proposed clearing of vegetation is unlikely to result in wind erosion and associated appreciable land degradation. Therefore, the proposed clearing is not likely to be at variance with clearing principle (g).

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

The nearest conservation area to the study area is the Roebuck Bay Ramsar site, which is located approximately 16km southwest of the study area. Given the distance from the area, the proposed

clearing will not impact this conservation area. Therefore, the proposed clearing is not likely to be at variance with clearing principle (h).

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water

As discussed in principle (f), no wetlands or watercourses have been mapped for the study area. Therefore, the clearing is not likely to cause deterioration in the quality of surface water. The proposed clearing is also unlikely to result in the intersection of any groundwater sources in the area that would result in the deterioration in the quality of groundwater. Therefore, the proposed clearing is not likely to be at variance with principle (i).

(j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause or exacerbate, the incidence or intensity of flooding

As discussed in principle (f), given the absence of hydrological features in the study area, the clearing is unlikely to cause or exacerbate the incidence or intensity of flooding in the area. Therefore, the proposed clearing is not likely to be at variance with principle (j).

7 DISCUSSION AND CONCLUSION

Threatened and Priority Ecological Communities

Two State (BC Act) and Commonwealth (EPBC Act) listed TECs have been recorded within 100 km of the study area and 13 PECs. No TECs or PECs been recorded from the study area, although two Priority 3 PECs (Kimberley Vegetation Association No. 67 and No. 73) occur in relatively close (within 4km) proximity to the north-western end of the study area. A likelihood of occurrence assessment determined that all of the 15 PECs and TECs are unlikely to occur within the study area.

Flora

Two Threatened flora (*Pandanus spiralis var. flammeus* and *Seringia exastia*) and 44 Priority flora have having been previously recorded within 100km of the study area. Of these only one conservation significant species have been previously recorded in the study area (*Seringia katatona* (P3)). Based on the proximity (taxa previously recorded within 10 km) and presence of habitat two other conservation significant species are likely to occur within the study area *Croton aridus* (P3) and *Tephrosia pedleyi* (P3). A further 28 Priority flora taxa were considered to possibly occur within the study area. A site visit will be necessary to confirm or exclude the presence of any of these species from the study area.

Fauna

From the desktop information it appears that two broad fauna habitats are likely to occur over the study area; Pindan acacia shrublands and sandplain grasslands. A total of 693 vertebrate species were recorded from DBCA's Naturemap within a 40km buffer of the study area, including 43 mammals (Seven Cetaceans, six introduced), 356 birds, 202 fish, 83 reptiles and nine amphibians (Appendix C). All of the 202 fish species recorded are marine species and will not be found within the study area. Birdlife Australia birdata search results identified 65 species of bird which is a more realistic representation of the species richness expected to be found near the study area.

A total of 91 vertebrate species of conservation significance were identified by database searches within 100km of the study area. The large search radius of 100 km was required due to the lack of records closer to the study area, presumably due to a lack of survey intensity in the region. Due to the large search area and the proximity of coastal, estuarine, marine and oceanic habitats to the west, a number of species identified had no relevance to the study area. Fifty-five of the bird species recorded are classified as wading, marine or migratory. Furthermore, search results identified two marine mammals (Sperm Whale and Dugong) and two marine reptiles (Flatback Turtle and Loggerhead Turtle) along with three fish (Freshwater Sawfish, Green Sawfish and Prince Regent Hardyhead). The study area does not contain suitable habitat to support marine, wading, migratory or freshwater species.

An assessment of likelihood of occurrence for relevant conservation significant fauna species recorded during the desktop assessment was conducted based on the proximity of records, number and timing of previous records, and the likely habitats occurring within the study area. Three species (Spectacled Hare-wallaby (mainland), Bilby and Peregrine Falcon) have previously been recorded within the study area.

Twenty-three Spectacled Hare-wallaby records are known from the study area. Twenty individuals were recorded by camera traps in 2017 and the remaining three were recorded using sign plots. Four hindered and twenty individuals of this species have been recorded within 100km of the study area. One Bilby was recorded from the study area in 2017 and a further 1313 have been recorded within 100 km of the study area. Fourteen records of the Peregrine Falcon were obtained from the search area with one old record (1976) from within the study area.

Both the Spectacled Hare-wallaby and the Bilby are highly mobile species and it is unlikely that neither is reliant on the habitats within the study area to survive. Given the extent of native vegetation

associations remaining, it can be concluded that the widening of the Dampier downs road will have very little effect on the species of conservation significance previously recorded within the study area.

One Threatened species (Great Desert Skink) and one Priority species (Dampier Peninsula Goanna) were assessed as having a likelihood of occurrence rating of 'Likely (1)' based on the proximity, number and timing of previous records and the potential presence of suitable habitat within the study area. Five Threatened species (Grey Falcon, Red Goshawk, Black-footed Rock-wallaby (West Kimberley), Golden Bandicoot (mainland) and Kimberley Brush-tailed Phascogale) along with three Priority species (Princess Parrot, Yellow-lipped Cave Bat, Dampierland Burrowing Snake) and one migratory species (Fork-tailed Swift) were assessed as having a likelihood of occurrence rating of 'Possible (2).'

The habitat types within the study area are considered locally common and no refugia or habitat isolates to harbour SRE species was identified during the desktop assessment.

A site visit has not been undertaken and the actual fauna habitats and habitat condition within the study area is unknown. Ground-truthing is required to verify desktop results presented here.

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9 APPENDICES

APPENDIX A DEFINITIONS

Threatened Flora and Fauna Categories (EPBC Act)

Code	Definition
EX	**Extinct** Taxa which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
EW	**Extinct in the Wild** Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it 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.
CR	**Critically Endangered** Taxa which at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
EN	**Endangered** Taxa which is not critically endangered and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
VU	**Vulnerable** Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	**Conservation Dependent** Taxa which at a particular time if, at that time, the species is the focus of a specific conservation programme, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Threatened Fauna and Flora Categories (BC Act)

Category	Code	Definition	Schedule
Critically Endangered	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.	**Schedule 1**
Endangered	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.	**Schedule 2**
Vulnerable	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.	**Schedule 3**
Extinct species	EX	Species where "there is no reasonable doubt that the last member of the species has died", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act). Published as presumed extinct under schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for extinct fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for extinct flora.	**Schedule 4**
Extinct in the wild species	EW	Species that "is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).	Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.
Migratory	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.	**Schedule 5**
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.	**Schedule 6**
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.	**Schedule 7**

Definition of codes for Priority Flora and Fauna (BC Act)

Code	Definition
P1: Priority One	**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.
P2: Priority Two	**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.
P3: Priority Three	**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.
P4: Priority Four	**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.

Definition of codes for vegetation condition

Vegetation condition (EPA & DPaW 2015)	Criteria
1	Pristine or nearly so, no obvious sign of disturbance or damage caused by human activities.
2	Vegetation structure intact; disturbance affecting individual species; weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
3	Vegetation structure altered; obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires; the presence of some more aggressive weeds; dieback; logging and grazing.
4	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires; the presence of some very aggressive weeds; partial clearing; dieback and grazing.
6	Basic vegetation structure severely impacted by disturbance. Scope for regeneration by not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires; the presence of some very aggressive weeds at high density; partial clearing; dieback and grazing.
7	The structure of the vegetation is no longer intact, and the area is completely or almost completely without native species. These areas are often described as “parkland cleared” with the flora comprising weed or crop species with isolated native trees or shrubs.

Control categories for Declared Pests (Weeds)

Declared plant category	Description
C1 - Exclusion	Pests assigned to this category are not established in WA and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.
C2 - Eradication	Pests assigned to this category are present in WA in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.
C3 - Management	Pests assigned to this category are established in WA but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.

Categorisation of Environmental Weeds

Field	Description	Code
Ecological Impact	Impact of species within the Region, from low impact (causes minimal disruption to ecological processes or loss of biodiversity) to high (causes acute disruption of ecological processes, dominates and/or significantly alters vegetation structure, composition and function of ecosystems). Examples of impact attributes to consider: - changed fire regime - changed nutrient conditions - changed hydrological patterns - changed soil erosion patterns - changed geomorphological processes - changed biomass distribution - changed light distribution - loss of biodiversity - substantially reduces regeneration opportunities of native plants - allelopathic effects	Low (L) Medium (M) High (H) Unknown (U)
Invasiveness	Rate of spread of a weed in native vegetation, encompassing factors of establishment, reproduction and long distance dispersal (>100m). Examples of establishment factors include: - ability to outcompete (light, moisture, nutrients, rapid root growth) - sexual or asexual establishment - need for disturbance to establish Examples of reproduction factors include: - time to seeding - seed production - vegetative reproduction Examples of long distance dispersal mechanisms include: - wind - water - flying/ground animals - deliberate/accidental human spread - vehicles - produce contaminant	Slow (S) Moderate (M) Rapid (R) Unknown (U)

BAM Act Definitions (Declared Pests)

Legal status	Definition
Declared Pest, Prohibited - s12	Prohibited organisms are declared pests by virtue of section 22(1), and may only be imported and kept subject to permits. Permit conditions applicable to some species may only be appropriate or available to research organisations or similarly secure institutions.
Declared Pest - s22(2)	Declared pests must satisfy any applicable import requirements when imported, and may be subject to an import permit if they are potential carriers of high-risk organisms. They may also be subject to control and keeping requirements once within Western Australia.
Permitted - s11	Permitted organisms must satisfy any applicable import requirements when imported. They may be subject to an import permit if they are potential carriers of high-risk organisms.
Permitted, Requires Permit - r73	Regulation 73 permitted organisms may only be imported subject to an import permit. These organisms may be subject to restriction under legislation other than the Biosecurity and Agriculture Management Act 2007. Permit conditions applicable to some species may only be appropriate or available to research organisations or similarly secure institutions.
Unlisted - s14	If you are considering importing an unlisted organism/s you will need to submit the name/s for assessment, as unlisted organisms are automatically prohibited entry into WA.
Control categories	Definition
C1 Exclusion	Organisms which should be excluded from part or all of Western Australia.
C2 Eradication	Organisms which should be eradicated from part or all of Western Australia.
C3 Management	Organisms that should have some form of management applied that will alleviate the harmful impact of the organism, reduce the numbers or distribution of the organism or prevent or contain the spread of the organism.
Unassigned	Unassigned: Declared pests that are recognised as having a harmful impact under certain circumstances, where their subsequent control requirements are determined by a Plan or other legislative arrangements under the Act.

Definition of codes for Threatened Ecological Communities

Code	Definition
PD: Presumed Totally Destroyed	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
CR: Critically Endangered	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 or 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 very 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).
EN: Endangered	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its 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) The 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 or 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).
VU: Vulnerable	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.

Definition of codes for Priority Ecological Communities

Code	Definition
P1: Priority One	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.
P2: Priority Two	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.
P3: Priority Three	(i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or: (ii) communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat (within approximately 10 years), or; (iii) communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, inappropriate fire regimes, clearing, hydrological change etc. 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.
P4: Priority Four	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. (i) 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. (ii) 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 a higher threat category. (iii) Ecological communities that have been removed from the list of threatened communities during the past five years.
P5: Priority Five	Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

APPENDIX B VASCULAR FLORA (NATUREMAP)

Dampier Downs Road Easement NatureMap Vascular Flora records (40 km buffer)

Species Name	Naturalised	Conservation Code
Abrus precatorius (Crabs Eyes)		
Abrus precatorius subsp. precatorius		
Abutilon hannii		
Abutilon otocarpum (Desert Chinese Lantern)		
Acacia adoxa var. subglabra		
Acacia ampliceps		
Acacia bivenosa		
Acacia colei		
Acacia colei var. colei		
Acacia colei var. ileocarpa		
Acacia eriopoda (Broome Pindan Wattle)		
Acacia eriopoda x tumida var. tumida		
Acacia hippuroides		
Acacia monticola (Gawar Lilwardi)		
Acacia monticola x tumida var. kulparn		P3
Acacia platycarpa (Pindan Wattle)		
Acacia plectocarpa subsp. plectocarpa		
Acacia sp.		
Acacia stigmatophylla (Djulurd)		
Acacia stipuligera		
Acacia trachycarpa (Minni Ritchi Balgali)		
Acacia tumida var. kulparn		
Acacia tumida var. tumida		
Acanthophora spicifera		
Acanthospermum hispidum (Starburr)	Y	
Achyranthes aspera (Chaff Flower)		
Acrostichum speciosum		
Adansonia gregorii (Boab Djungeri)		
Adriana tomentosa var. tomentosa		
Aerva javanica (Kapok Bush)	Y	
Aeschynomene indica (Budda Pea)		
Ageratum conyzoides	Y	
Albizia lebbeck		
Alstonia linearis (Bitter Bark)		
Alternanthera brasiliana	Y	
Alternanthera pungens (Khaki Weed)	Y	
Alyogyne pinoniana (Sand Hibiscus)		
Alysicarpus ovalifolius	Y	
Amaranthus undulatus		
Amphiroa fragilissima		

Species Name	Naturalised	Conservation Code
Amyema benthamii		
Amyema bifurcata		
Amyema conspicua		
Amyema sanguinea var. sanguinea		
Amyema thalassia		
Anadyomene plicata		
Androcalva loxophylla		
Annona reticulata	Y	
Aristida holathera var. latifolia		
Aristida hygrometrica (Northern Kerosene Grass)		
Aristida inaequiglumis (Feathertop Threeawn)		
Asystasia gangetica subsp. gangetica	Y	
Atalaya hemiglauca (Whitewood)		
Avicennia marina (White Mangrove)		
Azadirachta indica	Y	
Basilicum polystachyon		
Batis argillicola		
Bauhinia cunninghamii		
Bergia ammannioides		
Bergia henshallii		
Blumea integrifolia		
Boerhavia coccinea (Tar Vine Wituka)		
Boerhavia dominii		
Boerhavia gardneri		
Boerhavia sp.		
Bonamia media		
Bostrychia tenella		
Bothriochloa pertusa	Y	
Botryocladia leptopoda		
Brachychiton diversifolius subsp. diversifolius		
Bridelia tomentosa		
Bruguiera exaristata (Ribbed Mangrove)		
Buchnera asperata		
Bulbostylis barbata		
Byblis filifolia		
Byblis rorida		
Caesalpinia major		
Cajanus marmoratus		
Calandrinia sp.		
Calandrinia tepperiana		
Calotis breviseta		
Calotropis gigantea	Y	
Calytrix exstipulata (Kimberley Heather)		

Species Name	Naturalised	Conservation Code
Camptostemon schultzii (Kapok Mangrove)		
Canavalia rosea (Wild Jack Bean)		
Capparis lasiantha (Split Jack Balqarda)		
Cardamine sp. Jandakot (P. Luff s.n. 4/7/1969)	Y	
Carissa lanceolata (Conkerberry Marnuwiji)		
Cassytha capillaris		
Cassytha filiformis (Love Vine Jirawan)		
Catharanthus roseus (Pink Periwinkle)	Y	
Caulerpa corynephora		
Caulerpa lamourouxii		
Caulerpa serrulata		
Caulerpa taxifolia		
Caulerpa taxifolia var. taxifolia		
Cenchrus biflorus (Gallon's Curse)	Y	
Cenchrus ciliaris (Buffel Grass)	Y	
Cenchrus echinatus (Burrgrass)	Y	
Cenchrus setiger (Birdwood Grass)	Y	
Centratherum punctatum		
Centrosema molle		
Ceratophyllum demersum (Hornwort)		
Ceratopteris thalictroides		
Ceriops australis		
Chamaecrista absus var. absus		
Chamaecrista symonii		
Chloris barbata (Purpletop Chloris)	Y	
Chloris pumilio		
Chrysopogon pallidus (Ribbongrass)		
Citrullus lanatus (Pie Melon)	Y	
Cleome tetrandra var. tetrandra		
Cleome viscosa (Tickweed Tjinduwadhu)		
Clerodendrum floribundum var. coriaceum		
Clerodendrum floribundum var. ovatum		
Clerodendrum tomentosum var. mollissima		
Clerodendrum tomentosum var. tomentosum		
Clitoria ternatea	Y	
Coccinia grandis	Y	
Codium arabicum		
Codium dwarkense		
Codonocarpus cotinifolius (Native Poplar Kundurangu)		
Coelarthrum opuntia		
Conyza bonariensis (Flaxleaf Fleabane)	Y	
Corchorus aestuans		
Corchorus olitorius (Jute)	Y	

Species Name	Naturalised	Conservation Code
Corchorus sidoides subsp. vermicularis		
Corymbia bella		
Corymbia dendromerinx		
Corymbia flavescens		
Corymbia greeniana		
Corymbia paractia		P1
Corymbia polycarpa		
Corymbia zygophylla		
Corynotheca micrantha (Sand Lily)		
Cressa australis		
Crotalaria brevis		
Crotalaria cunninghamii (Green Birdflower Bilbun)		
Crotalaria cunninghamii subsp. cunninghamii		
Crotalaria medicaginea var. neglecta		
Crotalaria ramosissima		
Crotalaria sp.		
Croton aridus		P3
Cryptostegia madagascariensis	Y	
Cucumis anguria var. anguria	Y	
Cucumis melo (Ulcardo Melon)		
Cucumis picrocarpus		
Cullen corallum		
Cullen martinii		
Cullen pustulatum		
Cuscuta chinensis		
Cuscuta victoriana		
Cyanostegia cyanocalyx		
Cyanthillium cinereum	Y	
Cymbidium canaliculatum		
Cymodocea angustata		
Cynodon dactylon (Couch)	Y	
Cyperus bulbosus (Bush Onion Tjanmata)		
Cyperus carinatus		
Cyperus compressus	Y	
Cyperus conicus		
Cyperus macrostachyos		
Cyperus rotundus (Nut Grass)	Y	
Cyperus scariosus		
Cyperus tenuispica		
Dactyloctenium aegyptium (Coast Button Grass)	Y	
Dactyloctenium radulans (Button Grass)		
Dendrophthoe acacioides subsp. acacioides		
Denhamia cunninghamii (Koonkara)		

Species Name	Naturalised	Conservation Code
Dentella misera		
Desmodium filiforme		
Desmodium tortuosum (Florida Beggarweed)	Y	
Dichrostachys spicata (Pied Piper Bush)		
Digitaria bicornis (Finger Grass)		
Digitaria ciliaris (Summer Grass)	Y	
Digitaria radicosa	Y	
Dodonaea hispidula var. arida		
Dodonaea hispidula var. phylloptera		
Dolichandrone occidentalis		
Drosera broomensis		
Drosera finlaysoniana		
Drosera hartmeyerorum		
Drosera serpens		
Echinochloa colona (Awnless Barnyard Grass)	Y	
Echinochloa frumentacea (Siberian Millet)	Y	
Eclipta prostrata	Y	
Ectrosia danesii		
Ehretia saligna (False Cedar)		
Ehretia saligna var. saligna		
Eleocharis atropurpurea		
Eleusine indica (Crowsfoot Grass)	Y	
Eleutheranthera ruderalis		
Enneapogon pallidus (Conetop Nineawn)		
Eragrostis cilianensis (Stinkgrass)	Y	
Eragrostis cumingii (Cuming's Love Grass)		
Eragrostis eriopoda (Woollybutt Grass Wangurnu)		
Eragrostis falcata (Sickle Lovegrass)		
Eragrostis speciosa (Handsome Lovegrass)		
Eragrostis tenuifolia	Y	
Eriachne melicacea		
Eriachne obtusa (Northern Wandarrie Grass)		
Eriachne pindanica (Pindan Wiregrass)		
Eriocaulon cinereum		
Eruca sativa (Purplevein Rocket)	Y	
Erythrina vespertilio (Yulbah)		
Erythrophleum chlorostachys (Ironwood Dyundyu)		
Eucalyptus tectifica (Darwin Box)		
Eucheuma denticulatum		
Euphorbia hassallii		
Euphorbia heterophylla	Y	
Euphorbia hirta (Asthma Plant)	Y	
Euphorbia schultzii		

Species Name	Naturalised	Conservation Code
Euphorbia thymifolia	Y	
Euphorbia trigonosperma		
Euphorbia vaccaria var. vaccaria		
Evolvulus alsinoides var. decumbens		
Exocarpos latifolius (Broad-leaved Cherry)		
Ficus aculeata var. indecora (Ranji)		
Fimbristylis caespitosa		
Fimbristylis cymosa		
Fimbristylis nuda		
Fimbristylis oxystachya		
Fimbristylis punctata		
Fimbristylis rara		
Flaveria trinervia (Speedy Weed)	Y	
Flueggea virosa		
Flueggea virosa subsp. melanthesoides (Dogwood Guwal)		
Fuirena incrassata		P3
Galactia tenuiflora		
Gamochaeta pensylvanica	Y	
Gardenia pyriformis (Malara)		
Gardenia pyriformis subsp. keartlandii		
Glinus oppositifolius		
Glossostigma drummondii (Mudmat)		
Glycine pindanica		P3
Glycine tomentella (Woolly Glycine)		
Gmelina philippensis		
Gnaphalium polycaulon (Indian Cudweed)	Y	
Gomphrena canescens (Batchelors Buttons)		
Gomphrena canescens subsp. canescens		
Gomphrena celosioides (Gomphrena Weed)	Y	
Gomphrena flaccida (Gomphrena Weed)		
Gomphrena tenella		
Goodenia armitiana		
Goodenia lamprosperma		
Goodenia scaevolina (Ngurubi)		
Goodenia sepalosa var. sepalosa		
Goodenia sp. Dampier Peninsula (B.J. Carter 675)		
Gossypium australe (Native Cotton)		
Gossypium hirsutum (Upland Cotton)	Y	
Gossypium populifolium		
Gossypium rotundifolium		
Gracilaria salicornia		
Grevillea pyramidalis subsp. pyramidalis		
Grevillea refracta subsp. refracta		

Species Name	Naturalised	Conservation Code
Grevillea wickhamii subsp. aprica		
Grewia breviflora		
Grewia retusifolia (Dog's Balls)		
Guilleminea densa	Y	
Gymnanthera oblonga		
Gyrocarpus americanus subsp. pachyphyllus		
Gyrostemon tepperi		
Hakea arborescens (Common Hakea)		
Hakea macrocarpa (Dyaridany Jaradinty)		
Halimeda macroloba		
Halodule pinifolia		
Halodule uninervis		
Halophila minor		
Halophila ovalis (Sea Wrack)		
Halophila spinulosa		
Heliotropium foliatum		
Heliotropium leptaleum		
Heliotropium ovalifolium		
Herissantia crispa		
Heteropogon contortus (Bunch Speargrass)		
Hibiscus apodus		
Hibiscus austrinus		
Hibiscus austrinus var. austrinus		
Hibiscus leptocladus		
Hybanthus aurantiacus		
Hydrilla verticillata (Water Thyme)		
Hypnea pannosa		
Hypoestes floribunda var. varia		
Ichnocarpus frutescens		
Indigofera colutea (Sticky Indigo)		
Indigofera hirsuta (Hairy Indigo)		
Indigofera linifolia		
Indigofera linnaei (Birdsville Indigo)		
Indigofera monophylla		
Indigofera oblongifolia	Y	
Ipomoea batatas	Y	
Ipomoea coptica		
Ipomoea muelleri (Poison Morning Glory Yumbu)		
Ipomoea pes-caprae		
Ipomoea pes-caprae subsp. brasiliensis		
Ipomoea pes-caprae subsp. pes-caprae		
Ipomoea pes-tigridis	Y	
Ipomoea polymorpha		

Species Name	Naturalised	Conservation Code
Ipomoea triloba	Y	
Isotropis atropurpurea (Poison Sage)		
Jacksonia aculeata		
Jacquemontia paniculata		
Jacquemontia sp. Broome (A.A. Mitchell 3028)		P1
Jasminum didymum subsp. lineare (Desert Jasmine)		
Jatropha gossypiifolia (Bellyache Bush)	Y	
Lemna aequinoctialis		
Leptosema anomalum		
Leucaena leucocephala subsp. leucocephala	Y	
Lindernia chrysoplectra		
Lolium perenne (Perennial Ryegrass)	Y	
Lumnitzera racemosa (White-flowered Black Mangrove)		
Lysiana spathulata		
Lysiana spathulata subsp. spathulata		
Macroptilium atropurpureum (Purple Bean)	Y	
Mallotus nesophilus		
Marsdenia angustata		
Marsdenia viridiflora		
Marsdenia viridiflora subsp. tropica		
Marsilea sp.		
Medicago polymorpha (Burr Medic)	Y	
Melaleuca alsophila		
Melaleuca dealbata (Karnbor)		
Melhania oblongifolia		
Melicope elleryana		
Mesosphaerum suaveolens	Y	
Microstachys chamaelea		
Mitrasacme exserta		
Mitrasacme hispida		
Mitrasacme lutea		
Momordica balsamina (Balsam Apple)	Y	
Monochoria cyanea		
Muellerolimon salicorniaceum		
Murdannia graminea (Baniyu)		
Myoporum montanum (Native Myrtle)		
Nauclea orientalis (Leichardt Pine)		
Neobassia astrocarpa		
Newcastelia cladotricha (Lambs Tail)		
Nicotiana heterantha		P3
Nymphoides beaglensis		P3
Nymphoides indica (Marshwort)		
Ocimum americanum	Y	

Species Name	Naturalised	Conservation Code
Ocimum basilicum (Basil)	Y	
Oldenlandia corymbosa var. corymbosa	Y	
Oldenlandia mitrasacmoides subsp. mitrasacmoides		
Operculina aequisepala		
Opilia amentacea		
Oxalis corniculata (Yellow Wood Sorrel)	Y	
Pachyrhizus erosus		
Panicum decompositum (Native Millet Kaltu-kaltu)		
Paspalidium rarum (Rare Paspalidium)		
Passiflora foetida (Stinking Passion Flower)	Y	
Pavetta kimberleyana		
Peperomia pellucida	Y	
Perotis rara (Comet Grass)		
Persicaria hydropiper		
Persoonia falcata (Wild Pear Gandala)		
Phyla nodiflora var. nodiflora	Y	
Phyllanthus amarus	Y	
Phyllanthus eremicus (Desert Phyllanthus)		
Phyllanthus tenellus	Y	
Pilea microphylla		
Pistia stratiotes (Water Lettuce)	Y	
Planchonia careya (Mangaloo Yundu)		
Pluchea ferdinandi-muelleri		
Pluchea longiseta		
Pluchea rubelliflora		
Pluchea tetranthera		
Polycarpaea corymbosa		
Polycarpaea longiflora		
Polygala tepperi		
Polymeria ambigua (Morning Glory)		
Polymeria sp. Broome (K.F. Kenneally 9759)		P3
Portulaca filifolia		
Portulaca napiformis		
Portulaca oleracea (Purslane Wakati)		
Portulaca pilosa (Djanggara)	Y	
Praxelis clematidea		
Premna acuminata (Ngalinginkal)		
Psydrax attenuata var. tenella		
Pterocaulon intermedium		
Pterocaulon paradoxum		
Pterocaulon serrulatum var. velutinum		
Ptilotus calostachyus (Weeping Mulla Mulla)		
Ptilotus lanatus		

Species Name	Naturalised	Conservation Code
Ptilotus nobilis subsp. nobilis (Yellow Tails)		
Ptilotus polystachyus (Prince of Wales Feather)		
Raphanus raphanistrum (Wild Radish)	Y	
Rhizophora stylosa (Spotted-leaved Red Mangrove)		
Rhynchosia australis (Rhynchosia)		
Rhynchosia minima (Rhynchosia)		
Ruellia tuberosa	Y	
Salsola australis		
Santalum album		
Santalum lanceolatum (Northern Sandalwood Yarnguli)		
Scaevola parvifolia subsp. parvifolia		
Schizachyrium fragile (Senale Redgrass)		
Sebdenia flabellata		
Senna costata		
Senna glutinosa subsp. glutinosa		
Senna goniodes		
Senna notabilis		
Senna occidentalis	Y	
Senna oligoclada		
Senna planitiicola		
Seringia exastia (Fringed fire-bush)		T
Seringia katatona (Red dune fire-bush)		P3
Seringia nephrosperma (Free carpel fire-bush)		
Sersalisia sericea (Nangi)		
Sesbania cannabina (Sesbania Pea)		
Sesbania erubescens		
Sesbania simpliciuscula var. fitzroyensis		
Sesuvium portulacastrum		
Setaria dielsii (Diels' Pigeon Grass)		
Setaria verticillata (Whorled Pigeon Grass)	Y	
Sida cordifolia	Y	
Sida hackettiana		
Sida rohlenae subsp. occidentalis		
Sida sp. Pindan (B.G. Thomson 3398)		
Sida spinosa (Spiny Sida)		
Solanum beaugleholei		
Solanum cunninghamii		
Solanum dioicum (Gilu)		
Solanum diversiflorum		
Solanum esuriale (Quena)		
Solanum nodiflorum (Glossy Nightshade)	Y	
Solanum torvum		
Solieria robusta		

Species Name	Naturalised	Conservation Code
Soliva sessilis (Jo-jo Onehunga Weed)		Y
Sonchus oleraceus (Common Sowthistle)	Y	
Sorghum interjectum		
Sorghum intrans (Darwin Canegrass)		
Sorghum plumosum (Plume Canegrass)		
Sorghum stipoideum (Annual Sorghum)		
Sorghum timorense		
Spermacoce occidentalis		
Spermacoce sp.		
Spinifex longifolius (Beach Spinifex)		
Sporobolus virginicus (Marine Couch)		
Stemodia lathraia		
Streptoglossa bubakii		
Streptoglossa macrocephala		
Streptoglossa odora		
Stylidium pindanicum (Pindan Triggerplant)		P3
Stylosanthes hamata (Verano Stylo)	Y	
Suaeda arbusculoides		
Surreya diandra		
Tamarindus indica (Tamarind)	Y	
Tecticornia halocnemoides (Shrubby Samphire)		
Tecticornia halocnemoides subsp. tenuis		
Tecticornia indica subsp. indica		
Tecticornia indica subsp. julacea		
Tecticornia indica subsp. leiostachya (Samphire)		
Tephrosia crocea (Baynjood)		
Tephrosia leptoclada		
Tephrosia pedleyi		P3
Tephrosia remotiflora		
Tephrosia rosea (Flinders River Poison Bungoo'dah)		
Tephrosia rosea var. rosea		
Terminalia ferdinandiana (Mador)		
Terminalia hadleyana		
Terminalia kumpaja		P3
Terminalia latipes		
Terminalia petiolaris (Masroorl)		
Terminalia volucris (Rosewood)		
Tetragonia coronata		P3
Thespesia populneoides (Laba)		
Tinospora smilacina (Snakevine Oondala)		
Tolypiocladia calodictyon		
Trachymene oleracea subsp. oleracea		
Trianthema pilosum		

Species Name	Naturalised	Conservation Code
Trianthema portulacastrum (Giant Pigweed)	Y	
Trianthema triquetrum		
Trianthema turgidifolium		
Tribulopis angustifolia		
Tribulus occidentalis (Perennial Caltrop)		
Tribulus terrestris (Caltrop)	Y	
Trichodesma zeylanicum (Camel Bush Kumbalin)		
Tridax procumbens (Tridax Tridax Daisy)		Y
Trifolium cernuum (Drooping Flower Clover)	Y	
Triodia caelestialis		
Triodia epactia		
Triodia schinzii		
Tylophora cinerascens		
Uraria lagopodioides		
Urochloa mosambicensis (Sabi Grass)	Y	
Urochloa mutica	Y	
Urochloa piligera		
Urochloa praetervisa		
Urochloa pubigera		
Urochloa subquadripara		
Velleia panduriformis (Cabbage Poison)		
Ventilago viminalis (Supplejack Barndaragu)		
Verbesina encelioides	Y	
Verbesina encelioides var. encelioides (Crownbeard Wild Sunflower		Goldweed
Waltheria indica		
Whiteochloa cymbiformis		
Wrightia saligna		
Xerochloa barbata (Rice Grass)		
Xerochloa imberbis (Rice Grass)		
Xerochloa laniflora (Rice Grass)		
Yakirra australiensis		
Zornia chaetophora		
Zornia muelleriana subsp. congesta		
Zornia prostrata var. prostrata		
Acacia acradenia		
Acacia drepanocarpa subsp. drepanocarpa		
Acacia laccata		
Acacia neurocarpa		
Acacia sericophylla		
Acacia stellaticeps		
Ammannia multiflora		
Bergia trimera		
Cajanus cinereus		

Species Name	Naturalised	Conservation Code
Calytrix carinata		
Capparis umbonata (Wild Orange Nanggalu)		
Corymbia grandifolia subsp. lamprocardia		
Corymbia pachycarpa		
Cynanchum carnosum		
Cynanchum viminale subsp. australe		
Diplachne fusca (Brown Beetle Grass)		
Eucalyptus brevifolia (Snappy Gum)		
Eucalyptus camaldulensis subsp. obtusa (Blunt-budded River Red Gum)		
Eucalyptus jensenii (Wandi Ironbark)		
Ficus brachypoda		
Gomphrena brachystylis subsp. pindanensis		
Gomphrena cunninghamii		
Grevillea pyramidalis subsp. leucadendron		
Halgania solanacea var. solanacea		
Hibiscus meraukensis (Merauke Hibiscus)		
Ipomoea costata (Rock Morning Glory Kanti)		
Lophostemon grandiflorus subsp. grandiflorus		P3
Pandanus spiralis var. flammeus (Edgar Range Pandanus)		T
Pimelea ammocharis		
Pleuridium ecklonii		
Polymeria distigma		P3
Prosopis glandulosa x velutina	Y	
Ptilotus arthrolasius		
Ptilotus astrolasius		
Schoenoplectiella humillima		P2
Senna venusta		
Setaria surgens (Pigeon Grass)		
Sphaeromorphaea littoralis		
Tephrosia lasiochlaena		
Tephrosia rosea var. clementii		
Terminalia canescens (Joolal)		
Triumfetta appendiculata		
Acacia adoxa var. adoxa		
Acacia ancistrocarpa (Fitzroy Wattle)		
Acacia orthocarpa (Needleleaf Wattle)		
Acacia sp. Edgar Range (S.D. Hopper 1763)		P1
Acacia sp. Urandangie (L. Pedley 2025)		
Alternanthera angustifolia		
Alternanthera nana (Hairy Joyweed)		
Amphipogon caricinus var. caricinus		
Corchorus fascicularis (Grubweed)		
Cyperus dactylotes		

Species Name	Naturalised	Conservation Code
Cyperus iria		
Dentella asperata		
Eragrostis elongata (Clustered Lovegrass)		
Eremophila latrobei subsp. latrobei		
Euphorbia biconvexa		
Ficus aculeata var. aculeata		
Gompholobium simplicifolium		
Goodenia azurea subsp. hesperia		
Grevillea eriostachya (Flame Grevillea Kaliny-kalinypa)		
Heliotropium glabellum		
Hibiscus sturtii var. campylochlamys		
Indigofera boviperda		
Marsilea hirsuta (Nardoo)		
Peplidium muelleri		
Ptilotus kenneallyanus		
Ptilotus nobilis (Tall Mulla Mulla)		
Scaevola parvifolia (Camel Weed)		
Stemodia lythrifolia (Bunu Bunu)		
Acacia adoxa		
Acacia anaticeps		
Acacia hilliana		
Acacia jensenii		
Acacia retivenea subsp. clandestina		
Aristida holathera var. holathera		
Blumea saxatilis		
Brunonia australis var. A Kimberley Flora (K.F. Kenneally 5452)		
Byblis liniflora (Northern Byblis)		
Cheilanthes brownii		
Cheilanthes sieberi subsp. sieberi		
Cleome uncifera		
Cymbopogon procerus (Lemon Grass)		
Dampiera candicans		
Dampiera cinerea		
Dasymalla chorisepala		P3
Dicrastylis cordifolia		
Dodonaea coriacea		
Dodonaea lanceolata var. lanceolata		
Drosera derbyensis		
Eucalyptus odontocarpa (Sturt Creek Mallee)		
Gonocarpus eremophilus		
Grevillea wickhamii subsp. macrodonta		
Hakea chordophylla		
Lindsaea ensifolia subsp. ensifolia		

Species Name	Naturalised	Conservation Code
Malvastrum americanum (Spiked Malvastrum)	Y	
Melaleuca lasiandra		
Mirbelia viminalis		
Newcastelia spodiotricha		
Senna symonii		
Setaria apiculata (Pigeon Grass)		
Sida sp. Articulation below (A.A. Mitchell PRP 1605)		
Spermacoce hillii		
Stylidium desertorum		
Stylidium multiscapum		
Stylobasium spathulatum (Pebble Bush)		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)		
Triumfetta deserticola		
Triumfetta plumigera		

APPENDIX C VERTEBRATE FAUNA RECORDS (NATUREMAP)

NatureMap Species Report

Created By Rob Sellers on 18/01/2019

Kingdom	Animalia
Current Names Only	Yes
Core Datasets Only	Yes
Species Group	All Animals
Method	'By Circle'
Centre	122° 35' 53" E,18° 02' 27" S
Buffer	40km
Group By	Species Group

Species Group	Species	Records
Amphibian	9	105
Bird	356	47155
Fish	202	464
Invertebrate	24	77
Mammal	43	3264
Reptile	83	549
TOTAL	**717**	**51614**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Amphibian					
1.	25371	*Cyclorana australis (Giant Frog)*			
2.	25374	*Cyclorana longipes (Long-footed Frog)*			
3.	25380	*Litoria caerulea (Green Tree Frog)*			
4.	25391	*Litoria rothii (Northern Laughing Tree Frog)*			
5.	25392	*Litoria rubella (Little Red Tree Frog)*			
6.	25430	*Notaden nichollsi (Desert Spadefoot)*			
7.	42305	*Platyplectrum ornatum (Ornate Burrowing Frog)*			
8.	25436	*Uperoleia aspera (Derby Toadlet)*			
9.	25446	*Uperoleia talpa (Ratcheting Toadlet)*			
Bird					
10.	24559	*Acanthagenys rufogularis (Spiny-cheeked Honeyeater)*			
11.	24260	*Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)*			
12.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
13.	24281	*Accipiter cirrocephalus subsp. cirrocephalus (Collared Sparrowhawk)*			
14.	25536	*Accipiter fasciatus (Brown Goshawk)*			
15.	24283	*Accipiter fasciatus subsp. didimus (Brown Goshawk)*			
16.	24282	*Accipiter fasciatus subsp. fasciatus (Brown Goshawk)*			
17.	25537	*Accipiter novaehollandiae (Grey Goshawk)*			
18.	25755	*Acrocephalus australis (Australian Reed Warbler)*			
19.	41323	*Actitis hypoleucos (Common Sandpiper)*		IA	
20.	25544	*Aegotheles cristatus (Australian Owlet-nightjar)*			
21.	24310	*Anas castanea (Chestnut Teal)*			
22.	24312	*Anas gracilis (Grey Teal)*			
23.	24314	*Anas querquedula (Garganey)*		IA	
24.	24315	*Anas rhynchotis (Australasian Shoveler)*			
25.	24316	*Anas superciliosa (Pacific Black Duck)*			
26.	47414	*Anhinga novaehollandiae (Australasian Darter)*			
27.	24505	*Anous stolidus subsp. pileatus (Common Noddy)*		IA	
28.	24317	*Anseranas semipalmata (Magpie Goose, Pied Goose)*			
29.	25670	*Anthus australis (Australian Pipit)*			
30.	24600	*Anthus cervinus (Red-throated Pipit)*			
31.	24719	*Aprosmictus erythropterus (Red-winged Parrot)*			
32.	25554	*Apus pacificus (Fork-tailed Swift, Pacific Swift)*		IA	
33.	24334	*Apus pacificus subsp. pacificus (Fork-tailed Swift, Pacific Swift)*		IA	
34.	24285	*Aquila audax (Wedge-tailed Eagle)*			
35.	24337	*Ardea garzetta subsp. nigripes (Little Egret)*			
36.	25558	*Ardea ibis (Cattle Egret)*			
37.	25559	*Ardea intermedia (Intermediate Egret)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
38.	24339	*Ardea intermedia subsp. intermedia (Intermediate Egret)*			
39.	41324	*Ardea modesta (great egret, white egret)*			
40.	24340	*Ardea novaehollandiae (White-faced Heron)*			
41.	24341	*Ardea pacifica (White-necked Heron)*			
42.	24343	*Ardea sacra subsp. sacra (Eastern Reef Egret, Eastern Reef Heron)*			
43.		*Ardea sp.*			Y
44.	24344	*Ardea sumatrana (Great-billed Heron)*			
45.	48573	*Ardenna pacifica (Wedge-tailed Shearwater)*		IA	
46.	24610	*Ardeotis australis (Australian Bustard)*			
47.	25736	*Arenaria interpres (Ruddy Turnstone)*		IA	
48.	24778	*Arenaria interpres subsp. interpres (Ruddy Turnstone)*		IA	
49.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
50.	25567	*Artamus leucorynchus (White-breasted Woodswallow)*			
51.	24354	*Artamus leucorynchus subsp. leucopygialis (White-breasted Woodswallow)*			
52.	24355	*Artamus minor (Little Woodswallow)*			
53.	24356	*Artamus personatus (Masked Woodswallow)*			
54.	24357	*Artamus superciliosus (White-browed Woodswallow)*			
55.	24318	*Aythya australis (Hardhead)*			
56.	24359	*Burhinus grallarius (Bush Stone-curlew)*			
57.	47897	*Butorides striata (Striated Heron, Mangrove Heron)*			
58.	25713	*Cacatua galerita (Sulphur-crested Cockatoo)*			
59.	24726	*Cacatua roseicapilla subsp. roseicapilla (Galah)*			
60.	25716	*Cacatua sanguinea (Little Corella)*			
61.	24728	*Cacatua sanguinea subsp. sanguinea (Little Corella)*			
62.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
63.	25599	*Cacomantis variolosus (Brush Cuckoo)*			
64.	24779	*Calidris acuminata (Sharp-tailed Sandpiper)*		IA	
65.	24780	*Calidris alba (Sanderling)*		IA	
66.	25738	*Calidris canutus (Red Knot, knot)*		IA	
67.	24783	*Calidris canutus subsp. rogersi (Red Knot (north-eastern Siberia))*		T	
68.	24784	*Calidris ferruginea (Curlew Sandpiper)*		T	
69.	24786	*Calidris melanotos (Pectoral Sandpiper)*		IA	
70.	24787	*Calidris minuta (Little Stint)*			
71.	24788	*Calidris ruficollis (Red-necked Stint)*		IA	
72.	24789	*Calidris subminuta (Long-toed Stint)*		IA	
73.	24790	*Calidris tenuirostris (Great Knot)*		T	
74.	24686	*Calonectris leucomelas (Streaked Shearwater)*		IA	
75.	25717	*Calyptorhynchus banksii (Red-tailed Black-Cockatoo)*			
76.	47902	*Cecropis daurica (Red-rumped Swallow)*		IA	
77.	25600	*Centropus phasianinus (Pheasant Coucal)*			
78.	30884	*Centropus phasianinus subsp. phasianinus (Pheasant Coucal)*			
79.	24564	*Certhionyx variegatus (Pied Honeyeater)*			
80.	25574	*Charadrius dubius (Little Ringed Plover)*		IA	
81.	25575	*Charadrius leschenaultii (Greater Sand Plover)*		IA	
82.	24372	*Charadrius leschenaultii subsp. leschenaultii (Greater Sand Plover (Mongolian))*		T	
83.	25576	*Charadrius mongolus (Lesser Sand Plover)*		T	
84.	24375	*Charadrius mongolus subsp. mongolus (Lesser Sand Plover)*		T	
85.	24377	*Charadrius ruficapillus (Red-capped Plover)*			
86.	24378	*Charadrius veredus (Oriental Plover)*		IA	
87.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
88.	47909	*Cheramoeca leucosterna (White-backed Swallow)*			
89.	41332	*Chlidonias leucopterus (White-winged Black Tern, white-winged tern)*		IA	
90.		*Chroicocephalus novaehollandiae*			
91.	24431	*Chrysococcyx basalis (Horsfield's Bronze Cuckoo)*			
92.	24433	*Chrysococcyx minutillus subsp. minutillus (Little Bronze Cuckoo)*			
93.	24434	*Chrysococcyx osculans (Black-eared Cuckoo)*			
94.	24288	*Circus approximans (Swamp Harrier)*			
95.	24289	*Circus assimilis (Spotted Harrier)*			
96.	24565	*Cissomela pectoralis (Banded Honeyeater)*			
97.	25756	*Cisticola exilis (Golden-headed Cisticola)*			
98.	24835	*Cisticola exilis subsp. exilis (Golden-headed Cisticola)*			
99.	24774	*Cladorhynchus leucocephalus (Banded Stilt)*			
100.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
101.	24399	*Columba livia (Domestic Pigeon)*	Y		
102.	24566	*Conopophila rufogularis (Rufous-throated Honeyeater)*			
103.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
104.	24362	*Coracina novaehollandiae subsp. novaehollandiae (Black-faced Cuckoo-shrike)*			
105.	25569	*Coracina papuensis (White-bellied Cuckoo-shrike, Little Cuckoo-shrike)*			
106.	24416	*Corvus bennetti (Little Crow)*			
107.	25593	*Corvus orru (Torresian Crow)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
108.	24418	*Corvus orru subsp. cecilae (Western Crow)*			
109.	24671	*Coturnix pectoralis (Stubble Quail)*			
110.	25701	*Coturnix ypsilophora (Brown Quail)*			
111.	24672	*Coturnix ypsilophora subsp. cervina (Brown Quail)*			
112.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
113.	25595	*Cracticus tibicen (Australian Magpie)*			
114.	25596	*Cracticus torquatus (Grey Butcherbird)*			
115.	47919	*Cuculus optatus (Oriental Cuckoo)*		IA	
116.	47921	*Cyanoptila cyanomelana (Blue and White Flycatcher)*			Y
117.	24322	*Cygnus atratus (Black Swan)*			
118.	25547	*Dacelo leachii (Blue-winged Kookaburra)*			
119.	24304	*Dacelo leachii subsp. leachii (Blue-winged Kookaburra)*			
120.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
121.	24605	*Daphoenositta chrysoptera subsp. leucoptera (Varied Sittella, White-winged Sitella)*			
122.	24324	*Dendrocygna arcuata (Wandering Whistling Duck, Chestnut Whistling Duck)*			
123.	24325	*Dendrocygna eytoni (Plumed Whistling Duck)*			
124.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
125.	24470	*Dromaius novaehollandiae (Emu)*			
126.	25584	*Ducula bicolor (Pied Imperial Pigeon)*			
127.		*Egretta garzetta*			
128.		*Egretta novaehollandiae*			
129.		*Egretta picata*			
130.		*Elanus axillaris*			
131.	24290	*Elanus caeruleus subsp. axillaris (Australian Black-shouldered Kite)*			
132.	24291	*Elanus scriptus (Letter-winged Kite)*		P4	
133.	47937	*Elseyornis melanops (Black-fronted Dotterel)*			
134.	24631	*Emblema pictum (Painted Finch)*			
135.		*Eolophus roseicapillus*			
136.	25578	*Ephippiorhynchus asiaticus (Black-necked Stork)*			
137.	24568	*Epthianura aurifrons (Orange Chat)*			
138.	24569	*Epthianura crocea (Yellow Chat)*			
139.	24570	*Epthianura tricolor (Crimson Chat)*			
140.	24379	*Erythrogonys cinctus (Red-kneed Dotterel)*			
141.	24632	*Erythrura gouldiae (Gouldian Finch)*		P4	
142.	47938	*Esacus magnirostris (Beach Stone-curlew, Beach Thick-knee)*			
143.	24368	*Eurostopodus argus (Spotted Nightjar)*			
144.	25591	*Eurystomus orientalis (Dollarbird)*			
145.	24415	*Eurystomus orientalis subsp. pacificus (Dollarbird)*			
146.	25621	*Falco berigora (Brown Falcon)*			
147.	24471	*Falco berigora subsp. berigora (Brown Falcon)*			
148.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
149.	24472	*Falco cenchroides subsp. cenchroides (Australian Kestrel, Nankeen Kestrel)*			
150.	24473	*Falco hypoleucos (Grey Falcon)*		T	
151.	25623	*Falco longipennis (Australian Hobby)*			
152.	24474	*Falco longipennis subsp. longipennis (Australian Hobby)*			
153.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
154.	24476	*Falco subniger (Black Falcon)*			
155.	24478	*Fregata ariel (Lesser Frigatebird)*		IA	
156.	24479	*Fregata minor (great frigatebird, Greater Frigatebird)*		IA	
157.	25727	*Fulica atra (Eurasian Coot)*			
158.	24792	*Gallinago megala (Swinhoe's Snipe)*		IA	
159.	24793	*Gallinago stenura (Pin-tailed Snipe)*		IA	
160.	25730	*Gallirallus philippensis (Buff-banded Rail)*			
161.	24765	*Gallirallus philippensis subsp. mellori (Buff-banded Rail)*			
162.	42314	*Gavicalis virescens (Singing Honeyeater)*			
163.	47954	*Gelochelidon nilotica (Gull-billed Tern)*		IA	
164.	24401	*Geopelia cuneata (Diamond Dove)*			
165.	24402	*Geopelia humeralis (Bar-shouldered Dove)*			
166.	25585	*Geopelia striata (Zebra Dove)*			
167.	24403	*Geopelia striata subsp. placida (Peaceful Dove)*			
168.	24404	*Geophaps plumifera (Spinifex Pigeon)*			
169.	25530	*Gerygone fusca (Western Gerygone)*			
170.	25531	*Gerygone levigaster (Mangrove Gerygone)*			
171.	24273	*Gerygone levigaster subsp. levigaster (Mangrove Gerygone)*			
172.	25533	*Gerygone olivacea (White-throated Gerygone)*			
173.	24276	*Gerygone tenebrosa (Dusky Gerygone)*			
174.	24481	*Glareola maldivarum (Oriental Pratincole)*		IA	
175.	24443	*Grallina cyanoleuca (Magpie-lark)*			
176.	24484	*Grus rubicunda (Brolga)*			
177.	25627	*Haematopus fuliginosus (Sooty Oystercatcher)*			

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178.	24487	*Haematopus longirostris (Pied Oystercatcher)*			
179.	24293	*Haliaeetus leucogaster (White-bellied Sea-Eagle)*			
180.	25541	*Haliastur indus (Brahminy Kite)*			
181.	24294	*Haliastur indus subsp. girrenera (Brahminy Kite)*			
182.	24295	*Haliastur sphenurus (Whistling Kite)*			
183.	24296	*Hamirostra isura (Square-tailed Kite)*			
184.	24297	*Hamirostra melanosternon (Black-breasted Buzzard)*			
185.	24633	*Heteromunia pectoralis (Pictorella Mannikin)*			
186.	47965	*Hieraaetus morphnoides (Little Eagle)*			
187.	25734	*Himantopus himantopus (Black-winged Stilt)*			
188.	24775	*Himantopus himantopus subsp. leucocephalus (Black-winged Stilt)*			
189.	25555	*Hirundapus caudacutus (White-throated Needletail)*		IA	
190.	24491	*Hirundo neoxena (Welcome Swallow)*			
191.	25630	*Hirundo rustica (Barn Swallow)*		IA	
192.	48587	*Hydroprogne caspia (Caspian Tern)*		IA	
193.	47973	*Irediparra gallinacea (Comb-crested Jacana)*			
194.	25562	*Ixobrychus flavicollis (Black Bittern)*			
195.	24367	*Lalage tricolor (White-winged Triller)*			
196.	24511	*Larus novaehollandiae subsp. novaehollandiae (Silver Gull)*			
197.	25661	*Lichmera indistincta (Brown Honeyeater)*			
198.	24582	*Lichmera indistincta subsp. indistincta (Brown Honeyeater)*			
199.	25739	*Limicola falcinellus (Broad-billed Sandpiper)*		IA	
200.	24794	*Limicola falcinellus subsp. sibiricus (Broad-billed Sandpiper)*		IA	
201.	24795	*Limnodromus semipalmatus (Asian Dowitcher)*		IA	
202.	30932	*Limosa lapponica (Bar-tailed Godwit)*		IA	
203.	24796	*Limosa lapponica subsp. menzbieri (Bar-tailed Godwit (northern Siberian))*		T	
204.	25741	*Limosa limosa (Black-tailed Godwit)*		IA	
205.	24797	*Limosa limosa subsp. melanuroides (Black-tailed Godwit)*		IA	
206.	25683	*Lonchura castaneothorax (Chestnut-breasted Mannikin)*			
207.		*Lophoictinia isura*			
208.	24326	*Malacorhynchus membranaceus (Pink-eared Duck)*			
209.	25651	*Malurus lamberti (Variegated Fairy-wren)*			
210.	24544	*Malurus lamberti subsp. assimilis (Variegated Fairy-wren)*			
211.	25653	*Malurus melanocephalus (Red-backed Fairy-wren)*			
212.	24550	*Malurus melanocephalus subsp. cruentatus (Red-backed Fairy-wren)*			
213.	24583	*Manorina flavigula (Yellow-throated Miner)*			
214.	25759	*Megalurus timoriensis (Tawny Grassbird)*			
215.	47997	*Melanodryas cucullata (Hooded Robin)*			
216.	24585	*Melithreptus albogularis (White-throated Honeyeater)*			
217.	25665	*Melithreptus gularis (Black-chinned Honeyeater)*			
218.	24736	*Melopsittacus undulatus (Budgerigar)*			
219.	24598	*Merops ornatus (Rainbow Bee-eater)*			
220.		*Microcarbo melanoleucos*			
221.	25693	*Microeca fascinans (Jacky Winter)*			
222.	25694	*Microeca flavigaster (Lemon-breasted Flycatcher)*			
223.	24657	*Microeca flavigaster subsp. tormenti (Kimberley Flycatcher)*			
224.	25542	*Milvus migrans (Black Kite)*			
225.	24298	*Milvus migrans subsp. affinis (Black Kite)*			
226.	25545	*Mirafra javanica (Horsfield's Bushlark, Singing Bushlark)*			
227.	24302	*Mirafra javanica subsp. horsfieldii (Horsfield's Bushlark, Singing Bushlark)*			
228.	30877	*Motacilla cinerea (Grey Wagtail)*		IA	
229.	25672	*Motacilla flava (Yellow Wagtail)*		IA	
230.	25610	*Myiagra inquieta (Restless Flycatcher)*			
231.	24448	*Myiagra inquieta subsp. nana (Restless Flycatcher)*			
232.	25611	*Myiagra rubecula (Leaden Flycatcher)*			
233.	25612	*Myiagra ruficollis (Broad-billed Flycatcher)*			
234.	24450	*Myiagra ruficollis subsp. mimikae (Broad-billed Flycatcher)*			
235.	25666	*Myzomela erythrocephala (Red-headed Honeyeater)*			
236.	24590	*Myzomela erythrocephala subsp. erythrocephala (Red-headed Honeyeater)*			
237.	25684	*Neochmia phaeton (Crimson Finch)*			
238.	25685	*Neochmia ruficauda (Star Finch)*			
239.	24327	*Nettapus pulchellus (Green Pygmy-goose)*			
240.	25747	*Ninox connivens (Barking Owl)*			
241.	24819	*Ninox connivens subsp. connivens (Barking owl (southwest subpop.))*		P3	
242.	24798	*Numenius madagascariensis (Eastern Curlew)*		T	
243.		*Numenius minatus*			Y
244.	24799	*Numenius minutus (Little Curlew, Little Whimbrel)*		IA	
245.	25742	*Numenius phaeopus (Whimbrel)*		IA	
246.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
247.	48026	*Nycticorax caledonicus subsp. australasiae (Rufous Night Heron)*			

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248.	24742	*Nymphicus hollandicus (Cockatiel)*			
249.	24497	*Oceanites oceanicus (Wilson's Storm-petrel)*		IA	
250.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
251.	24618	*Oreoica gutturalis (Crested Bellbird)*			
252.	34011	*Oreoica gutturalis subsp. gutturalis (Crested Bellbird (southern))*			
253.	24608	*Oriolus sagittatus (Olive-backed Oriole)*			
254.	24620	*Pachycephala lanioides (White-breasted Whistler)*			
255.	25678	*Pachycephala melanura (Mangrove Golden Whistler)*			
256.	24621	*Pachycephala melanura subsp. melanura (Mangrove Golden Whistler)*			
257.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
258.	24624	*Pachycephala rufiventris subsp. rufiventris (Rufous Whistler)*			
259.	48591	*Pandion cristatus (Osprey, Eastern Osprey)*		IA	
260.	24627	*Pardalotus rubricatus (Red-browed Pardalote)*			
261.	25682	*Pardalotus striatus (Striated Pardalote)*			
262.	24642	*Passer montanus (Eurasian Tree Sparrow)*	Y		
263.	24674	*Pavo cristatus (Common Peafowl, Indian Peafowl)*	Y		
264.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
265.	48060	*Petrochelidon ariel (Fairy Martin)*			
266.	48061	*Petrochelidon nigricans (Tree Martin)*			
267.	24659	*Petroica goodenovii (Red-capped Robin)*			
268.	25697	*Phalacrocorax carbo (Great Cormorant)*			
269.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
270.	25699	*Phalacrocorax varius (Pied Cormorant)*			
271.	24801	*Phalaropus lobatus (Red-necked Phalarope)*		IA	
272.	24409	*Phaps chalcoptera (Common Bronzewing)*			
273.	24411	*Phaps histrionica (Flock Bronzewing, Flock Pigeon)*			
274.	25668	*Philemon citreogularis (Little Friarbird)*			
275.	24592	*Philemon citreogularis subsp. citreogularis (Little Friarbird)*			
276.		*Philemon sp.*			Y
277.	24802	*Philomachus pugnax (Ruff, reeve)*		IA	
278.	24841	*Platalea flavipes (Yellow-billed Spoonbill)*			
279.	24842	*Platalea regia (Royal Spoonbill)*			
280.	24843	*Plegadis falcinellus (Glossy Ibis)*		IA	
281.	24382	*Pluvialis fulva (Pacific Golden Plover)*		IA	
282.	24383	*Pluvialis squatarola (Grey Plover)*		IA	
283.	25703	*Podargus strigoides (Tawny Frogmouth)*			
284.	24678	*Podargus strigoides subsp. phalaenoides (Tawny Frogmouth)*			
285.	25704	*Podiceps cristatus (Great Crested Grebe)*			
286.	24643	*Poephila acuticauda (Long-tailed Finch)*			
287.	24681	*Poliocephalus poliocephalus (Hoary-headed Grebe)*			
288.	24752	*Polytelis alexandrae (Princess Parrot)*		P4	
289.	25706	*Pomatostomus temporalis (Grey-crowned Babbler)*			
290.	24684	*Pomatostomus temporalis subsp. rubeculus (Grey-crowned Babbler)*			
291.	25731	*Porphyrio porphyrio (Purple Swamphen)*			
292.	24766	*Porphyrio porphyrio subsp. melanotus (Purple Swamphen)*			
293.	24769	*Porzana fluminea (Australian Spotted Crake)*			
294.	25732	*Porzana pusilla (Baillon's Crake)*			
295.		*Psitteuteles versicolor*			
296.	30946	*Ptilinopus regina subsp. ewingii (Rose-crowned Fruit-dove)*			
297.	25725	*Ptilonorhynchus nuchalis (Great Bowerbird)*			
298.	24758	*Ptilonorhynchus nuchalis subsp. nuchalis (Great Bowerbird)*			
299.	42322	*Ptilotula flavescens subsp. flavescens (Yellow-tinted Honeyeater)*			
300.	24715	*Puffinus huttoni (Hutton's Shearwater)*		T	
301.	42344	*Purnella albifrons (White-fronted Honeyeater)*			
302.	24772	*Rallina fasciata (Red-legged Crake)*			Y
303.		*Rallina fascinata*			Y
304.	24776	*Recurvirostra novaehollandiae (Red-necked Avocet)*			
305.	48096	*Rhipidura albiscapa (Grey Fantail)*			
306.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
307.	24457	*Rhipidura phasiana (Mangrove Grey Fantail)*			
308.	25616	*Rhipidura rufiventris (Northern Fantail)*			
309.	48237	*Rostratula australis (Australian Painted Snipe)*		T	
310.	25605	*Scythrops novaehollandiae (Channel-billed Cuckoo)*			
311.	30948	*Smicrornis brevirostris (Weebill)*			
312.	24521	*Sterna bengalensis (Lesser Crested Tern)*			
313.	24522	*Sterna bergii (Crested Tern)*			
314.	25640	*Sterna dougallii (Roseate Tern)*		IA	
315.	24524	*Sterna dougallii subsp. gracilis (Roseate Tern)*		IA	
316.	24525	*Sterna fuscata subsp. nubilosa (Sooty Tern)*			
317.	25642	*Sterna hirundo (Common Tern)*		IA	

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318.	24527	*Sterna hirundo subsp. longipennis (Common Tern)*		IA	
319.	25643	*Sterna hybrida (Whiskered Tern)*			
320.	24528	*Sterna hybrida subsp. javanica (Whiskered Tern)*			
321.	48593	*Sternula albifrons (Little Tern)*		IA	
322.	48594	*Sternula nereis (Fairy Tern)*			
323.	24329	*Stictonetta naevosa (Freckled Duck)*			
324.	24482	*Stiltia isabella (Australian Pratincole)*			
325.	42348	*Stomiopera unicolor subsp. unicolor (White-gaped Honeyeater)*			
326.	25752	*Sturnus vulgaris (Common Starling)*	Y		
327.	25754	*Sula leucogaster (Brown Booby)*		IA	
328.	24828	*Sula leucogaster subsp. plotus (Brown Booby)*		IA	
329.	25705	*Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
330.	24682	*Tachybaptus novaehollandiae subsp. novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
331.	48123	*Tachybaptus ruficollis (Little Grebe, Red-throated Little Grebe)*			
332.	25552	*Tadorna radjah (Radjah Shelduck)*			
333.	24331	*Tadorna tadornoides (Australian Shelduck, Mountain Duck)*			
334.	30872	*Taeniopygia bichenovii (Double-barred Finch)*			
335.	30873	*Taeniopygia bichenovii subsp. annulosa (Double-barred Finch)*			
336.	30870	*Taeniopygia guttata (Zebra Finch)*			
337.	30871	*Taeniopygia guttata subsp. castanotis (Zebra Finch)*			
338.		*Thalasseus bengalensis*			
339.	48597	*Thalasseus bergii (Crested Tern)*		IA	
340.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
341.	25548	*Todiramphus chloris (Collared Kingfisher)*			
342.	42351	*Todiramphus pyrrhopygius (Red-backed Kingfisher)*			
343.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
344.	24309	*Todiramphus sanctus subsp. sanctus (Sacred Kingfisher)*			
345.	48141	*Tribonyx ventralis (Black-tailed Native-hen)*			
346.	25723	*Trichoglossus haematodus (Rainbow Lorikeet)*			
347.	24754	*Trichoglossus haematodus subsp. rubritorquis (Red-collared Lorikeet)*			
348.	24803	*Tringa brevipes (Grey-tailed Tattler)*		P4	
349.	24806	*Tringa glareola (Wood Sandpiper)*		IA	
350.	24808	*Tringa nebularia (Common Greenshank, greenshank)*		IA	
351.	24809	*Tringa stagnatilis (Marsh Sandpiper, little greenshank)*		IA	
352.	24810	*Tringa totanus (Common Redshank, redshank)*		IA	
353.	34149	*Turnix castanota (Chestnut-backed Button-quail)*			
354.	48145	*Turnix maculosus (Red-backed Button-quail)*			
355.	24848	*Turnix pyrrhothorax (Red-chested Button-quail)*			
356.	24851	*Turnix velox (Little Button-quail)*			
357.	24852	*Tyto alba subsp. delicatula (Barn Owl)*			
358.	34015	*Tyto longimembris (Eastern Grass Owl)*			
359.	24855	*Tyto novaehollandiae subsp. novaehollandiae (Masked Owl (southwest))*		P3	
360.	25577	*Vanellus miles (Masked Lapwing)*			
361.	24384	*Vanellus miles subsp. miles (Masked Lapwing)*			
362.	24386	*Vanellus tricolor (Banded Lapwing)*			
363.	41351	*Xenus cinereus (Terek Sandpiper)*		IA	
364.	25765	*Zosterops lateralis (Grey-breasted White-eye, Silvereye)*			
365.	24857	*Zosterops luteus (Yellow White-eye)*			

Fish

366.		*? ?*			
367.		*Abudefduf bengalensis*			
368.		*Abudefduf sp.*			
369.		*Acanthopagrus latus*			
370.		*Acanthopagrus palmaris*			
371.		*Acanthurus dussumieri*			
372.		*Acanthurus grammoptilus*			
373.		*Acanthurus sp.*			
374.		*Acentrogobius viridipunctatus*			
375.		*Alectis indica*			
376.		*Ambassis vachellii*			
377.		*Amniataba caudavittata*			
378.		*Amphiprion rubrocinctus*			
379.		*Anguilla bicolor*			
380.		*Apogon cookii*			
381.		*Apogon pallidofasciatus*			
382.		*Apogon rueppellii*			
383.		*Arius sp.*			
384.		*Arothron hispidus*			
385.		*Arothron manilensis*			

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386.		*Arrhamphus sclerolepis*			
387.		*Atherinomorus endrachtensis*			
388.		*Bathygobius fuscus*			
389.		*Batrachomoeus dahli*			
390.		*Batrachomoeus occidentalis*			
391.		*Blennodesmus scapularis*			
392.		*Boleophthalmus caeruleomaculatus*			
393.		*Brachysomophis cirrocheilos*			
394.		*Caranx bucculentus*			
395.		*Caranx ignobilis*			
396.		*Caranx sexfasciatus*			
397.		*Caranx sp.*			
398.		*Centriscus scutatus*			
399.		*Centrogenys vaigiensis*			
400.		*Cephalopholis boenak*			
401.		*Chanos chanos*			
402.		*Chelmon marginalis*			
403.		*Chelmon muelleri*			
404.		*Chelonodon patoca*			
405.		*Chiloscyllium punctatum*			
406.		*Chirocentrus dorab*			
407.		*Choerodon cyanodus*			
408.		*Choerodon sp.*			
409.		*Chromileptes altivelis*			
410.		*Conger cinereus*			
411.		*Congrogadus subducens*			
412.		*Cymbacephalus nematophthalmus*			
413.		*Cynoglossus sp.*			
414.		*Cypselurus sp.*			
415.		*Dampierosa daruma*			
416.		*Drepane punctata*			
417.		*Drombus sp.*			
418.		*Drombus triangularis*			
419.		*Echeneis naucrates*			
420.		*Elates ransonnetii*			
421.		*Eleutheronema tetradactylum*			
422.		*Elops hawaiensis*			
423.		*Enneapterygius gracilis*			
424.		*Epinephelus areolatus*			
425.		*Epinephelus coioides*			
426.		*Epinephelus corallicola*			
427.		*Epinephelus fasciatus*			
428.		*Epinephelus homosinensis (invalid)*			
429.		*Epinephelus malabaricus*			
430.		*Epinephelus ongus?*			Y
431.		*Epinephelus quoyanus*			
432.		*Epinephelus sp.*			
433.		*Eviota queenslandica*			
434.		*Fistularia petimba*			
435.		*Gerres sp.*			
436.		*Gerres subfasciatus*			
437.		*Gymnothorax favagineus*			
438.		*Gymnothorax pseudothyrsoideus*			
439.		*Gymnothorax undulatus*			
440.		*Halichoeres nigrescens*			
441.		*Halophryne diemensis*			
442.		*Halophryne ocellatus*			
443.		*Hapalogenys kishinouyei*			
444.		*Hemiscyllium trispeculare*			
445.		*Herklotsichthys blackburni*			
446.		*Himantura uarnak*			
447.		*Hippichthys gazella (invalid)*			Y
448.		*Hippichthys penicillus*			
449.		*Hippocampus angustus*			
450.		*Hippocampus sp.*			
451.		*Ichthyscopus insperatus*			
452.		*Ichthyscopus spinosus*			
453.		*Istigobius diadema*			
454.		*Istigobius ornatus*			
455.		*Istigobius? sp.*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
456.		*Johnius amblycephalus*			
457.		*Labracinus lineatus*			
458.		*Lactoria cornuta*			
459.		*Leiognathus equulus*			
460.		*Leptobrama muelleri*			
461.		*Lethrinus laticaudis*			
462.		*Lethrinus sp.*			
463.		*Liza alata*			
464.		*Liza subviridis*			
465.		*Liza vaigiensis*			
466.		*Lophiocharon trisignatus*			
467.		*Lutjanus carponotatus*			
468.		*Lutjanus erythropterus*			
469.		*Lutjanus lemniscatus*			
470.		*Lutjanus russellii*			
471.		*Lutjanus sp.*			
472.		*Marilyna meraukensis*			
473.		*Megalops cyprinoides*			
474.		*Melanotaenia sp.*			
475.		*Micrognathus micronotopterus*			
476.		*Mugil cephalus*			
477.		*Mugil sp.*			
478.		*Naso sp.*			
479.		*Nematalosa come*			
480.		*Nematalosa sp.*			
481.		*Nematalosa vlaminghi*			
482.		*Neosilurus hyrtlii*			
483.		*Netuma proxima*			
484.		*Nibea microgenys*			Y
485.		*Notograptus guttatus*			
486.		*Omobranchus ferox*			
487.		*Omobranchus lineolatus*			
488.		*Omobranchus rotundiceps*			
489.		*Omobranchus verticalis*			Y
490.		*Onuxodon margaritiferae*			
491.		*Ophichthus rutidoderma*			
492.		*Ophieleotris aporos*			
493.		*Opistognathus darwiniensis*			
494.		*Opistognathus inornatus*			
495.		*Opistognathus reticulatus*			
496.		*Orectolobus wardi*			
497.		*Oxyeleotris sp.*			
498.		*Pantolabus radiatus*			
499.		*Parablennius tasmanianus*			
500.		*Paradiplogrammus enneactis*			
501.		*Paraplagusia sinerama*			
502.		*Paraplotosus albilabris*			
503.		*Paraplotosus butleri*			
504.		*Parascorpaena picta*			
505.		*Pardachirus pavoninus*			
506.		*Pentapodus emeryii*			
507.		*Pentapodus porosus*			
508.		*Periophthalmus argentilineatus*			
509.		*Periophthalmus koelreuteri*			
510.		*Pisodonophis cancrivorus*			
511.		*Platybelone argalus*			
512.		*Platycephalus sp.*			
513.		*Plotosus lineatus*			
514.		*Polydactylus macrochir*			Y
515.		*Polydactylus multiradiatus*			
516.		*Pomacentrus milleri*			
517.		*Pomadasys argenteus*			
518.		*Priolepis nuchifasciata*			
519.		*Prionobutis microps*			
520.		*Pristis sp.*			Y
521.	34037	*Pristis zijsron (Green Sawfish)*		T	
522.		*Psammoperca waigiensis*			
523.		*Pseudochromis wilsoni*			
524.		*Pseudogobius sp.*			
525.		*Pseudomugil cyanodorsalis*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
526.		*Pseudorhombus sp.*			
527.		*Pterois antennata*			
528.		*Pterois sp.*			
529.		*Remora remora*			
530.		*Rhina ancylostoma*			Y
531.		*Rhinobatos sp.*			
532.		*Rhizoprionodon acutus*			
533.		*Salarias sexfilum*			
534.		*Salarias sexfilum?*			Y
535.		*Sargocentron rubrum*			
536.		*Scaevius milii*			
537.		*Scartelaos histophorus*			
538.		*Scolecenchelys macroptera*			
539.		*Scolopsis sp.*			
540.		*Scomberoides commersonnianus*			
541.		*Scomberoides lysan*			
542.		*Scomberoides sp.*			Y
543.		*Scomberomorus semifasciatus*			
544.		*Scomberomorus sp.*			
545.		*Selaroides leptolepis*			
546.		*Sillago analis*			
547.		*Sillago burrus*			
548.		*Sillago sihama*			
549.		*Sillago sihama?*			Y
550.		*Sphyraena putnamae*			Y
551.		*Strongylura sp.*			Y
552.		*Strongylura strongylura*			
553.		*Synanceia horrida*			
554.		*Taeniura lymma*			
555.		*Terapon jarbua*			
556.		*Terapon puta*			
557.		*Terapon sp.*			
558.		*Terapon theraps*			
559.		*Thryssa aestuaria*			
560.		*Toxotes chatareus*			
561.		*Trachinocephalus myops*			
562.		*Trichiurus lepturus*			
563.		*Trichonotus setiger*			
564.		*Urogymnus asperrimus*			Y
565.		*Valamugil cunnesius*			
566.		*Valamugil sp.*			Y
567.		*Valenciennea alleni?*			Y
Invertebrate					
568.		*Amblyomma moreliae*			
569.		*Arthrorhabdus paucispinus*			
570.		*Austracantha minax*			
571.		*Backobourkia collina*			
572.		*Cosmophasis baehrae*			
573.		*Cyclosa camelodes*			
574.		*Eriophora biapicata*			
575.		*Heteropoda renibulbis*			
576.		*Hogna crispipes*			
577.		*Isometrus maculatus*			Y
578.		*Latrodectus geometricus*			
579.		*Latrodectus hasseltii*			
580.		*Missulena occatoria*			
581.		*Mopsus mormon*			
582.		*Nephila edulis*			
583.		*Oecobius marathaus*			
584.		*Physocyclus globosus*			
585.		*Rhipicephalus microplus*			
586.		*Scolopendra morsitans*			
587.		*Thereuopoda lesueurii*			
588.		*Urodacus granifrons*			Y
589.		*Urodacus hoplurus*			
590.		*Urodacus koolanensis*			
591.		*Urodacus yaschenkoi*			
Mammal					
592.	24161	*Bettongia lesueur subsp. graii (Boodie (inland), Burrowing Bettong (inland))*		X	

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
593.	24251	*Bos taurus (European Cattle)*	Y		
594.	24039	*Canis lupus subsp. dingo (Dingo)*	Y		
595.	24181	*Chaerephon jobensis (Greater Northern Freetail-bat, Northern Mastiff Bat)*			
596.	24186	*Chalinolobus gouldii (Gould's Wattled Bat)*			
597.	24188	*Chalinolobus nigrogriseus (Hoary Wattled Bat)*			
598.	24093	*Dasyurus hallucatus (Northern Quoll)*		T	
599.	24084	*Dugong dugon (Dugong)*		S	
600.	24041	*Felis catus (Cat)*	Y		
601.	24215	*Hydromys chrysogaster (Water-rat, Rakali)*		P4	
602.	24150	*Isoodon auratus subsp. auratus (Golden Bandicoot (mainland), Wintarru)*		T	
603.	24152	*Isoodon macrourus (Northern Brown Bandicoot)*			
604.	25479	*Lagorchestes conspicillatus (Spectacled Hare-wallaby)*		P4	
605.	24122	*Lagorchestes conspicillatus subsp. leichardti (Spectacled Hare-wallaby (mainland))*		P4	
606.	24129	*Macropus agilis (Agile Wallaby)*			
607.	24136	*Macropus rufus (Red Kangaroo, Marlu)*			
608.	24168	*Macrotis lagotis (Bilby, Dalgyte, Ninu)*		T	
609.	24051	*Megaptera novaeangliae (Humpback Whale)*		S	
610.	24183	*Mormopterus loriae (Little Northern Freetail-bat)*			
611.	24223	*Mus musculus (House Mouse)*	Y		
612.	24224	*Notomys alexis (Spinifex Hopping-mouse)*			
613.	24192	*Nyctophilus arnhemensis (Arnhem Land Long-eared Bat)*			
614.	24194	*Nyctophilus geoffroyi (Lesser Long-eared Bat)*			
615.	24138	*Onychogalea unguifera (Northern Nailtail Wallaby, Karrabul)*			
616.		*Orcaella brevirostris*			
617.	24060	*Orcaella heinsohni (Australian Snubfin Dolphin)*		P4	
618.	48069	*Phascogale tapoatafa subsp. kimberleyensis (Kimberley Brush-tailed Phascogale)*		T	
619.	24198	*Pipistrellus westralis (Northern Pipistrelle)*			
620.	24102	*Planigale maculata (Common Planigale)*			
621.	24234	*Pseudomys delicatulus (Delicate Mouse)*			
622.	24239	*Pseudomys nanus (Western Chestnut Mouse)*			
623.	24063	*Pseudorca crassidens (False Killer Whale)*			
624.	24172	*Pteropus alecto (Black Flying-fox)*			
625.	24173	*Pteropus scapulatus (Little Red Flying-fox)*			
626.	24245	*Rattus rattus (Black Rat)*	Y		
627.	24174	*Saccolaimus flaviventris (Yellow-bellied Sheath-tailed Bat)*			
628.	24200	*Scotorepens greyii (Little Broad-nosed Bat)*			
629.	24201	*Scotorepens sanborni (Northern Broad-nosed Bat)*			
630.	24207	*Tachyglossus aculeatus (Short-beaked Echidna)*			
631.	24157	*Trichosurus vulpecula subsp. arnhemensis (northern brushtail possum (Kimberley))*		T	
632.	30954	*Tursiops aduncus (Indo-Pacific Bottlenose Dolphin)*			
633.	24069	*Tursiops truncatus (Bottlenose Dolphin)*			
634.	24040	*Vulpes vulpes (Red Fox)*	Y		
Reptile					
635.	25243	*Acanthophis pyrrhus (Desert Death Adder)*			
636.	25350	*Aipysurus apraefrontalis (Short-nosed Seasnake)*		T	
637.	25355	*Aipysurus laevis (Olive Seasnake)*			
638.	42369	*Aipysurus mosaicus (Mosaic Seasnake)*			
639.	25357	*Aipysurus tenuis (Brown-lined Seasnake)*			
640.	42372	*Amalosia rhombifer (Zigzag velvet gecko)*			
641.	30831	*Amphibolurus gilberti (Ta-ta, Gilbert's Dragon)*			
642.	44632	*Anilios diversus*			
643.	25448	*Antaresia stimsoni (Stimson's Python)*			
644.	25241	*Antaresia stimsoni subsp. stimsoni (Stimson's Python)*			
645.	25320	*Aspidites melanocephalus (Black-headed Python)*			
646.	25334	*Brachyurophis roperi (Northern Shovel-nosed Snake)*			
647.	25012	*Carlia amax (Two-spined Rainbow Skink)*			
648.	25015	*Carlia munda (Shaded-litter Rainbow Skink)*			
649.	25016	*Carlia rufilatus (Red-sided Rainbow Skink)*			
650.	25017	*Carlia triacantha (Desert Rainbow Skink)*			
651.	25336	*Chelonia mydas (Green Turtle)*		T	
652.	24863	*Chlamydosaurus kingii (Frill-necked Lizard)*			
653.	24921	*Crenadactylus ocellatus subsp. rostralis (Clawless Gecko)*			
654.	30890	*Cryptoblepharus ruber*			
655.	30891	*Cryptoblepharus tytthos*			
656.	24865	*Ctenophorus caudicinctus subsp. caudicinctus (Ring-tailed Dragon)*			
657.	24876	*Ctenophorus isolepis subsp. isolepis (Crested Dragon, Military Dragon)*			
658.	24882	*Ctenophorus nuchalis (Central Netted Dragon)*			
659.	25024	*Ctenotus angusticeps (Airlie Island Ctenotus, Northwestern coastal Ctenotus)*		P3	
660.	25033	*Ctenotus colletti*			
661.	25048	*Ctenotus inornatus*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
662.	25463	*Ctenotus pantherinus (Leopard Ctenotus)*			
663.	25061	*Ctenotus pantherinus subsp. calx (Leopard Ctenotus)*			
664.	25070	*Ctenotus robustus*			
665.	25073	*Ctenotus saxatilis (Rock Ctenotus)*			
666.	25077	*Ctenotus serventyi*			
667.	25004	*Delma tincta*			
668.	42390	*Demansia angusticeps*			
669.	24926	*Diplodactylus conspicillatus (Fat-tailed Gecko)*			
670.	24896	*Diporiphora pindan (Pindan Dragon)*			
671.	25362	*Ephalophis greyae*			
672.	42404	*Eremiascincus isolepis*			
673.	25342	*Eretmochelys imbricata subsp. bissa (Hawksbill Turtle)*		T	
674.	25327	*Fordonia leucobalia (White-bellied Mangrove Snake)*			
675.	25301	*Furina ornata (Moon Snake)*			
676.	24952	*Gehyra australis*			
677.		*Gehyra kimberleyi*			
678.	24956	*Gehyra pilbara*			
679.	24957	*Gehyra purpurascens*			
680.	24959	*Gehyra variegata*			
681.	25232	*Hemidactylus frenatus (Asian House Gecko)*	Y		
682.	24961	*Heteronotia binoei (Bynoe's Gecko)*			
683.	25363	*Hydrelaps darwiniensis*			
684.	43369	*Hydrophis peronii (Spiny-headed Seasnake)*			
685.	43385	*Hydrophis stokesii (Stoke's Seasnake, Sea Snake)*			
686.	25121	*Lerista apoda*			
687.	25125	*Lerista bipes*			
688.	25138	*Lerista griffini*			
689.	25146	*Lerista labialis*			
690.	25005	*Lialis burtonis*			
691.	41412	*Liopholis kintorei (Great Desert Skink, Tjakura)*		T	
692.	30933	*Lucasium stenodactylum*			
693.	25184	*Menetia greyii*			
694.	25185	*Menetia maini*			
695.	25194	*Morethia ruficauda subsp. ruficauda*			
696.	25195	*Morethia storri*			
697.	25510	*Pogona minor (Dwarf Bearded Dragon)*			
698.	24908	*Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)*			
699.		*Proablepharus sp.*			
700.	25200	*Proablepharus tenuis*			
701.	25261	*Pseudechis australis (Mulga Snake)*			
702.	42416	*Pseudonaja mengdeni (Western Brown Snake)*			
703.	25009	*Pygopus nigriceps*			
704.	24982	*Rhynchoedura ornata (Western Beaked Gecko)*			
705.	25305	*Simoselaps anomalus (Desert Banded Snake)*			
706.	25517	*Strophurus ciliaris*			
707.	24924	*Strophurus ciliaris subsp. aberrans*			
708.	24925	*Strophurus ciliaris subsp. ciliaris*			
709.	25307	*Suta punctata (Spotted Snake)*			
710.	25202	*Tiliqua multifasciata (Central Blue-tongue)*			
711.	25520	*Tiliqua scincoides (Eastern Blue-tongue)*			
712.	25208	*Tiliqua scincoides subsp. intermedia*			
713.	25209	*Varanus acanthurus (Spiny-tailed Monitor)*			
714.	25218	*Varanus gouldii (Bungarra or Sand Monitor)*			
715.	25524	*Varanus panoptes (Yellow-spotted Monitor)*			
716.	25222	*Varanus panoptes subsp. panoptes*			
717.	25526	*Varanus tristis (Racehorse Monitor)*			

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap
Mapping Western Australia's biodiversity

NatureMap Species Report

Created By Rob Sellers on 18/01/2019

Kingdom	Animalia
Current Names Only	Yes
Core Datasets Only	Yes
Method	'By Circle'
Centre	122° 47' 37" E,18° 18' 06" S
Buffer	40km
Group By	Species Group

Species Group	Species	Records
Amphibian	5	58
Bird	160	850
Fish	1	4
Invertebrate	5	5
Mammal	23	401
Reptile	32	118
TOTAL	**226**	**1436**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Amphibian					
1.	25371	*Cyclorana australis (Giant Frog)*			
2.	25374	*Cyclorana longipes (Long-footed Frog)*			
3.	25380	*Litoria caerulea (Green Tree Frog)*			
4.	25392	*Litoria rubella (Little Red Tree Frog)*			
5.	25430	*Notaden nichollsi (Desert Spadefoot)*			
Bird					
6.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
7.	25536	*Accipiter fasciatus (Brown Goshawk)*			
8.	41323	*Actitis hypoleucos (Common Sandpiper)*		IA	
9.	25544	*Aegotheles cristatus (Australian Owlet-nightjar)*			
10.	24312	*Anas gracilis (Grey Teal)*			
11.	24316	*Anas superciliosa (Pacific Black Duck)*			
12.	24317	*Anseranas semipalmata (Magpie Goose, Pied Goose)*			
13.	24719	*Aprosmictus erythropterus (Red-winged Parrot)*			
14.	25554	*Apus pacificus (Fork-tailed Swift, Pacific Swift)*		IA	
15.	24285	*Aquila audax (Wedge-tailed Eagle)*			
16.	41324	*Ardea modesta (great egret, white egret)*			
17.	24341	*Ardea pacifica (White-necked Heron)*			
18.	24343	*Ardea sacra subsp. sacra (Eastern Reef Egret, Eastern Reef Heron)*			
19.	24610	*Ardeotis australis (Australian Bustard)*			
20.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
21.	25567	*Artamus leucorynchus (White-breasted Woodswallow)*			
22.	24355	*Artamus minor (Little Woodswallow)*			
23.	24356	*Artamus personatus (Masked Woodswallow)*			
24.	24318	*Aythya australis (Hardhead)*			
25.	47897	*Butorides striata (Striated Heron, Mangrove Heron)*			
26.	24722	*Cacatua leadbeateri (Major Mitchell's Cockatoo)*			
27.	25716	*Cacatua sanguinea (Little Corella)*			
28.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
29.	24779	*Calidris acuminata (Sharp-tailed Sandpiper)*		IA	
30.	24780	*Calidris alba (Sanderling)*		IA	
31.	24784	*Calidris ferruginea (Curlew Sandpiper)*		T	
32.	24790	*Calidris tenuirostris (Great Knot)*		T	
33.	25717	*Calyptorhynchus banksii (Red-tailed Black-Cockatoo)*			
34.	24730	*Calyptorhynchus banksii subsp. macrorhynchus (Northern Red-tailed Black-Cockatoo)*			
35.	25600	*Centropus phasianinus (Pheasant Coucal)*			
36.	30884	*Centropus phasianinus subsp. phasianinus (Pheasant Coucal)*			
37.	25575	*Charadrius leschenaultii (Greater Sand Plover)*		IA	
38.	24377	*Charadrius ruficapillus (Red-capped Plover)*			
39.	24378	*Charadrius veredus (Oriental Plover)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
				IA	
40.	24431	*Chrysococcyx basalis (Horsfield's Bronze Cuckoo)*			
41.	24288	*Circus approximans (Swamp Harrier)*			
42.	24289	*Circus assimilis (Spotted Harrier)*			
43.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
44.	24611	*Colluricincla harmonica subsp. brunnea (Grey Shrike-thrush)*			
45.	24566	*Conopophila rufogularis (Rufous-throated Honeyeater)*			
46.	24361	*Coracina maxima (Ground Cuckoo-shrike)*			
47.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
48.	24362	*Coracina novaehollandiae subsp. novaehollandiae (Black-faced Cuckoo-shrike)*			
49.	24416	*Corvus bennetti (Little Crow)*			
50.	25593	*Corvus orru (Torresian Crow)*			
51.	25701	*Coturnix ypsilophora (Brown Quail)*			
52.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
53.	25595	*Cracticus tibicen (Australian Magpie)*			
54.	25547	*Dacelo leachii (Blue-winged Kookaburra)*			
55.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
56.	24605	*Daphoenositta chrysoptera subsp. leucoptera (Varied Sittella, White-winged Sitella)*			
57.	24324	*Dendrocygna arcuata (Wandering Whistling Duck, Chestnut Whistling Duck)*			
58.	24325	*Dendrocygna eytoni (Plumed Whistling Duck)*			
59.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
60.	24470	*Dromaius novaehollandiae (Emu)*			
61.		*Egretta garzetta*			
62.		*Egretta novaehollandiae*			
63.		*Elanus axillaris*			
64.	47937	*Elseyornis melanops (Black-fronted Dotterel)*			
65.	24631	*Emblema pictum (Painted Finch)*			
66.		*Eolophus roseicapillus*			
67.	24569	*Epthianura crocea (Yellow Chat)*			
68.	24570	*Epthianura tricolor (Crimson Chat)*			
69.	24837	*Eremiornis carteri (Spinifex-bird)*			
70.	24379	*Erythrogonys cinctus (Red-kneed Dotterel)*			
71.	25621	*Falco berigora (Brown Falcon)*			
72.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
73.	24473	*Falco hypoleucos (Grey Falcon)*		T	
74.	25623	*Falco longipennis (Australian Hobby)*			
75.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
76.	24478	*Fregata ariel (Lesser Frigatebird)*		IA	
77.	42314	*Gavicalis virescens (Singing Honeyeater)*			
78.	47954	*Gelochelidon nilotica (Gull-billed Tern)*		IA	
79.	24401	*Geopelia cuneata (Diamond Dove)*			
80.	24402	*Geopelia humeralis (Bar-shouldered Dove)*			
81.	25585	*Geopelia striata (Zebra Dove)*			
82.	24403	*Geopelia striata subsp. placida (Peaceful Dove)*			
83.	24404	*Geophaps plumifera (Spinifex Pigeon)*			
84.	24276	*Gerygone tenebrosa (Dusky Gerygone)*			
85.	24481	*Glareola maldivarum (Oriental Pratincole)*		IA	
86.	24443	*Grallina cyanoleuca (Magpie-lark)*			
87.	24484	*Grus rubicunda (Brolga)*			
88.	24293	*Haliaeetus leucogaster (White-bellied Sea-Eagle)*			
89.	25541	*Haliastur indus (Brahminy Kite)*			
90.	24294	*Haliastur indus subsp. girrenera (Brahminy Kite)*			
91.	24295	*Haliastur sphenurus (Whistling Kite)*			
92.	24297	*Hamirostra melanosternon (Black-breasted Buzzard)*			
93.	47965	*Hieraaetus morphnoides (Little Eagle)*			
94.	25734	*Himantopus himantopus (Black-winged Stilt)*			
95.	48587	*Hydroprogne caspia (Caspian Tern)*		IA	
96.	24511	*Larus novaehollandiae subsp. novaehollandiae (Silver Gull)*			
97.	25661	*Lichmera indistincta (Brown Honeyeater)*			
98.	25739	*Limicola falcinellus (Broad-billed Sandpiper)*		IA	
99.	30932	*Limosa lapponica (Bar-tailed Godwit)*		IA	
100.	25741	*Limosa limosa (Black-tailed Godwit)*		IA	
101.		*Lophoictinia isura*			
102.	24326	*Malacorhynchus membranaceus (Pink-eared Duck)*			
103.	25651	*Malurus lamberti (Variegated Fairy-wren)*			
104.	25653	*Malurus melanocephalus (Red-backed Fairy-wren)*			
105.	24550	*Malurus melanocephalus subsp. cruentatus (Red-backed Fairy-wren)*			
106.	24583	*Manorina flavigula (Yellow-throated Miner)*			
107.	47997	*Melanodryas cucullata (Hooded Robin)*			
108.	25665	*Melithreptus gularis (Black-chinned Honeyeater)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
109.	24589	*Melithreptus gularis subsp. laetior (Black-chinned Honeyeater)*			
110.	24736	*Melopsittacus undulatus (Budgerigar)*			
111.	24598	*Merops ornatus (Rainbow Bee-eater)*			
112.	25693	*Microeca fascinans (Jacky Winter)*			
113.	24654	*Microeca fascinans subsp. assimilis (Jacky Winter)*			
114.	25542	*Milvus migrans (Black Kite)*			
115.	25545	*Mirafra javanica (Horsfield's Bushlark, Singing Bushlark)*			
116.	25610	*Myiagra inquieta (Restless Flycatcher)*			
117.	25612	*Myiagra ruficollis (Broad-billed Flycatcher)*			
118.	24798	*Numenius madagascariensis (Eastern Curlew)*		T	
119.	25742	*Numenius phaeopus (Whimbrel)*		IA	
120.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
121.	24742	*Nymphicus hollandicus (Cockatiel)*			
122.	24497	*Oceanites oceanicus (Wilson's Storm-petrel)*		IA	
123.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
124.	24618	*Oreoica gutturalis (Crested Bellbird)*			
125.	24620	*Pachycephala lanioides (White-breasted Whistler)*			
126.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
127.	24627	*Pardalotus rubricatus (Red-browed Pardalote)*			
128.	25682	*Pardalotus striatus (Striated Pardalote)*			
129.	48060	*Petrochelidon ariel (Fairy Martin)*			
130.	48061	*Petrochelidon nigricans (Tree Martin)*			
131.	24659	*Petroica goodenovii (Red-capped Robin)*			
132.	25699	*Phalacrocorax varius (Pied Cormorant)*			
133.	25668	*Philemon citreogularis (Little Friarbird)*			
134.	24592	*Philemon citreogularis subsp. citreogularis (Little Friarbird)*			
135.	24842	*Platalea regia (Royal Spoonbill)*			
136.	24843	*Plegadis falcinellus (Glossy Ibis)*		IA	
137.	25703	*Podargus strigoides (Tawny Frogmouth)*			
138.	24678	*Podargus strigoides subsp. phalaenoides (Tawny Frogmouth)*			
139.	24643	*Poephila acuticauda (Long-tailed Finch)*			
140.	25706	*Pomatostomus temporalis (Grey-crowned Babbler)*			
141.	24684	*Pomatostomus temporalis subsp. rubeculus (Grey-crowned Babbler)*			
142.	25725	*Ptilonorhynchus nuchalis (Great Bowerbird)*			
143.	24758	*Ptilonorhynchus nuchalis subsp. nuchalis (Great Bowerbird)*			
144.	42322	*Ptilotula flavescens subsp. flavescens (Yellow-tinted Honeyeater)*			
145.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
146.	24454	*Rhipidura leucophrys subsp. leucophrys (Willie Wagtail)*			
147.	24457	*Rhipidura phasiana (Mangrove Grey Fantail)*			
148.	30948	*Smicrornis brevirostris (Weebill)*			
149.	24522	*Sterna bergii (Crested Tern)*			
150.	24482	*Stiltia isabella (Australian Pratincole)*			
151.	30872	*Taeniopygia bichenovii (Double-barred Finch)*			
152.	30870	*Taeniopygia guttata (Zebra Finch)*			
153.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
154.	42351	*Todiramphus pyrrhopygius (Red-backed Kingfisher)*			
155.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
156.	24754	*Trichoglossus haematodus subsp. rubritorquis (Red-collared Lorikeet)*			
157.	24806	*Tringa glareola (Wood Sandpiper)*		IA	
158.	24808	*Tringa nebularia (Common Greenshank, greenshank)*		IA	
159.	24809	*Tringa stagnatilis (Marsh Sandpiper, little greenshank)*		IA	
160.	24810	*Tringa totanus (Common Redshank, redshank)*		IA	
161.	24851	*Turnix velox (Little Button-quail)*			
162.	25577	*Vanellus miles (Masked Lapwing)*			
163.	24384	*Vanellus miles subsp. miles (Masked Lapwing)*			
164.	41351	*Xenus cinereus (Terek Sandpiper)*		IA	
165.	24857	*Zosterops luteus (Yellow White-eye)*			

Fish

166.		*Acanthurus sp.*			

Invertebrate

167.		*Latrodectus hasseltii*			
168.		*Nephila edulis*			
169.		*Physocyclus globosus*			
170.		*Rhipicephalus microplus*			
171.		*Thereuopoda lesueurii*			

Mammal

172.	24181	*Chaerephon jobensis (Greater Northern Freetail-bat, Northern Mastiff Bat)*			
173.	24186	*Chalinolobus gouldii (Gould's Wattled Bat)*			
174.	24041	*Felis catus (Cat)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
			Y		
175.	24122	*Lagorchestes conspicillatus subsp. leichardti (Spectacled Hare-wallaby (mainland))*		P4	
176.	24129	*Macropus agilis (Agile Wallaby)*			
177.	24136	*Macropus rufus (Red Kangaroo, Marlu)*			
178.	24168	*Macrotis lagotis (Bilby, Dalgyte, Ninu)*		T	
179.	24224	*Notomys alexis (Spinifex Hopping-mouse)*			
180.	24194	*Nyctophilus geoffroyi (Lesser Long-eared Bat)*			
181.	25506	*Petrogale lateralis (Black-footed Rock-wallaby, Black-flanked Rock-wallaby)*		T	
182.	24142	*Petrogale lateralis subsp. lateralis (Black-flanked Rock-wallaby, Black-footed Rock-wallaby)*		T	
183.	24102	*Planigale maculata (Common Planigale)*			
184.	24234	*Pseudomys delicatulus (Delicate Mouse)*			
185.	24239	*Pseudomys nanus (Western Chestnut Mouse)*			
186.	24173	*Pteropus scapulatus (Little Red Flying-fox)*			
187.	24174	*Saccolaimus flaviventris (Yellow-bellied Sheath-tailed Bat)*			
188.	24200	*Scotorepens greyii (Little Broad-nosed Bat)*			
189.	24116	*Sminthopsis macroura (Stripe-faced Dunnart)*			
190.	24120	*Sminthopsis youngsoni (Lesser Hairy-footed Dunnart)*			
191.	24175	*Taphozous georgianus (Common Sheath-tailed Bat)*			
192.	24203	*Vespadelus caurinus (Western Cave Bat, Northern Cave-bat)*			
193.	24205	*Vespadelus finlaysoni (Finlayson's Cave Bat)*			
194.	24040	*Vulpes vulpes (Red Fox)*	Y		

Reptile

195.	42372	*Amalosia rhombifer (Zigzag velvet gecko)*			
196.	30833	*Amphibolurus longirostris (Long-nosed Dragon)*			
197.	25241	*Antaresia stimsoni subsp. stimsoni (Stimson's Python)*			
198.	30890	*Cryptoblepharus ruber*			
199.	24870	*Ctenophorus caudicinctus subsp. macropus (Ring-tailed Dragon)*			
200.	24876	*Ctenophorus isolepis subsp. isolepis (Crested Dragon, Military Dragon)*			
201.	24882	*Ctenophorus nuchalis (Central Netted Dragon)*			
202.	25048	*Ctenotus inornatus*			
203.	25064	*Ctenotus pantherinus subsp. ocellifer (Leopard Ctenotus)*			
204.	42390	*Demansia angusticeps*			
205.	24896	*Diporiphora pindan (Pindan Dragon)*			
206.	42404	*Eremiascincus isolepis*			
207.	25109	*Eremiascincus richardsonii (Broad-banded Sand Swimmer)*			
208.	25301	*Furina ornata (Moon Snake)*			
209.	24956	*Gehyra pilbara*			
210.	24957	*Gehyra purpurascens*			
211.	24959	*Gehyra variegata*			
212.	24961	*Heteronotia binoei (Bynoe's Gecko)*			
213.	25125	*Lerista bipes*			
214.	25138	*Lerista griffini*			
215.	25005	*Lialis burtonis*			
216.	24908	*Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)*			
217.	25261	*Pseudechis australis (Mulga Snake)*			
218.	24982	*Rhynchoedura ornata (Western Beaked Gecko)*			
219.	25305	*Simoselaps anomalus (Desert Banded Snake)*			
220.	24924	*Strophurus ciliaris subsp. aberrans*			
221.	24932	*Strophurus jeanae*			
222.	25202	*Tiliqua multifasciata (Central Blue-tongue)*			
223.	25208	*Tiliqua scincoides subsp. intermedia*			
224.	25209	*Varanus acanthurus (Spiny-tailed Monitor)*			
225.	25524	*Varanus panoptes (Yellow-spotted Monitor)*			
226.	25526	*Varanus tristis (Racehorse Monitor)*			

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap Species Report

Created By Rob Sellers on 18/01/2019

Kingdom	Animalia
Current Names Only	Yes
Core Datasets Only	Yes
Method	'By Circle'
Centre	123° 05' 43" E,18° 30' 58" S
Buffer	40km
Group By	Species Group

Species Group	Species	Records
Amphibian	6	78
Bird	136	628
Invertebrate	2	2
Mammal	21	153
Reptile	36	173
TOTAL	**201**	**1034**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Amphibian					
1.	25371	*Cyclorana australis (Giant Frog)*			
2.	25380	*Litoria caerulea (Green Tree Frog)*			
3.	25391	*Litoria rothii (Northern Laughing Tree Frog)*			
4.	25392	*Litoria rubella (Little Red Tree Frog)*			
5.	25430	*Notaden nichollsi (Desert Spadefoot)*			
6.	25436	*Uperoleia aspera (Derby Toadlet)*			
Bird					
7.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
8.	24281	*Accipiter cirrocephalus subsp. cirrocephalus (Collared Sparrowhawk)*			
9.	25536	*Accipiter fasciatus (Brown Goshawk)*			
10.	41323	*Actitis hypoleucos (Common Sandpiper)*		IA	
11.	25544	*Aegotheles cristatus (Australian Owlet-nightjar)*			
12.	24300	*Aegotheles cristatus subsp. leucogaster (Australian Owlet-nightjar)*			
13.	24312	*Anas gracilis (Grey Teal)*			
14.	24316	*Anas superciliosa (Pacific Black Duck)*			
15.	24599	*Anthus australis subsp. australis (Australian Pipit)*			
16.	24719	*Aprosmictus erythropterus (Red-winged Parrot)*			
17.	24285	*Aquila audax (Wedge-tailed Eagle)*			
18.	24341	*Ardea pacifica (White-necked Heron)*			
19.	24610	*Ardeotis australis (Australian Bustard)*			
20.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
21.	24352	*Artamus cinereus subsp. melanops (Black-faced Woodswallow)*			
22.	25567	*Artamus leucorynchus (White-breasted Woodswallow)*			
23.	24355	*Artamus minor (Little Woodswallow)*			
24.	24356	*Artamus personatus (Masked Woodswallow)*			
25.	24359	*Burhinus grallarius (Bush Stone-curlew)*			
26.	24722	*Cacatua leadbeateri (Major Mitchell's Cockatoo)*			
27.	24725	*Cacatua roseicapilla subsp. assimilis (Galah)*			
28.	25716	*Cacatua sanguinea (Little Corella)*			
29.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
30.	25717	*Calyptorhynchus banksii (Red-tailed Black-Cockatoo)*			
31.	24730	*Calyptorhynchus banksii subsp. macrorhynchus (Northern Red-tailed Black-Cockatoo)*			
32.	25600	*Centropus phasianinus (Pheasant Coucal)*			
33.	30884	*Centropus phasianinus subsp. phasianinus (Pheasant Coucal)*			
34.	24564	*Certhionyx variegatus (Pied Honeyeater)*			
35.	24431	*Chrysococcyx basalis (Horsfield's Bronze Cuckoo)*			
36.	24289	*Circus assimilis (Spotted Harrier)*			
37.	25756	*Cisticola exilis (Golden-headed Cisticola)*			
38.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
39.	24611	*Colluricincla harmonica subsp. brunnea (Grey Shrike-thrush)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
40.	24613	*Colluricincla harmonica subsp. rufiventris (Grey Shrike-thrush)*			
41.	24566	*Conopophila rufogularis (Rufous-throated Honeyeater)*			
42.	24361	*Coracina maxima (Ground Cuckoo-shrike)*			
43.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
44.	24362	*Coracina novaehollandiae subsp. novaehollandiae (Black-faced Cuckoo-shrike)*			
45.	24416	*Corvus bennetti (Little Crow)*			
46.	25593	*Corvus orru (Torresian Crow)*			
47.	25701	*Coturnix ypsilophora (Brown Quail)*			
48.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
49.	25547	*Dacelo leachii (Blue-winged Kookaburra)*			
50.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
51.	24605	*Daphoenositta chrysoptera subsp. leucoptera (Varied Sittella, White-winged Sitella)*			
52.	24606	*Daphoenositta chrysoptera subsp. pileata (Varied Sittella, Black-capped Sitella)*			
53.	24324	*Dendrocygna arcuata (Wandering Whistling Duck, Chestnut Whistling Duck)*			
54.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
55.	24441	*Dicaeum hirundinaceum subsp. hirundinaceum (Mistletoebird)*			
56.	24470	*Dromaius novaehollandiae (Emu)*			
57.		*Egretta novaehollandiae*			
58.		*Elanus axillaris*			
59.	24290	*Elanus caeruleus subsp. axillaris (Australian Black-shouldered Kite)*			
60.		*Eolophus roseicapillus*			
61.	24570	*Epthianura tricolor (Crimson Chat)*			
62.	24837	*Eremiornis carteri (Spinifex-bird)*			
63.	24368	*Eurostopodus argus (Spotted Nightjar)*			
64.	25621	*Falco berigora (Brown Falcon)*			
65.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
66.	24472	*Falco cenchroides subsp. cenchroides (Australian Kestrel, Nankeen Kestrel)*			
67.	24473	*Falco hypoleucos (Grey Falcon)*		T	
68.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
69.	42314	*Gavicalis virescens (Singing Honeyeater)*			
70.	24401	*Geopelia cuneata (Diamond Dove)*			
71.	25585	*Geopelia striata (Zebra Dove)*			
72.	24403	*Geopelia striata subsp. placida (Peaceful Dove)*			
73.	24404	*Geophaps plumifera (Spinifex Pigeon)*			
74.	24443	*Grallina cyanoleuca (Magpie-lark)*			
75.	24484	*Grus rubicunda (Brolga)*			
76.	24295	*Haliastur sphenurus (Whistling Kite)*			
77.	24297	*Hamirostra melanosternon (Black-breasted Buzzard)*			
78.	24633	*Heteromunia pectoralis (Pictorella Mannikin)*			
79.	47965	*Hieraaetus morphnoides (Little Eagle)*			
80.	24775	*Himantopus himantopus subsp. leucocephalus (Black-winged Stilt)*			
81.	24367	*Lalage tricolor (White-winged Triller)*			
82.	25661	*Lichmera indistincta (Brown Honeyeater)*			
83.	24582	*Lichmera indistincta subsp. indistincta (Brown Honeyeater)*			
84.		*Lophochroa leadbeateri*			
85.		*Lophoictinia isura*			
86.	25651	*Malurus lamberti (Variegated Fairy-wren)*			
87.	24544	*Malurus lamberti subsp. assimilis (Variegated Fairy-wren)*			
88.	24546	*Malurus lamberti subsp. rogersi (Variegated Fairy-wren)*			
89.	25653	*Malurus melanocephalus (Red-backed Fairy-wren)*			
90.	24550	*Malurus melanocephalus subsp. cruentatus (Red-backed Fairy-wren)*			
91.	24583	*Manorina flavigula (Yellow-throated Miner)*			
92.	47997	*Melanodryas cucullata (Hooded Robin)*			
93.	25665	*Melithreptus gularis (Black-chinned Honeyeater)*			
94.	24589	*Melithreptus gularis subsp. laetior (Black-chinned Honeyeater)*			
95.	24736	*Melopsittacus undulatus (Budgerigar)*			
96.	24598	*Merops ornatus (Rainbow Bee-eater)*			
97.	25693	*Microeca fascinans (Jacky Winter)*			
98.	24654	*Microeca fascinans subsp. assimilis (Jacky Winter)*			
99.	25542	*Milvus migrans (Black Kite)*			
100.	24298	*Milvus migrans subsp. affinis (Black Kite)*			
101.	25545	*Mirafra javanica (Horsfield's Bushlark, Singing Bushlark)*			
102.	24302	*Mirafra javanica subsp. horsfieldii (Horsfield's Bushlark, Singing Bushlark)*			
103.	25610	*Myiagra inquieta (Restless Flycatcher)*			
104.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
105.	48026	*Nycticorax caledonicus subsp. australasiae (Rufous Night Heron)*			
106.	24742	*Nymphicus hollandicus (Cockatiel)*			
107.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
108.	24618	*Oreoica gutturalis (Crested Bellbird)*			
109.	34011	*Oreoica gutturalis subsp. gutturalis (Crested Bellbird (southern))*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
110.	24608	*Oriolus sagittatus (Olive-backed Oriole)*			
111.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
112.	24624	*Pachycephala rufiventris subsp. rufiventris (Rufous Whistler)*			
113.	24627	*Pardalotus rubricatus (Red-browed Pardalote)*			
114.	25682	*Pardalotus striatus (Striated Pardalote)*			
115.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
116.	48060	*Petrochelidon ariel (Fairy Martin)*			
117.	24659	*Petroica goodenovii (Red-capped Robin)*			
118.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
119.	24411	*Phaps histrionica (Flock Bronzewing, Flock Pigeon)*			
120.	25668	*Philemon citreogularis (Little Friarbird)*			
121.	24592	*Philemon citreogularis subsp. citreogularis (Little Friarbird)*			
122.	24842	*Platalea regia (Royal Spoonbill)*			
123.	24843	*Plegadis falcinellus (Glossy Ibis)*		IA	
124.	25703	*Podargus strigoides (Tawny Frogmouth)*			
125.	24678	*Podargus strigoides subsp. phalaenoides (Tawny Frogmouth)*			
126.	24752	*Polytelis alexandrae (Princess Parrot)*		P4	
127.	25706	*Pomatostomus temporalis (Grey-crowned Babbler)*			
128.	24684	*Pomatostomus temporalis subsp. rubeculus (Grey-crowned Babbler)*			
129.	24758	*Ptilonorhynchus nuchalis subsp. nuchalis (Great Bowerbird)*			
130.	42323	*Ptilotula keartlandi (Grey-headed Honeyeater)*			
131.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
132.	24454	*Rhipidura leucophrys subsp. leucophrys (Willie Wagtail)*			
133.	30948	*Smicrornis brevirostris (Weebill)*			
134.	30870	*Taeniopygia guttata (Zebra Finch)*			
135.	30871	*Taeniopygia guttata subsp. castanotis (Zebra Finch)*			
136.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
137.	42351	*Todiramphus pyrrhopygius (Red-backed Kingfisher)*			
138.	24754	*Trichoglossus haematodus subsp. rubritorquis (Red-collared Lorikeet)*			
139.	24756	*Trichoglossus versicolor (Varied Lorikeet)*			
140.	24851	*Turnix velox (Little Button-quail)*			
141.	25762	*Tyto alba (Barn Owl)*			
142.	25577	*Vanellus miles (Masked Lapwing)*			
Invertebrate					
143.		*Cosmophasis baehrae*			
144.		*Thereuopoda lesueurii*			
Mammal					
145.	24181	*Chaerephon jobensis (Greater Northern Freetail-bat, Northern Mastiff Bat)*			
146.	24186	*Chalinolobus gouldii (Gould's Wattled Bat)*			
147.	24188	*Chalinolobus nigrogriseus (Hoary Wattled Bat)*			
148.	24136	*Macropus rufus (Red Kangaroo, Marlu)*			
149.	24168	*Macrotis lagotis (Bilby, Dalgyte, Ninu)*		T	
150.	24223	*Mus musculus (House Mouse)*	Y		
151.	24194	*Nyctophilus geoffroyi (Lesser Long-eared Bat)*			
152.	25506	*Petrogale lateralis (Black-footed Rock-wallaby, Black-flanked Rock-wallaby)*		T	
153.	24142	*Petrogale lateralis subsp. lateralis (Black-flanked Rock-wallaby, Black-footed Rock-wallaby)*		T	
154.	24198	*Pipistrellus westralis (Northern Pipistrelle)*			
155.	24102	*Planigale maculata (Common Planigale)*			
156.	24234	*Pseudomys delicatulus (Delicate Mouse)*			
157.	24239	*Pseudomys nanus (Western Chestnut Mouse)*			
158.	24173	*Pteropus scapulatus (Little Red Flying-fox)*			
159.	24174	*Saccolaimus flaviventris (Yellow-bellied Sheath-tailed Bat)*			
160.	24200	*Scotorepens greyii (Little Broad-nosed Bat)*			
161.	24116	*Sminthopsis macroura (Stripe-faced Dunnart)*			
162.	24120	*Sminthopsis youngsoni (Lesser Hairy-footed Dunnart)*			
163.	24175	*Taphozous georgianus (Common Sheath-tailed Bat)*			
164.	24203	*Vespadelus caurinus (Western Cave Bat, Northern Cave-bat)*			
165.	24205	*Vespadelus finlaysoni (Finlayson's Cave Bat)*			
Reptile					
166.	42372	*Amalosia rhombifer (Zigzag velvet gecko)*			
167.	30833	*Amphibolurus longirostris (Long-nosed Dragon)*			
168.	25241	*Antaresia stimsoni subsp. stimsoni (Stimson's Python)*			
169.	25017	*Carlia triacantha (Desert Rainbow Skink)*			
170.	24870	*Ctenophorus caudicinctus subsp. macropus (Ring-tailed Dragon)*			
171.	24876	*Ctenophorus isolepis subsp. isolepis (Crested Dragon, Military Dragon)*			
172.	24882	*Ctenophorus nuchalis (Central Netted Dragon)*			
173.	25048	*Ctenotus inornatus*			
174.	25064	*Ctenotus pantherinus subsp. ocellifer (Leopard Ctenotus)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
175.	25062	*Ctenotus piankai*			
176.	25073	*Ctenotus saxatilis (Rock Ctenotus)*			
177.	24996	*Delma borea*			
178.	42390	*Demansia angusticeps*			
179.	24926	*Diplodactylus conspicillatus (Fat-tailed Gecko)*			
180.	24896	*Diporiphora pindan (Pindan Dragon)*			
181.	42404	*Eremiascincus isolepis*			
182.	41409	*Eremiascincus musivus (Mosaic Desert Skink)*			
183.	25109	*Eremiascincus richardsonii (Broad-banded Sand Swimmer)*			
184.	25301	*Furina ornata (Moon Snake)*			
185.	24956	*Gehyra pilbara*			
186.	24961	*Heteronotia binoei (Bynoe's Gecko)*			
187.	25125	*Lerista bipes*			
188.	25005	*Lialis burtonis*			
189.	25194	*Morethia ruficauda subsp. ruficauda*			
190.	24908	*Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)*			
191.	25199	*Proablepharus reginae*			
192.	25261	*Pseudechis australis (Mulga Snake)*			
193.	24982	*Rhynchoedura ornata (Western Beaked Gecko)*			
194.	24924	*Strophurus ciliaris subsp. aberrans*			
195.	24927	*Strophurus elderi*			
196.	24932	*Strophurus jeanae*			
197.	25307	*Suta punctata (Spotted Snake)*			
198.	25202	*Tiliqua multifasciata (Central Blue-tongue)*			
199.	25209	*Varanus acanthurus (Spiny-tailed Monitor)*			
200.	25215	*Varanus gilleni (Pygmy Mulga Monitor)*			
201.	25526	*Varanus tristis (Racehorse Monitor)*			

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap Species Report

Created By Rob Sellers on 18/01/2019

Kingdom	Animalia
Current Names Only	Yes
Core Datasets Only	Yes
Method	'By Circle'
Centre	123° 16' 09" E,18° 49' 54" S
Buffer	40km
Group By	Species Group

Species Group	Species	Records
Amphibian	6	24
Bird	104	448
Invertebrate	1	1
Mammal	16	52
Reptile	35	183
TOTAL	**162**	**708**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Amphibian					
1.	25371	*Cyclorana australis (Giant Frog)*			
2.	25380	*Litoria caerulea (Green Tree Frog)*			
3.	25391	*Litoria rothii (Northern Laughing Tree Frog)*			
4.	25392	*Litoria rubella (Little Red Tree Frog)*			
5.	25430	*Notaden nichollsi (Desert Spadefoot)*			
6.	25436	*Uperoleia aspera (Derby Toadlet)*			
Bird					
7.	24559	*Acanthagenys rufogularis (Spiny-cheeked Honeyeater)*			
8.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
9.	24281	*Accipiter cirrocephalus subsp. cirrocephalus (Collared Sparrowhawk)*			
10.	25536	*Accipiter fasciatus (Brown Goshawk)*			
11.	24300	*Aegotheles cristatus subsp. leucogaster (Australian Owlet-nightjar)*			
12.	47414	*Anhinga novaehollandiae (Australasian Darter)*			
13.	24599	*Anthus australis subsp. australis (Australian Pipit)*			
14.	24719	*Aprosmictus erythropterus (Red-winged Parrot)*			
15.	24285	*Aquila audax (Wedge-tailed Eagle)*			
16.	24341	*Ardea pacifica (White-necked Heron)*			
17.	24610	*Ardeotis australis (Australian Bustard)*			
18.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
19.	24352	*Artamus cinereus subsp. melanops (Black-faced Woodswallow)*			
20.	24355	*Artamus minor (Little Woodswallow)*			
21.	24356	*Artamus personatus (Masked Woodswallow)*			
22.	24357	*Artamus superciliosus (White-browed Woodswallow)*			
23.	24359	*Burhinus grallarius (Bush Stone-curlew)*			
24.	24722	*Cacatua leadbeateri (Major Mitchell's Cockatoo)*			
25.	24725	*Cacatua roseicapilla subsp. assimilis (Galah)*			
26.	24727	*Cacatua sanguinea subsp. westralensis (Little Corella)*			
27.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
28.	24730	*Calyptorhynchus banksii subsp. macrorhynchus (Northern Red-tailed Black-Cockatoo)*			
29.	25600	*Centropus phasianinus (Pheasant Coucal)*			
30.	24564	*Certhionyx variegatus (Pied Honeyeater)*			
31.	24431	*Chrysococcyx basalis (Horsfield's Bronze Cuckoo)*			
32.	24289	*Circus assimilis (Spotted Harrier)*			
33.	25756	*Cisticola exilis (Golden-headed Cisticola)*			
34.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
35.	24613	*Colluricincla harmonica subsp. rufiventris (Grey Shrike-thrush)*			
36.	24566	*Conopophila rufogularis (Rufous-throated Honeyeater)*			
37.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
38.	24362	*Coracina novaehollandiae subsp. novaehollandiae (Black-faced Cuckoo-shrike)*			
39.	24416	*Corvus bennetti (Little Crow)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
40.	25593	*Corvus orru (Torresian Crow)*			
41.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
42.	25547	*Dacelo leachii (Blue-winged Kookaburra)*			
43.	24606	*Daphoenositta chrysoptera subsp. pileata (Varied Sittella, Black-capped Sitella)*			
44.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
45.	24441	*Dicaeum hirundinaceum subsp. hirundinaceum (Mistletoebird)*			
46.	24470	*Dromaius novaehollandiae (Emu)*			
47.	24290	*Elanus caeruleus subsp. axillaris (Australian Black-shouldered Kite)*			
48.	24631	*Emblema pictum (Painted Finch)*			
49.	24570	*Epthianura tricolor (Crimson Chat)*			
50.	24368	*Eurostopodus argus (Spotted Nightjar)*			
51.	25621	*Falco berigora (Brown Falcon)*			
52.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
53.	24472	*Falco cenchroides subsp. cenchroides (Australian Kestrel, Nankeen Kestrel)*			
54.	24474	*Falco longipennis subsp. longipennis (Australian Hobby)*			
55.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
56.	24401	*Geopelia cuneata (Diamond Dove)*			
57.	24403	*Geopelia striata subsp. placida (Peaceful Dove)*			
58.	24404	*Geophaps plumifera (Spinifex Pigeon)*			
59.	24443	*Grallina cyanoleuca (Magpie-lark)*			
60.	24484	*Grus rubicunda (Brolga)*			
61.	24295	*Haliastur sphenurus (Whistling Kite)*			
62.	24297	*Hamirostra melanosternon (Black-breasted Buzzard)*			
63.	24633	*Heteromunia pectoralis (Pictorella Mannikin)*			
64.	24775	*Himantopus himantopus subsp. leucocephalus (Black-winged Stilt)*			
65.	24367	*Lalage tricolor (White-winged Triller)*			
66.	25661	*Lichmera indistincta (Brown Honeyeater)*			
67.	24582	*Lichmera indistincta subsp. indistincta (Brown Honeyeater)*			
68.		*Lophochroa leadbeateri*			
69.	25651	*Malurus lamberti (Variegated Fairy-wren)*			
70.	24544	*Malurus lamberti subsp. assimilis (Variegated Fairy-wren)*			
71.	24546	*Malurus lamberti subsp. rogersi (Variegated Fairy-wren)*			
72.	24583	*Manorina flavigula (Yellow-throated Miner)*			
73.	25665	*Melithreptus gularis (Black-chinned Honeyeater)*			
74.	24589	*Melithreptus gularis subsp. laetior (Black-chinned Honeyeater)*			
75.	24736	*Melopsittacus undulatus (Budgerigar)*			
76.	24598	*Merops ornatus (Rainbow Bee-eater)*			
77.	25542	*Milvus migrans (Black Kite)*			
78.	24298	*Milvus migrans subsp. affinis (Black Kite)*			
79.	24302	*Mirafra javanica subsp. horsfieldii (Horsfield's Bushlark, Singing Bushlark)*			
80.	25610	*Myiagra inquieta (Restless Flycatcher)*			
81.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
82.	48026	*Nycticorax caledonicus subsp. australasiae (Rufous Night Heron)*			
83.	24742	*Nymphicus hollandicus (Cockatiel)*			
84.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
85.	24618	*Oreoica gutturalis (Crested Bellbird)*			
86.	34011	*Oreoica gutturalis subsp. gutturalis (Crested Bellbird (southern))*			
87.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
88.	24624	*Pachycephala rufiventris subsp. rufiventris (Rufous Whistler)*			
89.	24627	*Pardalotus rubricatus (Red-browed Pardalote)*			
90.	25682	*Pardalotus striatus (Striated Pardalote)*			
91.	48060	*Petrochelidon ariel (Fairy Martin)*			
92.	48061	*Petrochelidon nigricans (Tree Martin)*			
93.	24659	*Petroica goodenovii (Red-capped Robin)*			
94.	24409	*Phaps chalcoptera (Common Bronzewing)*			
95.	24411	*Phaps histrionica (Flock Bronzewing, Flock Pigeon)*			
96.	25668	*Philemon citreogularis (Little Friarbird)*			
97.	24752	*Polytelis alexandrae (Princess Parrot)*		P4	
98.	25706	*Pomatostomus temporalis (Grey-crowned Babbler)*			
99.	42323	*Ptilotula keartlandi (Grey-headed Honeyeater)*			
100.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
101.	24454	*Rhipidura leucophrys subsp. leucophrys (Willie Wagtail)*			
102.	30948	*Smicrornis brevirostris (Weebill)*			
103.	30872	*Taeniopygia bichenovii (Double-barred Finch)*			
104.	30870	*Taeniopygia guttata (Zebra Finch)*			
105.	30871	*Taeniopygia guttata subsp. castanotis (Zebra Finch)*			
106.	42351	*Todiramphus pyrrhopygius (Red-backed Kingfisher)*			
107.	24754	*Trichoglossus haematodus subsp. rubritorquis (Red-collared Lorikeet)*			
108.	24756	*Trichoglossus versicolor (Varied Lorikeet)*			
109.	24851	*Turnix velox (Little Button-quail)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
110.	25762	*Tyto alba (Barn Owl)*			
Invertebrate					
111.		*Cosmophasis baehrae*			
Mammal					
112.	24251	*Bos taurus (European Cattle)*	Y		
113.	24254	*Camelus dromedarius (Dromedary, Camel)*	Y		
114.	24181	*Chaerephon jobensis (Greater Northern Freetail-bat, Northern Mastiff Bat)*			
115.	24041	*Felis catus (Cat)*	Y		
116.	24168	*Macrotis lagotis (Bilby, Dalgyte, Ninu)*		T	
117.	24223	*Mus musculus (House Mouse)*	Y		
118.	25506	*Petrogale lateralis (Black-footed Rock-wallaby, Black-flanked Rock-wallaby)*		T	
119.	24198	*Pipistrellus westralis (Northern Pipistrelle)*			
120.	24234	*Pseudomys delicatulus (Delicate Mouse)*			
121.	24239	*Pseudomys nanus (Western Chestnut Mouse)*			
122.	24174	*Saccolaimus flaviventris (Yellow-bellied Sheath-tailed Bat)*			
123.	24200	*Scotorepens greyii (Little Broad-nosed Bat)*			
124.	24120	*Sminthopsis youngsoni (Lesser Hairy-footed Dunnart)*			
125.	24207	*Tachyglossus aculeatus (Short-beaked Echidna)*			
126.	24203	*Vespadelus caurinus (Western Cave Bat, Northern Cave-bat)*			
127.	24205	*Vespadelus finlaysoni (Finlayson's Cave Bat)*			
Reptile					
128.	42372	*Amalosia rhombifer (Zigzag velvet gecko)*			
129.	25241	*Antaresia stimsoni subsp. stimsoni (Stimson's Python)*			
130.	25017	*Carlia triacantha (Desert Rainbow Skink)*			
131.	25458	*Ctenophorus caudicinctus (Ring-tailed Dragon)*			
132.	24870	*Ctenophorus caudicinctus subsp. macropus (Ring-tailed Dragon)*			
133.	24876	*Ctenophorus isolepis subsp. isolepis (Crested Dragon, Military Dragon)*			
134.	25041	*Ctenotus grandis subsp. grandis*			
135.	25045	*Ctenotus helenae*			
136.	25463	*Ctenotus pantherinus (Leopard Ctenotus)*			
137.	25064	*Ctenotus pantherinus subsp. ocellifer (Leopard Ctenotus)*			
138.	25062	*Ctenotus piankai*			
139.	25066	*Ctenotus quattuordecimlineatus*			
140.	25073	*Ctenotus saxatilis (Rock Ctenotus)*			
141.	24996	*Delma borea*			
142.	24926	*Diplodactylus conspicillatus (Fat-tailed Gecko)*			
143.	24896	*Diporiphora pindan (Pindan Dragon)*			
144.	41409	*Eremiascincus musivus (Mosaic Desert Skink)*			
145.	25109	*Eremiascincus richardsonii (Broad-banded Sand Swimmer)*			
146.	24956	*Gehyra pilbara*			
147.	24961	*Heteronotia binoei (Bynoe's Gecko)*			
148.	25125	*Lerista bipes*			
149.	25495	*Morethia ruficauda*			
150.	25194	*Morethia ruficauda subsp. ruficauda*			
151.	24967	*Nephrurus levis subsp. levis*			
152.	24908	*Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)*			
153.	25199	*Proablepharus reginae*			
154.	25261	*Pseudechis australis (Mulga Snake)*			
155.	24982	*Rhynchoedura ornata (Western Beaked Gecko)*			
156.	24924	*Strophurus ciliaris subsp. aberrans*			
157.	24927	*Strophurus elderi*			
158.	24932	*Strophurus jeanae*			
159.	25212	*Varanus eremius (Pygmy Desert Monitor)*			
160.	25215	*Varanus gilleni (Pygmy Mulga Monitor)*			
161.	25524	*Varanus panoptes (Yellow-spotted Monitor)*			
162.	25526	*Varanus tristis (Racehorse Monitor)*			

Conservation Codes
T - Rare or likely to become extinct
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S - Other specially protected fauna
1 - Priority 1
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APPENDIX D EPBC PROTECTED MATTERS SEARCH TOOL

Australian Government
Department of the Environment and Energy

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

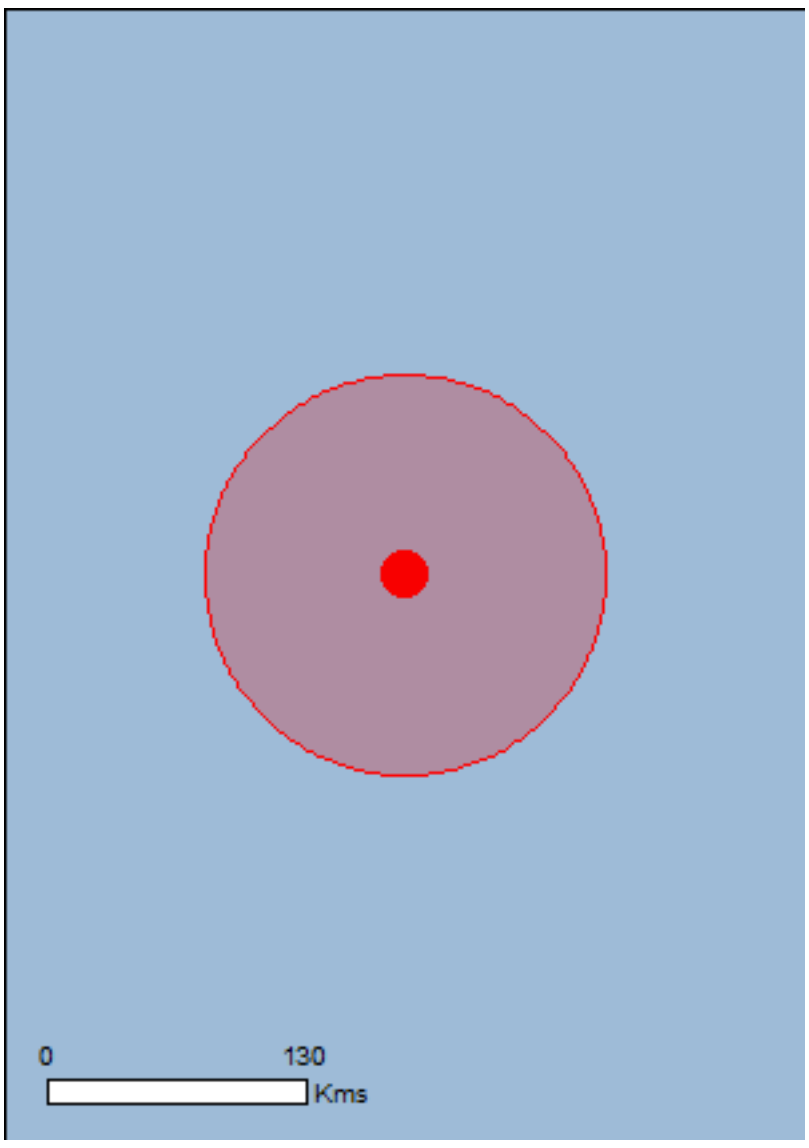
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 21/01/19 17:51:04

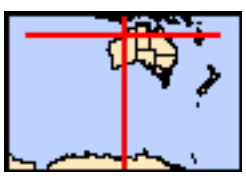
Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements



Coordinates

Buffer: 100.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	37
Listed Migratory Species:	65

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

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

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	104
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	7
Regional Forest Agreements:	None
Invasive Species:	21
Nationally Important Wetlands:	2
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

National Heritage Properties		[Resource Information]
Name	State	Status
Natural		
The West Kimberley	WA	Listed place

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Roebuck bay	Within Ramsar site

Listed Threatened Ecological Communities		[Resource Information]

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

Name	Status	Type of Presence
Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Endangered	Community may occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat may occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat may occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat known to occur within area
Malurus coronatus coronatus Purple-crowned Fairy-wren (western) [64442]	Endangered	Extinct within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species

Name	Status	Type of Presence
		habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat known to occur within area
Rostratula australis Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat may occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Petrogale lateralis West Kimberley race Black-footed Rock-wallaby (West Kimberley race) [66650]	Vulnerable	Species or species habitat known to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
Plants		
Pandanus spiralis var. flammeus Edgar Range Pandanus [8825]	Endangered	Species or species habitat known to occur within area
Reptiles		
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Ctenotus angusticeps Northwestern Coastal Ctenotus, Airlie Island Ctenotus [25937]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Sharks		
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
[Glyphis garricki](#) Northern River Shark, New Guinea River Shark [82454]	Endangered	Breeding likely to occur within area
[Pristis clavata](#) Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
[Pristis zijsron](#) Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
[Anous stolidus](#) Common Noddy [825]		Species or species habitat likely to occur within area
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat known to occur within area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
[Fregata minor](#) Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area
[Sternula albifrons](#) Little Tern [82849]		Congregation or aggregation known to occur within area
Migratory Marine Species		
[Anoxypristis cuspidata](#) Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat may occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur

Name	Threatened	Type of Presence within area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known to occur within area
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Dugong dugon](#) Dugong [28]		Foraging, feeding or related behaviour known to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
[Manta alfredi](#) Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
[Manta birostris](#) Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area
[Pristis clavata](#) Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
[Pristis zijsron](#) Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
[Sousa chinensis](#) Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
[Tursiops aduncus (Arafura/Timor Sea populations)](#) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area

Migratory Terrestrial Species

Name	Threatened	Type of Presence
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat known to occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting known to occur

Name	Threatened	Type of Presence
		within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species

Name	Threatened	Type of Presence
		habitat known to occur within area
[Anous stolidus](#) Common Noddy [825]		Species or species habitat likely to occur within area
[Anseranas semipalmata](#) Magpie Goose [978]		Species or species habitat may occur within area
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area
[Ardea alba](#) Great Egret, White Egret [59541]		Species or species habitat known to occur within area
[Ardea ibis](#) Cattle Egret [59542]		Species or species habitat may occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]		Roosting known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Roosting known to occur within area
[Calidris alba](#) Sanderling [875]		Roosting known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area
[Calidris ruficollis](#) Red-necked Stint [860]		Roosting known to occur within area
[Calidris tenuirostris](#) Great Knot [862]	Critically Endangered	Roosting known to occur within area
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat known to occur within area
[Charadrius bicinctus](#) Double-banded Plover [895]		Roosting known to occur within area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Roosting known to occur within area
[Charadrius mongolus](#) Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
[Charadrius ruficapillus](#) Red-capped Plover [881]		Roosting known to occur within area
[Charadrius veredus](#) Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area
[Chrysococcyx osculans](#) Black-eared Cuckoo [705]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting known to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Roosting known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area
Hirundo daurica Red-rumped Swallow [59480]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area

Name	Threatened	Type of Presence
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Sterna albifrons Little Tern [813]		Congregation or aggregation known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area
Fish		
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammals		
Dugong dugon Dugong [28]		Foraging, feeding or related behaviour known

Name	Threatened	Type of Presence
		to occur within area
Reptiles		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Seasnake [1121]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnston's River Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrelaps darwiniensis Black-ringed Seasnake [1100]		Species or species habitat may occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Hydrophis mcdowelli null [25926]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [1111]		Species or species habitat may occur within area
Lapemis hardwickii Spine-bellied Seasnake [1113]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Orcaella brevirostris Irrawaddy Dolphin [45]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Broome Bird Observatory	WA
Karajarri	WA
Unnamed WA51105	WA
Unnamed WA51497	WA
Unnamed WA51583	WA
Unnamed WA51617	WA
Unnamed WA51932	WA

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat may occur within area
Mammals		
Camelus dromedarius Dromedary, Camel [7]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat likely to occur within area
Cryptostegia grandiflora Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Jatropha gossypifolia Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507]		Species or species habitat likely to occur within area
Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area
Prosopis spp. Mesquite, Algaroba [68407]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area
Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat likely to occur within area

Nationally Important Wetlands	[Resource Information]
Name	State
Roebuck Bay	WA
Roebuck Plains System	WA

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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

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

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

Coordinates

-18.38278 123.05392

Acknowledgements

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

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

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

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

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APPENDIX E BIRDLIFE AUSTRALIA BIRDATA RECORDS

Brirdlife Australia Birdata records for the Dampier Downs Road Easement study area (80km buffer)

Common Name	Scientific Name	Count	Reporting Rate
Emu	*Dromaius novaehollandiae*	11	11.70%
Wandering Whistling-Duck	*Dendrocygna arcuata*	1	1.06%
Pacific Black Duck	*Anas superciliosa*	1	1.06%
Brown Quail	*Synoicus ypsilophora*	1	1.06%
Spinifex Pigeon	*Geophaps plumifera*	3	3.19%
Crested Pigeon	*Ocyphaps lophotes*	14	14.89%
Diamond Dove	*Geopelia cuneata*	19	20.21%
Peaceful Dove	*Geopelia placida*	4	4.26%
Pheasant Coucal	*Centropus phasianinus*	6	6.38%
Horsfield's Bronze-Cuckoo	*Chalcites basalis*	7	7.45%
Pallid Cuckoo	*Heteroscenes pallidus*	14	14.89%
Australian Bustard	*Ardeotis australis*	11	11.70%
Tawny Frogmouth	*Podargus strigoides*	1	1.06%
Spotted Nightjar	*Eurostopodus argus*	6	6.38%
Australian Owlet-nightjar	*Aegotheles cristatus*	1	1.06%
Bush Stone-curlew	*Burhinus grallarius*	1	1.06%
Little Button-quail	*Turnix velox*	7	7.45%
Nankeen Night-Heron	*Nycticorax caledonicus*	3	3.19%
White-necked Heron	*Ardea pacifica*	1	1.06%
Black-breasted Buzzard	*Hamirostra melanosternon*	3	3.19%
Square-tailed Kite	*Lophoictinia isura*	1	1.06%
Wedge-tailed Eagle	*Aquila audax*	6	6.38%
Spotted Harrier	*Circus assimilis*	5	5.32%
Brown Goshawk	*Accipiter fasciatus*	3	3.19%
Collared Sparrowhawk	*Accipiter cirrocephalus*	2	2.13%
Whistling Kite	*Haliastur sphenurus*	3	3.19%
Black Kite	*Milvus migrans*	4	4.26%
Southern Boobook	*Ninox boobook*	6	6.38%
Rainbow Bee-eater	*Merops ornatus*	29	30.85%
Red-backed Kingfisher	*Todiramphus pyrrhopygius*	15	15.96%
Blue-winged Kookaburra	*Dacelo leachii*	2	2.13%
Nankeen Kestrel	*Falco cenchroides*	17	18.09%
Brown Falcon	*Falco berigora*	13	13.83%
Peregrine Falcon	*Falco peregrinus*	2	2.13%
Cockatiel	*Nymphicus hollandicus*	3	3.19%
Red-tailed Black-Cockatoo	*Calyptorhynchus banksii*	1	1.06%
Galah	*Eolophus roseicapilla*	1	1.06%
Major Mitchell's Cockatoo	*Cacatua leadbeateri*	5	5.32%
Little Corella	*Cacatua sanguinea*	6	6.38%
Red-winged Parrot	*Aprosmictus erythropterus*	7	7.45%
Budgerigar	*Melopsittacus undulatus*	13	13.83%

Common Name	Scientific Name	Count	Reporting Rate
Variegated Fairy-wren	*Malurus lamberti*	12	12.77%
Red-backed Fairy-wren	*Malurus melanocephalus*	1	1.06%
Black Honeyeater	*Sugomel niger*	6	6.38%
Little Friarbird	*Philemon citreogularis*	9	9.57%
Banded Honeyeater	*Cissomela pectoralis*	1	1.06%
Brown Honeyeater	*Lichmera indistincta*	40	42.55%
Black-chinned Honeyeater	*Melithreptus gularis*	9	9.57%
Pied Honeyeater	*Certhionyx variegatus*	6	6.38%
Rufous-throated Honeyeater	*Conopophila rufogularis*	6	6.38%
Crimson Chat	*Epthianura tricolor*	7	7.45%
White-gaped Honeyeater	*Stomiopera unicolor*	2	2.13%
Singing Honeyeater	*Gavicalis virescens*	47	50.00%
Grey-headed Honeyeater	*Ptilotula keartlandi*	35	37.23%
Grey-fronted Honeyeater	*Ptilotula plumula*	1	1.06%
Yellow-tinted Honeyeater	*Ptilotula flavescens*	1	1.06%
White-plumed Honeyeater	*Ptilotula penicillata*	5	5.32%
White-fronted Honeyeater	*Purnella albifrons*	1	1.06%
Yellow-throated Miner	*Manorina flavigula*	19	20.21%
Red-browed Pardalote	*Pardalotus rubricatus*	33	35.11%
Striated Pardalote	*Pardalotus striatus*	1	1.06%
White-throated Gerygone	*Gerygone olivacea*	3	3.19%
Western Gerygone	*Gerygone fusca*	1	1.06%
Weebill	*Smicrornis brevirostris*	5	5.32%
Grey-crowned Babbler	*Pomatostomus temporalis*	14	14.89%
Varied Sittella	*Daphoenositta chrysoptera*	4	4.26%
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	18	19.15%
White-winged Triller	*Lalage tricolor*	19	20.21%
Rufous Whistler	*Pachycephala rufiventris*	19	20.21%
Grey Shrike-thrush	*Colluricincla harmonica*	18	19.15%
Crested Bellbird	*Oreoica gutturalis*	6	6.38%
Pied Butcherbird	*Cracticus nigrogularis*	29	30.85%
Masked Woodswallow	*Artamus personatus*	20	21.28%
White-browed Woodswallow	*Artamus superciliosus*	1	1.06%
Black-faced Woodswallow	*Artamus cinereus*	22	23.40%
Little Woodswallow	*Artamus minor*	4	4.26%
Willie Wagtail	*Rhipidura leucophrys*	33	35.11%
Torresian Crow	*Corvus orru*	6	6.38%
Restless Flycatcher	*Myiagra inquieta*	2	2.13%
Magpie-lark	*Grallina cyanoleuca*	8	8.51%
Jacky Winter	*Microeca fascinans*	2	2.13%
Hooded Robin	*Melanodryas cucullata*	3	3.19%
Mistletoebird	*Dicaeum hirundinaceum*	8	8.51%
Pictorella Mannikin	*Heteromunia pectoralis*	1	1.06%

Common Name	Scientific Name	Count	Reporting Rate
Painted Finch	*Emblema pictum*	2	2.13%
Zebra Finch	*Taeniopygia guttata*	22	23.40%
Double-barred Finch	*Taeniopygia bichenovii*	1	1.06%
Australasian Pipit	*Anthus novaeseelandiae*	2	2.13%
Horsfield's Bushlark	*Mirafra javanica*	1	1.06%
Golden-headed Cisticola	*Cisticola exilis*	2	2.13%
Brown Songlark	*Cincloramphus cruralis*	1	1.06%
Rufous Songlark	*Cincloramphus mathewsi*	13	13.83%
Fairy Martin	*Petrochelidon ariel*	6	6.38%
Tree Martin	*Petrochelidon nigricans*	7	7.45%
Crow & Raven spp		1	1.06%

APPENDIX F CONSERVATION SIGNIFICANT PLANT RECORDS FROM TPFL AND WAHERB DATABASES

Conservation Significant Flora

Source			Taxa	Conservation Code
WAHerb		NatureMap	*Acacia monticola x tumida var. kulparn*	P3
WAHerb		NatureMap	*Acacia sp. Edgar Range* (S.D. Hopper 1763)	P1
WAHerb			*Aphyllodium beardii*	P1
WAHerb	TP List		*Aphyllodium glossocarpum*	P3
WAHerb			*Aphyllodium parvifolium*	P1
WAHerb			*Atriplex eremitis*	P1
WAHerb			*Bonamia oblongifolia*	P3
WAHerb			*Comesperma sabulosum*	P3
WAHerb			*Corchorus sp. Fitzroy Crossing* (A.J. Ewart s.n. PERTH 01526790)	P3
WAHerb		NatureMap	*Corymbia paractia*	P1
WAHerb		NatureMap	*Croton aridus*	P3
WAHerb		NatureMap	*Dasymalla chorisepala*	P3
WAHerb			*Eriochloa fatmensis*	P3
WAHerb			*Fimbristylis sieberiana*	P3
WAHerb	TP List	NatureMap	*Fuirena incrassata*	P3
WAHerb			*Fuirena nudiflora*	P3
WAHerb	TP List	NatureMap	*Glycine pindanica*	P3
WAHerb	TP List		*Gomphrena pusilla*	P2
WAHerb	TP List		*Goodenia byrnesii*	P3
WAHerb			*Goodenia sepalosa var. glandulosa*	P3
WAHerb			*Haemodorum capitatum*	P1
WAHerb	TP List		*Indigofera ammobia*	P3
WAHerb	TP List		*Ipomoea tolmerana subsp. occidentalis*	P1
WAHerb		NatureMap	*Jacquemontia sp. Broome* (A.A. Mitchell 3028)	P1
WAHerb		NatureMap	*Lophostemon grandiflorus subsp. grandiflorus*	P3
WAHerb	TP List		*Nicotiana heterantha*	P3
WAHerb		NatureMap	*Nicotiana heterantha*	P3
WAHerb	TP List	NatureMap	*Nymphoides beaglensis*	P3
WAHerb	TP List		*Olax spartea*	P2
WAHerb	TP List	NatureMap	*Pandanus spiralis var. flammeus*	T
WAHerb	TP List		*Pittosporum moluccanum*	P4
WAHerb		NatureMap	*Polymeria distigma*	P3
WAHerb		NatureMap	*Polymeria sp. Broome* (K.F. Kenneally 9759)	P3
WAHerb			*Pterocaulon xenicum*	P3
WAHerb			*Rothia indica subsp. australis*	P3
WAHerb		NatureMap	*Schoenoplectiella humillima*	P2
WAHerb			*Schoenus punctatus*	P3
WAHerb	TP List	NatureMap	*Seringia exastia*	T
WAHerb	TP List	NatureMap	*Seringia katatona*	P3
WAHerb			*Stylidium costulatum*	P3
WAHerb		NatureMap	*Stylidium pindanicum*	P3

Source			Taxa	Conservation Code
WAHerb	TP List		*Tephrosia andrewii*	P3
WAHerb		NatureMap	*Tephrosia pedleyi*	P3
WAHerb			*Tephrosia valleculata*	P3
WAHerb		NatureMap	*Terminalia kumpaja*	P3
WAHerb		NatureMap	*Tetragonia coronata*	P3
WAHerb			*Thespidium basiflorum*	P1
WAHerb			*Tribulopis marliesiae*	P3

APPENDIX G NATUREMAP NATURALISED (WEED) FLORA SPECIES WITHIN 40 KM OF THE STUDY AREA

Nature Map naturalized (weed) flora species list within 40 km of study area

Taxon	Family	WAOL rating	Control category	WONS
Acanthospermum hispidum	Asteraceae	Permitted - s11	None	-
Aerva javanica	Amaranthaceae	Permitted - s11	None	-
Ageratum conyzoides	Asteraceae	Permitted - s11	None	-
Alternanthera brasiliana	Amaranthaceae	Permitted - s11	None	-
Alternanthera pungens	Amaranthaceae	Permitted - s11	None	-
Alysicarpus ovalifolius	Fabaceae	Permitted - s11	None	-
Annona reticulata	Annonaceae	Permitted - s11	None	-
Asystasia gangetica subsp. gangetica	Acanthaceae	Permitted - s11	None	-
Azadirachta indica	Meliaceae	Permitted - s11	None	-
Bothriochloa pertusa	Poaceae	Permitted - s11	None	-
Calotropis gigantea	Apocynaceae	Permitted - s11	None	-
Cardamine sp. Jandakot (P. Luff s.n. 4/7/1969)	Brassicaceae	Not listed	Not rated	-
Catharanthus roseus	Apocynaceae	Permitted - s11	None	-
Cenchrus biflorus	Poaceae	Permitted - s11	None	-
Cenchrus ciliaris	Poaceae	Permitted - s11	None	-
Cenchrus echinatus	Poaceae	Permitted - s11	None	-
Cenchrus setiger	Poaceae	Permitted - s11	None	-
Chloris barbata	Poaceae	Permitted - s11	None	-
Citrullus lanatus	Cucurbitaceae	Permitted - s11	None	-
Clitoria ternatea	Fabaceae	Permitted - s11	None	-
Coccinia grandis	Cucurbitaceae	Prohibited Organism (s12)	Exclusion	-
Conyza bonariensis	Asteraceae	Permitted - s11	None	-
Corchorus olitorius	Malvaceae	Permitted - s11	None	-
Cryptostegia madagascariensis	Apocynaceae	Declared Pest (s22)	Exempt	-
Cucumis anguria var. anguria	Cucurbitaceae	Permitted - s11	None	-
Cyanthillium cinereum	Asteraceae	Not listed	Not rated	-
Cynodon dactylon	Poaceae	Permitted - s11	None	-
Cyperus compressus	Cyperaceae	Permitted - s11	None	-
Cyperus rotundus	Cyperaceae	Permitted - s11	None	-
Dactyloctenium aegyptium	Poaceae	Permitted - s11	None	-
Desmodium tortuosum	Fabaceae	Permitted - s11	None	-
Digitaria ciliaris	Poaceae	Permitted - s11	None	-
Digitaria radicosa	Poaceae	Not listed	Not rated	-
Echinochloa colona	Poaceae	Permitted - s11	None	-
Echinochloa frumentacea	Poaceae	Permitted - s11	None	-
Eclipta prostrata	Asteraceae	Not listed	Not rated	-
Eleusine indica	Poaceae	Permitted - s11	None	-
Eragrostis cilianensis	Poaceae	Permitted - s11	None	-
Eragrostis tenuifolia	Poaceae	Permitted - s11	None	-
Eruca sativa	Brassicaceae	Permitted - s11	None	-
Euphorbia heterophylla	Euphorbiaceae	Permitted - s11	None	-
Euphorbia hirta	Euphorbiaceae	Not listed	Not rated	-

Taxon	Family	WAOL rating	Control category	WONS
Euphorbia thymifolia	Euphorbiaceae	Not listed	Not rated	-
Flaveria trinervia	Asteraceae	Not listed	Not rated	-
Gamochaeta pensylvanica	Asteraceae	Permitted - s11	None	-
Gnaphalium polycaulon	Asteraceae	Permitted - s11	None	-
Gomphrena celosioides	Amaranthaceae	Permitted - s11	None	-
Gossypium hirsutum	Malvaceae	Permitted - s11	None	-
Guilleminea densa	Amaranthaceae	Permitted - s11	None	-
Indigofera oblongifolia	Fabaceae	Permitted - s11	None	-
Ipomoea batatas	Convolvulaceae	Permitted - s11	None	-
Ipomoea pes-tigridis	Convolvulaceae	Permitted - s11	None	-
Ipomoea triloba	Convolvulaceae	Permitted - s11	None	-
Jatropha gossypiifolia	Euphorbiaceae	Declared Pest (s22)	Management	x
Leucaena leucocephala subsp. leucocephala	Fabaceae	Permitted - s11	None	-
Lolium perenne	Poaceae	Permitted - s11	None	-
Macroptilium atropurpureum	Fabaceae	Permitted - s11	None	-
Malvastrum americanum	Malvaceae	Permitted - s11	None	-
Medicago polymorpha	Fabaceae	Permitted - s11	None	-
Mesosphaerum suaveolens	Lamiaceae	Permitted - s11	None	-
Momordica balsamina	Cucurbitaceae	Permitted - s11	None	-
Ocimum americanum	Lamiaceae	Permitted - s11	None	-
Ocimum basilicum	Lamiaceae	Permitted - s11	None	-
Oldenlandia corymbosa var. corymbosa	Rubiaceae	Permitted - s11	None	-
Oxalis corniculata	Oxalidaceae	Permitted - s11	None	-
Passiflora foetida	Passifloraceae	Permitted - s11	None	-
Peperomia pellucida	Piperaceae	Not Listed	Not rated	-
Phyla nodiflora var. nodiflora	Verbenaceae	Permitted - s11	None	-
Phyllanthus amarus	Phyllanthaceae	Permitted - s11	None	-
Phyllanthus tenellus	Phyllanthaceae	Not Listed	Not rated	-
Pistia stratiotes	Araceae	Declared Pest (s22)	Eradication	-
Portulaca pilosa	Portulacaceae	Permitted - s11	None	-
Prosopis glandulosa x velutina	Fabaceae	Permitted - s11	None	x
Raphanus raphanistrum	Brassicaceae	Permitted - s11	None	-
Ruellia tuberosa	Acanthaceae	Not listed	Not rated	-
Senna occidentalis	Fabaceae	Permitted - s11	None	-
Setaria verticillata	Poaceae	Permitted - s11	None	-
Sida cordifolia	Malvaceae	Permitted - s11	None	-
Solanum nodiflorum	Solanaceae	Permitted - s11	None	-
Sonchus oleraceus	Asteraceae	Permitted - s11	None	-
Stylosanthes hamata	Fabaceae	Permitted - s11	None	-
Tamarindus indica	Fabaceae	Permitted - s11	None	-
Trianthema portulacastrum	Aizoaceae	Permitted - s11	None	-
Tribulus terrestris	Zygophyllaceae	Permitted - s11	None	-
Trifolium cernuum	Fabaceae	Permitted - s11	None	-

Taxon	Family	WAOL rating	Control category	WONS
Urochloa mosambicensis	Poaceae	Permitted - s11	None	-
Urochloa mutica	Poaceae	Permitted - s11	None	-
Verbesina encelioides	Asteraceae	Permitted - s11	None	-