Cape Leveque Road Network Extension - Native Vegetation Clearing Permit

Supporting Document

December 2024

HORIZON POWER

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1 Introduction

1.1 Project Context

Regional Power Corporation, trading as (T/A) Horizon Power, is a Western Australian (WA) Government Trading Enterprise (GTE) and the state's regional and remote energy provider. Horizon Power operates under the *Electricity Corporations Act 2005* and is governed by a Board of Directors accountable to the Minister for Energy.

Horizon Power is proposing to install a new 2.4 km connection along Broome-Cape Leveque Road in Broome Western Australia (the Project) to connect the new Shire of Broome waste disposal facility.

The construction of the Project will require the permanent clearing of up to 2.4 ha in total, within a 4.82 ha development envelope. Specific detail of the proposed clearing is provided in **Section 3** of this document.

A Native Vegetation Clearing Permit (NVCP) will be required from the Department of Water and Environmental Regulation (DWER).

1.2 Scope and Purpose

This document has been prepared to support a Native Vegetation Clearing Permit (NVCP) application form for the Project. Specifically, this document provides further detail regarding the proposed activities (**Section 2**) and related clearing (**Section 3**).

To support environmental approvals for the Project, ecological surveys were undertaken by GHD (2024) (IBSA-2024-0323). The results of this survey, as well as an older survey undertaken for the Cape Leveque Road Upgrades for Main Roads (Biota, 2018) are summarised in **Section 4** of this document and have been taken into account when avoiding and mitigating the Project's environmental impacts (**Section 5**).

An assessment of the 10 Clearing Principles as outlined in '*A guide to the assessment of applications to clear native vegetation'* (DER, 2014) has also been undertaken and is presented **Section 8**.

A Construction Environment Management Plan (CEMP) has also been prepared in support of the NVCP Application and is provided in **Attachment A**.

2 Description of the Activity

2.1 Project Location

The Development Envelope (DE) is 2.4 ha and is located near the township of Broome within the Shire of Broome in the Kimberly region. The proposed network extension is located on three parcels along Broome-Cape Leveque Road (**Table 1; Figure 1**).

Table 1 Development Envelope for the Project

Site	Size of Development Envelope (ha)	Development Envelope location	Shire	Neighbouring land uses
Cape Leveque Network Extension	4.82 ha	Lot 305 on deposited plan 414127	Broome	Road, reserve, water extraction
		Lot 501 on deposited plan 414127		
		Lot 550 on deposited plan 421448		

Figure 1 | Project Location and Development Envelope

N

0 87.5 175 350 Meters

Scale: 1:10,000

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2.2 Activity Overview and Timelines

The Project will consist of a new powerline along Broome-Cape Leveque Road in Broome Western Australia (the Project).

Construction is proposed for 2026/2027, pending funding and contractual requirements, with commissioning to follow. A 5-year clearing permit is requested to accommodate supplier readiness, with clearing undertaken within 3 months of construction.

2.3 Land Access

Horizon will utilise the access conferred by Sections 46 and 49 of the *Energy Operators (Powers) Act 1979* (the Act) for the connection infrastructure. A notice of entry will be sent to land owners as required under the *Energy Operators (Powers) Act 1979.*

3 Description of Proposed Clearing

3.1 Proposed Clearing Area

The construction of the Project will require the permanent clearing of up to 2.4 ha for the Ring Main Unit (RMU), transformer, new power poles, the connection corridor and access tracks for maintenance, within a development envelope 4.82 ha in size.

3.2 Proposed Clearing Method

Mechanical removal will be undertaken for the infrastructure construction within the permanent clearing footprint.

4 Ecological Survey

A recent detailed flora and vegetation assessment along with a basic and targeted fauna assessment was undertaken by GHD in 2024. This survey area intersects the majority of the DE, except for the northern transformer which is 70 m outside of the survey area. The results from the GHD (2024) survey were extrapolated for this area.

A Biota Environmental Science (Biota) ecological assessment from 2018 overlaps the entire DE and was used to confirm the extrapolated data for the Waste Facility transformer outside of the GHD survey area. The surveys have been appended to this document (**Attachment B**).

Table 2 Summary of Ecological Surveys Relevant to the Survey Area

Survey	Summary of Findings
Kimberly IRP (Broome), Biological Survey (GHD, 2024) *IBSA Number: IBSA-2024-0323*	**Survey Dates:** 6 – 12 February 2024 **Broome Survey Area:** 988.84 ha (majority of DE within survey area, except for the northern transformer) **Flora / Vegetation Findings:** – A total of 174 flora species were recorded within the survey area. Representing 48 families and 118 genera. – Of these species, 14 were introduced common weed species. No Weeds of National Significance (WoNS) were recorded within the survey area. One Declared Pest (DP) **Azadirachta indica* (Neem) was recorded within the survey area. – No *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed flora were recorded within the survey area. – Seven DBCA listed priority flora species were recorded from the Broome survey area: 1. *Bonamia oblongifolia* (Priority (P) 3) 2. *Acacia monticola x tumida* var. *kulparn* (P3) 3. *Glycine pindanica* (P3) 4. *Jacquemontia* sp. Broome (A.A. Mitchell 3028) (P1) 5. *Polymeria* sp. Broome (K.F. Kenneally 9759) (P3) 6. *Terminalia kumpaja* (P3) 7. *Corymbia ? paractia* (P2) – No Threatened Ecological Communities (TECs) listed under the EPBC or Biodiversity Conservation Act 2016 (BC Act) were recorded within the survey area. – One Priority Ecological Community (PEC) by DBCA was recorded within the survey area: ○ Relict dune system dominated by extensive stands of Minyjuru (Mangarr – *Sersalisia sericea*) (P1) – Four vegetation types were recorded within the survey area, not including paddock or cleared areas: 1. VT05 - Variable from low open forest to open woodland (*Corymbia greeniana*, *C. zygophylla* and/or *C. flavescens*) with *Acacia eriopoda* or *A. eriopoda* x *tumida* var. *tumida* (tree form or occasionally shrub form where more recently burnt) and scattered *Acacia colei* var. *colei* on pindan plains and dunes of very low relief. 2. VT06 - Low open forest to tall shrubland (Pindan) dominated by *Acacia eriopoda* with emergent *Planchonia careyi*, *Corymbia greeniana* and *C. zygophylla* (occ. *Sersalisia sericea*) over scattered low trees of *Gyrocarpus americanus* subsp. *pachyphyllus*, *Hakea macrocarpa*, *Brachychiton diversifolius* subsp. *diversifolius* on pindan relict dune formation (aligns with Relict dune system dominated by extensive stands of Minyjuru (Mangarr – *Sersalisia sericea*) (P1 PEC). 3. VT07 - Low open forest of *Eucalyptus tectifica* and **Azadirachta indica* over *Melaleuca cajuputi* subsp. *cajuputi*, *Melaleuca glomerata, Lysiphyllum cunninghamii* and *Acacia colei* var. *colei* on clay dampland. 4. VT08 - Sparse trees of *Avicennia marina* subsp. *marina* and ?*Ceriops australis* over a sparse low samphire shrubland of *Tecticornia ?pergranulata* subsp. *elongata, Neobassia astrocarpa* and *Sesuvium portulacastrum* subsp. *portulacastrum* on tidal mudflats. – The condition of the vegetation within the survey area ranged from 'Excellent' to 'Completely Degraded', with majority of the survey area in 'Excellent' condition (923.80 ha, 93.42%).

Survey	Summary of Findings
	Fauna / Fauna Habitat Findings: – A total of 115 fauna species were recorded within the survey area. This includes 73 birds, 9 mammals and 30 reptile species. Of these recorded 3 are introduced species. – The survey recorded seven significant fauna species: 1. Northern Blue-tongue Skink (*Tiliqua scincoides intermedia*) – Critically Endangered under EPBC Act 2. Bilby (*Macrotis lagotis*) – Vulnerable under EPBC and BC Acts 3. Northern Brushtail Possum (*Trichosurus vulpecula arnhemensis*) - Vulnerable under EPBC and BC Acts 4. Bare-rumped Sheath-tailed Bat (*Saccolaimus saccolaimus*) – Vulnerable under EPBC Act and Priority 3 under BC Act 5. Fork-tailed Swift (*Apus pacificus*) – Migratory species under EPBC and BC Acts 6. Northern Coastal Free-tailed Bat (*Ozimops cobourgianus*) – Priority 1 on the DBCA priority fauna list 7. Yellow-lipped Cave Bat (*Vespadelus douglasorum*) – Priority 2 on the DBCA priority fauna list – Five fauna habitats were recorded within the survey area: 1. Pindan shrubland plain (908.73 ha, 91.9% of survey area) 2. Pindan shrubland relict dunes (44.35 ha, 4.48% of survey area) 3. Open *Eucalypt* dampland (0.63 ha, 0.06% of survey area) 4. Sparse mangrove tidal mudflat (0.91 ha, 0.09% of survey area) 5. Scattered plantings and native trees (4.59 ha, 3.94% of survey area)
Cape Leveque Road Upgrade Biological Survey (Biota, 2018) *IBSA Number: unknown*	**Survey Dates:** 30th April – 5th May 2018 **Survey Area:** 823 ha (including part of DE and northern Waste Facility transformer) **Flora / Vegetation Findings:** – A total of 189 flora species were recorded within the survey area. Representing 52 families and 133 genera. – Of these species, 19 were introduced common weed species. No WoNS nor DPs were recorded within the survey area. – No *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed flora were recorded within the survey area. – Six DBCA listed priority flora species were recorded from the survey area: 1. *Corymbia paractia* (P2) 2. *Jacquemontia* sp. Broome (AA.Mitchell 3028) (P1) 3. *Bonamia oblongifolia* (P3) 4. *Polymeria* sp. Broome (K.F. Kenneally 9759) (P3) 5. *Terminalisa kumpaja* (P3) 6. *Stylidium pindanicum* (P3)

Survey	Summary of Findings
	– No TECs or PECs listed under the EPBC or BC Act were recorded within the survey area. – Four vegetation types were recorded within the survey area, not including disturbed areas (i.e. existing Cape Leveque Road and other tracks): 1. Pindan Sandplains (P1): *Bauhinia cunninghamii*, *Corymbia zygophylla,* (*C. greeniana*) scattered low trees to low open woodland over *Acacia eriopoda*, *Ficus aculeata* var. *indecora* tall shrubland over *Dodonaea hispidula* (*Breynia cernua*) open shrubland over *Corchorus sidoides* subsp. *sidoides* low open shrubland over *Chrysopogon pallidus*, *Arisitda holathera* var. *latifolia*, *Eriachne obtusa* open tussock grassland over *Triodia celaestialis* scattered hummock grasses to very open hummock grassland. 2. Pindan Sandplains (P2): *Eucalyptus tectifica, Corymbia* spp.*, Bauhinia cunninghamii,* (*Brachychiton diversifolius* subsp. *diversifolius*) low woodland to low open woodland over *Acacia tumida* var. kulparn (*A. eriopoda*, *Ventilago viminalis*, *Persooonia falcata*) tall shrubland over *Breynia cernua, Dolichandrone occidentalis* (*Grewia retusifolia*) open shrubland over *Corchorus sidoides* subsp. *sidoides* scattered low shrubs over *Chrysopogn pallidus*, *Whiteochloa airoides, Sehima nervosum,* (*Aristida holathera* var. *latifolia*) tussock grassland over *Triodia celaestialis* open hummock grassland. 3. Clay Plains (P3): *Eucalyptus tectifica*, *Bauhinia cunninghamii* low open woodland over *Sorghum plumosum* var. *plumosum,* (*Chrysopogon pallidus)* closed tussock grassland with *Zornia muelleriana* subsp. *congesta*, *Gossypium rotundifolium*, *Galactia tenuiflora* very open herbland. 4. Damplands (D1): *Melaleuca alsophila* low woodland over *Flueggea virosa* subsp. *melanthesoides* scattered shrubs over **Stylosanthes hamata* (**Mesosphaerum suaveolens)* low open heath over *Eriachne obtusa*, *Sorghum plumosum* var. *plumosum* (*Panicum seminudum*, *Ectrosia schultzia* var. *schultzia*, *Chrysopogon pallidus*) open tussock grassland with *Fimbristylis microcarya*, *F. rara* very open sedgeland. – The D1 vegetation unit is a locally restricted unit and is also Groundwater Dependent Vegetation. It is considered important in the maintenance of the functioning of the Nimalaica Clayplan PEC immediately to the west. – The P2 and P3 vegetation units are considered to be potentially Groundwater Dependent Vegetation. – The condition of the vegetation within the survey area ranged from 'Very' to 'Disturbed Cleared', with majority of the survey area in 'Very Good' condition (793.4 ha, 89.9%). **Fauna / Fauna Habitat Findings:** – A total of 68 fauna species were recorded within the survey area. This includes 53 birds, 8 mammals and 7 reptile species. Of these recorded 5 are introduced species. – The survey recorded three significant fauna species: 1. Eastern Great Egret (*Ardea modesta*) (currently listed as *Ardea alba*) – Listed as Marine under EPBC Act 2. Rainbow Bee-eater (*Merops ornatus*) - Listed as Marine under EPBC Act 3. Bilby (*Macrotis lagotis*) – Vulnerable under EPBC and BC Act – Three fauna habitats were recorded within the survey area: 1. *Corymbia* and *Bauhinia* Low Open Woodland on sandplain 2. Melaleuca Woodland damplands 3. Man-made Dam – A targeted Bilby assessment was undertaken resulting in a high certainty of Bilby tracks, diggings and burrows (including active Bilby burrows) within the survey area. Majority of the survey area (737.48 ha, 89.6%) was assessed as High prospectivity as Bilby habitat.

5 Existing Environment

The existing environment is summarised in **Table 3**.

Table 3 Existing environment

<table>
<tr><th>Environmental value</th><th>Assessment</th></tr>
<tr><td>Vegetation associations, types and condition</td><td>The DE is located within one Pre-European Vegetation Association, Dampierland vegetation association (750). Characterised as Pindan woodland: Acacia thicket with Eucalypt woodland over spinifex Acacia tumida, Eucalyptus tectifica, Corymba grandfolia, Triodia pungens, T. bitextura. More than 99% of this vegetation association remains.
<table>
<tr><th>Vegetation association</th><th>Scale</th><th>Pre-European extent (ha)</th><th>Current extent (ha)</th><th>% Remaining</th><th>% of current extent in all DBCA managed land (proportion of current extent)</th></tr>
<tr><td rowspan="4">750</td><td>State: WA</td><td>1,231,155.50</td><td>1,225,687.52</td><td>99.56</td><td>2.78</td></tr>
<tr><td>IBRA Bioregion: Dampierland</td><td>1,229,182.16</td><td>1,225,280.52</td><td>99.68</td><td>2.78</td></tr>
<tr><td>IBRA Subregion: Pindanland</td><td>1,221,734.45</td><td>1,217,843.72</td><td>99.68</td><td>2.80</td></tr>
<tr><td>LGA: Shire of Broome</td><td>1,115,559.36</td><td>1,110,131.18</td><td>99.51</td><td>3.07</td></tr>
</table>
The vegetation in the DE was predominately recorded as VT05: Variable from low open forest to open woodland (Corymbia greeniana, C. zygophylla and/or C. flavescens) with Acacia eriopoda or A. eriopoda x tumida var. tumida (tree form or occasionally shrub form where more recently burnt) and scattered Acacia colei var. colei on pindan plains and dunes of very low relief (GHD, 2024).
The previous Biota (2018) survey recorded the vegetation within the DE as Pindan plains (P1): Bauhinia cunninghamii, Corymbia zygophylla, (C. greeniana) scattered low trees to low open woodland over Acacia eriopoda, Ficus aculeata var. indecora tall shrubland over Dodonaea hispidula (Breynia cernua) open shrubland over Corchorus sidoides subsp. sidoides low open shrubland over Chrysopogon pallidus, Arisitda holathera var. latifolia, Eriachne obtusa open tussock grassland over Triodia celaestialis scattered hummock grasses to very open hummock grassland.
The biological surveys identified vegetation condition ranging from ‘Very Good’ to ‘Completely Degraded’ within the DE, as follows:
<table>
<tr><th>Vegetation type</th><th>Extent (ha) within DE</th><th>Condition</th><th>Extent (ha) within DE</th><th>Extent (%) within DE</th></tr>
<tr><td rowspan="2">VT05</td><td rowspan="2">3.84 ha</td><td>Excellent</td><td>3.84 ha</td><td>79.7%</td></tr>
<tr><td>Very Good</td><td>0.01 ha</td><td>0.2%</td></tr>
<tr><td>Rehabilitation</td><td>0.01 ha</td><td>n/a</td><td>0.01 ha</td><td>0.2%</td></tr>
<tr><td>Cleared</td><td>0.85 ha</td><td>Cleared/Completed Degraded</td><td>0.85 ha</td><td>17.6%</td></tr>
<tr><td>P1</td><td>0.11 ha</td><td>Very Good</td><td>0.11 ha</td><td>2.3%</td></tr>
<tr><td colspan="3">Total</td><td>4.82 ha</td><td>100%</td></tr>
</table></td></tr>
<tr><td>Fauna habitat</td><td>GHD (2024) identified two fauna habitat within the DE:
1. Pindan shrubland plain: described as variable from low open forest to open woodland (Corymbia greeniana, C. zygophylla and/or C. flavescens) with Acacia eriopoda or A.eriopoda x tumida var. tumida (tree form or occasionally shrub form where more recently burnt) and scattered Acacia colei var. colei on pindan plains and dunes of very low relief.
2. Scattered plantings and native trees: Planted native Corymbia/Eucalyptus trees over weeds on maintained road verge.
Biota (2018) identified the fauna habitat in the Waste Facility transformer as Corymbia and Bauhinia Low Open Woodland on sandplain. Characterised by Corymbia and Bauhinia spp. low open woodland over mixed</td></tr>
</table>

<table>
<tr><th>Environmental value</th><th>Assessment</th></tr>
<tr><td></td><td>shrubland dominated by Acacia spp., Corhorus sidoides, Flueggea virosa and Breynia cernua shrubs over mixed tussock grassland dominated by Chrysopogon pallidus over Triodia species hummock grassland on sandplains. The Corymbia and Bauhinia Low Open Woodland on sandplain fauna habitat is not rare or restricted and occurs more widely in the region (Biota, 2018).
Fauna habitats are detailed below.
<table>
<tr><th>Fauna habitat</th><th>Extent (ha) within DE</th><th>Extent (%) within DE</th></tr>
<tr><td>Pindan Shrubland plain</td><td>3.85 ha</td><td>79.9%</td></tr>
<tr><td>Scattered plantings and native trees</td><td>0.01 ha</td><td>0.2%</td></tr>
<tr><td>Corymbia and Bauhinia Woodland</td><td>0.11 ha</td><td>2.3%</td></tr>
<tr><td>Cleared and degraded areas</td><td>0.85 ha</td><td>17.6%</td></tr>
<tr><td>Total</td><td>4.82 ha</td><td>100%</td></tr>
</table></td></tr>
<tr><td>Significant fauna</td><td>The Bilby (Vulnerable under BC Act) was recorded in both the Biota (2018) and GHD (2024) surveys and is therefore known to occur in the DE. Additional species recorded by GHD (2024) are also considered known to occur in the DE, includes the following:
1. Northern Brushtail Possum (Trichosurus vulpecula arnhemensis) - Vulnerable under BC Act
2. Bare-rumped Sheath-tailed Bat (Saccolaimus saccolaimus) – Priority 3 under DBCA priority fauna list
3. Fork-tailed Swift (Apus pacificus) – Migratory species under BC Acts
4. Northern Coastal Free-tailed Bat (Ozimops cobourgianus) – Priority 1 on the DBCA priority fauna list
5. Yellow-lipped Cave Bat (Vespadelus douglasorum) – Priority 2 on the DBCA priority fauna list
10 conservation significant fauna species are considered likely or may occur post-surveys, due to potentially suitable habitat and close proximity of previous records (see Attachment C for further detail).</td></tr>
<tr><td>Significant ecological linkage</td><td>The Project is not part of a significant ecological linkage.</td></tr>
<tr><td>Ecological communities</td><td>No State or Federally listed Threatened Ecological Communities were recorded within the DE by GHD (2024) and Biota (2024). One Priority Ecological Community (PEC) was recorded within the survey area (GHD, 2024) the Relict dune system dominated by extensive stands of Minyjuru (Mangarr – Sersalisia sericea) (P1). This PEC does not intersect the DE but is in close proximity.</td></tr>
<tr><td>Significant flora</td><td>The following Conservation Significant Flora species were recorded in the DE (GHD, 2024; Biota, 2018):
1. Polymeria sp. Broome (K.F. Kenneally 9759) (P3)
2. Glycine pindanica (Priority 3)
An additional 7 species are considered likely to occur within the DE (Biota, 2018; GHD, 2024), and are detailed in Attachment D.</td></tr>
<tr><td>Wetlands and/or waterways</td><td>No impacts to waterways and no water extraction from a waterway is proposed for the works. No significant wetlands or rivers intersect the DE.
There is a mapped Important Wetland, Roebuck Bay, approximately 3 m south of the DE (spatial dataset DBCA-045). This important wetland connects to the Roebuck Bay Ramsar site (spatial dataset DBCA-010). However, surface water was not reported within the DE (Biota, 2018) and therefore no impacts are expected.</td></tr>
<tr><td>Water resources</td><td>The DE overlaps the Broome Groundwater Area and the Cape Leveque Coast Surface Water Area (spatial dataset DWER-085 & DWER-082; GoWA, 2022).
No Public Drinking Water Source Areas (PDSWAs) are present within the DE, however there is one in close proximity, the Broome Water Reserve, approximately 200 m north-east of the DE (spatial dataset DWER-033).
The Australian Groundwater Explorer (BoM, 2024) located 26 bores near the DE with the Perth Groundwater Map identifying groundwater level as 21.94 m below ground level (Gov WA, 2017).
No impacts are expected with digging being to 4 m depth or less.</td></tr>
<tr><td>Conservation Reserves</td><td>No DBCA managed conservation areas overlap the DE. However, there is an unnamed reserve protected under the CALM Act 1984 approximately 800 m west of the Project (spatial dataset DWER-046; GoWA, 2024).</td></tr>
</table>

Environmental value	Assessment
Environmentally Sensitive Areas	An ESA intersects the DE, a mapped Threatened Ecological Community Roebuck Bay Mudflats intersects the southern portion of the DE (spatial dataset DWER-046; GoWA, 2024). However, this TEC wasn't recorded during the Biota (2018) nor by the GHD (2024) surveys.
Land and soil quality	A review of Acid Sulphate Soil (ASS) risk mapping (spatial dataset DWER-048 & DWER-049; GoWA, 2024) indicates the DE is not in within or close to mapped ASS. The closest mapped ASS is 3 km south of the DE. No contaminated sites occur within 5 km of the DE (spatial dataset DWER-059; GoWA, 2024). The closest contaminated site (Object ID 5745, Remediated – restricted use) is located 7 km south-west from the DE.
Environmental heritage	There are no National or World Heritage Areas mapped as overlapping the DE.
Air quality	The proposed works are unlikely to contribute significantly to dust. Dust will be managed during construction in accordance with the CEMP (**Attachment A**). No significant receptors are directly adjacent to the Project and no significant air emissions are expected that would impact the airshed.
Amenity values	The proposed construction is expected to generate typical construction noise, no sensitive receptors are directly adjacent to the DE, therefore no significant noise or vibration impacts are expected. No heritage buildings are present that may be impacted by vibration.

6 Avoidance, Mitigation and Management Measures

6.1 Avoidance

Initial avoidance and minimisation was undertaken during site selection, including placement of the proposed infrastructure close to existing assets to reduce the clearing associated with the connection corridor.

Consultation was undertaken with the local Department of Biodiversity, Conservation and Attractions with regards to the Priority flora identified in the GHD (2024) biological survey. Based on this consultation, DBCA requested that Horizon Power prioritise avoidance of *Glycine pindanica, Jacquemontia sp.* Broome and *Corymbia paractia* due to restricted distributions. Both *Jacquemontia sp.* Broome and *Corymbia paractia* have been completely avoided during route selection. Two individuals of *Glycine pindanica* will be cleared for the project.

Project alignment has also been selected to avoid any clearing of P1 PEC Relict dune system dominated by extensive stands of Minyjuru (Mangarr – *Sersalisia sericea*).

6.2 Mitigation

A CEMP has been developed for the Project (**Attachment A**) which lists the specific mitigation and management measures to be applied during construction of the Project. Key management measures include:

- No clearing permitted outside of the DE.
- Clearing will be minimised where possible through placement of assets in existing cleared locations.
- Clearing locations will be demarcated prior to clearing activities.
- Clearing areas are to be checked by an Environmental Specialist or Site Supervisor prior to clearing to ensure no more than 2.4 ha of clearing is undertaken.
- A pre-clearing environmental toolbox will be held so all personnel are aware of their responsibilities under the permit.
- Clearing of native vegetation will be undertaken in a slow, progressive manner in one direction to allow fauna to move away from the clearing area.

6.3 Management

As mentioned in **Section 1.2**, a CEMP has been developed for the Project which lists the specific mitigation and management measures to be applied during construction of the Project (see **Attachment A**).

7 Stakeholder Engagement

Engagement with Shire of Broome, Main Roads and Water Corporation has been undertaken for this project.

8 Assessment Against the 10 Clearing Principles

An assessment against the 10 Clearing Principles outlined by DWER (2014) has been undertaken to support the NVCP application for the Project, as presented in **Table 4**. The assessment found that the proposed clearing of native vegetation for the Project 'may be at variance' to principle a) & and is 'at variance' to principle b).

Table 4 Assessment Against the 10 Clearing Principles

Principle	Assessment	Outcome
(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	Up to 2.4 ha of native vegetation is proposed to be cleared for the Project. **Vegetation** The DE is located in the Dampierland bioregion and the Pindanland sub-region as described by IBRA. More than 99% of this vegetation association remains. Two vegetation types were identified in the DE by the Biota (2018) and GHD (2024) surveys. The P1 vegetation was reported as "widespread on pindan sandplain in the locality, and is not considered to be of elevated conservation significance (Biota, 2018). GHD (2024) did not report on the significance of VT05, however the description of vegetation is similar to P1 (see **Section 5**) and is therefore also considered to not be of conservation significance. The GHD (2024) survey report identified vegetation condition ranging from 'Very Good' to 'Completely Degraded', with the majority of the vegetation within the DE classed as 'Excellent. No TECs listed under the EPBC Act or BC Act were identified in the DE (GHD, 2024; Biota, 2018). However, GHD (2024) did report a P1 PEC, a Relict Dune System, directly adjacent to the project. **Flora** 174 flora species were recorded, representing 48 families and 118 genera (GHD, 2024). Of these species, two were introduced common weed species. None were listed as a Declared Pest or Weeds of National Significance. No Threatened flora or communities were recorded within the DE. Two Priority Flora were recorded within the DE (GHD, 2024; Biota, 2018), including: – 15 individuals of *Polymeria* sp. Broome (K.F. Kenneally 9759) (P3) – 2 individuals of *Glycine pindanica* (P3) **Fauna and fauna habitat** Three fauna habitats were recorded within the DE (GHD, 2024), with the Pindan shrubland plains identified as suitable habitat for a number of conservation significant species (**Attachment C**). All habitats extend beyond the DE boundary and are likely utilised by a variety of fauna species, including those of conservation significance (GHD, 2024; Biota, 2018). The following species were recorded during field surveys (Biota, 2018; GHD, 2024): – The Greater Bilby (*Macrotis lagotis*) – Vulnerable under BC Act – Northern Brushtail Possum (*Trichosurus vulpecula arnhemensis*) - Vulnerable under BC Act – Bare-rumped Sheath-tailed Bat (*Saccolaimus saccolaimus*) – Priority 3 under DBCA priority fauna list – Fork-tailed Swift (*Apus pacificus*) – Migratory species under BC Acts – Northern Coastal Free-tailed Bat (*Ozimops cobourgianus*) – Priority 1 on the DBCA priority fauna list – Yellow-lipped Cave Bat (*Vespadelus douglasorum*) – Priority 2 on the DBCA priority fauna list	May be at variance.

	A further 13 threatened or migratory species are considered likely or may occur post surveys, due to potentially suitable habitat and close proximity of previous records (see **Attachment C**). Based on this assessment, it is considered that the DE might contain vegetation that represents a high level of biological biodiversity. While the habitat is abundant in the region, clearing for the project may be at variance to this principle.	
(b) Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous Western Australia.	Three fauna habitats were identified in the DE (GHD, 2024; Biota, 2018): 1. Pindan Shrubland plain 2. Scattered plantings and native trees 3. Corymbia and Bauhinia Woodland The following species were recorded during field surveys (Biota, 2018; GHD, 2024): – Greater Bilby (*Macrotis lagotis*) – Vulnerable under BC Act – Northern Brushtail Possum (*Trichosurus vulpecula arnhemensis*) - Vulnerable under BC Act – Bare-rumped Sheath-tailed Bat (*Saccolaimus saccolaimus*) – Priority 3 under DBCA priority fauna list – Fork-tailed Swift (*Apus pacificus*) – Migratory species under BC Acts – Northern Coastal Free-tailed Bat (*Ozimops cobourgianus*) – Priority 1 on the DBCA priority fauna list – Yellow-lipped Cave Bat (*Vespadelus douglasorum*) – Priority 2 on the DBCA priority fauna list A further 10 threatened or migratory species are considered likely or may occur post surveys, due to potentially suitable habitat and close proximity of previous records. This includes: – Grey Falcon (*Falco hypoleucos*) – Vulnerable under BC Act – Peregrine Falcon (*Falco peregrinus*) – OSP under BC Act – Northern Short-tailed Mouse (*Leggadina lakedownensis*) – Priority 4 under DBCA list – Gouldian Finch (*Chleobia gouldiae*) – Priority 4 under DBCA list – Osprey (*Pandion haliaetus*) – Migratory under BC Act – Dampierland Plain Slider (*Lerista separanda*) – Priority 2 under DBCA priority fauna list – Dampierland Burrowing Snake (*Simoselaps minimus*) - Priority 2 under DBCA priority fauna list – Golden-backed Tree-rat (*Mesembriomys macrurus*) – Priority 4 under DBCA priority fauna list – Princess Parrot (*Polytelis alexandrae*) – Priority 4 under DBCA priority fauna list – Masked Owl (*Tyto novaehollandiae kimberli*) – Priority 1 under DBCA priority fauna list The habitat preferences and suitable habitat within the DE for the conservation significant fauna that are considered known, likely or may occur within the DE are described in **Attachment C**. The discussion of potential impacts for these species is provided below. *Greater Bilby – Known to Occur*	At variance.

	The Bilby is listed as Vulnerable under the BC Act and is known to occur in the DE. Critical habitat for this species includes any area where the species is known of likely to occur (DCCEEW, 2023). Therefore, the Pindan shrubland vegetation type the DE are considered habitat critical to the survival of the Bilby. The *Corymbia* and *Bauhinia* Low Open Woodland habitat type is expected to be occasionally used by Bilby, but also meets the definition of critical habitat for this species. Up to 2.4 ha of bilby habitat may be cleared for the Project. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Bilby is widespread within a 20 km radius of the DE. Despite Bilby habitat being widespread in the area, clearing of up to 2.4 ha of critical habitat is required for the project. *Northern Brushtail Possum – Known to Occur* The Northern Brushtail Possum is Vulnerable under the BC Act and known to occur in the DE in low numbers. Important and/or critical habitat for this species is not defined (TSSC, 2021). However, trees with suitable hollows are considered potential nesting habitat for this species. One tree with hollow is present within the DE, and is considered important habitat. All other trees have been avoided through project placement. Only one potential habitat tree will be impacted, significant impacts to the Northern Brushtail Possum are not expected as a result of the Project. *Bare-rumped Sheath-tailed Bat – Known to Occur* The Bare-rumped Shealth-tailed Bat is listed as Priority 3 under the DBCA priority fauna list and known to occur in the DE. As described in **Attachment C**, knowledge of the species foraging and roosting habitats are limited, however it is considered that suitable habitat within the DE for this species includes the Pindan shrubland habitat type. This habitat is likely used as foraging and commuting habitat, which is considered habitat critical to the survival of the species (Schylz and Thomson, 2007). Therefore, these habitats are considered critical habitat for Bare-rumped Sheath-tail Bat. Up to 2.4 ha may be cleared for the project. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Bare-rumped Sheath-tailed Bat is widespread within a 20 km radius of the DE. Habitat trees recorded are likely to provide suitable roosting habitat for the species and is considered important habitat, with only one suitable hollow bearing tree within the DE. *Fork-tailed Swift – Known to Occur* The Fork-tailed Swift is listed as Migratory under the BC Act and known to occur in the DE. As described in **Attachment C**, this species forages aerially and rarely lands. Further, this species is expected to be a seasonal visitor during non-breeding period. Therefore, the clearing of up to 2.4 ha of supporting habitat is not expected to significantly impact this species. *Northern Coastal Free-tailed Bat – Known to Occur* The Northern Coastal Free-tailed Bat is listed as Priority 1 under the DBCA priority fauna list. As described in **Attachment C**, critical or important habitat is not defined. Based on the GHD (2024) report, it is assumed that all habitats would provide suitable foraging, dispersal and roosting habitat for the species. Habitat trees recorded are likely to provide suitable roosting habitat for the species and is considered important habitat. One suitable roosting trees is located within the DE. As habitat trees will mainly be avoided, a significant impact to the Northern Coastal Free-tailed Bat is not expected as a result of the Project. *Yellow-lipped Cave Bat – Known to Occur*	

	This species is listed as Priority 2 under the DBCA priority fauna list and is known to occur in the DE. As described in **Attachment C**, there is limited ecological information available. It is assumed that this species would utilise the Pindan shrubland for foraging and dispersal only, with no suitable roosting caves or crevices present within the DE. Further, the species may fly-over/disperse through the other habitat types within the DE. Therefore, up to 2.4 ha of supporting habitat may be cleared for the Project. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Yellow-lipped Cave Bat is widespread within a 20 km radius of the DE. Therefore, a significant impact to the Yellow-lipped Cave Bat is not expected as a result of the Project. *Grey Falcon – Likely to Occur* The Grey Falcon is listed as Vulnerable under the BC Act and is likely to occur within the DE. As described in **Attachment C**, the Pindan shrubland habitat type would provide suitable hunting habitat for the Grey Falcon. Up to 2.4 ha of this supporting habitat may be cleared for the Project. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Grey Falcon is widespread within a 20 km radius of the DE. Therefore, a significant impact to the Grey Falcon is not expected as a result of the Project. *Peregrine Falcon – May Occur* The Peregrine Falcon is listed as Other Specially Protected under the BC Act and may occur within the DE. As described in **Attachment C**, the Pindan shrubland habitat type would provide suitable hunting habitat for the Peregrine Falcon. Up to 2.4 ha of this supporting habitat may be cleared for the Project. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Peregrine Falcon is widespread within a 20 km radius of the DE. Therefore, a significant impact to the Peregrine Falcon is not expected as a result of the Project. *Northern Short-tailed Mouse – Likely to Occur* The Northern Short-tailed Mouse is listed as Priority 4 under the BC Act and is likely to occur within the DE. As described in **Attachment C**, the Pindan shrubland habitat type would provide suitable habitat for this species. Up to 2.4 ha of this supporting habitat may be cleared for the Project. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Northern Short-tailed Mouse is widespread within a 20 km radius of the DE. Therefore, a significant impact to this species is not expected as a result of the Project. *Gouldian Finch – Likely to Occur* The Gouldian Finch is listed as Migratory under the BC Act and is likely to occur within the DE. As described in **Attachment C**, this species may forage on seed grasses when seasonally available, with the woodland habitat throughout the DE having a paucity of suitable nesting/breeding habitat, however lacks nearby water sources, therefore may be seasonal use only (GHD, 2024). Habitats within the DE do not match the known breeding habitat defined within the species' recovery plan (O'Malley, 2006). Up to 2.4 ha of foraging habitat may be cleared for the project.	

	Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Gouldian Finch is widespread within a 20 km radius of the DE. Therefore, a significant impact to this species is not expected as a result of the Project. *Osprey – May Occur* The Osprey is listed as Priority 4 under the DBCA priority fauna list and may occur within the DE. As described in **Attachment C**, this species was previously recorded within the Pindan shrubland habitat (GHD, 2024) occupying a nest. No important habitats/sites nor habitat critical to the survival of the above species is defined. Therefore, these habitat can be considered important habitat. Up to 2.4 ha of this habitat may be cleared for this species. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for the Osprey is widespread within a 20 km radius of the DE. Therefore, a significant impact to this species is not expected as a result of the Project. *Dampierland Plain Slider & Dampierland Burrowing Snake – May Occur* Both species are listed as Priority 2 under the DBCA priority fauna list and may occur within the DE. As described in **Attachment C**, if present both species would utilise the low elevation ancient dunes supporting shrublands within both habitats. Critical and/or important habitat is not defined for this species. Up to 2.4 ha of supporting habitat will be cleared for this Project. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat for both species is widespread within a 20 km radius of the DE. Therefore, a significant impact to these species is not expected as a result of the Project. *Golden-backed Tree-rat – May Occur* The Golden-backed Tree-rat is listed as Priority 4 under the DBCA priority fauna list and may occur within the DE. As described in **Attachment C**, if present this species would utilise the woodland habitat within the DE. Critical and/or important habitat is not defined for this species, up to 2.4 ha of supporting habitat will be cleared for this Project. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat this species is widespread within a 20 km radius of the DE. Therefore, a significant impact to this species is not expected as a result of the Project. *Princess Parrot – May Occur* The Princess Parrot is listed as Priority 4 under the DBCA priority fauna list and may occur within the DE. As described in **Attachment C**, if present the species would utilise the Pindan shrublands habitat type. Up to 2.4 ha of supporting habitat will be cleared for this Project. Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat this species is widespread within a 20 km radius of the DE. Therefore, a significant impact to this species is not expected as a result of the Project. *Masked Owl – May Occur* The Masked Owl is listed as Priority 1 under the DBCA priority fauna list and may occur within the DE. As described in **Attachment C**, the DE does not contain suitable habitat for this species, however GHD (2024) reported it may hunt over the DE on an occasional basis. Up to 2.4 ha of hunting habitat will be cleared for this Project.	

	Based on aerial imagery and the Native Vegetation Extent (spatial dataset DPIRD-005, GoWA 2024) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2024) datasets, habitat this species is widespread within a 20 km radius of the DE. Therefore, a significant impact to this species is not expected as a result of the Project. Fragmentation of fauna habitats are not anticipated to result from this clearing, which will be mainly linear along exiting disturbance for Cape Leveque Road. Considering the availability of surrounding habitat and small scale of clearing, significant impacts are not expected to most species likely to utilise the DE. However, habitat within the DE is listed as habitat critical to the survival of the Greater Bilby and Bare-rumped Sheath-tailed Bat and is therefore the proposed clearing is at variance to this principle.	
(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	No flora species listed as Threatened under the BC Act were recorded in the DE during the GHD (2024) and Biota (2024) surveys. The project is considered not at variance to this principle.	Not at variance.
(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.	No TECs listed under the EPBC Act or BC Act were identified within the DE during the GHD (2024) and Biota (2018) field surveys. The project is considered not at variance to this principle.	Not at variance.
(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 project is located within one Pre-European Vegetation Association, Dampierland Association 750. More than 99% of this vegetation associations remain. The project is considered not at variance to this principle.	Not at variance.
(f) Native vegetation should not be cleared if it is growing in or in association with a watercourse or wetland.	No watercourses were identified as intersecting the DE during the desktop assessment nor field surveys (Biota, 2018, GHD, 2024). The DE does not intersect any wetlands of international importance (RAMSAR) or Nationally Important Wetlands. There is a mapped Important Wetland, Roebuck Bay, approximately 3 m south of the DE. No Public Drinking Water Source Areas (PDSWAs) are present within the DE, however there is one in close proximity, the Broome Water Reserve, approximately 200 m north-east of the DE The proposed clearing is linear in nature and directly adjacent to existing disturbance, no impacts are expected to watercourses or wetlands associated with the clearing. The proposed clearing is unlikely to be at variance to this principle.	Unlikely to be at variance.
(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	The soil landscape land quality mapping (spatial dataset DPIRD-017, GoWA 2024) indicates that the DE is within the Dampier Peninsula Sandplain Zone, which is described as 'Sandplains and dunes (with some sandy plateaux and coastal mudflats) on sedimentary rocks of the Canning Basin with Red deep sands and some Yellow sandy earths'. Soils in the area may be susceptible to erosion, however this is unlikely given the small scale of clearing proposed. A review of Acid Sulphate Soil (ASS) risk mapping (spatial dataset DWER-048 & DWER-049; GoWA, 2024) indicates the DE is not in within or close to any mapped ASS. The closest mapped ASS is 3 km south of the DE. No contaminated sites occur within 5 km of the DE (spatial dataset DWER-059; GoWA, 2024). The closest contaminated site (Object ID 5745, Remediated – restricted use) is located 7 km south-west from the DE.	Not at variance

	The clearing proposed in the DE will be 2.4 ha in total. Any dust produced during construction will be managed through the implementation of a CEMP. Given the linear nature of the Project, it is not likely that the clearing will cause appreciable land degradation. It is expected that hydrological regimes will be maintained through design, and that standard management practices will be implemented to prevent erosion / sedimentation. The Project will incorporate standard construction management measures to reduce the risk of soil erosion and sedimentation as a result of ground disturbance and clearing (**Attachment A**). The clearing is not expected to cause appreciable land degradation and based on the above, the proposed clearing of native vegetation for the Project is not considered to be at variance with this principle.	
(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 proposed clearing area is not within any mapped conservation areas. An ESAs intersects the DE, a mapped Threatened Ecological Community 'Roebuck Bay Mudflats' intersects the southern portion of the DE (spatial dataset DWER-046; GoWA, 2024). This TEC wasn't recorded by Biota (2018) nor by GHD (2024). The project is considered not at variance to this principle.	Not at variance.
(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.	The DE overlaps the Broome Groundwater Area (GoWA, 2022), which is proclaimed under the RIWI Act. The DE does not overlap any Surface Water Areas. It is not expected that the Project will require dewatering or groundwater abstraction. Clearing within the DE is unlikely to cause deterioration in the quality of surface or underground water, therefore the Project is unlikely to be at variance to this principle.	Unlikely to be at variance.
(j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the intensity of flooding.	The nearest BoM weather station with comprehensive data collection and recent historic climate data is the Broome Airport (Station No. 3003). Mean maximum annual rainfall is 198.7 mm in January and the mean minimum rainfall is 1.4 mm in September/October (BoM, 2024). The DE is located in a severe cyclone region which has the potential to experience ocean inundation and flooding events (Cardno, 2015). The scale of the DE and clearing required is not likely to have an impact on the flood regimes or increase intensity of flooding in the region. It is expected that the hydrological regimes of these landforms will be maintained through design and therefore unlikely to incur flooding. Additionally, given the over 95% pre-European vegetation remaining, the proposed clearing is not expected to increase the risk of flooding in the region. Standard management measures for construction will be in place to mitigate against / manage erosion and associated environmental aspects. Therefore, the proposed clearing of native vegetation for the Project is not considered to be at variance with this principle.	Unlikely to be at variance.

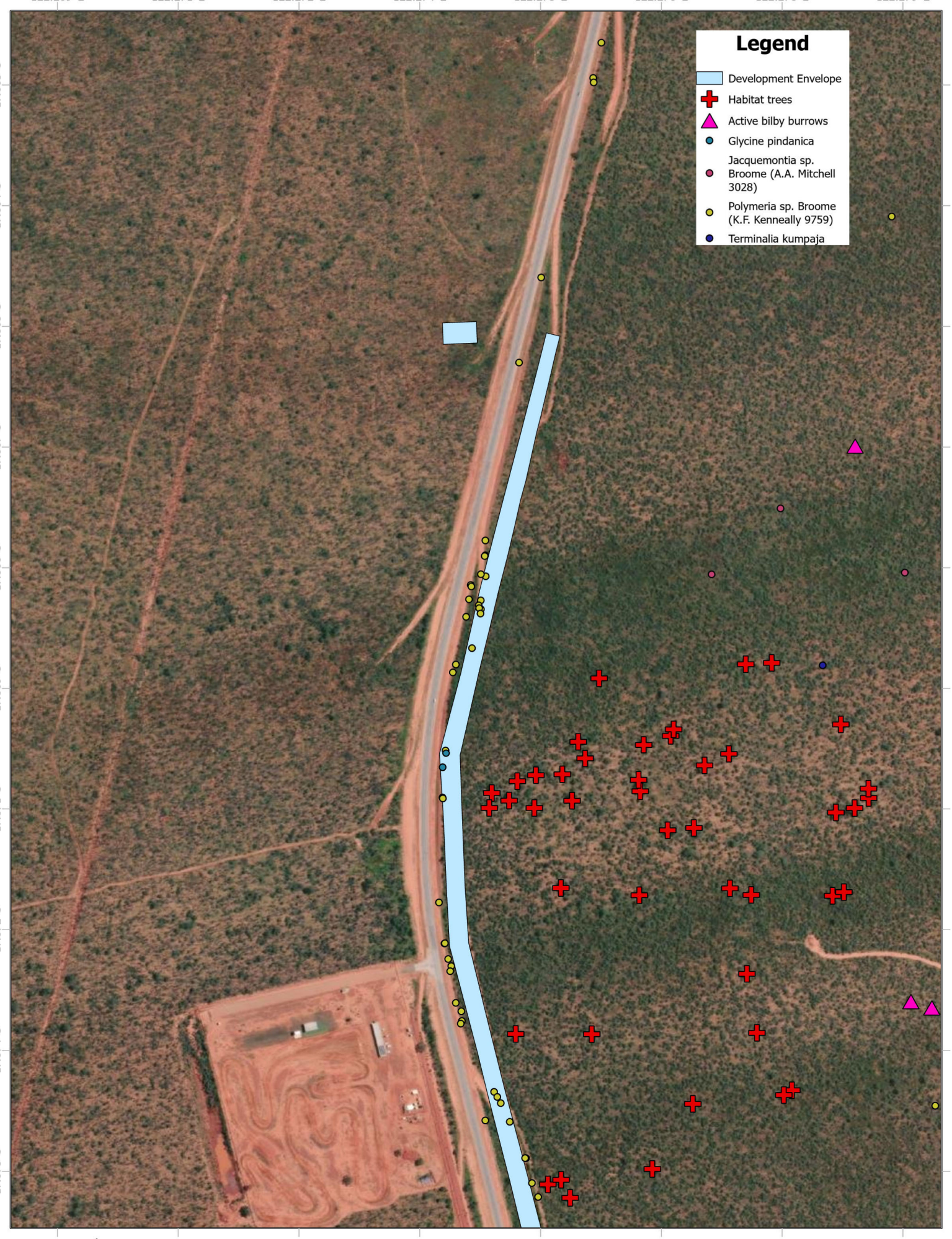

Figure 2 | Environmental Constraints

N

0 50 100 200 Meters

Scale: 1:6,000

HORIZON POWER

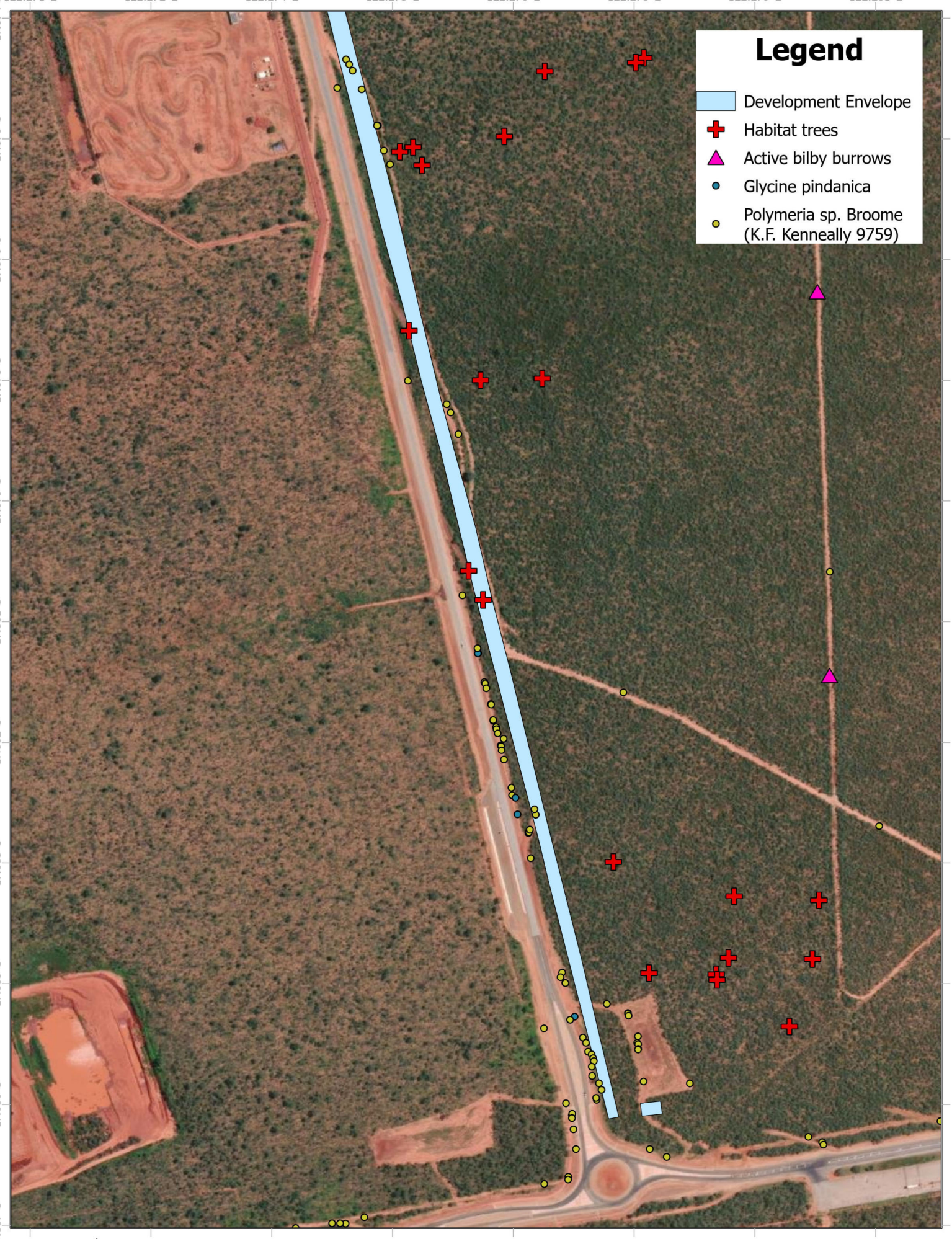

Figure 2 | Environmental Constraints

N

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Scale: 1:6,000

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9 Other matters

9.1 Land Planning

The Project will be undertaken exercising the powers under the *Energy Operators (Powers) Act 1979*. No Development Approvals or other land planning approvals are required.

9.2 Other approvals

In considering a clearing matter under section 51O of the *Environmental Protection Act 1986* (EP Act), the DWER CEO shall have regard to any planning instrument and other relevant matters when making decisions as to clearing permits. 'Other matters' are not defined in the EP Act, and consequently are any matters the CEO considers relevant. Other matters are generally environmental issues not directly within the scope of the clearing principles, but within the object and principles of the Act. Other approvals that may apply to this Project are detailed in **Table 5**.

Table 5 Assessment of other approvals relevant to the Project

Other approvals	Assessment
Referral to Environmental Protection Authority	Due to the small scale of the project clearing, it is considered likely that all environmental impacts can be managed under Part V of the EP Act and referral to the EPA is not considered necessary.
Referral to Department of Climate Change, Energy, the Environment and Water (DCCEEW)	*Threatened flora, fauna and ecological communities* No conservation significant flora species were recorded within the DE. No TECs were recorded in the DE. One TEC was recorded within 20 km of the DE, the Monsoon Vine Thickets, however, this TEC was not recorded within the DE during field surveys (GHD, 2024; Biota, 2018). 46 Threatened fauna species were identified by PMST within 20 km of the DE. Of these, the following Threatened fauna species were recorded within the DE: • Bilby (*Macrotis lagotis*)– Vulnerable under EPBC Act) • Northern Brushtail Possum (*Trichosurus vulpecula arnhemensis*) – Vulnerable under EPBC Act • Bare-rumped Sheath-tailed bat (*Saccolaimus saccolaimus nudicluniatus*) – Vulnerable under EPBC Act • Northern Blue-togue Skink (*Tiliqua scincoides intermedia*) – Critically Endangered under EPBC Act Additionally, the following species identified in the PMST are considered likely/may occur within the DE: • Gouldian Finch (*Chloebia gouldiae*) – Endangered under EPBC Act • Grey Falcon (*Falco hypoleucos*) – Vulnerable under EPBC Act • Princess Parrot (*Polytelis alexandrae*) – Vulnerable • Masked Owl (*Tyto novaehollandiae kimberli*) - Vulnerable Further, the Fork-tailed Swift (*Apus pacificus*) listed as Migratory, the Rainbow Bee-eater (*Merops ornatus*) listed as Marine and the Eastern Great Egret (*Ardea alba*) listed as Marine under the EPBC Act, were recorded during field surveys that overlap the DE (Biota, 2018; GHD, 2024). Up to 2.4 ha may potentially be cleared of Pindan Shrublands habitat that is critical to the survival of the Bilby and Bare-rumped Sheath-tailed bat. No Bilby burrows were identified in the DE. Additionally, one potential nesting tree for the Northern Brush-tailed Possum and Northern Coastal Free-tail Bat may be cleared for the Project. Pindan shrublands habitat is widespread within the region (Biota, 2018). Given that the project will clear less than 2.4 ha of suitable habitat and one nesting tree for the above species, referral to DCCEEW is not considered to be required. *Migratory fauna* 68 migratory species were recorded within 20 km of the DE. Species identified as Threatened are outlined above and excluded here. One additional Migratory species was recorded within the DE, Osprey (*Pandion haliaetus*), which is listed as Migratory (Marine) under the EPBC Act.

Other approvals	Assessment
	There is suitable nesting habitat within the Pindan shrubland habitat for the Osprey (GHD, 2024). However, a very small amount of clearing (up to 2.4 ha) will be cleared for the Project, no significant impacts are expected. *National heritage and World Heritage* No World Heritage places overlap the DE or are within 20 km of the DE. One National Heritage place, the West Kimberley is within 20km of the DE. No impacts are expected to National Heritage features. *Wetlands of international importance* Roebuck Bay, an important wetland, occurs approximately 3 m south of the DE. This important wetland connects to the Roebuck Bay Ramsar site. However, no significant impacts to surface water flows or wetlands are expected.
Works Approval or Licence under EP Act	No works approvals or licences are required for the Project.
Groundwater or surface water licence under the Rights in Water and Irrigation Act 1914	No surface or groundwater abstraction is proposed. No approvals under the RIWI Act will be required for the project.
Notice of Intent to Clear system under the Soil and Land Conservation Act 1945	Not Applicable.
State and municipal heritage	A search of the inHerit database and the DPLH-006 dataset identified no State or municipal heritage sites with the DE.
Native title	The DE is located on land where native title has been determined not to exist (Federal Court No. WAD6006/1998).
Aboriginal Sites of Significance under the Aboriginal Heritage Act 1972	A search of the Aboriginal Cultural Heritage Inquiry System shows that the DE does not intersect any registered or lodged sites. Horizon Power has an Aboriginal Cultural Heritage Management Policy, that details our commitment to *avoid impacting on Aboriginal Cultural Heritage whenever and wherever possible*. For this reason, Horizon Power is engaging with Yawuru to facilitate heritage monitors during ground disturbance activities.

10 References

DCCEEW. (2023). Recovery Plan for the Greater Bilby (Macrotis lagotis). Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/recovery/greater-bilby-2023.

Department of Environment Regulation (DER), 2014. *A guide to the assessment of applications to clear native vegetation. Under Part V Division 2 of the Environmental Protection Act 1986*.

GHD. (2024). Kimberly IRP: Biological Survey. Prepared for Horizon Power.

Biota Environmental Sciences (Biota). (2018). Cape Leveque Road Upgrade Biological Survey. Prepared for Main Roads Western Australia.

Government of Western Australia (GoWA). 2024. Data WA. Accessed on 21/10/2024. Available from: https://data.wa.gov.au/

Aboriginal Heritage Places (DPLH-001)

Acid Sulfate Soil Risk Map 100K (DWER-048)

Clearing Regulations – ESAs (DWER-046)

Contaminated Sites Database (DWER-059)

DBCA Legislated Lands and Waters (DBCA-011)

DBCA Statewide Vegetation Statistics

Heritage Council WA - Local Heritage Survey (DPLH-008)

Heritage Council WA - State Register (DPLH-006)

Pre-European Vegetation (DPIRD-006)

Public Drinking Water Source Areas (DWER-033)

Soil landscape land quality - Zones (DPIRD-017)

Soil Landscape Mapping - Best Available (DPIRD-027)

RIWI Act, Groundwater Areas (DWER-034)

RIWI Act Surface Water and Irrigation District (DWER-037)

RIWI Act, Rivers (DWER-036)

O'Malley, C. (2006). National Recovery Plain for the Goudian Finch (*Erythrura gouldiae*). In collaboration with the National Gouldian Finch Recovery Team.

Schulz, M., & Thomson, B. (2007). National recovery plan for the bare-rumped sheathtail bat *Saccolaimus saccolaimus nudicluniatus*. Queensland Environmental Protection Agency, Brisbane.

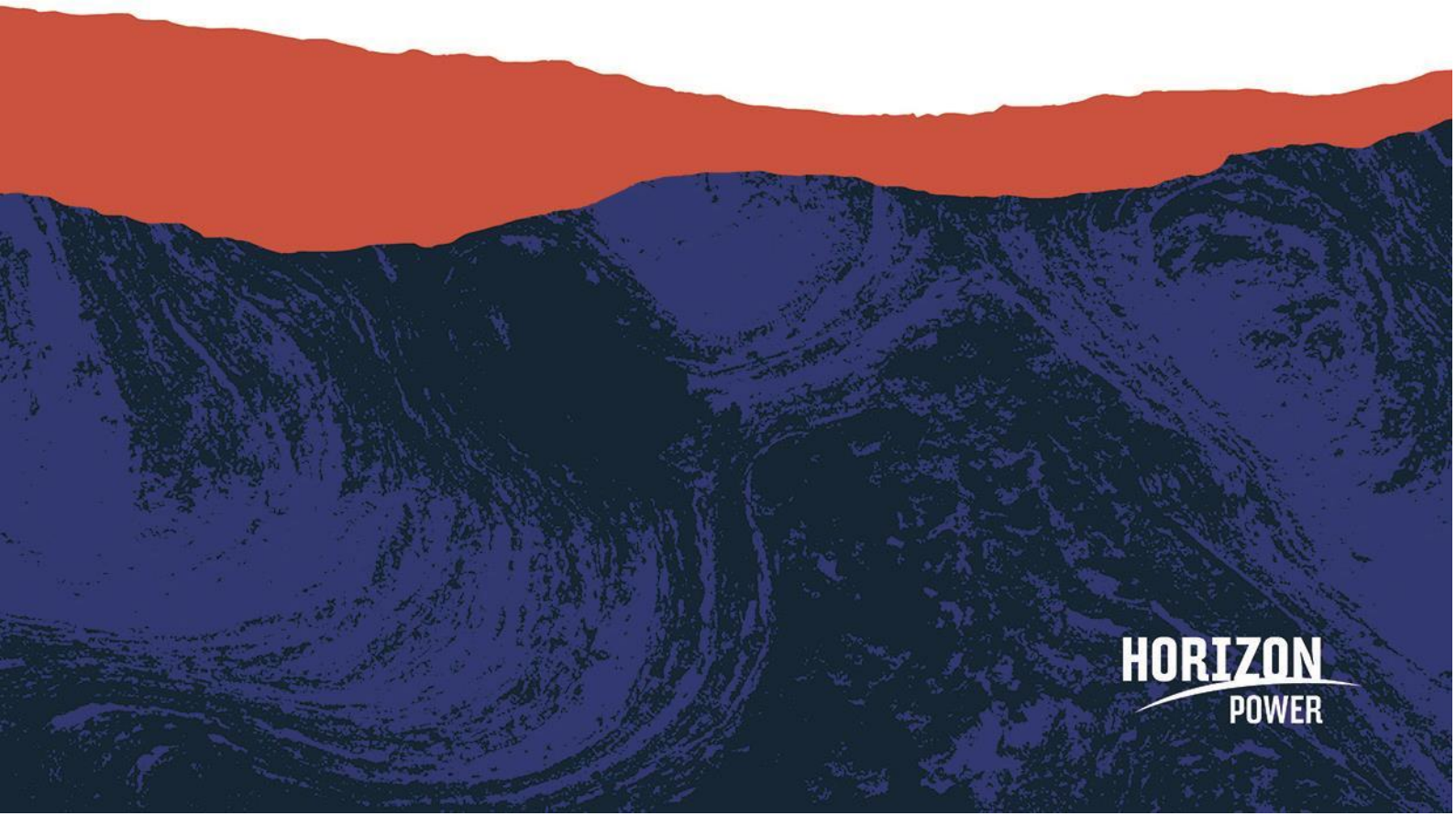
TSSC. (2021). Conservation Advice *Trichosurus vulpecula arnhemensis* Northern Brushtail Possum.

Attachment A: Construction Environmental Management Plan

Cape Leveque Network Extension - Native Vegetation Clearing Permit

Construction Environmental Management Plan

December 2024



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1 Introduction

1.1 Project Context and Scope

Regional Power Corporation, trading as (T/A) Horizon Power, is a Western Australian (WA) Government Trading Enterprise (GTE) and the state's regional and remote energy provider. Horizon Power operates under the *Electricity Corporations Act 2005* and is governed by a Board of Directors accountable to the Minister for Energy.

Horizon Power is proposing to install a new 2.4 km connection along Broome-Cape Leveque Road in Broome Western Australia (the Project) to connect the new Shire of Broome waste disposal facility.

The construction of the Project will require the permanent clearing of up to 2.4 ha for the RMU's, transformer, new power poles, the connection corridor and access tracks for maintenance, within a development envelope 4.82 ha in size.

A Native Vegetation Clearing Permit (NVCP) will be required from the Department of Water and Environmental Regulation (DWER).

1.2 Scope and purpose

This Construction Environmental Management Plan (CEMP) has been developed to outline environmental management measures to be implemented by Horizon Power and its contractors during the construction of the Project. This includes, but is not limited to, measures to manage dust, erosion and spread of weeds during clearing of native vegetation.

Figure 1 | Project Location and Development Envelope

N

0 87.5 175 350 Meters

Scale: 1:10,000

HORIZON POWER

2 Description of the Activity

2.1 Activity Overview

The Project will consist of a new powerline along Broome-Cape Leveque Road in Broome Western Australia (the Project).

Construction is proposed for 2026/2027, pending funding and contractual requirements, with commissioning to follow. A 5-year clearing permit is requested to accommodate supplier readiness, with clearing undertaken within 3 months of construction.

2.2 Clearing of Native Vegetation

The proposed clearing will occur within the Development Envelope (**Error! Reference source not found.**) which is 4.82 ha in size. No more than 2.4 ha of clearing is permitted.

Clearing of native vegetation within the DE will only be undertaken as specified by the Clearing Permit, including the extent and method of clearing to be undertaken and any specific management measures outlined in the permit conditions.

3 Management Measures

The management measures listed in Table 1 will be implemented during construction of this Project. Clearing of native vegetation will occur as per the conditions in the NVCP issued by DWER.

Table 1 Management Measures to be Implemented During Geotechnical Investigations and Construction

Aspect	Management Measure
Construction	
Extent of Clearing	– No clearing is permitted outside the DE (**Error! Reference source not found.**) – Clearing will be minimised where possible through placement of assets and access tracks in existing cleared locations where possible. – The clearing locations are to be demarcated prior to clearing activities. – Clearing areas are to be checked by an Environmental Specialist or Site Supervisor prior to clearing to ensure no more than 2.4 ha of clearing is undertaken for the Project – A pre-clearing toolbox will be held so all staff are aware of their responsibilities under the permit.
Flora and vegetation	– Areas that are degraded, sparsely vegetated and/or previously cleared will be used preferentially for access tracks.
Fauna	– Clearing of native vegetation will be undertaken in a slow, progressive manner in one direction to allow fauna to move away from the clearing area into adjacent vegetation. – Construction personnel will not touch, feed or otherwise directly interact with fauna. – Vehicle and machinery speeds within the DE will be restricted to reduce the likelihood of fauna strike.
Weeds	– The Contractor will ensure that no weed-affected soil, mulch, fill or other material is brought into the DE. – Vehicles and machinery will arrive clean, and weed control will be undertaken at the site post-construction as required. – Movement of vehicles and machinery will be restricted to the DE or established tracks and roads.
Erosion and soils	– Standard construction measures regarding erosion and sediment control will be implemented during construction works. – Designated access tracks will be applied to prevent additional disturbance.

Aspect	Management Measure
Dust	– Standard construction dust control and mitigation measures will be implemented during clearing. This may include the use of a water trucks, or similar. – Ground disturbance and clearing of vegetation will be restricted during high winds if dust cannot be adequately controlled. – Reduced vehicle speed limits will be applied in areas of unconsolidated soil.
Noise	– The contractor will comply with the Environmental Protection (Noise) Regulations 1997 – Complaints regarding noise will be recorded and investigated by Horizon Power.
Waste	– Rubbish will be disposed of in appropriate containers and all waste will be removed from the site.
Hydrocarbons and chemicals	– Hydrocarbons and chemicals will be appropriately managed on site to prevent spills, including maintaining equipment in good working order in accordance with manufacturers specifications. – No refuelling will be undertaken within 50 m of a waterway, drain or drainage line. – Refuelling will be undertaken on hardstand or using catch trays only. Uncontrolled refuelling is not permitted. – Hydrocarbons will be appropriately stored at least 50 m away from drainage lines, waterways, wetlands or soaks, and stored in an appropriate bunded container. – Chemicals will be appropriately stored to prevent leaks or overflow.
Heritage	– Should aboriginal cultural heritage materials be uncovered during construction works, works are to stop immediately within 20 m of the find. The Contractor is to contact the Horizon Project Manager and an incident will be raised. The area will be cordoned off and no access permitted to the area by people until the incident is investigated and resolved.

Attachment B: Biota Environmental Sciences (2018), Cape Leveque Road Upgrade Biological Survey

Biota Environmental Sciences

Cape Leveque Road Upgrade Biological Survey

Prepared for Main Roads Western Australia

August 2018

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Cape Leveque Road Upgrade Biological Survey

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1.0 Summary of Key Findings

1.1 Background

Main Roads Western Australia commissioned Biota Environmental Sciences to undertake a detailed and targeted flora and vegetation survey, a Level 1 fauna survey and a targeted Bilby survey of Cape Leveque Road (the study area) to delineate key environmental values and their potential sensitivity to impact. The surveys were required to support the Environmental Impact Assessment and approvals process for planned upgrades to Cape Leveque Road between Straight Line Kilometre (SLK) 0 and 25 (the Project).

Prospective upgrades to the road are likely to consist of widening of the existing road formation and sealing of the eastern side of the existing road at SLK 0 - 13.6; construction of a new all-weather sealed road at SLK 13.6 - 25; a 10 m wide side track to allow passage of traffic; an upgraded intersection with Broome Highway at SLK 0; a parking/information bay at approximately SLK 0.2 and SLK 20; borrow pits and associated access tracks approximately every 1 to 2 km along the length of the alignment; and off-shoot drains approximately every 200 m.

Key findings from the biological surveys are summarised in Sections 1.1 to 1.4.

1.2 Detailed and Targeted Vegetation and Flora Survey

Four vegetation units were identified for the study area, associated with two broad landform categories: plains (both clay and pindan sand dominated), and damplands. Most of the vegetation (89.9%) was in Very Good condition, whilst small sections around the dam were considered to be either Good or Poor, given increased disturbance from both human and cattle activity. The remainder of the study area comprised cleared or Disturbed ground predominantly associated with the existing Cape Leveque to Broome Road.

None of the vegetation units recorded represent Threatened Ecological Communities or Priority Ecological Communities. Most of the vegetation (63.7%) in the study area (i.e. vegetation unit P1) was accounted for by unit P1, which is widespread on pindan sandplain in the locality, and is not considered to be of elevated conservation significance.

Vegetation unit D1 (a *Melaleuca alsophila* low woodland over dampland) is considered to be of high conservation significance, given its importance in the maintenance and functioning of the Nimalaica Claypan Priority Ecological Community (PEC) immediately to the west. The D1 vegetation unit is also considered Groundwater Dependent Vegetation. Approximately three hectares of the D1 vegetation unit lies within the study area, with a much larger occurrence immediately to the west.

Vegetation units P2 and P3 (*Eucalyptus tectifica* dominated units fringing the D1 dampland) are considered to be potential Groundwater Dependent Vegetation. Unit P3, whilst restricted in distribution within the study area, extends further (~300 m) to the northwest, and is likely to fringe additional sections of the D1 vegetation unit outside of the study area. Vegetation unit P2 is likely to occur more widely in the locality.

A total of 189 native flora species were recorded from the study area, all of which are typical of the locality. This total included six conservation significant flora species:

- *Corymbia paractia* (Priority 1);
- *Jacquemontia* sp. Broome (A.A. Mitchell 3028) (Priority 1);
- *Bonamia oblongifolia* (Priority 3);
- *Polymeria* sp. Broome (K.F. Kenneally 9759) (Priority 3);
- *Stylidium pindanicum* (Priority 3); and
- *Terminalia kumpaja* (Priority 3).

Five of these species appear to have broad distributions, and/or are poorly collected, rather than being truly rare. *Corymbia paractia* (Priority 1) is restricted to the locality.

Nineteen introduced flora species (weeds) were recorded, none of which are listed as declared pests under the WA *Biosecurity and Agriculture Management Act 2007,* or Weeds of National Significance. Most of these were recorded along the Cape Leveque to Broome Road, from road offshoot drains, in addition to high numbers around the dam. Verano Stylo (**Stylosanthes hamata*) was the most common weed, followed by Birdwood grass (**Cenchrus setiger*), with the other weed species being recorded in low numbers and/or being recorded from only a few locations.

1.3 Level 1 Fauna Survey

Database and literature searches yielded a total of 335 vertebrate species with the potential to occur in the study area, comprising 11 amphibian species, 92 reptile species, 30 non-volant (ground-dwelling) mammal species, 17 volant (bat) species and 185 avifauna (bird) species. Sixty-eight fauna species were recorded during the reconnaissance Level 1 fauna survey of the study area, comprising 53 avifauna species, eight mammal species and seven reptile species.

Of the 335 vertebrate species potentially occurring in the study area, 35 are listed as conservation significant species. Three of these species were recorded during the field survey:

- The Eastern Great Egret (*Ardea modesta*) and Rainbow Bee-eater (*Merops ornatus*) are both listed Marine species under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- Confirmed burrows, diggings and tracks of the Bilby (*Macrotis lagotis*) were recorded during the field survey. This species is listed as Schedule 3 under the WA *Wildlife Conservation Act 1950* and Vulnerable under the EPBC Act (Section 1.4).

One further conservation significant species was considered likely to occur in the study area (the Dampierland Goanna, *Varanus sparnus*, listed as Prioirty 1 under the WA *Wildlife Conservation Act*) and 18 species may potentially occur. The remaining 13 conservation significant species known from the locality are considered unlikely to occur (11 species) or would not occur (two species).

Three fauna habitats were present within the study area: (1) *Corymbia* and *Bauhinia* low open woodland on sandplain, (2) *Melaleuca* woodland dampland, and (3) a man-made dam. Fauna habitats 1 and 2 are not considered rare or restricted to the study area, as both occur more widely in the region. The conservation significant species recorded or potentially occurring within the study area may utilise these habitats for foraging, commuting or nesting on occasion, but are unlikely to rely upon them. The dam habitat, although man-made, represents a localised and uncommon habitat within the study area that may be of value to conservation significant species that forage in inundated habitats, such as the Eastern Great Egret. In the broader context of the locality however, the dam would not be considered significant, as naturally inundated environments occur elsewhere in close proximity to the study area.

1.4 Targeted Bilby Survey

Bilby searches were performed using a combination of linear foot traverses and 2 ha sign plot searches. Sign evidence (e.g. tracks, scats, diggings and burrows) were recorded, and were assigned a criteria of certainty (High, Moderate or Low) based on the strength of the evidence indicating that the sign was attributable to the Bilby. Prospective Bilby habitat was also mapped based on a joint appraisal of mapped vegetation units and fire history mapping.

During the transect searches, tracks that could be attributed to the Bilby with High certainty were recorded at 12 locations. Diggings were also recorded at a large number of locations (total of 163). The majority of the diggings were assigned a Low (total of 18) or Moderate (total of 114) certainty, as they could not reliably be attributed to the Bilby, however 31 of these diggings were assigned a High certainty. During the sign plot searches, three additional diggings were recorded, however these were assigned a Moderate certainty.

Seven burrows were also located within the study area: five were active burrows (High certainty) and two were inactive burrows (Low certainty).

The results of the targeted survey suggest that habitat available within the study area is currently favourable for the Bilby, and the species is currently present, with fresh diggings, tracks and burrows attributable to the Bilby recorded. This is also reflected in the habitat assessment, with 737.48 ha of High prospectivivty habitat identified within the study area. In addition, the Bilby has also been recorded historically from the study area, suggesting that the area is of importance to the Bilby as viable habitat.

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2.0 Introduction

2.1 Project Background

Main Roads Western Australia (Main Roads) is commencing upgrade works to the Cape Leveque Road on the Dampier Peninsula (the Project), located in the Kimberley region of Western Australia (WA) (Figure 2.1). The Project, commencing in 2018, will focus on upgrading the portion of Cape Leveque Road between Straight Line Kilometre (SLK) 0 and 103.6. Upgrades will involve the clearing, construction and sealing of a new road adjacent to the existing unsealed Broome-Cape Leveque Road (SLK 13 - 103.6), in addition to reconstruction and widening of an existing sealed road (SLK 0 - 13). While environmental approvals have been granted for the upgrade between SLK 25 and 103.6 following State and Federal referral of the Browse LNG Access Road Project in 2011, approvals for SLK 0 - 25 remain outstanding.

To support the environmental impact assessment (EIA) and approvals process of the Project between SLK 0 - 25, Main Roads required a biological survey to delineate key environmental values and their potential sensitivity to impact. Biota Environmental Sciences (Biota) was commissioned to undertake this biological survey.

2.2 Study Area

The spatial scope of the required biological survey comprised the future works area for the prospective upgrades to the Cape Leveque Road. The future works area, totalling 823 ha, is hereafter referred to as the study area (Figure 2.2) and comprised a 150 m buffer from the existing road alignment centreline, extending north from Broome Highway (300 m total width).

Prospective upgrade work to the study area includes:

- widening of the existing road formation and sealing of the eastern side of the existing road at SLK 0 - 13.6;
- construction of a new all-weather sealed road at SLK 13.6 - 25;
- a 10 m wide side track to allow passage of traffic;
- an upgraded intersection with Broome Highway at SLK 0;
- a parking/information bay at approximately SLK 0.2 and SLK 20;
- borrow pits and associated access tracks approximately every 1 to 2 km along the length of the alignment; and
- off-shoot drains approximately every 200 m.

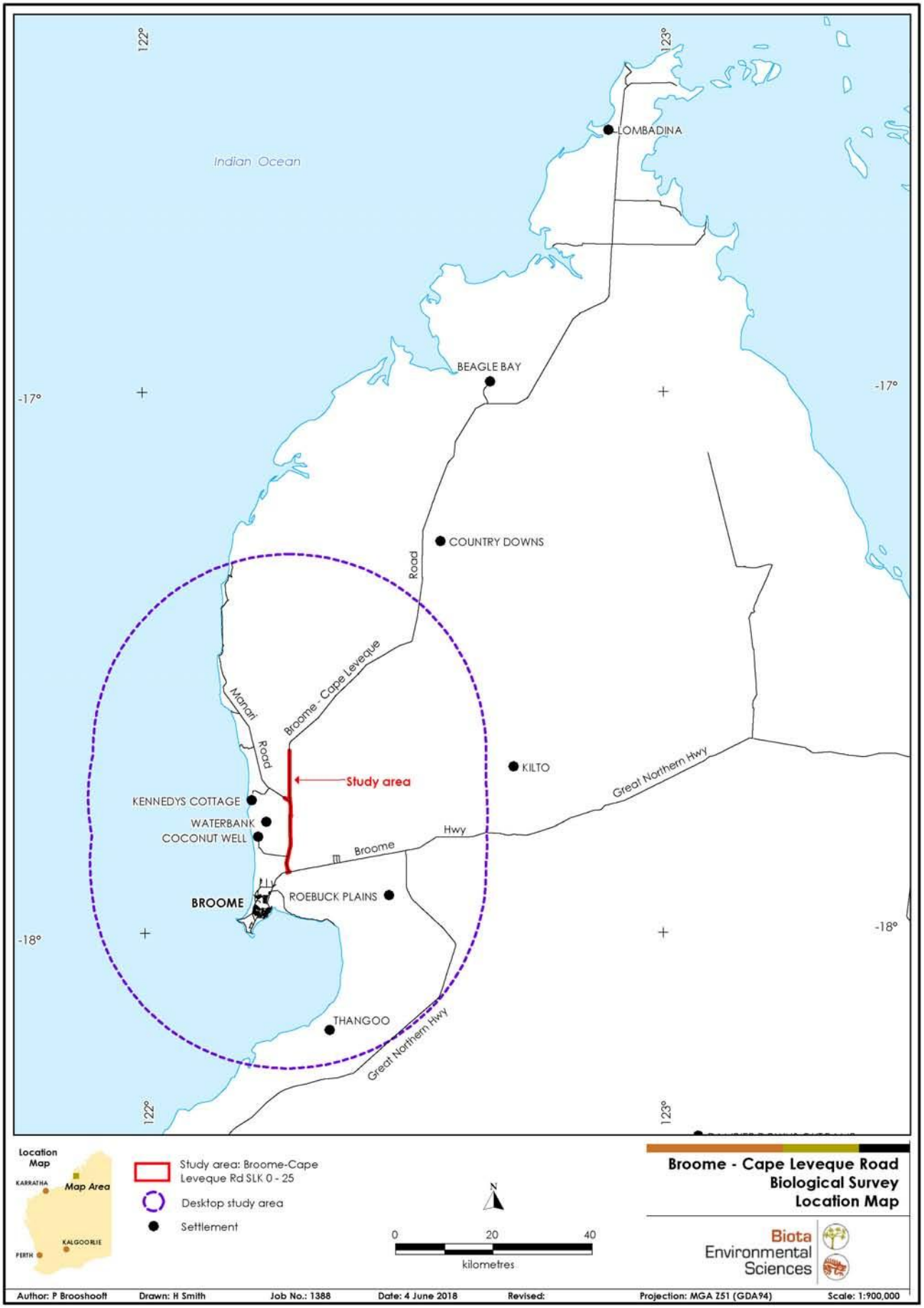

Figure 2.1: Location of the Cape Leveque Road study area.

Figure 2.2: Cape Leveque Road study area.

2.3 Study Objectives and Scope

This report documents the methods, results and key findings of the biological survey of the study area. The survey had three distinct components, with the specific scope of each described below in Sections 2.3.1 to 2.3.3.

2.3.1 Detailed and Targeted Flora and Vegetation Survey

The objectives of the flora and vegetation survey component were to:

- undertake a desktop assessment of relevant databases and previous surveys to consolidate existing records of conservation significant flora from the locality (within 40 km);
- identify conservation significant flora species from the desktop review that are likely to occur, or may potentially occur, within the study area;
- complete sampling of flora and vegetation within the study area to describe and characterise the vegetation, including quadrat and relevé sampling;
- compile a list of vascular flora species recorded from the study area;
- conduct targeted searches for Threatened and Priority flora;
- record and photograph introduced flora species (weeds) as well as any other disturbances; and
- identify key issues arising from the potential impact of road upgrade activities on the flora and vegetation within the study area.

The methodology used for the flora and vegetation survey was consistent with the following legislation:

- Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016a); and,
- Environmental Factor Guideline – Flora and Vegetation (EPA 2016b).

The flora and vegetation survey comprised a single-phase 'Detailed' survey as per EPA (2016a) and also included a 'Targeted' survey for flora of conservation significance.

2.3.2 Level 1 Fauna Survey

The objectives of the fauna survey component were to:

- undertake a desktop and literature review of relevant databases and biological surveys conducted in the locality of the study area (within 40 km);
- conduct a 'Level 1' reconnaissance survey of the study area as per EPA (2016c) to search for evidence of conservation significant vertebrate species, and to record a list of general fauna;
- determine the fauna habitats present and assess their suitability to support fauna of conservation significance;
- create maps of fauna habitat types in the study area;
- create a potential list of the vertebrate fauna recorded from or potentially occurring in the study area;
- identify and assess the likelihood of occurrence of the conservation significant species that have the potential to occur in the study area; and
- identify key issues arising from the potential impact of the road upgrade activities on the fauna within the study area.

The methodology used for the fauna survey was consistent with a 'Level 1' fauna survey under the following EPA guidance documents:

- Technical Guidance – Sampling Methods for Terrestrial Vertebrate Fauna (EPA 2016d);
- Technical Guidance – Terrestrial Fauna Surveys (2016c); and
- Environmental Factor Guideline – Terrestrial Fauna (EPA 2016e).

2.3.3 Targeted Bilby Survey

The Bilby (*Macrotis lagotis*) is listed as a Threatened species under both the WA *Wildlife Conservation Act 1950* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). This species has been recorded historically in the locality, and was considered a potential key issue for the Project

The objectives of the targeted Bilby survey were to:

- conduct linear foot traverses and searches of 'sign plots' to document evidence (tracks, scats, burrows or diggings) of the Bilby within the study area.

The methodology used for the targeted Bilby survey was consistent with the following document issued by the WA Department of Biodiversity, Conservation and Attractions (DBCA):

- Guidelines for surveys to detect the presence of bilbies, and assess the importance of habitat in Western Australia (DBCA 2017a).

The survey was also undertaken with consideration of the following relevant legislation:

- Statement of Environmental Principles, Factors and Objectives (EPA 2016f); and
- Matters of National Environmental Significance – Significant Impact Guidelines 1.1 (DoE 2013).

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3.0 Regional Context of the Study Area

3.1 IBRA Bioregion and Subregion

The Interim Biogeographic Regionalisation for Australia (IBRA) recognises 89 bioregions and 419 subregions within Australia (DSEWPaC 2012). The study area lies within the Dampierland bioregion, and more specifically within the Pindanland subregion, which covers 5,198,904 ha and is described as follows:

> *"The Pindanland subregion (DAL02) is the coastal, semi-arid, northwestern margin of the Canning Basin. The region has a semi-arid, hot, tropical climate with summer rainfall. Quaternary sandplains overlay Jurassic and Mesozoic sandstones and support Pindan vegetation on the plains and hummock grasslands on hills. Quaternary marine deposits on coastal plains support mangal, samphire, Sporobolus grasslands, Melaleuca alsophila low forests, and Spinifex-Crotalaria strand communities"* (Graham 2003).

3.2 Climate

The climate of the Pindanland subregion is dry hot tropical and semi-arid with summer rainfall (Graham 2003). The area typically experiences a 7-8 month dry season extending from April to November, with the wet season occurring from December to March. These climate patterns are reflected in the long-term (1940-2018) climate averages for the study area, which were sourced from the nearest meteorological station at Broome Airport (Bureau of Meteorology 2018) (Figure 3.1).

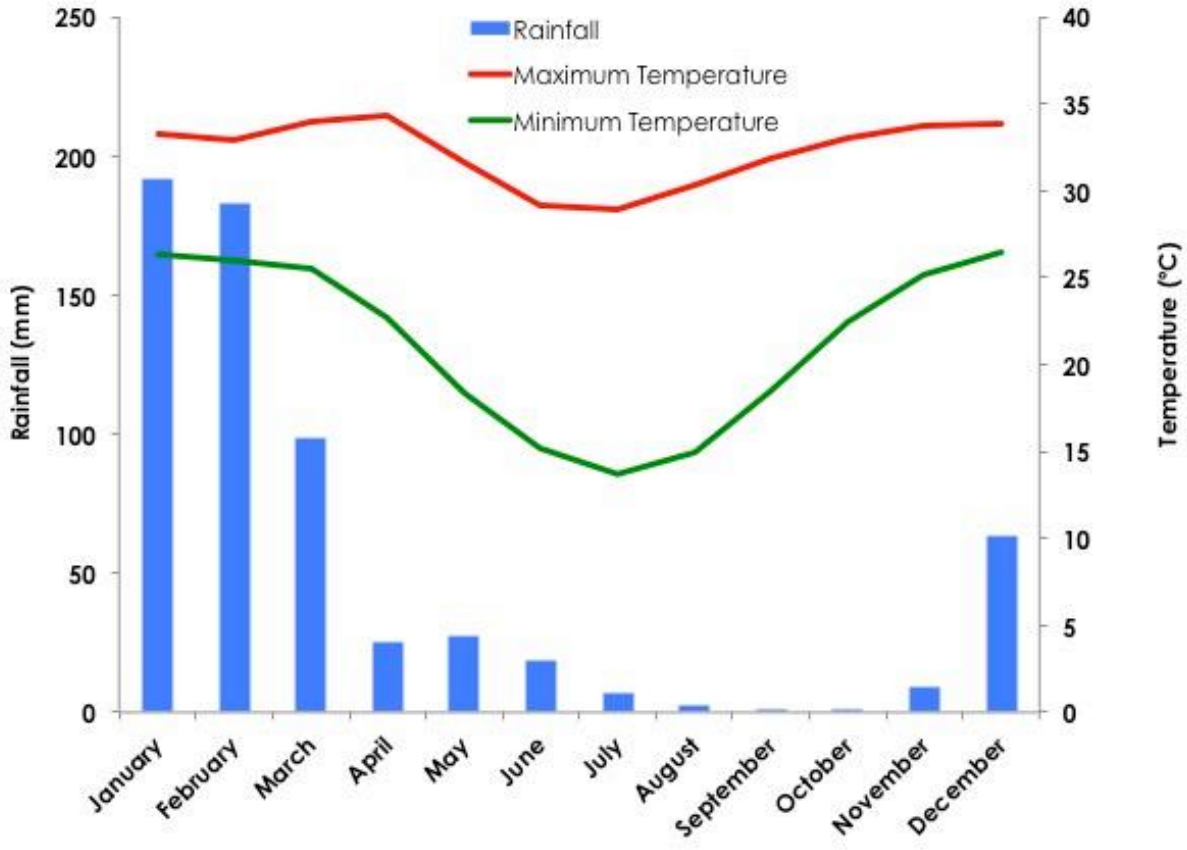

Figure 3.1: Monthly long-term (1940-2018) climate averages recorded at the Broome Airport weather station (data supplied by the Bureau of Meteorology).

3.3 Land Systems

Land systems mapping covering the study area has been prepared by the WA Department of Agriculture (Payne and Schoknecht 2011). The study area contains three land systems; Yeeda, Wanganut and Carpentaria (Table 3.1; Figure 3.2). All three land systems are widespread and well represented throughout the Pindanland subregion of the Dampierland bioregion.

Table 3.1: Land systems occurring within the study area.

Land System	Description	Total Area (ha) of Land System in the Pindanland Subregion	Area (ha) of Land System in the Study Area	Percentage (%) of Total Land System Occurring in the Study Area
Yeeda	Sandplains with red and yellow sands supporting pindan acacia shrublands with emergent eucalypt trees.	1,638,200.14	433.49	0.02
Wanganut	Low-lying sandplains and dune fields with drainage formations supporting pindan acacia shrublands with emergent eucalypt trees.	513,754.47	382.86	0.05
Carpentaria	Coastal flats and associated sandy margins and dunes, with saline sands and muds, supporting paperbark thickets, samphire meadows, and extensive bare mud flats with fringing mangrove forests.	60,260.26	6.41	0.001

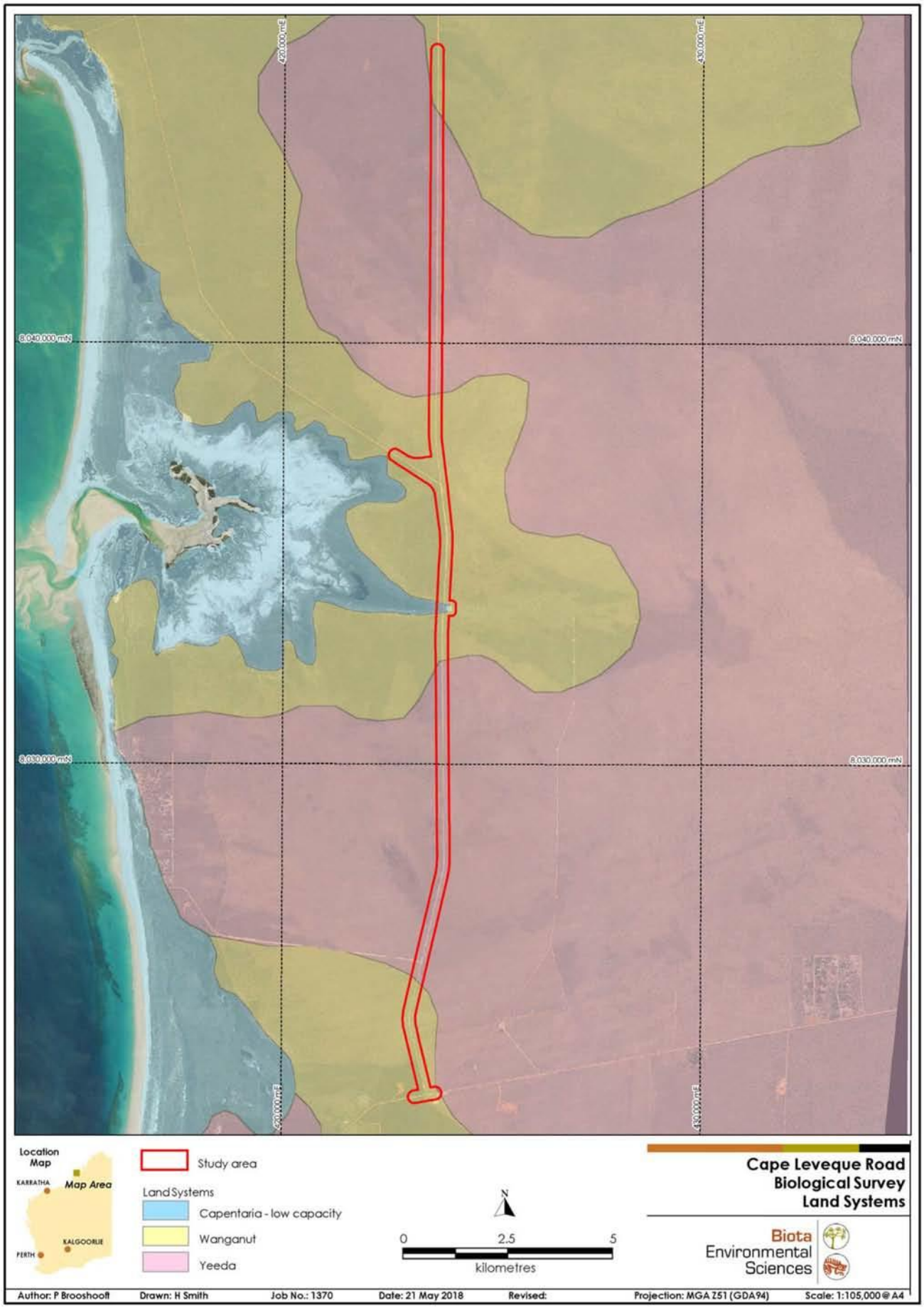

Figure 3.2: Land systems mapping within the study area and surrounds.

3.4 Geology, Soils and Hydrology

The study area occurs within the Canning Basin, the largest sedimentary basin in WA, which consists predominantly of Palaeozoic sedimentary rocks with a thin Mesozoic and Tertiary cover (Paul et al. 2013). The study area encompasses two geological surface units, Czs and Qd, which describe the substrate underlying the habitats present within the study area. These units were mapped at a scale of 1:250,000 (Geological Survey of Western Australia 2011), and are described in Table 3.2 and mapped in Figure 3.3.

The soils of the study area have been mapped, and are available from the Australian Soil Resource Information System (ASRIS) (CSIRO 2014). Two broad soil units are represented in the study area (Table 3.2 and Figure 3.4).

The surface water catchment of the study area is the Cape Leveque Coast Basin of the Western Plateau Division. Drainage within this catchment area is towards the coast, while recharge to the aquifer is via rainfall infiltrating the unconfined Canning Basin (Paul et al. 2013). Sheet flooding is the most widespread pattern of drainage on the Dampier Peninsula, as the gently sloping plains are interrupted by few abrupt rises (McKenzie and Kenneally 1983). No major watercourses or drainage lines occur within the study area, however one man-made dam with standing water was observed in the study area.

Table 3.2: Geological and soil units occurring within the study area.

	Unit	Description	Portion of Study Area (ha)
Geology	Czs	Sand or gravel plains; quartz sand sheets commonly with ferruginous pisoliths or pebbles, minor clay; local calcrete, laterite, silcrete, silt, clay, alluvium, colluvium and aeolian sand.	450.91
	Qd	Dunes, sandplain with dunes and swales; may include numerous interdune claypans; residual and aeolian sand with minor silt and clay; aeolian red quartz sand, clay and silt, in places gypsiferous; yellow hummocky sand.	371.85
Soils	AB21	Pindan country: gently undulating sand plain with a few small rocky sandstone residuals; no external drainage: chief soils are red earthy sands and hummocks of siliceous sands.	367.67
	AB26	Sand plain with longitudinal sand dunes and some active drainage-ways: chief soils are red earthy sands, with dunes and hummocks of red sands.	455.09

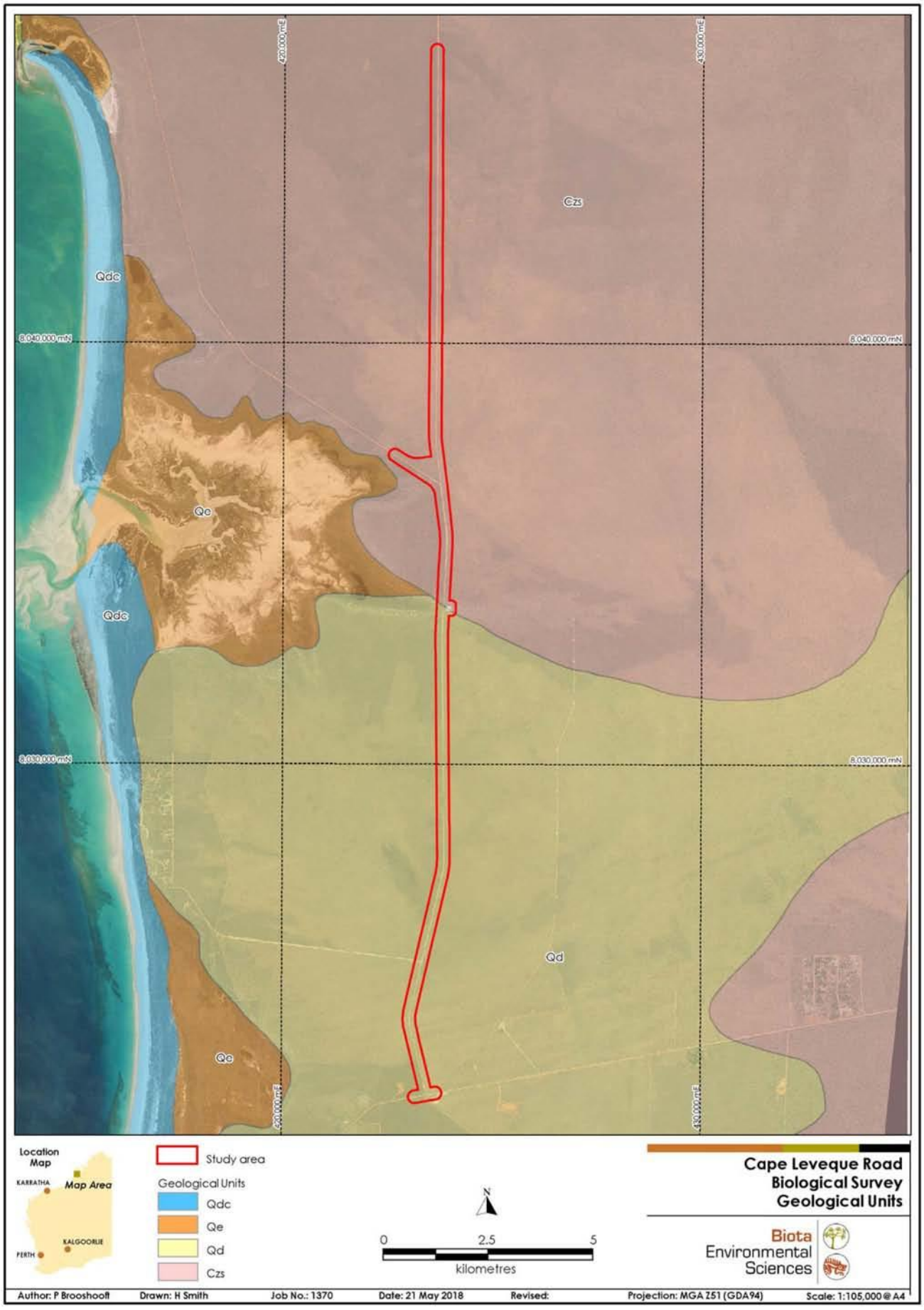

Figure 3.3: Geological units within the study area and surrounds.

Figure 3.4: Soil units within the study area and surrounds.

3.5 Conservation and Heritage Areas

Two DBCA managed reserves and one listed National Heritage Area occur within 20 km of the study area (Table 3.3 and Figure 3.5).

Table 3.3: Conservation and heritage area within 20 km of the study area.

	Name	Distance and Direction from Study Area	Description
DBCA Managed Land	R 47964	5.8 km	Broome Wildlife Centre.
	R 41066	11.7 km	Broome Bird Observatory.
	R 51583; R 51046; R 51932; R 51105; R 51162; R 51497; R 52354	9.75 km southeast 11.8 km southeast 17.9 km 9 km 2.3 km west 2.8 km southwest abuts study area to the west	Reserves designated for conservation, recreation, and traditional and customary Aboriginal use and enjoyment.
	R 51617	9 km southwest	Access reserve.
	R 1644	10.1 km southwest	Temporary camping ground.
	R 50911	8.5 km east	Gubinge tree research.
	R 51380	2 km southwest	A reserve designated for conservation, recreation, and traditional and customary Aboriginal use and enjoyment, and for the purpose of practising, sustaining and maintaining native title rights and interests.
National Heritage List	The West Kimberley	3 km west and 8 km south	Describes the natural landscape of the west Kimberley, listed for its biological richness and important source of geological and fossil evidence of Australia's evolutionary history.

3.6 Pre-European Vegetation

The vegetation of the Kimberley region was mapped by John Beard (1979) at a scale of 1:1,000,000. The study area lies within the Dampier Botanical District, which broadly corresponds with the Dampierland IBRA bioregion. The district is characterised by pindan vegetation on sandplains, more or less densely wooded according to rainfall; tall grass savanna with or without scattered trees on clay plains; spinifex steppe on sandstone, and limestone outcrops (Beard 1979).

The study area contains one of Beard's (1979) vegetation units (Table 3.4 and Figure 3.6):

- Dampierland 750: Shrublands, pindan; *Acacia tumida* shrubland with grey box and cabbage gum medium woodland over ribbon grass and curly spinifex.

Table 3.4: Beard's (1979) vegetation mapping unit occurring within the study area and pre-European extent in the subregion (statistics from Government of Western Australia 2018).

Beard's Vegetation Mapping Unit	Pre-European Extent within Pindanland Subregion (ha)	Current Extent within Pindanland Subregion (ha)	Extent within Study Area (ha)	Percentage (%) of Pindanland Extent Occurring in the Study Area
Dampierland 750	1,221,734.45	1,217,843.72	822.76	0.07

Figure 3.5: Conservation and heritage areas within 20 km of the study area.

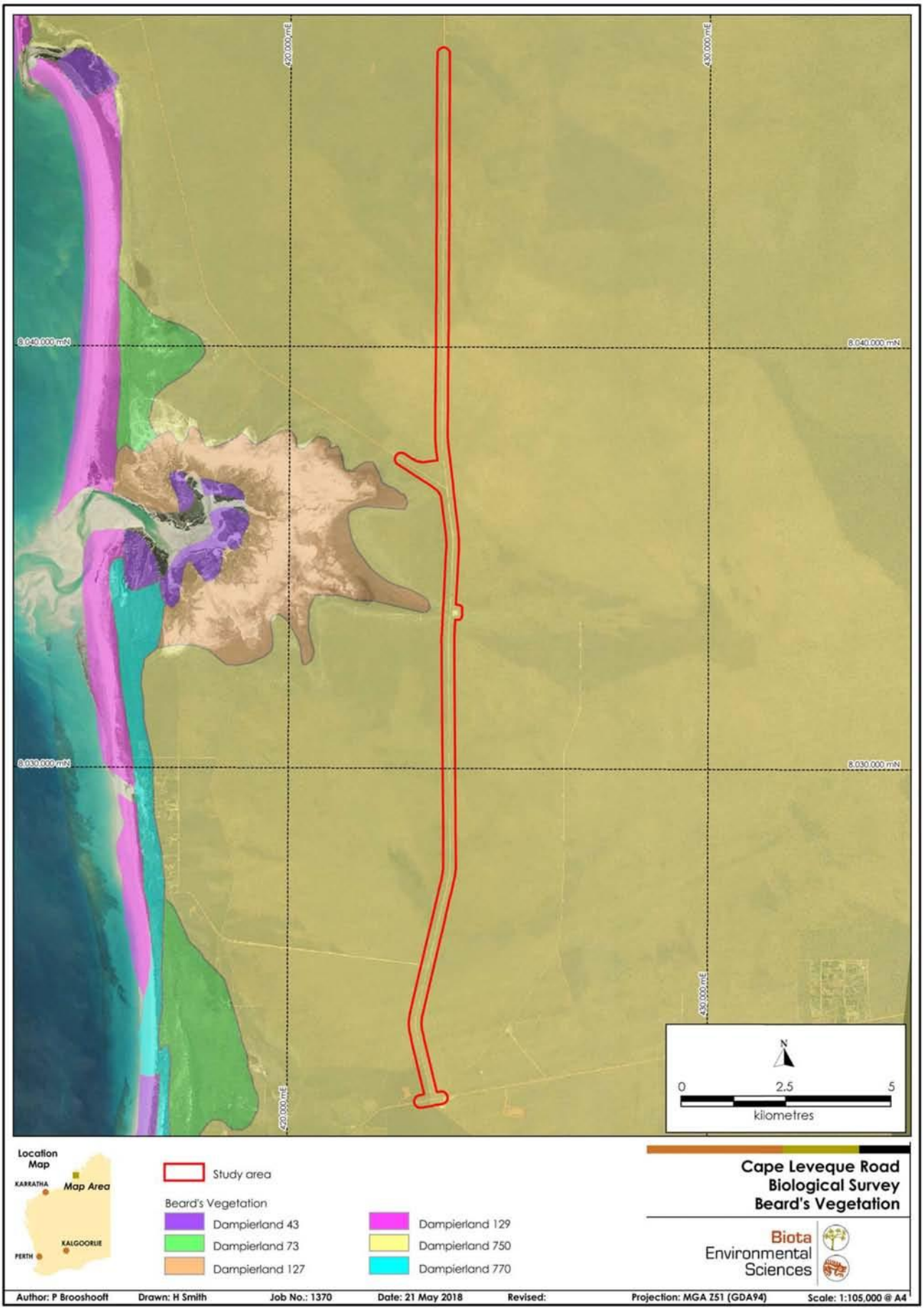

Figure 3.6: Beard's vegetation mapping within the study area and surrounds.

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4.0 Approach and Methods

4.1 Desktop Assessment

The desktop assessment was undertaken to identify features of conservation significance known from the study area or the broader locality (within 40 km). Appendix 1 contains more information regarding the framework for conservation significance ranking of communities and species in WA. The desktop assessment was also used to assess the level of biological survey work that had been completed previously in the study area, which informed the design of the current survey.

The review considered regional information, previous biological surveys in the locality, and the results of various database searches (see Appendices 2 to 4), as discussed in the following sections. The results of the desktop assessment were used to assist in the compilation of a list of flora species of conservation significance potentially occurring in the study area (Appendix 5), as well as lists of overall fauna and fauna species of conservation significance potentially occurring in the study area (Appendices 6 and 7 respectively).

4.1.1 Database Searches

The following databases were searched for records of fauna, flora and vegetation of conservation significance previously recorded from, or potentially occurring in the locality of the study area[1]:

1. NatureMap database (http://NatureMap.dec.wa.gov.au): a joint project of the DBCA and the Western Australian Museum (WAM). This database represents the most comprehensive source of information on the distribution of Western Australia's flora and fauna, comprising records from the Fauna Survey Returns database, the WA Threatened Flora and Fauna Databases, the WA Herbarium and WAM Specimen databases, and the BirdLife Australia Atlas. The database search was centered on two points 122°17'57"E, 17°38'32"S and 122°19'26"E, 17°52'07"S and requested the return of records from a 40 km radius around these points[2] (Appendix 2).
2. The DBCA databases of Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs), Declared Rare and Priority Flora, and Threatened Fauna. These data searches requested the return of records from a 40 km buffer around the study area boundary, and were provided by Main Roads.
3. The Atlas of Living Australia (ALA) (http://www.ala.org.au): a joint project between academic collecting institutions, private individual collectors and community groups. The atlas contains occurrence records, environmental data, images and the conservation status of species throughout Australia. The database search requested the return of records from a 40 km buffer around the study area boundary (Appendix 3).
4. The Commonwealth EPBC Act Protected Matters database. The database search requested the return of records from a 40 km buffer around the study area (Appendix 4).

4.1.2 Literature Review

Publicly available literature (including previous surveys commissioned by Main Roads) was searched for relevant flora and vegetation surveys and fauna surveys conducted in the locality of the study area. This was limited to surveys conducted within 40 km of the study area boundary (Table 4.1).

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1 The search areas for each database included coastal and marine areas; species restricted to these areas were excluded from the results. Erroneous records of species returned from the database searches (i.e. those that were outside of known ranges or would not occur in Australia) were also excluded.

2 The two search points buffered by 40 km were used to best approximate the desktop buffer search area of SLK0-25 supplied by Main Roads in a format allowable in NatureMap.

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Table 4.1: Previous relevant surveys conducted in the locality of the study area.

Report/Document Title (Author)	Distance and Direction from Study Area and Size of Area Surveyed (Ha)	Type of Survey/Study	Survey Dates	Taxonomic Groups Documented	Survey Methods	No. Native Species Recorded	No. Introduced Species	Survey Limitations	Features of Conservation Significance / TECs and PECs / Threatened and Priority Species
BIOLOGICAL									
Browse LNG Precinct Flora and Fauna Assessment (AECOM 2011a)	- Overlaps study area ~ 920 ha	Single season detailed flora and vegetation survey and Level 1 fauna survey	11/04/2011-18/04/2011	- Flora - Avifauna - Mammals - Reptiles - Amphibians	- Vegetation mapping - Flora quadrat assessment - Targeted searches for flora of conservation significance - Habitat assessment - Targeted fauna searches	- 207 flora - 28 avifauna - 3 mammals - 6 reptiles - 1 amphibian	- 10 introduced flora (**Chloris barbata, *Citrullus lanatus, *Corchorus olitorius, *Cynodon dactylon, *Eragrostis cilianensis, *Euphorbia hirta, *Mangifera indica, *Mesosphaerum* (previously **Hyptis*) *suaveolens, *Stylosanthes hamata* and **Triumfetta pentandra*) - Two mammals (Dingo, Horse)	- Single phase survey only - Not all areas could be accessed	- 'Paperbark Swamp' (vegetation unit Ma) recorded as conservation significant, and as a minor tributary to the Priority 4 'Nimalaica clay pan community' PEC east of Willie Creek - One Priority 1 flora species: *Jacquemontia* sp. Broome (A.A. Mitchell 3028) - One Priority 4 flora species: *Pittosporum moluccanum* - Four Marine species: Pallid Cuckoo (*Cuculus pallidus*), Brown Goshawk (*Accipiter fasciatus*), Black-faced Cuckoo Shrike (*Coracina novae-hollandiae*) and Rainbow Bee-eater (*Merops ornatus*)
FLORA									
Perpendicular Head-North Head, Packer Island, Gourdon Bay and Coulomb-Quondong Flora and vegetation Assessments (ENV 2008a, 2008b)[3]	- 15-25 km west -Survey area NA	Single season detailed flora and vegetation survey	21/08/2008-25/08/2008	- Flora	- Flora quadrat assessment - Targeted searches for flora of conservation significance	- 193 flora	- 12 introduced flora (**Aerva javanica, *Bidens bipinnata, *Cenchrus biflorus, *Cenchrus ciliaris, *Citrullus lanatus, *Cynodon dactylon, *Euphorbia tirucalli, *Leucaena leucocephala, *Macroptilium atropurpureum, *Passiflora foetida* var. *hispida, *Stylosanthes hamata* and **Triumfetta pentandra*)	- Single phase survey only - Not all areas could be accessed - Low rainfall preceeding survey.	- 'Monsoon vine thickets' TEC (High conservation value) at Coulomb-Quondong - One Priority 4 species: *Pittosporum moluccanum*
A Vegetation and Flora Survey of James Price Point: Wet Season 2009 (Biota 2009a)	- 11-30 km northwest -10,000 ha	Single season detailed flora and vegetation survey	05/03/2009-15/03/2009 and 20/03/2009-23/03/2009	- Flora	- Vegetation mapping - Flora quadrat assessment - Targeted searches for flora of conservation significance	- 308 flora	- One Declared Pest (**Sida acuta*) - 21 other introduced flora	- Single phase survey only - Not all areas could be accessed	- Monsoon Vine Thickets TEC - Drainage Basin vegetation (High conservation value) - Coastal Heath vegetation (Moderate conservation value) - Coastal communities (Moderate conservation value) - One Priority 2 flora species: *Gomphrena pusilla* - One Priority 3 species: *Polymeria* sp. Broome (K.F. Kenneally 9759) - One Priority 4 species: *Pittosporum moluccanum*
James Price Point Browse LNG Precinct Vegetation and Flora Survey (Biota 2011a)	- 11-30 km west -17, 260 ha	Single season detailed flora and vegetation survey	22/03/2010-31/03/2010	- Flora	- Vegetation mapping - Flora quadrat assessment - Targeted searches for flora of conservation significance	- 336 flora	- One Declared Pest (**Sida acuta*) - 23 other introduced flora	- Single phase survey only - Not all areas could be accessed - Large areas recently burnt	- Monsoon vine thickets' TEC (High conservation value); supports the Priority 2 *Gomphrena pusilla* and Priority 4 *Pittosporum moluccanum* - 'Coastal Heath' vegetation (Moderate conservation value) - Drainage basin vegetation (High conservation value) supports Priority 3 *Lophostemon grandiflorus* subsp. *grandiflorus* - One Priority 2 species: *Gomphrena pusilla* - One Priority 3 species: *Lophostemon grandiflorus* subsp. *grandiflorus* - One Priority 4 species: *Pittosporum moluccanum*
Supplementary Terrestrial Flora and Vegetation Assessment (AECOM 2011a)	- 11-30km west -10, 000 ha	Dry season resampling of quadrats established by Biota (2009a)	Late dry season (dates not specified)	- Flora	- Flora quadrat assessment - Targeted searches for flora of conservation significance	- 36 flora	- One Declared Pest (**Sida acuta*) - Seven other introduced flora (**Aerva javanica, *Cenchrus ciliaris, *Leucaena leucocephala, *Macroptilium atropurpureum, *Passiflora foetida* var. *hispida, *Stylosanthes hamata* and **Tamarindus indica*)	- Limited time; only two quadrats resampled. - Not all areas could be accessed - Large areas recently burnt	- 'Monsoon vine thickets' (High conservation value) TEC - One Priority 3 species: *Lophostemon grandiflorus* subsp. *grandiflorus* - One Priority 4 species: *Pittosporum moluccanum*
James Price Point Flora Monitoring Phase 1 and 2 (Biota 2011b, 2011c)	- 10-30 km northwest -17,393 ha	Vegetation Monitoring Program	29/04/2011-20/05/2011 and 8/11/2011-4/12/2011	- Flora	- Flora quadrat assessment	- 242 flora	- Nine introduced flora (**Aerva javanica, *Bidens bipinnata, *Cenchrus ciliaris, *Cenchrus setiger, *Chloris sp., * Citrullus lanatus, *Digitaria ciliaris, *Passiflora foetida* var. *hispida* and **Stylosanthes hamata*)	- NA	- One Priority 2 species: *Gomphrena pusilla* - One Priority 3 species: *Lophostemon grandiflorus* subsp. *grandiflorus* - One Priority 4 species: *Pittosporum moluccanum*

3 Only Coulomb-Quondong data presented, as this was the only site from this study within 40 km of the study area..

Report/Document Title (Author)	Distance and Direction from Study Area and Size of Area Surveyed (Ha)	Type of Survey/Study	Survey Dates	Taxonomic Groups Documented	Survey Methods	No. Native Species Recorded	No. Introduced Species	Survey Limitations	Features of Conservation Significance / TECs and PECs / Threatened and Priority Species
Cape Leveque Road Vegetation and Flora Assessment (GHD 2013a)	- Overlaps study area km west -251 ha	Single season detailed flora and vegetation survey	12/03/2013-23/03/2013	- Flora	- Vegetation mapping - Flora quadrat assessment - Targeted searches for flora of conservation significance	- 133 flora	- Two introduced flora (**Mesosphaerum suaveolens* and **Stylosanthes scabra*)	- Single phase survey only - Not all areas could be accessed	- Two Priority 1 species: *Ipomoea tolmerana* subsp. *occidentalis* and *Jacquemontia* sp. Broome (A.A. Mitchell 3028) - One Priority 3 species: *Glycine pindanica*
FAUNA									
Perpendicular Head-North Head, Packer Island, Gourdon Bay and Coulomb-Quondong Vertebrate Fauna Assessment (ENV 2008a)	- 15-25km northwest	Dry season vertebrate fauna survey (only Coulomb Point-Quondong Point coastal area considered here)	22/08/2008 - 26/08/2008	- Mammals - Avifauna - Reptiles - Amphibians	- Habitat assessment - Pitfall trapping, funnel trapping, Elliott and cage trapping - Targeted searches - Night survey - Ultrasonic call recording - Opportunistic secondary evidence	- 17 reptiles - 11 mammals	- 4 mammals (House Mouse, Black Rat, Dog, Cat)	- Single phase survey only - Access constraints prevented avifauna survey - 4 nights trapping - Low temperatures likely to have influenced reptile activity	- One Priority 1 species: Northern Coastal Free-tailed Bat (*Mormopterus loriae cobourgiana*)
James Price Point Terrestrial Fauna Survey: Wet Season 2009 (Biota 2009b)	- 11-30km northwest - 10, 000 ha	Level 2 wet season vertebrate and SRE fauna survey	5/03/2009 - 31/03-2009	- Mammals - Avifauna - Reptiles - Amphibians - Invertebrates	- Pitfall trapping, funnel trapping, Elliott and cage trapping - Harp netting, ultrasonic call recording - Habitat specific searches - Identification of secondary evidence - Night survey	- 4 amphibians - 39 reptiles - 4 bats - 3 non-volant mammals - 68 avifauna	- 2 mammals (House Mouse, Cat)	- Not all sections of the study area were ground truthed or sampled equally - Single phase survey only	- One Schedule 7 species: Peregrine Falcon (*Falco peregrinus*) - Two Priority 2 species: *Simoselaps minimus* and *Lerista separanda* - One Marine species: Rainbow Bee-eater (*Merops ornatus*)
Report for Broome North Development Area - Targeted Fauna Survey (GHD 2009a)	- 7km southwest - 715 ha	Level 2 vertebrate fauna assessment (Area A and B combined)	04/05/2009 - 10/05/2009	- Mammals - Avifauna - Reptiles - Amphibians	- Cage trapping - Systematic bird survey - Opportunistic hand foraging - Identification of secondary evidence	- 50 avifauna - 25 reptiles - 5 mammals - 1 amphibian	- 3 mammals (Dog, Cat, Horse), 1 reptile (Asian House Gecko)	- Single season survey only	- One Marine species: Rainbow Bee-eater (*Merops ornatus*)
Broome North: Southern Portion (Area A) - Preliminary Environmental Impact Assessment and Biological Survey (GHD 2009b)	- 7km southwest - 350 ha	Reconnaissance vertebrate fauna survey	03/06/2008 - 06/06/2008	- Mammals - Avifauna - Reptiles - Amphibians	- Opportunistic visual and aural survey - Identification of secondary evidece - Hand foraging	- 19 avifauna - 1 mammal - 1 reptile	- 1 mammal (Dog)	- No trapping, opportunistic observations only - Single season survey only	- One Marine species: Rainbow Bee-eater (*Merops ornatus*)
Broome North: Southern Portion (Area B) – Preliminary Environmental Impact Assessment and Biological Survey (GHD 2009c)	- 7km southwest - 365 ha	Reconnaissance vertebrate fauna survey	03/06/2008 - 06/06/2008	- Mammals - Avifauna - Reptiles - Amphibians	- Opportunistic visual and aural survey - Identification of secondary evidece - Hand foraging	- 19 avifauna - 1 mammal - 1 reptile	- 1 mammal (Dog)	- No trapping, opportunistic observations only - Single season survey only	- One Marine species: Rainbow Bee-eater (*Merops ornatus*)
Supplementary Terrestrial Fauna and Habitat Assessment of James Price Point, WA (AECOM 2010)	- 9-36km northwest	Dry season vertebrate fauna survey	9/11/2009 - 13/11/2009	- Mammals - Avifauna - Reptiles - Amphibians	- Transect walks to target conservation significant species - Recording of secondary evidence - Opportunistic fauna observations - Aerial migratory bird survey	- 20 reptiles - 5 mammals - 85 avifauna	- 3 mammals (Dog, Cat, European Cattle)	- No seasonal component - Not all sections of the survey area were surveyed - No systematic trapping - Rain restricted ability to identify scats and tracks	- One Schedule 3/Migratory and Schedule 5/Critically Endangered species: Eastern Curlew (*Numenius madagascariensis*) - One Schedule 7 species: Peregrine Falcon (*Falco peregrinus*)
James Price Point Browse LNG Precinct Targeted Terrestrial Fauna Survey (Biota 2011d)	- 9-30 km northwest	Targeted vertebrate and Short-range Endemic (SRE) invertebrate survey	22/03/2010 - 31/03/2010	- Mammals - Avifauna - Reptiles - Amphibians	- Pit trapping and Elliott trapping - Targeted invertbrate survey	- 1 amphibian - 27 reptiles - 4 mammals	None	- Access restrictions - Low rainfall reduced SRE activity - Lack of contextual information on potential SREs	None
Browse LNG Precinct Access Road - Targeted Fauna Survey Bilby (AECOM 2011b)	- Within study area (SLK 0-25) and a proposed road extending 18 km northwest of SLK 25	Targeted Bilby assessment	28/06/2011 - 01/07/2011	- Mammals	- Desktop Assessment - Transect survey for sign evidence - Nocturnal survey - Motion camera detection	- 3 mammals	- 2 mammals (Dog, Cat)	- Not all of the study area was traversed	- One Schedule 3/Vulnerable species: Bilby (8 burrows (not active) potentially belonging to the Bilby were recorded, along with 1 set of partial tracks potentially of the Bilby)

Report/Document Title (Author)	Distance and Direction from Study Area and Size of Area Surveyed (Ha)	Type of Survey/Study	Survey Dates	Taxonomic Groups Documented	Survey Methods	No. Native Species Recorded	No. Introduced Species	Survey Limitations	Features of Conservation Significance / TECs and PECs / Threatened and Priority Species
Cape Leveque Road Upgrade Targeted Bilby Assessment (GHD 2013b)	- Extending 77.6 km north of the study area (SLK 25-102.6)	Targeted Bilby assessment	10/12/2012 - 19/12/2012	- Mammals - Avifauna - Reptiles	- Desktop assessment - 20x 6ha sign plot searches - Motion camera trapping - Opportunistic observation	- 68 avifauna - 22 reptiles - 5 mammals - 5 amphibians	- 2 mammals (Dog, Cat)	- Survey conducted over a single season in one year only - Two areas traversed were impacted by fire (unlikely to impact on the results of the survey) - Soil substrate and rainfall reduced ability to detect presence of the Bilby	- One Schedule 3/Vulnerable species: Bilby (active burrows and diggings confirmed as Bilby were recorded, and motion camera images of the Bilby were captured) - One Marine species: Rainbow Bee-eater (*Merops ornatus*) - One Priority 4 species: Gouldian Finch (*Erythrura gouldiae*)
Cape Leveque Road SLK 0-25 Targeted Bilby Survey (GHD 2016a)	- Within study area (SLK 0-25)	Targeted Bilby assessment	October 2015, November 2015, December 2015	- Mammals	- Desktop assessment - 27 sign plot surveys - Long term monitoring of 4x 2ha sign plots - Motion camera trapping	- 4 mammals	- 3 mammals (Dog, Cat, European Cattle)	- Survey specific limitations not addressed	- One Schedule 3/Vulnerable species: Bilby (2 burrows (active) of the Bilby; diggings, scats and tracks confirmed as Bilby; motion camera evidence of Bilby)
Cape Leveque Road SLK 25-102.6 Targeted Bilby Survey (GHD 2016b)	- Extending 77.6 km north of the study area (SLK 25-102.6) - 297 ha	Targeted Bilby assessment	October 2015, November 2015, December 2015	- Mammals	- Desktop assessment - 77x 2ha sign plot searches, - Long term monitoring of 12x 2ha sign plots - Opportunistic observations of fauna - Motion camera trapping	- 2 avifauna - 3 mammals	- 3 mammals (Dog, Cat, European Cattle)	- Survey specific limitations not addressed	- One Schedule 3/Vulnerable species: Bilby (active burrows, scats, tracks and diggings confirmed as Bilby evidence)

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4.1.3 Assessment of Likelihood of Occurrence

In order to determine which species of conservation significance have the potential to occur in the study area, the results of the database and literature searches were examined, while considering the known habitat preferences and distributions of the species identified. Habitats were defined primarily according to landforms and vegetation.

For each species of conservation significance identified as having the potential to occur in the study areas, a set of rankings and criteria that has been developed by Biota was applied to assess the likelihood of occurrence within the study area (Table 4.2). Through the remainder of this report, the term "close proximity" is defined as being within 20 km of the study area, while the broader "locality" comprises the area up to 40 km from the study area.

Table 4.2: Biota's likelihood ranking system for species that may occur in the study area.

Rank	Criteria
Recorded	1. The species has been recorded in the study area.
Likely to occur	1. There are existing records of the species in close proximity to the study area (within 20 km); and • the species is strongly linked to a specific habitat, which is present in the study area; or • the species has more general habitat preferences, and suitable habitat is present.
May potentially occur	1. There are existing records of the species from the locality (within 40 km), however • the species is strongly linked to a specific habitat, of which only a small amount is present in the study area; or • the species has more general habitat preferences, but only some suitable habitat is present. 2. There is suitable habitat in the study area, but the species is recorded infrequently in the locality.
Unlikely to occur	1. The species is linked to a specific habitat, which is absent from the study area; or 2. Suitable habitat is present, however there are no existing records of the species from the locality despite reasonable previous search effort in suitable habitat; or 3. There is some suitable habitat in the study area, however the species is very infrequently recorded in the locality or the only records are historic (>40 years ago).
Would not occur	1. The species is strongly linked to a specific habitat, which is absent from the study area; or 2. The species' range is very restricted and does not include the study area; or 3. The species is not considered extant in the locality.

4.2 Field Survey Timing and Weather

4.2.1 Timing and Team

A single phase survey was conducted in the study area. The Detailed and Targeted flora and vegetation assessment was undertaken between the 30th of April and 5th of May 2018 by two Biota botanists, Pierre-Louis de Kock and Rebecca Mason.

The Level 1 fauna survey and targeted Bilby survey was undertaken between the 7th and 10th of May 2018 by four Biota zoologists, Roy Teale, Dr Stewart Ford, Penny Brooshooft and Jacinta King. The fauna survey was conducted under "Licence to Take Fauna for Scientific Purposes" Permit No. 08-002119-2 issued to Penny Brooshooft (Appendix 8).

Analysis of bat call recordings was completed by Daniel Kamien (of Biota) using methods recommended by the Australasian Bat Society (2006), in conjunction with available reference data. Only sequences containing good quality, search phase calls were considered for identification.

Qualifications and relevant experience of the field personnel are summarised in Table 4.3.

Table 4.3: Summary of personnel involved in the biological survey.

	Name	Survey Role	Position	Qualification	Years of Survey Experience	DBCA Licence
Flora	Pierre-Louis de Kock	Project Manager (Flora), vegetation mapping, site sampling, rare flora searches	Level 2 Botanist/ Specialist Taxonomist	BSc (Environmental Management)	12	SL012303
	Rebecca Mason	Vegetation mapping, site sampling, rare flora searches	Level 1 Botanist	BSc (Environmental Restoration & Conservation Biology)	7	SL012205
Fauna	Roy Teale	Project Director, Level 1 fauna survey, targeted Bilby survey	Director and Zoologist	BSc (Zoology and Botany) (Hons)	27	08-002119-2
	Penny Brooshooft	Project Manager (Fauna), Level 1 fauna survey, targeted Bilby survey	Level 2 Zoologist	BSc (Zoology and Conservation Biology) (Hons)	8	
	Stewart Ford	Level 1 fauna survey, targeted Bilby survey	Senior Zoologist	PhD (Zoology), BSc (Zoology) (Hons)	18	
	Jacinta King	Level 1 fauna survey, targeted Bilby survey	Level 1 Zoologist	BSc (Environmental Science and Conservation Biology) (Hons)	6	

4.2.2 Weather and Climate Conditions

The weather conditions (particularly rainfall) leading up to a field survey are important factors influencing the number and type of flora and fauna species that are recorded from an area. Weather observations during the survey were sourced from data collected at Broome Airport (Bureau of Meteorology weather station number 3003), located 7 km southwest of the study area (Table 4.4).

Minimum temperatures ranged from 16°C to 22.3°C during the survey, while maximum temperatures ranged from 31.9°C to 36.0°C (Table 4.4). No rainfall was received during the survey (Table 4.4).

Table 4.4: Daily weather observations for the field survey.

Date	30/4	1/5	2/5	3/5	4/5	5/5	6/5	7/5	8/5	9/5	10/5	Total/ Mean
Rainfall (mm)	0	0	0	0	0	0	0	0	0	0	0	0
Maximum Temperature (°C)	34.7	34.3	32.2	31.9	33.9	36.0	33.4	35.3	35.1	35.8	35.8	34.4
Minimum Temperature (°C)	19.8	18.4	17.4	19.6	20.1	21.0	20.2	22.3	19.0	16.0	17.1	19.2

To characterise the climate leading up to the current survey, monthly rainfall and temperature data for the year preceding the field survey was compared to the long-term (1939-2018) climate averages from the Broome Airport weather recording station (Figure 4.1).

The data show that rainfall received during the wet season preceding the field survey (December 2017 to February 2018) was five times the average when compared to the long-term median rainfall for this period (1,703.2 mm compared to 336.9 mm). Similarly, total rainfall in the three months preceding the survey (February- April 2018) was 633.0 mm, well above the long-term median rainfall for this period (223.9 mm). The west Kimberley experienced two tropical cyclones early in 2018, which contributed significant rainfall events in the region (Tropical Cyclone Joyce in January and Tropical Cyclone Kevin in February).

Weather conditions at the time of field surveys were therefore optimal for post-wet season biological surveys. Taking the recent rainfall data into consideration, the conditions at the time of the survey were also considered optimal for the collection of annual and cryptic perennial flora species.

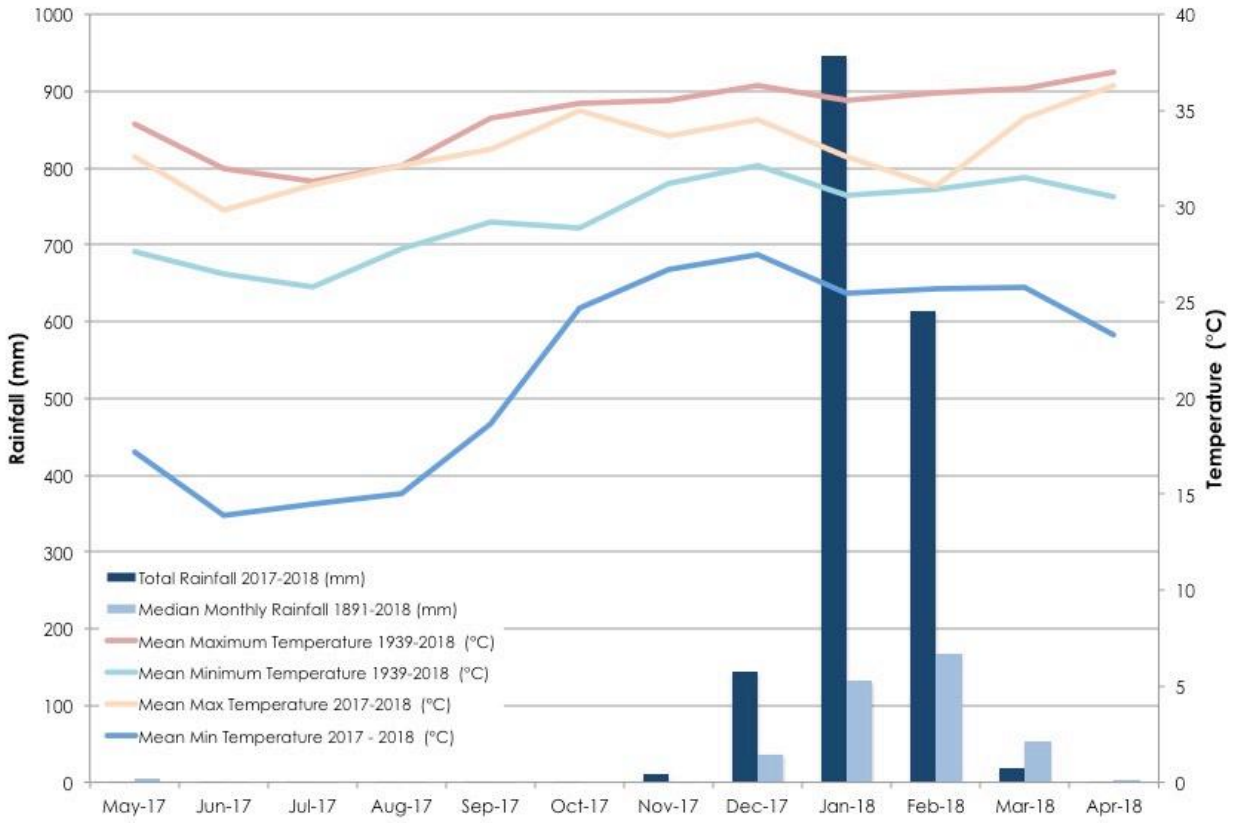

Figure 4.1: Total monthly rainfall and median monthly temperature for the Broome Airport weather station for the year preceding the biological surveys, compared to the long-term monthly median rainfall and monthly maximum and minimum temperatures for the same months.

4.3 Detailed and Targeted Flora and Vegetation Survey

4.3.1 Floristic Data Collection: Assessment of Quadrats and Relevés

Indicative sampling locations were selected prior to the field survey. Sampling sites were selected based on the broad habitats and vegetation types apparent. Once in the field, the actual locations of the sampling sites were adjusted as necessary (e.g. to be placed in an area more representative of the broader vegetation unit).

Sampling sites were established as either:

1. Quadrats: bounded floristic sampling sites. The standard for the Kimberley bioregion comprises a 50 m x 50 m square (or a modified shape with an equivalent area). Quadrats were measured out using optical squares and measuring tapes, and permanently marked using steel fence droppers at each corner. Photographs of each quadrat were taken from the northwest corner, looking southeast; or
2. Relevés: unbounded floristic sampling sites with a similar search area to a quadrat. Relevés were typically used where the vegetation stand was too small or too narrow to effectively establish a quadrat. The relevés during the current survey were rigorously surveyed for flora, but were not permanently marked.

The following parameters were recorded for all quadrats and relevés:

- location coordinates[4] (±5 m) recorded with a handheld Global Positioning System (GPS) unit; coordinates were recorded for all four corners of a quadrat, and at least the central point of a relevé;
- a digital photograph of each site (usually taken from the northwest corner of a quadrat or the central point of a relevé);
- habitat description;
- broad soil type;
- fire history (approximate time since last fire, where applicable);
- vegetation description based on the height and estimated percentage foliar cover of dominant species (see Appendix 9);
- vegetation condition ranking according to Trudgen (1988) (see Appendix 9); and
- the estimated percentage foliar cover of each flora species present within the quadrat, or in the vicinity of the relevé (within a ~30 m radius of the centre point).

Locations of the sampling sites are shown in Figure 4.2 to Figure 4.4, while a summary of the raw data from the sites is provided in Appendix 10.

4.3.2 Vegetation Description and Mapping

Vegetation units in the study area were sampled with 14 quadrats during the current survey (see Appendix 10 for raw data), and also with mapping notes at 70 locations. A mapping note is a condensed form of sampling site, at which similar broad habitat and vegetation information is recorded as for the relevés, however the area is smaller in size and only the dominant flora species are recorded. Mapping notes were utilised to mark the boundaries of vegetation units in the field to allow for more accurate delineation of mapping boundaries in the office. Mapping notes were also used as an additional way to define vegetation units when it was not practical to establish relevés within the vegetation unit, usually due to the limited size or scattered distribution of a vegetation unit.

[4] All coordinates presented in this report are in GDA94 datum and MGA50 projection.

Vegetation units and boundaries were verified in the office using both the data collected in the field and digital imagery. A full description of the vegetation units is presented in Section 6.0. Geographical Information System (GIS) analysis and maps presented in this report were prepared by Holly Smith (GIS Analyst with Biota) and Paul Sawers (GIS Manager).

4.3.3 Searches for Threatened Flora, Priority Flora and Weeds

Targeted, non-systematic searches were conducted on foot in areas considered to be potential habitat for conservation significant flora (i.e. Threatened and Priority listed species). The routes of the foot traverses intersected all major vegetation/habitat units in the study area (see Figure 4.2 to Figure 4.4), and survey effort was increased in areas that were recognised as having a high potential to support conservation significant or restricted species. The distance between observers varied depending on the terrain but was typically 50-100 m.

Locations of species of conservation significance or unknown taxa were recorded using a handheld GPS unit. The number of individuals and extent of the population were also recorded for each location, along with the habitat and associated species.

Locations of introduced flora species (weeds) were also recorded during the foot traverses, along with an estimate of their population size.

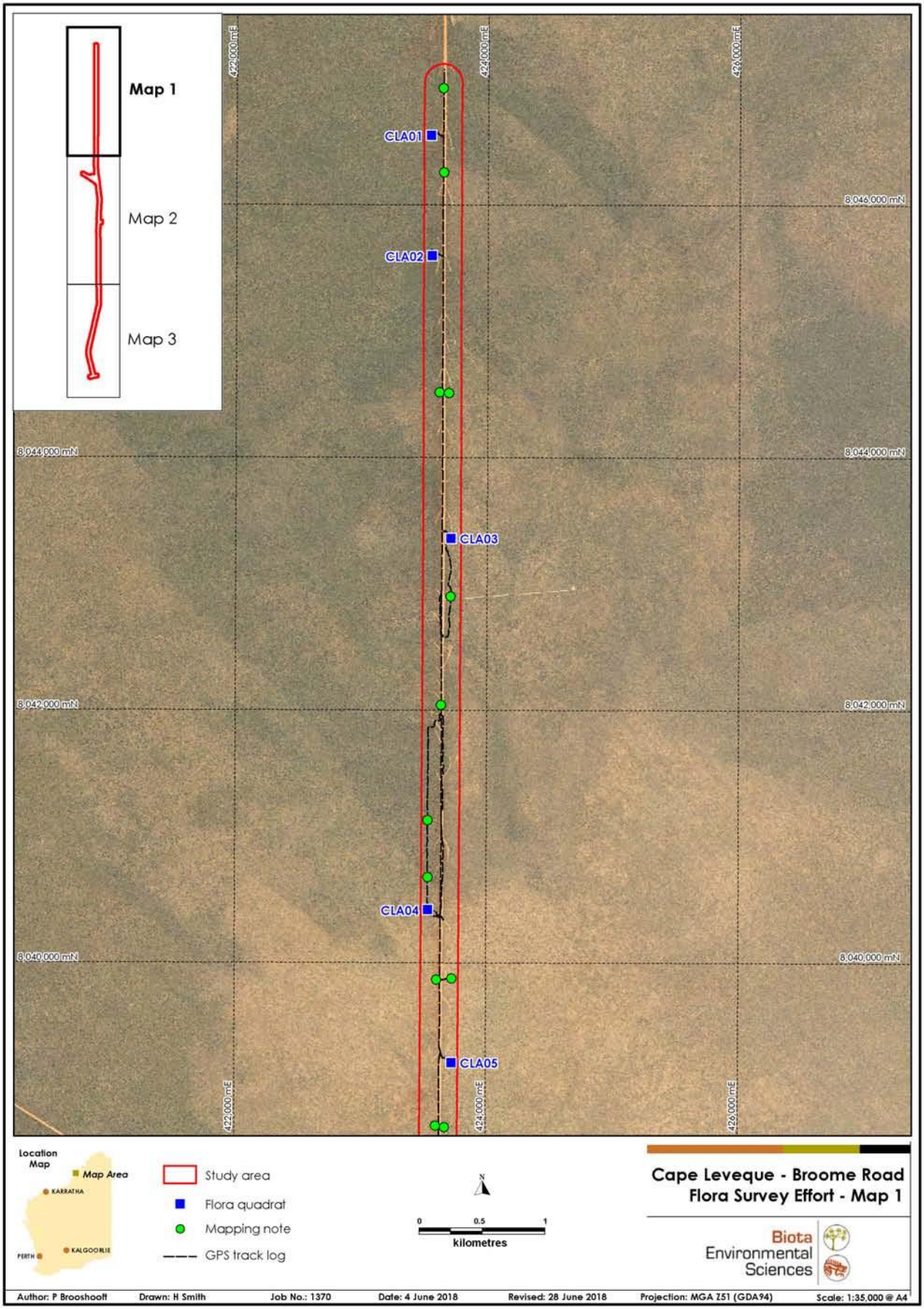

Figure 4.2: Track logs of foot traverses and locations of flora sampling sites in the study area (Map 1).

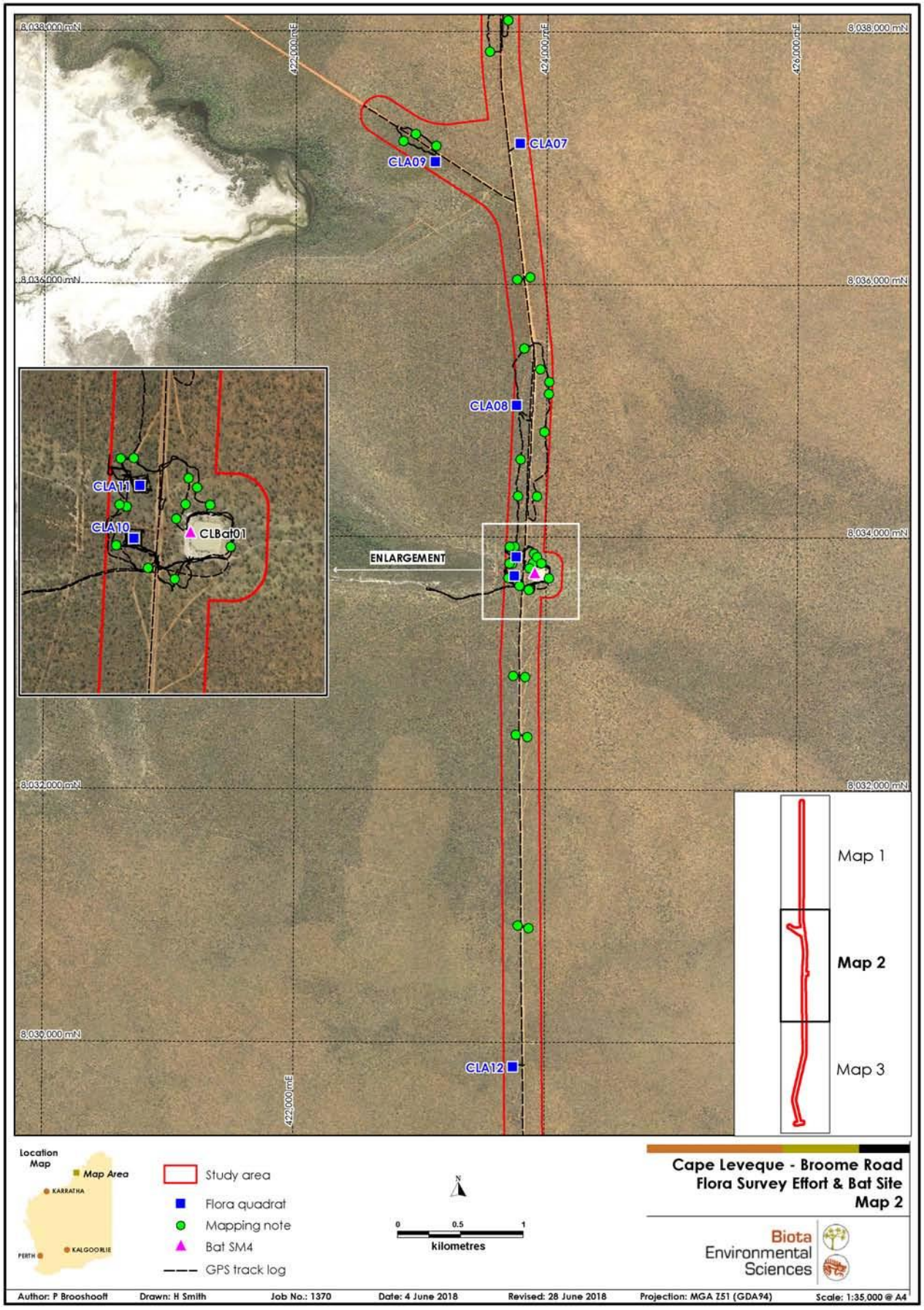

Figure 4.3: **Track logs of foot traverses and locations of flora sampling sites and the bat site in the study area (Map 2).**

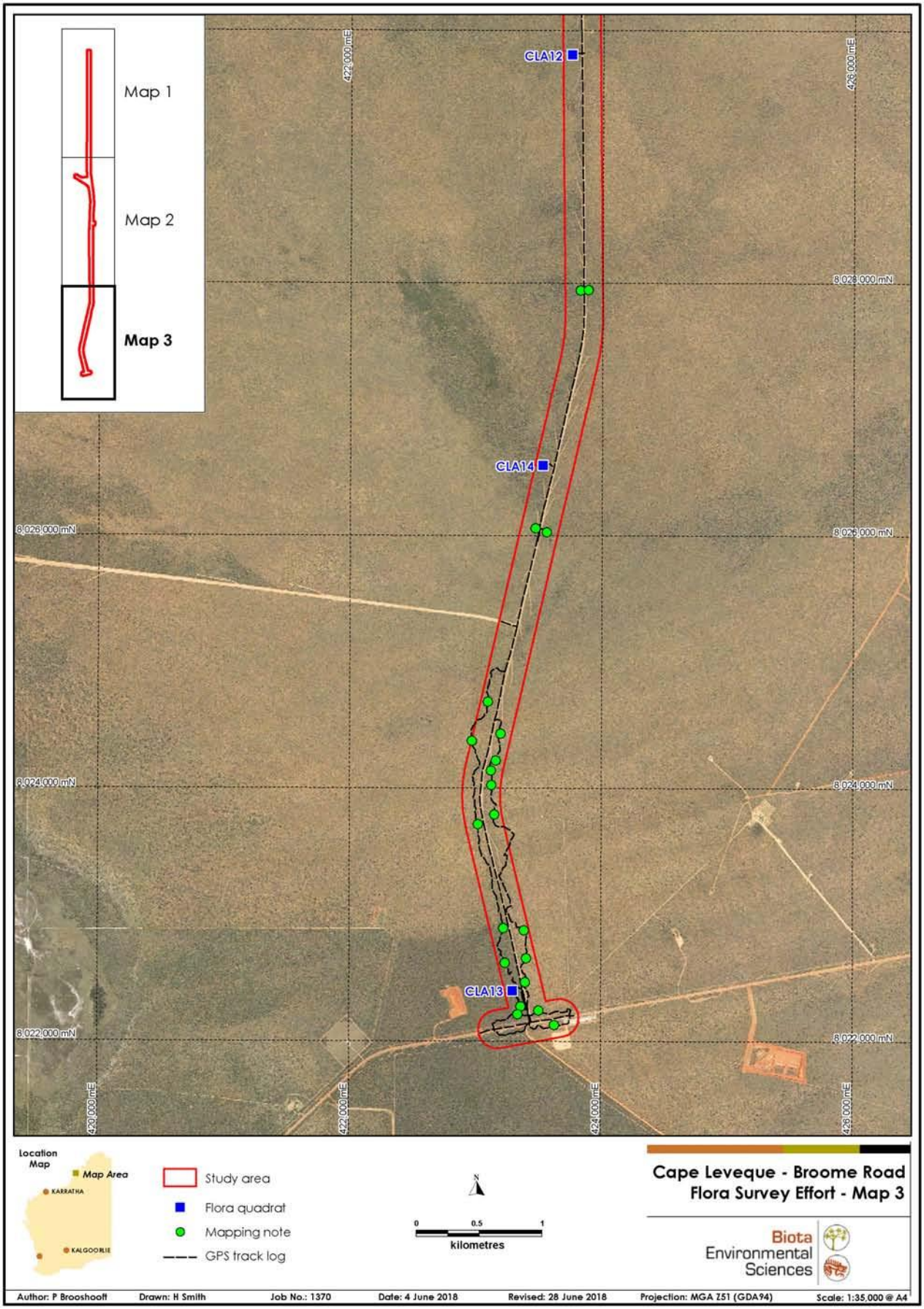

Figure 4.4: Track logs of foot traverses and locations of flora sampling sites in the study area (Map 3).

4.4 Level 1 Fauna Reconnaissance Survey

A reconnaissance survey of the study area was undertaken in order to verify the accuracy of the desktop assessment, to delineate and characterise the fauna of the study area and identify potential threatening processes. This survey involved description and mapping of the fauna habitats present, and selective low intensity sampling, as described in Sections 4.4.1 and 4.4.2.

4.4.1 Fauna Habitat Mapping

Fauna habitat mapping was conducted using a functional, ecological perspective on fauna use of the landscape (Biota 2013). Foot traverses were carried out to map broad habitat areas. Habitats were described and mapped based on areas within the study area that would be likely to offer a range of ecological niches for a suite of different species, with consideration of landform, substrate and vegetation. It is important to note that each broad habitat area defined here cannot be used to map the distribution of any one species or group of taxa, as many species utilise a range of ecological niches for specific activities such as foraging, commuting, breeding and nesting. The resultant habitat map may therefore be viewed as a guide to delineate areas that may be of differing ecological importance to the fauna species utilising the study area.

4.4.2 Non-Systematic Sampling

Non-systematic methods were employed to search for fauna or secondary evidence thereof. The aim was to locate, search and describe habitats that may support fauna of conservation significance, habitat-specific species and other species with the potential to occur based on the results of the desktop assessment. Various non-systematic techniques were used, including:

- recording of bat echolocation calls (see Section 4.4.2.1);
- foot traverses (undertaken concurrently with the targeted Bilby surveys outlined in Section 4.5) to record evidence of terrestrial vertebrate species of conservation significance;
- active foraging in microhabitats likely to support conservation significant fauna, particularly reptiles; this included methods such as rock turning, log splitting, burrow digging and bark peeling;
- identification of road kills and other animal remains found during the survey;
- opportunistic sightings and records;
- unbounded area searches for avifauna; and
- recording and identification of secondary signs including tracks, scats and diggings.

4.4.2.1 Bat Sampling

Bats were sampled using a SongMeter SM4BAT detector unit, which detects and records ultrasonic echolocation calls emitted by bats during flight (Wildlife Acoustics 2010). Sampling was undertaken at the man-made dam for a period of two nights (Table 4.5 and Figure 4.3). The dam was considered the most prospective habitat likely to provide foraging and drinking opportunities for a range of bat species within the study area (see Plate 4.1).

Table 4.5: Effort and location of the SongMeter bat sampling site in the study area.

Site Name	Easting (mE)	Northing (mN)	Date Set	Date Retrieved	Nights in Operation
CLBat01	423911	8033714	8/5/18	10/5/18	2

Plate 4.1: Bat sampling site CLBat01 located at the man-made dam in the study area.

4.5 Targeted Bilby Assessment

The targeted Bilby assessment was conducted in accordance with DBCA guidelines for surveys to detect the presence of bilbies (DBCA 2017a). The assessment was designed in consultation with Dr Martin Dziminski (a DBCA specialist in Bilby monitoring and surveying), who verified that the survey design would address the objectives of the study.

A combination of linear transects and 2 ha sign plot searches was used. Specifically these methods involved:

- unbounded linear foot traverses: the team of zoologists walked parallel to the centreline of the Cape Leveque Road. Each person was spaced approximately 40 m apart, and the entire length of the study area was traversed;
- five 2 ha (200 m x 100 m) sign plots: a team of one or two zoologists systematically searched within the designated plot area for 30 minutes (a total of 30-60 person minutes for each plot). Plot locations were selected prior to the field survey based on aerial imagery, to encompass dense vegetation areas of prospective Bilby habitat, of varying fire ages. In the interests of standardisation and development of best practice survey techniques for the Bilby in WA, a standardised data sheet for the 2 ha sign plot surveys (available from the DBCA) was used to record data. A modified version of this datasheet has been presented here (see Section 9.2 and Appendix 12).

A range of sign evidence of the Bilby was recorded during the linear foot traverses and sign plot searches, as discussed in Section 4.5.1. Where sign evidence was detected, locations were recorded on handheld GPS units.

4.5.1 Sign Evidence

4.5.1.1 Tracks

Bilby foot imprints are distinctive when fresh, and readily distinguished from other species that have an otherwise similar track pattern and gait (Southgate et al. in prep.). Hind foot imprints are noticeably longer than front foot imprints and bear few conspicuous indentations, while front foot imprints have three distinct parallel lines produced by the toes and claws (Southgate et al. in prep., Moseby et al. 2012). Other species with similar tracks include the rabbit, bandicoot, dasyurids and rodents, however these can be distinguished from the Bilby based on differences in shape, size and toe and claw prints (Southgate et al. in prep.).

The gait of the Bilby is a quadrupedal bounding overstep, which produces a pattern of parallel hind foot imprints and slightly offset or in-line front foot imprints (Southgate et al. in prep., Moseby et al. 2012). This gait pattern is consistent with other similar-sized mammals, including quolls, mulgara, bandicoots, rabbits, rats and occasionally possums (Southgate et al. in prep.).

As tracks and gait patterns have the potential to be confused with species other than the Bilby, a set of certainty criteria was applied when assessing track evidence in the field (Table 4.6).

Table 4.6: Criteria used to assess certainty of Bilby tracks.

Certainty	Criteria
High	1. Track imprints and gait pattern are clear and consistent with those produced by the Bilby; or 2. Resolution of hind feet and front feet imprints is poor despite a gait pattern consistent with that of the Bilby, however they may be attributed to the Bilby as other species producing similar tracks and gait patterns do not occur, or are unlikely to occur in the study area.
Low	1. Resolution of hind feet and front feet imprints is poor despite a gait pattern consistent with that of the Bilby, and they cannot reliably be attributed to the Bilby as other species producing similar tracks and gait patterns occur, or are likely to occur in the study area.

4.5.1.2 Scats

The Bilby produces scats with distinctive characteristics unmatched by any other species on mainland Australia (Southgate et al. in prep.). The scats are oblong in shape, longer than they are wide, firm, usually contain a mixture of sand, plant and invertebrate material, have a smooth coating and rounded ends, and are typically deposited in a group of two to five pellets (Southgate et al. in prep.). Scats are most commonly found in association with digging activity, deposited on top of or within spoil piles of diggings, and sometimes at burrow entrances (Southgate et al. in prep.).

Given that there is no ambiguity in distinguishing Bilby scats from those of other species, scats detected during the survey that were consistent with the above description were considered positive confirmation of Bilby presence.

4.5.1.3 Diggings

Bilbies forage for food at the soil surface, or dig in the subsoil for beetles, termites, root-dwelling larvae, seeds and bulbs (Southgate et al. in prep.). Where the Bilby has foraged, diggings are generally conspicuous and distinctive, especially where they occur at the base of shrubs or forbs known to contain root-dwelling larvae (see Table 4.7), as the Bilby is the only species in mainland Australia that forages for root-dwelling larvae in plant roots (Southgate et al. in prep.).

Table 4.7: Plant species known to contain root-dwelling larvae in the Dampierland bioregion adapted from (Southgate et al. In prep., DBCA 2017b).

Plant Species	Larval Types
Acacia colei	Family: Cossidae
Acacia dictyophleba	Family: Cossidae
Acacia eriopoda	Family: Cossidae
Acacia monticola	Family: Cossidae
Acacia stellaticeps	Family: Cossidae
Acacia tumida	Family: Cossidae
Acacia hilliana	Family: Cossidae
Senna notabilis	Family: Cossidae
Grevillea refracta	Order: Lepidoptera
Dodonaea hispidula	Order: Lepidoptera

Diggings of the Bilby can be of different size and shape, but are typically:

- shallow, 5-10 cm in depth, with the spoil pile evenly distributed around the dig;
- deep conical or cylindrical digs, usually less than 50 cm deep; or
- large ploughed areas of multiple shallow diggings around termite nests.

Other species such as varanids, echidnas, rabbits, wallabies, bandicoots, mulgara and mice can produce diggings that are similar to the Bilby. Varanid diggings can sometimes superficially appear to belong to the Bilby, but can be distinguished by their notable crescent shape, presence of a distinct mid-ridge at the base of the digging and spoil pile often on one side (Southgate et al. in prep., Moseby et al. 2012). Given that diggings may be confused with species other than the Bilby, a set of criteria was applied when assessing digging evidence in the field (Table 4.8).

Table 4.8: Criteria used to assess certainty of Bilby diggings.

Certainty	Criteria
High	1. Single or multiple diggings at the base of shrubs or forbs known to contain root-dwelling larvae (Table 4.7); and/or, 2. Confirmed Bilby scats (Section 4.5.1.2) detected within spoil piles of diggings; and/or, 3. Other sign, including clear tracks, scats and burrows, recorded in association with diggings.
Moderate	1. Size and shape of diggings are consistent with known characteristics of Bilby diggings, but occur in isolation of other sign; and/or 2. Isolated diggings occur in habitat supporting plant species suitable for foraging, and the Bilby has been recorded historically from the locality.
Low	1. Diggings exhibit some characteristics typical of the Bilby, however they cannot reliably be attributed to the Bilby due to age, location within the landscape (i.e. not at the base of shrubs or forbs), and/or absence of other positive sign.

4.5.1.4 Burrows

The Bilby constructs burrows that typically have a single round entrance, readily distinguishable from varanids and other reptiles that construct crescent shaped burrows (Southgate et al. in prep.). Bilby burrows usually have an apron of excavated sand at the entrance, and are often found under logs, at the base of trees, spinifex tussocks, termite mounds or sand mounds (Southgate et al. in prep., Triggs 1996, Moseby et al. 2012). It is common to observe multiple burrows within an established foraging area, and 'warrens' with multiple burrow entrances can sometimes occur (Southgate et al. in prep.).

Inactive Bilby burrows can be utilised by a range of other species, including cats, foxes, varanids, echidnas, hopping mice and mulgara, potentially making them appear active (Southgate et al. in prep.). Where burrow evidence was detected, a set of criteria was applied to assess the certainty that they were active (or inactive) Bilby burrows (Table 4.9).

Table 4.9: Criteria used to assess certainty of Bilby burrows.

Certainty	Criteria
High (Active)	1. Fresh, confirmed Bilby tracks (Section 4.5.1.1) detected on/surrounding apron in front of burrow entrance; and/or 2. Fresh, confirmed Bilby scats (Section 4.5.1.2) detected on/surrounding apron in front of burrow entrance; and/or, 3. Fresh, confirmed Bilby diggings (Section 4.5.1.3) detected in a foraging area surrounding the burrow entrance; and/or 4. Multiple burrow entrances detected in a foraging area, displaying evidence from 1-3 above.
Low (Inactive)	1. Burrow entrance exhibits characteristics of the Bilby, and some other sign evidence with longevity persists (e.g. scats/diggings), however it cannot reliably be attributed to the Bilby due to age and absence of fresh, positive signs.

4.5.1.5 Interpretation of Certainty Criteria

The certainty criteria used to assess sign evidence (Sections 4.5.1.1 to 4.5.1.4) outlines a prescriptive field based approach aimed at quantifying Bilby presence within the study area. The results of this approach (see Section 9.0) should be interpreted with the considerations outlined in Table 4.10.

Table 4.10: Considerations for interpretation of certainty criteria.

Certainty Criteria	Interpretation Consideration
High	Sign records were positively attributable to the Bilby, and should be interpreted as evidence of current Bilby presence within the study area.
Moderate	Individual sign could not be attributed to the Bilby with High certainty, however these records should be regarded as potential evidence of Bilby presence within the study area. Particularly with respect to digging evidence, mapped locations should be considered together and not in isolation, as this provides an indication of potential Bilby presence at a landscape scale. For example, individual diggings may have been assigned Moderate certainty in the field, however mapped clusters of Moderate diggings may suggest a potential Bilby foraging area when all records are considered together.
Low	Individual sign could not be attributed to the Bilby with Moderate or High certainty, but may be interpreted as historical presence of the Bilby, particularly where clusters of Low certainty sign are mapped together.

4.5.2 Bilby Habitat Mapping

At a landscape scale, there are a multitude of factors that affect suitability of habitat for the Bilby, and thus its occurrence, including landform, substrate, vegetation, fire frequency, rainfall, land clearance and presence of introduced herbivores and carnivores (Cramer et al. 2016). Within WA, three landforms have been identified as primary Bilby habitat, described broadly as (1) residual landforms, (2) fluvial landforms and (3) plains and dune fields (Cramer et al. 2016). Additionally, soil, sand, sandy clay or sandy gravel substrates have been identified as critical to the presence of the Bilby, as they enable burrow construction (DBCA 2016a). Within the study area, landforms present are consistent with (3), plains and dune fields (see Section 3.3), and the substrate is suitably sandy (see Section 3.4).

Acknowledging the complexity of the factors that define Bilby habitat, a finer scale, survey-specific approach has been developed here to map Bilby habitat within the study area. The approach recognises that Bilby presence is strongly linked to the availability of food resources, which are intrinsically dependent on fire history (Southgate 2005). Bilbies have been recorded in habitats with a range of fire-ages, including recently burnt (1-2 years), unburnt (3-6 years) and long unburnt (>6 years) areas (Southgate 2005, Southgate and Carthew 2007, DBCA 2017a). This has been attributed to fire influencing food availability; fire (and subsequent rainfall) promotes regeneration of some short-lived species such as the grass *Yakirra australiensis*, the seeds of which form dominant components of the Bilby diet when available (Southgate 2005, Liddle 2016). Fire also promotes the growth of other short-lived species such as *Senna notabilis,* the roots of which host larvae, another key component in the Bilby diet (Liddle 2016, DBCA 2017b). Conversely, fire kills long-lived larvae host species, such as *Acacia hilliana* and A. *tumida* (Liddle 2016). These long-lived species only develop hosting capacity for larvae after the plant reaches a certain age (Liddle 2016), suggesting that unburnt stands of these species are important from the dietary perspective of the Bilby.

Considering the above, a set of criteria was developed to determine the prospectivity of habitat within the study area (Table 4.11). Habitats were described and mapped based on a joint appraisal of mapped vegetation units (Section 6.0) and fire history mapping (Department of the Environment 2018). It should be noted that the mapping produced is representative of the habitat at the time of writing: many biotic and abiotic factors determine suitability of Bilby habitat, and temporal changes in these factors influence Bilby presence. The habitat map should therefore be viewed as a guide to delineate areas that may currently be of importance to the Bilby, in the absence of significant change in influencing factors (e.g. post-survey fires and rainfall, or increase in prevalence of introduced predators).

Table 4.11: Criteria used to assess prospective Bilby habitat.

Habitat Prospectivity	Criteria
High	1. Habitat supporting long-lived shrubs or forbs known to contain root-dwelling larvae and other important food source plants in unburnt and long unburnt areas (e.g. *Acacia monticola, A. dictyophleba, A. eriopoda, A. stellaticeps, A. colei, A. tumida, Grevillea refracta, Dodonaea hispidula* and *Solanum* spp.), and/or; 2. Habitat supporting short-lived shrubs or forbs known to contain root-dwelling larvae and other important food source plants in recently burnt areas (e.g. *Senna notabilis* and *Yakirra australiensis*).
Moderate	1. Habitat supporting plant species that are broadly typical of suitable Bilby habitat in the Kimberley (e.g. *Corymbia* sp., or *Gyrocarpus americanus* with occasional *Gardenia pyriformis* over *Triodia* sp., and *Chrysopogon pallidus*), but with no mapped records of important food source plant species.
Low	1. Habitat does not meet any of the criteria listed above.

4.6 Specimen Identification, Nomenclature and Data

4.6.1 Flora

Common taxa that were well known to the survey botanists were confirmed in the field. A voucher specimen was collected if the taxon was either difficult to determine without closer examination, belonged to a recognised species complex, was poorly collected or otherwise unusual, or was in very good condition (healthy specimens with flowers and/or fruits are often useful to submit to the WA Herbarium). Each voucher specimen was assigned a unique internal code to facilitate tracking of data. Specimens were pressed in the field and then returned to Perth for further examination and confirmation.

Voucher specimens were identified using flora keys, consulting appropriate publications and checking reference collections. Biota botanists identified most specimens, the majority of which were confirmed by Pierre-Louis de Kock (Level 2 Botanist/Specialist Taxonomist with Biota) and Michi Maier (Biota's Principal Botanist). Taxonomic specialists with particular expertise in the Kimberley bioregion were approached for assistance with some specimen identifcations, however none were available within the timeframe for submission of this report; these experts may be consulted at a later date to provide advice regarding some unusual plant specimens.

A full flora species list is provided in Appendix 13. Nomenclature and conservation significance rankings used in this report are generally consistent with the current listing of WA flora recognised by the WA Herbarium on FloraBase[5] at the time of preparation of this report.

4.6.2 Fauna

As per the relevant Technical Guidance (EPA 2016d), species nomenclature for mammals, reptiles and amphibians follows that of the WAM fauna taxonomic checklist, which was last revised in April 2018. Species nomenclature for avifauna follows that of Christidis and Boles (2008).

4.7 Study Limitations

In accordance with the EPA Technical Guidances for 'Flora and Vegetation Surveys for Environmental Impact Assessment' (EPA 2016a) and 'Sampling Methods for Terrestrial Vertebrate Fauna' (EPA 2016d), potential constraints and limitations of this biological survey of the study area are addressed in Table 4.12.

5 http://florabase.dpaw.wa.gov.au

Table 4.12: Potential constraints and limitations of the biological survey.

Potential Constraint	Statement of Limitations
1. Sources of information	• There has been extensive surveying in the vicinity of the study area and broader locality. One biological survey, six flora surveys and 11 fauna surveys were relevant to the current study and were considered in the desktop assessment. In addition, numerous publicly available databases containing information on flora and fauna species, threatened flora and fauna and rare communities were drawn on to provide adequate context to the current study. • The current survey also added new data specific to the study area. Regional and local level information is therefore not considered to be a limiting factor for this study.
2. Survey scope	• The survey objective was to provide information on environmental values of the study area to support the EIA and approvals process of the Project. Given the size of the study area and the scope of the Project, a Detailed and targeted flora and vegetation survey, a Level 1 fauna survey, and targeted Bilby survey were considered appropriate. • No systematic trapping for fauna was performed. This is consistent with the requirements of a Level 1 and targeted fauna survey.
3. Proportion of flora/fauna collected and identified	• All vascular flora encountered during the field survey of the study area were recorded, and 335 voucher specimens were collected. A total of 190 vascular flora species were recorded during the current survey. A small number of taxa (less than 5%) could not be confidently or fully identified, either because the collected material was inadequate or because the current taxonomic framework does not address all observed variation. None of these are considered to represent conservation significant species, however the specimens will be submitted to Kimberley flora expert Dr Matt Barrett for further consideration; this could not be achieved in the timeframe for this report. • The Level 1 fauna survey recorded species opportunistically, and verified habitats with the potential to support conservation significant species; the targeted survey focused on recording evidence of the Bilby. An inventory survey of all fauna species was not completed, as this would require systematic trapping as part of a larger Level 2 survey, which was not required to meet the objectives of the current survey.
4. Completeness of survey	• The study area was surveyed thoroughly from both a fauna and flora perspective, with numerous sampling sites assessed and foot traverses completed through the majority of the study area. Seasonal sampling would, however, undoubtedly lead to additional flora taxa being recorded.
5. Mapping reliability	• Vegetation units and fauna habitats were described and mapped based on data collected during the systematic flora sampling and the targeted foot traverses through the study area. • Aerial imagery used in the mapping and reporting was the most current version available (July 2013; supplied by Main Roads). The mapping is considered to provide a reliable indication of the vegetation units and fauna habitats in the study area.
6. Timing, weather, season, cycle	• The survey timing and intensity was adequate for recording annual and cryptic perennial flora species present at the time, and the vascular flora documented from the study area is comprehensive. • The timing of the fauna survey was adequate for recording fauna species through non-systematic sampling methods.
7. Disturbances	• There were no disruptions during the survey and it was undertaken as planned. • A number of tracks and road off-shoot drains exist in the study area. Only limited flora searches were undertaken in these areas.
8. Intensity of survey	• A Level 1 fauna survey and targeted Bilby survey were considered adequate to address the fauna values of the study area to support the EIA. • No systematic fauna sampling (trapping) was completed for vertebrate fauna. While this is consistent with the requirements for a Level 1 and targeted survey, this report should not be treated as an exhaustive or conclusive account of the fauna assemblage of the study area. • The Detailed and Targeted flora survey was considered adequate to address the flora and vegetation values of the study area given the scope of the current study.

Potential Constraint	Statement of Limitations
9. Resources and experience levels	• Sufficient time was allocated to the fauna field survey component (a total of 14 person days). The zoologists undertaking the survey were suitably qualified and experienced to identify fauna and, in particular, sign evidence of the Bilby. • Sufficient time was allocated to the flora and vegetation field survey component (a total of 12 person days). The botanists undertaking the survey were suitably qualified and experienced to identify flora.
10. Access issues	• The entire study area could be accessed and surveyed at an appropriate level, therefore there were no limitations due to access issues.

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5.0 Desktop Assessment Results

5.1 Environmentally Sensitive Areas

ESAs are defined in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005* under section 51B of the WA *Environmental Protection Act 1986* (EP Act). These include areas that are World Heritage sites; included on the Register of the National Estate due to natural heritage value; defined wetlands, including Ramsar wetlands, conservation category wetlands and nationally important wetlands; vegetation containing Threatened flora; Threatened Ecological Communities; and Bush Forever sites.

Five ESAs occur within the locality of the study area, one of which overlaps the southern end of the study area (Figure 5.1).

5.2 Vegetation and Flora

5.2.1 Conservation Significant Vegetation Communities Known from the Locality

5.2.1.1 Threatened Ecological Communities

TECs are described by the DBCA as biological assemblages occurring in a particular habitat, which are under threat of modification or destruction from various processes (as per DEC 2010; see Appendix 1). TECs are listed by the WA Minister for Environment and are significant at the State level, being protected as ESAs under the EP Act.

Eleven TECs are listed for the Kimberley region (DBCA 2016b). The buffer zone for one of these TECs is intersected by the southern end of the study area (Figure 5.1):

- **'RoeBuck Bay mudflats'**
  This community is described as 'Species - rich faunal community of the intertidal mudflats of Roebuck Bay' (DBCA 2016b). This community is listed as Vulnerable pursuant to the EP Act. The study area intersects 39.1 ha of the buffer zone around this TEC, which is a management area designated to protect the TEC (see Figure 5.1). The community itself would not occur in the study area, as no suitable habitat is present.

One additional TEC occurs within 40 km of the study area, comprising 'Monsoon vine thickets'. This community is described in Table 5.1 and shown on Figure 5.1, but does not occur in the study area.

5.2.1.2 Priority Ecological Communities

PECs are biological (flora or fauna) communities that are recognised to be of significance, but do not meet the criteria for listing as a TEC. There are five categories of PECs, none of which are currently protected under legislation (see Appendix 1).

Sixty-two PECs are listed for the Kimberley bioregion (DBCA 2017c), and seven of these are known to occur within 40 km of the study area. These communities are described in Table 5.1 and shown on Figure 5.1.

5.2.2 Conservation Significant Flora Known from the Locality

The framework for ranking species of conservation significance in WA is presented in Appendix 1. A total of 20 conservation significant flora species have either been recorded within 40 km of the study area, or have distributions that encompass the study area. These comprise:

- one Threatened species (*Seringia exastia*);
- five Priority 1 species;
- one Priority 2 species;
- 12 Priority 3 species; and
- one Priority 4 species (see Appendix 5).

One of the Priority 3 species has previously been recorded from one location within the study area: *Stylidium pindanicum* (DBCA Threatened flora database search supplied by Main Roads, see Section 4.1.1).

Based on the known distributions and habitat preferences of the remaining flora species compared with the habitats that appeared to be present in the study area, all of the conservation significant species were considered to have the potential to occur in the study area prior to the field survey. These species were considered the key target flora species for the 2018 field survey.

Table 5.1: TECs and PECs occurring within 40 km of the study area.

Community Name	Description (DBCA 2016b, 2017c)	Conservation Listing†		Threats (Graham 2003, DBCA 2017c)	Distance of Nearest Buffer to Study Area	Habitat Suitability
		Federal	State			
TECs						
Monsoon (vine) thickets on coastal sand dunes of Dampier Peninsula	Described by DBCA (2018a) as "Semi-deciduous vine thicket on leeward slopes of coastal sand dunes on the Dampier Peninsula. The community generally occurs on deep dune sands with a dark superficial grey organic layer, with a surface layer of moist leaf litter, but it can occur on other substrates due to other influences." An extensive list of flora and fauna species associated with this TEC is provided in DBCA (2018a).	EN	VU	- Fragmentation - Clearing - Changed fire regime - Pollution - Weed invasion	6.1 km southwest	No suitable habitat present in study area.
PECs						
Corymbia paractia dominated community on dunes	*Corymbia paractia* behind dunes, Broome township area, Dampier Peninsula; also port north of Broome. Transition zone where coastal dunes (with vine thickets) merge with Pindan (desert) vegetation.		P1	- Clearing - Trampling - Weed invasion - Inappropriate fire regimes	5.2 km southwest	Suitable habitat unlikely. Moderate numbers of *Corymbia paractia* were recorded in the far south of the study area; however these occurred in pindan habitat well removed from the coastal dunes.
Dwarf pindan heath community of Broome coast	Occurs between the racecourse and Gantheame Point lighthouse; insufficient survey outside of Broome townsite area to determine full extent.		P1	- Clearing - Trampling - Weed invasion - Inappropriate fire regimes	13.7 km southwest	No suitable habitat present in study area (restricted to near-coastal fringe).
Relict dune system dominated by extensive stands of Minyjuru (Mangarr) *Sersalisia* (formerly Pouteria) *sericea*	Contains frequent mature (100 years +) *Sersalisia sericea*, otherwise known as Minyjuru. Minyjuru is a culturally important and renowned local bushtucker species and does not occur in such frequency and longevity in other locations. The community is recorded as a *Eucalyptus, Sersalisia* low woodland unit that occurs on parallel dunes in the area southeast of Gantheaume Point. The extensive stands of Minyjuru occur in association with species more often found within the nearby 'Monsoon vine thicket' TEC.		P1	- Weed invasion - Grazing - Inappropriate fire regime - Proposed developments	14 m east	Suitable habitat unlikely to be present: *Sersalisia sericea* was recorded from four locactions during the current survey, however all records were of isolated trees occurring on pindan habitats.

Community Name	Description (DBCA 2016b, 2017c)	Conservation Listing†		Threats (Graham 2003, DBCA 2017c)	Distance of Nearest Buffer to Study Area	Habitat Suitability
		Federal	State			
Roebuck land system	Paleo-tidal coastal plains and tidal flats with saline soil supporting salt-water couch grasslands, samphire low shrublands, melaleuca thickets and mangroves.		P3	- Extensive threatening processes acting at landscape scales: frequent fires leading to loss of trees and shrubs, over-grazing and weed invasion (buffel grass)	32.1 km southeast	No suitable habitat present in study area.
Vegetation Association 67 as defined by John Beard's vegetation mapping for the Kimberley (Beard 1979)	Original Association Description: Grasslands, tall bunch grass savanna, sparse low tree; ribbon grass & paperbarks; NVIS Sub-association: *Melaleuca nervosa, M. acacioides* open woodland over *Chrysopogon* sp. tussock grassland.		P3	- Extensive threatening processes acting at landscape scales: frequent fires leading to loss of trees and shrubs, over-grazing and weed invasion (buffel grass)	40.7 km southeast	No suitable habitat present in study area.
Vegetation Association 73 as defined by John Beard's vegetation mapping for the Kimberley (Beard 1979)	Original Association Description: Grasslands, short bunch grass savanna, grass; salt water grassland (*Sporobolus virginicus*). NVIS Sub-association: *Sporobolus virginicus* tussock grassland with some *Bassia* sp., *Eragrostis falcata, Dichanthium fecundum, Salsola tragus,* samphire.		P3	- Extensive threatening processes acting at landscape scales: frequent fires leading to loss of trees and shrubs, over-grazing and weed invasion (buffel grass)	1.7 km southwest	No suitable habitat in study area.
Nimalaica Claypan Community (prevously Nimalaica)	This is a unique, almost permanent, freshwater lake inland from Willie Creek, Broome.		P4	- Groundwater extraction - Causeway construction - Feral animals - Expansion of township	962 m west	No suitable habitat present in study area.

† EN = Endangered; VU = Vulnerable; P = Priority.

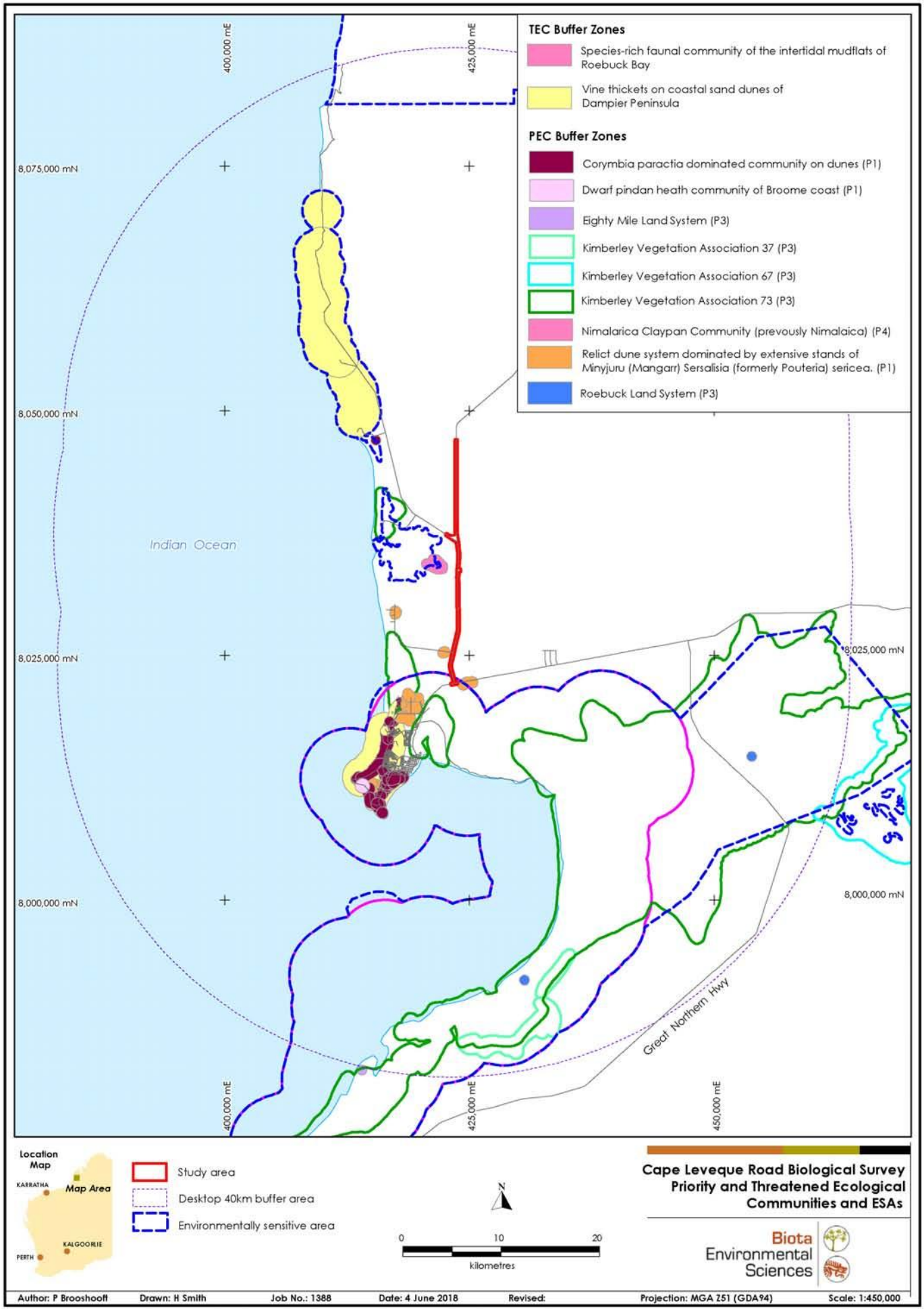

Figure 5.1: Locations of TECs, PECs and ESAs within 40 km of the study area.

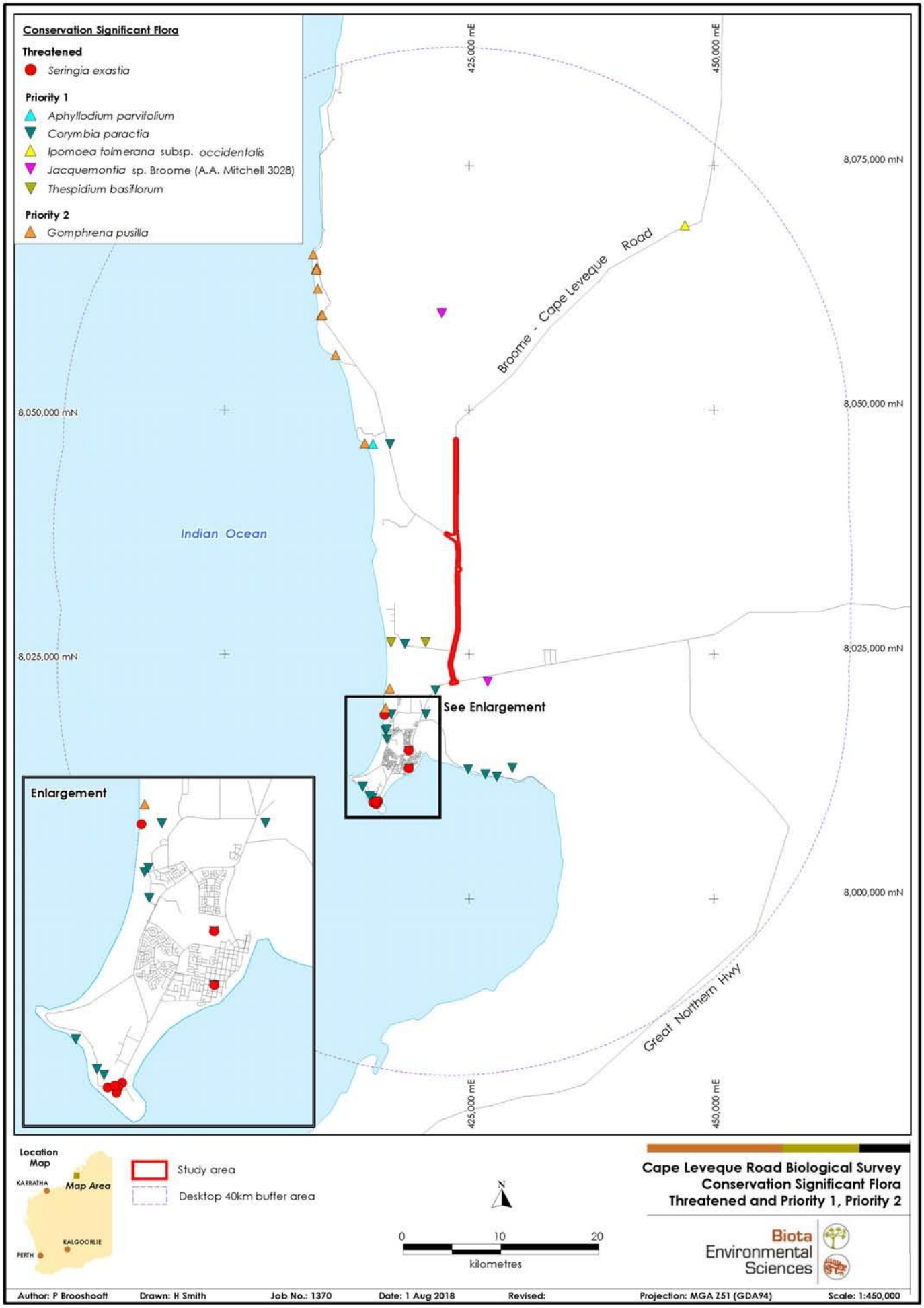

Figure 5.2: Threatened, Priority 1 and Priority 2 flora taxa recorded historically within 40 km of the study area.

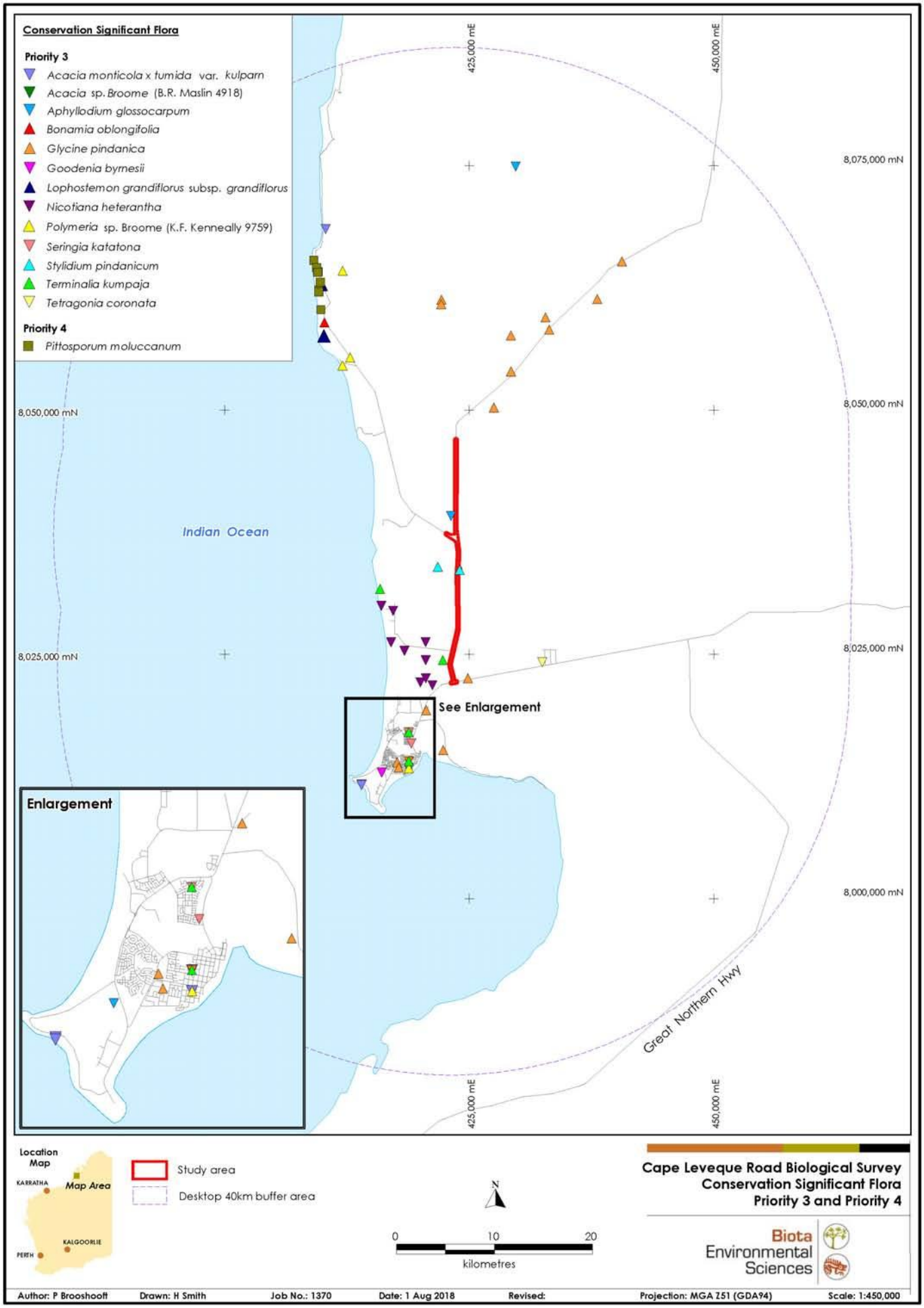

Figure 5.3: Priority 3 and Priority 4 flora taxa recorded historically within 40 km of the study area.

5.3 Terrestrial Vertebrate Fauna

5.3.1 Overview

Database and literature searches yielded a total of 335 vertebrate species with the potential to occur in the study area (Table 5.2), 35 of which are listed as conservation significant (Table 5.2). The combined species list is provided in Appendix 6.

Table 5.2: Overview of vertebrate fauna species with potential to occur in the study area.

Fauna Group	Status	Number of Species	Number of Conservation Significant Species
Amphibians (frogs)	Native	10	0
	Introduced	1	0
Reptiles	Native	90	5
	Introduced	2	0
Non-volant mammals (ground-dwelling)	Native	22	9
	Introduced	8	0
Volant mammals (bats)	Native	17	2
Avifauna (birds)	Native	185	19
	Total	**335**	**35**

5.3.2 Likelihood of Occurrence of Conservation Significant Fauna

Native fauna species that are rare, threatened with extinction, or have high conservation value, are specially protected by law under the WA *Wildlife Conservation Act 1950* and/or the Commonwealth EPBC Act. Migratory and Marine species are also protected under the EPBC Act as species of National Environmental Significance. In addition, the DBCA maintains a list of fauna that are deemed a priority for conservation, which have not been assigned statutory protection under the WA *Wildlife Conservation Act 1950* but are still considered to be of conservation priority, or are considered to be rare but not threatened and are in need of monitoring (DBCA 2018b). Appendix 1 details categories of conservation significance recognised under the above frameworks.

Of the 335 species potentially occurring in the study area, 35 species are listed as conservation significant species. Locations of these records (where available) in relation to the study area are mapped and presented in Figure 5.4 and Figure 5.5. Appendix 7 summarises the likelihood of occurrence of the conservation significant species that were returned from the desktop assessment. The likelihood of occurrence was considered by assessing the species' habitat preference in relation to the habitat present in the study area, together with the current known distribution and last known records of the species (see Section 4.1.3). Four species were considered likely to occur in the study area and 18 species may potentially occur (Appendix 7). Eleven species were considered unlikely to occur, and two species would not occur in the study area (Appendix 7).

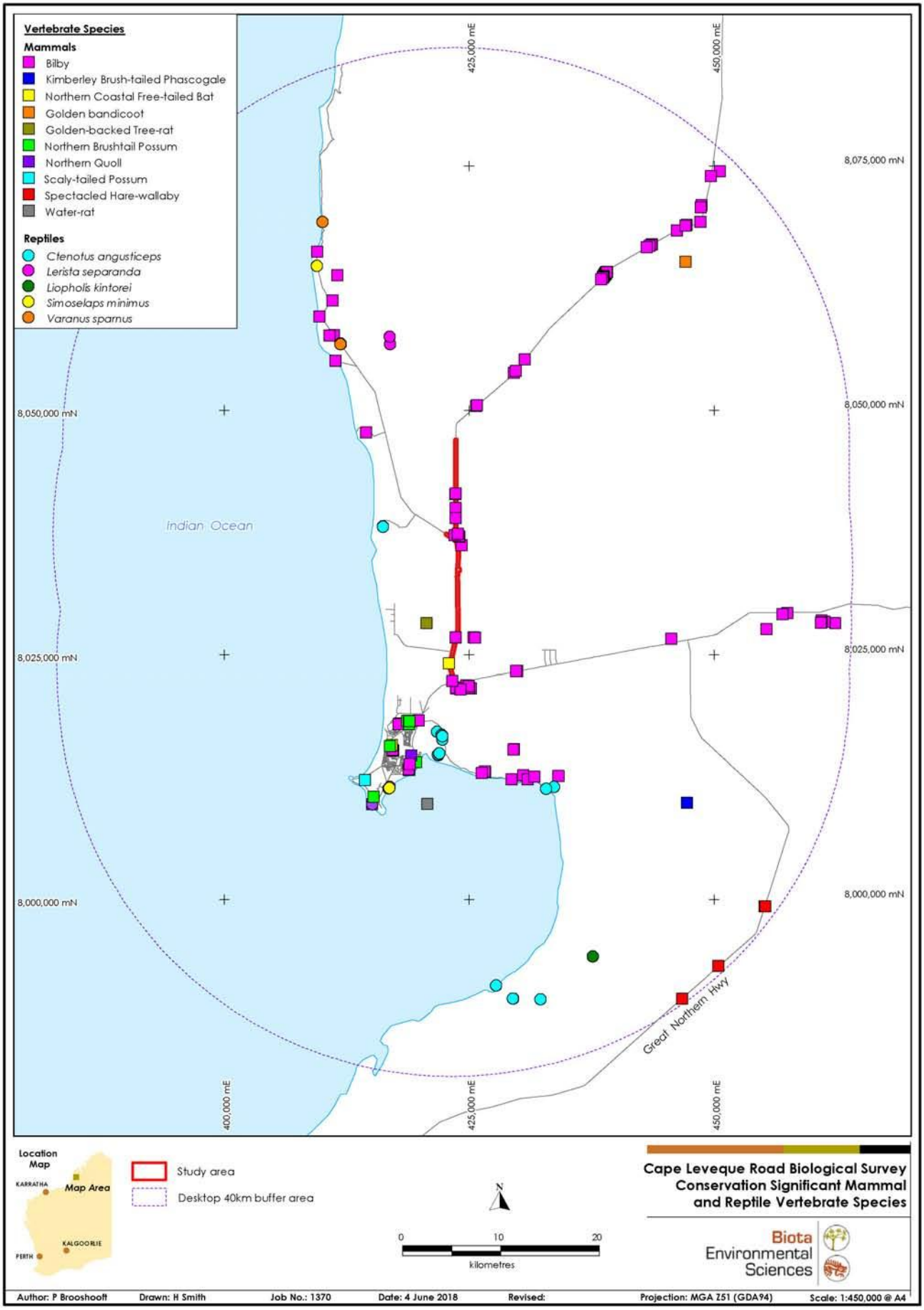

Figure 5.4: Conservation significant mammal and reptile species recorded historically within 40 km of the study area.

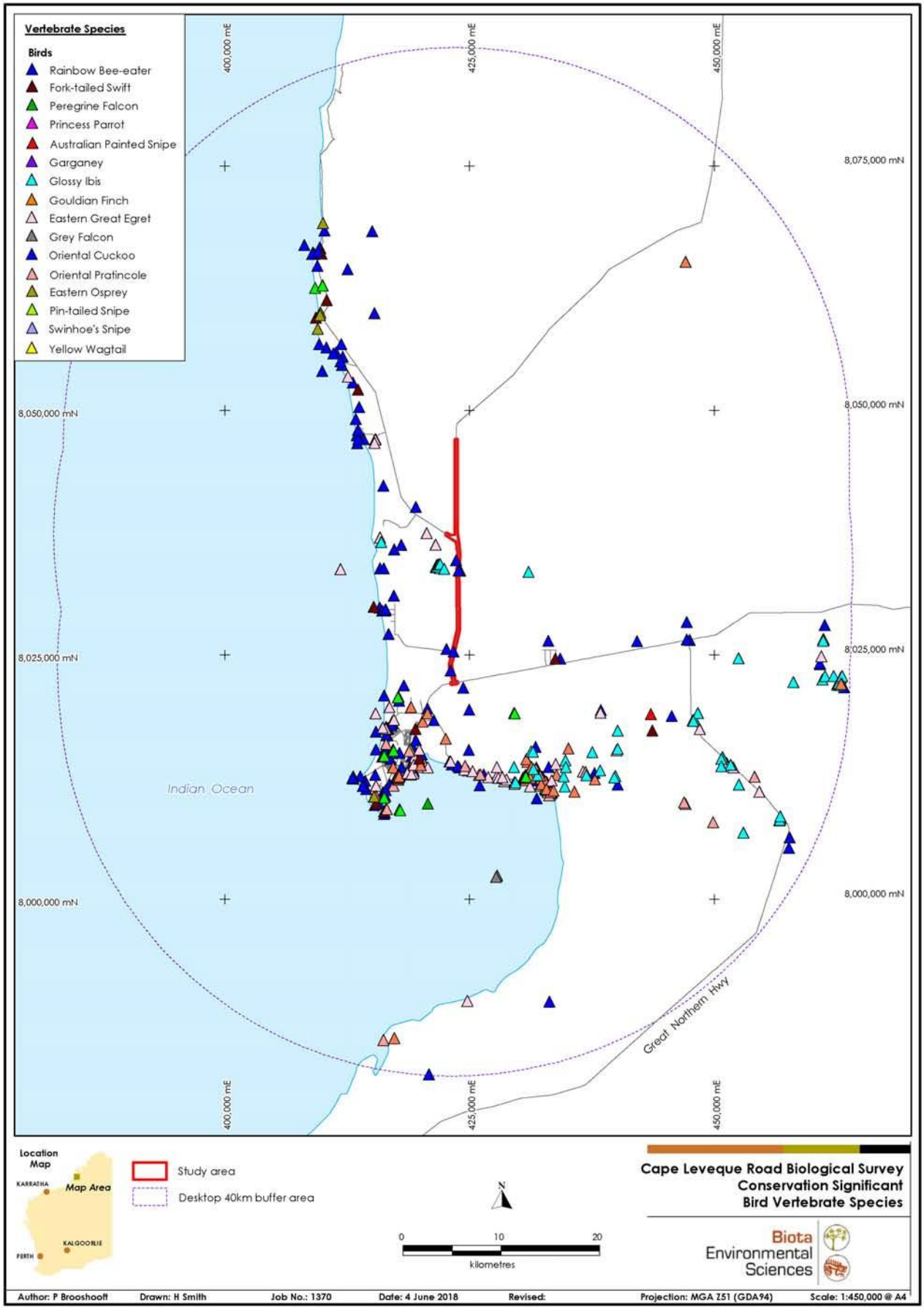

Figure 5.5: Conservation significant bird species recorded historically within 40 km of the study area.

6.0 Vegetation of the Study Area

6.1 Overview

Disturbed areas (associated with the existing Cape Leveque Road, road off-shoot drains, truck dissassembly area, tourist information bay and other tracks) accounted for 78.7 ha (9.6%) of the study area (see Section 6.3).

Four vegetation units were identified for the remainder of study area (see Figure 6.1 to Figure 6.3 for maps of their distribution). These were associated with two broad landform categories, comprising:

1. Plains, with either sandy pindan soils or clay soils; and
2. Damplands.

Each vegetation unit is described in Section 6.2, including the total area of each unit in the study area.

6.2 Description of the Vegetation Sub-Associations

6.2.1 Vegetation of Plains

6.2.1.1 Vegetation of Pindan Sandplains

P1: *Bauhinia cunninghamii, Corymbia zygophylla,* (*C. greeniana*) scattered low trees to low open woodland over *Acacia eriopoda*, *Ficus aculeata* var. *indecora* tall shrubland over *Dodonaea hispidula* (*Breynia cernua*) open shrubland over *Corchorus sidoides* subsp. *sidoides* low open shrubland over *Chrysopogon pallidus*, *Arisitda holathera* var. *latifolia*, *Eriachne obtusa* open tussock grassland over *Triodia celaestialis* scattered hummock grasses to very open hummock grassland.

Distribution and Extent	This vegetation unit occurred on the extensive pindan sandplains in the southern and northern sections of the study area (Plate 6.1). It was the dominant vegetation unit through the study area, covering 524.3 ha (63.7%).
Associated Species	Trees/Tall Shrubs: *Acacia colei* var. *colei*, *Ehretia saligna, Erythrophleum chlorostachys, Grevillea pyramidalis* subsp. *pyramidalis, G. refracta, Santalum lanceolatum, Sersalisia sericea.* Shrubs: *Acacia platycarpa*, *Carissa lanceolata*, *Dolichandrone occidentalis*, *Gyrostemon tepperi*, *Pterocaulon ? paradoxum, Trichodesma zeylanicum*, *Wrightia saligna*. Low Shrubs: *Buchnera ramosissima, Crotalaria ramosissima*, *Murdannia graminea*, *Sida rohlenae* subsp. *occidentalis*, *Waltheria indica*. Herbs: *Byblis rorida, Galactia tenuiflora*, *Glycine tomentella*, *Goodenia sepalosa* var. *sepalosa*, *Gossypium rotundifolium, Spermacoce occidentalis*. Grasses: *Aristida holathera* var. *holathera*, *Eriachne pindanica*, *Schizachyrium fragile, Thaumastochloa pubescens*.
Vegetation Condition	Very Good to Good.
Disturbance	Disturbance from cattle (scats and tracks); presence of weeds (particularly **Stylosanthes hamata* and **Citrullus lanatus*).
Sites in the Study Area	Quadrats: CLA01, CLA02, CLA03, CLA04, CLA05, CLA12, CLA13 and CLA14. 32 additional mapping notes.
Notes	The density of *Corymbia* trees varied within the vegetation unit, from scattered individuals to low open woodlands. Five Priority flora species were recorded from this vegetation unit; two Priority 1 species, *Jacquemontia* sp. Broome (A.A. Mitchell 3028) and *Corymbia paractia*; and three Priority 3 species, *Bonamia oblongifolia*, *Polymeria* sp. Broome (K.F. Kenneally 9759) and *Terminalia kumpaja*.


Plate 6.1: Vegetation unit P1.

P2: *Eucalyptus tectifica, Corymbia* spp., *Bauhinia cunninghamii,* (*Brachychiton diversifolius* subsp. *diversifolius*) low woodland to low open woodland over *Acacia tumida* var. kulparn (*A. eriopoda, Ventilago viminalis, Persooonia falcata*) tall shrubland over *Breynia cernua, Dolichandrone occidentalis* (*Grewia retusifolia*) open shrubland over *Corchorus sidoides* subsp. *sidoides* scattered low shrubs over *Chrysopogn pallidus, Whiteochloa airoides, Sehima nervosum,* (*Aristida holathera* var. *latifolia*) tussock grassland over *Triodia celaestialis* open hummock grassland.

Distribution and Extent	This vegetation unit was recorded in the central section of the study area, occurring on pindan sandy loams (on elevated sections) to clay loams (in lower areas) (Plate 6.2). The unit occurred in a transition zone between the more elevated P1 pindan sands vegetation unit and the low-lying area of dampland vegetation in the centre of the study area. Unit P2 covered 213.4 ha (25.9%) of the study area.
Dominant Tree Taxa	Three eucalypt species dominated the vegetation unit: *Eucalyptus tectifica*, *Corymbia bella* and *C. greeniana*.
Associated Species	Trees: *Ficus aculeata* var. *indecora*. Shrubs: *Acacia platycarpa*, *Sersalisia sericea*. Low Shrubs: *Chamaecrista symonii*, *Crotalaria ramosissima*, *Phyllanthus baccatus*, *Tephrosia remotiflora*. Herbs: *Byblis filifolia*, *Glycine tomentella, Goodenia sepalosa* var. *sepalosa, Murdannia graminea, Spermacoce hillii, S. occidentalis*. Sedges: *Scleria* sp. Pindan. Grasses: *Eriachne melicacea*, *E. pindanica*, *Thaumastochloa pubescens*.
Vegetation Condition	Very Good (majority of the vegetation unit) to Poor (two small areas immediately east and south of the dam).
Disturbance	Disturbance from cattle (scats and tracks); weeds (particularly **Passiflora foetida* var. *hispida* and **Stylosanthes* spp.).
Sites in the Study Area	Quadrats: CLA06, CLA07, CLA08 and CLA09. 24 additional mapping notes.
Notes	This unit would be considered to be potentiallty Groundwater Dependent Vegetation. Five Priority flora species were recorded from this vegetation unit; one Priority 1 species, *Jacquemontia* sp. Broome (A.A. Mitchell 3028); and four Priority 3 species, *Bonamia oblongifolia*, *Polymeria* sp. Broome (K.F. Kenneally 9759), *Stylidium pindanicum* and *Terminalia kumpaja* (see Section 7.2.2). The density of eucalypt trees and *Whiteochloa airoides* grasses increased with proximity to the dampland vegetation unit D1.

Plate 6.2: Vegetation unit P2.

6.2.1.2 Vegetation of Clay Plains

P3: *Eucalyptus tectifica, Bauhinia cunninghamii* low open woodland over *Sorghum plumosum* var. *plumosum, (Chrysopogon pallidus)* closed tussock grassland with *Zornia muelleriana* subsp. *congesta, Gossypium rotundifolium, Galactia tenuiflora* very open herbland.

Distribution and Extent	This small band of vegetation (160 m wide) was recorded on loamy clays towards the centre of the study area, immediately north of the *Melaleuca alsophila* dampland vegetation unit D1 (Plate 6.3). It was very restricted in the study area, covering only 3.25 ha (0.4%). This vegetation unit extends beyond the study area to the northwest (Val English, DBCA, pers. comm. 2018).
Associated Species	Shrubs: *Grewia retusifolia*, *Chamaecrista absus*. Herbs: *Buchnera linearis, Drosera broomensis*, *Cajanus marmoratus*, *Calandrinia strophiolata*, *C. tepperiana*, *Cartonema parviflorum*, *Indigofera hirsuta, Mitrasacme hispida*, *M. nummularia*, *Stylidium pindanicum* (Priority 3). Sedges: *Cyperus carinatus*, *C. ? cuspidatus*. Grasses: *Ectrosia schultzii* var. *schultzii*, *Sehima nervosum*, *Thaumastochloa pubescens*, *Whiteochloa airoides*.
Vegetation Condition	Very Good.
Disturbance	Disturbance from cattle (scats and tracks); presence of weeds (**Stylosanthes hamata* and **Triumfetta pentandra*).
Sites in the Study Area	Quadrats: CLA11. Area too small to establish more quadrats; vegetation sampled with three additional mapping notes instead.
Notes	This unit is considered to be potentiallty Groundwater Dependent Vegetation. One Priority 3 flora species, *Stylidium pindanicum*, was recorded within this vegetation unit (Section 7.2.2).

Plate 6.3: Vegetation unit P3.

6.2.2 Vegetation of Damplands

D1: *Melaleuca alsophila* low woodland over *Flueggea virosa* subsp. *melanthesoides* scattered shrubs over **Stylosanthes hamata* (Mesosphaerum suaveolens*) low open heath over *Eriachne obtusa*, *Sorghum plumosum* var. *plumosum* (*Panicum seminudum*, *Ectrosia schultzia* var. *schultzia*, *Chrysopogon pallidus*) open tussock grassland with *Fimbristylis microcarya*, *F. rara* very open sedgeland.**

Distribution and Extent	This vegetation unit (Plate 6.4) was recorded near the centre of the study area. It was associated with a small band of dampland habitat on light clays (180 m wide), immediately east of the Namalaica Claypan PEC. It was very restricted in the study area, covering only 3.12 ha (0.4%), however this unit continues further to the west (Val English, DBCA, pers. comm. 2018).
Associated Species	Shrubs: *Acacia colei* var. *colei*, *A. tumida* var. *kulparn*. Low Shrubs: *Crotalaria ramosissima*, **Triumfetta pentandra*, *Waltheria indica*. Herbs: *Blumea saxatilis*, *Buchnera asperata*, *Gomphrena tenella*. Sedges: *Cyperus carinatus*. Grasses: *Eragrostis cumingii*, *Schizachyrium fragile*.
Vegetation Condition	Good (west side of Cape Leveque Road) to Poor (east side of Cape Leveque Road).
Disturbance	Disturbance from cattle (abundant scats, tracks, and trampling); presence of weeds (e.g. **Chloris barbata*, **Mesosphaerum suaveolens*, **Physalis angulata*, **Stylosanthes hamata* and **Triumfetta pentandra*).
Sites in the Study Area	Quadrats: CLA10. Area too small to establish more quadrats; vegetation sampled with three additional mapping notes instead.
Notes	This unit is considered to be Groundwater Dependent Vegetation. Several *Melaleuca alsophila* trees were also recorded fringing the dam on the eastern side of the Cape Leveque Road. These trees occurred in isolation and did not constitute the D1 *Melaleuca alsophila* dampland vegetation unit. It is likely that they germinated following establishment of the dam (given preferable germination and growing conditions). While no Priority flora species were recorded from this vegetation unit, it is likely that the Priority 3 species *Stylidium pindanicum* would occur (Section 7.2.2).

Plate 6.4: Vegetation unit D1.

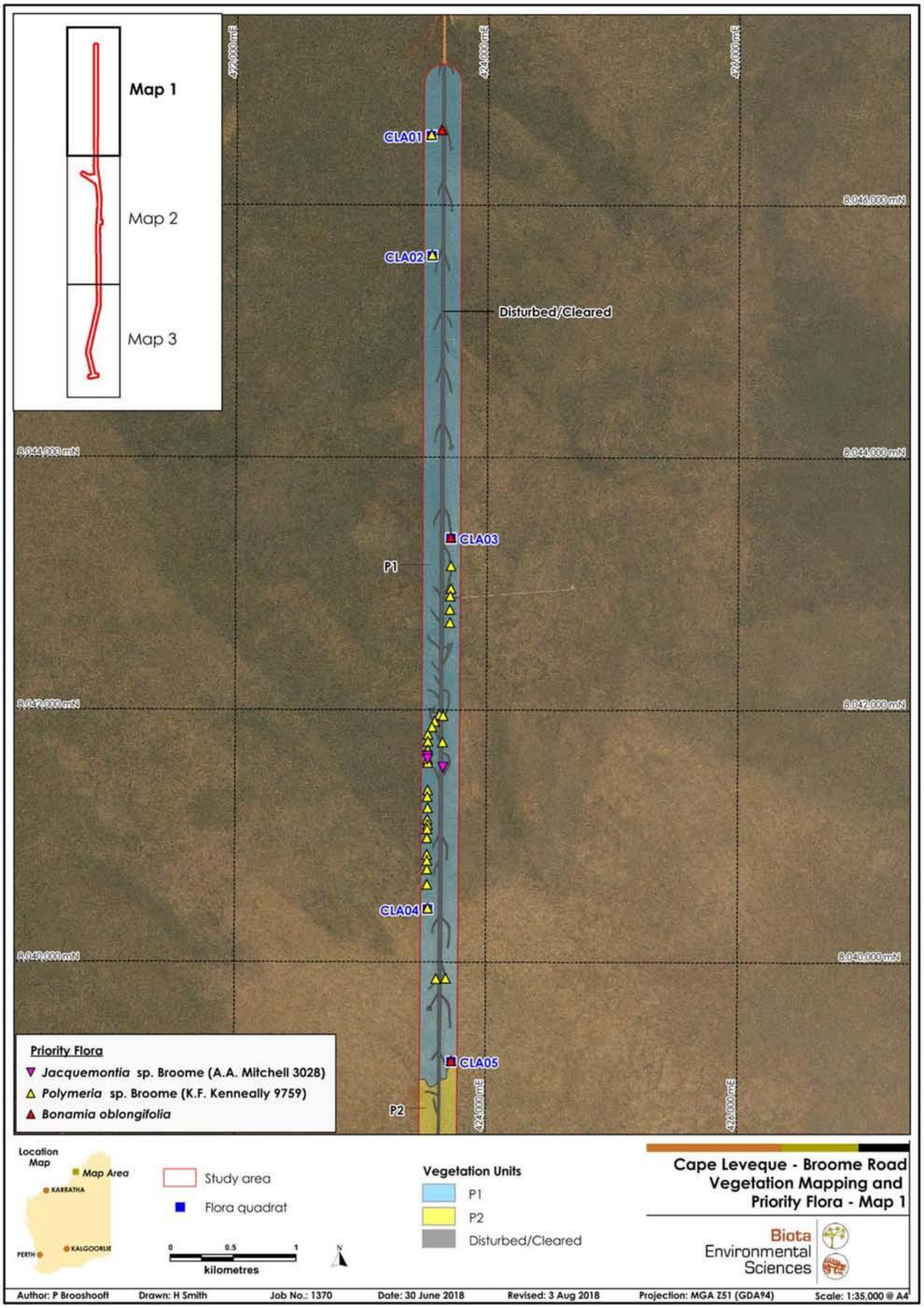

Figure 6.1: Vegetation within the study area and locations of conservation significant flora (Map 1).

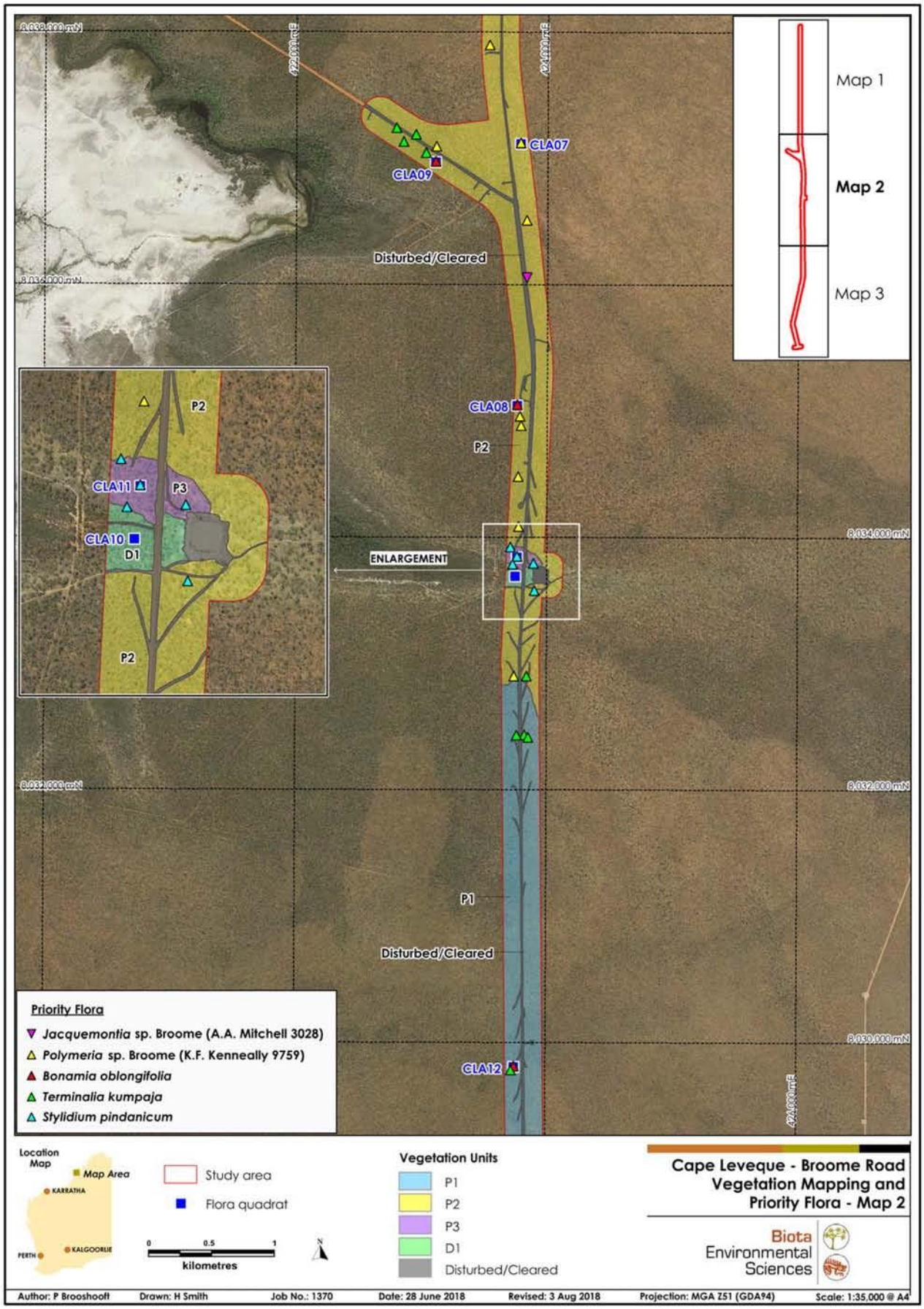

Figure 6.2: Vegetation within the study area and locations of conservation significant flora (Map 2).

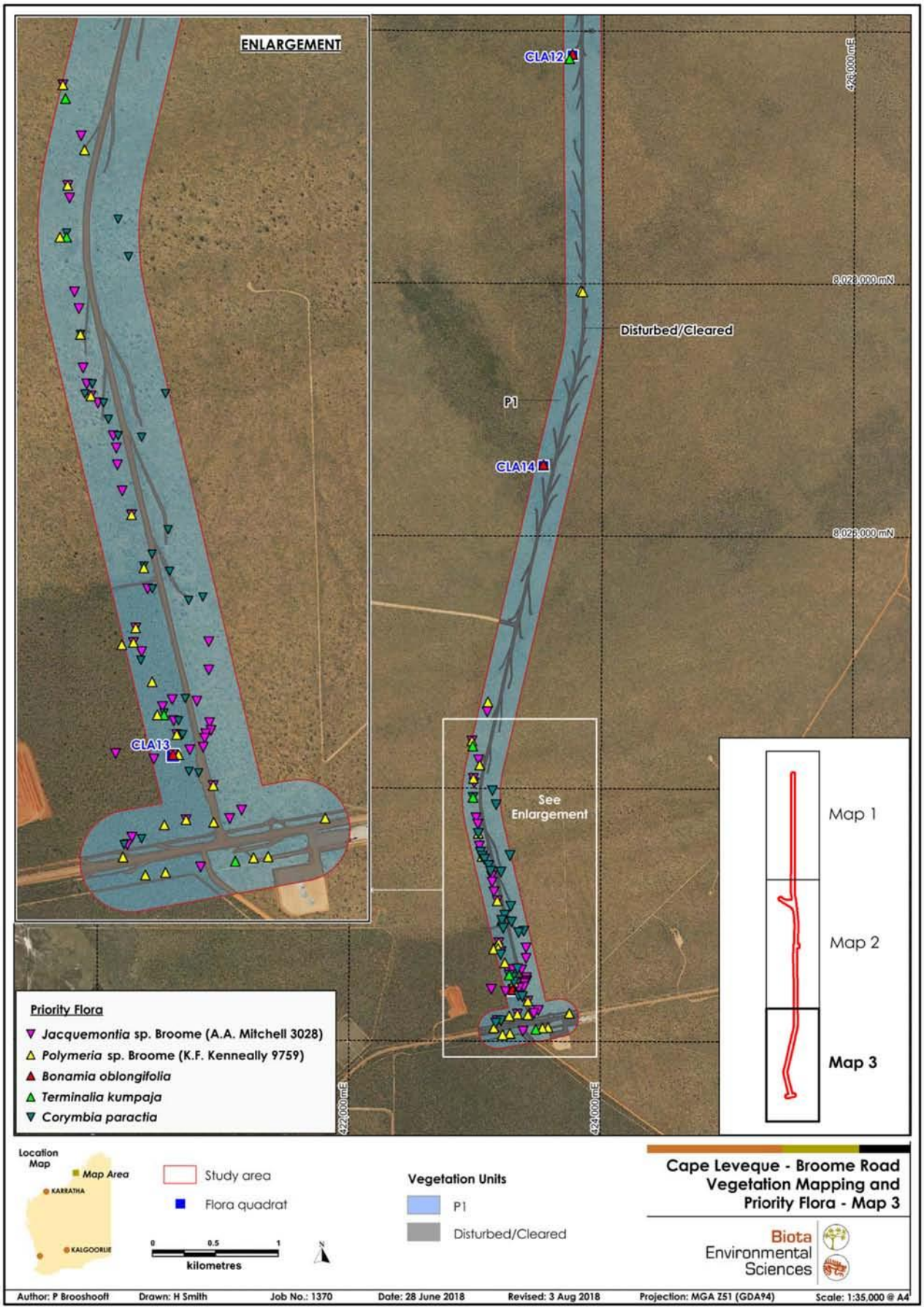

Figure 6.3: Vegetation within the study area and locations of conservation significant flora (Map 3).

6.3 Vegetation Condition

The condition of vegetation in the study area is mapped in Figure 6.4 to Figure 6.6. The vegetation condition assessments were based on the ranking scale developed by Trudgen (1988), as included within EPA (2016a). These rankings considered the degree of invasion by introduced flora (weeds), impact from humans, feral animal and livestock activities, and the structural integrity of the vegetation (see Appendix 9). Locations of introduced species recorded from the study area during the current survey (see Section 7.3) are overlain on the vegetation condition mapping in Figure 6.4 to Figure 6.6, and listed in Appendix 14.

The study area included the existing Cape Leveque Road, and numerous areas that had been cleared for associated road maintenance purposes (e.g. a dam and service tracks, together with road off-shoot drains). These cleared areas were mapped based on the most recent available aerial photography (April 2013) and were classified as Disturbed/Cleared.

The majority of the remaining intact vegetation in the study area was considered to be in Very Good condition, with rankings generally corresponding with the landform category:

- Plains: Vegetation of the plains was generally considered to be in Very Good condition due to the presence of only scattered weeds. Signs of cattle activity (tracks, scats and trampling) were observed throughout the plains landform. Two small sections of lower plain immediately adjacent to the dam were recorded as Poor, due to heavy use by cattle and a high abundance of weeds. In addition, a small section in the far south was rated as Good (a narrow strip of remnant vegetation bounded by the Broome road to the north and truck disassembly area to the south).
- Dampland: Vegetation of the dampland was mostly rated as being in Good condition. The vegetation was not considered Excellent or Very Good, due to the high abundance of weeds (e.g. **Chloris barbata*, **Mesosphaerum suaveolens* and **Stylosanthes hamata*), together with high cattle activity (tracks, scats and trampling). The smaller polygon immediately east of the Cape Leveque road was considered to be in Poor condition, as it contained fewer native species in each stratum.

Table 6.1: Extent of vegetation condition categories within the study area.

Condition Category	Extent in Study Area (ha)	Percentage of Study Area (%)
Very Good	793.4	89.9
Good	2.2	0.3
Poor	2.4	0.3
Disturbed/Cleared	78.7	9.6

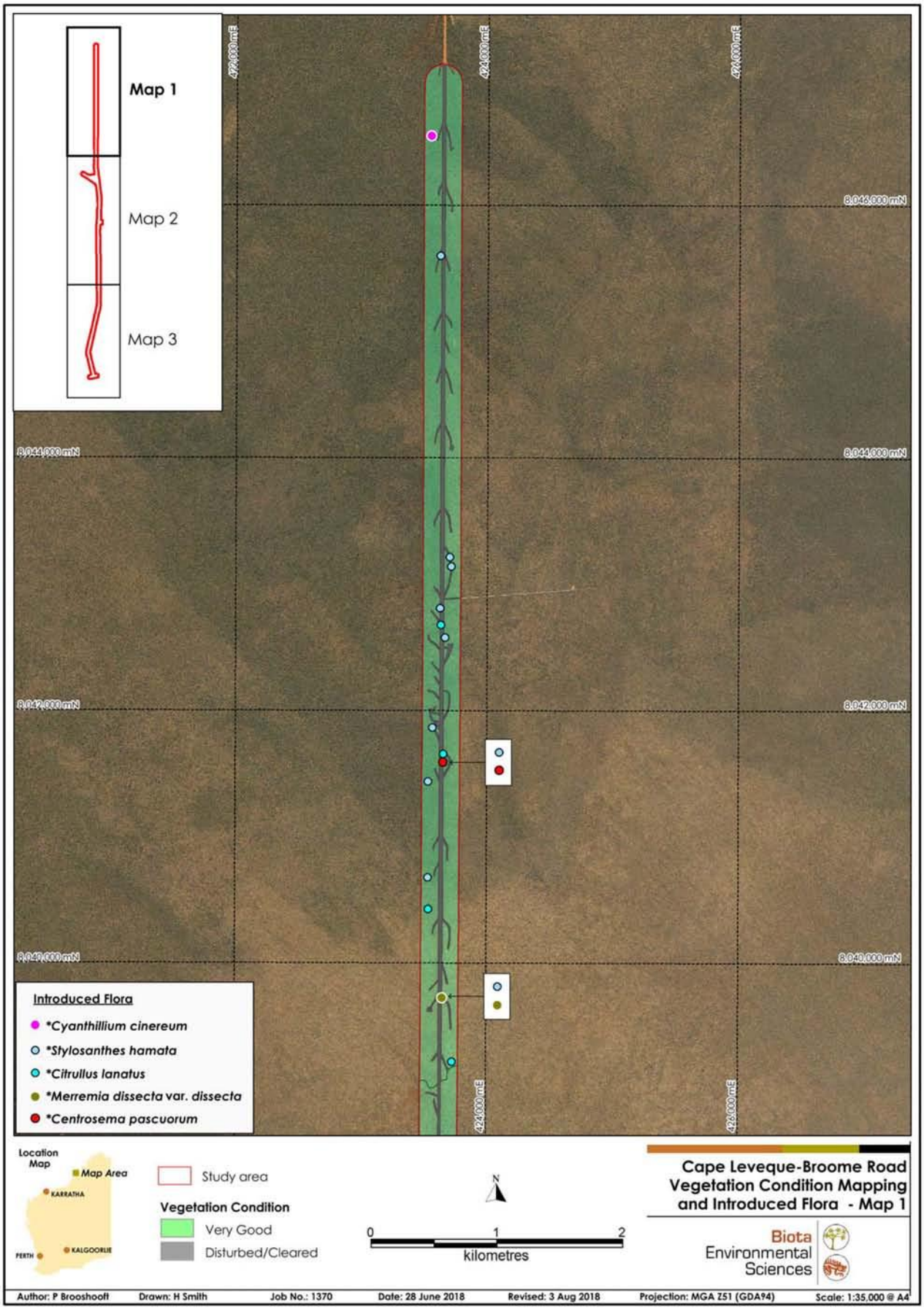

Figure 6.4: Condition of vegetation in the study area and locations of introduced species (Map 1).

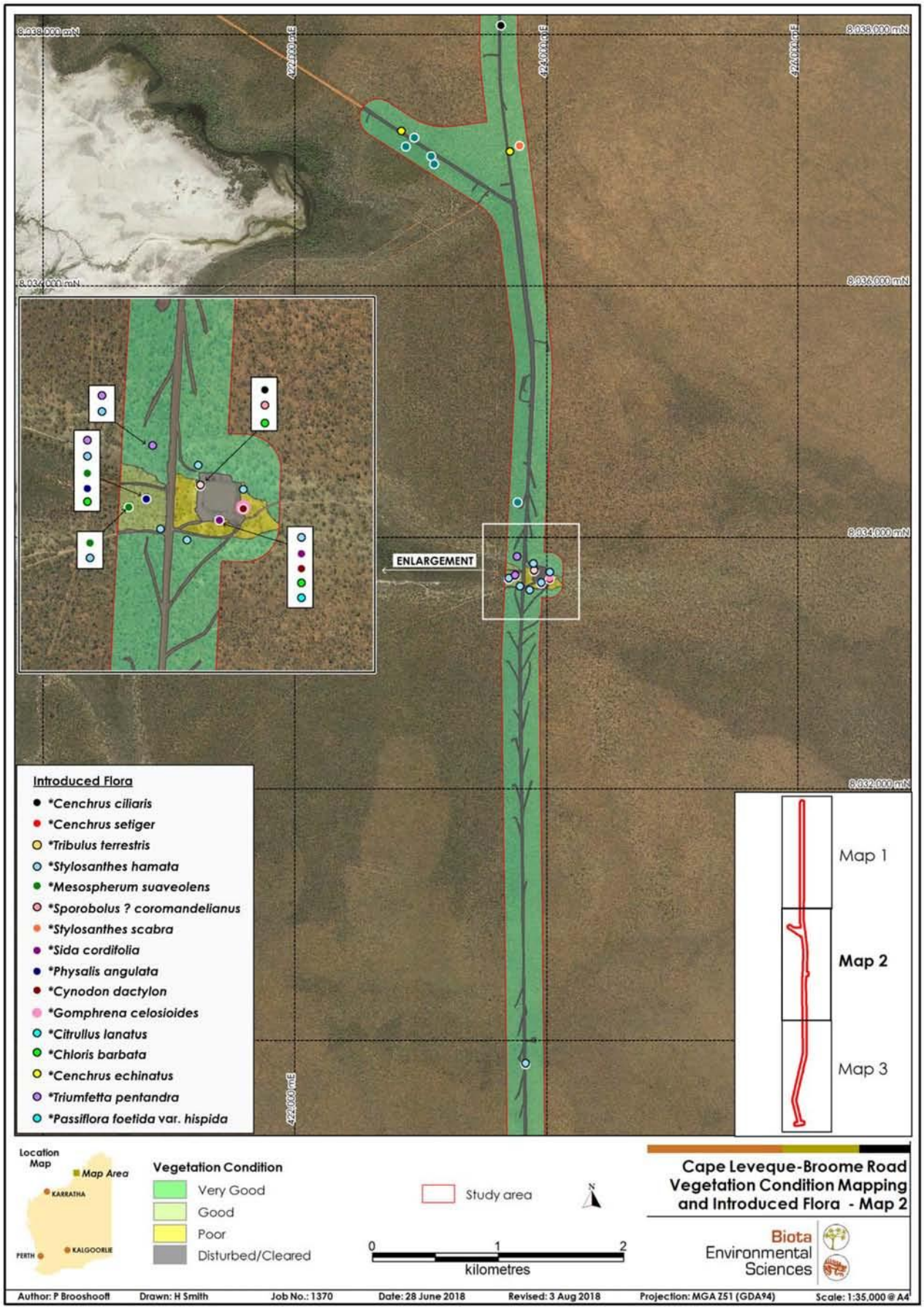

Figure 6.5: Condition of vegetation in the study area and locations of introduced species (Map 2).

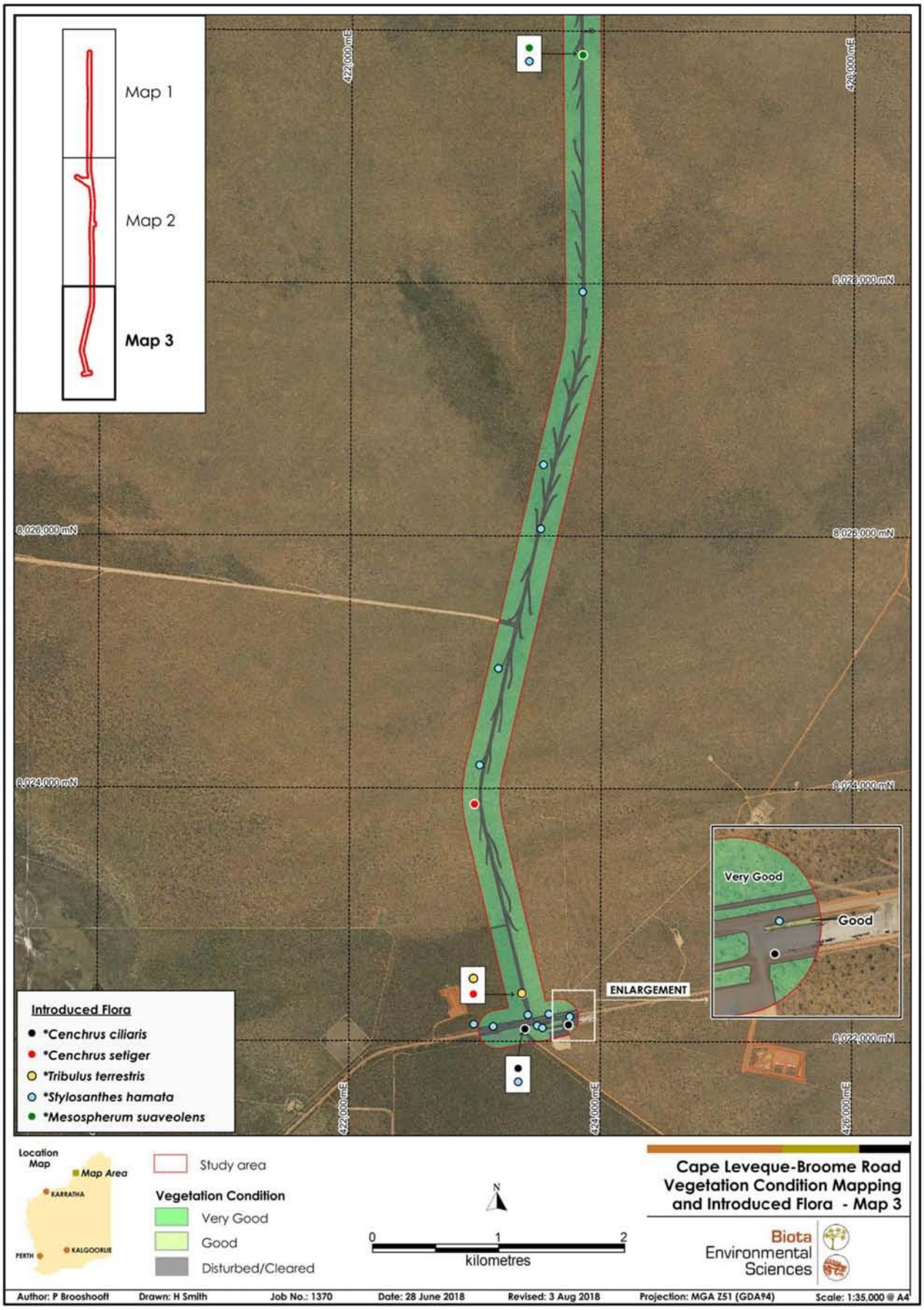

Figure 6.6: Condition of vegetation in the study area and locations of introduced species (Map 3).

6.4 Vegetation of Conservation Significance

6.4.1 TECs and PECs

None of the vegetation units identified for the study area comprise TECs or PECs (see Section 5.2.1).

6.4.2 Other Communities of Significance

The D1 vegetation community is a locally restricted vegetation unit, and is also Groundwater Dependent Vegetation. It is considered important in the maintenance of the functioning of the Nimalaica Claypan PEC immediately to the west, and therefore warrants a high conservation value (Val English, DBCA, pers. comm. 2018).

Vegetation units that appear to be core habitat for Threatened or Priority flora would also be considered to be of elevated significance. Three Priority flora species, *Bonamia oblongifolia, Polymeria* sp. Broome (K.F. Kenneally 9759) and *Terminalia kumpaja* were recorded in moderate to high numbers throughout P1 and P2 vegetation units. It is highly likely that vegetation units P1 and P2 would support many more additional records of these species within the study area. Two Priority 1 species, *Corymbia paractia*, and *Jacquemontia* sp. Broome (A.A. Mitchell 3028) were recorded in high abundance in the western end of the study area in vegetation unit P1.

The P3 vegetation unit is very restricted in the study area, in addition to it being the core habitat for *Stylidium pindanicum* (Priority 3), which was recorded within it in high abundance. This vegetation unit would also be considered potential Groundwater Dependant Vegetation.

7.0 Flora of the Study Area

7.1 Overview

7.1.1 Flora Taxa Recorded from the Study Area

A total of 189 native vascular flora species from 133 genera and 52 families were recorded from the study area during the current survey (see Appendix 13). These included six Priority species (see Section 7.2.2).

The dominant native plant families and genera recorded from the study area are presented in Table 7.1. These families and genera are typically represented in species lists from this region.

Table 7.1: Dominant native families and genera recorded from the study area.

Family	No. of Native Species	Genus	No. of Native Species
Fabaceae (peas, cassias and wattles)	33	*Acacia* (wattles)	6
Poaceae (grasses)	32	*Corymbia* (bloodwoods)	5
Malvaceae (hibiscus, sida etc.)	14	*Fimbristylis* (sedges)	5

In addition to the above, 19 introduced flora species (weeds) from 16 genera and 11 families were recorded in the study area during the current survey (Section 7.3).

7.2 Flora of Conservation Significance

7.2.1 Threatened Flora

No Threatened flora species were recorded during the field survey.

One Threatened species, *Seringia exastia*, has been recorded from the locality. While there is suitable habitat for this species in the study area, the closest known record is 8.5 km southwest and there are no records north of this location. This species should have been recorded during the survey, if present, and is not considered likely to occur in the area.

7.2.2 Priority Flora

7.2.2.1 Priority Flora Recorded from the Study Area

Six Priority flora species were recorded during the current field survey (see Table 7.2). The locations for each species are shown on Figure 6.1 to Figure 6.3, with more detail for the individual records provided in Appendix 14.

Table 7.2: Priority species recorded from the study area.

Family	Species	Status	Distribution in the Study Area
Myrtaceae	*Corymbia paractia*	Priority 1	73 individuals at 27 locations
Convolvulaceae	*Jacquemontia* sp. Broome (A.A. Mitchell 3028)	Priority 1	743 individuals at 47 locations
	Bonamia oblongifolia	Priority 3	38 individuals at 9 locations
	Polymeria sp. Broome (K.F. Kenneally 9759)	Priority 3	368 individuals at 74 locations
Combretaceae	*Terminalia kumpaja*	Priority 3	66 individuals at 14 locations
Stylidiaceae	*Stylidium pindanicum*	Priority 3	147 individuals at 5 locations

A brief description of each species follows:

- ***Corymbia paractia* (Priority 1)**

This low eucalypt tree has smooth white bark, shedding in thin scales, and white flowers. It is restricted to a range of approximately 36 km along the southwestern edge of the Dampier Peninsula, occurring mainly in the transition zone between coastal beach dunes and red pindan soils, with two vouchered specimens from slightly further inland (Western Australian Herbarium 1998). When present as a dominant species close to the coast, this eucalypt forms part of the '*Corymbia paractia* dominated community on dunes' PEC (see Section 5.2.1.2).

A total of 73 trees of *Corymbia paractia* were recorded from 27 locations in the study area. All of these records were from the southernmost end of the study area, extending only as far as 2 km north of the Great Northern Highway. This species has also been vouchered from a location 1.8 km southwest, and these locations together appear to represent the inland edge of this species' distribution. These records are not from the transition zone between the coastal beach dunes and red pindan soils, which is designated as the '*Corymbia paractia* dominated community on dunes' PEC, but rather occur in typical pindan habitat.

- ***Jacquemontia* sp. Broome (A.A. Mitchell 3028) (Priority 1)**

This undescribed taxon in the Convolvulaceae family is a perennial herb with hairy leaves, and pink flowers that have a hairy calyx (Plate 7.1). It has a similarly small distribution to *Corymbia paractia,* but is currently represented in the WA Herbarium by only two vouchered collections, separated by 38 km. Both collections are from pindan plains on the Dampier Peninsula, 10-12 km inland from the coast.

This taxon was recorded frequently during the field survey; a total of 743 individuals were recorded from 47 locations. The majority of the records (43 locations) were from a 2.8 km section at the southernmost end of the study area; only four records were made north of these, however they extended approximately 20.6 km north. These records are within the range of this taxon, based on the WA Herbarium voucher specimens. However, it should be noted that additional records from another survey completed by the field team (Biota 2018a) have extended the known distribution considerably further north, such that the taxon is now known to occur over 100 km.

Given the number of recent records, and the fact that the habitat in which this species occurs is widespread and abundant on the Dampier Peninsula, it appears likely that this taxon is poorly collected rather than genuinely rare. Review of the Priority ranking for this species appears warranted, with a ranking of Priority 3 likely to be more appropriate. All records and voucher specimens will be submitted to DBCA as soon as possible to facilitate this.

Plate 7.1: *Jacquemontia* sp. Broome (A.A. Mitchell 3028): leaves and flowers.

- ***Bonamia oblongifolia* (Priority 3)**

This species is another prostrate, hairy herb in the Convolvulaceae family, but has blue flowers. Specimens broadly matching the description of *Bonamia oblongifolia* were recorded from the study area: these had small blue flowers (9-10 mm long); and hairy leaves that were 4-5(-6) mm wide and up to 20(-30) mm long, with a petiole approximately 3 mm in length, and rounded to acute leaf tips. Acute leaf apices appear inconsistent with this species' concept, however this may be due to a narrow circumscription based on only a few specimens.

Bonamia oblongifolia was recorded from nine locations spread throughout the study area, with at least 38 individuals present (numbers of individuals were not recorded at all sites, and a minimum of 1 plant was assigned for these records). It is likely that this species would occur at additional locations in the study area.

Bonamia oblongifolia is currently only vouchered from a few, widely spaced locations in the Dampierland and Great Sandy Desert bioregions, with a known range extending over approximately 390 km. However, this species has been recorded on a number of recent surveys (e.g. Biota 2018b, 2018c, Wells 2018); records from these surveys have yet to be formally lodged. It therefore appears that *Bonamia oblongifolia* occurs more frequently in pindan vegetation through the region than was previously identified, which may have been recognised in its recent downgrading by DBCA from Priority 1 to Priority 3.

- ***Polymeria* sp. Broome (K.F. Kenneally 9759) (Priority 3)**

This taxon is another undescribed Convolvulaceae taxon; it is an erect herb with hairy leaves, and pink flowers that have two long linear stigmas (Plate 7.2). A total of 368 individuals of *Polymeria* sp. Broome (K.F. Kenneally 9759) were recorded from 74 locations spread throughout the study area.

As for *Bonamia oblongifolia*, *Polymeria* sp. Broome (K.F. Kenneally 9759) is currently only vouchered from a few, widely spaced locations; these span 250 km in the Dampierland and Great Sandy Desert bioregions, extending from north of Broome to east of Sandfire Roadhouse (Western Australian Herbarium 1998). However this taxon has been recorded from a number of recent surveys from Mandora in the south to almost Beagle Bay in the north (see Biota 2018a, 2018b, 2018c, Wells 2018); while records from these surveys are again yet to be formally lodged, these extend the distribution of this taxon to over 350 km. The broad range of documented locations and the abundance of suitable pindan habitat suggest that *Polymeria* sp. Broome (K.F. Kenneally 9759) is poorly collected rather than genuinely rare.

Plate 7.2: *Polymeria* sp. Broome (K.F. Kenneally 9759).

- ***Stylidium pindanicum* (Priority 3)**

The Pindan Triggerplant is a relatively recently described species with a rosette of slender leaves and pink flowers (Barrett et al. 2015) (Plate 7.3). It has a broad distribution over some 480 km; most records are from the Dampier Peninsula, with additional records to the northeast and southeast. A total of 147 individuals of this species were recorded from five locations in the study area, all in the vicinity of the dam. Most of the records were associated with vegetation unit P3 on the area of clay plain fringing the dampland vegetation unit. There was also one record in an adjacent area of vegetation unit P2, south of the dam. This species has been previously recorded from the southeast side of this dam (DBCA search results; abundance information not provided).

Plate 7.3: ***Stylidium pindanicum*.**

- ***Terminalia kumpaja* (Priority 3)**

Terminalia kumpaja is a tall shrub to low spreading tree with a dense canopy, distinct divaricate branching, and dark purple globular fruit with a walnut-like kernel (Plate 7.4). This species was only recently distinguished as distinct from *T. cunninghamii* (Barrett 2015). *Terminalia kumpaja* has been recorded from pindan vegetation over a range of approximately 280 km, from north of Broome to Wallal Downs.

A total of 66 individuals of this species were recorded from 14 locations in the central and southern sections of the study area. The northernmost records represent a slight northern extension beyond the range represented by the voucher specimens on FloraBase, however ALA shows another specimen further north on the Dampier Peninsula, held in the Australian National Herbarium in Canberra.

Plate 7.4: ***Terminalia kumpaja*: growth form, branchlet and close-up of kernels.**

7.2.2.2 Priority Flora Potentially Occurring in the Study Area

In addition to the species discussed in Section 7.2.2.1, 13 other Priority flora taxa have been recorded in the broader locality or have distributions that encompass the study area (see Appendix 5). Two of these Priority 3 species, *Aphyllodium glossocarpum* and *Glycine pindanicum,* may potentially occur in the study area as they have both been recorded in close proximity (400 m and 1.1 km, respectively), and there is considerable suitable habitat. The remaining species are considered unlikely to occur in the study area, either because they are strongly linked to specific habitats that are absent from the study area, or because they would be expected to have been recorded during the field survey, if present.

7.3 Introduced Flora

A total of 19 introduced flora species were recorded from the study area (see Table 7.3). The recorded locations are presented on Figure 6.4 to Figure 6.6 and tabulated in Appendix 14.

None of the introduced species are Weeds of National Significance (see DoEE 2018) or declared pests under the WA *Biosecurity and Agriculture Management Act 2007* (DAFWA 2018).

Table 7.3: Weed species recorded from the study area.

Family	Species	Distribution in the Study Area
Amaranthaceae	**Gomphrena celosioides*	Scattered plants at 1 location
Asteraceae	**Cyanthillium cinereum*	Scattered plants at 1 location
Convolvulaceae	**Merremia dissecta* var. *dissecta*	1 plant at 1 location
Cucurbitaceae	**Citrullus lanatus*	6 plants at 5 locations
Fabaceae	**Centrosema pascuorum*	2 plants at 1 location
	**Stylosanthes hamata*	9,192 plants at 33 locations
	**Stylosanthes scabra*	1 plant at 1 location
Lamiaceae	**Mesosphaerum suaveolens*	306 plants at 3 locations
Malvaceae	**Sida cordifolia*	3 plants at 1 location
	**Triumfetta pentandra*	Scattered plants at 2 locations
Passifloraceae	**Passiflora foetida var. hispida*	11 plants at 6 locations
Poaceae	**Cenchrus ciliaris*	30 plants at 4 locations
	**Cenchrus echinatus*	5 plants at 2 locations
	**Cenchrus setiger*	1,400 plants at 2 locations
	**Chloris barbata*	87 plants at 3 locations
	**Cynodon dactylon*	212 plants at 2 locations
	**Sporobolus ? coromandelianus*	Scattered plants at 1 location
Solanaceae	**Physalis angulata*	Scattered plants at 1 location
Zygophyllaceae	**Tribulus terrestris*	1 plant at 1 location

A brief description of each species is provided below:

***Centrosema pascuorum* (Centurion)** is an annual twining herb with large purple flowers (Plate 7.6), which is only known from northern parts of Australia (eg. Broome and Darwin), where it is relatively uncommon. It is generally recorded from disturbed habitats. This species was recorded from one location alongside the Broome to Cape Leveque Road, comprising two individuals.

***Gomphrena celosioides* (Gomphrena Weed)** is a widespread weed throughout WA, commonly recorded from sandy or loamy soils in disturbed areas, often around settlements and on roadsides. This species was recorded only at the dam in the central section of the study area.

**** Cyanthillium cinereum* (Gomphrena Weed)** is an introduced daisy that is widespread through the Kimberley and has also been recorded from Port Hedland in the Pilbara. This species was recorded only from quadrat CLA01 at the northern end of the study area.

Merremia dissecta* var. *dissecta is a creeper with deeply divided leaves and white funnel-shaped flowers (Plate 7.5). It has been recorded from scattered locations through the Kimberley and Pilbara regions. A single plant of this species was recorded near an offshoot drain just north of the dam in the central section of the study area.

***Citrullus lanatus* (Pie Melon)** is a hairy, annual creeper with large melon fruit, which is widespread throughout WA except in the inland desert regions. One to two plants were recorded at five locations in the study area, all in the northern half.

***Stylosanthes hamata* (Verano Stylo)** is a perennial herb to low shrub with yellow pea flowers and distinctive beaked fruit. This species has been recorded from Exmouth to the Kimberley. Although introduced as a fodder species, Verano Stylo is considered a serious environmental weed. Verano Stylo was the most widespread weed in the study area, with 9,192 plants recorded from 33 locations throughout the study area.

***Stylosanthes scabra* (Shrubby Stylo)** is similar to Verano Stylo but is a more robust, taller shrub and has scabrid hairs. This species has only been recorded from the Kimberley. A single plant of Shrubby Stylo was recorded from quadrat CLA07 in the central section of the study area.

***Mesosphaerum suaveolens* (Hyptis)** was previously known as **Hyptis suaveolens*. This species occurs through the Kimberley and has been previously recorded on the Dampier Peninsula. Hyptis was recorded from two locations in the dampland vegetation west of the dam, and another location 4 km south.

***Sida cordifolia* (Flannel Weed)** is a slender shrub known from scattered locations through the Kimberley. Three plants of Flannel Weed were recorded on the south side of the dam, in the central section of the study area.

Triumfetta pentandra is an annual to weakly perennial herb or shrub, recorded from scattered locations through the Kimberley and well known from the Dampier Peninsula. This species was recorded from quadrats CLA10 and CLA11, west of the dam in the central section of the study area.

*** *Passiflora foetida* var. *hispida* (Stinking Passion Flower)** is a woody climber with an unpleasant odour and small orange fruit. This species is widespread and common through the Kimberley, and also occurs in drainage lines in the Pilbara; it is likely spread by fruit-eating birds. Stinking Passion Flower occurred as occasional plants at six locations in the central section of the study area, spread between the dam and the off-shoot drain 4 km north.

***Cenchrus ciliaris* (Buffel Grass)** is a perennial grass with bristly florets, which was introduced by pastoralists as a fodder species. It is widespread throughout WA and is commonly found in association with drainage lines, floodplains, sandy coastal areas and disturbed sites (Western Australian Herbarium 1998-). A total of 30 plants of Buffel Grass were recorded from four locations in the study area, ranging from the central section to the southern end.

***Cenchrus echinatus* (Burrgrass)** is similar to Buffel Grass but its florets are very robust and spiny. Five plants were recorded at two locations, both approximately 3.5 km north of the dam.

***Cenchrus setiger* (Birdwood Grass)** has florets that are intermediate in structure between Buffel Grass and Burrgrass. It is similarly widespread throughout WA. Dense stands of Birdwood Grass were recorded at two locations, both at the southern end of the study area.

***Chloris barbata* (Purpletop Chloris)** is an annual to weakly perennial grass with a purplish, digitate inflorescence. It is frequently recorded through northern WA from Exmouth to the Kimberley, where it typically occurs along road verges, disturbed sites, on levee banks and in creeklines. A total of 87 plants were recorded from three locations, all close to the dam in the central section of the study area.

***Cynodon dactylon* (Couch)** is a widespread perennial grass that occurs through WA, particularly in damp disturbed areas. A total of 212 plants were recorded from two locations in close proximity at the southeastern edge of the dam.

Sporobolus ? coromandelianus is an annual grass occurring in disturbed areas and roadsides. A single specimen from the study area was tentatively identified as this species, however there is currently no voucher material at the WA Herbarium to enable confirmation. This species was recorded in the central section of the study area, at the northwestern edge of the dam.

***Physalis angulata* (Cutleaf Groundcherry)** is an erect annual herb with yellow-orange fruit held inside an enlarged calyx. This species is widespread through the Kimberley and also occurs in the Pilbara. This species was recorded from a single location in the dampland vegetation west of the dam.

***Tribulus terrestris* (Caltrop)** is a hairy prostrate herb with yellow flowers followed by spiky fruit. This species is widespread through WA, typically occurring on sandy soils in disturbed areas. A single plant of Caltrop was recorded from the existing tourist information bay at the southern end of the study area.

Plate 7.5: ***Merremia dissecta* var. *dissecta* flower.**

Plate 7.6: ***Centrosema pascuorum* flower.**

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8.0 Level 1 Fauna Survey

8.1 Reconnaissance Field Survey Records

During the reconnaissance survey of the study area, 68 fauna species were either directly observed or recorded from sign or calls, comprising 53 avifauna species, eight mammal species and seven reptile species. These species are detailed in Table 8.2.

Of the total fauna recorded, five were introduced mammal species, comprising the Dog/Dingo, Cat, Horse, Camel and European Cattle (Table 8.2; and Figure 8.1 to Figure 8.3).

One mammal species represented an addition to the potential species list of the study area: the Red Kangaroo (*Osphranter rufus*) (Table 8.2; Appendix 6).

8.1.1 Conservation Significant Fauna

Of the 68 species recorded, three are listed as species of conservation significance (Table 8.2 and Figure 8.1 to Figure 8.3):

- Eastern Great Egret, *Ardea modesta* (Marine);
- Rainbow Bee-eater, *Merops ornatus* (Marine); and
- Bilby, *Macrotis lagotis* (Schedule 3/Vulnerable).

The Rainbow Bee-eater and Eastern Great Egret have recently been removed as Schedule 5/Migratory species from both the Wildlife Conservation (Specially Protected Fauna) Notice 2017 (see State of Western Australia 2018) and the EPBC Act, however they still remain Federally listed under the EPBC Act as Marine species. The Rainbow Bee-eater is common and widespread throughout the State, and the Project would not significantly impact upon the conservation status of this species. The Eastern Great Egret may forage for fish or tadpoles in the man-made dam in the study area on occasion, but would not be expected to utilise the other habitats in the study area.

The Bilby was recorded from secondary signs only, comprising diggings, tracks and burrows. These are discussed further in Section 9.0, with locations of records mapped in Figure 9.1 to Figure 9.6.

8.2 Fauna Habitats

Three fauna habitats were present within the study area, surrounding the cleared or disturbed areas associated with the existing road (see Table 8.1 and Figure 8.1 to Figure 8.3).

Table 8.1: Description of fauna habitats within the study area.

Fauna Habitat	Description	Representative Photograph
1. *Corymbia* and *Bauhinia* Low Open Woodland on sandplain	*Corymbia* and *Bauhinia* spp. low open woodland over mixed shrubland dominated by *Acacia* spp., *Corchorus sidoides, Flueggea virosa* and *Breynia cernua* shrubs over mixed tussock grassland dominated by *Chrysopogon pallidus* over *Triodia* species hummock grassland on sandplain.	
2. *Melaleuca* Woodland damplands	*Melaleuca alsophila* low woodland over scattered *Flueggea virosa* shrubs over mixed open heath and tussock grassland over open sedgeland dominated by *Fimbristylis* spp. on sandy damplands.	
3. Man-made Dam	Permanent artificial water body fringed with sparse mixed grasses.	

Table 8.2: Fauna species recorded during the reconnaissance survey of the study area.

Family	Species Name	Common Name	Conservation Status		Number Observed*
			State	Federal	
BIRDS					
Phasianidae	*Coturnix ypsilophora*	Brown Quail			14
Columbidae	*Ocyphaps lophotes*	Crested Pigeon			1
	Geopelia striata	Peaceful Dove			15
	Geopelia striata	Peaceful Dove			1
	Geopelia humeralis	Bar-shouldered Dove			2
Eurostopodidae	*Eurostopodus argus*	Spotted Nightjar			1T
Ardeidae	*Ardea modesta*	Eastern Great Egret		Marine	2
	Ardea intermedia	Intermediate Egret			1
Accipitridae	*Milvus migrans*	Black Kite			1
	Accipiter fasciatus	Brown Goshawk			3
Falconidae	*Falco berigora*	Brown Falcon			3
Otididae	*Ardeotis australis*	Australian Bustard			2, 1T
Turnicidae	*Turnix pyrrhothorax*	Red-chested Button-quail			4
	Turnix sp.				3
Cacatuidae	*Calyptorhynchus banksii*	Red-tailed Black-Cockatoo			8
Psittacidae	*Trichoglossus haematodus*	Red-collared Lorikeet			27
	Psitteuteles versicolor	Varied Lorikeet			2
	Aprosmictus erythropterus	Red-winged Parrot			8
	Melopsittacus undulatus	Budgerigar			8
Cuculidae	*Chalcites basalis*	Horsfield's Bronze-Cuckoo			2
	Chalcites osculans	Black-eared Cuckoo			1
Strigidae	*Ninox novaeseelandiae*	Southern Boobook			3
Halcyonidae	*Dacelo leachii*	Blue-winged Kookaburra			12
	Todiramphus pyrrhopygius	Red-backed Kingfisher			1
Meropidae	*Merops ornatus*	Rainbow Bee-eater		Marine	32
Ptilonorhynchidae	*Ptilonorhynchus nuchalis*	Great Bowerbird			4
Maluridae	*Malurus melanocephalus*	Red-backed Fairy-wren			13
	Malurus lamberti	Variegated Fairy-wren			41
	Malurus sp.	-			2
Acanthizidae	*Smicrornis brevirostris*	Weebill			3
	Gerygone albogularis	White-throated Gerygone			11
Pardalotidae	*Pardalotus striatus*	Striated Pardalote			39

Family	Species Name	Common Name	Conservation Status		Number Observed*
			State	Federal	
Meliphagidae	*Lichenostomus virescens*	Singing Honeyeater			74
	Lichmera indistincta	Brown Honeyeater			114
	Melithreptus albogularis	White-throated Honeyeater			9
	Philemon citreogularis	Little Friarbird			18
Pomatostomidae	*Pomatostomus temporalis*	Grey-crowned Babbler			29
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike			35
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler			34
	Colluricincla harmonica	Grey Shrike-thrush			7
Oriolidae	*Oriolus sagittatus*	Olive-backed Oriole			4
Artamidae	*Artamus personatus*	Masked Woodswallow			39
	Artamus cinereus	Black-faced Woodswallow			3
	Cracticus nigrogularis	Pied Butcherbird			18
Rhipiduridae	*Rhipidura rufiventris*	Northern Fantail			1
	Rhipidura leucophrys	Willie Wagtail			16
Corvidae	*Corvus orru*	Torresian Crow			17
Monarchidae	*Myiagra nana*	Paperbark Flycatcher			3
	Grallina cyanoleuca	Magpie-lark			14
Petroicidae	*Microeca fascinans*	Jacky Winter			2
Nectariniidae	*Dicaeum hirundinaceum*	Mistletoebird			7
Estrildidae	*Poephila acuticauda*	Long-tailed Finch			3
MAMMALS					
Thylacomyidae	*Macrotis lagotis*	Bilby, Dalgyte	Schedule 3	Vulnerable	12T, 7B, 165D^
Macropodidae	*Notamacropus agilis*	Agile Wallaby			1, 1T
	Osphranter rufus	Red Kangaroo, Marlu			2, 1T
Canidae	*Canis lupus/dingo*	Dog/Dingo°			5T
Felidae	*Felis catus*	Cat°			1S, 1T
Equidae	*Equus caballus*	Horse°			2S, 1T
Camelidae	*Camelus dromedarius*	Dromedary, Camel°			1S
Bovidae	*Bos taurus`*	European Cattle°			1S, 1T
REPTILES					
Diplodactylidae	*Strophurus ciliaris*				1
Pygopodidae	*Delma tincta*				1R
	Diporiphora pindan	Pindan Dragon			3
Scincidae	*Tiliqua multifasciata*	Central Blue-tongue			1T
	Tiliqua sp.				1R

Family	Species Name	Common Name	Conservation Status		Number Observed*
			State	Federal	
Varanidae	*Varanus gouldii*	Bungarra or Sand Goanna			2
Pythonidae	*Aspidites melanocephalus*	Black-headed Python			1R

* D = Digging, T = Track, R = Remains, S = Scat, ^ Low- High certainty, ° denotes introduced species,
`*Bos taurus indicus* breed of European Cattle occurs in the Kimberley, however it is reported here as *B. taurus* as this is consistent with nomenclature conventions used throughout this report (see Section 4.6.2).

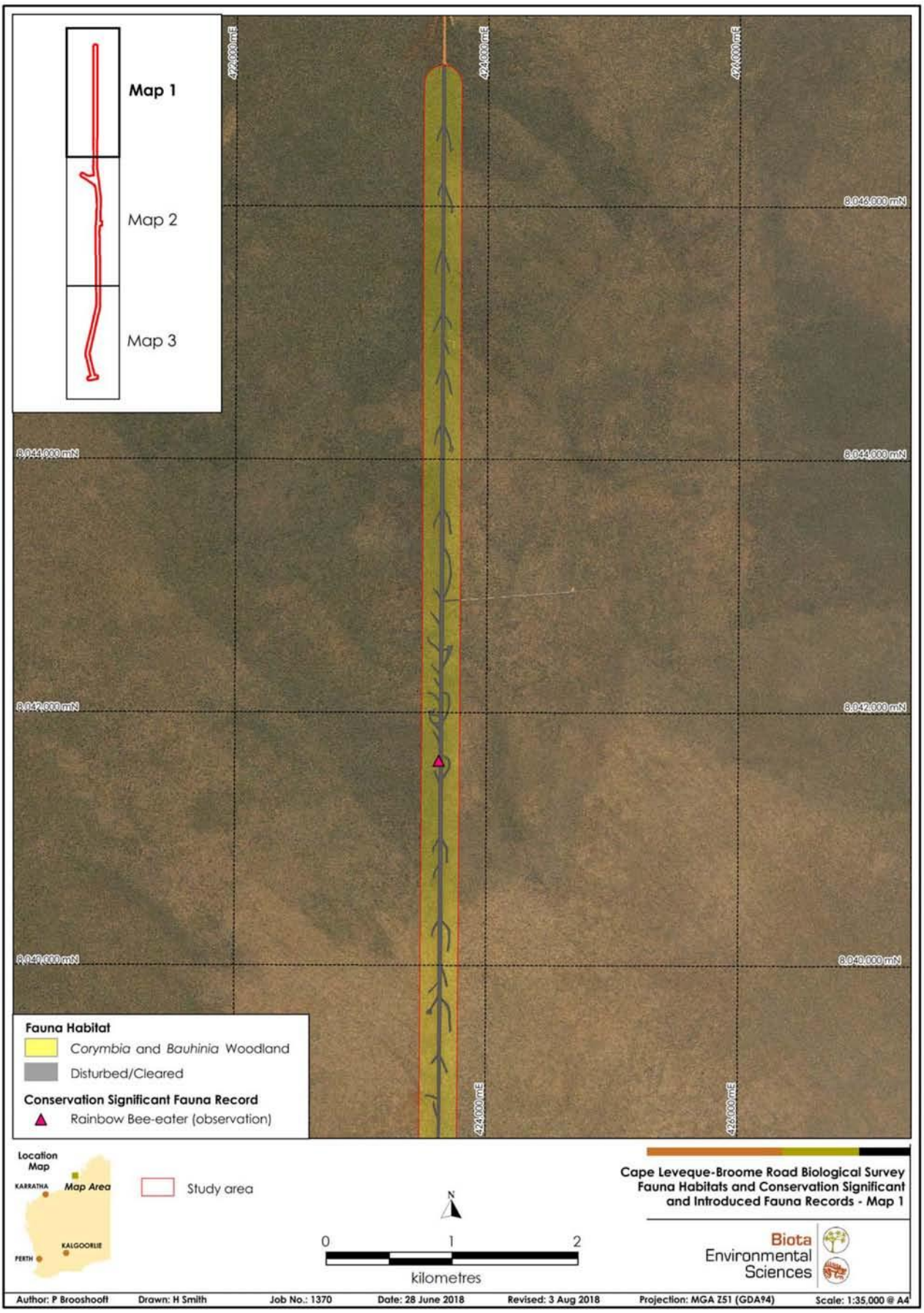

Figure 8.1: Fauna habitats within the study area, with locations of conservation significant and introduced fauna recorded during the reconnaissance field survey (Map 1).

NB. Bilby sign evidence locations shown in Figure 9.1 to Figure 9.6.

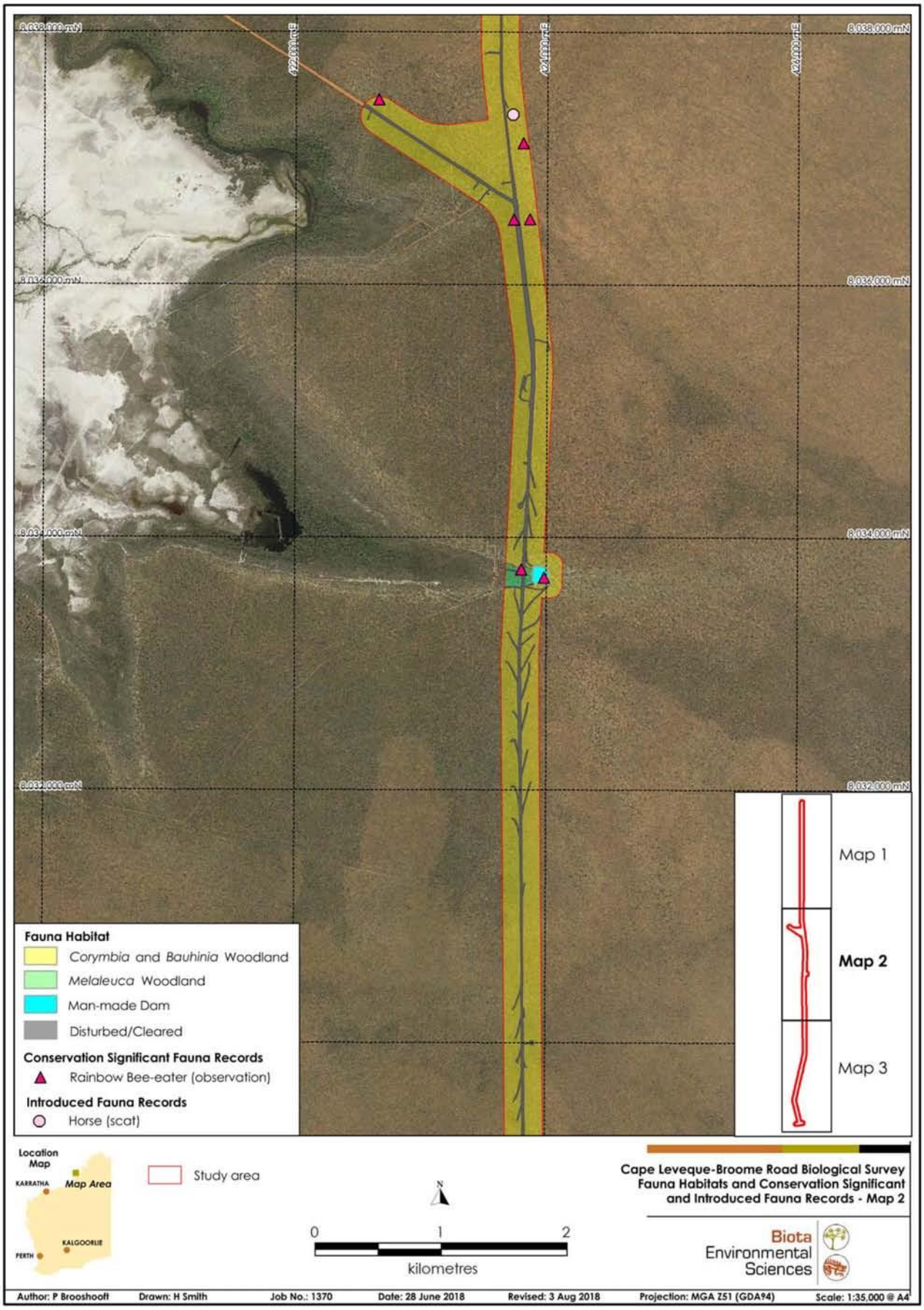

Figure 8.2: Fauna habitats within the study area, with locations of conservation significant and introduced fauna recorded during the reconnaissance field survey (Map 2).

NB. Bilby sign evidence locations shown in Figure 9.1 to Figure 9.6.

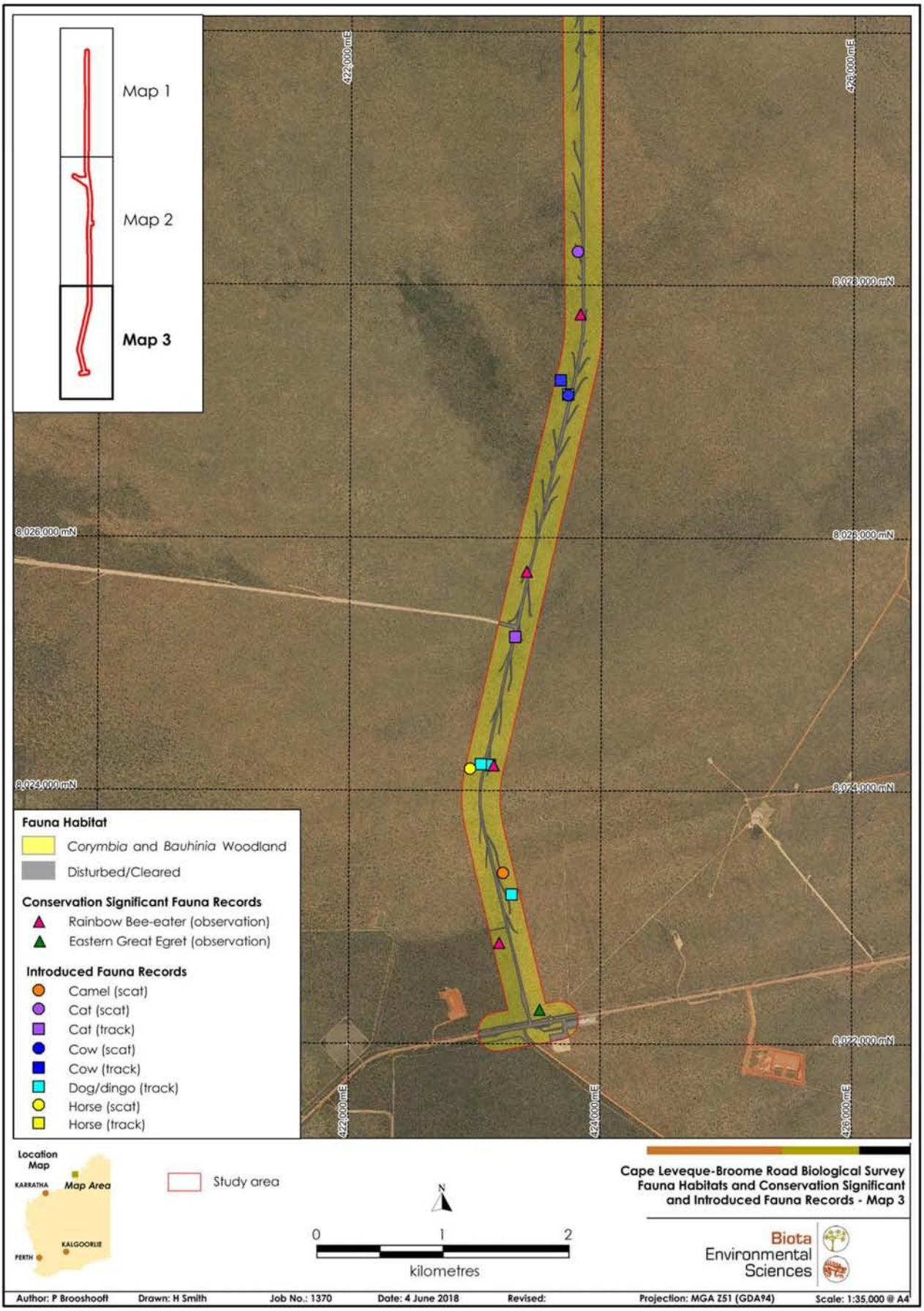

Figure 8.3: Fauna habitats within the study area, with locations of conservation significant and introduced fauna recorded during the reconnaissance field survey (Map 3).

NB. Bilby sign evidence locations shown in Figure 9.1 to Figure 9.6.

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9.0 Targeted Bilby Assessment

9.1 Transects

9.1.1 Effort

The study area was thoroughly surveyed, with a total distance of 142.64 km traversed on foot, and a total effort of over 79 hours expended searching for evidence of the Bilby (Table 9.1; Figure 9.1 to Figure 9.3).

Table 9.1: Summary of effort applied during transect searches of the study area.

Personnel	Total Distance Walked (km)	Total Time Expended (mins)
R. Teale	46.94	1,140
S. Ford	29.18	1,088
P. Brooshooft	29.61	1,131
J. King	36.91	1,423
Total	**142.64**	**4,782**

9.1.2 Sign Evidence Recorded

9.1.2.1 Tracks

Twelve locations of tracks were recorded in the study area (Figure 9.1 to Figure 9.3; Appendix 11). These were assessed as High certainty and were attributed to the Bilby (Appendix 11). Foot imprints were not distinct in the tracks (see Plate 9.1 for examples), however gait pattern was consistent with that of the Bilby, and other species with similar gait patterns (see Section 4.5.1.1) are unlikely to be present in the study area.

Plate 9.1: Bilby track examples (left: T03, right: T11).

9.1.2.2 Scats

No Bilby scats were detected during the foot traverses of the study area.

9.1.2.3 Diggings

Diggings were recorded at a large number of locations (total of 163) within the study (Figure 9.1 to Figure 9.3; Appendix 11). The majority of the diggings were assigned a Low (total of 18) or Moderate (total of 114) certainty, as they could not reliably be attributed to the Bilby, however 31 diggings were assessed as High certainty and were positively attributed to the Bilby (see Plate 9.2 for examples).

Plate 9.2: Bilby diggings (left: D74, middle: D13, right: D56).

9.1.2.4 Burrows

Seven burrows were located within the study area: five were active burrows (High certainty) and two were inactive burrows (Low certainty) (Figure 9.1 to Figure 9.3; Appendix 11; see Plate 9.3 for examples of active burrows).

No positive images of the Bilby were recorded from the motion cameras established at the burrow entrances.

Plate 9.3: Active Bilby burrows (left: B01, middle: B03, right: B05).

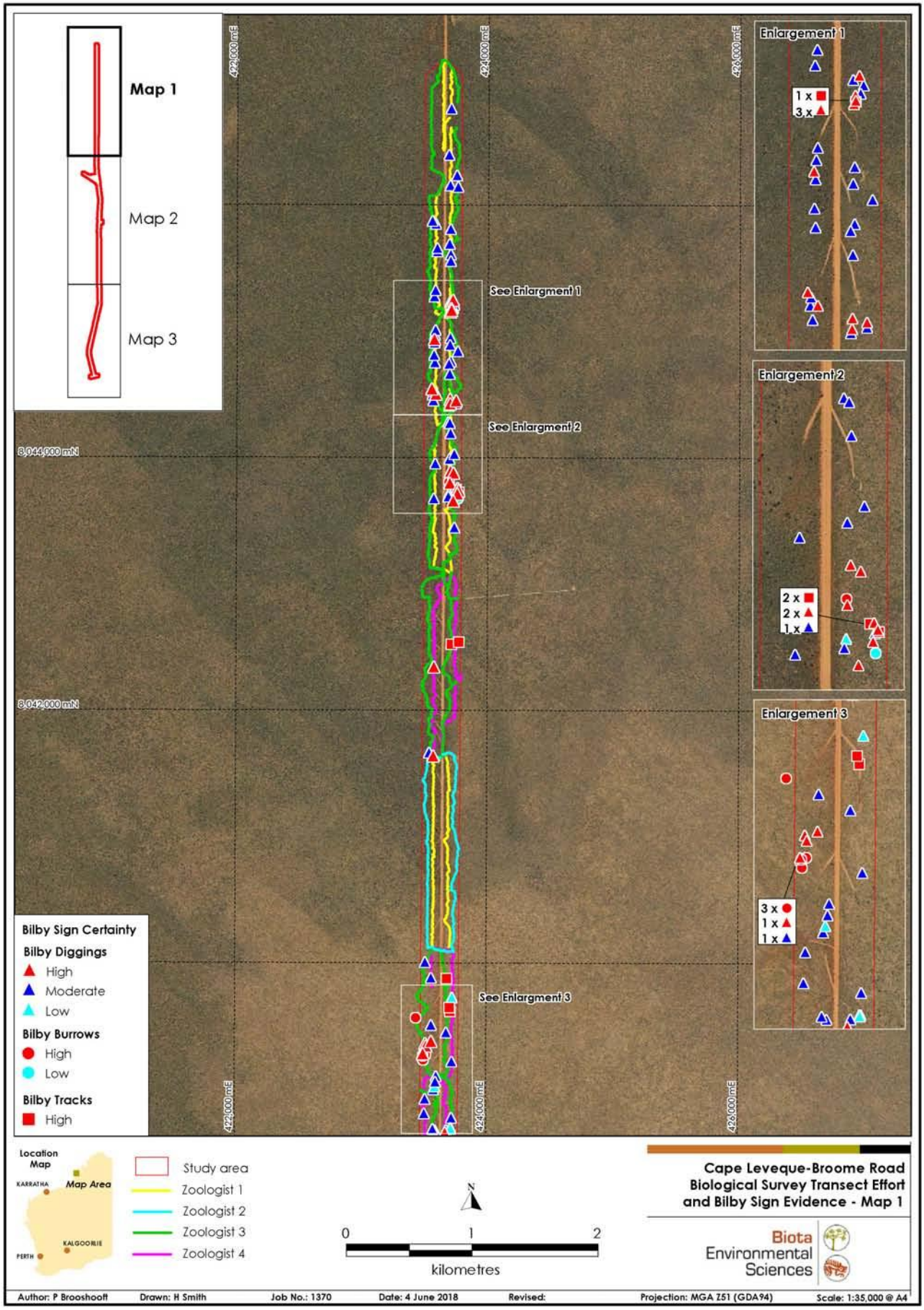

Figure 9.1: Transect effort and Bilby sign evidence (Map 1).

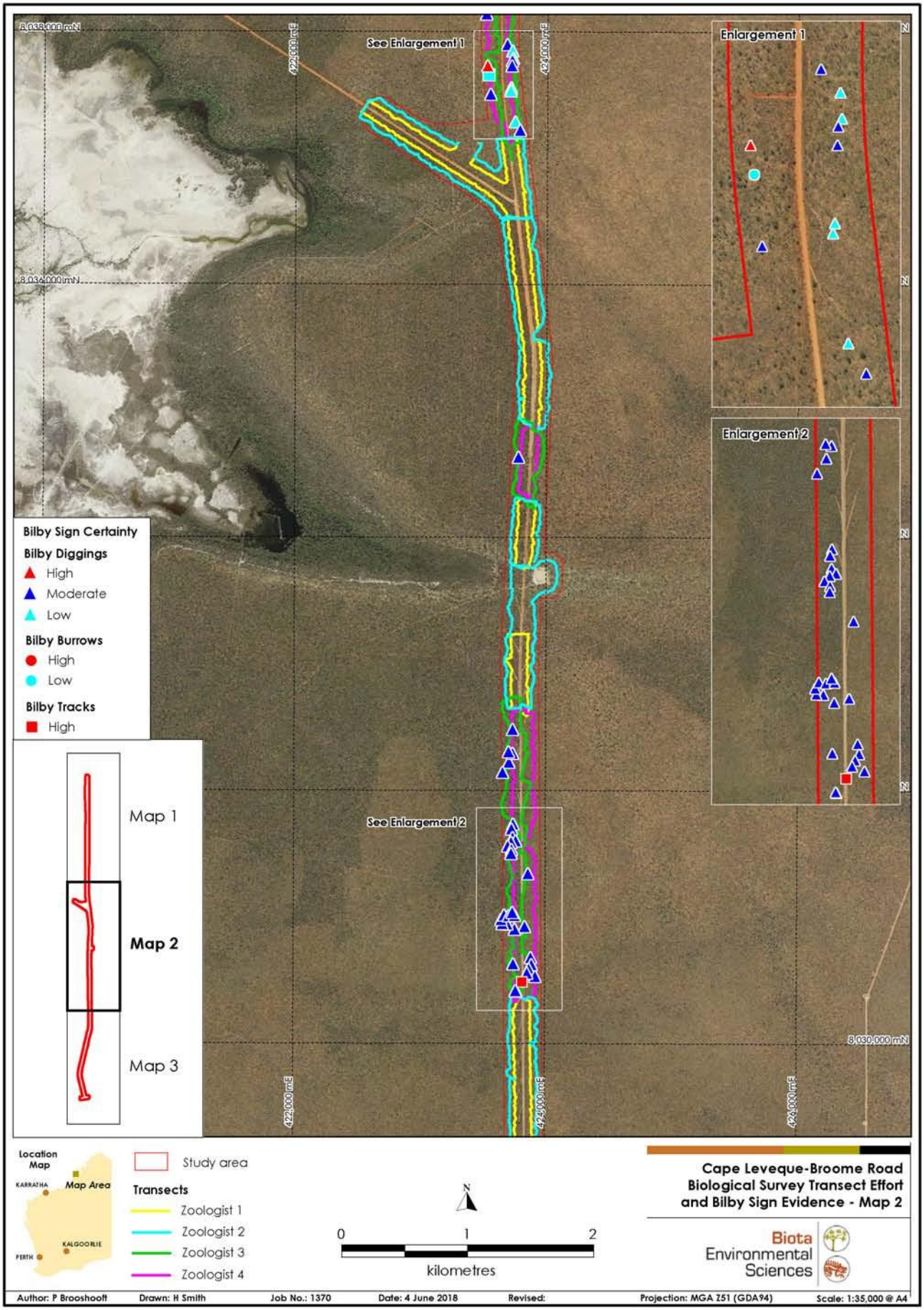

Figure 9.2: Transect effort and Bilby sign evidence (Map 2).

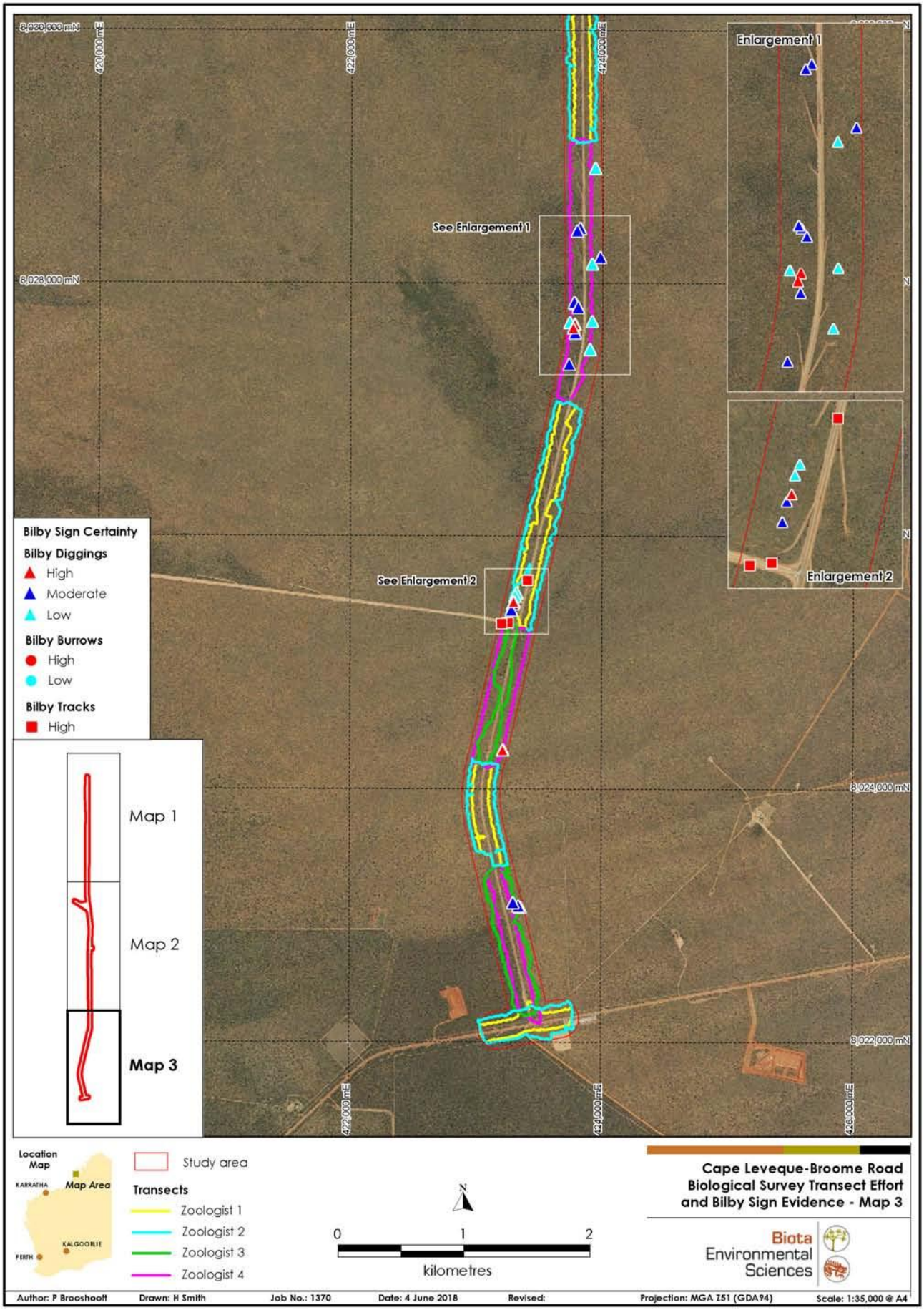

Figure 9.3: Transect effort and Bilby sign evidence (Map 3).

9.2 Sign Plots

9.2.1 Effort

Sign plots were adequately searched, with a total of 5.62 km covered on foot and a total of 310 minutes spent searching within sign plots for evidence of the Bilby (Table 9.2; Figure 9.4 to Figure 9.6).

Table 9.2: Summary of effort applied during sign plot searches in the study area.

Sign Plot	Personnel	Total Distance Walked (km)	Total Time Expended (mins)
SLK 0-25 01	S. Ford	0.69	35
SLK 0-25 02	R. Teale	0.73	30
	P. Brooshooft	0.30	30
SLK 0-25 03	R. Teale	0.88	30
	P. Brooshooft	0.25	30
SLK 0-25 04	S. Ford	0.61	30
	J. King	0.54	30
SLK 0-25 05	R. Teale	1.04	30
	J. King	0.58	30
Total		**5.62**	**310**

9.2.2 Sign Evidence Recorded

9.2.2.1 Tracks

No evidence of Bilby tracks were detected during the sign plot searches in the study area. However, tracks of other animals, including the cow, Agile Wallaby (*Notamacropus agilis*), another macropod (species unidentifiable), *Lerista* (species unidentifiable), hopping birds (species unidentifiable) and small lizards (species unidentifiable) were noted during the plot searches (Appendix 12).

9.2.2.2 Scats

No Bilby scats were detected during the sign plot searches in the study area. However, scats of other species including the cow, varanid (species unidentifiable), Agile Wallaby (*Notamacropus agilis*) and another macropod (species unidentifiable) were noted during the plot searches (Appendix 12).

9.2.2.3 Diggings

Three digging locations were recorded within sign plots SLK0-25 02, SLK0-25 03 and SLK0-25 05 (Figure 9.4 to Figure 9.6; Appendix 12). The diggings were assigned Moderate certainty (Plate 9.4). Diggings of varanids (species unidentifiable) were also detected within the sign plots (Appendix 12).

Plate 9.4: Diggings assigned moderate certainty (left: D01, middle: D108, right: D115).

9.2.2.4 Burrows

No Bilby burrows were detected during the sign plot searches in the study area, however burrows of small lizards and varanids (species unidentifiable) were detected (Appendix 12).

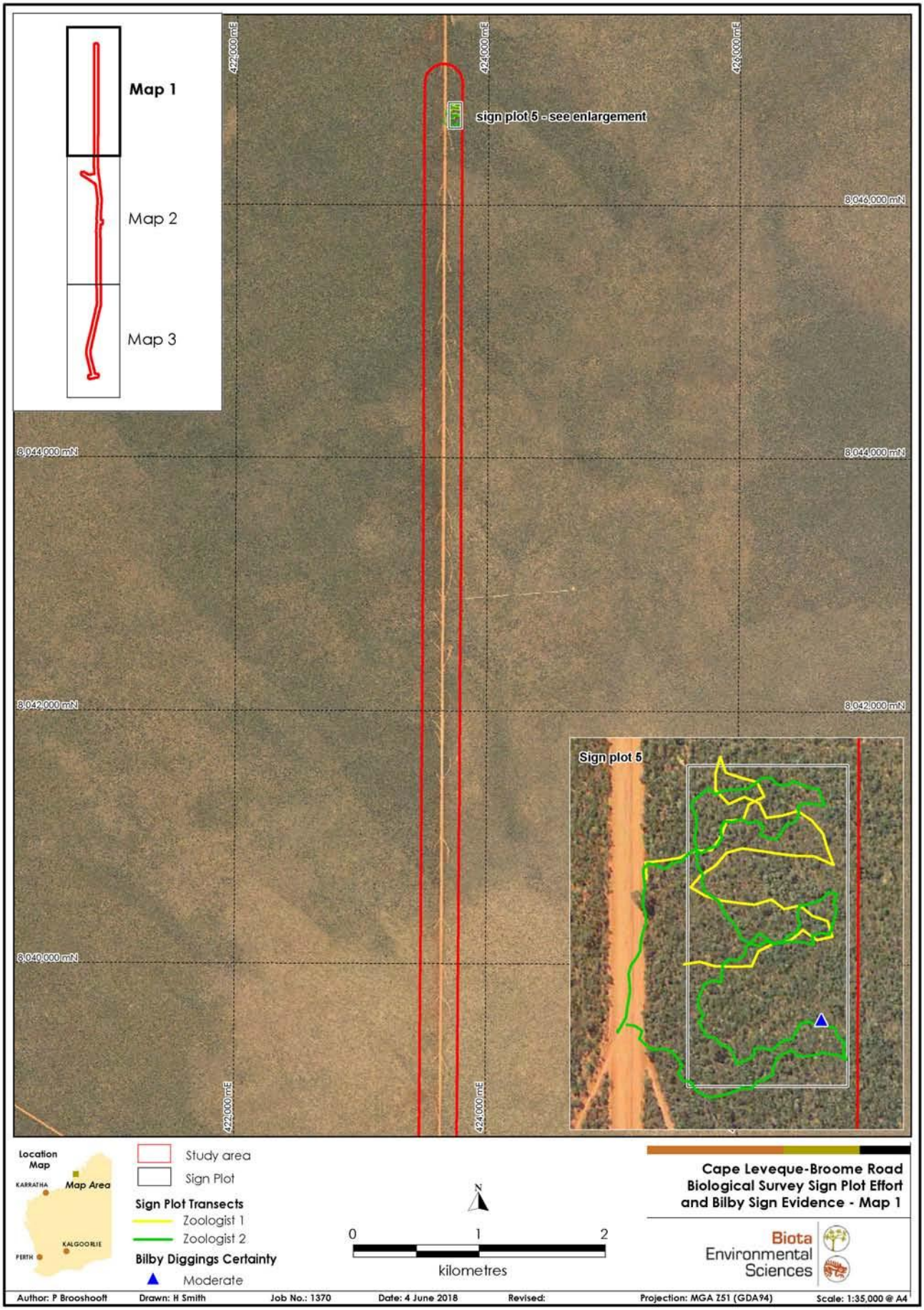

Figure 9.4: Sign plot effort and Bilby sign evidence recorded during sign plot searches (Map 1).

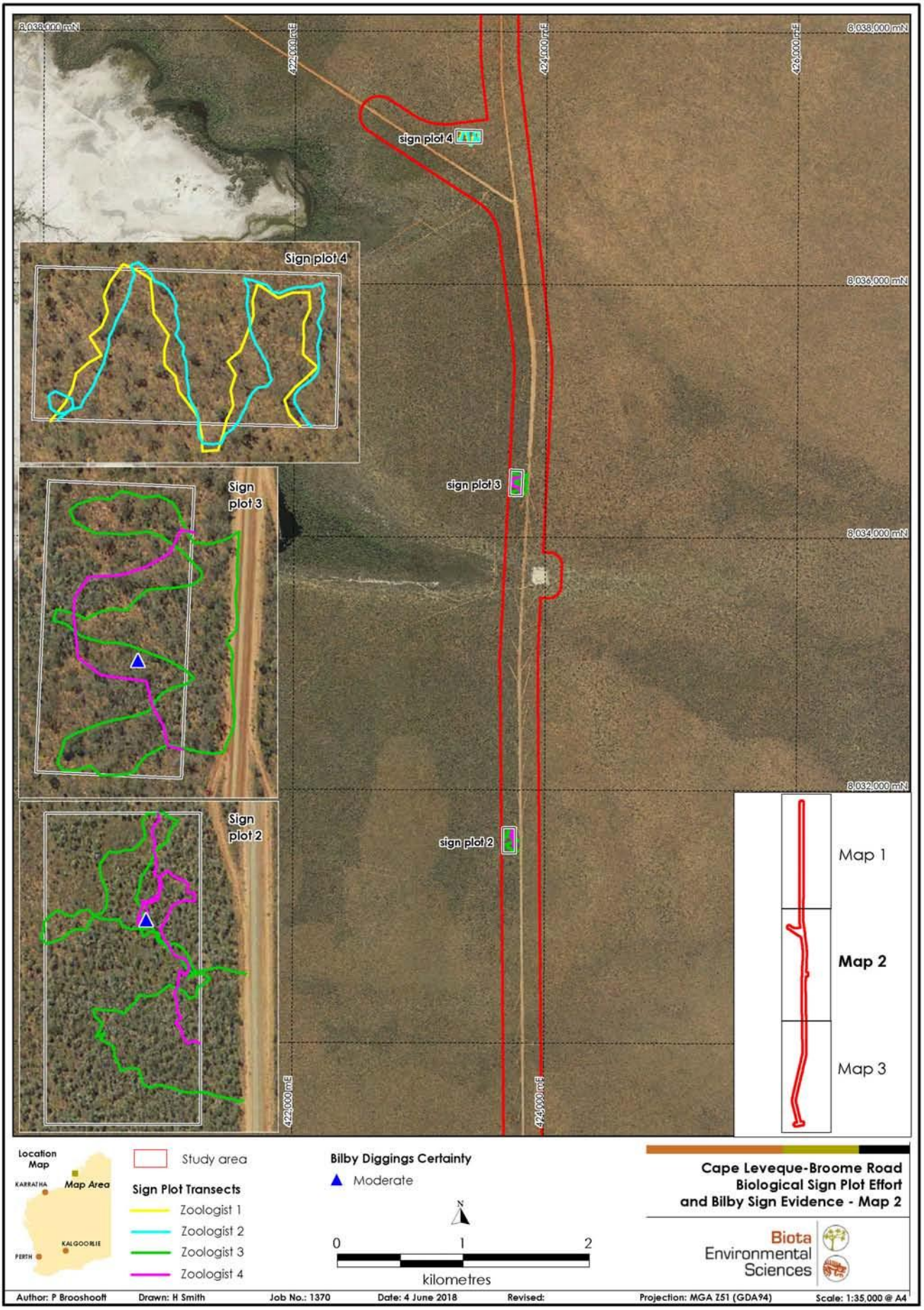

Figure 9.5: Sign plot effort and Bilby sign evidence recorded during sign plot searches (Map 2).

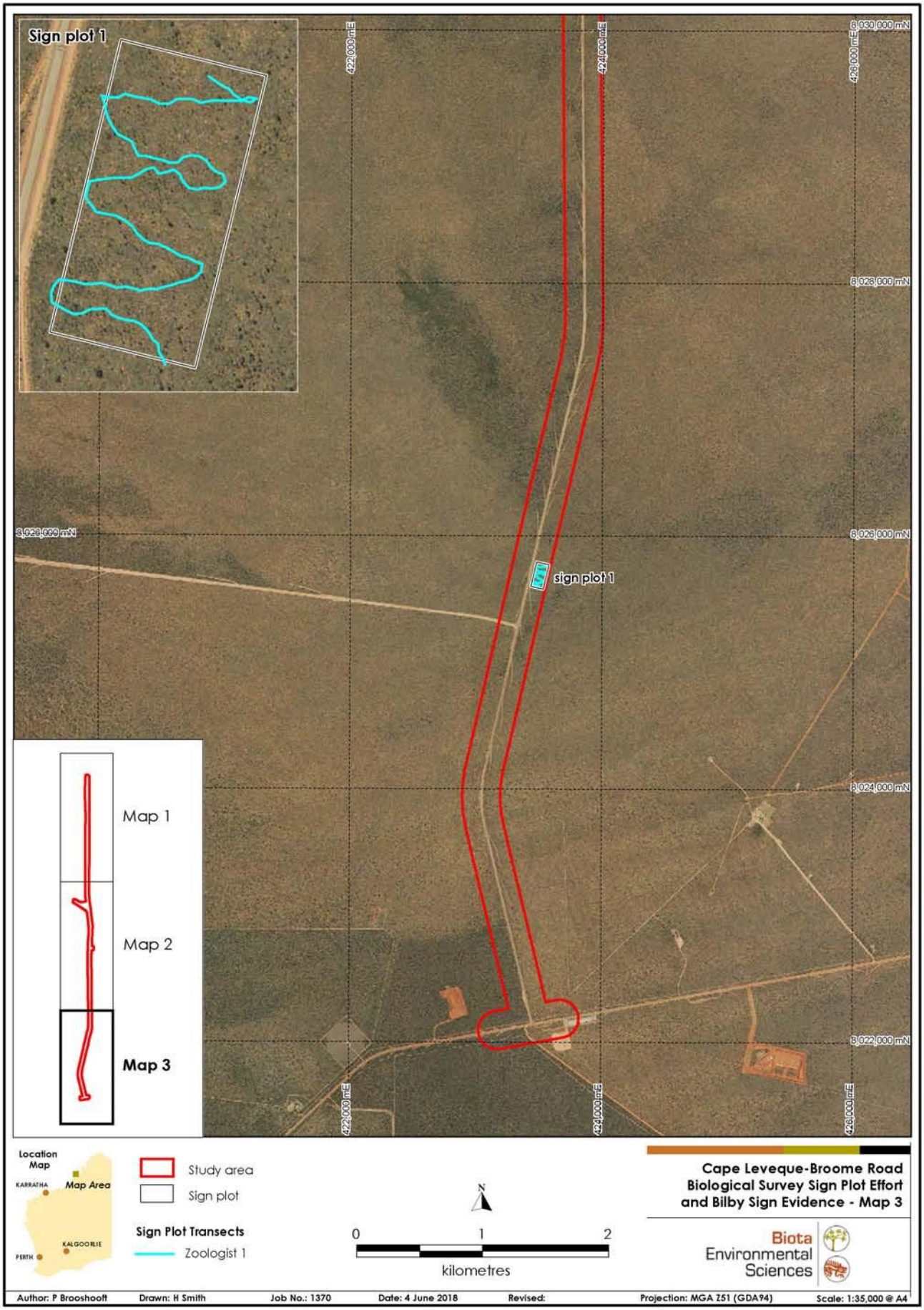

Figure 9.6: Sign plot effort and Bilby sign evidence recorded during sign plot searches (Map 3).

9.3 Bilby Habitat Assessment

The majority of the study area was assessed as High prospectivity Bilby habitat (737.48 ha, representing 89.6% of the total study area), based on the presence of suitable food source plants within vegetation of an appropriate fire history age (see Section 4.5.2; Figure 9.7 to Figure 9.9). The remaining portions of the study area were assessed as Low (6.57 ha) prospective habitat, while 78.71 ha was cleared or disturbed (Figure 9.7 to Figure 9.9).

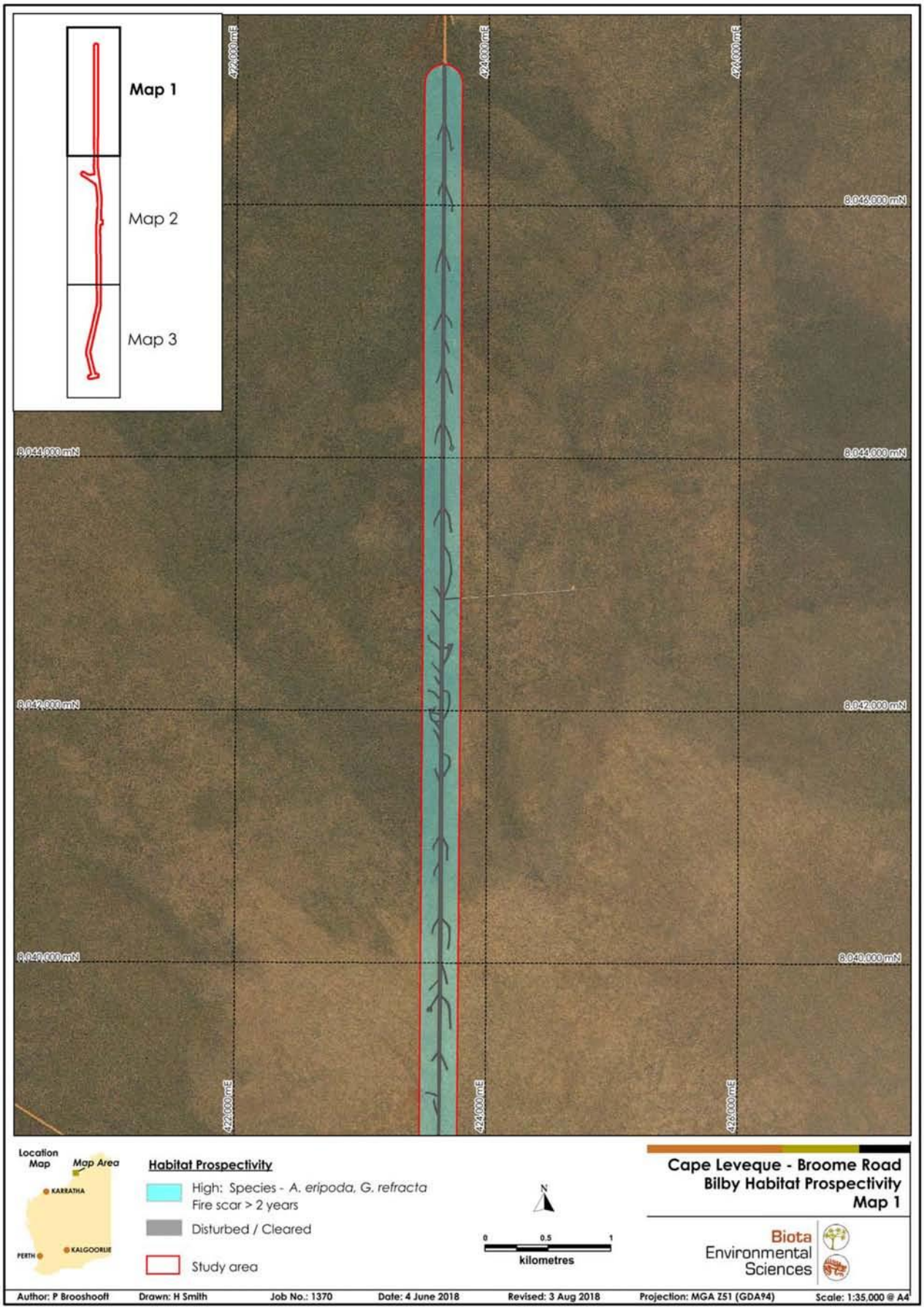

Figure 9.7: Prospective Bilby habitat within the study area (Map 1).

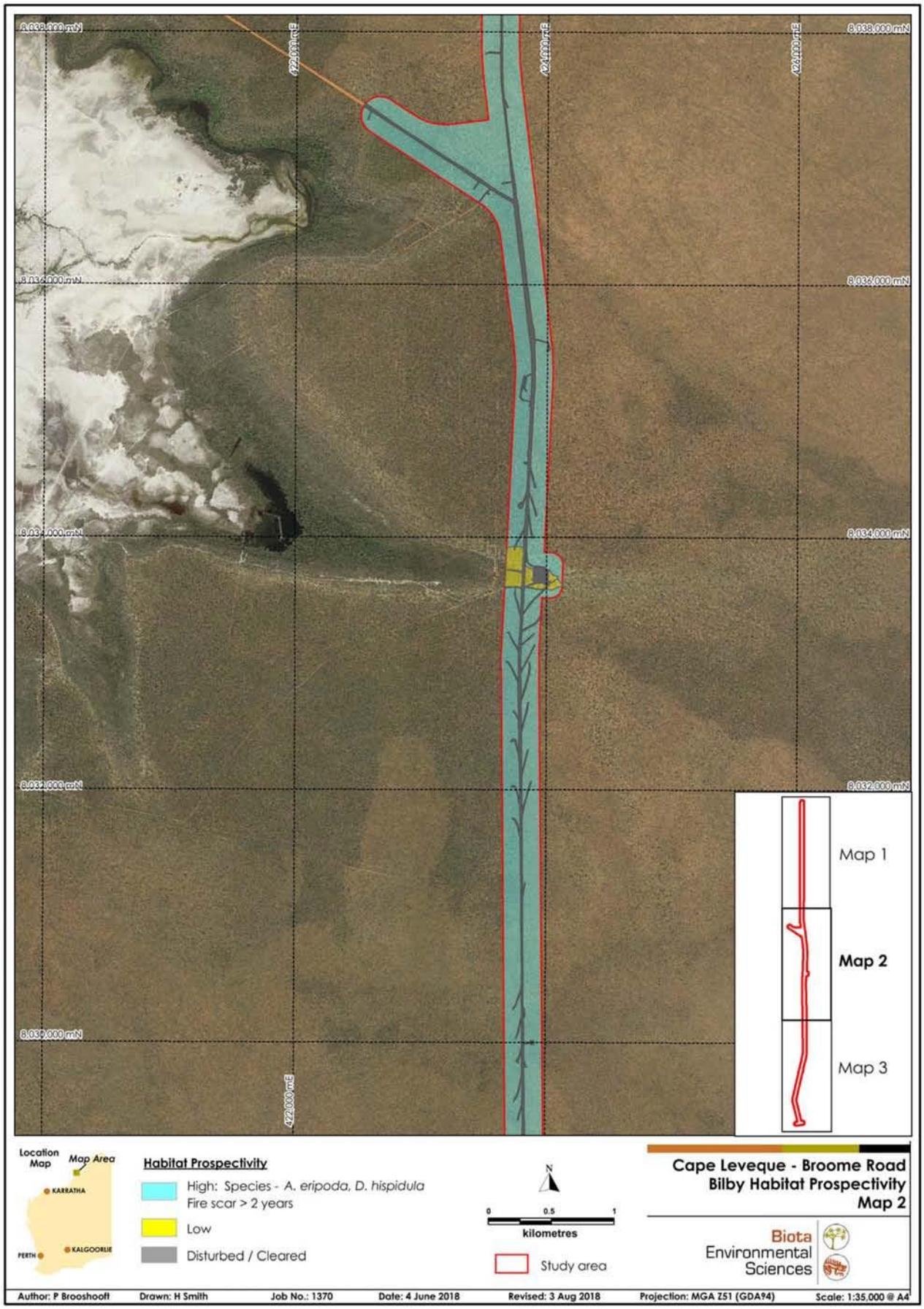

Figure 9.8: Prospective Bilby habitat within the study area (Map 2).

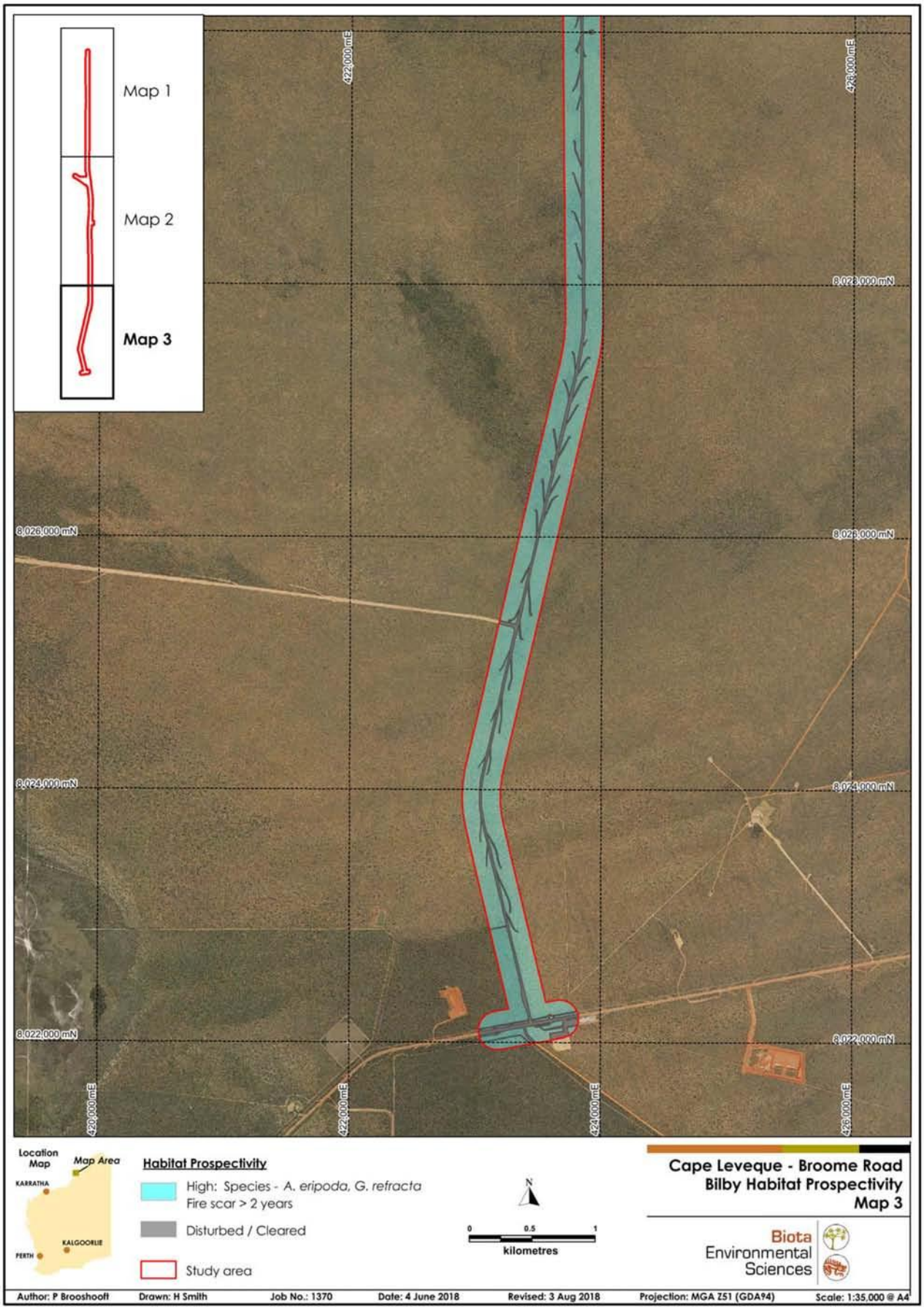

Figure 9.9: Prospective Bilby habitat within the study area (Map 3).

10.0 Conclusions

10.1 Conservation Significance of the Vegetation and Flora of the Study Area

Four vegetation units, P1, P2, P3 and D1, were recorded for the study area. None of these comprise a listed TEC or PEC. P1 was the most extensive vegetation unit within the study area, and is also typical of that occurring on pindan sandplain in the locality. As pindan sandplain is widespread and abundant, and the vegetation was dominated by common and widespread species, this unit is likely to have a broad occurrence in the wider locality.

Vegetation unit D1 is considered to be of high conservation significance, in addition to it being Groundwater Dependent Vegetation. The vegetation community extends much further (1.7 km) to the west of the study area; the vegetation occurring within the study area is very small relative to its wider extent adjoining the study area.

Vegetation units P2 and P3, are both considered to be potentially Groundwater Dependent Vegetation. Unit P3, whilst restricted in distribution within the study area, extends further (~300 m) to the northwest, and is likely to fringe additional sections of the D1 vegetation unit (based on investigation of aerial imagery). Vegetation unit P2 is likely to have similar vegetation with a broader distribution in the locality.

A total of 189 native flora species were recorded, all of which are typical of the locality. Six flora species of conservation significance were recorded; five of these have broad known distributions, and/or are poorly collected, rather being truly rare. One of these, *Corymbia paractia* (Priority 1) is restricted to the locality.

10.2 Conservation Significance of the Fauna and Habitats of the Study Area

Fauna Habitats 1 and 2 (*Corymbia* and *Bauhinia* Low Open Woodland on sandplain and *Melaleuca* woodland damplands) are not rare or restricted to the study area, and occur more widely within the region. The conservation significant species likely to occur, or potentially occurring, within the study area (see Section 5.3.2) may utilise these habitats for foraging, commuting or nesting on occasion, but are unlikely to rely upon them. Although Habitat 3, the man-made dam, is artificial, it does represent a localised and uncommon habitat type within the study area that would attract a different suite of species. Conservation significant species potentially occurring within the study area that rely in part on inundated habitats, such as the Grey Falcon, Australian Painted Snipe, Oriental Pratincole or Barn Swallow (Section 5.3.2), may utilise Habitat 3 for foraging on occasion. This habitat is also likely to be attractive to introduced species such as the European Cattle, Horse, Cat, Camel or Dog, as they rely upon free drinking water for survival. Within a regional context, however, Habitat 3 is not considered significant, as inundated environments occur elsewhere in close proximity to the study area (e.g. Willie Creek Wetland and Roebuck Plains).

10.3 Assessment of Bilby Presence and Habitat Prospectivity in the Study Area

The Bilby occurs in low densities throughout its range, and is known to be highly mobile, responding to fluctuations in resource availability by moving into areas of prospective habitat when conditions are favourable, and out of areas when resources are depleted (Cramer et al. 2016). The results of this survey indicate that habitat available within the study area is currently favourable for the Bilby and the species is present, with fresh diggings, tracks and burrows attributable to the Bilby recorded during the survey. This is also reflected in the habitat assessment, which identified 737.48 ha of High prospective habitat within the study area. In addition, the Bilby has been recorded historically from the study area (see Figure 5.4), suggesting that the area is of importance to the Bilby as viable habitat.

11.0 Glossary

ALA	Atlas of Living Australia
*	Used prior to a species name to denote introduced flora (weeds).
Annual (plant)	A plant that lives for only one year or season.
Biota	Biota Environmental Sciences
cm	centimetre
Conservation significant	A plant, animal, community or habitat that has a formally assigned conservation ranking, usually because it is recognised to be rare, unusual, new or poorly sampled (see Appendix 1).
Cover (value)	Species are quantified by estimating the "birds-eye-view" percentage of ground occupied in a survey area; the percentage is called the cover value.
DBCA	The WA Department of Biodiversity, Conservation and Attractions.
Dominant	The species that occurred most abundantly in a stratum of vegetation or in an area.
EIA	Environmental Impact Assessment
EPA	Environmental Protection Authority of Western Australia.
EPBC Act	The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.
ESA	Environmentally Sensitive Area under section 51B of the WA *Environmental Protection Act* 1986 as per the WA Environmental Protection (Environmentally Sensitive Areas) Notice 2005.
Foot traverse	Consists of walking through an area to confirm or note the vegetation and/or determine species presence (usually sampling a narrow corridor/cross section of vegetation).
IBRA	Interim Biogeographical Regionalisation for Australia.
km	Kilometre.
m	Metre.
mm	Millimetre.
Mapping note	A description of the vegetation at a point location, typically including associated species, habitat and a photograph.
MNES	Matters of National Environmental Significance listed under the EPBC Act.
Opportunistic	A species collected or recorded from outside a formal sampling site (quadrat and relevé sites for flora; trapping or systematic search sites for fauna); sometimes abbreviated to "Opp."
PEC	Priority Ecological Community (see Appendix 1).
Perennial	A plant that lives for more than two years; often with a tree or shrub growth form.
Priority species	Flora or fauna species listed by the DBCA as requiring additional information to properly evaluate their conservation significance (see Appendix 1 for more on the conservation framework).
Relevé	An unbounded flora survey site with a similar area to a standard quadrat (2,500 m^2 in the Pilbara), in which most species present are recorded.
sens. lat.	Abbreviation of *sensu lato* (Latin), meaning 'in the broad sense'.
sp. (plural: spp.)	Abbreviation of "species".
SM4BAT	A model of Song Meter by Wildlife Acoustics

Stratum (plural: strata)	A horizontal level of vegetation defined by growth habit and/or height; e.g. low trees (up to 10 m tall), tall shrubs (greater than 2 m tall), tussock grasses, hummock grasses, etc.
subsp.	Abbreviation of "subspecies".
Taxon (plural: taxa)	A taxonomic entity, typically at species level or below.
TEC	Threatened Ecological Community (see Appendix 1).
var.	Abbreviation of "variety".
WAM	WA Museum.

12.0 References

AECOM (2010). Supplementary Terrestrial Fauna and Habitat Assessment of James Price Point, WA. Unpublished report prepared for the Department of State Development, AECOM, Western Australia.

AECOM (2011a). Browse LNG Precinct Access Road Flora and Fauna Assessment. Unpublished report prepared for Main Roads WA, AECOM Australia Pty Ltd.

AECOM (2011b). Browse LNG Precinct Access Road Targeted Fauna Survey - Greater Bilby. Unpublished report prepared for Main Roads WA, AECOM Australia Pty Ltd.

Australasian Bat Society (2006). Recommendations of the Australasian Bat Society Inc for reporting standards for insectivorous bat surveys using bat detectors. *The Australian Bat Society Newsletter* 27:6–9.

Barrett, R. L. (2015). Examining range disjunctions in Australian *Terminalia* (Combretaceae) with taxonomic revision of the *T. canescens* and *T. cunninghamii* species complexes. *Australian Systematic Botany* 28:23–45.

Barrett, R. L., M. D. Barrett, K. F. Kenneally, and A. Lowrie (2015). Four new species of *Stylidium* (Stylidiaceae) from the Kimberley region of Western Australia. *Nuytsia* 26:127–141.

Beard, J. S. (1979). *Vegetation Survey of Western Australia : Kimberley. 1:1,000,000 Vegetation Series : Explanatory Notes to Sheet 1*. University of Western Australia.

Biota (2009a). A Vegetation and Flora Survey of James Price Point: Wet Season 2009. Unpublished report prepared for the Department of State Development, December 2009, Biota Environmental Sciences, Western Australia.

Biota (2009b). James Price Point Terrestrial Fauna Survey: Wet Season 2009. Unpublished report prepared for the Department of State Development, December 2009, Biota Environmental Sciences, Western Australia.

Biota (2011a). James Price Point Browse LNG Precinct Vegetation and Flora Survey - March 2010. Unpublished report prepared for Environmental Resources Management, March 2011, Biota Environmental Sciences, Western Australia.

Biota (2011b). James Price Point Vegetation Monitoring Program - Phase 1 Data Report. Unpublished report prepared for Sinclair Knight Merz, April 2011, Biota Environmental Sciences, Western Australia.

Biota (2011c). James Price Point Vegetation Monitoring Program - Phase 2 Data Report. Unpublished report prepared for Sinclair Knight Merz, November 2011, Biota Environmental Sciences, Western Australia.

Biota (2011d). James Price Point Browse LNG Precinct Targeted Terrestrial Fauna Survey - March 2010. Unpublished report prepared for Environmental Resources Management, March 2011, Biota Environmental Sciences, Western Australia.

Biota (2013). Rangelands Landform Field Guide. Internal document, Biota Environmental Sciences, Western Australia.

Biota (2018a). Gravel Pit Expansion Biological Survey. Unpublished report prepared for Main Roads Western Australia, July 2018, Biota Environmental Sciences.

Biota (2018b). Bidyadanga Road Upgrade Biological Survey. Unpublished report prepared for Main Roads Western Australia, June 2018, Biota Environmental Sciences.

Biota (2018c). Mandora Station Cattle Fodder Pivots Rare Flora Survey. Unpublished report prepared for Mandora Cattle Company Pty Ltd, May 2018, Biota Environmental Sciences.

Bureau of Meteorology (2018). Climate Data Online [WWW Document]. Retrieved from http://www.bom.gov.au/climate/data/.

Christidis, L., and W. E. Boles (2008). *Systematics and Taxonomy of Australian Birds*. CSIRO Publishing, Melbourne.

Cramer, V. A., M. A. Dziminski, R. Southgate, F. M. Carpenter, R. J. Ellis, and S. van Leeuwen (2016). A conceptual framework for habitat use and research priorities for the greater bilby (*Macrotis lagotis*) in the north of Western Australia. *Australian Mammalogy* 39(2):137–151.

CSIRO (2014). ASRIS: Australian Soil Resource Information System [WWW Document]. Retrieved from http://www.asris.csiro.au/index.html.

DAFWA (2018). Western Australian Organism List (WAOL) [WWW Document]. Department of Agriculture and Food, . Retrieved from https://www.agric.wa.gov.au/organisms.

DBCA (2016a). The conservation and management of the bilby (*Macrotis lagotis*) in the Pilbara: Progress Report. Department of Biodiversity, Conservation and Attractions, Perth, WA.

DBCA (2016b). List of Threatened Ecological Communities (TECs) endorsed by the Western Australian Minister for Environment. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, correct as at 6 October 2016.

DBCA (2017a). Guidelines for Surveys to Detect the Presence of Bilbies, and Assess the Importance of Habitat in Western Australia. Department of Biodiversity, Conservation and Attractions.

DBCA (2017b). Greater Bilby Survey: La Grange Project Area. Department of Biodiversity, Conservation and Attractions, Perth, WA.

DBCA (2017c). Priority Ecological Communities for Western Australia, Version 27. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, 30 June 2017.

DBCA (2018a). Interim Recovery Plan 2018-2023 for the Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula. Interim Recovery Plan No. 383, February 2018, Department of Biodiversity, Conservation and Attractions, Science and Conservation Service, Perth.

DBCA (2018b). Threatened and Priority Fauna List, 15 February 2018. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions.

DEC (2010). Definitions, Categories and Criteria for Threatened and Priority Ecological Communities. Species and Communities Branch, Department of Environment and Conservation, December 2010.

Department of the Environment (2018). North Australia and Rangelands Fire Information [WWW Document]. Retrieved from http://www.firenorth.org.au/nafi3/.

DoE (2013). Matters of National Environmental Significance - Significant Impact Guidelines 1.1 *Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment, Canberra, Australia.

DoEE (2018). Weeds of National Significance [WWW Document]. Department of the Environment and Energy, . Retrieved from http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html.

DSEWPaC (2012). Interim Biogeographic Regionalisation for Australia (IBRA), Version 7 (Subregions) - States and Territories. Department of Sustainability, Environment, Water, Population and Communities, Canberra. Retrieved from http://www.environment.gov.au/topics/land/national-reserve-system/science-maps-and-data/australias-bioregions-ibra.

ENV (2008a). Perpendicular Head-North Head, Packer Island, Gourdon Bay and Coulomb-Quondong Vertebrate Fauna Assessment. Unpublished report prepared for Department of Industry and Resources, ENV Australia, Western Australia.

ENV (2008b). Perpendicular Head-North Head, Packer Island, Gourdon Bay and Coulomb-Quondong Vegetation Assessment. Unpublished report prepared for Department of Industry and Resources, ENV Australia, Western Australia.

EPA (2016a). *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment*. Environmental Protection Authority, Western Australia.

EPA (2016b). *Environmental Factor Guideline: Flora and Vegetation*. Environmental Protection Authority, Western Australia.

EPA (2016c). *Technical Guidance: Terrestrial Fauna Surveys*. Environmental Protection Authority, Western Australia.

EPA (2016d). *Technical Guidance: Sampling Methods for Terrestrial Vertebrate Fauna*. Environmental Protection Authority, Western Australia.

EPA (2016e). *Environmental Factor Guideline: Terrestrial Fauna*. Environmental Protection Authority, Western Australia.

EPA (2016f). *Statement of Environmental Principles, Factors and Objectives*. Environmental Protection Authority, Western Australia.

Geological Survey of Western Australia (2011, January 13). Surface geology of Australia - 1:1,000,000 scale, Western Australia. Department of Mines and Petroleum, Western Australia.

GHD (2009a). Report for Broome North Development Area - Targeted Fauna Survey. Unpublished report prepared for LandCorp, GHD, Western Australia.

GHD (2009b). Broome North - Southern Portion (Area A). Preliminary Environmental Impact Assessment and Biological Survey. Unpublished report prepared for LandCorp, GHD, Western Australia.

GHD (2009c). Broome North - Southern Portion (Area B). Preliminary Environmental Impact Assessment and Biological Survey. Unpublished report prepared for LandCorp, GHD, Western Australia.

GHD (2013a). Cape Leveque Road Vegetation and Flora Assessment. Unpublished report prepared for Main Roads WA, GHD, Western Australia.

GHD (2013b). Cape Leveque Road Upgrade Targeted Greater Bilby Assessment. Unpublished report prepared for Main Roads WA, GHD, Western Australia.

GHD (2016a). Cape Leveque Road SLK 0 - 25 Targeted Greater Bilby Survey. Unpublished Report Prepared for Main Roads, GHD.

GHD (2016b). Cape Leveque Road SLK 25 - 102.6 Targeted Greater Bilby Survey. Unpublished Report Prepared for Main Roads, GHD.

Government of Western Australia (2018). *2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017.* Department of Biodiversity, Conservation and Attractions, Government of Western Australia, Perth, Western Australia.

Graham, G. (2003). Dampierland 2 (DL2 - Pindanland subregion). Pages 179–187 *in* J. E. May and N. L. McKenzie, editors. *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions*. Department of Conservation and Land Management, Western Australia.

Liddle, N. R. (2016). The availability and use of root-dwelling larvae as a food source for the greater bilby, *Macrotis lagotis*, in the fire prone Tanami Desert of the Northern Territory. Charles Darwin University.

McKenzie, N. L., and K. F. Kenneally (1983). Part I: Background and Environment. Pages 5–23 *Wildlife of the Dampier Peninsula, South-west Kimberley, Western Australia*. Western Australian Wildlife Research Centre, Department of Fisheries and Wildlife.

Moseby, K., T. Nano, and R. Southgate (2012). *Tales in the sand: a guide to identifying Australian arid zone fauna using spoor and other signs*. Ecological Horizons Pty Ltd.

Paul, R. J., R. J. George, and P. Gardiner (2013). A review of the Broome Sandstone aquifer in the La Grange area. Department of Agriculture and Food, Western Australia.

Payne, A., and N. Schoknecht (2011). Land Systems of the Kimberley Region, Western Australia. Department of Agriculture.

Southgate, R. (2005). The results from animal track sampling in the Western Desert Tanami Project (Coyote and Larranganni Deposits). Unpublished report prepared for Biota Environmental Sciences, Envisage Environmental Services.

Southgate, R., and S. Carthew (2007). Post-fire ephemerals and spinifex-fuelled fires: a decision model for bilby habitat management in the Tanami Desert, Australia. *International Journal of Wildland Fire* 16:741–754.

Southgate, R., M. Dziminski, R. Paltridge, A. Schubert, and G. Gaikhorst (in prep.). Verifying bilby presence and the systematic sampling of wild populations using the 2 ha sign-based monitoring protocol – with notes on aerial and ground survey techniques and asserting absence. *Australian Mammalogy*.

State of Western Australia (2018). Wildlife Conservation (Specially Protected Fauna) Notice 2017. *Western Australian Government Gazette* 9:191–203.

Triggs, B. (1996). *Tracks, Scats and Other Traces - A Field Guide to Australian Mammals*. Oxford University Press.

Trudgen, M. E. (1988). A Report on the Flora and Vegetation of the Port Kennedy Area. Unpublished report prepared for Bowman Bishaw and Associates, West Perth, M.E. Trudgen and Associates, Western Australia.

Wells, G. (2018). Targeted flora survey for Shamrock Station Irrigation Project. Memo to Cameron McDonald, Argyle Cattle Company Pty Ltd, 22 January 2018, Phoenix Environmental Sciences.

Western Australian Herbarium (1998, 2018). FloraBase - the Western Australian Flora [WWW Document]. Department of Biodiversity, Conservation and Attractions, . Retrieved from http://florabase.dpaw.wa.gov.au/.

Wildlife Acoustics (2010). *Song Meter User Manual, Model SM2, with Song Meter SM2BAT 192kHz Stereo or 384kHz Mono Ultrasonic Recorders addendum*.

Appendix 1

Framework for Conservation Significance Ranking of Species and Communities in WA

A. Definitions, Categories and Criteria for Threatened and Priority Ecological Communities (DEC 2010)

1. General Definitions

Ecological Community
A naturally occurring biological assemblage that occurs in a particular type of habitat.

Note: The scale at which biological communities are defined will often depend on the level of detail in the information source, therefore no particular scale is specified.

A **threatened ecological community** (TEC) is one which is found to fit into one of the following categories; "presumed totally destroyed", "critically endangered", "endangered" or "vulnerable".

Possible threatened ecological communities that do not meet survey criteria are added to the DBCA's Priority Ecological Community Lists under Priorities 1, 2 and 3. Ecological Communities that are adequately known, are rare but not threatened, or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.

An **assemblage** is a defined group of biological entities.

Habitat is defined as the areas in which an organism and/or assemblage of organisms lives. It includes the abiotic factors (e.g. substrate and topography), and the biotic factors.

Occurrence: a discrete example of an ecological community, separated from other examples of the same community by more than 20 metres of a different ecological community, an artificial surface or a totally destroyed community.

By ensuring that every discrete occurrence is recognised and recorded future changes in status can be readily monitored.

Adequately Surveyed is defined as follows:
"An ecological community that has been searched for thoroughly in most likely habitats, by relevant experts."

Community structure is defined as follows:
"The spatial organisation, construction and arrangement of the biological elements comprising a biological assemblage" (e.g. *Eucalyptus salmonophloia* woodland over scattered small shrubs over dense herbs; structure in a faunal assemblage could refer to trophic structure, e.g. dominance by feeders on detritus as distinct from feeders on live plants).

Definitions of **Modification** and **Destruction** of an ecological community:

Modification: "changes to some or all of ecological processes (including abiotic processes such as hydrology), species composition and community structure as a direct or indirect result of human activities. The level of damage involved could be ameliorated naturally or by human intervention."

Destruction: "modification such that reestablishment of ecological processes, species composition and community structure within the range of variability exhibited by the original community is unlikely within the foreseeable future even with positive human intervention."

Note: Modification and destruction are difficult concepts to quantify, and their application will be determined by scientific judgement. Examples of modification and total destruction are cited below:

Modification of ecological processes: The hydrology of Toolibin Lake has been altered by clearing of the catchment such that death of some of the original flora has occurred due to dependence on fresh water. The system may be bought back to a semblance of the original state by redirecting saline runoff and pumping waters of the rising underground watertable away to restore the hydrological balance. Total destruction of downstream lakes has occurred due to hydrology being altered to the point that few of the original flora or fauna species are able to tolerate the level of salinity and/or water logging.

Modification of structure: The understorey of a plant community may be altered by weed invasion due to nutrient enrichment by addition of fertiliser. Should the additional nutrients be removed from the system the balance may be restored, and the original plant species better able to compete. Total destruction may occur if additional nutrients continue to be added to the system causing the understorey to be completely replaced by weed species, and death of overstorey species due to inability to tolerate high nutrient levels.

Modification of species composition: Pollution may cause alteration of the invertebrate species present in a freshwater lake. Removal of pollutants may allow the return of the original inhabitant species. Addition of residual highly toxic substances may cause permanent changes to water quality, and total destruction of the community.

Threatening processes are defined as follows:
"Any process or activity that threatens to destroy or significantly modify the ecological community and/or affect the continuing evolutionary processes within any ecological community."

Examples of some of the continuing threatening processes in Western Australia include: general pollution; competition, predation and change induced in ecological communities as a result of introduced animals; competition and displacement of native plants by introduced species; hydrological changes; inappropriate fire regimes; diseases resulting from introduced micro-organisms; direct human exploitation and disturbance of ecological communities.

Restoration is defined as returning an ecological community to its pre-disturbance or natural state in terms of abiotic conditions, community structure and species composition.

Rehabilitation is defined as the re-establishment of ecological attributes in a damaged ecological community although the community will remain modified.

2. Definitions and Criteria for Presumed Totally Destroyed, Critically Endangered, Endangered and Vulnerable Ecological Communities

ECOLOGICAL COMMUNITIES

Presumed Totally Destroyed (PD)
An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.

An ecological community will be listed as presumed totally destroyed if there are no recent records of the community being extant and either of the following applies (A or B):

A) Records within the last 50 years have not been confirmed despite thorough searches of known or likely habitats or

B) All occurrences recorded within the last 50 years have since been destroyed

Critically Endangered (CR)
An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.

An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future. This will be determined on the basis of the best available information, by it meeting any one or more of the following criteria (A, B or C):

A) The estimated geographic range, and/or total area occupied, and/or number of discrete occurrences since European settlement have been reduced by at least 90% and either or both of the following apply (i or ii):

   i) geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is imminent (within approximately 10 years);

   ii) modification throughout its range is continuing such that in the immediate future (within approximately 10 years) the community is unlikely to be capable of being substantially rehabilitated.

B) Current distribution is limited, and one or more of the following apply (i, ii 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).

Endangered (EN)
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).

Vulnerable (VU)
An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing a high risk of total destruction or significant modification in the medium 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.

3. Definitions and Criteria for Priority Ecological Communities

PRIORITY ECOLOGICAL COMMUNITY LIST
Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community Lists under Priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community, and evaluation of conservation status, so that consideration can be given to their declaration as threatened ecological communities. Ecological Communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.

Priority One: Poorly-known ecological communities
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.

Priority Two: Poorly-known ecological communities
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.

Priority Three: Poorly known ecological communities

(i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat 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.

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.

Priority Five: Conservation Dependent ecological communities
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.

B. Categories for Flora and Fauna Species

1. Western Australian *Wildlife Conservation Act 1950*

Until all Regulations associated with the new Western Australian *Biodiversity Conservation Act 2016* are promulgated, all native flora and fauna species remain protected under the *Wildlife Conservation Act 1950,* making it an offence to take these without approval. The definition of 'take' is broad, and encompasses killing, capturing or disturbing fauna, and destroying, gathering, cutting or injuring flora. In addition to this basic level of statutory protection, a number of species are assigned an additional level of conservation significance based on the fact that there are a limited number of known populations, some of which may be under threat.

Such species are classified within a framework of 11 categories. Species of the highest conservation significance are designated as Threatened within four categories (Critically Endangered: CR, Endangered: EN, Vulnerable: V and Presumed Extinct: EX), representing those species listed in Schedules 1 to 4 of the annual Wildlife Conservation (Specially Protected Fauna) Notice and Wildlife Conservation (Rare Flora) Notice. Migratory birds that are protected under various international agreements are assigned to a separate category (IA). Conservation dependent fauna (species listed under Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice) and other specially protected fauna (those listed in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice) comprise two additional categories (Conservation Dependent: CD and Other Specially Protected: OS). Species that appear to be rare or threatened, but for which there is insufficient information to properly evaluate their conservation significance, are assigned to one of three Priority categories (Priority 1 to Priority 3), while species that are adequately known but require regular monitoring are assigned to Priority 4. The 11 categories are explained in more detail on the following pages.

Note that of the above classifications, only 'Threatened' has statutory standing. The Priority flora and fauna classifications are employed by the WA Department of Parks and Wildlife to manage and classify their database of species considered potentially rare or at risk, but these categories have no legislative status. Note also that proposals that appear likely to affect Threatened flora require formal written approval from the Minister for the Environment under Section 23(f) of the *Wildlife Conservation Act 1950,* in addition to the requirements of the *Environmental Protection (Native Vegetation Clearing) Regulations 2004*.

Department of Parks and Wildlife

CONSERVATION CODES

For Western Australian Flora and Fauna

Specially protected fauna or flora[1] are species[2] which have been adequately searched for and are deemed to be, in the wild, either rare, at risk of extinction, or otherwise in need of special protection, and have been gazetted as such.

Categories of specially protected fauna and flora are:

T **Threatened species**

Published as Specially Protected under the *Wildlife Conservation Act 1950,* and listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).

Threatened fauna is that subset of 'Specially Protected Fauna' declared to be 'likely to become extinct' pursuant to section 14(4) of the Wildlife Conservation Act.

Threatened flora is 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.

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

CR **Critically endangered species**

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 and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EN **Endangered species**

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 and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

VU **Vulnerable species**

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 and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EX **Presumed extinct species**

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 and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.

IA **Migratory birds protected under an international agreement**

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.

CD **Conservation dependent fauna**

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.

OS **Other specially protected fauna**

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.

P **Priority species**

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

1 **Priority 1: 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.

2 **Priority 2: 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.

3 **Priority 3: 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.

4 **Priority 4: 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.

[1] The definition of flora includes algae, fungi and lichens
[2]Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

Last updated 23 May 2017

2. Commonwealth EPBC Act

Many of the species that are specially protected at State level are also listed as Threatened species at the Federal level, as one of the Matters of National Environmental Significance (MNES) identified under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). These may be classified as 'critically endangered', 'endangered', 'vulnerable' or 'lower risk', consistent with IUCN categories:

1. **Critically Endangered (CR):** a taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future.
2. **Endangered (EN):** a taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future.
3. **Vulnerable (VU):** a taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future.
4. **Lower Risk (LR):** a taxon is Lower Risk when it has been evaluated, does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. Taxa included in the Lower Risk category can be separated into three subcategories:
    - **Conservation Dependent (CD).** Taxa which are the focus of a continuing taxon-specific or habitat-specific conservation program targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years.
    - **Near Threatened (NT).** Taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable.
    - **Least Concern (LC).** Taxa which do not qualify for Conservation Dependent or Near Threatened.

In addition, numerous Migratory species are listed as MNES under the EPBC Act (some of which are also listed as Threatened). Migratory species are those animals that migrate to Australia and its external territories, or pass through or over Australian waters during their annual migrations. The list of migratory species consists of those species listed under the following international conventions:

1. Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention);
2. China-Australia Migratory Bird Agreement (CAMBA);
3. Japan-Australia Migratory Bird Agreement (JAMBA); and,
4. Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

Marine species are also protected under the EPBC Act, and are listed to ensure the long-term conservation of the species. Marine species include all Australian sea snakes, seals, crocodiles, dugongs, marine turtles, seahorses and seabirds that naturally occur in the Commonwealth marine area.

Under the terms of the EPBC Act, an action (e.g. a project or development) is required to be referred to the Australian Government Environment Minister for approval if it has, will have, or is likely to have, a significant impact on an MNES. The term 'action' includes projects and developments subsequent to commencement of the Act, however there are a number of exemptions (e.g. projects in Commonwealth areas). According to Department of the Environment (2013), a 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.

Appendix 2

Database Search Results: NatureMap

NatureMap
Mapping Western Australia's biodiversity

NatureMap Species Report

Created By Guest user on 14/03/2018

Kingdom Plantae
Conservation Status Conservation Taxon (T, X, IA, S, P1-P5)
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 122° 16' 55" E,17° 46' 50" S
Buffer 40km
Group By Family

Family	Species	Records
Aizoaceae	1	1
Amaranthaceae	1	11
Asteraceae	1	2
Combretaceae	1	5
Convolvulaceae	3	9
Fabaceae	4	30
Goodeniaceae	1	4
Malvaceae	2	19
Myrtaceae	2	26
Pittosporaceae	1	11
Solanaceae	1	11
Stylidiaceae	1	2
TOTAL	**19**	**131**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Aizoaceae					
1.	16690	*Tetragonia coronata*		P3	
Amaranthaceae					
2.	2686	*Gomphrena pusilla*		P2	
Asteraceae					
3.	8246	*Thespidium basiflorum*		P1	
Combretaceae					
4.	45697	*Terminalia kumpaja*		P3	
Convolvulaceae					
5.	6607	*Bonamia oblongifolia*		P3	
6.	34797	*Jacquemontia sp. Broome (A.A. Mitchell 3028)*		P1	Y
7.	41644	*Polymeria sp. Broome (K.F. Kenneally 9759)*		P3	
Fabaceae					
8.	42183	*Acacia monticola x tumida var. kulparn*		P3	
9.	14487	*Aphyllodium glossocarpum*		P3	
10.	16498	*Aphyllodium parvifolium*		P1	
11.	13829	*Glycine pindanica*		P3	
Goodeniaceae					
12.	12514	*Goodenia byrnesii*		P3	
Malvaceae					
13.	46817	*Seringia exastia (Fringed fire-bush)*		T	
14.	46820	*Seringia katatona (Red dune fire-bush)*		P3	
Myrtaceae					
15.	16789	*Corymbia paractia*		P1	Y
16.	11425	*Lophostemon grandiflorus subsp. grandiflorus*		P3	
Pittosporaceae					
17.	3172	*Pittosporum moluccanum*		P4	
Solanaceae					
18.	14817	*Nicotiana heterantha*		P3	
Stylidiaceae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
19.	45717	*Stylidium pindanicum (Pindan Triggerplant)*		P3	

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 penny brooshooft on 27/04/2018

Current Names Only	Yes
Core Datasets Only	Yes
Species Group	Amphibians
Method	'By Circle'
Centre	122° 17' 57" E,17° 38' 32" S
Buffer	40km
Group By	Family

Family	Species	Records
Bufonidae	1	16
Hylidae	6	89
Limnodynastidae	1	2
Myobatrachidae	2	18
TOTAL	**10**	**125**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Bufonidae					
1.	42305	*Platyplectrum ornatum (Ornate Burrowing Frog)*			
Hylidae					
2.	25371	*Cyclorana australis (Giant Frog)*			
3.	25374	*Cyclorana longipes (Long-footed Frog)*			
4.	25380	*Litoria caerulea (Green Tree Frog)*			
5.	25389	*Litoria nasuta (Striped Rocket Frog)*			
6.	25391	*Litoria rothii (Northern Laughing Tree Frog)*			
7.	25392	*Litoria rubella (Little Red Tree Frog)*			
Limnodynastidae					
8.	25430	*Notaden nichollsi (Desert Spadefoot)*			
Myobatrachidae					
9.	25436	*Uperoleia aspera (Derby Toadlet)*			
10.	25446	*Uperoleia talpa (Ratcheting Toadlet)*			

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 penny brooshooft on 27/04/2018

Current Names Only	Yes
Core Datasets Only	Yes
Species Group	Amphibians
Method	'By Circle'
Centre	122° 19' 26" E,17° 52' 07" S
Buffer	40km
Group By	Family

Family	Species	Records
Bufonidae	1	6
Hylidae	6	100
Limnodynastidae	1	21
Myobatrachidae	2	14
TOTAL	**10**	**141**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Bufonidae					
1.	42305	*Platyplectrum ornatum (Ornate Burrowing Frog)*			
Hylidae					
2.	25371	*Cyclorana australis (Giant Frog)*			
3.	25374	*Cyclorana longipes (Long-footed Frog)*			
4.	25380	*Litoria caerulea (Green Tree Frog)*			
5.	25389	*Litoria nasuta (Striped Rocket Frog)*			
6.	25391	*Litoria rothii (Northern Laughing Tree Frog)*			
7.	25392	*Litoria rubella (Little Red Tree Frog)*			
Limnodynastidae					
8.	25430	*Notaden nichollsi (Desert Spadefoot)*			
Myobatrachidae					
9.	25436	*Uperoleia aspera (Derby Toadlet)*			
10.	25446	*Uperoleia talpa (Ratcheting Toadlet)*			

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 penny brooshooft on 27/04/2018

Current Names Only	Yes
Core Datasets Only	Yes
Species Group	Reptiles
Method	'By Circle'
Centre	122° 17' 57" E,17° 38' 32" S
Buffer	40km
Group By	Family

Family	Species	Records
Agamidae	11	277
Boidae	5	13
Cheloniidae	3	129
Cheluidae	1	1
Colubridae	2	3
Diplodactylidae	8	146
Elapidae	18	149
Gekkonidae	6	200
Pygopodidae	5	59
Scincidae	29	1075
Typhlopidae	2	10
Varanidae	7	62
TOTAL	**97**	**2124**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Agamidae					
1.	30831	*Amphibolurus gilberti (Ta-ta, Gilbert's Dragon)*			
2.	24862	*Chelosania brunnea (Chameleon Dragon)*			
3.	24863	*Chlamydosaurus kingii (Frill-necked Lizard)*			
4.	24865	*Ctenophorus caudicinctus subsp. caudicinctus (Ring-tailed Dragon)*			
5.	25459	*Ctenophorus isolepis (Crested Dragon, Military Dragon)*			
6.	24876	*Ctenophorus isolepis subsp. isolepis (Crested Dragon, Military Dragon)*			
7.	24882	*Ctenophorus nuchalis (Central Netted Dragon)*			
8.	24896	*Diporiphora pindan (Pindan Dragon)*			
9.	25510	*Pogona minor (Dwarf Bearded Dragon)*			
10.	24907	*Pogona minor subsp. minor (Dwarf Bearded Dragon)*			
11.	24908	*Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)*			
Boidae					
12.	25317	*Antaresia childreni (Children's Python)*			
13.	25448	*Antaresia stimsoni (Stimson's Python)*			
14.	25241	*Antaresia stimsoni subsp. stimsoni (Stimson's Python)*			
15.	25320	*Aspidites melanocephalus (Black-headed Python)*			
16.	25239	*Liasis olivaceus subsp. olivaceus (Olive Python)*			
Cheloniidae					
17.	25336	*Chelonia mydas (Green Turtle)*		T	
18.	25342	*Eretmochelys imbricata subsp. bissa (Hawksbill Turtle)*		T	
19.	25344	*Natator depressus (Flatback Turtle)*		T	
Cheluidae					
20.	42382	*Chelodina burrungandjii (Northern Long-necked Turtle)*			
Colubridae					
21.	25325	*Dendrelaphis punctulata (Green Tree Snake)*			
22.	25327	*Fordonia leucobalia (White-bellied Mangrove Snake)*			
Diplodactylidae					
23.	42372	*Amalosia rhombifer (Zigzag velvet gecko)*			
24.	24921	*Crenadactylus ocellatus subsp. rostralis (Clawless Gecko)*			
25.	24926	*Diplodactylus conspicillatus (Fat-tailed Gecko)*			
26.	30933	*Lucasium stenodactylum*			
27.	24982	*Rhynchoedura ornata (Western Beaked Gecko)*			
28.	25517	*Strophurus ciliaris*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
29.	24924	*Strophurus ciliaris subsp. aberrans*			
30.	24925	*Strophurus ciliaris subsp. ciliaris*			
Elapidae					
31.	25350	*Aipysurus apraefrontalis (Short-nosed Seasnake)*		T	
32.	25355	*Aipysurus laevis (Olive Seasnake)*			
33.	42369	*Aipysurus mosaicus (Mosaic Seasnake)*			
34.	25357	*Aipysurus tenuis (Brown-lined Seasnake)*			
35.	25334	*Brachyurophis roperi (Northern Shovel-nosed Snake)*			
36.	42390	*Demansia angusticeps*			
37.	25293	*Demansia olivacea (Olive Whipsnake)*			
38.	25362	*Ephalophis greyae*			
39.	25301	*Furina ornata (Moon Snake)*			
40.	25363	*Hydrelaps darwiniensis*			
41.	44656	*Hydrophis major (Olive-headed seasnake, greater seasnake)*			
42.	43369	*Hydrophis peronii (Spiny-headed Seasnake)*			
43.	43385	*Hydrophis stokesii (Stoke's Seasnake, Sea Snake)*			
44.	25261	*Pseudechis australis (Mulga Snake)*			
45.	42416	*Pseudonaja mengdeni (Western Brown Snake)*			
46.	25264	*Pseudonaja nuchalis (Gwardar, Northern Brown Snake)*			
47.	25268	*Simoselaps minimus (Dampierland Burrowing Snake)*		P2	
48.	25307	*Suta punctata (Spotted Snake)*			
Gekkonidae					
49.	24952	*Gehyra australis*			
50.		*Gehyra kimberleyi*			
51.	24956	*Gehyra pilbara*			
52.	24959	*Gehyra variegata*			
53.	25232	*Hemidactylus frenatus (Asian House Gecko)*	Y		
54.	24961	*Heteronotia binoei (Bynoe's Gecko)*			
Pygopodidae					
55.	24996	*Delma borea*			
56.	25004	*Delma tincta*			
57.	25005	*Lialis burtonis*			
58.	25009	*Pygopus nigriceps*			
59.	30822	*Pygopus steelescotti*			
Scincidae					
60.	25012	*Carlia amax (Two-spined Rainbow Skink)*			
61.	25015	*Carlia munda (Shaded-litter Rainbow Skink)*			
62.	25016	*Carlia rufilatus (Red-sided Rainbow Skink)*			
63.	25017	*Carlia triacantha (Desert Rainbow Skink)*			
64.	42383	*Cryptoblepharus metallicus*			
65.	30890	*Cryptoblepharus ruber*			
66.	30891	*Cryptoblepharus tytthos*			
67.	25024	*Ctenotus angusticeps (Airlie Island Ctenotus, Northwestern coastal Ctenotus)*		P3	
68.	25033	*Ctenotus colletti*			
69.	25048	*Ctenotus inornatus*			
70.	25463	*Ctenotus pantherinus (Leopard Ctenotus)*			
71.	25061	*Ctenotus pantherinus subsp. calx (Leopard Ctenotus)*			
72.	25070	*Ctenotus robustus*			
73.	25073	*Ctenotus saxatilis (Rock Ctenotus)*			
74.	25077	*Ctenotus serventyi*			
75.	42404	*Eremiascincus isolepis*			
76.	25121	*Lerista apoda*			
77.	25125	*Lerista bipes*			
78.	25138	*Lerista griffini*			
79.	25146	*Lerista labialis*			
80.	25170	*Lerista separanda (Dampierland plain slider, skink)*		P2	
81.	25184	*Menetia greyii*			
82.	25185	*Menetia maini*			
83.	25194	*Morethia ruficauda subsp. ruficauda*			
84.	25195	*Morethia storri*			
85.	25200	*Proablepharus tenuis*			
86.	25202	*Tiliqua multifasciata (Central Blue-tongue)*			
87.	25520	*Tiliqua scincoides (Eastern Blue-tongue)*			
88.	25208	*Tiliqua scincoides subsp. intermedia*			
Typhlopidae					
89.	44632	*Anilios diversus*			Y
90.	44635	*Anilios grypus*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Varanidae					
91.	25209	*Varanus acanthurus (Spiny-tailed Monitor)*			
92.	25210	*Varanus brevicauda (Short-tailed Pygmy Monitor)*			
93.	25218	*Varanus gouldii (Bungarra or Sand Monitor)*			
94.	25222	*Varanus panoptes subsp. panoptes*			
95.	44661	*Varanus sparnus (Dampier Peninsula Goanna, Dampierland Goanna)*		P1	
96.	25526	*Varanus tristis (Racehorse Monitor)*			
97.	25227	*Varanus tristis subsp. 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
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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 penny brooshooft on 27/04/2018

Current Names Only Yes
Core Datasets Only Yes
Species Group Reptiles
Method 'By Circle'
Centre 122° 19' 26" E,17° 52' 07" S
Buffer 40km
Group By Family

Family	Species	Records
Agamidae	9	185
Boidae	4	10
Cheloniidae	3	116
Cheluidae	1	1
Colubridae	1	2
Diplodactylidae	8	99
Elapidae	20	117
Gekkonidae	7	147
Pygopodidae	4	36
Scincidae	30	578
Typhlopidae	2	10
Varanidae	7	45
TOTAL	**96**	**1346**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Agamidae					
1.	30831	*Amphibolurus gilberti (Ta-ta, Gilbert's Dragon)*			
2.	24863	*Chlamydosaurus kingii (Frill-necked Lizard)*			
3.	24865	*Ctenophorus caudicinctus subsp. caudicinctus (Ring-tailed Dragon)*			
4.	24876	*Ctenophorus isolepis subsp. isolepis (Crested Dragon, Military Dragon)*			
5.	24882	*Ctenophorus nuchalis (Central Netted Dragon)*			
6.	24896	*Diporiphora pindan (Pindan Dragon)*			
7.	25510	*Pogona minor (Dwarf Bearded Dragon)*			
8.	24907	*Pogona minor subsp. minor (Dwarf Bearded Dragon)*			
9.	24908	*Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)*			
Boidae					
10.	25317	*Antaresia childreni (Children's Python)*			
11.	25448	*Antaresia stimsoni (Stimson's Python)*			
12.	25241	*Antaresia stimsoni subsp. stimsoni (Stimson's Python)*			
13.	25320	*Aspidites melanocephalus (Black-headed Python)*			
Cheloniidae					
14.	25336	*Chelonia mydas (Green Turtle)*		T	
15.	25342	*Eretmochelys imbricata subsp. bissa (Hawksbill Turtle)*		T	
16.	25344	*Natator depressus (Flatback Turtle)*		T	
Cheluidae					
17.	42382	*Chelodina burrungandjii (Northern Long-necked Turtle)*			
Colubridae					
18.	25327	*Fordonia leucobalia (White-bellied Mangrove Snake)*			
Diplodactylidae					
19.	42372	*Amalosia rhombifer (Zigzag velvet gecko)*			
20.	24921	*Crenadactylus ocellatus subsp. rostralis (Clawless Gecko)*			
21.	24926	*Diplodactylus conspicillatus (Fat-tailed Gecko)*			
22.	30933	*Lucasium stenodactylum*			
23.	24982	*Rhynchoedura ornata (Western Beaked Gecko)*			
24.	25517	*Strophurus ciliaris*			
25.	24924	*Strophurus ciliaris subsp. aberrans*			
26.	24925	*Strophurus ciliaris subsp. ciliaris*			
Elapidae					
27.	25350	*Aipysurus apraefrontalis (Short-nosed Seasnake)*		T	

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29.	42369	*Aipysurus mosaicus (Mosaic Seasnake)*			
30.	25357	*Aipysurus tenuis (Brown-lined Seasnake)*			
31.	25334	*Brachyurophis roperi (Northern Shovel-nosed Snake)*			
32.	42390	*Demansia angusticeps*			
33.	25293	*Demansia olivacea (Olive Whipsnake)*			
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35.	25301	*Furina ornata (Moon Snake)*			
36.	25363	*Hydrelaps darwiniensis*			
37.	43383	*Hydrophis kingii (Spectacled Seasnake, King's Seasnake)*			
38.	44656	*Hydrophis major (Olive-headed seasnake, greater seasnake)*			
39.	43369	*Hydrophis peronii (Spiny-headed Seasnake)*			
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41.	25261	*Pseudechis australis (Mulga Snake)*			
42.	42416	*Pseudonaja mengdeni (Western Brown Snake)*			
43.	25264	*Pseudonaja nuchalis (Gwardar, Northern Brown Snake)*			
44.	25305	*Simoselaps anomalus (Desert Banded Snake)*			
45.	25268	*Simoselaps minimus (Dampierland Burrowing Snake)*		P2	
46.	25307	*Suta punctata (Spotted Snake)*			
Gekkonidae					
47.	24952	*Gehyra australis*			
48.		*Gehyra kimberleyi*			
49.	24956	*Gehyra pilbara*			
50.	24957	*Gehyra purpurascens*			
51.	24959	*Gehyra variegata*			
52.	25232	*Hemidactylus frenatus (Asian House Gecko)*	Y		
53.	24961	*Heteronotia binoei (Bynoe's Gecko)*			
Pygopodidae					
54.	24996	*Delma borea*			
55.	25004	*Delma tincta*			
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75.	25125	*Lerista bipes*			
76.	25138	*Lerista griffini*			
77.	25146	*Lerista labialis*			
78.	25170	*Lerista separanda (Dampierland plain slider, skink)*		P2	
79.	41412	*Liopholis kintorei (Great Desert Skink, Tjakura)*		T	
80.	25184	*Menetia greyii*			
81.	25185	*Menetia maini*			
82.	25194	*Morethia ruficauda subsp. ruficauda*			
83.	25195	*Morethia storri*			
84.	25200	*Proablepharus tenuis*			
85.	25202	*Tiliqua multifasciata (Central Blue-tongue)*			
86.	25520	*Tiliqua scincoides (Eastern Blue-tongue)*			
87.	25208	*Tiliqua scincoides subsp. intermedia*			
Typhlopidae					
88.	44632	*Anilios diversus*			Y
89.	44635	*Anilios grypus*			
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Created By penny brooshooft on 27/04/2018

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Core Datasets Only Yes
Species Group Birds
Method 'By Circle'
Centre 122° 17' 57" E,17° 38' 32" S
Buffer 40km
Group By Family

Family	Species	Records
Acanthizidae	7	255
Accipitridae	25	2097
Aegothelidae	1	14
Alaudidae	2	101
Anatidae	14	839
Anhingidae	1	62
Apodidae	3	52
Ardeidae	19	917
Artamidae	7	426
Burhinidae	2	34
Cacatuidae	1	20
Campephagidae	5	481
Caprimulgidae	1	7
Casuariidae	1	4
Centropodidae	3	192
Charadriidae	14	1346
Ciconiidae	1	146
Columbidae	10	1259
Coraciidae	2	69
Corvidae	3	370
Cracticidae	4	461
Cuculidae	10	144
Dicaeidae	1	225
Dicruridae	14	1269
Estrilidae	11	333
Falconidae	10	408
Fregatidae	2	71
Glareolidae	2	70
Gruidae	1	60
Haematopodidae	2	314
Halcyonidae	6	400
Hirundinidae	5	416
Hydrobatidae	1	12
Jacanidae	1	10
Laridae	22	1441
Maluridae	8	473
Meliphagidae	22	1504
Meropidae	1	403
Motacillidae	2	5
Muscicapidae	1	1
Neosittidae	3	22
Oriolidae	1	66
Otididae	1	44
Pachycephalidae	10	824
Pardalotidae	6	147
Passeridae	1	1
Pelecanidae	1	308
Pelecanoididae	1	1
Petroicidae	7	55
Phalacrocoracidae	6	204
Phasianidae	4	57
Pittidae	1	1
Podargidae	3	86
Podicipedidae	4	216
Pomatostomidae	2	373
Procellariidae	7	21
Psittacidae	12	816
Ptilonorhynchidae	2	304
Rallidae	12	237
Recurvirostridae	4	332
Rostratulidae	1	3
Scolopacidae	33	4567
Strigidae	2	33
Sturnidae	2	279
Sulidae	2	107
Sylviidae	5	176
Threskiornithidae	4	373
Turnicidae	4	54
Tytonidae	4	21
Zosteropidae	2	234
TOTAL	**395**	**26673**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Acanthizidae					
1.	25530	*Gerygone fusca (Western Gerygone)*			
2.	25531	*Gerygone levigaster (Mangrove Gerygone)*			
3.	24273	*Gerygone levigaster subsp. levigaster (Mangrove Gerygone)*			
4.	25533	*Gerygone olivacea (White-throated Gerygone)*			
5.	24275	*Gerygone olivacea subsp. rogersi (White-throated Gerygone)*			
6.	24276	*Gerygone tenebrosa (Dusky Gerygone)*			
7.	30948	*Smicrornis brevirostris (Weebill)*			
Accipitridae					
8.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
9.	24281	*Accipiter cirrocephalus subsp. cirrocephalus (Collared Sparrowhawk)*			
10.	25536	*Accipiter fasciatus (Brown Goshawk)*			
11.	24283	*Accipiter fasciatus subsp. didimus (Brown Goshawk)*			
12.	24282	*Accipiter fasciatus subsp. fasciatus (Brown Goshawk)*			
13.	25537	*Accipiter novaehollandiae (Grey Goshawk)*			
14.	24285	*Aquila audax (Wedge-tailed Eagle)*			
15.	24288	*Circus approximans (Swamp Harrier)*			
16.	24289	*Circus assimilis (Spotted Harrier)*			
17.		*Elanus axillaris*			
18.	25540	*Elanus caeruleus (Black-shouldered Kite)*			
19.	24290	*Elanus caeruleus subsp. axillaris (Australian Black-shouldered Kite)*			
20.	24291	*Elanus scriptus (Letter-winged Kite)*		P4	
21.	24292	*Erythrotriorchis radiatus (Red Goshawk)*		T	
22.	24293	*Haliaeetus leucogaster (White-bellied Sea-Eagle)*			
23.	25541	*Haliastur indus (Brahminy Kite)*			
24.	24294	*Haliastur indus subsp. girrenera (Brahminy Kite)*			
25.	24295	*Haliastur sphenurus (Whistling Kite)*			
26.	24296	*Hamirostra isura (Square-tailed Kite)*			
27.	24297	*Hamirostra melanosternon (Black-breasted Buzzard)*			
28.	47965	*Hieraaetus morphnoides (Little Eagle)*			
29.		*Lophoictinia isura*			
30.	25542	*Milvus migrans (Black Kite)*			
31.	24298	*Milvus migrans subsp. affinis (Black Kite)*			
32.	48591	*Pandion cristatus (Osprey, Eastern Osprey)*		IA	
Aegothelidae					
33.	25544	*Aegotheles cristatus (Australian Owlet-nightjar)*			
Alaudidae					
34.	25545	*Mirafra javanica (Horsfield's Bushlark, Singing Bushlark)*			
35.	24302	*Mirafra javanica subsp. horsfieldii (Horsfield's Bushlark, Singing Bushlark)*			
Anatidae					
36.	24312	*Anas gracilis (Grey Teal)*			
37.		*Anas platyrhynchos subsp. domesticus*			
38.	24314	*Anas querquedula (Garganey)*		IA	
39.	24315	*Anas rhynchotis (Australasian Shoveler)*			
40.	24316	*Anas superciliosa (Pacific Black Duck)*			
41.	24317	*Anseranas semipalmata (Magpie Goose, Pied Goose)*			
42.	24318	*Aythya australis (Hardhead)*			
43.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
44.	24322	*Cygnus atratus (Black Swan)*			
45.	24324	*Dendrocygna arcuata (Wandering Whistling Duck, Chestnut Whistling Duck)*			
46.	24325	*Dendrocygna eytoni (Plumed Whistling Duck)*			
47.	24326	*Malacorhynchus membranaceus (Pink-eared Duck)*			
48.	24327	*Nettapus pulchellus (Green Pygmy-goose)*			
49.	25552	*Tadorna radjah (Radjah Shelduck)*			
Anhingidae					
50.	47414	*Anhinga novaehollandiae (Australasian Darter)*			
Apodidae					
51.	25554	*Apus pacificus (Fork-tailed Swift, Pacific Swift)*		IA	
52.	24334	*Apus pacificus subsp. pacificus (Fork-tailed Swift, Pacific Swift)*		IA	
53.	25555	*Hirundapus caudacutus (White-throated Needletail)*		IA	
Ardeidae					
54.	24337	*Ardea garzetta subsp. nigripes (Little Egret)*			
55.	25558	*Ardea ibis (Cattle Egret)*			
56.	25559	*Ardea intermedia (Intermediate Egret)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
57.	24339	*Ardea intermedia subsp. intermedia (Intermediate Egret)*			
58.	41324	*Ardea modesta (great egret, white egret)*			
59.	24340	*Ardea novaehollandiae (White-faced Heron)*			
60.	24341	*Ardea pacifica (White-necked Heron)*			
61.	25560	*Ardea sacra (Eastern Reef Egret, Eastern Reef Heron)*			
62.	24343	*Ardea sacra subsp. sacra (Eastern Reef Egret, Eastern Reef Heron)*			
63.		*Ardea sp.*			Y
64.	24344	*Ardea sumatrana (Great-billed Heron)*			
65.	47897	*Butorides striata (Striated Heron, Mangrove Heron)*			
66.		*Egretta garzetta*			
67.		*Egretta novaehollandiae*			
68.		*Egretta picata*			
69.	47975	*Ixobrychus dubius (Australian Little Bittern)*		P4	
70.	24347	*Ixobrychus flavicollis subsp. australis (Black Bittern (southwest subpop.), Australian Black Bittern)*		P2	
71.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
72.	48026	*Nycticorax caledonicus subsp. australasiae (Rufous Night Heron)*			
Artamidae					
73.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
74.	24352	*Artamus cinereus subsp. melanops (Black-faced Woodswallow)*			
75.	25567	*Artamus leucorynchus (White-breasted Woodswallow)*			
76.	24354	*Artamus leucorynchus subsp. leucopygialis (White-breasted Woodswallow)*			
77.	24355	*Artamus minor (Little Woodswallow)*			
78.	24356	*Artamus personatus (Masked Woodswallow)*			
79.	24357	*Artamus superciliosus (White-browed Woodswallow)*			
Burhinidae					
80.	24359	*Burhinus grallarius (Bush Stone-curlew)*			
81.	47938	*Esacus magnirostris (Beach Stone-curlew, Beach Thick-knee)*			
Cacatuidae					
82.		*Eolophus roseicapillus*			
Campephagidae					
83.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
84.	24362	*Coracina novaehollandiae subsp. novaehollandiae (Black-faced Cuckoo-shrike)*			
85.	24363	*Coracina novaehollandiae subsp. subpallida (Black-faced Cuckoo-shrike)*			
86.	25569	*Coracina papuensis (White-bellied Cuckoo-shrike, Little Cuckoo-shrike)*			
87.	24367	*Lalage tricolor (White-winged Triller)*			
Caprimulgidae					
88.	24368	*Eurostopodus argus (Spotted Nightjar)*			
Casuariidae					
89.	24470	*Dromaius novaehollandiae (Emu)*			
Centropodidae					
90.	25600	*Centropus phasianinus (Pheasant Coucal)*			
91.	24430	*Centropus phasianinus subsp. highami (Pheasant Coucal)*			
92.	30884	*Centropus phasianinus subsp. phasianinus (Pheasant Coucal)*			
Charadriidae					
93.	25574	*Charadrius dubius (Little Ringed Plover)*		IA	
94.	25575	*Charadrius leschenaultii (Greater Sand Plover)*		IA	
95.	24372	*Charadrius leschenaultii subsp. leschenaultii (Greater Sand Plover (Mongolian))*		T	
96.	25576	*Charadrius mongolus (Lesser Sand Plover)*		T	
97.	24375	*Charadrius mongolus subsp. mongolus (Lesser Sand Plover)*		T	
98.	24377	*Charadrius ruficapillus (Red-capped Plover)*			
99.	24378	*Charadrius veredus (Oriental Plover)*		IA	
100.	47937	*Elseyornis melanops (Black-fronted Dotterel)*			
101.	24379	*Erythrogonys cinctus (Red-kneed Dotterel)*			
102.	24382	*Pluvialis fulva (Pacific Golden Plover)*		IA	
103.	24383	*Pluvialis squatarola (Grey Plover)*		IA	
104.	25577	*Vanellus miles (Masked Lapwing)*			
105.	24384	*Vanellus miles subsp. miles (Masked Lapwing)*			
106.	24386	*Vanellus tricolor (Banded Lapwing)*			
Ciconiidae					
107.	25578	*Ephippiorhynchus asiaticus (Black-necked Stork)*			
Columbidae					
108.	24399	*Columba livia (Domestic Pigeon)*	Y		
109.	25584	*Ducula bicolor (Pied Imperial Pigeon)*			
110.	24401	*Geopelia cuneata (Diamond Dove)*			

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111.	24402	*Geopelia humeralis (Bar-shouldered Dove)*			
112.	25585	*Geopelia striata (Zebra Dove)*			
113.	24403	*Geopelia striata subsp. placida (Peaceful Dove)*			
114.	24404	*Geophaps plumifera (Spinifex Pigeon)*			
115.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
116.	24411	*Phaps histrionica (Flock Bronzewing, Flock Pigeon)*			
117.	30946	*Ptilinopus regina subsp. ewingii (Rose-crowned Fruit-dove)*			
Coraciidae					
118.	25591	*Eurystomus orientalis (Dollarbird)*			
119.	24415	*Eurystomus orientalis subsp. pacificus (Dollarbird)*			
Corvidae					
120.	24416	*Corvus bennetti (Little Crow)*			
121.	25593	*Corvus orru (Torresian Crow)*			
122.	24418	*Corvus orru subsp. cecilae (Western Crow)*			
Cracticidae					
123.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
124.	25595	*Cracticus tibicen (Australian Magpie)*			
125.	25596	*Cracticus torquatus (Grey Butcherbird)*			
126.	24424	*Cracticus torquatus subsp. torquatus (Grey Butcherbird)*			
Cuculidae					
127.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
128.	25599	*Cacomantis variolosus (Brush Cuckoo)*			
129.	24428	*Cacomantis variolosus subsp. variolosus (Brush Cuckoo)*			
130.	24431	*Chrysococcyx basalis (Horsfield's Bronze Cuckoo)*			
131.	24432	*Chrysococcyx lucidus subsp. plagosus (Shining Bronze Cuckoo)*			
132.	25602	*Chrysococcyx minutillus (Little Bronze Cuckoo)*			
133.	24433	*Chrysococcyx minutillus subsp. minutillus (Little Bronze Cuckoo)*			
134.	24434	*Chrysococcyx osculans (Black-eared Cuckoo)*			
135.	47919	*Cuculus optatus (Oriental Cuckoo)*		IA	
136.	25605	*Scythrops novaehollandiae (Channel-billed Cuckoo)*			
Dicaeidae					
137.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
Dicruridae					
138.	24443	*Grallina cyanoleuca (Magpie-lark)*			
139.	25610	*Myiagra inquieta (Restless Flycatcher)*			
140.	24447	*Myiagra inquieta subsp. inquieta (Restless Flycatcher)*			
141.	24448	*Myiagra inquieta subsp. nana (Restless Flycatcher)*			
142.	25611	*Myiagra rubecula (Leaden Flycatcher)*			
143.	24449	*Myiagra rubecula subsp. concinna (Leaden Flycatcher)*			
144.	25612	*Myiagra ruficollis (Broad-billed Flycatcher)*			
145.	24450	*Myiagra ruficollis subsp. mimikae (Broad-billed Flycatcher)*			
146.	48096	*Rhipidura albiscapa (Grey Fantail)*			
147.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
148.	24454	*Rhipidura leucophrys subsp. leucophrys (Willie Wagtail)*			
149.	24457	*Rhipidura phasiana (Mangrove Grey Fantail)*			
150.	25616	*Rhipidura rufiventris (Northern Fantail)*			
151.	24456	*Rhipidura rufiventris subsp. isura (Northern Fantail)*			
Estrilidae					
152.	24631	*Emblema pictum (Painted Finch)*			
153.	24632	*Erythrura gouldiae (Gouldian Finch)*		P4	
154.	24633	*Heteromunia pectoralis (Pictorella Mannikin)*			
155.	25683	*Lonchura castaneothorax (Chestnut-breasted Mannikin)*			
156.	25684	*Neochmia phaeton (Crimson Finch)*			
157.	24639	*Neochmia ruficauda subsp. clarescens (Star Finch)*			
158.	24643	*Poephila acuticauda (Long-tailed Finch)*			
159.	30872	*Taeniopygia bichenovii (Double-barred Finch)*			
160.	30873	*Taeniopygia bichenovii subsp. annulosa (Double-barred Finch)*			
161.	30870	*Taeniopygia guttata (Zebra Finch)*			
162.	30871	*Taeniopygia guttata subsp. castanotis (Zebra Finch)*			
Falconidae					
163.	25621	*Falco berigora (Brown Falcon)*			
164.	24471	*Falco berigora subsp. berigora (Brown Falcon)*			
165.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
166.	24472	*Falco cenchroides subsp. cenchroides (Australian Kestrel, Nankeen Kestrel)*			
167.	24473	*Falco hypoleucos (Grey Falcon)*		T	
168.	25623	*Falco longipennis (Australian Hobby)*			

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169.	24474	*Falco longipennis subsp. longipennis (Australian Hobby)*			
170.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
171.	24475	*Falco peregrinus subsp. macropus (Australian Peregrine Falcon)*		S	
172.	24476	*Falco subniger (Black Falcon)*			
Fregatidae					
173.	24478	*Fregata ariel (Lesser Frigatebird)*		IA	
174.	24479	*Fregata minor (great frigatebird, Greater Frigatebird)*		IA	
Glareolidae					
175.	24481	*Glareola maldivarum (Oriental Pratincole)*		IA	
176.	24482	*Stiltia isabella (Australian Pratincole)*			
Gruidae					
177.	24484	*Grus rubicunda (Brolga)*			
Haematopodidae					
178.	25627	*Haematopus fuliginosus (Sooty Oystercatcher)*			
179.	24487	*Haematopus longirostris (Pied Oystercatcher)*			
Halcyonidae					
180.	25547	*Dacelo leachii (Blue-winged Kookaburra)*			
181.	24304	*Dacelo leachii subsp. leachii (Blue-winged Kookaburra)*			
182.	25548	*Todiramphus chloris (Collared Kingfisher)*			
183.	42351	*Todiramphus pyrrhopygius (Red-backed Kingfisher)*			
184.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
185.	24309	*Todiramphus sanctus subsp. sanctus (Sacred Kingfisher)*			
Hirundinidae					
186.	47902	*Cecropis daurica (Red-rumped Swallow)*		IA	
187.	24491	*Hirundo neoxena (Welcome Swallow)*			
188.	25630	*Hirundo rustica (Barn Swallow)*		IA	
189.	48060	*Petrochelidon ariel (Fairy Martin)*			
190.	48061	*Petrochelidon nigricans (Tree Martin)*			
Hydrobatidae					
191.	24497	*Oceanites oceanicus (Wilson's Storm-petrel)*		IA	
Jacanidae					
192.	47973	*Irediparra gallinacea (Comb-crested Jacana)*			
Laridae					
193.	25634	*Anous stolidus (Common Noddy)*		IA	
194.	24505	*Anous stolidus subsp. pileatus (Common Noddy)*		IA	
195.	41332	*Chlidonias leucopterus (White-winged Black Tern, white-winged tern)*		IA	
196.		*Chroicocephalus novaehollandiae*			
197.	48587	*Hydroprogne caspia (Caspian Tern)*		IA	
198.	25637	*Larus novaehollandiae (Silver Gull)*			
199.	24511	*Larus novaehollandiae subsp. novaehollandiae (Silver Gull)*			
200.	41347	*Onychoprion anaethetus (Bridled Tern)*		IA	
201.	24517	*Stercorarius parasiticus (Arctic jaeger, Arctic Skua)*		IA	
202.	24521	*Sterna bengalensis (Lesser Crested Tern)*			
203.	24522	*Sterna bergii (Crested Tern)*			
204.	25640	*Sterna dougallii (Roseate Tern)*		IA	
205.	24524	*Sterna dougallii subsp. gracilis (Roseate Tern)*		IA	
206.	24525	*Sterna fuscata subsp. nubilosa (Sooty Tern)*			
207.	25642	*Sterna hirundo (Common Tern)*		IA	
208.	24527	*Sterna hirundo subsp. longipennis (Common Tern)*		IA	
209.	25643	*Sterna hybrida (Whiskered Tern)*			
210.	24528	*Sterna hybrida subsp. javanica (Whiskered Tern)*			
211.	48593	*Sternula albifrons (Little Tern)*		IA	
212.	48594	*Sternula nereis (Fairy Tern)*			
213.		*Thalasseus bengalensis*			
214.	48597	*Thalasseus bergii (Crested Tern)*		IA	
Maluridae					
215.	25650	*Malurus elegans (Red-winged Fairy-wren)*			
216.	25651	*Malurus lamberti (Variegated Fairy-wren)*			
217.	24544	*Malurus lamberti subsp. assimilis (Variegated Fairy-wren)*			
218.	24545	*Malurus lamberti subsp. bernieri (Shark Bay varigated fairy-wren)*		T	
219.	24546	*Malurus lamberti subsp. rogersi (Variegated Fairy-wren)*			
220.	25652	*Malurus leucopterus (White-winged Fairy-wren)*			
221.	25653	*Malurus melanocephalus (Red-backed Fairy-wren)*			
222.	24550	*Malurus melanocephalus subsp. cruentatus (Red-backed Fairy-wren)*			

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Meliphagidae					
223.	24559	*Acanthagenys rufogularis (Spiny-cheeked Honeyeater)*			
224.	24561	*Anthochaera carunculata (Red Wattlebird)*			
225.	24565	*Cissomela pectoralis (Banded Honeyeater)*			
226.	24566	*Conopophila rufogularis (Rufous-throated Honeyeater)*			
227.	24567	*Epthianura albifrons (White-fronted Chat)*			
228.	24569	*Epthianura crocea (Yellow Chat)*			
229.	24570	*Epthianura tricolor (Crimson Chat)*			
230.	42314	*Gavicalis virescens (Singing Honeyeater)*			
231.	25661	*Lichmera indistincta (Brown Honeyeater)*			
232.	24582	*Lichmera indistincta subsp. indistincta (Brown Honeyeater)*			
233.	24583	*Manorina flavigula (Yellow-throated Miner)*			
234.	24585	*Melithreptus albogularis (White-throated Honeyeater)*			
235.	25665	*Melithreptus gularis (Black-chinned Honeyeater)*			
236.	24589	*Melithreptus gularis subsp. laetior (Black-chinned Honeyeater)*			
237.	25666	*Myzomela erythrocephala (Red-headed Honeyeater)*			
238.	24590	*Myzomela erythrocephala subsp. erythrocephala (Red-headed Honeyeater)*			
239.	25668	*Philemon citreogularis (Little Friarbird)*			
240.	24592	*Philemon citreogularis subsp. citreogularis (Little Friarbird)*			
241.		*Philemon sp.*			Y
242.	42322	*Ptilotula flavescens subsp. flavescens (Yellow-tinted Honeyeater)*			
243.	42344	*Purnella albifrons (White-fronted Honeyeater)*			
244.	42348	*Stomiopera unicolor subsp. unicolor (White-gaped Honeyeater)*			
Meropidae					
245.	24598	*Merops ornatus (Rainbow Bee-eater)*			
Motacillidae					
246.	24599	*Anthus australis subsp. australis (Australian Pipit)*			
247.	25672	*Motacilla flava (Yellow Wagtail)*		IA	
Muscicapidae					
248.	47921	*Cyanoptila cyanomelana (Blue and White Flycatcher)*			Y
Neosittidae					
249.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
250.	24605	*Daphoenositta chrysoptera subsp. leucoptera (Varied Sittella, White-winged Sitella)*			
251.	24606	*Daphoenositta chrysoptera subsp. pileata (Varied Sittella, Black-capped Sitella)*			
Oriolidae					
252.	24608	*Oriolus sagittatus (Olive-backed Oriole)*			
Otididae					
253.	24610	*Ardeotis australis (Australian Bustard)*			
Pachycephalidae					
254.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
255.	24611	*Colluricincla harmonica subsp. brunnea (Grey Shrike-thrush)*			
256.	24612	*Colluricincla harmonica subsp. kolichisi (Grey Shrike-thrush)*			
257.	24613	*Colluricincla harmonica subsp. rufiventris (Grey Shrike-thrush)*			
258.	34011	*Oreoica gutturalis subsp. gutturalis (Crested Bellbird (southern))*			
259.	24620	*Pachycephala lanioides (White-breasted Whistler)*			
260.	25678	*Pachycephala melanura (Mangrove Golden Whistler)*			
261.	24621	*Pachycephala melanura subsp. melanura (Mangrove Golden Whistler)*			
262.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
263.	24624	*Pachycephala rufiventris subsp. rufiventris (Rufous Whistler)*			
Pardalotidae					
264.	24625	*Pardalotus punctatus subsp. punctatus (Spotted Pardalote)*			
265.	24627	*Pardalotus rubricatus (Red-browed Pardalote)*			
266.	25682	*Pardalotus striatus (Striated Pardalote)*			
267.	24628	*Pardalotus striatus subsp. murchisoni (Striated Pardalote)*			
268.	24629	*Pardalotus striatus subsp. uropygialis (Striated Pardalote)*			
269.	24630	*Pardalotus striatus subsp. westraliensis (Striated Pardalote)*			
Passeridae					
270.	24642	*Passer montanus (Eurasian Tree Sparrow)*	Y		
Pelecanidae					
271.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
Pelecanoididae					
272.	24649	*Pelecanoides urinatrix subsp. exsul (Common Diving Petrel)*			
Petroicidae					
273.	47997	*Melanodryas cucullata (Hooded Robin)*			

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274.	25693	*Microeca fascinans (Jacky Winter)*			
275.	24654	*Microeca fascinans subsp. assimilis (Jacky Winter)*			
276.	24655	*Microeca fascinans subsp. fascinans (Jacky Winter)*			
277.	25694	*Microeca flavigaster (Lemon-breasted Flycatcher)*			
278.	24657	*Microeca flavigaster subsp. tormenti (Kimberley Flycatcher)*			
279.	24659	*Petroica goodenovii (Red-capped Robin)*			
Phalacrocoracidae					
280.		*Microcarbo melanoleucos*			
281.	25697	*Phalacrocorax carbo (Great Cormorant)*			
282.	24664	*Phalacrocorax carbo subsp. novaehollandiae (Great Cormorant)*			
283.	24666	*Phalacrocorax melanoleucos subsp. melanoleucos (Little Pied Cormorant)*			
284.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
285.	25699	*Phalacrocorax varius (Pied Cormorant)*			
Phasianidae					
286.	25701	*Coturnix ypsilophora (Brown Quail)*			
287.	24673	*Coturnix ypsilophora subsp. australis (Brown Quail)*			
288.	24672	*Coturnix ypsilophora subsp. cervina (Brown Quail)*			
289.	24674	*Pavo cristatus (Common Peafowl, Indian Peafowl)*	Y		
Pittidae					
290.	24677	*Pitta moluccensis (Blue-winged Pitta)*			
Podargidae					
291.	25703	*Podargus strigoides (Tawny Frogmouth)*			
292.	24679	*Podargus strigoides subsp. brachypterus (Tawny Frogmouth)*			
293.	24678	*Podargus strigoides subsp. phalaenoides (Tawny Frogmouth)*			
Podicipedidae					
294.	25704	*Podiceps cristatus (Great Crested Grebe)*			
295.	24681	*Poliocephalus poliocephalus (Hoary-headed Grebe)*			
296.	25705	*Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
297.	24682	*Tachybaptus novaehollandiae subsp. novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
Pomatostomidae					
298.	25706	*Pomatostomus temporalis (Grey-crowned Babbler)*			
299.	24684	*Pomatostomus temporalis subsp. rubeculus (Grey-crowned Babbler)*			
Procellariidae					
300.	48573	*Ardenna pacifica (Wedge-tailed Shearwater)*		IA	
301.	41328	*Ardenna tenuirostris (Short-tailed Shearwater)*		IA	
302.	24685	*Bulweria bulwerii (Bulwer's Petrel)*		IA	
303.	24686	*Calonectris leucomelas (Streaked Shearwater)*		IA	
304.	24691	*Macronectes halli (Northern Giant Petrel)*		IA	
305.	24715	*Puffinus huttoni (Hutton's Shearwater)*		T	
306.	24716	*Puffinus pacificus (Wedge-tailed Shearwater)*		IA	
Psittacidae					
307.	24719	*Aprosmictus erythropterus (Red-winged Parrot)*			
308.	24726	*Cacatua roseicapilla subsp. roseicapilla (Galah)*			
309.	25716	*Cacatua sanguinea (Little Corella)*			
310.	24728	*Cacatua sanguinea subsp. sanguinea (Little Corella)*			
311.	25717	*Calyptorhynchus banksii (Red-tailed Black-Cockatoo)*			
312.	24736	*Melopsittacus undulatus (Budgerigar)*			
313.	24742	*Nymphicus hollandicus (Cockatiel)*			
314.	24752	*Polytelis alexandrae (Princess Parrot)*		P4	
315.		*Psitteuteles versicolor*			
316.	25723	*Trichoglossus haematodus (Rainbow Lorikeet)*			
317.	24754	*Trichoglossus haematodus subsp. rubritorquis (Red-collared Lorikeet)*			
318.	24756	*Trichoglossus versicolor (Varied Lorikeet)*			
Ptilonorhynchidae					
319.	25725	*Ptilonorhynchus nuchalis (Great Bowerbird)*			
320.	24758	*Ptilonorhynchus nuchalis subsp. nuchalis (Great Bowerbird)*			
Rallidae					
321.		*Amaurornis cinerea*			
322.	25727	*Fulica atra (Eurasian Coot)*			
323.	25730	*Gallirallus philippensis (Buff-banded Rail)*			
324.	24765	*Gallirallus philippensis subsp. mellori (Buff-banded Rail)*			
325.	25731	*Porphyrio porphyrio (Purple Swamphen)*			
326.	24766	*Porphyrio porphyrio subsp. melanotus (Purple Swamphen)*			
327.	24769	*Porzana fluminea (Australian Spotted Crake)*			

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328.	25732	*Porzana pusilla (Baillon's Crake)*			
329.	24771	*Porzana tabuensis (Spotless Crake)*			
330.	24772	*Rallina fasciata (Red-legged Crake)*			Y
331.		*Rallina fascinata*			Y
332.	48141	*Tribonyx ventralis (Black-tailed Native-hen)*			
Recurvirostridae					
333.	24774	*Cladorhynchus leucocephalus (Banded Stilt)*			
334.	25734	*Himantopus himantopus (Black-winged Stilt)*			
335.	24775	*Himantopus himantopus subsp. leucocephalus (Black-winged Stilt)*			
336.	24776	*Recurvirostra novaehollandiae (Red-necked Avocet)*			
Rostratulidae					
337.	48237	*Rostratula australis (Australian Painted Snipe)*		T	
Scolopacidae					
338.	41323	*Actitis hypoleucos (Common Sandpiper)*		IA	
339.	25736	*Arenaria interpres (Ruddy Turnstone)*		IA	
340.	24778	*Arenaria interpres subsp. interpres (Ruddy Turnstone)*		IA	
341.	24779	*Calidris acuminata (Sharp-tailed Sandpiper)*		IA	
342.	24780	*Calidris alba (Sanderling)*		IA	
343.	25738	*Calidris canutus (Red Knot, knot)*		IA	
344.	24783	*Calidris canutus subsp. rogersi (Red Knot (north-eastern Siberia))*		T	
345.	24784	*Calidris ferruginea (Curlew Sandpiper)*		T	
346.	24786	*Calidris melanotos (Pectoral Sandpiper)*		IA	
347.	24788	*Calidris ruficollis (Red-necked Stint)*		IA	
348.	24789	*Calidris subminuta (Long-toed Stint)*		IA	
349.	24790	*Calidris tenuirostris (Great Knot)*		T	
350.	24792	*Gallinago megala (Swinhoe's Snipe)*		IA	
351.	24793	*Gallinago stenura (Pin-tailed Snipe)*		IA	
352.	25739	*Limicola falcinellus (Broad-billed Sandpiper)*		IA	
353.	24794	*Limicola falcinellus subsp. sibiricus (Broad-billed Sandpiper)*		IA	
354.	24795	*Limnodromus semipalmatus (Asian Dowitcher)*		IA	
355.	30932	*Limosa lapponica (Bar-tailed Godwit)*		IA	
356.	24796	*Limosa lapponica subsp. menzbieri (Bar-tailed Godwit (northern Siberian))*		T	
357.	25741	*Limosa limosa (Black-tailed Godwit)*		IA	
358.	24797	*Limosa limosa subsp. melanuroides (Black-tailed Godwit)*		IA	
359.	24798	*Numenius madagascariensis (Eastern Curlew)*		T	
360.		*Numenius minatus*			Y
361.	24799	*Numenius minutus (Little Curlew, Little Whimbrel)*		IA	
362.	25742	*Numenius phaeopus (Whimbrel)*		IA	
363.	24801	*Phalaropus lobatus (Red-necked Phalarope)*		IA	
364.	24802	*Philomachus pugnax (Ruff, reeve)*		IA	
365.	24803	*Tringa brevipes (Grey-tailed Tattler)*		P4	
366.	24806	*Tringa glareola (Wood Sandpiper)*		IA	
367.	24808	*Tringa nebularia (Common Greenshank, greenshank)*		IA	
368.	24809	*Tringa stagnatilis (Marsh Sandpiper, little greenshank)*		IA	
369.	24810	*Tringa totanus (Common Redshank, redshank)*		IA	
370.	41351	*Xenus cinereus (Terek Sandpiper)*		IA	
Strigidae					
371.	25747	*Ninox connivens (Barking Owl)*			
372.	24819	*Ninox connivens subsp. connivens (Barking owl (southwest subpop.))*		P3	
Sturnidae					
373.	47954	*Gelochelidon nilotica (Gull-billed Tern)*		IA	
374.	25752	*Sturnus vulgaris (Common Starling)*	Y		
Sulidae					
375.	25754	*Sula leucogaster (Brown Booby)*		IA	
376.	24828	*Sula leucogaster subsp. plotus (Brown Booby)*		IA	
Sylviidae					
377.	25755	*Acrocephalus australis (Australian Reed Warbler)*			
378.	25756	*Cisticola exilis (Golden-headed Cisticola)*			
379.	24835	*Cisticola exilis subsp. exilis (Golden-headed Cisticola)*			
380.	25758	*Megalurus gramineus (Little Grassbird)*			
381.	25759	*Megalurus timoriensis (Tawny Grassbird)*			
Threskiornithidae					
382.	24841	*Platalea flavipes (Yellow-billed Spoonbill)*			
383.	24842	*Platalea regia (Royal Spoonbill)*			
384.	24843	*Plegadis falcinellus (Glossy Ibis)*		IA	
385.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			

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Turnicidae					
386.	34149	*Turnix castanota (Chestnut-backed Button-quail)*			
387.	48145	*Turnix maculosus (Red-backed Button-quail)*			
388.	24848	*Turnix pyrrhothorax (Red-chested Button-quail)*			
389.	24851	*Turnix velox (Little Button-quail)*			
Tytonidae					
390.	25762	*Tyto alba (Barn Owl)*			
391.	24852	*Tyto alba subsp. delicatula (Barn Owl)*			
392.	34015	*Tyto longimembris (Eastern Grass Owl)*			
393.	24855	*Tyto novaehollandiae subsp. novaehollandiae (Masked Owl (southwest))*		P3	
Zosteropidae					
394.	25765	*Zosterops lateralis (Grey-breasted White-eye, Silvereye)*			
395.	24857	*Zosterops luteus (Yellow White-eye)*			

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 penny brooshooft on 30/04/2018

Current Names Only Yes
Core Datasets Only Yes
Species Group Birds
Method 'By Circle'
Centre 122° 19' 26" E,17° 52' 07" S
Buffer 40km
Group By Family

Family	Species	Records
Acanthizidae	7	288
Accipitridae	25	2522
Aegothelidae	1	11
Alaudidae	2	165
Anatidae	17	1240
Anhingidae	1	87
Apodidae	3	49
Ardeidae	20	1108
Artamidae	7	515
Burhinidae	2	36
Cacatuidae	1	37
Campephagidae	5	506
Caprimulgidae	1	6
Casuariidae	1	2
Centropodidae	3	190
Charadriidae	14	1610
Ciconiidae	1	172
Columbidae	10	1305
Coraciidae	2	67
Corvidae	3	438
Cracticidae	4	501
Cuculidae	8	160
Dicaeidae	1	229
Dicruridae	13	1460
Estrilidae	11	431
Falconidae	9	527
Fregatidae	2	57
Glareolidae	2	150
Gruidae	1	133
Haematopodidae	2	316
Halcyonidae	6	411
Hirundinidae	5	498
Hydrobatidae	1	12
Jacanidae	1	24
Laridae	23	1611
Maluridae	7	417
Meliphagidae	23	1423
Meropidae	1	423
Motacillidae	1	2
Muscicapidae	1	1
Neosittidae	2	7
Oriolidae	1	68
Otididae	1	72
Pachycephalidae	10	759
Pardalotidae	6	91
Passeridae	1	1
Pelecanidae	1	330
Pelecanoididae	1	1
Petroicidae	5	66
Phalacrocoracidae	6	285
Phasianidae	4	54
Pittidae	1	1
Podargidae	2	81
Podicipedidae	4	322
Pomatostomidae	2	379
Procellariidae	7	22
Psittacidae	11	795
Ptilonorhynchidae	2	297
Rallidae	12	301
Recurvirostridae	4	408
Rostratulidae	1	8
Scolopacidae	33	4981
Strigidae	2	33
Sturnidae	2	332
Sulidae	2	130
Sylviidae	5	218
Threskiornithidae	4	530
Turnicidae	4	58
Tytonidae	3	19
Zosteropidae	2	240
TOTAL	**389**	**30029**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Acanthizidae					
1.	25530	*Gerygone fusca (Western Gerygone)*			
2.	25531	*Gerygone levigaster (Mangrove Gerygone)*			
3.	24273	*Gerygone levigaster subsp. levigaster (Mangrove Gerygone)*			
4.	25533	*Gerygone olivacea (White-throated Gerygone)*			
5.	24275	*Gerygone olivacea subsp. rogersi (White-throated Gerygone)*			
6.	24276	*Gerygone tenebrosa (Dusky Gerygone)*			
7.	30948	*Smicrornis brevirostris (Weebill)*			
Accipitridae					
8.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
9.	24281	*Accipiter cirrocephalus subsp. cirrocephalus (Collared Sparrowhawk)*			
10.	25536	*Accipiter fasciatus (Brown Goshawk)*			
11.	24283	*Accipiter fasciatus subsp. didimus (Brown Goshawk)*			
12.	24282	*Accipiter fasciatus subsp. fasciatus (Brown Goshawk)*			
13.	25537	*Accipiter novaehollandiae (Grey Goshawk)*			
14.	24285	*Aquila audax (Wedge-tailed Eagle)*			
15.	24288	*Circus approximans (Swamp Harrier)*			
16.	24289	*Circus assimilis (Spotted Harrier)*			
17.		*Elanus axillaris*			
18.	25540	*Elanus caeruleus (Black-shouldered Kite)*			
19.	24290	*Elanus caeruleus subsp. axillaris (Australian Black-shouldered Kite)*			
20.	24291	*Elanus scriptus (Letter-winged Kite)*		P4	
21.	24292	*Erythrotriorchis radiatus (Red Goshawk)*		T	
22.	24293	*Haliaeetus leucogaster (White-bellied Sea-Eagle)*			
23.	25541	*Haliastur indus (Brahminy Kite)*			
24.	24294	*Haliastur indus subsp. girrenera (Brahminy Kite)*			
25.	24295	*Haliastur sphenurus (Whistling Kite)*			
26.	24296	*Hamirostra isura (Square-tailed Kite)*			
27.	24297	*Hamirostra melanosternon (Black-breasted Buzzard)*			
28.	47965	*Hieraaetus morphnoides (Little Eagle)*			
29.		*Lophoictinia isura*			
30.	25542	*Milvus migrans (Black Kite)*			
31.	24298	*Milvus migrans subsp. affinis (Black Kite)*			
32.	48591	*Pandion cristatus (Osprey, Eastern Osprey)*		IA	
Aegothelidae					
33.	25544	*Aegotheles cristatus (Australian Owlet-nightjar)*			
Alaudidae					
34.	25545	*Mirafra javanica (Horsfield's Bushlark, Singing Bushlark)*			
35.	24302	*Mirafra javanica subsp. horsfieldii (Horsfield's Bushlark, Singing Bushlark)*			
Anatidae					
36.	24310	*Anas castanea (Chestnut Teal)*			
37.	24312	*Anas gracilis (Grey Teal)*			
38.		*Anas platyrhynchos subsp. domesticus*			
39.	24314	*Anas querquedula (Garganey)*		IA	
40.	24315	*Anas rhynchotis (Australasian Shoveler)*			
41.	24316	*Anas superciliosa (Pacific Black Duck)*			
42.	24317	*Anseranas semipalmata (Magpie Goose, Pied Goose)*			
43.	24318	*Aythya australis (Hardhead)*			
44.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
45.	24322	*Cygnus atratus (Black Swan)*			
46.	24324	*Dendrocygna arcuata (Wandering Whistling Duck, Chestnut Whistling Duck)*			
47.	24325	*Dendrocygna eytoni (Plumed Whistling Duck)*			
48.	24326	*Malacorhynchus membranaceus (Pink-eared Duck)*			
49.	24327	*Nettapus pulchellus (Green Pygmy-goose)*			
50.	24329	*Stictonetta naevosa (Freckled Duck)*			
51.	25552	*Tadorna radjah (Radjah Shelduck)*			
52.	24331	*Tadorna tadornoides (Australian Shelduck, Mountain Duck)*			
Anhingidae					
53.	47414	*Anhinga novaehollandiae (Australasian Darter)*			
Apodidae					
54.	25554	*Apus pacificus (Fork-tailed Swift, Pacific Swift)*		IA	
55.	24334	*Apus pacificus subsp. pacificus (Fork-tailed Swift, Pacific Swift)*		IA	
56.	25555	*Hirundapus caudacutus (White-throated Needletail)*		IA	
Ardeidae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
57.	24337	*Ardea garzetta subsp. nigripes (Little Egret)*			
58.	25558	*Ardea ibis (Cattle Egret)*			
59.	25559	*Ardea intermedia (Intermediate Egret)*			
60.	24339	*Ardea intermedia subsp. intermedia (Intermediate Egret)*			
61.	41324	*Ardea modesta (great egret, white egret)*			
62.	24340	*Ardea novaehollandiae (White-faced Heron)*			
63.	24341	*Ardea pacifica (White-necked Heron)*			
64.	25560	*Ardea sacra (Eastern Reef Egret, Eastern Reef Heron)*			
65.	24343	*Ardea sacra subsp. sacra (Eastern Reef Egret, Eastern Reef Heron)*			
66.		*Ardea sp.*			Y
67.	24344	*Ardea sumatrana (Great-billed Heron)*			
68.	47897	*Butorides striata (Striated Heron, Mangrove Heron)*			
69.		*Egretta garzetta*			
70.		*Egretta novaehollandiae*			
71.		*Egretta picata*			
72.	47975	*Ixobrychus dubius (Australian Little Bittern)*		P4	
73.	25562	*Ixobrychus flavicollis (Black Bittern)*			
74.	24347	*Ixobrychus flavicollis subsp. australis (Black Bittern (southwest subpop.), Australian Black Bittern)*		P2	
75.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
76.	48026	*Nycticorax caledonicus subsp. australasiae (Rufous Night Heron)*			
Artamidae					
77.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
78.	24352	*Artamus cinereus subsp. melanops (Black-faced Woodswallow)*			
79.	25567	*Artamus leucorynchus (White-breasted Woodswallow)*			
80.	24354	*Artamus leucorynchus subsp. leucopygialis (White-breasted Woodswallow)*			
81.	24355	*Artamus minor (Little Woodswallow)*			
82.	24356	*Artamus personatus (Masked Woodswallow)*			
83.	24357	*Artamus superciliosus (White-browed Woodswallow)*			
Burhinidae					
84.	24359	*Burhinus grallarius (Bush Stone-curlew)*			
85.	47938	*Esacus magnirostris (Beach Stone-curlew, Beach Thick-knee)*			
Cacatuidae					
86.		*Eolophus roseicapillus*			
Campephagidae					
87.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
88.	24362	*Coracina novaehollandiae subsp. novaehollandiae (Black-faced Cuckoo-shrike)*			
89.	24363	*Coracina novaehollandiae subsp. subpallida (Black-faced Cuckoo-shrike)*			
90.	25569	*Coracina papuensis (White-bellied Cuckoo-shrike, Little Cuckoo-shrike)*			
91.	24367	*Lalage tricolor (White-winged Triller)*			
Caprimulgidae					
92.	24368	*Eurostopodus argus (Spotted Nightjar)*			
Casuariidae					
93.	24470	*Dromaius novaehollandiae (Emu)*			
Centropodidae					
94.	25600	*Centropus phasianinus (Pheasant Coucal)*			
95.	24430	*Centropus phasianinus subsp. highami (Pheasant Coucal)*			
96.	30884	*Centropus phasianinus subsp. phasianinus (Pheasant Coucal)*			
Charadriidae					
97.	25574	*Charadrius dubius (Little Ringed Plover)*		IA	
98.	25575	*Charadrius leschenaultii (Greater Sand Plover)*		IA	
99.	24372	*Charadrius leschenaultii subsp. leschenaultii (Greater Sand Plover (Mongolian))*		T	
100.	25576	*Charadrius mongolus (Lesser Sand Plover)*		T	
101.	24375	*Charadrius mongolus subsp. mongolus (Lesser Sand Plover)*		T	
102.	24377	*Charadrius ruficapillus (Red-capped Plover)*			
103.	24378	*Charadrius veredus (Oriental Plover)*		IA	
104.	47937	*Elseyornis melanops (Black-fronted Dotterel)*			
105.	24379	*Erythrogonys cinctus (Red-kneed Dotterel)*			
106.	24382	*Pluvialis fulva (Pacific Golden Plover)*		IA	
107.	24383	*Pluvialis squatarola (Grey Plover)*		IA	
108.	25577	*Vanellus miles (Masked Lapwing)*			
109.	24384	*Vanellus miles subsp. miles (Masked Lapwing)*			
110.	24386	*Vanellus tricolor (Banded Lapwing)*			
Ciconiidae					
111.	25578	*Ephippiorhynchus asiaticus (Black-necked Stork)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Columbidae					
112.	24399	*Columba livia (Domestic Pigeon)*	Y		
113.	25584	*Ducula bicolor (Pied Imperial Pigeon)*			
114.	24401	*Geopelia cuneata (Diamond Dove)*			
115.	24402	*Geopelia humeralis (Bar-shouldered Dove)*			
116.	25585	*Geopelia striata (Zebra Dove)*			
117.	24403	*Geopelia striata subsp. placida (Peaceful Dove)*			
118.	24404	*Geophaps plumifera (Spinifex Pigeon)*			
119.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
120.	24411	*Phaps histrionica (Flock Bronzewing, Flock Pigeon)*			
121.	30946	*Ptilinopus regina subsp. ewingii (Rose-crowned Fruit-dove)*			
Coraciidae					
122.	25591	*Eurystomus orientalis (Dollarbird)*			
123.	24415	*Eurystomus orientalis subsp. pacificus (Dollarbird)*			
Corvidae					
124.	24416	*Corvus bennetti (Little Crow)*			
125.	25593	*Corvus orru (Torresian Crow)*			
126.	24418	*Corvus orru subsp. cecilae (Western Crow)*			
Cracticidae					
127.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
128.	25595	*Cracticus tibicen (Australian Magpie)*			
129.	25596	*Cracticus torquatus (Grey Butcherbird)*			
130.	24424	*Cracticus torquatus subsp. torquatus (Grey Butcherbird)*			
Cuculidae					
131.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
132.	25599	*Cacomantis variolosus (Brush Cuckoo)*			
133.	24428	*Cacomantis variolosus subsp. variolosus (Brush Cuckoo)*			
134.	24431	*Chrysococcyx basalis (Horsfield's Bronze Cuckoo)*			
135.	24433	*Chrysococcyx minutillus subsp. minutillus (Little Bronze Cuckoo)*			
136.	24434	*Chrysococcyx osculans (Black-eared Cuckoo)*			
137.	47919	*Cuculus optatus (Oriental Cuckoo)*		IA	
138.	25605	*Scythrops novaehollandiae (Channel-billed Cuckoo)*			
Dicaeidae					
139.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
Dicruridae					
140.	24443	*Grallina cyanoleuca (Magpie-lark)*			
141.	25610	*Myiagra inquieta (Restless Flycatcher)*			
142.	24447	*Myiagra inquieta subsp. inquieta (Restless Flycatcher)*			
143.	24448	*Myiagra inquieta subsp. nana (Restless Flycatcher)*			
144.	25611	*Myiagra rubecula (Leaden Flycatcher)*			
145.	25612	*Myiagra ruficollis (Broad-billed Flycatcher)*			
146.	24450	*Myiagra ruficollis subsp. mimikae (Broad-billed Flycatcher)*			
147.	48096	*Rhipidura albiscapa (Grey Fantail)*			
148.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
149.	24454	*Rhipidura leucophrys subsp. leucophrys (Willie Wagtail)*			
150.	24457	*Rhipidura phasiana (Mangrove Grey Fantail)*			
151.	25616	*Rhipidura rufiventris (Northern Fantail)*			
152.	24456	*Rhipidura rufiventris subsp. isura (Northern Fantail)*			
Estrilidae					
153.	24631	*Emblema pictum (Painted Finch)*			
154.	24632	*Erythrura gouldiae (Gouldian Finch)*		P4	
155.	24633	*Heteromunia pectoralis (Pictorella Mannikin)*			
156.	25683	*Lonchura castaneothorax (Chestnut-breasted Mannikin)*			
157.	25684	*Neochmia phaeton (Crimson Finch)*			
158.	24639	*Neochmia ruficauda subsp. clarescens (Star Finch)*			
159.	24643	*Poephila acuticauda (Long-tailed Finch)*			
160.	30872	*Taeniopygia bichenovii (Double-barred Finch)*			
161.	30873	*Taeniopygia bichenovii subsp. annulosa (Double-barred Finch)*			
162.	30870	*Taeniopygia guttata (Zebra Finch)*			
163.	30871	*Taeniopygia guttata subsp. castanotis (Zebra Finch)*			
Falconidae					
164.	25621	*Falco berigora (Brown Falcon)*			
165.	24471	*Falco berigora subsp. berigora (Brown Falcon)*			
166.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
167.	24472	*Falco cenchroides subsp. cenchroides (Australian Kestrel, Nankeen Kestrel)*			
168.	24473	*Falco hypoleucos (Grey Falcon)*		T	

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
169.	25623	*Falco longipennis (Australian Hobby)*			
170.	24474	*Falco longipennis subsp. longipennis (Australian Hobby)*			
171.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
172.	24476	*Falco subniger (Black Falcon)*			
Fregatidae					
173.	24478	*Fregata ariel (Lesser Frigatebird)*		IA	
174.	24479	*Fregata minor (great frigatebird, Greater Frigatebird)*		IA	
Glareolidae					
175.	24481	*Glareola maldivarum (Oriental Pratincole)*		IA	
176.	24482	*Stiltia isabella (Australian Pratincole)*			
Gruidae					
177.	24484	*Grus rubicunda (Brolga)*			
Haematopodidae					
178.	25627	*Haematopus fuliginosus (Sooty Oystercatcher)*			
179.	24487	*Haematopus longirostris (Pied Oystercatcher)*			
Halcyonidae					
180.	25547	*Dacelo leachii (Blue-winged Kookaburra)*			
181.	24304	*Dacelo leachii subsp. leachii (Blue-winged Kookaburra)*			
182.	25548	*Todiramphus chloris (Collared Kingfisher)*			
183.	42351	*Todiramphus pyrrhopygius (Red-backed Kingfisher)*			
184.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
185.	24309	*Todiramphus sanctus subsp. sanctus (Sacred Kingfisher)*			
Hirundinidae					
186.	47902	*Cecropis daurica (Red-rumped Swallow)*		IA	
187.	24491	*Hirundo neoxena (Welcome Swallow)*			
188.	25630	*Hirundo rustica (Barn Swallow)*		IA	
189.	48060	*Petrochelidon ariel (Fairy Martin)*			
190.	48061	*Petrochelidon nigricans (Tree Martin)*			
Hydrobatidae					
191.	24497	*Oceanites oceanicus (Wilson's Storm-petrel)*		IA	
Jacanidae					
192.	47973	*Irediparra gallinacea (Comb-crested Jacana)*			
Laridae					
193.	25634	*Anous stolidus (Common Noddy)*		IA	
194.	24505	*Anous stolidus subsp. pileatus (Common Noddy)*		IA	
195.	41332	*Chlidonias leucopterus (White-winged Black Tern, white-winged tern)*		IA	
196.		*Chroicocephalus novaehollandiae*			
197.	48587	*Hydroprogne caspia (Caspian Tern)*		IA	
198.	25637	*Larus novaehollandiae (Silver Gull)*			
199.	24511	*Larus novaehollandiae subsp. novaehollandiae (Silver Gull)*			
200.	41347	*Onychoprion anaethetus (Bridled Tern)*		IA	
201.		*Onychoprion fuscata*			
202.	24517	*Stercorarius parasiticus (Arctic jaeger, Arctic Skua)*		IA	
203.	24521	*Sterna bengalensis (Lesser Crested Tern)*			
204.	24522	*Sterna bergii (Crested Tern)*			
205.	25640	*Sterna dougallii (Roseate Tern)*		IA	
206.	24524	*Sterna dougallii subsp. gracilis (Roseate Tern)*		IA	
207.	24525	*Sterna fuscata subsp. nubilosa (Sooty Tern)*			
208.	25642	*Sterna hirundo (Common Tern)*		IA	
209.	24527	*Sterna hirundo subsp. longipennis (Common Tern)*		IA	
210.	25643	*Sterna hybrida (Whiskered Tern)*			
211.	24528	*Sterna hybrida subsp. javanica (Whiskered Tern)*			
212.	48593	*Sternula albifrons (Little Tern)*		IA	
213.	48594	*Sternula nereis (Fairy Tern)*			
214.		*Thalasseus bengalensis*			
215.	48597	*Thalasseus bergii (Crested Tern)*		IA	
Maluridae					
216.	25650	*Malurus elegans (Red-winged Fairy-wren)*			
217.	25651	*Malurus lamberti (Variegated Fairy-wren)*			
218.	24544	*Malurus lamberti subsp. assimilis (Variegated Fairy-wren)*			
219.	24545	*Malurus lamberti subsp. bernieri (Shark Bay varigated fairy-wren)*		T	
220.	24546	*Malurus lamberti subsp. rogersi (Variegated Fairy-wren)*			
221.	25653	*Malurus melanocephalus (Red-backed Fairy-wren)*			
222.	24550	*Malurus melanocephalus subsp. cruentatus (Red-backed Fairy-wren)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Meliphagidae					
223.	24559	*Acanthagenys rufogularis (Spiny-cheeked Honeyeater)*			
224.	24561	*Anthochaera carunculata (Red Wattlebird)*			
225.	24564	*Certhionyx variegatus (Pied Honeyeater)*			
226.	24565	*Cissomela pectoralis (Banded Honeyeater)*			
227.	24566	*Conopophila rufogularis (Rufous-throated Honeyeater)*			
228.	24568	*Epthianura aurifrons (Orange Chat)*			
229.	24569	*Epthianura crocea (Yellow Chat)*			
230.	24570	*Epthianura tricolor (Crimson Chat)*			
231.	42314	*Gavicalis virescens (Singing Honeyeater)*			
232.	25661	*Lichmera indistincta (Brown Honeyeater)*			
233.	24582	*Lichmera indistincta subsp. indistincta (Brown Honeyeater)*			
234.	24583	*Manorina flavigula (Yellow-throated Miner)*			
235.	24585	*Melithreptus albogularis (White-throated Honeyeater)*			
236.	25665	*Melithreptus gularis (Black-chinned Honeyeater)*			
237.	24589	*Melithreptus gularis subsp. laetior (Black-chinned Honeyeater)*			
238.	25666	*Myzomela erythrocephala (Red-headed Honeyeater)*			
239.	24590	*Myzomela erythrocephala subsp. erythrocephala (Red-headed Honeyeater)*			
240.	25668	*Philemon citreogularis (Little Friarbird)*			
241.	24592	*Philemon citreogularis subsp. citreogularis (Little Friarbird)*			
242.		*Philemon sp.*			Y
243.	42322	*Ptilotula flavescens subsp. flavescens (Yellow-tinted Honeyeater)*			
244.	42344	*Purnella albifrons (White-fronted Honeyeater)*			
245.	42348	*Stomiopera unicolor subsp. unicolor (White-gaped Honeyeater)*			
Meropidae					
246.	24598	*Merops ornatus (Rainbow Bee-eater)*			
Motacillidae					
247.	25672	*Motacilla flava (Yellow Wagtail)*		IA	
Muscicapidae					
248.	47921	*Cyanoptila cyanomelana (Blue and White Flycatcher)*			Y
Neosittidae					
249.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
250.	24605	*Daphoenositta chrysoptera subsp. leucoptera (Varied Sittella, White-winged Sitella)*			
Oriolidae					
251.	24608	*Oriolus sagittatus (Olive-backed Oriole)*			
Otididae					
252.	24610	*Ardeotis australis (Australian Bustard)*			
Pachycephalidae					
253.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
254.	24611	*Colluricincla harmonica subsp. brunnea (Grey Shrike-thrush)*			
255.	24612	*Colluricincla harmonica subsp. kolichisi (Grey Shrike-thrush)*			
256.	24613	*Colluricincla harmonica subsp. rufiventris (Grey Shrike-thrush)*			
257.	34011	*Oreoica gutturalis subsp. gutturalis (Crested Bellbird (southern))*			
258.	24620	*Pachycephala lanioides (White-breasted Whistler)*			
259.	25678	*Pachycephala melanura (Mangrove Golden Whistler)*			
260.	24621	*Pachycephala melanura subsp. melanura (Mangrove Golden Whistler)*			
261.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
262.	24624	*Pachycephala rufiventris subsp. rufiventris (Rufous Whistler)*			
Pardalotidae					
263.	24625	*Pardalotus punctatus subsp. punctatus (Spotted Pardalote)*			
264.	24627	*Pardalotus rubricatus (Red-browed Pardalote)*			
265.	25682	*Pardalotus striatus (Striated Pardalote)*			
266.	24628	*Pardalotus striatus subsp. murchisoni (Striated Pardalote)*			
267.	24629	*Pardalotus striatus subsp. uropygialis (Striated Pardalote)*			
268.	24630	*Pardalotus striatus subsp. westraliensis (Striated Pardalote)*			
Passeridae					
269.	24642	*Passer montanus (Eurasian Tree Sparrow)*	Y		
Pelecanidae					
270.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
Pelecanoididae					
271.	24649	*Pelecanoides urinatrix subsp. exsul (Common Diving Petrel)*			
Petroicidae					
272.	47997	*Melanodryas cucullata (Hooded Robin)*			
273.	25693	*Microeca fascinans (Jacky Winter)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
274.	25694	*Microeca flavigaster (Lemon-breasted Flycatcher)*			
275.	24657	*Microeca flavigaster subsp. tormenti (Kimberley Flycatcher)*			
276.	24659	*Petroica goodenovii (Red-capped Robin)*			
Phalacrocoracidae					
277.		*Microcarbo melanoleucos*			
278.	25697	*Phalacrocorax carbo (Great Cormorant)*			
279.	24664	*Phalacrocorax carbo subsp. novaehollandiae (Great Cormorant)*			
280.	24666	*Phalacrocorax melanoleucos subsp. melanoleucos (Little Pied Cormorant)*			
281.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
282.	25699	*Phalacrocorax varius (Pied Cormorant)*			
Phasianidae					
283.	25701	*Coturnix ypsilophora (Brown Quail)*			
284.	24673	*Coturnix ypsilophora subsp. australis (Brown Quail)*			
285.	24672	*Coturnix ypsilophora subsp. cervina (Brown Quail)*			
286.	24674	*Pavo cristatus (Common Peafowl, Indian Peafowl)*	Y		
Pittidae					
287.	24677	*Pitta moluccensis (Blue-winged Pitta)*			
Podargidae					
288.	25703	*Podargus strigoides (Tawny Frogmouth)*			
289.	24678	*Podargus strigoides subsp. phalaenoides (Tawny Frogmouth)*			
Podicipedidae					
290.	25704	*Podiceps cristatus (Great Crested Grebe)*			
291.	24681	*Poliocephalus poliocephalus (Hoary-headed Grebe)*			
292.	25705	*Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
293.	24682	*Tachybaptus novaehollandiae subsp. novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
Pomatostomidae					
294.	25706	*Pomatostomus temporalis (Grey-crowned Babbler)*			
295.	24684	*Pomatostomus temporalis subsp. rubeculus (Grey-crowned Babbler)*			
Procellariidae					
296.	48573	*Ardenna pacifica (Wedge-tailed Shearwater)*		IA	
297.	41328	*Ardenna tenuirostris (Short-tailed Shearwater)*		IA	
298.	24685	*Bulweria bulwerii (Bulwer's Petrel)*		IA	
299.	24686	*Calonectris leucomelas (Streaked Shearwater)*		IA	
300.	24691	*Macronectes halli (Northern Giant Petrel)*		IA	
301.	24715	*Puffinus huttoni (Hutton's Shearwater)*		T	
302.	24716	*Puffinus pacificus (Wedge-tailed Shearwater)*		IA	
Psittacidae					
303.	24719	*Aprosmictus erythropterus (Red-winged Parrot)*			
304.	24726	*Cacatua roseicapilla subsp. roseicapilla (Galah)*			
305.	25716	*Cacatua sanguinea (Little Corella)*			
306.	24728	*Cacatua sanguinea subsp. sanguinea (Little Corella)*			
307.	25717	*Calyptorhynchus banksii (Red-tailed Black-Cockatoo)*			
308.	24736	*Melopsittacus undulatus (Budgerigar)*			
309.	24742	*Nymphicus hollandicus (Cockatiel)*			
310.	24752	*Polytelis alexandrae (Princess Parrot)*		P4	
311.		*Psitteuteles versicolor*			
312.	25723	*Trichoglossus haematodus (Rainbow Lorikeet)*			
313.	24754	*Trichoglossus haematodus subsp. rubritorquis (Red-collared Lorikeet)*			
Ptilonorhynchidae					
314.	25725	*Ptilonorhynchus nuchalis (Great Bowerbird)*			
315.	24758	*Ptilonorhynchus nuchalis subsp. nuchalis (Great Bowerbird)*			
Rallidae					
316.		*Amaurornis cinerea*			
317.	25727	*Fulica atra (Eurasian Coot)*			
318.	25730	*Gallirallus philippensis (Buff-banded Rail)*			
319.	24765	*Gallirallus philippensis subsp. mellori (Buff-banded Rail)*			
320.	25731	*Porphyrio porphyrio (Purple Swamphen)*			
321.	24766	*Porphyrio porphyrio subsp. melanotus (Purple Swamphen)*			
322.	24769	*Porzana fluminea (Australian Spotted Crake)*			
323.	25732	*Porzana pusilla (Baillon's Crake)*			
324.	24771	*Porzana tabuensis (Spotless Crake)*			
325.	24772	*Rallina fasciata (Red-legged Crake)*			Y
326.		*Rallina fascinata*			Y
327.	48141	*Tribonyx ventralis (Black-tailed Native-hen)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Recurvirostridae					
328.	24774	*Cladorhynchus leucocephalus (Banded Stilt)*			
329.	25734	*Himantopus himantopus (Black-winged Stilt)*			
330.	24775	*Himantopus himantopus subsp. leucocephalus (Black-winged Stilt)*			
331.	24776	*Recurvirostra novaehollandiae (Red-necked Avocet)*			
Rostratulidae					
332.	48237	*Rostratula australis (Australian Painted Snipe)*		T	
Scolopacidae					
333.	41323	*Actitis hypoleucos (Common Sandpiper)*		IA	
334.	25736	*Arenaria interpres (Ruddy Turnstone)*		IA	
335.	24778	*Arenaria interpres subsp. interpres (Ruddy Turnstone)*		IA	
336.	24779	*Calidris acuminata (Sharp-tailed Sandpiper)*		IA	
337.	24780	*Calidris alba (Sanderling)*		IA	
338.	25738	*Calidris canutus (Red Knot, knot)*		IA	
339.	24783	*Calidris canutus subsp. rogersi (Red Knot (north-eastern Siberia))*		T	
340.	24784	*Calidris ferruginea (Curlew Sandpiper)*		T	
341.	24786	*Calidris melanotos (Pectoral Sandpiper)*		IA	
342.	24788	*Calidris ruficollis (Red-necked Stint)*		IA	
343.	24789	*Calidris subminuta (Long-toed Stint)*		IA	
344.	24790	*Calidris tenuirostris (Great Knot)*		T	
345.	24792	*Gallinago megala (Swinhoe's Snipe)*		IA	
346.	24793	*Gallinago stenura (Pin-tailed Snipe)*		IA	
347.	25739	*Limicola falcinellus (Broad-billed Sandpiper)*		IA	
348.	24794	*Limicola falcinellus subsp. sibiricus (Broad-billed Sandpiper)*		IA	
349.	24795	*Limnodromus semipalmatus (Asian Dowitcher)*		IA	
350.	30932	*Limosa lapponica (Bar-tailed Godwit)*		IA	
351.	24796	*Limosa lapponica subsp. menzbieri (Bar-tailed Godwit (northern Siberian))*		T	
352.	25741	*Limosa limosa (Black-tailed Godwit)*		IA	
353.	24797	*Limosa limosa subsp. melanuroides (Black-tailed Godwit)*		IA	
354.	24798	*Numenius madagascariensis (Eastern Curlew)*		T	
355.		*Numenius minatus*			Y
356.	24799	*Numenius minutus (Little Curlew, Little Whimbrel)*		IA	
357.	25742	*Numenius phaeopus (Whimbrel)*		IA	
358.	24801	*Phalaropus lobatus (Red-necked Phalarope)*		IA	
359.	24802	*Philomachus pugnax (Ruff, reeve)*		IA	
360.	24803	*Tringa brevipes (Grey-tailed Tattler)*		P4	
361.	24806	*Tringa glareola (Wood Sandpiper)*		IA	
362.	24808	*Tringa nebularia (Common Greenshank, greenshank)*		IA	
363.	24809	*Tringa stagnatilis (Marsh Sandpiper, little greenshank)*		IA	
364.	24810	*Tringa totanus (Common Redshank, redshank)*		IA	
365.	41351	*Xenus cinereus (Terek Sandpiper)*		IA	
Strigidae					
366.	25747	*Ninox connivens (Barking Owl)*			
367.	24819	*Ninox connivens subsp. connivens (Barking owl (southwest subpop.))*		P3	
Sturnidae					
368.	47954	*Gelochelidon nilotica (Gull-billed Tern)*		IA	
369.	25752	*Sturnus vulgaris (Common Starling)*	Y		
Sulidae					
370.	25754	*Sula leucogaster (Brown Booby)*		IA	
371.	24828	*Sula leucogaster subsp. plotus (Brown Booby)*		IA	
Sylviidae					
372.	25755	*Acrocephalus australis (Australian Reed Warbler)*			
373.	25756	*Cisticola exilis (Golden-headed Cisticola)*			
374.	24835	*Cisticola exilis subsp. exilis (Golden-headed Cisticola)*			
375.	25758	*Megalurus gramineus (Little Grassbird)*			
376.	25759	*Megalurus timoriensis (Tawny Grassbird)*			
Threskiornithidae					
377.	24841	*Platalea flavipes (Yellow-billed Spoonbill)*			
378.	24842	*Platalea regia (Royal Spoonbill)*			
379.	24843	*Plegadis falcinellus (Glossy Ibis)*		IA	
380.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
Turnicidae					
381.	34149	*Turnix castanota (Chestnut-backed Button-quail)*			
382.	48145	*Turnix maculosus (Red-backed Button-quail)*			
383.	24848	*Turnix pyrrhothorax (Red-chested Button-quail)*			
384.	24851	*Turnix velox (Little Button-quail)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Tytonidae					
385.	24852	*Tyto alba subsp. delicatula (Barn Owl)*			
386.	34015	*Tyto longimembris (Eastern Grass Owl)*			
387.	24855	*Tyto novaehollandiae subsp. novaehollandiae (Masked Owl (southwest))*		P3	
Zosteropidae					
388.	25765	*Zosterops lateralis (Grey-breasted White-eye, Silvereye)*			
389.	24857	*Zosterops luteus (Yellow White-eye)*			

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NatureMap
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NatureMap Species Report

Created By penny brooshooft on 29/05/2018

Current Names Only Yes
Core Datasets Only Yes
Species Group Mammals
Method 'By Circle'
Centre 122° 19' 26" E,17° 52' 07" S
Buffer 40km
Group By Family

Family	Species	Records
Balaenopteridae	1	23
Canidae	2	5
Dasyuridae	5	6
Delphinidae	5	205
Dugongidae	1	23
Emballonuridae	2	12
Felidae	1	11
Macropodidae	3	32
Molossidae	2	21
Muridae	6	60
Peramelidae	1	1
Phalangeridae	2	11
Potoroidae	1	1
Pteropodidae	2	4
Tachyglossidae	1	3
Thylacomyidae	1	60
Vespertilionidae	9	94
TOTAL	**45**	**572**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Balaenopteridae					
1.	24051	*Megaptera novaeangliae (Humpback Whale)*		S	
Canidae					
2.	24039	*Canis lupus subsp. dingo (Dingo)*	Y		
3.	30883	*Canis lupus subsp. familiaris (Dog)*	Y		
Dasyuridae					
4.	24093	*Dasyurus hallucatus (Northern Quoll)*		T	
5.	48069	*Phascogale tapoatafa subsp. kimberleyensis (Kimberley Brush-tailed Phascogale)*		T	
6.	24101	*Planigale ingrami (Long-tailed Planigale)*			
7.	24102	*Planigale maculata (Common Planigale)*			
8.	24120	*Sminthopsis youngsoni (Lesser Hairy-footed Dunnart)*			
Delphinidae					
9.		*Orcaella brevirostris*			
10.	24060	*Orcaella heinsohni (Australian Snubfin Dolphin)*		P4	
11.	24063	*Pseudorca crassidens (False Killer Whale)*			
12.	30954	*Tursiops aduncus (Indo-Pacific Bottlenose Dolphin)*			
13.	24069	*Tursiops truncatus (Bottlenose Dolphin)*			
Dugongidae					
14.	24084	*Dugong dugon (Dugong)*		S	
Emballonuridae					
15.	24174	*Saccolaimus flaviventris (Yellow-bellied Sheath-tailed Bat)*			
16.	48100	*Saccolaimus saccolaimus (Bare-rumped Sheathtail-bat)*			
Felidae					
17.	24041	*Felis catus (Cat)*	Y		
Macropodidae					
18.	24122	*Lagorchestes conspicillatus subsp. leichardti (Spectacled Hare-wallaby (mainland))*		P4	
19.	24129	*Macropus agilis (Agile Wallaby)*			
20.	24138	*Onychogalea unguifera (Northern Nailtail Wallaby, Karrabul)*			
Molossidae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
21.	24181	*Chaerephon jobensis (Greater Northern Freetail-bat, Northern Mastiff Bat)*			
22.	24183	*Mormopterus loriae (Little Northern Freetail-bat)*			
Muridae					
23.	24215	*Hydromys chrysogaster (Water-rat, Rakali)*		P4	
24.	24222	*Mesembriomys macrurus (Golden-backed Tree-rat)*		P4	
25.	24223	*Mus musculus (House Mouse)*	Y		
26.	24234	*Pseudomys delicatulus (Delicate Mouse)*			
27.	24239	*Pseudomys nanus (Western Chestnut Mouse)*			
28.	24245	*Rattus rattus (Black Rat)*	Y		
Peramelidae					
29.	24150	*Isoodon auratus subsp. auratus (Golden Bandicoot (mainland), Wintarru)*		T	
Phalangeridae					
30.	24157	*Trichosurus vulpecula subsp. arnhemensis (northern brushtail possum (Kimberley))*		T	
31.	24159	*Wyulda squamicaudata (Scaly-tailed Possum)*		P4	
Potoroidae					
32.	24161	*Bettongia lesueur subsp. graii (Boodie (inland), Burrowing Bettong (inland))*		X	
Pteropodidae					
33.	24172	*Pteropus alecto (Black Flying-fox)*			
34.	24173	*Pteropus scapulatus (Little Red Flying-fox)*			
Tachyglossidae					
35.	24207	*Tachyglossus aculeatus (Short-beaked Echidna)*			
Thylacomyidae					
36.	24168	*Macrotis lagotis (Bilby, Dalgyte, Ninu)*		T	
Vespertilionidae					
37.	24186	*Chalinolobus gouldii (Gould's Wattled Bat)*			
38.	24188	*Chalinolobus nigrogriseus (Hoary Wattled Bat)*			
39.	24190	*Miniopterus schreibersii subsp. orianae (Northern Bentwing-bat)*			
40.	24192	*Nyctophilus arnhemensis (Arnhem Land Long-eared Bat)*			
41.	42365	*Nyctophilus daedalus (Northwestern Long-eared Bat, Pallid Long-eared Bat)*			
42.	24194	*Nyctophilus geoffroyi (Lesser Long-eared Bat)*			
43.	24198	*Pipistrellus westralis (Northern Pipistrelle)*			
44.	24200	*Scotorepens greyii (Little Broad-nosed Bat)*			
45.	24201	*Scotorepens sanborni (Northern Broad-nosed Bat)*			

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NatureMap Species Report

Created By penny brooshooft on 27/04/2018

Current Names Only	Yes
Core Datasets Only	Yes
Species Group	Mammals
Method	'By Circle'
Centre	122° 17' 57" E,17° 38' 32" S
Buffer	40km
Group By	Family

Family	Species	Records
Balaenopteridae	2	27
Canidae	2	9
Dasyuridae	4	5
Delphinidae	5	116
Dugongidae	1	21
Emballonuridae	2	16
Felidae	1	14
Macropodidae	2	27
Molossidae	2	39
Muridae	6	124
Peramelidae	1	2
Phalangeridae	2	10
Physeteridae	1	1
Potoroidae	1	1
Pteropodidae	2	7
Tachyglossidae	1	3
Thylacomyidae	1	120
Vespertilionidae	8	117
TOTAL	**44**	**659**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Balaenopteridae					
1.	24044	*Balaenoptera acutorostrata (Dwarf Minke Whale)*			
2.	24051	*Megaptera novaeangliae (Humpback Whale)*		S	
Canidae					
3.	24039	*Canis lupus subsp. dingo (Dingo)*	Y		
4.	30883	*Canis lupus subsp. familiaris (Dog)*	Y		
Dasyuridae					
5.	24093	*Dasyurus hallucatus (Northern Quoll)*		T	
6.	24101	*Planigale ingrami (Long-tailed Planigale)*			
7.	24102	*Planigale maculata (Common Planigale)*			
8.	24120	*Sminthopsis youngsoni (Lesser Hairy-footed Dunnart)*			
Delphinidae					
9.		*Orcaella brevirostris*			
10.	24060	*Orcaella heinsohni (Australian Snubfin Dolphin)*		P4	
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13.	24069	*Tursiops truncatus (Bottlenose Dolphin)*			
Dugongidae					
14.	24084	*Dugong dugon (Dugong)*		S	
Emballonuridae					
15.	24174	*Saccolaimus flaviventris (Yellow-bellied Sheath-tailed Bat)*			
16.	48100	*Saccolaimus saccolaimus (Bare-rumped Sheathtail-bat)*			
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17.	24041	*Felis catus (Cat)*	Y		
Macropodidae					
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23.	24222	*Mesembriomys macrurus (Golden-backed Tree-rat)*		P4	
24.	24223	*Mus musculus (House Mouse)*	Y		
25.	24234	*Pseudomys delicatulus (Delicate Mouse)*			
26.	24239	*Pseudomys nanus (Western Chestnut Mouse)*			
27.	24245	*Rattus rattus (Black Rat)*	Y		
Peramelidae					
28.	24150	*Isoodon auratus subsp. auratus (Golden Bandicoot (mainland), Wintarru)*		T	
Phalangeridae					
29.	24157	*Trichosurus vulpecula subsp. arnhemensis (northern brushtail possum (Kimberley))*		T	
30.	24159	*Wyulda squamicaudata (Scaly-tailed Possum)*		P4	
Physeteridae					
31.	24073	*Physeter macrocephalus (Sperm Whale)*		T	
Potoroidae					
32.	24161	*Bettongia lesueur subsp. graii (Boodie (inland), Burrowing Bettong (inland))*		X	
Pteropodidae					
33.	24172	*Pteropus alecto (Black Flying-fox)*			
34.	24173	*Pteropus scapulatus (Little Red Flying-fox)*			
Tachyglossidae					
35.	24207	*Tachyglossus aculeatus (Short-beaked Echidna)*			
Thylacomyidae					
36.	24168	*Macrotis lagotis (Bilby, Dalgyte, Ninu)*		T	
Vespertilionidae					
37.	24186	*Chalinolobus gouldii (Gould's Wattled Bat)*			
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Appendix 3

Database Search Results: ALA

Amphibians

Family	Species Name	Common Name
Pelodryadidae	*Cyclorana australis*	Giant Frog
Limnodynastidae	*Notaden nichollsi*	Desert Spadefoot
Pelodryadidae	*Cyclorana longipes*	Long-footed Frog
Pelodryadidae	*Litoria caerulea*	Green Tree Frog
Limnodynastidae	*Platyplectrum ornatum*	Ornate Burrowing Frog
Myobatrachidae	*Uperoleia talpa*	Ratcheting Toadlet
Myobatrachidae	*Uperoleia aspera*	Derby Toadlet
Pelodryadidae	*Litoria rubella*	Little Red Tree Frog
Pelodryadidae	*Litoria rothii*	Northern Laughing Tree Frog
Bufonidae	*Rhinella marina**	Cane Toad

* = introduced species.

Reptiles

Family	Species Name	Common Name
Crocodylidae	*Crocodylus porosus*	Saltwater Crocodile
Cheloniidae	*Caretta caretta*	Loggerhead Turtle
Cheloniidae	*Chelonia mydas*	Green Turtle
Cheloniidae	*Eretmochelys imbricata*	Hawksbill Turtle
Cheloniidae	*Natator depressus*	Flatback Turtle
Cheluidae	*Chelodina burrungandjii*	Northern Long-necked Turtle
Diplodactylidae	*Amalosia rhombifer*	
Diplodactylidae	*Diplodactylus conspicillatus*	Variable Fat-tailed Gecko
Diplodactylidae	*Diplodactylus laevis*	Desert Fat-tailed Gecko
Diplodactylidae	*Lucasium stenodactylum*	
Diplodactylidae	*Rhynchoedura ornata*	Western Beaked Gecko
Diplodactylidae	*Strophurus ciliaris*	
Gekkonidae	*Gehyra australis*	
Gekkonidae	*Gehyra pilbara*	
Gekkonidae	*Gehyra punctata*	
Gekkonidae	*Gehyra variegata*	
Gekkonidae	*Hemidactylus frenatus**	Asian House Gecko
Gekkonidae	*Heteronotia binoei*	Bynoe's Gecko
Pygopodidae	*Delma tincta*	
Pygopodidae	*Lialis burtonis*	
Pygopodidae	*Pygopus nigriceps*	
Agamidae	*Chelosania brunnea*	Chameleon Dragon
Agamidae	*Chlamydosaurus kingii*	Frill-necked Lizard
Agamidae	*Ctenophorus isolepis*	Military Dragon
Agamidae	*Ctenophorus nuchalis*	Central Netted Dragon
Agamidae	*Ctenophorus reticulatus*	Western Netted Dragon
Agamidae	*Diporiphora pindan*	Pindan Dragon
Agamidae	*Lophognathus gilberti*	Ta-Ta or Gilbert's Dragon
Agamidae	*Moloch horridus*	Thorny Devil
Agamidae	*Pogona microlepidota*	Kimberley Bearded Dragon
Agamidae	*Pogona minor*	
Scincidae	*Carlia munda*	
Scincidae	*Carlia rufilatus*	
Scincidae	*Carlia triacantha*	
Scincidae	*Cryptoblepharus metallicus*	
Scincidae	*Cryptoblepharus plagiocephalus*	
Scincidae	*Cryptoblepharus ruber*	
Scincidae	*Cryptoblepharus tytthos*	
Scincidae	*Ctenotus angusticeps*	
Scincidae	*Ctenotus colletti*	
Scincidae	*Ctenotus helenae*	
Scincidae	*Ctenotus inornatus*	
Scincidae	*Ctenotus robustus*	
Scincidae	*Eremiascincus isolepis*	

Family	Species Name	Common Name
Scincidae	*Lerista apoda*	
Scincidae	*Lerista bipes*	
Scincidae	*Lerista griffini*	
Scincidae	*Lerista separanda*	
Scincidae	*Menetia greyii*	
Scincidae	*Menetia maini*	
Scincidae	*Morethia ruficauda*	
Scincidae	*Morethia storri*	
Scincidae	*Proablepharus tenuis*	
Scincidae	*Tiliqua multifasciata*	Central Blue-tongue
Scincidae	*Tiliqua scincoides*	Eastern Blue-tongue
Varanidae	*Varanus acanthurus*	Spiny-tailed Goanna
Varanidae	*Varanus brevicauda*	Short-tailed Pygmy Goanna
Varanidae	*Varanus gouldii*	Bungarra or Sand Goanna
Varanidae	*Varanus mertensi*	Merten's Water Monitor
Varanidae	*Varanus panoptes*	Yellow-spotted Goanna
Varanidae	*Varanus tristis*	Racehorse Goanna
Typhlopidae	*Anilios diversus*	
Typhlopidae	*Anilios grypus*	
Typhlopidae	*Indotyphlops braminus*	
Pythonidae	*Antaresia childreni*	Children's Python
Pythonidae	*Antaresia stimsoni*	Stimson's Python
Pythonidae	*Aspidites melanocephalus*	Black-headed Python
Pythonidae	*Liasis fuscus*	Water Python
Pythonidae	*Liasis olivaceus*	Olive Python
Colubridae	*Dendrelaphis punctulata*	Green Tree Snake
Colubridae	*Fordonia leucobalia*	White-bellied Mangrove Snake
Homalopsidae	*Myron restari*	
Elapidae	*Brachyurophis roperi*	
Elapidae	*Demansia angusticeps*	
Elapidae	*Demansia psammophis*	Yellow-faced Whipsnake
Elapidae	*Demansia psammophis*	Yellow-faced Whipsnake
Elapidae	*Furina ornata*	Moon Snake
Elapidae	*Pseudechis australis*	Mulga Snake
Elapidae	*Pseudonaja mengdeni*	Western Brown Snake
Elapidae	*Pseudonaja modesta*	Ringed Brown Snake
Elapidae	*Pseudonaja nuchalis*	Gwardar; Northern Brown Snake
Elapidae	*Simoselaps anomalus*	Desert Banded Snake
Elapidae	*Simoselaps bertholdi*	Jan's Banded Snake
Elapidae	*Simoselaps minimus*	
Elapidae	*Suta punctata*	Spotted Snake
Elapidae	*Aipysurus apraefrontalis*	
Elapidae	*Aipysurus duboisii*	
Elapidae	*Aipysurus laevis*	
Elapidae	*Aipysurus mosaicus*	Mosaic Sea Snake
Elapidae	*Aipysurus tenuis*	
Elapidae	*Ephalophis greyae*	
Elapidae	*Hydrelaps darwiniensis*	
Elapidae	*Hydrophis elegans*	
Elapidae	*Hydrophis kingii*	
Elapidae	*Hydrophis major*	
Elapidae	*Hydrophis peronii*	
Elapidae	*Hydrophis stokesii*	

* = introduced species.

Mammals

Family	Species Name	Common Name
Thylacomyidae	*Macrotis lagotis*	Bilby, Dalgyte
Phalangeridae	*Trichosurus vulpecula*	Northern Brushtail Possum
Macropodidae	*Notamacropus agilis*	Agile Wallaby
Macropodidae	*Onychogalea unguifera*	Northern Nailtail Wallaby, Karrabul

Family	Species Name	Common Name
Muridae	*Mus musculus**	House Mouse
Muridae	*Pseudomys delicatulus*	Delicate Mouse
Muridae	*Pseudomys nanus*	Barrow Island Western Chestnut Mouse
Muridae	*Rattus rattus**	Black Rat
Pteropodidae	*Pteropus alecto*	Black Flying-fox
Pteropodidae	*Pteropus scapulatus*	Little Red Flying-fox
Emballonuridae	*Saccolaimus flaviventris*	Yellow-bellied Sheath-tailed Bat
Emballonuridae	*Saccolaimus saccolaimus*	Bare-rumped Sheath-tailed Bat
Molossidae	*Chaerephon jobensis*	Greater Northern Free-tailed Bat
Molossidae	*Ozimops cobourgianus*	Northern Coastal Free-tailed Bat
Miniopteridae	*Miniopterus orianae*	Large Bent-winged Bat
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat
Vespertilionidae	*Chalinolobus nigrogriseus*	Hoary Wattled Bat
Vespertilionidae	*Nyctophilus arnhemensis*	Arnhem Long-eared Bat
Vespertilionidae	*Nyctophilus daedalus*	Pallid Long-eared Bat
Vespertilionidae	*Nyctophilus geoffroyi*	Lesser Long-eared Bat
Vespertilionidae	*Pipistrellus westralis*	Northern Pipistrelle
Vespertilionidae	*Scotorepens greyii*	Little Broad-nosed Bat
Vespertilionidae	*Scotorepens sanborni*	Northern Broad-nosed Bat

* = introduced species.

Avifauna

Family	Species Name	Common Name
Stercorariidae	*Stercorarius parasiticus*	Arctic Jaeger
Scolopacidae	*Limnodromus semipalmatus*	Asian Dowitcher
Anhingidae	*Anhinga novaehollandiae*	Australasian Darter
Oriolidae	*Sphecotheres vieilloti*	Australasian Figbird
Podicipedidae	*Tachybaptus novaehollandiae*	Australasian Grebe
Recurvirostridae	*Himantopus himantopus*	Black-winged Stilt
Anatidae	*Anas rhynchotis*	Australasian Shoveler
Otididae	*Ardeotis australis*	Australian Bustard
Falconidae	*Falco longipennis*	Australian Hobby
Ardeidae	*Ixobrychus dubius*	Australian Little Bittern
Artamidae	*Cracticus tibicen*	Australian Magpie
Aegothelidae	*Aegotheles cristatus*	Australian Owlet-Nightjar
Rostratulidae	*Rostratula australis*	Australian Painted Snipe
Pelecanidae	*Pelecanus conspicillatus*	Australian Pelican
Motacillidae	*Anthus novaeseelandiae*	Australasian Pipit
Glareolidae	*Stiltia isabella*	Australian Pratincole
Corvidae	*Corvus coronoides*	Australian Raven
Recurvirostridae	*Recurvirostra novaehollandiae*	Red-necked Avocet
Acrocephalidae	*Acrocephalus australis*	Australian Reed-Warbler
Psittacidae	*Barnardius zonarius*	Australian Ringneck
Anatidae	*Tadorna tadornoides*	Australian Shelduck
Rallidae	*Porzana fluminea*	Australian Spotted Crake
Threskiornithidae	*Threskiornis molucca*	Australian White Ibis
Anatidae	*Chenonetta jubata*	Australian Wood Duck
Rallidae	*Porzana pusilla*	Baillon's Crake
Meliphagidae	*Cissomela pectoralis*	Banded Honeyeater
Charadriidae	*Vanellus tricolor*	Banded Lapwing
Rallidae	*Gallirallus philippensis*	Buff-banded Rail
Recurvirostridae	*Cladorhynchus leucocephalus*	Banded Stilt
Meliphagidae	*Ramsayornis fasciatus*	Bar-Breasted Honeyeater
Columbidae	*Geopelia humeralis*	Bar-Shouldered Dove
Scolopacidae	*Limosa lapponica*	Bar-Tailed Godwit
Strigidae	*Ninox connivens*	Barking Owl
Tytonidae	*Tyto javanica*	Eastern Barn Owl
Hirundinidae	*Hirundo rustica*	Barn Swallow
Burhinidae	*Esacus magnirostris*	Beach Stone-Curlew
Ardeidae	*Ixobrychus flavicollis*	Black Bittern
Falconidae	*Falco subniger*	Black Falcon

Family	Species Name	Common Name
Meliphagidae	*Sugomel niger*	Black Honeyeater
Accipitridae	*Milvus migrans*	Black Kite
Anatidae	*Cygnus atratus*	Black Swan
Accipitridae	*Hamirostra melanosternon*	Black-Breasted Buzzard
Meliphagidae	*Melithreptus gularis*	Black-Chinned Honeyeater
Cuculidae	*Chalcites osculans*	Black-Eared Cuckoo
Campephagidae	*Coracina novaehollandiae*	Black-Faced Cuckoo-Shrike
Artamidae	*Artamus cinereus*	Black-Faced Woodswallow
Charadriidae	*Elseyornis melanops*	Black-Fronted Dotterel
Laridae	*Sterna sumatrana*	Black-Naped Tern
Ciconiidae	*Ephippiorhynchus asiaticus*	Black-Necked Stork
Accipitridae	*Elanus axillaris*	Black-Shouldered Kite
Scolopacidae	*Limosa limosa*	Black-Tailed Godwit
Rallidae	*Tribonyx ventralis*	Black-Tailed Native-Hen
Climacteridae	*Climacteris melanura*	Black-Tailed Treecreeper
Meliphagidae	*Entomyzon cyanotis*	Blue-Faced Honeyeater
Halcyonidae	*Dacelo leachii*	Blue-Winged Kookaburra
Accipitridae	*Haliastur indus*	Brahminy Kite
Laridae	*Onychoprion anaethetus*	Bridled Tern
Monarchidae	*Myiagra ruficollis*	Broad-Billed Flycatcher
Scolopacidae	*Limicola falcinellus*	Broad-Billed Sandpiper
Gruidae	*Grus rubicunda*	Brolga
Sulidae	*Sula leucogaster*	Brown Booby
Falconidae	*Falco berigora*	Brown Falcon
Accipitridae	*Accipiter fasciatus*	Brown Goshawk
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater
Phasianidae	*Coturnix ypsilophora*	Brown Quail
Stercorariidae	*Stercorarius antarcticus*	Brown Skua
Megaluridae	*Cincloramphus cruralis*	Brown Songlark
Cuculidae	*Cacomantis variolosus*	Brush Cuckoo
Psittacidae	*Melopsittacus undulatus*	Budgerigar
Procellariidae	*Bulweria bulwerii*	Bulwer's Petrel
Burhinidae	*Burhinus grallarius*	Bush Stone-Curlew
Laridae	*Hydroprogne caspia*	Caspian Tern
Ardeidae	*Ardea ibis*	Cattle Egret
Cuculidae	*Scythrops novaehollandiae*	Channel-Billed Cuckoo
Anatidae	*Anas castanea*	Chestnut Teal
Estrildidae	*Lonchura castaneothorax*	Chestnut-breasted Mannikin
Campephagidae	*Coracina tenuirostris*	Cicadabird
Cacatuidae	*Nymphicus hollandicus*	Cockatiel
Halcyonidae	*Todiramphus chloris*	Collared Kingfisher
Accipitridae	*Accipiter cirrocephalus*	Collared Sparrowhawk
Jacanidae	*Irediparra gallinacea*	Comb-Crested Jacana
Columbidae	*Phaps chalcoptera*	Common Bronzewing
Procellariidae	*Pelecanoides urinatrix*	Common Diving-Petrel
Scolopacidae	*Tringa nebularia*	Common Greenshank
Laridae	*Anous stolidus*	Common Noddy
Scolopacidae	*Tringa totanus*	Common Redshank
Scolopacidae	*Actitis hypoleucos*	Common Sandpiper
Sturnidae	*Sturnus vulgaris*	Common Starling
Laridae	*Sterna hirundo*	Common Tern
Pachycephalidae	*Oreoica gutturalis*	Crested Bellbird
Columbidae	*Ocyphaps lophotes*	Crested Pigeon
Laridae	*Thalasseus bergii*	Crested Tern
Meliphagidae	*Epthianura tricolor*	Crimson Chat
Estrildidae	*Neochmia phaeton*	Crimson Finch
Scolopacidae	*Calidris ferruginea*	Curlew Sandpiper
Anhingidae	*Anhinga novaehollandiae*	Australasian Darter
Columbidae	*Geopelia cuneata*	Diamond Dove
Coraciidae	*Eurystomus orientalis*	Dollarbird
Estrildidae	*Taeniopygia bichenovii*	Double-Barred Finch
Scolopacidae	*Calidris alpina*	Dunlin

Family	Species Name	Common Name
Acanthizidae	*Gerygone tenebrosa*	Dusky Gerygone
Meliphagidae	*Myzomela obscura*	Dusky Honeyeater
Rallidae	*Gallinula tenebrosa*	Dusky Moorhen
Tytonidae	*Tyto javanica*	Eastern Barn Owl
Scolopacidae	*Numenius madagascariensis*	Eastern Curlew
Tytonidae	*Tyto longimembris*	Eastern Grass Owl
Ardeidae	*Ardea modesta*	Eastern Great Egret
Accipitridae	*Pandion cristatus*	Eastern Osprey
Ardeidae	*Egretta sacra*	Eastern Reef Egret
Casuariidae	*Dromaius novaehollandiae*	Emu
Rallidae	*Fulica atra*	Eurasian Coot
Passeridae	*Passer montanus*	EurasianTree Sparrow
Hirundinidae	*Petrochelidon ariel*	Fairy Martin
Laridae	*Sternula nereis*	Fairy Tern
Columbidae	*Phaps histrionica*	Flock Bronzewing
Apodidae	*Apus pacificus*	Fork-Tailed Swift
Anatidae	*Stictonetta naevosa*	Freckled Duck
Cacatuidae	*Eolophus roseicapillus*	Galah
Anatidae	*Anas querquedula*	Garganey
Threskiornithidae	*Plegadis falcinellus*	Glossy Ibis
Pachycephalidae	*Pachycephala pectoralis*	Golden Whistler
Cisticolidae	*Cisticola exilis*	Golden-Headed Cisticola
Estrildidae	*Erythrura gouldiae*	Gouldian Finch
Anatidae	*Dendrocygna eytoni*	Plumed Whistling-Duck
Ptilonorhychidae	*Ptilonorhynchus nuchalis*	Great Bowerbird
Phalacrocoracidae	*Phalacrocorax carbo*	Great Cormorant
Podicipedidae	*Podiceps cristatus*	Great Crested Grebe
Fregatidae	*Fregata minor*	Great Frigatebird
Scolopacidae	*Calidris tenuirostris*	Great Knot
Ardeidae	*Ardea sumatrana*	Great-Billed Heron
Charadriidae	*Charadrius leschenaultii*	Greater Sand Plover
Anatidae	*Nettapus pulchellus*	Green Pygmy-Goose
Acanthizidae	*Gerygone chloronota*	Green-Backed Gerygone
Scolopacidae	*Phalaropus fulicarius*	Grey Phalarope
Artamidae	*Cracticus torquatus*	Grey Butcherbird
Falconidae	*Falco hypoleucos*	Grey Falcon
Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail
Accipitridae	*Accipiter novaehollandiae*	Grey Goshawk
Charadriidae	*Pluvialis squatarola*	Grey Plover
Pachycephalidae	*Colluricincla harmonica*	Grey Shrike-Thrush
Anatidae	*Anas gracilis*	Grey Teal
Motacillidae	*Motacilla cinerea*	Grey Wagtail
Pomatostomidae	*Pomatostomus temporalis*	Grey-Crowned Babbler
Meliphagidae	*Lichenostomus keartlandi*	Grey-Headed Honeyeater
Campephagidae	*Coracina maxima*	Ground Cuckoo-Shrike
Laridae	*Gelochelidon nilotica*	Gull-Billed Tern
Anatidae	*Aythya australis*	Hardhead
Numididae	*Numida meleagris*	Helmeted Guineafowl
Podicipedidae	*Poliocephalus poliocephalus*	Hoary-Headed Grebe
Petroicidae	*Melanodryas cucullata*	Hooded Robin
Cuculidae	*Chalcites basalis*	Horsfield's Bronze-Cuckoo
Alaudidae	*Mirafra javanica*	Horsfield’s Bushlark
Procellariidae	*Puffinus huttoni*	Hutton's Shearwater
Phasianidae	*Pavo cristatus**	Indian Peafowl
Ardeidae	*Ardea intermedia*	Intermediate Egret
Petroicidae	*Microeca fascinans*	Jacky Winter
Halcyonidae	*Dacelo leachii*	Blue-winged Kookaburra
Columbidae	*Streptopelia senegalensis*	Laughing Dove
Monarchidae	*Myiagra rubecula*	Leaden Flycatcher
Petroicidae	*Microeca flavigaster*	Lemon-Bellied Flycatcher
Laridae	*Thalasseus bengalensis*	Lesser Crested Tern
Fregatidae	*Fregata ariel*	Lesser Frigatebird

Family	Species Name	Common Name
Scolopacidae	*Calidris canutus*	Red Knot
Accipitridae	*Elanus scriptus*	Letter-Winged Kite
Ardeidae	*Ixobrychus dubius*	Australian Little Bittern
Phalacrocoracidae	*Phalacrocorax sulcirostris*	Little Black Cormorant
Cuculidae	*Chalcites minutillus*	Little Bronze-Cuckoo
Turnicidae	*Turnix velox*	Little Button-Quail
Cacatuidae	*Cacatua sanguinea*	Little Corella
Phalacrocoracidae	*Microcarbo melanoleucos*	Little Pied Cormorant
Corvidae	*Corvus bennetti*	Little Crow
Accipitridae	*Hieraaetus morphnoides*	Little Eagle
Ardeidae	*Egretta garzetta*	Little Egret
Meliphagidae	*Philemon citreogularis*	Little Friarbird
Megaluridae	*Megalurus gramineus*	Little Grassbird
Phalacrocoracidae	*Microcarbo melanoleucos*	Little Pied Cormorant
Charadriidae	*Charadrius dubius*	Little Ringed Plover
Scolopacidae	*Calidris minuta*	Little Stint
Laridae	*Sternula albifrons*	Little Tern
Scolopacidae	*Numenius minutus*	Little Curlew
Artamidae	*Artamus minor*	Little Woodswallow
Estrildidae	*Poephila acuticauda*	Long-Tailed Finch
Scolopacidae	*Calidris subminuta*	Long-Toed Stint
Anseranatidae	*Anseranas semipalmata*	Magpie Goose
Monarchidae	*Grallina cyanoleuca*	Magpie-Lark
Acanthizidae	*Gerygone levigaster*	Mangrove Gerygone
Pachycephalidae	*Pachycephala melanura*	Mangrove Golden Whistler
Rhipiduridae	*Rhipidura phasiana*	Mangrove Grey Fantail
Scolopacidae	*Tringa stagnatilis*	Marsh Sandpiper
Sulidae	*Sula dactylatra*	Masked Booby
Estrildidae	*Poephila personata*	Masked Finch
Tytonidae	*Tyto novaehollandiae*	Masked Owl
Charadriidae	*Vanellus miles*	Masked Lapwing
Artamidae	*Artamus personatus*	Masked Woodswallow
Nectariniidae	*Dicaeum hirundinaceum*	Mistletoebird
Charadriidae	*Charadrius mongolus*	Lesser Sand Plover
Falconidae	*Falco cenchroides*	Nankeen Kestrel
Ardeidae	*Nycticorax caledonicus*	Nankeen Night-Heron
Rhipiduridae	*Rhipidura fuliginosa*	New Zealand Fantail
Rhipiduridae	*Rhipidura rufiventris*	Northern Fantail
Procellariidae	*Macronectes halli*	Northern Giant-Petrel
Oriolidae	*Oriolus sagittatus*	Olive-Backed Oriole
Meliphagidae	*Epthianura aurifrons*	Orange Chat
Cuculidae	*Cuculus optatus*	Oriental Cuckoo
Charadriidae	*Charadrius veredus*	Oriental Plover
Glareolidae	*Glareola maldivarum*	Oriental Pratincole
Accipitridae	*Pandion cristatus*	Eastern Osprey
Accipitridae	*Aviceda subcristata*	Pacific Baza
Anatidae	*Anas superciliosa*	Pacific Black Duck
Charadriidae	*Pluvialis fulva*	Pacific Golden Plover
Cuculidae	*Eudynamys orientalis*	Eastern Koel
Estrildidae	*Emblema pictum*	Painted Finch
Cuculidae	*Cacomantis pallidus*	Pallid Cuckoo
Columbidae	*Geopelia striata*	Peaceful Dove
Scolopacidae	*Calidris melanotos*	Pectoral Sandpiper
Falconidae	*Falco peregrinus*	Peregrine Falcon
Cuculidae	*Centropus phasianinus*	Pheasant Coucal
Estrildidae	*Heteromunia pectoralis*	Pictorella Mannikin
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird
Phalacrocoracidae	*Phalacrocorax varius*	Pied Cormorant
Ardeidae	*Egretta picata*	Pied Heron
Meliphagidae	*Certhionyx variegatus*	Pied Honeyeater
Columbidae	*Ducula bicolor*	Pied Imperial-Pigeon
Haematopodidae	*Haematopus longirostris*	Australian Pied Oystercatcher

Family	Species Name	Common Name
Scolopacidae	*Gallinago stenura*	Pin-Tailed Snipe
Anatidae	*Malacorhynchus membranaceus*	Pink-Eared Duck
Stercorariidae	*Stercorarius pomarinus*	Pomarine Jaeger
Rallidae	*Porphyrio porphyrio*	Purple Swamphen
Meropidae	*Merops ornatus*	Rainbow Bee-Eater
Psittacidae	*Trichoglossus haematodus*	Rainbow Lorikeet
Anatidae	*Tadorna radjah*	Radjah Shelduck
Accipitridae	*Erythrotriorchis radiatus*	Red Goshawk
Phasianidae	*Gallus gallus*	Red Junglefowl
Meliphagidae	*Anthochaera carunculata*	Red Wattlebird
Turnicidae	*Turnix maculosus*	Red-Backed Button-Quail
Maluridae	*Malurus melanocephalus*	Red-Backed Fairy-Wren
Halcyonidae	*Todiramphus pyrrhopygius*	Red-Backed Kingfisher
Pardalotidae	*Pardalotus rubricatus*	Red-Browed Pardalote
Charadriidae	*Charadrius ruficapillus*	Red-capped Plover
Petroicidae	*Petroica goodenovii*	Red-Capped Robin
Turnicidae	*Turnix pyrrhothorax*	Red-Chested Button-Quail
Estrildidae	*Stagonopleura oculata*	Red-Eared Firetail
Meliphagidae	*Myzomela erythrocephala*	Red-Headed Honeyeater
Charadriidae	*Erythrogonys cinctus*	Red-Kneed Dotterel
Scolopacidae	*Phalaropus lobatus*	Red-Necked Phalarope
Scolopacidae	*Calidris ruficollis*	Red-Necked Stint
Cacatuidae	*Calyptorhynchus banksii*	Red-Tailed Black-Cockatoo
Phaethontidae	*Phaethon rubricauda*	Red-Tailed Tropicbird
Maluridae	*Malurus elegans*	Red-Winged Fairy-Wren
Psittacidae	*Aprosmictus erythropterus*	Red-Winged Parrot
Monarchidae	*Myiagra inquieta*	Restless Flycatcher
Columbidae	*Columba livia*	Rock Dove
Petroicidae	*Petroica rosea*	Rose Robin
Columbidae	*Ptilinopus regina*	Rose-Crowned Fruit-Dove
Laridae	*Sterna dougallii*	Roseate Tern
Threskiornithidae	*Platalea regia*	Royal Spoonbill
Scolopacidae	*Arenaria interpres*	Ruddy Turnstone
Scolopacidae	*Philomachus pugnax*	Ruff
Acanthizidae	*Calamanthus campestris*	Rufous Fieldwren
Megaluridae	*Cincloramphus mathewsi*	Rufous Songlark
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler
Meliphagidae	*Conopophila rufogularis*	Rufous-Throated Honeyeater
Halcyonidae	*Todiramphus sanctus*	Sacred Kingfisher
Scolopacidae	*Calidris alba*	Sanderling
Scolopacidae	*Calidris acuminata*	Sharp-Tailed Sandpiper
Cuculidae	*Chalcites lucidus*	Shining Bronze-Cuckoo
Procellariidae	*Ardenna tenuirostris*	Short-Tailed Shearwater
Scolopacidae	*Tringa brevipes*	Grey-tailed Tattler
Laridae	*Chroicocephalus novaehollandiae*	Silver Gull
Meliphagidae	*Philemon argenticeps*	Silver-Crowned Friarbird
Timaliidae	*Zosterops lateralis*	Silvereye
Meliphagidae	*Lichenostomus virescens*	Singing Honeyeater
Haematopodidae	*Haematopus fuliginosus*	Sooty Oystercatcher
Laridae	*Onychoprion fuscata*	Sooty Tern
Strigidae	*Ninox novaeseelandiae*	Southern Boobook
Apodidae	*Hirundapus caudacutus*	White-throated Needletail
Columbidae	*Geophaps plumifera*	Spinifex Pigeon
Meliphagidae	*Acanthagenys rufogularis*	Spiny-Cheeked Honeyeater
Rallidae	*Porzana tabuensis*	Spotless Crake
Accipitridae	*Circus assimilis*	Spotted Harrier
Eurostopodidae	*Eurostopodus argus*	Spotted Nightjar
Accipitridae	*Lophoictinia isura*	Square-Tailed Kite
Estrildidae	*Neochmia ruficauda*	Star Finch
Threskiornithidae	*Threskiornis spinicollis*	Straw-Necked Ibis
Procellariidae	*Calonectris leucomelas*	Streaked Shearwater
Ardeidae	*Butorides striata*	Striated Heron

Family	Species Name	Common Name
Pardalotidae	*Pardalotus striatus*	Striated Pardalote
Phasianidae	*Coturnix pectoralis*	Stubble Quail
Cacatuidae	*Cacatua galerita*	Sulphur-Crested Cockatoo
Accipitridae	*Circus approximans*	Swamp Harrier
Scolopacidae	*Gallinago megala*	Swinhoe's Snipe
Podargidae	*Podargus strigoides*	Tawny Frogmouth
Megaluridae	*Megalurus timoriensis*	Tawny Grassbird
Scolopacidae	*Xenus cinereus*	Terek Sandpiper
Corvidae	*Corvus orru*	Torresian Crow
Hirundinidae	*Petrochelidon nigricans*	Tree Martin
Psittacidae	*Psitteuteles versicolor*	Varied Lorikeet
Neosittidae	*Daphoenositta chrysoptera*	Varied Sittella
Maluridae	*Malurus lamberti*	Variegated Fairy-Wren
Anatidae	*Dendrocygna arcuata*	Wandering Whistling-Duck
Accipitridae	*Aquila audax*	Wedge-Tailed Eagle
Procellariidae	*Ardenna pacifica*	Wedge-Tailed Shearwater
Acanthizidae	*Smicrornis brevirostris*	Weebill
Hirundinidae	*Hirundo neoxena*	Welcome Swallow
Acanthizidae	*Gerygone fusca*	Western Gerygone
Psittacidae	*Platycercus icterotis*	Western Rosella
Scolopacidae	*Numenius phaeopus*	Whimbrel
Laridae	*Chlidonias hybrida*	Whiskered Tern
Accipitridae	*Haliastur sphenurus*	Whistling Kite
Motacillidae	*Motacilla alba*	White Wagtail
Hirundinidae	*Cheramoeca leucosterna*	White-Backed Swallow
Campephagidae	*Coracina papuensis*	White-Bellied Cuckoo-Shrike
Accipitridae	*Haliaeetus leucogaster*	White-Bellied Sea-Eagle
Pachycephalidae	*Pachycephala lanioides*	White-Breasted Whistler
Artamidae	*Artamus leucorynchus*	White-Breasted Woodswallow
Rallidae	*Amaurornis cinerea*	White-Browed Crake
Artamidae	*Artamus superciliosus*	White-Browed Woodswallow
Ardeidae	*Egretta novaehollandiae*	White-Faced Heron
Oceanitidae	*Pelagodroma marina*	White-Faced Storm-Petrel
Meliphagidae	*Purnella albifrons*	White-Fronted Honeyeater
Meliphagidae	*Lichenostomus unicolor*	White-Gaped Honeyeater
Ardeidae	*Ardea pacifica*	White-Necked Heron
Meliphagidae	*Lichenostomus penicillatus*	White-Plumed Honeyeater
Phaethontidae	*Phaethon lepturus*	White-Tailed Tropicbird
Acanthizidae	*Gerygone albogularis*	White-Throated Gerygone
Meliphagidae	*Melithreptus albogularis*	White-Throated Honeyeater
Laridae	*Chlidonias leucopterus*	White-Winged Black Tern
Maluridae	*Malurus leucopterus*	White-Winged Fairy-Wren
Campephagidae	*Lalage sueurii*	White-Winged Triller
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail
Oceanitidae	*Oceanites oceanicus*	Wilson's Storm-Petrel
Scolopacidae	*Tringa glareola*	Wood Sandpiper
Meliphagidae	*Epthianura crocea*	Yellow Chat
Motacillidae	*Motacilla tschutschensis*	Eastern Yellow Wagtail
Timaliidae	*Zosterops luteus*	Yellow White-Eye
Threskiornithidae	*Platalea flavipes*	Yellow-Billed Spoonbill
Meliphagidae	*Manorina flavigula*	Yellow-Throated Miner
Meliphagidae	*Lichenostomus flavescens*	Yellow-Tinted Honeyeater
Estrildidae	*Taeniopygia guttata*	Zebra Finch

* Introduced species

Appendix 4

Database Search Results: EPBC Act Protected Matters

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.

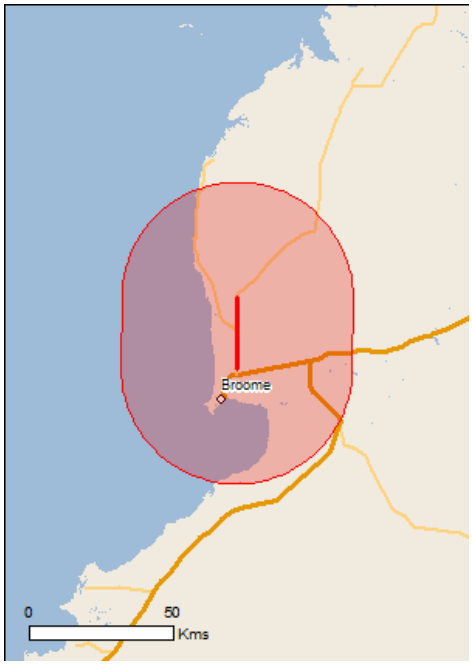
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

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

Report created: 18/04/18 17:25:28

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

Caveat
Acknowledgements



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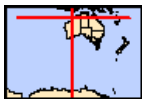

Summary

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:	1
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	32
Listed Migratory Species:	68

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:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	106
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	1

Extra Information

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

State and Territory Reserves:	10
Regional Forest Agreements:	None
Invasive Species:	19
Nationally Important Wetlands:	3
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

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

Name
EEZ and Territorial Sea

Marine Regions [Resource Information]

If you are planning to undertake action in an area in or close to the Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.

Name
North-west

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 likely to 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

Name	Status	Type of Presence
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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis 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
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
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		
Keraudrenia exastia Fringed Keraudrenia [66301]	Critically 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 Airlie Island Ctenotus [25937]	Vulnerable	Species or species habitat known to occur

Name	Status	Type of Presence
		within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known 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
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat 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]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding 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

Name	Threatened	Type of Presence
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur 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	Species or species habitat known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat 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 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
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat 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

Name	Threatened	Type of Presence
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		
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

Name	Threatened	Type of Presence
		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 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 - Defence - BROOME TRAINING DEPOT

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 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]		Breeding 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

Name	Threatened	Type of Presence
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
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		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
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 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

Name	Threatened	Type of Presence
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
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]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding 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

Name	Threatened	Type of Presence
		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 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

Name	Threatened	Type of Presence
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
Solenostomus paegnius Rough-snout Ghost Pipefish [68425]		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 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

Name	Threatened	Type of Presence
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	Species or species habitat known 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 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

Name	Status	Type of Presence
		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

Commonwealth Reserves Marine	[Resource Information]
Name	Label
Roebuck	Multiple Use Zone (IUCN VI)

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Broome Bird Observatory	WA
Broome Wildlife Centre	WA
Coulomb Point	WA
Unnamed WA51105	WA
Unnamed WA51162	WA
Unnamed WA51497	WA
Unnamed WA51583	WA
Unnamed WA51617	WA
Unnamed WA51932	WA
Unnamed WA52354	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

Name	Status	Type of Presence
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
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 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
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
Willie Creek Wetlands	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

-17.66167 122.28,-17.86806 122.27722

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 5

Likelihood of Occurrence of Flora of Conservation Significance

Species	Habit	Habitat	Database Searches				Previous Surveys							Likelihood of Occurrence Within the Study Area: Ranking Based on Desktop Review and Field Survey Results (NR: distance to nearest record)
			NatureMap	WA Herbarium	TPFL	EPBC Act Protected Matters	ENV (2008b)[1]	Biota (2009a)	Biota (2011a)	AECOM (2010)	Biota (2011b, c)	AECOM (2011a)	GHD (2013a)	
Threatened														
Seringia exastia	Multi-stemmed erect compact shrub.	Deep red sands (pindan) and dune swales.	✓	✓	✓	✓								Unlikely to occur: suitable habitat in the study area, but the species is recorded infrequently (NR: 8.5 km southwest); should have been recorded during the field survey, if present.
Priority 1														
Aphyllodium parvifolium	Trailing shrub.	Sandhills.	✓	✓										Unlikely to occur: suitable habitat in the study area, but the species is recorded infrequently in the locality (NR: 8.7 km west); should have been recorded during the field survey, if present.
Corymbia paractia	Tree.	Skeletal soils. In transition zone between coastal beach dunes and red pindan soils.	✓	✓										Recorded: 73 individuals from 27 locations.
Ipomoea tolmerana subsp. *occidentalis*	Trailing perennial with tuberous roots.	Pindan plains in open savanna woodland on sandy loam soils.		✓	✓									Unlikely to occur: suitable habitat in the study area, but the species is recorded infrequently in the locality (NR: 33.5 km northeast); should have been recorded during the field survey, if present.
Jacquemontia sp. Broome (A.A Mitchell 3028)	Creeping herb.	Pindan plain.	✓	✓								✓	✓	Recorded: 743 individuals at 47 locations.
Thespidium basiflorum	Densely tufted, multi-stemmed perennial herb.	Sandy soils, creeks.	✓	✓										Unlikely to occur: suitable habitat restricted in the study area, and the species is recorded infrequently in the locality (NR: 2.9 km west); should have been recorded during the field survey, if present.
Priority 2														
Gomphrena pusilla	Slender branching annual herb.	Fine beach sand. Behind foredune, on limestone.	✓	✓	✓		✓	✓	✓		✓			Unlikely to occur: no particularly suitable habitat in the study area (NR: 7.4 km west), and should have been recorded during the field survey, if present (flowers between March and June).

[1] Only Coulomb-Quondong data presented, as this was the only site from this survey within 40 km of the study area.

Species	Habit	Habitat	Database Searches				Previous Surveys							Likelihood of Occurrence Within the Study Area: Ranking Based on Desktop Review and Field Survey Results (NR: distance to nearest record)
			NatureMap	WA Herbarium	TPFL	EPBC Act Protected Matters	ENV (2008b)[1]	Biota (2009a)	Biota (2011a)	AECOM (2010)	Biota (2011b, c)	AECOM (2011a)	GHD (2013a)	
Priority 3														
Acacia monticola x *tumida* var. kulparn	Shrub.	Coastal pindan.	✓	✓										Unlikely to occur: suitable habitat in the study area, but the species is recorded infrequently in the locality (NR: 9.4 km southwest); should have been recorded during the field survey, if present.
Aphyllodium glossocarpum	Spreading or erect shrub.	On sand in Pindan.	✓	✓										May potentially occur: extensive suitable habitat in the study area; the species is recorded infrequently in the locality however there is a record in close proximity (NR: 0.4 km west).
Bonamia oblongifolia	Perennial herb.	Sandy or gravelly soils.	✓	✓										Recorded: 38 individuals from 9 locations.
Glycine pindanica	Prostrate or scrambling perennial herb or climber.	Pindan soils, disturbed soils.	✓	✓	✓								✓	May potentially occur: it is known to occur along sections of the Cape Leveque to Broome road to the north of the study area, in addition to 1.1 km west-southwest. There is potential for it to germinate opportunistically along the road within the study area following soil disturbance.
Goodenia byrnesii	Prostrate to decumbent herb.	On sand at edge of creek.	✓	✓	✓									Unlikely to occur: species may not have been identifiable at the time of survey (flowers January to February), however suitable habitat is restricted in the study area, and the species is only recorded infrequently in the locality (NR: 12.1 km southwest).
Lophostemon grandiflorus subsp. *grandiflorus*	Tree.	Damp habitats (swamps, seepages).	✓	✓						✓	✓			Unlikely to occur: suitable habitat restricted in the study area (NR 17.9 km northwest); should have been recorded during the field survey, if present.
Nicotiana heterantha	Decumbent short-lived annual or perennial herb.	Black clay, seasonally wet flats.	✓	✓	✓									Unlikely to occur: suitable habitat restricted in the study area (NR 1.9 km west); should have been recorded during the field survey, if present (flowers between March and June).
Polymeria sp. Broome (K.F. Kenneally 9759)	Prostrate sprawling herb.	Coastal Pindan.	✓	✓				✓						Recorded: 368 individuals from 74 locations.

Species	Habit	Habitat	Database Searches				Previous Surveys							Likelihood of Occurrence Within the Study Area: Ranking Based on Desktop Review and Field Survey Results (NR: distance to nearest record)
			NatureMap	WA Herbarium	TPFL	EPBC Act Protected Matters	ENV (2008b)[1]	Biota (2009a)	Biota (2011a)	AECOM (2010)	Biota (2011b, c)	AECOM (2011a)	GHD (2013a)	
Seringia katatona	Erect multi-stemmed shrub.	Dunes, red sand.	✓	✓	✓									Unlikely to occur: suitable habitat in the study area, but the species is recorded infrequently in the locality (NR 7.6 km southwest); should have been recorded during the field survey, if present.
Stylidium pindanicum	Annual herb.	Sand and clay; clay flats, seasonal swamps.	✓	✓										Recorded: 147 individuals at 5 locations.
Terminalia kumpaja	Shrub, or small spreading tree.	Red sand plains.	✓	✓										Recorded: 66 individuals at 14 locations.
Tetragonia coronata	Decumbent annual herb.	Red clay loam. Calcrete outcrops.		✓										Unlikely to occur: no particularly suitable habitat in the study area and the species is recorded infrequently in the locality (NR: 9.4 km east).
Priority 4														
Pittosporum moluccanum	Tree.	White sand, sand dunes.	✓	✓	✓		✓	✓		✓	✓	✓		Unlikely to occur: recorded frequently in the locality (NR: 20 km northwest); however no suitable habitat in the study area, and should have been recorded during the field survey, if present.

Appendix 6

Potential Fauna Species List

Amphibians

Family	Species Name	Common Name	NatureMap	ALA	EPBC	(GHD 2016a)	(Biota 2009)	(Biota 2011)	(GHD 2009a)
Pelodryadidae	*Cyclorana australis*	Giant Frog	•	•		•	•		
Pelodryadidae	*Cyclorana longipes*	Long-footed Frog	•	•		•	•		
Pelodryadidae	*Litoria caerulea*	Green Tree Frog	•	•		•	•		•
Pelodryadidae	*Litoria nasuta*	Striped Rocket Frog	•						
Pelodryadidae	*Litoria rothii*	Northern Laughing Tree Frog	•	•					
Pelodryadidae	*Litoria rubella*	Little Red Tree Frog	•	•		•			
Limnodynastidae	*Notaden nichollsi*	Desert Spadefoot	•	•					
Limnodynastidae	*Platyplectrum ornatum*	Ornate Burrowing Frog	•	•				•	
Myobatrachidae	*Uperoleia aspera*	Derby Toadlet	•	•					
Myobatrachidae	*Uperoleia talpa*	Ratcheting Toadlet	•	•		•			
Bufonidae	*Rhinella marina**	Cane Toad		•	•				

(* introduced species)

Reptiles

			Conservation Status													
Family	**Species Name**	**Common Name**	**State**	**Federal**	**NatureMap**	**ALA**	**DBCA**	**EPBC**	**(GHD 2016a)**	**(ENV 2008)**	**(Biota 2009)**	**(AECOM 2010)**	**(Biota 2011)**	**(GHD 2009a)**	**(GHD 2009b)**	**(GHD 2009c)**
Cheluidae	*Chelodina burrungandjii*	Northern Long-necked Turtle			•	•										
Diplodactylidae	*Amalosia rhombifer*				•	•						•	•			
Diplodactylidae	*Crenadactylus ocellatus*	South-western Clawless Gecko			•											
Diplodactylidae	*Diplodactylus conspicillatus*	Variable Fat-tailed Gecko			•	•					•	•	•			
Diplodactylidae	*Diplodactylus laevis*	Desert Fat-tailed Gecko				•										
Diplodactylidae	*Lucasium stenodactylum*				•	•			•		•					
Diplodactylidae	*Rhynchoedura ornata*	Western Beaked Gecko			•	•										
Diplodactylidae	*Strophurus ciliaris*				•	•			•	•	•	•	•	•		
Gekkonidae	*Gehyra australis*				•	•										
Gekkonidae	*Gehyra pilbara*				•	•					•			•		
Gekkonidae	*Gehyra punctata*					•										
Gekkonidae	*Gehyra purpurascens*				•											
Gekkonidae	*Gehyra variegata*				•	•						•				
Gekkonidae	*Hemidactylus frenatus**	Asian House Gecko			•	•		•						•		
Gekkonidae	*Heteronotia binoei*	Bynoe's Gecko			•	•				•	•		•	•		
Pygopodidae	*Delma borea*				•											
Pygopodidae	*Delma tincta*				•	•			•		•					
Pygopodidae	*Lialis burtonis*				•	•			•	•	•	•	•	•		
Pygopodidae	*Pygopus nigriceps*				•	•					•					
Pygopodidae	*Pygopus steelescotti*				•											
Agamidae	*Chelosania brunnea*	Chameleon Dragon			•	•										
Agamidae	*Chlamydosaurus kingii*	Frill-necked Lizard			•	•			•		•	•		•		
Agamidae	*Ctenophorus caudicinctus*	Ring-tailed Dragon			•											
Agamidae	*Ctenophorus isolepis*	Military Dragon			•	•										
Agamidae	*Ctenophorus nuchalis*	Central Netted Dragon			•	•										
Agamidae	*Ctenophorus reticulatus*	Western Netted Dragon				•										
Agamidae	*Diporiphora pindan*	Pindan Dragon			•	•				•	•	•	•	•		
Agamidae	*Lophognathus gilberti*	Ta-Ta or Gilbert's Dragon			•	•				•	•	•	•	•	•	•
Agamidae	*Moloch horridus*	Thorny Devil				•										
Agamidae	*Pogona microlepidota*	Kimberley Bearded Dragon				•										
Agamidae	*Pogona minor*				•	•					•	•	•	•		
Scincidae	*Carlia amax*				•				•							
Scincidae	*Carlia gracilis*													•		
Scincidae	*Carlia munda*				•	•			•					•		
Scincidae	*Carlia rufilatus*				•	•				•	•	•	•			
Scincidae	*Carlia triacantha*				•	•										
Scincidae	*Cryptoblepharus metallicus*				•	•								•		
Scincidae	*Cryptoblepharus plagiocephalus*					•										
Scincidae	*Cryptoblepharus ruber*				•	•				•			•			
Scincidae	*Cryptoblepharus tytthos*				•	•			•							
Scincidae	*Ctenotus angusticeps*		Priority 3		•	•	•	•								
Scincidae	*Ctenotus colletti*				•	•										
Scincidae	*Ctenotus helenae*					•										
Scincidae	*Ctenotus inornatus*				•	•			•	•	•	•	•	•		
Scincidae	*Ctenotus pantherinus*	Leopard Ctenotus			•				•							
Scincidae	*Ctenotus robustus*				•	•										
Scincidae	*Ctenotus saxatilis*	Rock Ctenotus			•											
Scincidae	*Ctenotus serventyi*				•						•					

			Conservation Status															
Family	**Species Name**	**Common Name**	**State**	**Federal**	**NatureMap**	**ALA**	**DBCA**	**EPBC**	**(GHD 2016a)**	**(ENV 2008)**	**(Biota 2009)**	**(AECOM 2010)**	**(Biota 2011)**	**(GHD 2009a)**	**(GHD 2009b)**	**(GHD 2009c)**
Scincidae	*Eremiascincus isolepis*				•	•			•	•	•	•	•	•		
Scincidae	*Lerista apoda*				•	•					•		•	•		
Scincidae	*Lerista bipes*				•	•				•	•		•	•		
Scincidae	*Lerista griffini*				•	•					•			•		
Scincidae	*Lerista labialis*				•					•						
Scincidae	*Lerista separanda*		Priority 2		•	•	•				•					
Scincidae	*Liopholis kintorei*	Great Desert Skink	Schedule 3	Vulnerable	•		•									
Scincidae	*Menetia greyii*				•	•							•	•		
Scincidae	*Menetia maini*				•	•			•							
Scincidae	*Morethia ruficauda*				•	•			•							
Scincidae	*Morethia storri*				•	•					•					
Scincidae	*Proablepharus tenuis*				•	•					•					
Scincidae	*Tiliqua multifasciata*	Central Blue-tongue			•	•					•			•		
Scincidae	*Tiliqua scincoides*	Eastern Blue-tongue			•	•			•	•	•	•	•	•		
Varanidae	*Varanus acanthurus*	Spiny-tailed Goanna			•	•						•				
Varanidae	*Varanus brevicauda*	Short-tailed Pygmy Goanna			•	•					•					
Varanidae	*Varanus gouldii*	Bungarra or Sand Goanna			•	•			•		•	•				
Varanidae	*Varanus mertensi*	Merten's Water Monitor				•										
Varanidae	*Varanus panoptes*	Yellow-spotted Goanna			•	•					•	•				
Varanidae	*Varanus sparnus*	Dampierland Goanna	Priority 1		•		•									
Varanidae	*Varanus tristis*	Racehorse Goanna			•	•			•	•	•	•	•			
Typhlopidae	*Anilios diversus*				•	•				•	•		•			
Typhlopidae	*Anilios grypus*				•	•										
Typhlopidae	*Anilios kimberleyensis*													•		
Typhlopidae	*Indotyphlops braminus**					•		•								
Pythonidae	*Antaresia childreni*	Children's Python			•	•										
Pythonidae	*Antaresia stimsoni*	Stimson's Python			•	•			•		•	•				
Pythonidae	*Aspidites melanocephalus*	Black-headed Python			•	•							•	•		
Pythonidae	*Liasis fuscus*	Water Python				•										
Pythonidae	*Liasis olivaceus*	Olive Python			•	•				•						
Colubridae	*Dendrelaphis punctulata*	Green Tree Snake			•	•							•			
Elapidae	*Brachyurophis roperi*				•	•					•		•			
Elapidae	*Demansia angusticeps*				•	•			•		•		•	•		
Elapidae	*Demansia olivacea*	Olive Whipsnake			•											
Elapidae	*Demansia psammophis*	Yellow-faced Whipsnake				•										
Elapidae	*Furina ornata*	Moon Snake			•	•					•		•	•		
Elapidae	*Pseudechis australis*	Mulga Snake			•	•			•	•	•			•		
Elapidae	*Pseudonaja mengdeni*	Western Brown Snake			•	•			•		•					
Elapidae	*Pseudonaja modesta*	Ringed Brown Snake				•										
Elapidae	*Pseudonaja nuchalis*	Gwardar; Northern Brown Snake			•	•								•		
Elapidae	*Simoselaps anomalus*	Desert Banded Snake			•	•										
Elapidae	*Simoselaps bertholdi*	Jan's Banded Snake				•										
Elapidae	*Simoselaps minimus*		Priority 2		•	•	•				•					
Elapidae	*Suta punctata*	Spotted Snake			•	•					•		•			

(* introduced species)

Mammals

			Conservation Status																	
Family	**Species Name**	**Common Name**	**State**	**Federal**	**NatureMap**	**ALA**	**DBCA**	**EPBC**	**(AECOM 2011)**	**(GHD 2016b)**	**(GHD 2016a)**	**(GHD 2013)**	**(ENV 2008)**	**(Biota 2009)**	**(AECOM 2010)**	**(Biota 2011)**	**(GHD 2009a)**	**(GHD 2009b)**	**(GHD 2009c)**
Tachyglossidae	*Tachyglossus aculeatus*	Short-beaked Echidna			•							•			•				
Dasyuridae	*Dasyurus hallucatus*	Northern Quoll	Schedule 2	Endangered	•		•												
Dasyuridae	*Phascogale tapoatafa*	Kimberley Brush-tailed Phascogale	Schedule 3; Priority 1	Vulnerable	•		•												
Dasyuridae	*Planigale ingrami*	Long-tailed Planigale			•														
Dasyuridae	*Planigale maculata*	Common Planigale			•							•							
Dasyuridae	*Sminthopsis youngsoni*	Lesser Hairy-footed Dunnart			•														
Peramelidae	*Isoodon auratus*	Golden Bandicoot	Schedule 3	Vulnerable	•		•												
Thylacomyidae	*Macrotis lagotis*	Bilby, Dalgyte	Schedule 3	Vulnerable	•	•	•	•	•	•	•	•			•				
Phalangeridae	*Trichosurus vulpecula*	Northern Brushtail Possum	Schedule 3		•	•	•										•		
Phalangeridae	*Wyulda squamicaudata*	Scaly-tailed Possum	Priority 3		•		•												
Potoroidae	*Bettongia lesueur*	Burrowing Bettong, Boodie			•		•												
Macropodidae	*Lagorchestes conspicillatus*	Spectacled Hare-wallaby	Priority 3		•		•												
Macropodidae	*Notamacropus agilis*	Agile Wallaby			•	•						•		•	•		•	•	
Macropodidae	*Onychogalea unguifera*	Northern Nailtail Wallaby, Karrabul			•	•											•		
Muridae	*Hydromys chrysogaster*	Water-rat	Priority 4		•		•												
Muridae	*Mesembriomys macrurus*	Golden-backed Tree-rat	Priority 4	Vulnerable	•		•												
Muridae	*Mus musculus**	House Mouse			•	•		•					•	•					
Muridae	*Pseudomys delicatulus*	Delicate Mouse			•	•							•	•	•	•	•		
Muridae	*Pseudomys nanus*	Western Chestnut Mouse			•	•						•							
Muridae	*Rattus rattus**	Black Rat			•	•		•					•						
Muridae	*Rattus tunneyi*	Pale Field-rat											•						
Leporidae	*Oryctolagus cuniculus**	Rabbit						•											
Pteropodidae	*Pteropus alecto*	Black Flying-fox			•	•											•		
Pteropodidae	*Pteropus scapulatus*	Little Red Flying-fox			•	•													
Emballonuridae	*Saccolaimus flaviventris*	Yellow-bellied Sheath-tailed Bat			•	•							•	•					
Emballonuridae	*Saccolaimus saccolaimus*	Bare-rumped Sheath-tailed Bat	Priority 3	Vulnerable	•	•		•											
Molossidae	*Chaerephon jobensis*	Greater Northern Free-tailed Bat			•	•							•	•					
Molossidae	*Ozimops cobourgianus*	Northern Coastal Free-tailed Bat	Priority 1		•	•	•						•						
Molossidae	*Ozimops lumsdenae*	Northern Free-tailed Bat											•						
Miniopteridae	*Miniopterus orianae*	Large Bent-winged Bat			•	•													
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat			•	•							•	•					
Vespertilionidae	*Chalinolobus nigrogriseus*	Hoary Wattled Bat			•	•							•	•					
Vespertilionidae	*Nyctophilus arnhemensis*	Arnhem Long-eared Bat			•	•								•					
Vespertilionidae	*Nyctophilus daedalus*	Pallid Long-eared Bat			•	•													
Vespertilionidae	*Nyctophilus geoffroyi*	Lesser Long-eared Bat			•	•							•						
Vespertilionidae	*Pipistrellus westralis*	Northern Pipistrelle			•	•													
Vespertilionidae	*Scotorepens greyii*	Little Broad-nosed Bat			•	•							•	•					
Vespertilionidae	*Scotorepens sanborni*	Northern Broad-nosed Bat			•	•								•					
Vespertilionidae	*Vespadelus caurinus*	Northern Cave-bat											•						
Canidae	*Canis lupus**	Dog			•				•			•	•	•	•		•	•	•
Canidae	*Vulpes vulpes**	Red Fox						•											
Felidae	*Felis catu*s*	Cat			•			•	•			•	•	•	•		•		
Equidae	*Equus asinus**	Donkey						•											
Equidae	*Equus caballus**	Horse						•									•		•
Suidae	*Sus scrofa**	Pig						•											
Camelidae	*Camelus dromedarius**	Dromedary, Camel						•											
Bovidae	*Bos taurus**	European Cattle													•				

(* introduced species)

Avifauna

			Conservation Status												
Family	**Common Name**	**Species Name**	**State**	**Federal**	**NatureMap**	**ALA**	**DBCA**	**EPBC**	**(GHD 2013)**	**(ENV 2008)**	**(AECOM 2010)**	**(GHD 2009a)**	**(GHD 2009b)**	**(GHD 2009c)**
Casuariidae	Emu	*Dromaius novaehollandiae*			•	•								
Phasianidae	Brown Quail	*Coturnix ypsilophora*			•	•			•	•	•			
Anseranatidae	Magpie Goose	*Anseranas semipalmata*			•	•		•						
Anatidae	Plumed Whistling-Duck	*Dendrocygna eytoni*			•	•								
Anatidae	Wandering Whistling-Duck	*Dendrocygna arcuata*			•	•								
Anatidae	Freckled Duck	*Stictonetta naevosa*				•								
Anatidae	Black Swan	*Cygnus atratus*			•	•								
Anatidae	Radjah Shelduck	*Tadorna radjah*			•	•								
Anatidae	Pink-eared Duck	*Malacorhynchus membranaceus*			•	•								
Anatidae	Green Pygmy-goose	*Nettapus pulchellus*			•	•								
Anatidae	Garganey	*Anas querquedula*	Schedule 5	Marine; Migratory	•	•	•							
Anatidae	Australasian Shoveler	*Anas rhynchotis*			•	•								
Anatidae	Grey Teal	*Anas gracilis*			•	•								
Anatidae	Pacific Black Duck	*Anas superciliosa*			•	•								
Anatidae	Hardhead	*Aythya australis*			•	•								
Podicipedidae	Australasian Grebe	*Tachybaptus novaehollandiae*			•	•								
Podicipedidae	Hoary-headed Grebe	*Poliocephalus poliocephalus*			•	•								
Podicipedidae	Great Crested Grebe	*Podiceps cristatus*			•	•								
Columbidae	Rock Dove	*Columba livia*			•	•		•						
Columbidae	Common Bronzewing	*Phaps chalcoptera*				•			•					
Columbidae	Flock Bronzewing	*Phaps histrionica*			•	•								
Columbidae	Crested Pigeon	*Ocyphaps lophotes*			•	•			•	•	•	•	•	•
Columbidae	Spinifex Pigeon	*Geophaps plumifera*			•	•								
Columbidae	Diamond Dove	*Geopelia cuneata*			•	•			•	•			•	•
Columbidae	Peaceful Dove	*Geopelia striata*			•	•			•	•	•	•		
Columbidae	Bar-shouldered Dove	*Geopelia humeralis*			•	•			•	•	•	•		
Podargidae	Tawny Frogmouth	*Podargus strigoides*			•	•			•	•	•	•		
Eurostopodidae	Spotted Nightjar	*Eurostopodus argus*			•	•					•	•		
Aegothelidae	Australian Owlet-nightjar	*Aegotheles cristatus*			•	•			•		•			
Apodidae	Fork-tailed Swift	*Apus pacificus*	Schedule 5	Marine; Migratory	•	•	•	•			•			
Phalacrocoracidae	Little Pied Cormorant	*Microcarbo melanoleucos*			•	•								
Phalacrocoracidae	Little Black Cormorant	*Phalacrocorax sulcirostris*			•	•								
Phalacrocoracidae	Pied Cormorant	*Phalacrocorax varius*			•	•					•			
Pelecanidae	Australian Pelican	*Pelecanus conspicillatus*			•	•								
Ciconiidae	Black-necked Stork	*Ephippiorhynchus asiaticus*			•	•								
Ardeidae	White-necked Heron	*Ardea pacifica*			•	•						•		
Ardeidae	Eastern Great Egret	*Ardea modesta*		Marine	•	•	•	•						
Ardeidae	Intermediate Egret	*Ardea intermedia*			•	•								
Ardeidae	Cattle Egret	*Ardea ibis*			•	•	•	•						
Ardeidae	White-faced Heron	*Egretta novaehollandiae*			•	•					•			
Ardeidae	Little Egret	*Egretta garzetta*			•	•								
Ardeidae	Nankeen Night-Heron	*Nycticorax caledonicus*			•	•				•				
Threskiornithidae	Glossy Ibis	*Plegadis falcinellus*	Schedule 5	Marine; Migratory	•	•	•							
Threskiornithidae	Australian White Ibis	*Threskiornis molucca*				•			•					
Threskiornithidae	Straw-necked Ibis	*Threskiornis spinicollis*			•	•					•	•	•	•
Threskiornithidae	Royal Spoonbill	*Platalea regia*			•	•			•					
Accipitridae	Eastern Osprey	*Pandion cristatus*	Schedule 5	Marine	•	•	•	•		•	•			
Accipitridae	Black-shouldered Kite	*Elanus axillaris*			•	•			•		•	•		
Accipitridae	Square-tailed Kite	*Lophoictinia isura*			•	•				•		•		

			Conservation Status												
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Accipitridae	Black-breasted Buzzard	*Hamirostra melanosternon*			•	•								
Accipitridae	White-bellied Sea-Eagle	*Haliaeetus leucogaster*			•	•		•		•	•			
Accipitridae	Whistling Kite	*Haliastur sphenurus*			•	•			•		•	•	•	•
Accipitridae	Brahminy Kite	*Haliastur indus*			•	•					•			
Accipitridae	Black Kite	*Milvus migrans*			•	•			•		•	•	•	•
Accipitridae	Brown Goshawk	*Accipiter fasciatus*			•	•			•	•	•	•		
Accipitridae	Collared Sparrowhawk	*Accipiter cirrocephalus*			•	•			•					
Accipitridae	Spotted Harrier	*Circus assimilis*			•	•								
Accipitridae	Wedge-tailed Eagle	*Aquila audax*			•	•								
Accipitridae	Little Eagle	*Hieraaetus morphnoides*			•	•								
Falconidae	Nankeen Kestrel	*Falco cenchroides*			•	•			•	•	•	•		
Falconidae	Brown Falcon	*Falco berigora*			•	•			•	•	•	•		
Falconidae	Australian Hobby	*Falco longipennis*			•	•					•	•		
Falconidae	Grey Falcon	*Falco hypoleucos*	Schedule 3		•	•	•							
Falconidae	Peregrine Falcon	*Falco peregrinus*	Schedule 7		•	•	•			•	•			
Gruidae	Brolga	*Grus rubicunda*			•	•								
Rallidae	Purple Swamphen	*Porphyrio porphyrio*			•	•								
Rallidae	Buff-banded Rail	*Gallirallus philippensis*			•	•								
Rallidae	Spotless Crake	*Porzana tabuensis*			•	•								
Rallidae	White-Browed Crake	*Amaurornis cinerea*				•								
Rallidae	Black-tailed Native-hen	*Tribonyx ventralis*			•	•								
Rallidae	Eurasian Coot	*Fulica atra*			•	•								
Otididae	Australian Bustard	*Ardeotis australis*			•	•			•					
Burhinidae	Bush Stone-curlew	*Burhinus grallarius*			•	•				•				
Charadriidae	Banded Lapwing	*Vanellus tricolor*			•	•								
Charadriidae	Masked Lapwing	*Vanellus miles*			•	•					•			
Rostratulidae	Australian Painted Snipe	*Rostratula australis*	Schedule 2	Endangered	•	•	•	•						
Scolopacidae	Pin-tailed Snipe	*Gallinago stenura*	Schedule 5	Marine; Migratory	•	•	•	•						
Scolopacidae	Swinhoe's Snipe	*Gallinago megala*	Schedule 5	Marine; Migratory	•	•	•	•						
Turnicidae	Red-backed Button-quail	*Turnix maculosus*			•	•			•					
Turnicidae	Red-chested Button-quail	*Turnix pyrrhothorax*			•	•					•			
Turnicidae	Little Button-quail	*Turnix velox*			•	•			•					
Glareolidae	Oriental Pratincole	*Glareola maldivarum*	Schedule 5	Migratory	•	•	•	•						
Glareolidae	Australian Pratincole	*Stiltia isabella*			•	•								
Laridae	Silver Gull	*Chroicocephalus novaehollandiae*			•	•				•	•	•		
Cacatuidae	Red-tailed Black-Cockatoo	*Calyptorhynchus banksii*			•	•			•		•			
Cacatuidae	Galah	*Eolophus roseicapillus*			•	•						•		
Cacatuidae	Little Corella	*Cacatua sanguinea*			•	•			•		•	•	•	•
Cacatuidae	Cockatiel	*Nymphicus hollandicus*			•	•						•		
Psittacidae	Red-collared Lorikeet	*Trichoglossus haematodus*			•	•			•	•	•	•		
Psittacidae	Varied Lorikeet	*Psitteuteles versicolor*			•	•			•	•				
Psittacidae	Red-winged Parrot	*Aprosmictus erythropterus*			•	•			•	•	•	•	•	•
Psittacidae	Budgerigar	*Melopsittacus undulatus*			•	•			•					
Cuculidae	Pheasant Coucal	*Centropus phasianinus*			•	•			•	•	•	•		
Cuculidae	Eastern Koel	*Eudynamys orientalis*				•								
Cuculidae	Channel-billed Cuckoo	*Scythrops novaehollandiae*			•	•					•			
Cuculidae	Horsfield's Bronze-Cuckoo	*Chalcites basalis*			•	•				•	•			
Cuculidae	Black-eared Cuckoo	*Chalcites osculans*			•	•				•	•			
Cuculidae	Shining Bronze-Cuckoo	*Chalcites lucidus*			•	•								
Cuculidae	Little Bronze-Cuckoo	*Chalcites minutillus*			•	•								
Cuculidae	Pallid Cuckoo	*Cacomantis pallidus*			•	•					•			

			Conservation Status												
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Cuculidae	Brush Cuckoo	*Cacomantis variolosus*			•	•			•	•	•			
Cuculidae	Oriental Cuckoo	*Cuculus optatus*	Schedule 5	Marine; Migratory	•	•	•	•			•			
Strigidae	Barking Owl	*Ninox connivens*			•	•								
Strigidae	Southern Boobook	*Ninox novaeseelandiae*				•			•			•		
Tytonidae	Masked Owl	*Tyto novaehollandiae*	Priority 1	Vulnerable		•	•	•						
Tytonidae	Eastern Barn Owl	*Tyto javanica*			•	•			•					
Tytonidae	Eastern Grass Owl	*Tyto longimembris*			•	•								
Halcyonidae	Blue-winged Kookaburra	*Dacelo leachii*			•	•			•	•	•	•		
Halcyonidae	Red-backed Kingfisher	*Todiramphus pyrrhopygius*			•	•				•	•			
Halcyonidae	Sacred Kingfisher	*Todiramphus sanctus*			•	•			•	•	•			
Meropidae	Rainbow Bee-eater	*Merops ornatus*		Marine	•	•	•	•	•	•	•	•	•	•
Coraciidae	Dollarbird	*Eurystomus orientalis*			•	•			•	•	•	•		
Climacteridae	Black-Tailed Treecreeper	*Climacteris melanura*				•			•					
Ptilonorhychidae	Great Bowerbird	*Ptilonorhynchus nuchalis*			•	•				•	•	•		
Maluridae	Red-backed Fairy-wren	*Malurus melanocephalus*			•	•			•	•	•			
Maluridae	White-winged Fairy-wren	*Malurus leucopterus*			•	•								
Maluridae	Variegated Fairy-wren	*Malurus lamberti*			•	•			•	•	•	•		
Acanthizidae	Rufous Fieldwren	*Calamanthus campestris*				•								
Acanthizidae	Weebill	*Smicrornis brevirostris*			•	•			•	•		•		
Acanthizidae	Mangrove Gerygone	*Gerygone levigaster*			•	•					•			
Acanthizidae	White-throated Gerygone	*Gerygone albogularis*			•	•			•	•	•	•		
Pardalotidae	Red-browed Pardalote	*Pardalotus rubricatus*			•	•				•	•			
Pardalotidae	Striated Pardalote	*Pardalotus striatus*			•	•				•				
Meliphagidae	Pied Honeyeater	*Certhionyx variegatus*			•	•								
Meliphagidae	Singing Honeyeater	*Lichenostomus virescens*			•	•			•	•	•	•		
Meliphagidae	White-gaped Honeyeater	*Lichenostomus unicolor*			•	•				•	•	•		
Meliphagidae	Yellow-tinted Honeyeater	*Lichenostomus flavescens*			•	•			•	•				
Meliphagidae	White-fronted Honeyeater	*Purnella albifrons*			•	•								
Meliphagidae	Yellow-throated Miner	*Manorina flavigula*			•	•								
Meliphagidae	Bar-Breasted Honeyeater	*Ramsayornis fasciatus*				•								
Meliphagidae	Rufous-throated Honeyeater	*Conopophila rufogularis*			•	•			•	•	•	•		
Meliphagidae	Crimson Chat	*Epthianura tricolor*			•	•								
Meliphagidae	Black Honeyeater	*Sugomel niger*				•								
Meliphagidae	Banded Honeyeater	*Cissomela pectoralis*			•	•			•				•	•
Meliphagidae	Brown Honeyeater	*Lichmera indistincta*			•	•			•	•	•	•		
Meliphagidae	Black-chinned Honeyeater	*Melithreptus gularis*			•	•				•	•			
Meliphagidae	White-throated Honeyeater	*Melithreptus albogularis*			•	•					•		•	•
Meliphagidae	Little Friarbird	*Philemon citreogularis*			•	•			•	•	•	•		
Pomatostomidae	Grey-crowned Babbler	*Pomatostomus temporalis*			•	•			•	•	•	•	•	•
Neosittidae	Varied Sittella	*Daphoenositta chrysoptera*			•	•				•	•			
Campephagidae	Black-faced Cuckoo-shrike	*Coracina novaehollandiae*			•	•			•	•	•	•	•	•
Campephagidae	White-winged Triller	*Lalage sueurii*			•	•			•		•			
Pachycephalidae	Rufous Whistler	*Pachycephala rufiventris*			•	•			•	•	•	•	•	•
Pachycephalidae	Grey Shrike-thrush	*Colluricincla harmonica*			•	•			•	•	•	•		
Oriolidae	Olive-backed Oriole	*Oriolus sagittatus*			•	•					•			
Artamidae	Masked Woodswallow	*Artamus personatus*			•	•								
Artamidae	White-browed Woodswallow	*Artamus superciliosus*			•	•								
Artamidae	Black-faced Woodswallow	*Artamus cinereus*			•	•			•	•	•			
Artamidae	Little Woodswallow	*Artamus minor*			•	•				•	•			
Artamidae	Grey Butcherbird	*Cracticus torquatus*			•	•								
Artamidae	Pied Butcherbird	*Cracticus nigrogularis*			•	•			•	•	•	•	•	•

			Conservation Status												
Family	**Common Name**	**Species Name**	**State**	**Federal**	**NatureMap**	**ALA**	**DBCA**	**EPBC**	**(GHD 2013)**	**(ENV 2008)**	**(AECOM 2010)**	**(GHD 2009a)**	**(GHD 2009b)**	**(GHD 2009c)**
Artamidae	Australian Magpie	*Cracticus tibicen*			•	•			•			•		
Rhipiduridae	Grey Fantail	*Rhipidura albiscapa*			•	•							•	•
Rhipiduridae	Northern Fantail	*Rhipidura rufiventris*			•	•				•	•			
Rhipiduridae	Willie Wagtail	*Rhipidura leucophrys*			•	•			•	•	•	•	•	•
Corvidae	Torresian Crow	*Corvus orru*			•	•			•	•	•	•	•	•
Monarchidae	Broad-billed Flycatcher	*Myiagra ruficollis*			•	•								
Monarchidae	Leaden Flycatcher	*Myiagra rubecula*			•	•			•	•	•			
Monarchidae	Paperbark Flycatcher	*Myiagra nana*			•	•				•	•	•		
Monarchidae	Magpie-lark	*Grallina cyanoleuca*			•	•			•		•	•	•	•
Petroicidae	Jacky Winter	*Microeca fascinans*			•	•				•	•			
Petroicidae	Hooded Robin	*Melanodryas cucullata*			•	•			•					
Alaudidae	Horsfield's Bushlark	*Mirafra javanica*			•	•								
Cisticolidae	Golden-headed Cisticola	*Cisticola exilis*			•	•			•	•		•		
Megaluridae	Tawny Grassbird	*Megalurus timoriensis*			•	•								
Megaluridae	Little Grassbird	*Megalurus gramineus*			•	•								
Megaluridae	Rufous Songlark	*Cincloramphus mathewsi*				•			•					
Megaluridae	Brown Songlark	*Cincloramphus cruralis*				•								
Hirundinidae	Barn Swallow	*Hirundo rustica*	Schedule 5	Marine; Migratory	•	•	•	•						
Hirundinidae	Fairy Martin	*Petrochelidon ariel*			•	•								
Hirundinidae	Tree Martin	*Petrochelidon nigricans*			•	•					•			
Hirundinidae	Red-rumped Swallow	*Cecropis daurica*	Schedule 5	Marine; Migratory	•			•						
Nectariniidae	Mistletoebird	*Dicaeum hirundinaceum*			•	•			•		•			
Estrildidae	Zebra Finch	*Taeniopygia guttata*			•	•				•				
Estrildidae	Double-barred Finch	*Taeniopygia bichenovii*			•	•				•		•	•	•
Estrildidae	Long-tailed Finch	*Poephila acuticauda*			•	•			•	•	•			
Estrildidae	Star Finch	*Neochmia ruficauda*			•	•								
Estrildidae	Painted Finch	*Emblema pictum*			•	•								
Estrildidae	Gouldian Finch	*Erythrura gouldiae*	Priority 4	Endangered	•	•	•	•						
Estrildidae	Chestnut-breasted Mannikin	*Lonchura castaneothorax*			•	•								
Estrildidae	Pictorella Mannikin	*Heteromunia pectoralis*			•	•								
Motacillidae	Australasian Pipit	*Anthus novaeseelandiae*			•	•				•	•	•		
Motacillidae	Eastern Yellow Wagtail	*Motacilla tschutschensis*	Schedule 5	Marine; Migratory	•	•	•	•						
Motacillidae	Grey Wagtail	*Motacilla cinerea*	Schedule 5	Marine; Migratory		•		•						
Motacillidae	White Wagtail	*Motacilla alba*				•								

References

AECOM (2010). Supplementary Terrestrial Fauna and Habitat Assessment of James Price Point, WA. Unpublished report prepared for the Department of State Development, AECOM, Western Australia.

AECOM (2011). Browse LNG Precinct Access Road Targeted Fauna Survey - Greater Bilby. Unpublished Report Prepared for Main Roads, AECOM Australia Pty Ltd.

Biota (2009). James Price Point Terrestrial Fauna Survey: Wet Season 2009. Unpublished report prepared for the Department of State Development, December 2009, Biota Environmental Sciences, Western Australia.

Biota (2011). James Price Point Browse LNG Precinct Targeted Terrestrial Fauna Survey - March 2010. Unpublished report prepared for Environmental Resources Management, March 2011, Biota Environmental Sciences, Western Australia.

ENV (2008). Perpendicular Head-North Head, Packer Island, Gourdon Bay and Coulomb-Quondong Vertebrate Fauna Assessment. Unpublished report prepared for Department of Industry and Resources, ENV Australia, Western Australia.

GHD (2009a). Report for Broome North Development Area - Targeted Fauna Survey. Unpublished report prepared for LandCorp, GHD, Western Australia.

GHD (2009b). Broome North - Southern Portion (Area A). Preliminary Environmental Impact Assessment and Biological Survey. Unpublished report prepared for LandCorp, GHD, Western Australia.

GHD (2009c). Broome North - Southern Portion (Area B). Preliminary Environmental Impact Assessment and Biological Survey. Unpublished report prepared for LandCorp, GHD, Western Australia.

GHD (2013). Cape Leveque Road Upgrade Targeted Greater Bilby Assessment. Unpublished report prepared for Main Roads WA, GHD, Western Australia.

GHD (2016a). Cape Leveque Road SLK 25 - 102.6 Targeted Greater Bilby Survey. Unpublished Report Prepared for Main Roads, GHD.

GHD (2016b). Cape Leveque Road SLK 0 - 25 Targeted Greater Bilby Survey. Unpublished Report Prepared for Main Roads, GHD.

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Appendix 7

Likelihood of Occurrence of Fauna of Conservation Significance

CLASS Family	Species Name	Common Name	State	Federal	NatureMap	ALA	DBCA	EPBC	(AECOM 2011)	(GHD 2016a)	(GHD 2016b)	(GHD 2013)	(ENV 2008)	(Biota 2009)	(AECOM 2010)	(Biota 2011)	(GHD 2009a)	(GHD 2009b)	(GHD 2009c)	Preferred Habitat	Habitat Available in Study Area?	Likelihood of Occurrence
MAMMALS																						
Dasyuridae	*Dasyurus hallucatus*	Northern Quoll	Schedule 2	Endangered	•		•													Rocky areas and tall open coastal eucalypt forests, sandstone escarpment	✗	Unlikely to occur
Dasyuridae	*Phascogale tapoatafa*	Kimberley Brush-tailed Phascogale	Schedule 3; Priority 1	Vulnerable	•		•													Woodlands dominated by *Eucalyptus* and *Corymbia* species with old and dead trees that have suitable nesting hollows	✓	Unlikely to occur
Peramelidae	*Isoodon auratus*	Golden Bandicoot	Schedule 3	Vulnerable	•		•													Hummock grass on sandstone, grassy woodlands and deciduous vine thickets in the Kimberley	✓	Unlikely to occur
Thylacomyidae	*Macrotis lagotis*	Bilby, Dalgyte	Schedule 3	Vulnerable	•	•	•	•	•	•	•	•			•					*Acacia* shrubland, open tussock grassland on uplands and hills, mulga woodland/ shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas	✓	Likely to occur - recorded during the field survey.
Phalangeridae	*Trichosurus vulpecula*	Northern Brushtail Possum	Schedule 3		•	•	•										•			Most treed environments	✓	Unlikely to occur
Phalangeridae	*Wyulda squamicaudata*	Scaly-tailed Possum	Priority 3		•		•													Rocky sandstone areas with adjacent low open woodlands, closed forest or vine thickets	✗	Unlikely to occur
Macropodidae	*Lagorchestes conspicillatus*	Spectacled Hare-wallaby	Priority 3		•		•													Tropical tussock or hummock grassland with mid-dense or sparse tree and shrub cover	✓	May potentially occur
Muridae	*Hydromys chrysogaster*	Water-rat	Priority 4		•		•													Marine environments along the coast	✗	Unlikely to occur
Muridae	*Mesembriomys macrurus*	Golden-backed Tree-rat	Priority 4	Vulnerable	•		•													Near coastal, higher rainfall areas of northwest Kimberley	✗	Would not occur
Emballonuridae	*Saccolaimus saccolaimus*	Bare-rumped Sheath-tailed Bat	Priority 3	Vulnerable	•	•		•												Woodland, forest and open environments, roosts in tree hollows	✓	May potentially occur
Molossidae	*Ozimops cobourgianus*	Northern Coastal Free-tailed Bat	Priority 1		•	•	•						•							Mangroves and adjacent coastal vegetation	✓	Unlikely to occur
REPTILES																						
Scincidae	*Ctenotus angusticeps*		Priority 3		•	•	•	•												Coastal mudflats vegetated with samphire, sometimes sheltering in crab holes in intertidal zone	✗	Unlikely to occur
Scincidae	*Lerista separanda*		Priority 2		•	•	•							•						Dune crests and sandy areas of southwest Kimberley coast	✓	Unlikely to occur – infrequently recorded in the locality, despite presence of suitable habitat.
Scincidae	*Liopholis kintorei*	Great Desert Skink	Schedule 3	Vulnerable	•		•													Red sandplains and sand ridges of interior deserts	✗	Would not occur
Varanidae	*Varanus sparnus*	Dampierland Goanna	Priority 1		•		•													Pindan shrubland on Dampier Peninsula	✓	Likely to occur
Elapidae	*Simoselaps minimus*		Priority 2		•	•	•							•						Open areas with sandy substrate	✓	May potentially occur
AVIFAUNA																						
Anatidae	*Anas querquedula*	Garganey	Schedule 5	Migratory	•	•	•													Large freshwater or occasionally brackish lakes with abundant floating, emergent and fringing vegetation, also shallow flood plains, shallow dams, pans and sewage ponds	✓	May potentially occur
Apodidae	*Apus pacificus*	Fork-tailed Swift	Schedule 5		•	•	•	•							•					Exclusively aerial in Australia, does not rely on terrestrial environments	✓	May potentially occur
Ardeidae	*Ardea modesta*	Eastern Great Egret		Marine	•	•	•	•												Wide range of watered wetland habitats	✓	Likely to occur – recorded during the field survey.
Threskiornithidae	*Plegadis falcinellus*	Glossy Ibis	Schedule 5	Migratory	•	•	•													Fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation	✓	May potentially occur

CLASS Family	Species Name	Common Name	State	Federal	NatureMap	ALA	DBCA	EPBC	(AECOM 2011)	(GHD 2016a)	(GHD 2016b)	(GHD 2013)	(ENV 2008)	(Biota 2009)	(AECOM 2010)	(Biota 2011)	(GHD 2009a)	(GHD 2009b)	(GHD 2009c)	Preferred Habitat	Habitat Available in Study Area?	Likelihood of Occurrence
Accipitridae	*Pandion cristatus*	Eastern Osprey	Schedule 5	Migratory	•	•	•	•					•		•					Coastal habitats and terrestrial wetlands, occasionally along inland rivers	✓	May potentially occur
Falconidae	*Falco hypoleucos*	Grey Falcon	Schedule 3		•	•	•													Inhabits lightly wooded coastal and riverine plains, also near wetlands where surface water attracts prey.	✓	May potentially occur
Falconidae	*Falco peregrinus*	Peregrine Falcon	Schedule 7		•	•	•						•		•					Forest, woodlands, wetlands and open country	✓	May potentially occur
Rostratulidae	*Rostratula australis*	Australian Painted Snipe	Schedule 2	Endangered	•	•	•	•												Shallow terrestrial freshwater wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains	✓	May potentially occur
Scolopacidae	*Gallinago stenura*	Pin-tailed Snipe	Schedule 5	Migratory	•	•	•	•												Shallow freshwater swamps, ponds and lakes with emergent, sparse to dense cover of grass/sedge	✓	May potentially occur
Scolopacidae	*Gallinago megala*	Swinhoe's Snipe	Schedule 5	Migratory	•	•	•	•												Wetlands, swamps, freshwater streams and grasslands	✓	May potentially occur
Glareolidae	*Glareola maldivarum*	Oriental Pratincole	Schedule 5	Migratory	•	•	•	•												Open plains, floodplains, short grassland, coastal areas and lagoons. Also occurs near terrestrial wetlands, such as billabongs, lakes or creeks, and artificial wetlands such as reservoirs, saltworks and sewage farms, especially around the margins	✓	May potentially occur
Cuculidae	*Cuculus optatus*	Oriental Cuckoo	Schedule 5	Migratory	•	•	•	•							•					Monsoon forest, wet Eucalypt forest, river margins and mangroves	✗	Unlikely to occur
Tytonidae	*Tyto novaehollandiae*	Masked Owl	Priority 1	Vulnerable		•	•	•												Riparian forest, rainforest, open forest, Melaleuca swamps and the edges of mangroves	✗	Unlikely to occur
Meropidae	*Merops ornatus*	Rainbow Bee-eater		Marine	•	•	•	•				•	•		•		•	•	•	Variety of habitats that are generally well watered, lightly wooded with suitable (sandy) soil for nesting and a tall stratum of vegetation for perching	✓	Likely to occur – recorded during the field survey.
Hirundinidae	*Hirundo rustica*	Barn Swallow	Schedule 5	Marine; Migratory	•	•	•	•												Open areas in coastal lowlands often near water, also freshwater wetlands, paperbark woodlands, mesophyll shrub thickets and tussock grassland	✓	May potentially occur
Hirundinidae	*Cecropis daurica*	Red-rumped Swallow	Schedule 5	Marine; Migratory	•			•												Vagrant to Australia, occurs in a wide range of terrestrial habitats	✓	May potentially occur
Estrildidae	*Erythrura gouldiae*	Gouldian Finch	Priority 4	Endangered	•	•	•	•												Savannah woodland with grassy understory on the Dampier Peninsula	✓	May potentially occur
Motacillidae	*Motacilla tschutschensis*	Eastern Yellow Wagtail	Schedule 5	Migratory	•	•	•	•												Occupies a range of damp or wet habitats with low vegetation	✓	May potentially occur
Motacillidae	*Motacilla cinerea*	Grey Wagtail	Schedule 5	Migratory		•		•												Rare vagrant to Australia, occurring around watercourses	✓	May potentially occur

References

AECOM (2010). Supplementary Terrestrial Fauna and Habitat Assessment of James Price Point, WA. Unpublished report prepared for the Department of State Development, AECOM, Western Australia.

AECOM (2011). Browse LNG Precinct Access Road Targeted Fauna Survey - Greater Bilby. Unpublished Report Prepared for Main Roads, AECOM Australia Pty Ltd.

Biota (2009). James Price Point Terrestrial Fauna Survey: Wet Season 2009. Unpublished report prepared for the Department of State Development, December 2009, Biota Environmental Sciences, Western Australia.

Biota (2011). James Price Point Browse LNG Precinct Targeted Terrestrial Fauna Survey - March 2010. Unpublished report prepared for Environmental Resources Management, March 2011, Biota Environmental Sciences, Western Australia.

ENV (2008). Perpendicular Head-North Head, Packer Island, Gourdon Bay and Coulomb-Quondong Vertebrate Fauna Assessment. Unpublished report prepared for Department of Industry and Resources, ENV Australia, Western Australia.

GHD (2009a). Report for Broome North Development Area - Targeted Fauna Survey. Unpublished report prepared for LandCorp, GHD, Western Australia.

GHD (2009b). Broome North - Southern Portion (Area A). Preliminary Environmental Impact Assessment and Biological Survey. Unpublished report prepared for LandCorp, GHD, Western Australia.

GHD (2009c). Broome North - Southern Portion (Area B). Preliminary Environmental Impact Assessment and Biological Survey. Unpublished report prepared for LandCorp, GHD, Western Australia.

GHD (2013). Cape Leveque Road Upgrade Targeted Greater Bilby Assessment. Unpublished report prepared for Main Roads WA, GHD, Western Australia.

GHD (2016a). Cape Leveque Road SLK 0 - 25 Targeted Greater Bilby Survey. Unpublished Report Prepared for Main Roads, GHD.

GHD (2016b). Cape Leveque Road SLK 25 - 102.6 Targeted Greater Bilby Survey. Unpublished Report Prepared for Main Roads, GHD.

Appendix 8

Regulation 17 Fauna Licence

DEPARTMENT OF PARKS AND WILDLIFE

Department of Parks and Wildlife

Enquiries: 17 DICK PERRY AVE, KENSINGTON, WESTERN AUSTRALIA
Telephone: 08 9219 9000
Facsimile: 08 9219 8242
Web Site: https://wildlifelicensing.dpaw.wa.gov.au
Correspondance: **Locked Bag 30**
Bentley Delivery Centre WA 6983

Wildlife Conservation Act 1950

REGULATION 17

Regulation 17 – Licence to take fauna for scientific purposes (Regulation 17 - Standard)

The undermentioned person may take fauna for research or other scientific purposes and where authorised, keep it in captivity, subject to the following and attached conditions, which may be added to, suspended or otherwise varied as considered fit.

Director General

Conditions

1. The licensee must comply with the provisions of the Wildlife Conservation Act 1950, Wildlife Conservation Regulations 1970 and any Notices in force under this legislation.
2. The licensee shall take fauna only in the manner stated on the endorsed Regulation 17 licence application form and endorsed related correspondence.
3. Unless specifically authorised in the conditions of this Licence or otherwise in writing by the Director General, species of fauna declared as likely to become extinct, rare or otherwise in need of special protection shall not be taken.
4. Any by-catch of fauna, which is declared to be rare, likely to become extinct, or otherwise in need of special protection shall be released immediately at the point of capture. Where such fauna taken under this licence is injured or deceased, the licensee shall contact the Department's Wildlife Licensing Section for advice on disposal. Records must be kept of any such fauna so captured and details are to be included in the report required under further condition below.
5. Any interaction involving Gazetted Threatened Fauna that may be harmful to the fauna and/or invasive may require approval from the Commonwealth Department of the Environment ph 02 6274 1111. Interaction with such species is controlled by the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 and Environment Protection and Biodiversity Conservation Regulations 2000 as well as the Wildlife Conservation Act 1950 and Wildlife Conservation Regulations 1970.
6. No fauna shall be taken in areas where it would impinge on pre-existing scientific research programs.
7. Except in the case of approved lethal traps, the licensee shall ensure that measures are taken in the capture and handling of fauna to prevent injury or mortality resulting from that capture or handling. Where traps or other mechanical means or devices are used to capture fauna these shall be deployed so as to prevent exposure of trapped animals to ants and debilitating weather conditions and inspected at regular intervals throughout each day of their use. At the conclusion of research all markers used, and signs and structures erected by the licensee shall be removed and the environment returned to its original condition.
8. Not more than ten specimens of any one protected species of fauna shall be taken and removed from any location less than 20km apart. Where exceptional circumstances make it necessary to take a larger number of specimens from a particular location in order to obtain adequate statistical data, the collector must proceed with circumspection and justify their actions to the Director General in advance.
9. The licensee shall not release any fauna or their progeny in any area where it does not naturally occur, nor hand such fauna over to any other person or authority unless approved by the Director General, nor dispose of the remains of such fauna in any manner likely to confuse the natural or present day distribution of the species.
10. Bioprospecting involving the removal of sample aquatic and terrestrial organisms for chemical extraction and bioactivity screening shall not be conducted without specific written approval by the Director General.
11. No fauna is to be taken from any CALM land, as defined in the Conservation and Land Management Regulations 2002, without prior written approval of the Director General. No fauna is to be taken from any public land without the prior written approval of the Government Authority managing that land.
12. The licensee must not enter upon any private property or pastoral lease for the purposes of this licence, nor take any fauna from any private land or pastoral lease without the prior consent in writing of the owner or occupier. Similarly, in the case of Aboriginal lands, the licensee must not enter upon or take fauna from such lands without the written approval of the Department of Aboriginal Affairs and/or the relevant native title holders or applicants.
13. Copies of this licence and any written approval or consent required by conditions of this licence must be carried by the licensee and any person/s authorised under the licence at all times when conducting activities relevant to the licence

Department of Parks and Wildlife

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Correspondance: **Locked Bag 30**
Bentley Delivery Centre WA 6983

and must be presented to an authorised officer of the Department upon request.

14 All holotypes and syntypes and a half share of paratypes of species or subspecies permitted to be permanently taken under this licence shall be donated to the Western Australian Museum. Duplicates (one pair in each case) of any species collected, which represents a significant extension of geographic range shall upon request be donated to the Western Australian Museum.

15 To prevent any unnecessary collecting in this State, all specimens and material taken and retained under the authority of this license shall, upon request, be loaned to the Western Australian Museum. Any unused portion or portions of any specimen collected under the authority of this license shall be offered to the Western Australian Museum for inclusion in its collection or made available to other scientific workers if so required.

16 Within one month of the expiration of this licence, the holder shall submit an electronic return into the department's Wildlife Licensing System, detailing the locality, site, geocode, date and number of each species of fauna captured, sighted or vouchered during the currency of the licence. A copy of any paper, report or thesis resulting from the research shall upon completion be lodged with the Director General.

Purpose

Level 1 fauna survey by targeted searches for conservation significant species by visual / opportunistic observations, secondary signs and habitat assessment of Cape Leveque Road (SLK0-25), the Gravel Pit area and Bidyadanga Road, consistent with State legislation for Environmental Impact Assessment.

Locations

Cape Leveque Road and Bidyadanga Road on the Dampier Peninsula Broome.

Authorised Person

Surname	**Given name(s)**
Teale	Roy
Ford	Stewart
King	Jacinta
Greenham	Michael
Keirle	David
Traditional land owners	Nyul Nyul Ranger group, the Jabirr Jabirr people and the Karrajarri Ranger Group.

Date of Issue 23/04/2018
Valid From 23/04/2018
Date of Expiry 14/05/2018

Licensee: Ms Penny Brooshooft
Address Biota Environmental Sciences
PO Box 155
Leederville WA 6903
Australia

Issued by a Wildlife Licensing Officer of the Department of Parks and Wildlife under delegation from the Minister for Environment pursuant to section 133(1) of the Conservation and Land Management Act 1984.

Appendix 9

Vegetation Structure and Condition Scale

Vegetation Structural Classes*

Stratum	Canopy Cover (%)				
	70-100%	**30-70%**	**10-30%**	**2-10%**	**<2%**
Trees over 30 m	Tall closed forest	Tall open forest	Tall woodland	Tall open woodland	Scattered tall trees
Trees 10-30 m	Closed forest	Open forest	Woodland	Open woodland	Scattered trees
Trees under 10 m	Low closed forest	Low open forest	Low woodland	Low open woodland	Scattered low trees
Shrubs over 2 m	Tall closed scrub	Tall open scrub	Tall shrubland	Tall open shrubland	Scattered tall shrubs
Shrubs 1-2 m	Closed heath	Open heath	Shrubland	Open shrubland	Scattered shrubs
Shrubs under 1 m	Low closed heath	Low open heath	Low shrubland	Low open shrubland	Scattered low shrubs
Hummock grasses	Closed hummock grassland	Hummock grassland	Open hummock grassland	Very open hummock grassland	Scattered hummock grasses
Grasses, Sedges, Herbs	Closed tussock grassland / bunch grassland / sedgeland / herbland	Tussock grassland / bunch grassland / sedgeland / herbland	Open tussock grassland / bunch grassland / sedgeland / herbland	Very open tussock grassland / bunch grassland / sedgeland / herbland	Scattered tussock grasses / bunch grasses / sedges / herbs

* Based on Muir (1977) , and Aplin's (1979) modification of the vegetation classification system of Specht (1970): Aplin T.E.H. (1979). The Flora. Chapter 3 In O'Brien, B.J. (ed.) (1979). *Environment and Science*. University of Western Australia Press; Muir B.G. (1977). Biological Survey of the Western Australian Wheatbelt. Part II: Vegetation and habitat of Bendering Reserve. *Records of the Western Australian Museum*, Suppl. No. 3; Specht R.L. (1970). Vegetation. In: *The Australian Environment*. 4th edn (Ed. G.W. Leeper). Melbourne.

Vegetation Condition Scale*

Vegetation Condition	South West and Interzone Botanical Provinces	Eremaean and Northern Botanical Provinces
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.	
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very Good	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.	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	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 very aggressive weeds, partial clearing, dieback and grazing.	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor		Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely Degraded	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 and shrubs.	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

*Taken from EPA (2016a). Adapted from:
- Keighery, B.J. (1994). Bushland Plant Survey: a Guide to Plant Community Survey for the Community Wildflower Society of WA (Inc.), Nedlands, Western Australia; and
- Trudgen M.E. (1988). A Report on the Flora and Vegetation of the Port Kennedy Area. Unpublished report prepared for Bowman Bishaw and Associates, West Perth.

Appendix 10

Raw Data from Flora Sampling Sites

Cape Leveque Road Biological Survey **Site** CLA01
Described by PL/RM **Date** 5/1/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423524 **mE** 8046583 **mN** 116.278952 **E** -17.666276 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A
Vegetation *Eucalyptus tectifica* (*Brachychiton diversifolius* subsp. *diversifolius*) low open woodland over *Acacia eriopoda* (*Bauhinia cunninghamii*, *Ficus aculeata* var. *indecora*, *Grevillea refracta*, *Santalum lanceolatum*, *Ehretia saligna* var. *saligna*) tall shrubland over *Sersalisia sericea*, *Trichodesma zeylanicum* open shrubland over *Corchorus sidoides* subsp. *sidoides* low open shrubland over *Triodia caelestialis* scattered hummock grasses over Eriachne obtusa, *Aristida holathera* var. *latifolia* open tussock grassland.
Veg Condition Very good; cattle scats.
Fire Age No sign of recent fire.

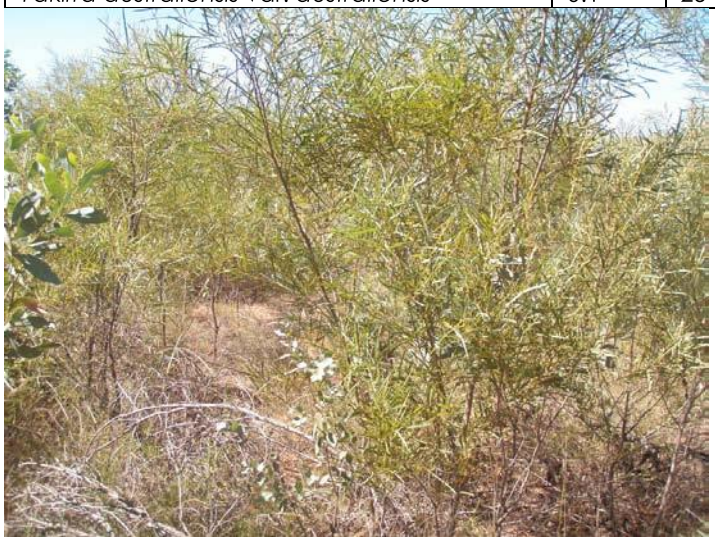
Species	Cover	Height (cm)	Specimen	Notes
Acacia adoxa var. *subglabra*	0.1	50	CLA01-13	
Acacia colei var. *colei*	0.1	220	CLA01-03	
Acacia eriopoda	14	500	CLA01-02	
Aristida holathera var. *latifolia*	4	70	CLA01-16	
Bauhinia cunninghamii	3	400		
Brachychiton diversifolius subsp. *diversifolius*	2	400	CLA01-04	
Breynia cernua	0.1	160	CLA01-25	
Buchnera asperata	0.1	50	CLA01-10	
Byblis rorida	0.1	30	CLA01-17	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	20	CLA01-09	
Carissa lanceolata	0.1	190	CLA01-43	
Chrysopogon pallidus	0.1	30	CLA01-42	
Codonocarpus cotinifolius	0.1	120		
Corchorus sidoides subsp. *sidoides*	6	70	CLA01-06	
Crotalaria brevis	0.1	30	CLA01-40	
Crotalaria medicaginea var. *neglecta*	0.1	50		
Cucumis variabilis	0.1	20	CLA01-35	Tentative det. TBC Matt Barrett.
**Cyanthillium cinereum*	0.1	90	CLA01-26	Number of individuals not recorded; treated as N=1.
Cyperus blakeanus	0.1	50	CLA01-39	
Dodonaea hispidula	0.1	190		
Dolichandrone occidentalis	0.1	60		
Ehretia saligna var. *saligna*	1	210		
Eragrostis eriopoda	0.1	40	CLA01-37	
Eriachne melicacea	0.1	30	CLA01-50	
Eriachne obtusa	4	60	CLA01-05	
Eriachne pindanica	0.1	35	CLA01-21	
Eucalyptus tectifica	2	650	CLA01-01	
Evolvulus alsinoides var. *decumbens*	0.1	30		
Ficus aculeata var. *indecora*	2	350	CLA01-32	
Galactia tenuiflora	0.1	40	CLA01-08	
Goodenia sepalosa var. *sepalosa*	0.1	25	CLA01-22	
Gossypium australe	0.1	110	CLA01-28	
Gossypium rotundifolium	0.1	25		
Grevillea pyramidalis subsp. *pyramidalis*	0.1	140	CLA01-31	
Grevillea refracta	0.5	450		
Gyrostemon tepperi	0.1	60		
Heliotropium leptaleum	0.1	30	CLA01-45,27	
Hibiscus geranioides	0.1	25	CLA01-44	
Hybanthus aurantiacus	0.1	45		
Marsdenia viridiflora subsp. *tropica*	0.1	40	CLA01-47	
Melhania oblongifolia	0.1	30		
Murdannia graminea	0.1	45	CLA01-48	
Myoporum montanum	0.1	180	CLA01-38	

Species	Cover	Height (cm)	Specimen	Notes
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	40	CLA01-41	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	20	CLA1-20,49	N=4. Ph 61,283-284.
Premna acuminata	0.1	80	CLA01-23	
Pterocaulon ? paradoxum	0.1	60	CLA01-14	Sterile; determination based on broad stem wing.
Ptilotus lanatus	0.1	40	CLA01-07	
Santalum lanceolatum	1	220		
Schizachyrium fragile	7	25	CLA01-19	
Sersalisia sericea	2	180	CLA01-33	
Setaria apiculata	0.1	35	CLA01-29	
Sida hackettiana	0.1	30	CLA01-24	
Sida rohlenae subsp. *occidentalis*	0.1	35	CLA01-30	
Solanum cunninghamii	0.1	50	CLA01-34	
Spermacoce occidentalis	0.1	40	CLA01-11	
Synostemon lissocarpus	0.1	50	CLA01-12	Appears to be range extension on FloraBase, FB not yet updated.
Trichodesma zeylanicum	2	100	CLA01-15	Var. not determined; characters appear intermediate.
Triodia caelestialis	1	110	CLA01-18	
Ventilago viminalis	0.1	120	CLA01-46	
Waltheria indica	0.1	40		

Cape Leveque Road Biological Survey **Site** CLA02
Described by PL/RM **Date** 5/1/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423525 **mE** 8045615 **mN** 116.278926 **E** -17.675025 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Acacia eriopoda* (*A. colei* var. *colei*, *Ehretia saligna* var. *saligna*, *Grevillea refracta*, *G. pyramidalis* subsp. *pyramidalis*, *Ficus aculeata* var. *indecora*) tall shrubland over *Dodonaea hispidula* (*Santalum lanceolatum*) shrubland over *Corchorus sidoides* subsp. *sidoides* (*Acacia adoxa* var. *subglabra*) low shrubland over *Eriachne obtusa*, (*Aristida holathera* var. *latifolia*) tussock grassland.
Veg Condition Very good; cow scats.
Fire Age No sign of recent fire.

Species	Cover	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	30	CLA02-20	
Acacia adoxa var. *subglabra*	3	50	CLA01-13=	
Acacia colei var. *colei*	3	300	CLA01-03=	
Acacia eriopoda	22	320	CLA01-02=	
Acacia tumida var. *kulparn*	0.1	80	CLA02-09	
Aristida holathera var. *latifolia*	4	70		
Brachychiton diversifolius subsp. *diversifolius*	0.1	90	CLA02-16	
Breynia cernua	0.1	90	CLA02-10	
Byblis filifolia	0.1	25	CLA01-17=	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	20	CLA02-26	
Carissa lanceolata	0.1	50		
Cassytha filiformis	0.1	80	CLA02-04	
Chrysopogon pallidus	0.1	40	CLA01-42=	
Clerodendrum floribundum	0.1	140	CLA02-05	Poor material; var. not determined.
Codonocarpus cotinifolius	0.1	60		
Corchorus sidoides subsp. *sidoides*	8	40	CLA01-06=	
Crotalaria medicaginea var. *neglecta*	0.1	45		
Cucumis variabilis	0.1	25	CLA01-35=	Tentative det. TBC Matt Barrett.
Cymbopogon ambiguus	0.1	150	CLA02-02	
Cymbopogon procerus	0.1	80	CLA02-25	
Cynanchum sp.	0.1	110	CLA02-14	Poor material; TBC Matt Barrett. No cons sig Cynanchum spp. in the region.
Dodonaea hispidula	8	160		
Ehretia saligna var. *saligna*	2	270		
Eriachne obtusa	60	45	CLA01-05=	
Eriachne pindanica	3	40	CLA02-03	
Euphorbia psilosperma	0.1	20	CLA02-12	
Evolvulus alsinoides var. *decumbens*	0.1	25		
Ficus aculeata var. *indecora*	1	280	CLA01-32=	
Fimbristylis oxystachya	0.1	15	CLA02-19	
Flueggea virosa subsp. *melanthesoides*	0.1	180		
Glycine tomentella	0.1	40	CLA02-01	
Goodenia sepalosa var. *sepalosa*	0.1	20	CLA01-22=	
Gossypium rotundifolium	0.1	30		
Grevillea pyramidalis subsp. *pyramidalis*	1	310	CLA01-31=	
Grevillea refracta	1	320		
Gyrostemon tepperi	0.1	40		
Hybanthus aurantiacus	0.1	45		
Marsdenia angustata	0.1	70	CLA02-22	
Marsdenia viridiflora subsp. *tropica*	0.1	70	CLA02-08	
Melhania oblongifolia	0.1	35		
Phyllanthus baccatus	0.1	120	CLA02-15	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	40	CLA02-7,24	N=6.
Premna acuminata	0.1	140	CLA02-06	

Species	Cover	Height (cm)	Specimen	Notes
Psydrax attenuata var. *tenella*	0.1	130	CLA02-21	
Pterocaulon ? paradoxum	0.1	45	CLA01-14=	
Ptilotus polystachyus	0.1	25	CLA02-23	
Santalum lanceolatum	3	190		
Schizachyrium fragile	2	40	CLA01-19=	
Scleria sp. Pindan	0.1	45	CLA02-17	aff. brownii, but with larger spikelets and seeds; taxon not yet recognised on FloraBase.
Setaria apiculata	0.1	35	CLA01-29=	
Sida rohlenae subsp. *occidentalis*	0.1	45	CLA01-30=	
Solanum cunninghamii	0.1	40	CLA01-34=	
Spermacoce occidentalis	0.1	25	CLA02-27	
Tephrosia remotiflora	0.1	40	CLA02-11	
Thaumastochloa pubescens	0.1	15	CLA02-28	
Tinospora smilacina	0.1	25		
Trichodesma zeylanicum	0.1	70	CLA01-15=	Var. not determined; characters appear intermediate.
Waltheria indica	0.1	25		
Yakirra australiensis var. *australiensis*	0.1	25	CLA02-13	



Cape Leveque Road Biological Survey **Site** CLA03
Described by PL/RM **Date** 5/1/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423685 **mE** 8043395 **mN** 116.280355 **E** -17.695095 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Ficus aculeata* var. *indecora* low open woodland over *Acacia eriopoda* (*Grevillea refracta*, *Ehretia saligna* var. *saligna*) tall shrubland over *Dodonaea hispidula*, *Breynia cernua* open shrubland over *Corchorus sidoides* subsp. *sidoides* low open shrubland over *Aristida holathera* var. *latifolia*, (*Eriachne obtusa*, *E. melicacea*) open tussock grassland.
Veg Condition Very good; cow tracks.
Fire Age No sign of recent fire.

Species	Cover	Height (cm)	Specimen	Notes
Acacia adoxa var. *subglabra*	0.1	30	CLA01-13=	
Acacia colei var. *colei*	0.1	300	CLA01-03=	
Acacia eriopoda	25	400		
Acacia tumida var. *kulparn*	0.1	260	CLA02-09=	
Aristida holathera var. *latifolia*	20	60	CLA01-16=	
Bauhinia cunninghamii	0.1	200		
Bonamia oblongifolia	0.1	10	CLA03-19	N=1.
Brachychiton diversifolius subsp. *diversifolius*	0.1	70	CLA01-36=	
Breynia cernua	3	80	CLA03-13	
Byblis filifolia	0.1	20	CLA03-05	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	10	CLA01-09=	
Carissa lanceolata	0.1	190		
Cassytha filiformis	0.1	150	CLA02-04=	
Chrysopogon pallidus	0.1	80	CLA01-42=	
Clerodendrum floribundum	0.1	10	CLA03-15	Poor material; var. not determined.
Codonocarpus cotinifolius	0.1	20		
Corchorus sidoides subsp. *sidoides*	2	30	CLA01-06=	
Corymbia greeniana	0.1	230	CLA03-12	
Crotalaria medicaginea var. *neglecta*	0.1	40		
Cucumis variabilis	0.1	120	CLA03-08	Tentative det. TBC Matt Barrett.
Denhamia cunninghamii	0.1	80	CLA03-14	
Dodonaea hispidula	3	150		
Ehretia saligna var. *saligna*	2	300		
Eriachne melicacea	1	30	CLA03-01	
Eriachne obtusa	1	30	CLA01-05=	
Eriachne pindanica	0.1	20		
Euphorbia psilosperma	0.1	20	CLA03-09	
Ficus aculeata var. *indecora*	2	250		
Goodenia sepalosa var. *sepalosa*	0.1	15	CLA03-11	
Gossypium rotundifolium	0.1	20		
Grevillea pyramidalis subsp. *pyramidalis*	0.1	250		
Grevillea refracta	3	300		
Gyrostemon tepperi	0.1	40		
Heliotropium leptaleum	0.1	10	CLA03-06	
Hybanthus aurantiacus	0.1	30		
Polygala tepperi	0.1	30	CLA03-17	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	40	CLA03-07	N=5.
Premna acuminata	0.1	100	CLA03-21	
Ptilotus polystachyus	0.1	40	CLA03-03	
Santalum lanceolatum	0.1	80		
Schizachyrium fragile	1	30	CLA01-19=	
Scleria sp. Pindan	0.1	40	CLA03-10	aff. brownii, but with larger spikelets and seeds; taxon not yet recognised on FloraBase.
Sida rohlenae subsp. *occidentalis*	0.1	30		

Species	Cover	Height (cm)	Specimen	Notes
Sida sp. Pindan (B.G. Thomson 3398) PN	0.1	80	CLA03-16	
Solanum cunninghamii	0.1	40	CLA01-34=	
Spermacoce occidentalis	0.1	20	CLA02-27=	
Synostemon lissocarpus	0.1	30	CLA01-12=	Appears to be range extension on FloraBase, FB not yet updated.
Tephrosia remotiflora	0.1	30	CLA03-04	
Thaumastochloa pubescens	0.1	20	CLA03-02	
Tinospora smilacina	0.1	15		
Trichodesma zeylanicum	0.1	80	CLA01-15=	Var. not determined; characters appear intermediate.
Ventilago viminalis	0.1	120		
Waltheria indica	0.1	40		
Whiteochloa airoides	0.1	80	CLA03-20	
Yakirra australiensis var. *australiensis*	0.1	10	CLA02-13=	

Cape Leveque Road Biological Survey **Site** CLA04
Described by PL/RM **Date** 5/2/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423512 **mE** 8040443 **mN** 116.278617 **E** -17.721770 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Ficus aculeata* var. *indecora* low open woodland over *Acacia eriopoda* (*A. colei var colei, Ehretia saligna* var. *saligna*) tall shrubland over *Dodonaea hispidula* open shrubland over *Corchorus sidoides* subsp. *sidoides* scattered, *Trichodesma zeylanicum, Pterocaulon ? paradoxum* low open shrubland over *Chrysopogon pallidus* (*Eriachne obtusa*) open tussock grassland and *Triodia caelestialis* open hummock grassland.
Veg Condition Very good; Cow tracks, *Citrullus lanatus.
Fire Age Very long unburnt.

Species	Cover	Height (cm)	Specimen	Notes
Acacia colei var. *colei*	2	580	CLA01-03=	
Acacia eriopoda	22	600		
Aristida holathera var. *holathera*	0.1	80	CLA04-25	
Bauhinia cunninghamii	0.1	250		
Buchnera asperata	0.1	70	CLA04-19	
Buchnera ramosissima	0.1	80	CLA04-22	
Bulbostylis barbata	0.1	25	CLA04-27	
Byblis filifolia	0.1	30	CLA04-09	Tentative det. TBC Matt Barrett.
Cassytha capillaris	0.1	25		
Chrysopogon pallidus	13	40	CLA04-02	
Citrullus lanatus	0.1	30	N=1.	
Codonocarpus cotinifolius	0.1	100		
Corchorus sidoides subsp. *sidoides*	1	40	CLA01-06=	
Crotalaria ramosissima	0.1	25		
Cucumis variabilis	0.1	40	CLA04-06	Tentative det. TBC Matt Barrett.
Digitaria brownii	0.1	40		
Dodonaea hispidula	2	170		
Dolichandrone occidentalis	0.1	120		
Ehretia saligna var. *saligna*	1	230		
Eriachne obtusa	2	50		
Eriachne pindanica	0.1	40	CLA02-03=	
Euphorbia psilosperma	0.1	20	CLA04-07	
Evolvulus alsinoides var. *decumbens*	0.1	45		
Ficus aculeata var. *indecora*	3	320		
Flueggea virosa subsp. *melanthesoides*	0.1	160		
Galactia tenuiflora	0.1	40	CLA01-08=	
Glycine tomentella	0.1	25	CLA04-20	
Goodenia sepalosa var. sepalosa	0.1	25	CLA01-22=	
Grevillea pyramidalis subsp. *pyramidalis*	0.1	200	CLA01-31=	
Heliotropium leptaleum	0.1	25	CLA04-08	
Hibiscus geranioides	0.1	40	CLA04-16	
Hybanthus aurantiacus	0.1	30		
Jasminum didymum	0.1	80	CLA04-21	Subsp. not determined; leaf characters appear intermediate between subsp. didymum and lineare.
Lysiana spathulata subsp. *spathulata*	0.1	60	CLA04-17	
Marsdenia viridiflora subsp. *tropica*	0.1	20	CLA04-24	
Melhania oblongifolia	0.1	50		
Murdannia graminea	0.1	40	CLA-PL15=	
Oldenlandia mitrasacmoides subsp. mitrasacmoides	0.1	30	CLA04-15	
Persoonia falcata	0.1	210	CLA04-26	
Polygala tepperi	0.1	30	CLA04-05	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	30	CLA-PL14=	N=12.
Premna acuminata	0.1	60	CLA04-12	

Species	Cover	Height (cm)	Specimen	Notes
Pterocaulon ? paradoxum	1	50	CLA04-04, CLA01-14=	Sterile; determination based on broad stem wing.
Schizachyrium fragile	0.1	25	CLA01-19=	
Sersalisia sericea	0.1	210	CLA01-33=	
Setaria apiculata	0.1	40	CLA01-29=	
Sida hackettiana	0.1	20	CLA04-13, 18	
Sida rohlenae subsp. *occidentalis*	0.1	30		
Solanum cunninghamii	0.1	50	CLA04-11	
Spermacoce hillii	0.1	20	CLA04-14	
Synostemon lissocarpus	0.1	25	CLA04-28	Appears to be range extension on FloraBase. FB not yet updated.
Tephrosia leptoclada	0.1	40	CLA04-10	
Trichodesma zeylanicum	1	60	CLA01-15=	Var. not determined; characters appear intermediate.
Triodia caelestialis	18	40	CLA04-01	
Waltheria indica	0.1	35		
Yakirra australiensis var. *australiensis*	0.1	25	CLA02-13=	
Zornia prostrata var. *prostrata*	0.1	25	CLA04-23	

Cape Leveque Road Biological Survey **Site** CLA05
Described by PL/RM **Date** 5/2/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423705 **mE** 8039245 **mN** 116.280394 **E** -17.732604 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Bauhinia cunninghamii* scattered low trees over *Acacia eriopoda* tall shrubland over *Acacia platycarpa* scattered shrubs over *Chrysopogon pallidus*, *Aristida holathera* var. *latifolia*, (*Eriachne obtusa*) very open tussock grassland and *Triodia caelestialis* very open hummock grassland over *Galactia tenuiflora*, *Glycine tomentella* very open herbland.
Veg Condition Very good; cow scats.
Fire Age No sign of recent fire.

Species	Cover	Height (cm)	Specimen	Notes
Acacia colei var. *colei*	0.1	100		
Acacia eriopoda	22	450		
Acacia platycarpa	1	180	CLA05-20	
Aristida holathera var. *holathera*	0.1	60	CLA05-01	
Aristida holathera var. *latifolia*	5	80		
Bauhinia cunninghamii	1	200		
Bonamia oblongifolia	0.1	30	CLA05-03	
Brachychiton diversifolius subsp. *diversifolius*	0.1	150	CLA01-04=	
Buchnera asperata	0.1	60	CLA05-02	
Bulbostylis barbata	0.1	20	CLA04-27=	
Byblis filifolia	0.1	20	CLA04-09=	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	15	CLA01-09=	
Chamaecrista symonii	0.1	20	CLA05-04	
Chrysopogon pallidus	14	70	CLA04-02=, CLA05-17	
Citrullus lanatus	0.1	100	N=2	
Corchorus sidoides subsp. *sidoides*	0.1	30		
Corymbia zygophylla	0.1	300		
Corynotheca micrantha var. *gracilis*	0.1	40	CLA05-05	
Crotalaria medicaginea var. *neglecta*	0.1	20		
Cucumis variabilis	0.1	150		Tentative det. TBC Matt Barrett.
Desmodium filiforme	0.1	60	CLA05-11	
Dodonaea hispidula	0.1	100		
Dolichandrone occidentalis	0.1	50		
Ehretia saligna var. *saligna*	0.1	180		
Eriachne melicacea	0.1	30	CLA05-15	
Eriachne obtusa	1	60		
Eriachne pindanica	0.1	30		
Ficus aculeata var. *indecora*	0.1	120		
Fimbristylis oxystachya	0.1	30	CLA05-12	
Galactia tenuiflora	3	100	CLA05-10	
Glycine tomentella	2	20	CLA05-13	
Goodenia sepalosa var. *sepalosa*	0.1	5	CLA01-22=	
Gossypium rotundifolium	0.1	100		
Grevillea pyramidalis subsp. *pyramidalis*	0.1	150		
Grevillea refracta	0.1	100		
Gyrostemon tepperi	0.1	50		
Heliotropium leptaleum	0.1	30	CLA04-08=	
Hybanthus aurantiacus	0.1	40		
Marsdenia viridiflora subsp. *tropica*	0.1	30	CLA05-09	
Melhania oblongifolia	0.1	50		
Murdannia graminea	0.1	40	CLA05-19	
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	30	CLA04-15=	
Persoonia falcata	0.1	150	CLA04-26=	
Polycarpaea longiflora	0.1	70	CLA05-14	
Polygala tepperi	0.1	60	CLA04-05=	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	50	CLA-PL14=	N=6.

Species	Cover	Height (cm)	Specimen	Notes
Premna acuminata	0.1	60	CLA04-12=	
Pterocaulon ? paradoxum	0.1	40	CLA04-04=	Sterile; determination based on broad stem wing.
Ptilotus lanatus	0.1	15	CLA05-06	
Ptilotus polystachyus	0.1	40	CLA05-16	
Schizachyrium fragile	2	30	CLA01-19=	
Setaria surgens	0.1	30		
Sida rohlenae subsp. *occidentalis*	0.1	40		
Solanum cunninghamii	0.1	60	CLA04-11=	
Spermacoce occidentalis	0.1	20	CLA01-11=	
Thaumastochloa pubescens	0.1	20	CLA03-02=	
Tinospora smilacina	0.1	20		
Trianthema pilosum	0.1	10		
Tribulopis angustifolia	0.1	30	CLA-PL31=	
Trichodesma zeylanicum	0.1	80		Var. not determined; characters appear intermediate.
Triodia caelestialis	2	30		
Ventilago viminalis	0.1	70		
Waltheria indica	0.1	50		
Whiteochloa airoides	0.1	70	CLA03-20=	
Yakirra australiensis var. *australiensis*	0.1	25	CLA02-13=	
Zornia muelleriana subsp. *congesta*	0.1	20	CLA05-08	

Cape Leveque Road Biological Survey **Site** CLA06
Described by PL/RM **Date** 5/2/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423690 **mE** 8038266 **mN** 116.280217 **E** -17.741452 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Bauhinia cunninghamii*, *Ficus aculeata* var. *indecora*, *Corymbia greeniana*, *C. zygophylla* low open woodland over *Acacia eriopoda* (*Acacia tumida* var. *kulparn*, *Ventilago viminalis*) tall shrubland over *Dolichandrone occidentalis*, *Acacia platycarpa* (*Grewia retusifolia*) shrubland over *Corchorus sidoides* subsp. *sidoides* scattered low shrubs over *Chrysopogon pallidus* (*Eriachne melicacea*, *Eriachne obtusa*) open tussock grassland and *Triodia caelestialis* scattered hummock grasses over *Galactia tenuiflora* very open herbland.
Veg Condition Very good; cattle scats.
Fire Age No sign of recent fire.
Notes Not much Corymbia around, a patch across the road.

Species	**Cover**	**Height (cm)**	**Specimen**	**Notes**
Acacia eriopoda	18	500		
Acacia platycarpa	4	190	CLA05-20=	
Acacia tumida var. *kulparn*	1	270		
Aristida holathera var. *holathera*	0.1	50	CLA05-01=	
Bauhinia cunninghamii	2	350		
Bonamia oblongifolia	0.1	20	CLA05-03=	
Brachychiton diversifolius subsp. *diversifolius*	0.1	220	CLA06-09	
Buchnera asperata	0.1	30	CLA05-02=	
Byblis filifolia	0.1	25	CLA04-09=	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	20	CLA06-06	
Carissa lanceolata	0.1	120		
Chamaecrista symonii	0.1	30	CLA05-04=	
Chrysopogon pallidus	19	40	CLA04-02=	
Corchorus sidoides subsp. *sidoides*	0.5	40	CLA01-06=	
Corymbia greeniana	1	600	CLA06-08	
Corymbia zygophylla	1	240		
Corynotheca micrantha var. *gracilis*	0.1	40	CLA05-05=	
Cucumis variabilis	0.1	40		Tentative det. TBC Matt Barrett.
Dodonaea hispidula	0.1	190		
Dolichandrone occidentalis	6	190		
Ehretia saligna var. *saligna*	0.1	240		
Eriachne melicacea	1	40	CLA05-15=	
Eriachne obtusa	1	60		
Eriachne pindanica	0.1	40	CLA02-03=	
Ficus aculeata var. *indecora*	1	240		
Fimbristylis oxystachya	0.1	40	CLA05-12=	
Galactia tenuiflora	2	45	CLA06-04	
Goodenia sepalosa var. *sepalosa*	0.1	30	CLA01-22=	
Grevillea pyramidalis subsp. *pyramidalis*	0.1	300		
Grewia retusifolia	2	120	CLA06-02	
Gymnanthera oblonga	0.1	180	CLA06-01	
Gyrostemon tepperi	0.1	40		
Heliotropium leptaleum	0.1	40	CLA04-08=	
Hybanthus aurantiacus	0.1	45		
Murdannia graminea	0.1	40	CLA-PL15=	
Persoonia falcata	0.1	260	CLA04-26=	
Polygala tepperi	0.1	35	CLA04-05=	
Premna acuminata	0.1	60	CLA04-12=	
Ptilotus polystachyus	0.1	110	CLA06-07	
Schizachyrium fragile	0.1	30		
Scleria sp. Pindan	0.1	40	CLA06-05	aff. brownii, but with larger spikelets and seeds; taxon separated by Russell Barrett but not yet

Species	Cover	Height (cm)	Specimen	Notes
				recognised on FloraBase.
Sersalisia sericea	0.1	140	CLA01-33=	
Sida rohlenae subsp. *occidentalis*	0.1	40		
Solanum cunninghamii	0.1	40	CLA04-11=	
Spermacoce occidentalis	0.1	30	CLA01-11=	
Synostemon lissocarpus	0.1	40	CLA04-28=	Appears to be range extension on FloraBase but not; WA specimens on loan, FB not yet updated.
Thaumastochloa pubescens	0.1	20	CLA03-02=	
Tinospora smilacina	0.1	25		
Trianthema pilosum	0.1	20		
Tribulopis angustifolia	0.1	30	CLA-PL31=	
Triodia caelestialis	1	40		
Ventilago viminalis	1	210		
Waltheria indica	0.1	60		
Yakirra australiensis var. *australiensis*	0.1	25	CLA02-13=	

Cape Leveque Road Biological Survey **Site** CLA07
Described by PL/RM **Date** 5/3/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423756 **mE** 8037142 **mN** 116.280799 **E** -17.751613 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Bauhinia cunninghamii*, *Eucalyptus tectifica*, *Corymbia bella*, *Brachychiton diversifolius* subsp. *diversifolius* low woodland over *Acacia tumida* var. *kulparn* (*A. colei* var. *colei, Persoonia falcata*) tall open shrubland over *Grewia retusifolia* (*Ventilago viminalis*) open shrubland over *Acacia adoxa* var. *subglabra*, Crotalaria ramosissima low open shrubland over *Chrysopogon pallidus*, *Sehima nervosum* (*Eriachne obtusa*, *Aristida holathera* var. *holathera*) open tussock grassland and *Triodia caelestialis* open hummock grassland over *Galactia tenuiflora* very open herbland.
Veg Condition Very good; Horse and donkey scats.
Fire Age Very long unburnt.

Species	Cover	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	25		
Acacia adoxa var. *subglabra*	1	45	CLA01-13=	
Acacia colei var. *colei*	2	260	CLA01-03=	
Acacia eriopoda	0.1	240		
Acacia hippuroides	0.1	60	CLA08-03=	
Acacia platycarpa	0.1	50	CLA05-20=	
Acacia tumida var. *kulparn*	4	250		
Aristida holathera var. *holathera*	0.5	55	CLA05-01=	
Aristida hygrometrica	0.1	45	CLA07-18	
Bauhinia cunninghamii	9	350		
Boerhavia gardneri	0.1	40	CLA07-17	
Brachychiton diversifolius subsp. *diversifolius*	3	400	CLA06-09=	
Breynia cernua	0.1	60	CLA07-09	
Buchnera asperata	0.1	70	CLA05-02=	
Carissa lanceolata	0.1	80		
Chrysopogon pallidus	7	45	CLA01-42=	
Corchorus sidoides subsp. *sidoides*	0.1	35		
Corymbia bella	4	900	CLA07-02	
Corymbia flavescens	0.1	1300	CLA07-08	
Crotalaria ramosissima	1	50		
Desmodium filiforme	0.1	25	CLA07-13	
Dolichandrone occidentalis	0.1	80		
Ehretia saligna var. *saligna*	0.1	240		
Eriachne obtusa	2	60		
Eucalyptus tectifica	6	900	CLA07-03	
Euphorbia psilosperma	0.1	25	CLA07-12	
Evolvulus alsinoides var. *decumbens*	0.1	25		
Ficus aculeata var. *indecora*	0.1	110		
Fimbristylis ammobia	0.1	25	CLA07-10	
Galactia tenuiflora	2	25	CLA06-04=	
Goodenia sepalosa var. *sepalosa*	0.1	30	CLA01-22=	
Gossypium rotundifolium	0.1	30		
Grewia retusifolia	3	160	CLA06-02=	
Gymnanthera oblonga	0.1	45	CLA07-11	
Gyrocarpus americanus subsp. *pachyphyllus*	0.1	20	CLA07-19	
Heliotropium leptaleum	0.1	40	CLA04-08=	
Hybanthus aurantiacus	0.1	40		
Indigofera colutea	0.1	10		
Melhania oblongifolia	0.1	45		
Murdannia graminea	0.1	45	CLA-PL15=	
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	50	CLA07-16	
Perotis rara	0.1	20	CLA07-06	
Persoonia falcata	1	270	CLA04-26=	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	25	CLA-PL12=	N=8.
Premna acuminata	0.1	50	CLA04-12=	

Species	Cover	Height (cm)	Specimen	Notes
Pterocaulon ? paradoxum	0.1	50	CLA01-14=	Sterile; determination based on broad stem wing.
Santalum lanceolatum	0.1	120		
Schizachyrium fragile	0.1	45		
Sehima nervosum	6	90	CLA07-01	
Setaria apiculata	0.1	45	CLA01-29=	
Sida hackettiana	0.1	80	CLA07-04	
Solanum cunninghamii	0.1	30	CLA01-34=	
Spermacoce hillii	0.1	25	CLA04-14=	
**Stylosanthes scabra*	0.1	45	CLA07-05	N=1.
Thaumastochloa pubescens	0.1	15	CLA07-07	
Tinospora smilacina	0.1	20		
Trichodesma zeylanicum	0.1	30	CLA08-09=	Var. not determined; characters appear intermediate.
Triodia caelestialis	20	40	CLA01-18=	
Ventilago viminalis	1	190		
Waltheria indica	0.1	50		
Whiteochloa airoides	0.1	130	CLA03-20=	

Cape Leveque Road Biological Survey **Site** CLA08
Described by PL/RM **Date** 5/3/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423742 **mE** 8035077 **mN** 116.280593 **E** -17.770276 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Bauhinia cunninghamii*, *Eucalyptus tectifica*, *Corymbia greeniana*, *Brachychiton diversifolius* subsp. *diversifolius* low woodland over *Hakea arborescens*, *Acacia tumida* var. *kulparn* (*Persoonia falcata*, *Dolichandrone occidentalis*) tall shrubland over *Dodonaea hispidula, Acacia eriopoda*, *Breynia cernua* open shrubland over *Corchorus sidoides* subsp. *sidoides* scattered low shrubs over *Chrysopogon pallidus* (*Whitechloa airoides*, *Sorghum plumosum* var. *plumosum*, *Eriachne obtusa*, *Sehima nervosum*, *Aristida holathera* var. *holathera*) open tussock grassland and *Triodia caelestialis* very open hummock grassland over *Galactia tenuiflora* very open herbland.
Veg Condition Very good; cattle sightings, scats and tracks.
Fire Age No sign of recent fire.

Species	Cover	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	40		
Acacia eriopoda	3	150		
Acacia hippuroides	0.1	90	CLA08-03	
Acacia tumida var. *kulparn*	4	250		
Aristida holathera var. *holathera*	0.5	50	CLA05-01=	
Aristida holathera var. *latifolia*	0.1	80	CLA08-08	
Bauhinia cunninghamii	5	500		
Bonamia oblongifolia	0.1	30	CLA05-03=	
Brachychiton diversifolius subsp. *diversifolius*	3	600		
Breynia cernua	2	100	CLA07-09=	
Buchnera asperata	0.1	60	CLA05-02=	
Buchnera ramosissima	0.1	40	CLA08-07	
Calandrinia strophiolata	0.1	20		
Cassytha capillaris	0.1	30		
Chrysopogon pallidus	20	80	CLA01-42=	
Codonocarpus cotinifolius	0.1	70		
Corchorus sidoides subsp. *sidoides*	1	40		
Corymbia greeniana	4	600	CLA-PL36	
Crotalaria ramosissima	0.1	40		
Dodonaea hispidula	3	150		
Dolichandrone occidentalis	1	500		
Ehretia saligna var. *saligna*	0.1	120		
Eriachne melicacea	0.1	30	CLA05-15=	
Eriachne obtusa	2	30		
Eucalyptus tectifica	4	500	CLA08-01	
Ficus aculeata var. *indecora*	0.1	200		
Galactia tenuiflora	3	40	CLA06-04=	
Goodenia sepalosa var. *sepalosa*	0.1	5	CLA01-22	
Gossypium rotundifolium	0.1	25		
Grevillea pyramidalis subsp. *pyramidalis*	0.1	50		
Grewia retusifolia	0.1	120	CLA06-02=	
Hakea arborescens	4	400	=	
Heliotropium leptaleum	0.1	80	CLA04-08=	
Hybanthus aurantiacus	0.1	50		
Melhania oblongifolia	0.1	30		
Murdannia graminea	0.1	60	CLA-PL15	
Persoonia falcata	1	500	CLA04-26=	
Polygala tepperi	0.1	50	CLA04-05=	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	40	CLA-PL12=	N=5.
Premna acuminata	0.1	350	CLA08-05	
Premna acuminata	0.1	60	CLA04-12=	
Pterocaulon ? paradoxum	0.1	40	CLA01-14=	Sterile; determination based on broad stem wing.
Schizachyrium fragile	0.1	30		
Sehima nervosum	1	80	CLA07-01=	

Species	Cover	Height (cm)	Specimen	Notes
Senna costata	0.1	100	CLA08-04	
Setaria apiculata	0.1	30	CLA01-29=	
Sida hackettiana	0.1	40	CLA07-04=	
Sida rohlenae subsp. *occidentalis*	0.1	40		
Solanum cunninghamii	0.1	40	CLA01-34=	
Sorghum plumosum var. *plumosum*	3	80	CLA08-06	
Spermacoce hillii	0.1	30	CLA04-14=	
Synostemon lissocarpus	0.1	50	CLA01-12=	Appears to be range extension on FloraBase. FB not yet updated.
Thaumastochloa pubescens	0.1	20	CLA03-02=	
Tinospora smilacina	0.1	100		
Trichodesma zeylanicum	0.1	60	CLA08-09	Var. not determined; characters appear intermediate.
Triodia caelestialis	5	40		
Ventilago viminalis	0.1	200		
Waltheria indica	0.1	50		
Whiteochloa airoides	3	80	CLA03-20=	
Yakirra australiensis var. *australiensis*	0.1	20	CLA08-02	

Cape Leveque Road Biological Survey **Site** CLA09
Described by PL/RM **Date** 5/3/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423085 **mE** 8037002 **mN** 116.274465 **E** -17.752855 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Eucalyptus tectifica, Bauhinia cunninghamii* (*Corymbia bella, Brachychiton diversifolius* subsp. *diversifolius*) low woodland over *Acacia tumida* var. *kulparn* (*Ventilago viminalis, Persoonia falcata*) tall open shrubland over *Flueggea virosa* subsp. *melanthesoides* open shrubland over *Corchorus sidoides* subsp. *sidoides* scattered low shrubs over *Chrysopogon pallidus, Aristida holathera* var. *latifolia* (*Whitechloa airoides, Aristida hygrometrica*) tussock grassland over *Triodia caelestialis* very open hummock grassland over *Glycine tomentella* very open herbland.
Veg Condition Very good; Donkey scats, very old wire fence
Fire Age 5+ yrs.

Species	Cover	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	40		
Acacia colei var. *colei*	0.1	220	CLA01-03=	
Acacia platycarpa	0.1	100		
Acacia tumida var. *kulparn*	7	260	CLA02-09=	
Aristida holathera var. *latifolia*	11	70	CLA09-06	
Aristida hygrometrica	1	60	CLA07-18=	
Atalaya hemiglauca	0.1	120		
Bauhinia cunninghamii	6	650		
Bonamia oblongifolia	0.1	25	CLA05-03=	
Brachychiton diversifolius subsp. *diversifolius*	1	700	CLA09-08	
Buchnera asperata	0.1	60	CLA05-02=	
Buchnera ramosissima	0.1	30	CLA08-07=	
Chrysopogon pallidus	19	120	CLA01-42=	
Corchorus sidoides subsp. *sidoides*	0.5	40		
Corymbia bella	2	800	CLA07-02=	
Crotalaria ramosissima	0.1	25		
Cucumis variabilis	0.1	60		Tentative det. TBC Matt Barrett.
Cynanchum sp.	0.1	30	CLA09-07	Poor material; TBC Matt Barrett. No cons sig Cynanchum spp. in the region.
Desmodium filiforme	0.1	30	CLA07-13=	
Ehretia saligna var. *saligna*	0.1	270		
Eragrostis eriopoda	0.1	40		
Eriachne melicacea	0.1	25	CLA05-15=	
Eriachne obtusa	0.1	50		
Eucalyptus tectifica	7	900	CLA07-03=	
Ficus aculeata var. *indecora*	0.1	160		
Flueggea virosa subsp. *melanthesoides*	2	180		
Glycine tomentella	2	40	CLA09-12	
Goodenia sepalosa var. *sepalosa*	0.1	25	CLA01-22=	
Gossypium rotundifolium	0.1	25		
Grevillea pyramidalis subsp. *pyramidalis*	0.1	210		
Heliotropium leptaleum	0.1	40	CLA04-08=	
Hybanthus aurantiacus	0.1	40		
Indigofera colutea	0.1	20		
Melhania oblongifolia	0.1	40	CLA09-04	sens. lat.
Murdannia graminea	0.1	50	CLA-PL15=	
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	50	CLA01-41=	
Passiflora foetida var. *hispida*	0.1	220	N=2.	
Persoonia falcata	0.5	230	CLA04-26=	
Polycarpaea corymbosa var. *corymbosa*	0.1	20	CLA09-10	
Pterocaulon ? paradoxum	0.1	50	CLA01-14=	Sterile; determination based on broad stem wing.

Species	Cover	Height (cm)	Specimen	Notes
Ptilotus lanatus	0.1	30	CLA09-02	
Rhynchosia minima	0.1	25	CLA09-11	
Santalum lanceolatum	0.1	250		
Sehima nervosum	0.1	100	CLA07-01=	
Setaria apiculata	0.1	35	CLA01-29=	
Sida hackettiana	0.1	45	CLA07-04=	
Spermacoce hillii	0.1	25	CLA04-14=	
Tephrosia remotiflora	0.1	40	CLA09-01	
Thaumastochloa pubescens	0.1	20	CLA03-02=	
Tinospora smilacina	0.1	40		
Trianthema pilosum	0.1	20		
Tribulopis angustifolia	0.1	25		
Trichodesma zeylanicum	0.1	30	CLA08-09=	Var. not determined; characters appear intermediate.
Triodia caelestialis	2	40	CLA01-18=	
Urochloa holosericea subsp. *velutina*	0.1	15	CLA09-09	Voucher.
Ventilago viminalis	1	220		
Waltheria indica	0.1	30		
Whiteochloa airoides	7	120	CLA03-20=	
Yakirra australiensis var. *australiensis*	0.1	25		

Cape Leveque Road Biological Survey **Site** CLA10
Described by PL/RM **Date** 5/4/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423727 **mE** 8033722 **mN** 116.280402 **E** -17.782522 **S**
Habitat Clay depression, bordering the Namalaica Claypan to the west.
Soil Light grey, light clay.
Rock Type N/A.
Vegetation Melaleuca alsophila low woodland over *Flueggea virosa* subsp. *melanthesoides* scattered shrubs over **Stylosanthes hamata* (**Mesosphaerum suaveolens*) low open heath over *Eriachne obtusa*, *Sorghum plumosum* var. *plumosum*, *Panicum seminudum* (*Ectrosia schultzii* var. *schultzii*, *Chrysopogon pallidus*) open tussock grassland over *Fimbristylis microcarya* (*F. rara*) rara very open sedgeland.
Veg Condition Good; High density of **Stylosanthes hamata*, **Mesosphaerum suaveolens*; Cattle sightings, scats and tracks.
Fire Age No sign of recent fire.

Species	Cover	Height (cm)	Specimen	Notes
Acacia colei var. *colei*	0.1	30		
Acacia tumida var. *kulparn*	0.1	90		
Bauhinia cunninghamii	0.1	120		
Blumea saxatilis	0.1	20	CLA10-04	
Buchnera asperata	0.1	30	CLA05-02=	
Calandrinia strophiolata	0.1	10	CLA10-12	
**Chloris barbata*	0.1	50	CLA10-16	Number of plants not recorded; treated as N=1.
Chrysopogon pallidus	0.5	60		
Crotalaria ramosissima	0.1	15		
Cyperus carinatus	0.1	40	CLA10-06	
Desmodium filiforme	0.1	25	CLA05-11=	
Digitaria bicornis	0.1	30	CLA10-05	
Ectrosia schultzii var. *schultzii*	2	40	CLA10-09	
Eragrostis cumingii	2	15		
Eriachne obtusa	6	30		
Fimbristylis microcarya	6	30	CLA10-11	
Fimbristylis rara	0.5	30	CLA10-14	
Flueggea virosa subsp. *melanthesoides*	0.5	110		
Gomphrena tenella	0.1	10	CLA10-07	
Gymnanthera oblonga	0.1	50	CLA10-15	
Melaleuca alsophila	18	600	CLA10-01	
**Mesosphaerum suaveolens*	1	30	CLA10-10	N=80.
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	20	CLA10-13	
Panicum seminudum	4	40	CLA10-02	
Physalis angulata	0.1	60	CLA10-18	Number of plants not recorded; treated as N=1.
Schizachyrium fragile	0.1	30		
Setaria surgens	0.1	30		
Sorghum plumosum var. *plumosum*	5	100	CLA-PL42=	
**Stylosanthes hamata*	30	30		N=5000+
Tinospora smilacina	0.1	20		
Triumfetta pentandra	0.1	50	CLA10-17	
Waltheria indica	0.1	10		
Zornia muelleriana subsp. *congesta*	0.1	20	CLA10-08	

Cape Leveque Road Biological Survey **Site** CLA11
Described by PL/RM **Date** 5/4/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423738 **mE** 8033867 **mN** 116.280511 **E** -17.781212 **S**
Habitat Clay plain, bordering Melaleuca alsophila dampland vegetation to the south.
Soil Light reddish brown loamy clay on surface, grey clay at depth.
Rock Type N/A.
Vegetation *Eucalyptus tectifica*, *Bauhinia cunninghamii* low open woodland over *Sorghum plumosum* var. *plumosum* (*Chrysopogon pallidus*) closed tussock grassland over *Zornia muelleriana* subsp. *congesta*, *Gossypium rotundifolium*, *Galactia tenuiflora* very open herbland.
Veg Condition Very good; Cattle scats, tracks, weed species.
Fire Age Very long unburnt.
Notes Vegetation is approx. 200 length North-South. Extends several hundred meters to the west. Also extends east across the Cape Leveque road.

Species	Cover	Height (cm)	Specimen	Notes
Atalaya hemiglauca	0.1	60	CLA11-09	
Bauhinia cunninghamii	4	400		
Blumea saxatilis	0.1	15	CLA10-04=	
Brachychiton diversifolius subsp. *diversifolius*	0.1	100		
Buchnera asperata	0.1	70	CLA05-02=	
Buchnera linearis	0.1	15	CLA11-02	
Buchnera ramosissima	0.1	50	CLA11-07	
Byblis filifolia	0.1	15	CLA-BMa06=	Tentative det. TBC Matt Barrett.
Cajanus marmoratus	0.1	100		
Calandrinia strophiolata	0.1	15	CLA11-04	
Calandrinia tepperiana	0.1	20	CLA11-19	
Carissa lanceolata	0.1	90		
Cartonema parviflorum	0.1	30	CLA11-01	
Chamaecrista absus	0.1	40	CLA11-18	
Chrysopogon pallidus	15	80		
Crotalaria ramosissima	0.1	40		
Cyperus ? cuspidatus	0.1	20	CLA11-17	Voucher.
Cyperus carinatus	0.1	60	CLA10-06=	
Dolichandrone occidentalis	0.1	70		
Drosera broomensis	0.1	2	CLA-PL53=	
Ectrosia schultzii var. *schultzii*	0.1	30	CLA10-09=	
Ehretia saligna var. *saligna*	0.1	60		
Eragrostis cumingii	0.1	30		
Eriachne obtusa	0.1	40		
Eucalyptus tectifica	5	900	CLA11-11	
Euphorbia ? mitchelliana	0.1	30	CLA11-14	TBC Matt Barrett.
Ficus aculeata var. *indecora*	0.1	90		
Fimbristylis rara	0.1	20	CLA11-16	
Flueggea virosa subsp. *melanthesoides*	0.5	100		
Galactia tenuiflora	1	20	CLA01-08=	
Gossypium rotundifolium	1	50		
Grewia retusifolia	0.1	100	CLA06-02=	
Gymnanthera oblonga	0.1	50	CLA10-15=	
Hibiscus apodus	0.1	50	CLA-BMa04=	
Indigofera colutea	0.1	20		
Indigofera hirsuta	0.1	40	CLA11-13	
Indigofera linifolia	0.1	20		
Indigofera linnaei	0.1	30	CLA11-08	
Mitrasacme hispida	0.1	10	CLA11-03	
Mitrasacme nummularia	0.1	90	CLA-PL54=	
Murdannia graminea	0.1	40	CLA-PL15=	
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	70	CLA-PL51=	
Pterocaulon ? paradoxum	0.1	50	CLA01-14=	
Rhynchosia minima	0.1	30		
Sehima nervosum	0.1	80	CLA07-01=	
Setaria surgens	0.1	30		

Species	Cover	Height (cm)	Specimen	Notes
Sorghum plumosum var. *plumosum*	65	100	CLA-PL42=	
Stackhousia intermedia	0.1	60	CLA11-06	
Stylidium pindanicum	0.1	20	CLA-PL52=	N=60.
**Stylosanthes hamata*	0.1	30	N=50.	
Tephrosia remotiflora	0.1	30	CLA09-01=	
Thaumastochloa pubescens	0.1	20	CLA11-05	
Tinospora smilacina	0.1	50		
Triumfetta pentandra	0.1	40	CLA11-12	
Uraria lagopodioides	0.1	30	CLA11-15	
Whiteochloa airoides	0.1	110	CLA03-20=	
Yakirra australiensis var. *australiensis*	0.1	15		
Zornia muelleriana subsp. *congesta*	2	30	CLA10-08=	

Cape Leveque Road Biological Survey **Site** CLA12
Described by PL/RM **Date** 5/4/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423738 **mE** 8029839 **mN** 116.280365 **E** -17.817618 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Ficus aculeata* var. indecora, Bauhinia cunninghamii low open woodland over *Acacia eriopoda* (*Ventilago viminalis*, *Ehretia saligna* var. *saligna*) tall shrubland over *Gossypium australe, Grevillea refracta* open shrubland over *Trichodesma zeylanicum* low open shrubland over *Pterocaulon ? paradoxum* scattered low shrubs over *Eriachne obtusa* (*Aristida holathera var. holathera, Whiteochloa airoides*) open tussock grassland.
Veg Condition Very good. Cattle tracks, cattle bones
Fire Age Very long unburnt.

Species	Cover	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	40		
Acacia adoxa var. *subglabra*	0.1	50	CLA01-13=	
Acacia colei var. *colei*	0.1	200		
Acacia eriopoda	18	600		
Aristida holathera var. *holathera*	3	60	CLA12-15	
Aristida hygrometrica	0.1	30	CLA07-18=	
Bauhinia cunninghamii	1	300		
Bonamia oblongifolia	0.1	20	CLA12-09	
Brachychiton diversifolius subsp. *diversifolius*	0.1	300		
Buchnera asperata	0.1	70	CLA05-02=	
Buchnera ramosissima	0.1	40	CLA08-07=	
Byblis rorida	0.1	30	CLA01-17=	Tentative det. TBC Matt Barrett.
Carissa lanceolata	0.1	100		
Cassytha capillaris	0.1	30		
Chrysopogon pallidus	0.1	100	CLA01-42=	
Corchorus sidoides subsp. *sidoides*	0.1	20		
Corymbia zygophylla	0.1	350		
Crotalaria medicaginea var. *neglecta*	0.1	70	CLA12-11	
Cucumis variabilis	0.1	20		Tentative det. TBC Matt Barrett.
Dolichandrone occidentalis	0.1	300		
Ehretia saligna var. *saligna*	1	200		
Eriachne obtusa	8	60		
Eriachne pindanica	0.1	30	CLA12-02	
Euphorbia psilosperma	0.1	30	CLA12-08	
Evolvulus alsinoides var. *decumbens*	0.1	20		
Ficus aculeata var. *indecora*	3	550		
Fimbristylis oxystachya	0.1	30	CLA12-12	
Flueggea virosa subsp. *melanthesoides*	0.1	160		
Glycine tomentella	0.1	30		
Goodenia sepalosa var. *sepalosa*	0.1	15		
Gossypium australe	2	120	CLA12-06	
Grevillea pyramidalis subsp. *pyramidalis*	0.1	50		
Grevillea refracta	1	160		
Gyrostemon tepperi	0.1	30		
Heliotropium leptaleum	0.1	30	CLA04-08=	
Hybanthus aurantiacus	0.1	30		
Marsdenia viridiflora subsp. *tropica*	0.1	80	CLA12-04, 07	
Melhania oblongifolia	0.1	45	CLA12-14	
Murdannia graminea	0.1	60	CLA-PL15=	
Persoonia falcata	0.1	60	CLA04-26=	
Polygala tepperi	0.1	30	CLA04-05=	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	20	CLA12-13	N=30.
Premna acuminata	0.1	60	CLA04-12=	
Pterocaulon ? paradoxum	0.5	60	CLA01-14=	
Ptilotus polystachyus	0.1	40		
Schizachyrium fragile	0.1	30		
Senna costata	0.1	100	CLA12-16	

Species	Cover	Height (cm)	Specimen	Notes
Sersalisia sericea	0.1	300	CLA01-33=	
Sida rohlenae subsp. *occidentalis*	0.1	30		
Solanum cunninghamii	0.1	40	CLA01-34=	
Spermacoce occidentalis	0.1	30	CLA12-01	
Synostemon lissocarpus	0.1	50	CLA12-10	Appears to be range extension on FloraBase, FB not yet updated.
Tephrosia leptoclada	0.1	30	CLA12-03	
Thaumastochloa pubescens	0.1	30	CLA11-05=	
Trichodesma zeylanicum	3	150		Var. not determined; characters appear intermediate.
Triodia caelestialis	0.1	40		
Ventilago viminalis	1	200		
Waltheria indica	0.1	50		
Whiteochloa airoides	1	60	CLA03-20=	
Yakirra australiensis var. *australiensis*	0.1	20	CLA02-13=	

Cape Leveque Road Biological Survey **Site** CLA13
Described by PL/RM **Date** 5/5/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423274 **mE** 8022422 **mN** 116.275716 **E** -17.884636 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A
Vegetation *Bauhinia cunninghamii*, *Ficus aculeata* var. *indecora*, *Corymbia zygophylla* low woodland over *Dolichandrone occidentalis*, *Acacia eriopoda* (*Persoonia falcata*) tall shrubland over *Trichodesma zeylanicum* (*Corchorus sidoides* subsp. *sidoides*) low open shrubland over *Eriachne obtusa* (*Aristida holathera* var. *latifolia*) open tussock grassland and *Triodia caelestialis* open hummock grassland over *Jacquemontia* sp. Broome (A.A. Mitchell 3028), *Spermacoce occidentalis* very open herbland.
Veg Condition Very good; Some rubbish, cow bones.
Fire Age Very long unburnt.

Species	Cover	Height (cm)	Specimen	Notes
Acacia adoxa var. *subglabra*	0.1	30	CLA01-13=	
Acacia colei var. *colei*	0.1	150		
Acacia eriopoda	9	900		
Aristida holathera var. *latifolia*	3	60	CLA13-03	
Bauhinia cunninghamii	5	450		
Bonamia oblongifolia	0.1	20	CLA05-03=	
Brachychiton diversifolius subsp. *diversifolius*	0.1	200		
Buchnera asperata	0.1	60	CLA05-02=	
Buchnera ramosissima	0.1	40	CLA08-07=	
Byblis rorida	0.1	25	CLA01-17=	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	20	CLA13-07	
Carissa lanceolata	0.1	100		
Cassytha capillaris	0.1	40		
Chamaecrista symonii	0.1	20	CLA13-08	
Chrysopogon pallidus	0.1	60	CLA01-42=	
Corchorus sidoides subsp. *sidoides*	1	35		
Corymbia greeniana	0.1	250	CLA13-09	
Corymbia zygophylla	2	450		
Crotalaria ramosissima	0.1	40		
Cucumis variabilis	0.1	150		Tentative det. TBC Matt Barrett.
Dolichandrone occidentalis	15	500		
Eragrostis eriopoda	0.1	40		
Eriachne obtusa	9	40		
Eriachne pindanica	0.1	30	CLA12-02=	
Evolvulus alsinoides var. *decumbens*	0.1	30		
Ficus aculeata var. *indecora*	3	350		
Galactia tenuiflora	0.1	25	CLA01-08=	
Gardenia pyriformis subsp. *keartlandii*	0.1	150	=	
Gyrostemon tepperi	0.1	70		
Heliotropium leptaleum	0.1	40	CLA04-08=	
Hybanthus aurantiacus	0.1	50		
Jacquemontia sp. Broome (A.A. Mitchell 3028)	2	30	CLA13-01	N=75.
Jasminum didymum	0.1	200	CLA13-05	Subsp. not determined; leaf characters appear intermediate between subsp. didymum and lineare.
Lysiana spathulata subsp. *spathulata*	0.1	110	CLA13-02	
Marsdenia viridiflora subsp. *tropica*	0.1	50	CLA12-07=	
Murdannia graminea	0.1	50	CLA-PL15=	
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	20	CLA01-41=	
Persoonia falcata	0.5	400	CLA04-26=	
Polygala tepperi	0.1	50	CLA04-05=	

Species	Cover	Height (cm)	Specimen	Notes
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	30	CLA-PL12=	N=13.
Premna acuminata	0.1	50	CLA04-12=	
Pterocaulon ? paradoxum	0.1	60	CLA01-14=	
Ptilotus polystachyus	0.1	50	CLA13-10	
Schizachyrium fragile	0.1	30	CLA01-19=	
Scleria sp. Pindan	0.1	40	CLA06-05=	aff. brownii, but with larger spikelets and seeds; not yet recognised on FloraBase.
Sida rohlenae subsp. *occidentalis*	0.1	30		
Sida sp. Pindan (B.G. Thomson 3398) PN	0.1	50	CLA13-04	
Solanum cunninghamii	0.1	40	CLA01-34=	
Sorghum plumosum var. *plumosum*	0.1	80		
Spermacoce occidentalis	1	25	CLA01-11=	
Tephrosia leptoclada	0.1	30	CLA12-03=	
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.1	40	CLA13-06	
Thaumastochloa pubescens	0.1	30	CLA03-02=	
Tinospora smilacina	0.1	70		
Trianthema pilosum	0.1	5		
Trichodesma zeylanicum	4	70		Var. not determined; characters appear intermediate.
Triodia caelestialis	11	30		
Velleia panduriformis	0.1	40		
Ventilago viminalis	0.1	200		
Waltheria indica	0.1	50		

Cape Leveque Road Biological Survey **Site** CLA14
Described by PL/RM **Date** 5/5/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423508 **mE** 8026585 **mN** 116.278076 **E** -17.847019 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Bauhinia cunninghamii* (*Corymbia zygophylla*) low open woodland over *Acacia eriopoda* tall shrubland over *Wrightia saligna* scattered shrubs over Trichodesma zeylanicum (*Corchorus sidoides* subsp. *sidoides*) low open shrubland over *Sorghum plumosum* var. plumosum, *Aristida holathera* var. *latifolia*, *A. holathera* var. *holathera*, *Chrysopogon pallidus* very open tussock grassland and *Triodia caelestialis* open hummock grassland.
Veg Condition Very good; Cattle tracks, **Stylosanthes hamata*.
Fire Age No sign of recent fire.

Species	Cover	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	50		
Acacia colei var. *colei*	0.1	200		
Acacia eriopoda	12	600		
Aristida holathera var. *holathera*	1	40		
Aristida holathera var. *latifolia*	1	40		
Bauhinia cunninghamii	2	400		
Bonamia oblongifolia	0.1	20	CLA05-03=	
Brachychiton diversifolius subsp. *diversifolius*	0.1	450		
Buchnera asperata	0.1	60	CLA05-02=	
Byblis rorida	0.1	20	CLA01-17=	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	20	CLA01-09=	
Cassytha capillaris	0.1	30		
Chrysopogon pallidus	1	80		
Corchorus sidoides subsp. *sidoides*	3	20		
Corymbia zygophylla	0.5	350		
Crotalaria medicaginea var. *neglecta*	0.1	70		
Crotalaria ramosissima	0.1	40		
Cucumis variabilis	0.1	40		Tentative det. TBC Matt Barrett.
Digitaria brownii	0.1	40		
Dolichandrone occidentalis	0.1	150		
Ehretia saligna var. *saligna*	0.1	300		
Eragrostis eriopoda	0.1	30		
Eriachne melicacea	0.1	30	CLA03-01=	
Eriachne obtusa	0.1	40		
Eriachne pindanica	0.1	30		
Evolvulus alsinoides var. *decumbens*	0.1	25		
Ficus aculeata var. *indecora*	0.1	350		
Flueggea virosa subsp. *melanthesoides*	0.1	140		
Galactia tenuiflora	0.1	15	CLA01-08=	
Goodenia sepalosa var. *sepalosa*	0.1	15	CLA01-22=	
Gyrostemon tepperi	0.1	60		
Heliotropium leptaleum	0.1	25	CLA04-08=	
Hybanthus aurantiacus	0.1	50		
Jasminum didymum	0.1	80	CLA14-05	Subsp. not determined; leaf characters appear intermediate between subsp. didymum and lineare.
Marsdenia angustata	0.1	60	CLA14-03	
Marsdenia viridiflora subsp. *tropica*	0.1	150	CLA12-07=	
Murdannia graminea	0.1	40	CLA-PL15=	
Phyllanthus exilis	0.1	35	CLA14-02	
Polygala tepperi	0.1	50	CLA04-05=	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	40	CLA-PL14=	N=15.
Premna acuminata	0.1	120	CLA14-04	
Pterocaulon ? paradoxum	0.1	60	CLA01-14=	

Species	Cover	Height (cm)	Specimen	Notes
Ptilotus polystachyus	0.1	50	CLA06-07=	
Schizachyrium fragile	5	30		
Sida rohlenae subsp. *occidentalis*	0.1	40		
Sida sp. Pindan (B.G. Thomson 3398) PN	0.1	70	CLA03-16=	
Solanum cunninghamii	0.1	45	CLA01-34=	
Sorghum plumosum var. *plumosum*	1	80		
Spermacoce occidentalis	0.1	10	CLA01-11=	
**Stylosanthes hamata*	0.1	50		Number of plants not recorded; treated as N=1.
Tephrosia leptoclada	0.1	25	CLA12-03=	
Thaumastochloa pubescens	0.1	20	CLA03-02=	
Tinospora smilacina	0.1	15		
Trichodesma zeylanicum	6	60	CLA08-09=	Var. not determined; characters appear intermediate.
Triodia caelestialis	12	40		
Velleia panduriformis	0.1	30		
Waltheria indica	0.1	40		
Wrightia saligna	1	160	CLA14-06	
Yakirra australiensis var. *australiensis*	0.1	20		

Cape Leveque Road Biological Survey **Site** CLA01
Described by PL/RM **Date** 5/1/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423524 **mE** 8046583 **mN** 116.278952 **E** -17.666276 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A
Vegetation *Eucalyptus tectifica* (*Brachychiton diversifolius* subsp. *diversifolius*) low open woodland over *Acacia eriopoda* (*Bauhinia cunninghamii*, *Ficus aculeata* var. *indecora*, *Grevillea refracta*, *Santalum lanceolatum*, *Ehretia saligna* var. *saligna*) tall shrubland over *Sersalisia sericea*, *Trichodesma zeylanicum* open shrubland over *Corchorus sidoides* subsp. *sidoides* low open shrubland over *Triodia caelestialis* scattered hummock grasses over Eriachne obtusa, *Aristida holathera* var. *latifolia* open tussock grassland.
Veg Condition Very good; cattle scats.
Fire Age No sign of recent fire.

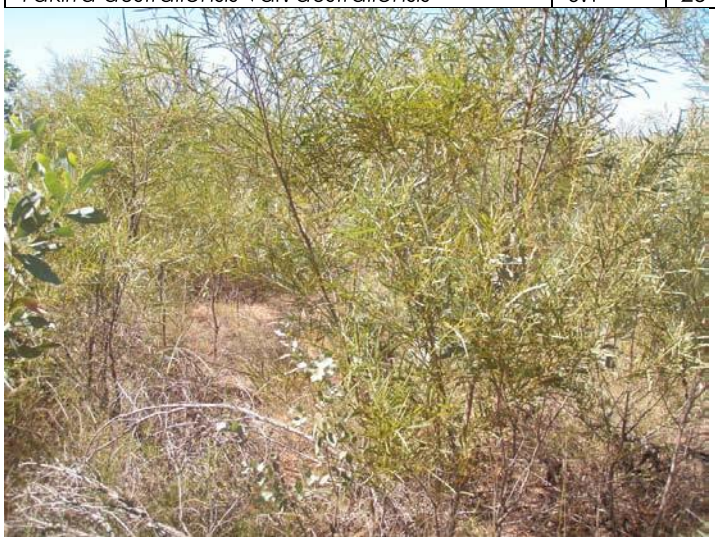
Species	Cover	Height (cm)	Specimen	Notes
Acacia adoxa var. *subglabra*	0.1	50	CLA01-13	
Acacia colei var. *colei*	0.1	220	CLA01-03	
Acacia eriopoda	14	500	CLA01-02	
Aristida holathera var. *latifolia*	4	70	CLA01-16	
Bauhinia cunninghamii	3	400		
Brachychiton diversifolius subsp. *diversifolius*	2	400	CLA01-04	
Breynia cernua	0.1	160	CLA01-25	
Buchnera asperata	0.1	50	CLA01-10	
Byblis rorida	0.1	30	CLA01-17	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	20	CLA01-09	
Carissa lanceolata	0.1	190	CLA01-43	
Chrysopogon pallidus	0.1	30	CLA01-42	
Codonocarpus cotinifolius	0.1	120		
Corchorus sidoides subsp. *sidoides*	6	70	CLA01-06	
Crotalaria brevis	0.1	30	CLA01-40	
Crotalaria medicaginea var. *neglecta*	0.1	50		
Cucumis variabilis	0.1	20	CLA01-35	Tentative det. TBC Matt Barrett.
**Cyanthillium cinereum*	0.1	90	CLA01-26	Number of individuals not recorded; treated as N=1.
Cyperus blakeanus	0.1	50	CLA01-39	
Dodonaea hispidula	0.1	190		
Dolichandrone occidentalis	0.1	60		
Ehretia saligna var. *saligna*	1	210		
Eragrostis eriopoda	0.1	40	CLA01-37	
Eriachne melicacea	0.1	30	CLA01-50	
Eriachne obtusa	4	60	CLA01-05	
Eriachne pindanica	0.1	35	CLA01-21	
Eucalyptus tectifica	2	650	CLA01-01	
Evolvulus alsinoides var. *decumbens*	0.1	30		
Ficus aculeata var. *indecora*	2	350	CLA01-32	
Galactia tenuiflora	0.1	40	CLA01-08	
Goodenia sepalosa var. *sepalosa*	0.1	25	CLA01-22	
Gossypium australe	0.1	110	CLA01-28	
Gossypium rotundifolium	0.1	25		
Grevillea pyramidalis subsp. *pyramidalis*	0.1	140	CLA01-31	
Grevillea refracta	0.5	450		
Gyrostemon tepperi	0.1	60		
Heliotropium leptaleum	0.1	30	CLA01-45,27	
Hibiscus geranioides	0.1	25	CLA01-44	
Hybanthus aurantiacus	0.1	45		
Marsdenia viridiflora subsp. *tropica*	0.1	40	CLA01-47	
Melhania oblongifolia	0.1	30		
Murdannia graminea	0.1	45	CLA01-48	
Myoporum montanum	0.1	180	CLA01-38	

Species	Cover	Height (cm)	Specimen	Notes
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	40	CLA01-41	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	20	CLA1-20,49	N=4. Ph 61,283-284.
Premna acuminata	0.1	80	CLA01-23	
Pterocaulon ? paradoxum	0.1	60	CLA01-14	Sterile; determination based on broad stem wing.
Ptilotus lanatus	0.1	40	CLA01-07	
Santalum lanceolatum	1	220		
Schizachyrium fragile	7	25	CLA01-19	
Sersalisia sericea	2	180	CLA01-33	
Setaria apiculata	0.1	35	CLA01-29	
Sida hackettiana	0.1	30	CLA01-24	
Sida rohlenae subsp. *occidentalis*	0.1	35	CLA01-30	
Solanum cunninghamii	0.1	50	CLA01-34	
Spermacoce occidentalis	0.1	40	CLA01-11	
Synostemon lissocarpus	0.1	50	CLA01-12	Appears to be range extension on FloraBase, FB not yet updated.
Trichodesma zeylanicum	2	100	CLA01-15	Var. not determined; characters appear intermediate.
Triodia caelestialis	1	110	CLA01-18	
Ventilago viminalis	0.1	120	CLA01-46	
Waltheria indica	0.1	40		

Cape Leveque Road Biological Survey **Site** CLA02
Described by PL/RM **Date** 5/1/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423525 **mE** 8045615 **mN** 116.278926 **E** -17.675025 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Acacia eriopoda* (*A. colei* var. *colei*, *Ehretia saligna* var. *saligna*, *Grevillea refracta*, *G. pyramidalis* subsp. *pyramidalis*, *Ficus aculeata* var. *indecora*) tall shrubland over *Dodonaea hispidula* (*Santalum lanceolatum*) shrubland over *Corchorus sidoides* subsp. *sidoides* (*Acacia adoxa* var. *subglabra*) low shrubland over *Eriachne obtusa*, (*Aristida holathera* var. *latifolia*) tussock grassland.
Veg Condition Very good; cow scats.
Fire Age No sign of recent fire.

Species	Cover	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	30	CLA02-20	
Acacia adoxa var. *subglabra*	3	50	CLA01-13=	
Acacia colei var. *colei*	3	300	CLA01-03=	
Acacia eriopoda	22	320	CLA01-02=	
Acacia tumida var. *kulparn*	0.1	80	CLA02-09	
Aristida holathera var. *latifolia*	4	70		
Brachychiton diversifolius subsp. *diversifolius*	0.1	90	CLA02-16	
Breynia cernua	0.1	90	CLA02-10	
Byblis filifolia	0.1	25	CLA01-17=	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	20	CLA02-26	
Carissa lanceolata	0.1	50		
Cassytha filiformis	0.1	80	CLA02-04	
Chrysopogon pallidus	0.1	40	CLA01-42=	
Clerodendrum floribundum	0.1	140	CLA02-05	Poor material; var. not determined.
Codonocarpus cotinifolius	0.1	60		
Corchorus sidoides subsp. *sidoides*	8	40	CLA01-06=	
Crotalaria medicaginea var. *neglecta*	0.1	45		
Cucumis variabilis	0.1	25	CLA01-35=	Tentative det. TBC Matt Barrett.
Cymbopogon ambiguus	0.1	150	CLA02-02	
Cymbopogon procerus	0.1	80	CLA02-25	
Cynanchum sp.	0.1	110	CLA02-14	Poor material; TBC Matt Barrett. No cons sig Cynanchum spp. in the region.
Dodonaea hispidula	8	160		
Ehretia saligna var. *saligna*	2	270		
Eriachne obtusa	60	45	CLA01-05=	
Eriachne pindanica	3	40	CLA02-03	
Euphorbia psilosperma	0.1	20	CLA02-12	
Evolvulus alsinoides var. *decumbens*	0.1	25		
Ficus aculeata var. *indecora*	1	280	CLA01-32=	
Fimbristylis oxystachya	0.1	15	CLA02-19	
Flueggea virosa subsp. *melanthesoides*	0.1	180		
Glycine tomentella	0.1	40	CLA02-01	
Goodenia sepalosa var. *sepalosa*	0.1	20	CLA01-22=	
Gossypium rotundifolium	0.1	30		
Grevillea pyramidalis subsp. *pyramidalis*	1	310	CLA01-31=	
Grevillea refracta	1	320		
Gyrostemon tepperi	0.1	40		
Hybanthus aurantiacus	0.1	45		
Marsdenia angustata	0.1	70	CLA02-22	
Marsdenia viridiflora subsp. *tropica*	0.1	70	CLA02-08	
Melhania oblongifolia	0.1	35		
Phyllanthus baccatus	0.1	120	CLA02-15	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	40	CLA02-7,24	N=6.
Premna acuminata	0.1	140	CLA02-06	

Species	Cover	Height (cm)	Specimen	Notes
Psydrax attenuata var. *tenella*	0.1	130	CLA02-21	
Pterocaulon ? paradoxum	0.1	45	CLA01-14=	
Ptilotus polystachyus	0.1	25	CLA02-23	
Santalum lanceolatum	3	190		
Schizachyrium fragile	2	40	CLA01-19=	
Scleria sp. Pindan	0.1	45	CLA02-17	aff. brownii, but with larger spikelets and seeds; taxon not yet recognised on FloraBase.
Setaria apiculata	0.1	35	CLA01-29=	
Sida rohlenae subsp. *occidentalis*	0.1	45	CLA01-30=	
Solanum cunninghamii	0.1	40	CLA01-34=	
Spermacoce occidentalis	0.1	25	CLA02-27	
Tephrosia remotiflora	0.1	40	CLA02-11	
Thaumastochloa pubescens	0.1	15	CLA02-28	
Tinospora smilacina	0.1	25		
Trichodesma zeylanicum	0.1	70	CLA01-15=	Var. not determined; characters appear intermediate.
Waltheria indica	0.1	25		
Yakirra australiensis var. *australiensis*	0.1	25	CLA02-13	



Cape Leveque Road Biological Survey **Site** CLA03
Described by PL/RM **Date** 5/1/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423685 **mE** 8043395 **mN** 116.280355 **E** -17.695095 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Ficus aculeata* var. *indecora* low open woodland over *Acacia eriopoda* (*Grevillea refracta*, *Ehretia saligna* var. *saligna*) tall shrubland over *Dodonaea hispidula*, *Breynia cernua* open shrubland over *Corchorus sidoides* subsp. *sidoides* low open shrubland over *Aristida holathera* var. *latifolia*, (*Eriachne obtusa*, *E. melicacea*) open tussock grassland.
Veg Condition Very good; cow tracks.
Fire Age No sign of recent fire.

Species	Cover	Height (cm)	Specimen	Notes
Acacia adoxa var. *subglabra*	0.1	30	CLA01-13=	
Acacia colei var. *colei*	0.1	300	CLA01-03=	
Acacia eriopoda	25	400		
Acacia tumida var. *kulparn*	0.1	260	CLA02-09=	
Aristida holathera var. *latifolia*	20	60	CLA01-16=	
Bauhinia cunninghamii	0.1	200		
Bonamia oblongifolia	0.1	10	CLA03-19	N=1.
Brachychiton diversifolius subsp. *diversifolius*	0.1	70	CLA01-36=	
Breynia cernua	3	80	CLA03-13	
Byblis filifolia	0.1	20	CLA03-05	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	10	CLA01-09=	
Carissa lanceolata	0.1	190		
Cassytha filiformis	0.1	150	CLA02-04=	
Chrysopogon pallidus	0.1	80	CLA01-42=	
Clerodendrum floribundum	0.1	10	CLA03-15	Poor material; var. not determined.
Codonocarpus cotinifolius	0.1	20		
Corchorus sidoides subsp. *sidoides*	2	30	CLA01-06=	
Corymbia greeniana	0.1	230	CLA03-12	
Crotalaria medicaginea var. *neglecta*	0.1	40		
Cucumis variabilis	0.1	120	CLA03-08	Tentative det. TBC Matt Barrett.
Denhamia cunninghamii	0.1	80	CLA03-14	
Dodonaea hispidula	3	150		
Ehretia saligna var. *saligna*	2	300		
Eriachne melicacea	1	30	CLA03-01	
Eriachne obtusa	1	30	CLA01-05=	
Eriachne pindanica	0.1	20		
Euphorbia psilosperma	0.1	20	CLA03-09	
Ficus aculeata var. *indecora*	2	250		
Goodenia sepalosa var. *sepalosa*	0.1	15	CLA03-11	
Gossypium rotundifolium	0.1	20		
Grevillea pyramidalis subsp. *pyramidalis*	0.1	250		
Grevillea refracta	3	300		
Gyrostemon tepperi	0.1	40		
Heliotropium leptaleum	0.1	10	CLA03-06	
Hybanthus aurantiacus	0.1	30		
Polygala tepperi	0.1	30	CLA03-17	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	40	CLA03-07	N=5.
Premna acuminata	0.1	100	CLA03-21	
Ptilotus polystachyus	0.1	40	CLA03-03	
Santalum lanceolatum	0.1	80		
Schizachyrium fragile	1	30	CLA01-19=	
Scleria sp. Pindan	0.1	40	CLA03-10	aff. brownii, but with larger spikelets and seeds; taxon not yet recognised on FloraBase.
Sida rohlenae subsp. *occidentalis*	0.1	30		

Species	Cover	Height (cm)	Specimen	Notes
Sida sp. Pindan (B.G. Thomson 3398) PN	0.1	80	CLA03-16	
Solanum cunninghamii	0.1	40	CLA01-34=	
Spermacoce occidentalis	0.1	20	CLA02-27=	
Synostemon lissocarpus	0.1	30	CLA01-12=	Appears to be range extension on FloraBase, FB not yet updated.
Tephrosia remotiflora	0.1	30	CLA03-04	
Thaumastochloa pubescens	0.1	20	CLA03-02	
Tinospora smilacina	0.1	15		
Trichodesma zeylanicum	0.1	80	CLA01-15=	Var. not determined; characters appear intermediate.
Ventilago viminalis	0.1	120		
Waltheria indica	0.1	40		
Whiteochloa airoides	0.1	80	CLA03-20	
Yakirra australiensis var. *australiensis*	0.1	10	CLA02-13=	

Cape Leveque Road Biological Survey **Site** CLA04
Described by PL/RM **Date** 5/2/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423512 **mE** 8040443 **mN** 116.278617 **E** -17.721770 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Ficus aculeata* var. *indecora* low open woodland over *Acacia eriopoda* (*A. colei var colei, Ehretia saligna* var. *saligna*) tall shrubland over *Dodonaea hispidula* open shrubland over *Corchorus sidoides* subsp. *sidoides* scattered, *Trichodesma zeylanicum, Pterocaulon ? paradoxum* low open shrubland over *Chrysopogon pallidus* (*Eriachne obtusa*) open tussock grassland and *Triodia caelestialis* open hummock grassland.
Veg Condition Very good; Cow tracks, *Citrullus lanatus.
Fire Age Very long unburnt.

Species	Cover	Height (cm)	Specimen	Notes
Acacia colei var. *colei*	2	580	CLA01-03=	
Acacia eriopoda	22	600		
Aristida holathera var. *holathera*	0.1	80	CLA04-25	
Bauhinia cunninghamii	0.1	250		
Buchnera asperata	0.1	70	CLA04-19	
Buchnera ramosissima	0.1	80	CLA04-22	
Bulbostylis barbata	0.1	25	CLA04-27	
Byblis filifolia	0.1	30	CLA04-09	Tentative det. TBC Matt Barrett.
Cassytha capillaris	0.1	25		
Chrysopogon pallidus	13	40	CLA04-02	
Citrullus lanatus	0.1	30	N=1.	
Codonocarpus cotinifolius	0.1	100		
Corchorus sidoides subsp. *sidoides*	1	40	CLA01-06=	
Crotalaria ramosissima	0.1	25		
Cucumis variabilis	0.1	40	CLA04-06	Tentative det. TBC Matt Barrett.
Digitaria brownii	0.1	40		
Dodonaea hispidula	2	170		
Dolichandrone occidentalis	0.1	120		
Ehretia saligna var. *saligna*	1	230		
Eriachne obtusa	2	50		
Eriachne pindanica	0.1	40	CLA02-03=	
Euphorbia psilosperma	0.1	20	CLA04-07	
Evolvulus alsinoides var. *decumbens*	0.1	45		
Ficus aculeata var. *indecora*	3	320		
Flueggea virosa subsp. *melanthesoides*	0.1	160		
Galactia tenuiflora	0.1	40	CLA01-08=	
Glycine tomentella	0.1	25	CLA04-20	
Goodenia sepalosa var. sepalosa	0.1	25	CLA01-22=	
Grevillea pyramidalis subsp. *pyramidalis*	0.1	200	CLA01-31=	
Heliotropium leptaleum	0.1	25	CLA04-08	
Hibiscus geranioides	0.1	40	CLA04-16	
Hybanthus aurantiacus	0.1	30		
Jasminum didymum	0.1	80	CLA04-21	Subsp. not determined; leaf characters appear intermediate between subsp. didymum and lineare.
Lysiana spathulata subsp. *spathulata*	0.1	60	CLA04-17	
Marsdenia viridiflora subsp. *tropica*	0.1	20	CLA04-24	
Melhania oblongifolia	0.1	50		
Murdannia graminea	0.1	40	CLA-PL15=	
Oldenlandia mitrasacmoides subsp. mitrasacmoides	0.1	30	CLA04-15	
Persoonia falcata	0.1	210	CLA04-26	
Polygala tepperi	0.1	30	CLA04-05	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	30	CLA-PL14=	N=12.
Premna acuminata	0.1	60	CLA04-12	

Species	Cover	Height (cm)	Specimen	Notes
Pterocaulon ? paradoxum	1	50	CLA04-04, CLA01-14=	Sterile; determination based on broad stem wing.
Schizachyrium fragile	0.1	25	CLA01-19=	
Sersalisia sericea	0.1	210	CLA01-33=	
Setaria apiculata	0.1	40	CLA01-29=	
Sida hackettiana	0.1	20	CLA04-13, 18	
Sida rohlenae subsp. *occidentalis*	0.1	30		
Solanum cunninghamii	0.1	50	CLA04-11	
Spermacoce hillii	0.1	20	CLA04-14	
Synostemon lissocarpus	0.1	25	CLA04-28	Appears to be range extension on FloraBase. FB not yet updated.
Tephrosia leptoclada	0.1	40	CLA04-10	
Trichodesma zeylanicum	1	60	CLA01-15=	Var. not determined; characters appear intermediate.
Triodia caelestialis	18	40	CLA04-01	
Waltheria indica	0.1	35		
Yakirra australiensis var. *australiensis*	0.1	25	CLA02-13=	
Zornia prostrata var. *prostrata*	0.1	25	CLA04-23	

Cape Leveque Road Biological Survey **Site** CLA05
Described by PL/RM **Date** 5/2/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423705 **mE** 8039245 **mN** 116.280394 **E** -17.732604 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Bauhinia cunninghamii* scattered low trees over *Acacia eriopoda* tall shrubland over *Acacia platycarpa* scattered shrubs over *Chrysopogon pallidus*, *Aristida holathera* var. *latifolia*, (*Eriachne obtusa*) very open tussock grassland and *Triodia caelestialis* very open hummock grassland over *Galactia tenuiflora*, *Glycine tomentella* very open herbland.
Veg Condition Very good; cow scats.
Fire Age No sign of recent fire.

Species	Cover	Height (cm)	Specimen	Notes
Acacia colei var. *colei*	0.1	100		
Acacia eriopoda	22	450		
Acacia platycarpa	1	180	CLA05-20	
Aristida holathera var. *holathera*	0.1	60	CLA05-01	
Aristida holathera var. *latifolia*	5	80		
Bauhinia cunninghamii	1	200		
Bonamia oblongifolia	0.1	30	CLA05-03	
Brachychiton diversifolius subsp. *diversifolius*	0.1	150	CLA01-04=	
Buchnera asperata	0.1	60	CLA05-02	
Bulbostylis barbata	0.1	20	CLA04-27=	
Byblis filifolia	0.1	20	CLA04-09=	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	15	CLA01-09=	
Chamaecrista symonii	0.1	20	CLA05-04	
Chrysopogon pallidus	14	70	CLA04-02=, CLA05-17	
Citrullus lanatus	0.1	100	N=2	
Corchorus sidoides subsp. *sidoides*	0.1	30		
Corymbia zygophylla	0.1	300		
Corynotheca micrantha var. *gracilis*	0.1	40	CLA05-05	
Crotalaria medicaginea var. *neglecta*	0.1	20		
Cucumis variabilis	0.1	150		Tentative det. TBC Matt Barrett.
Desmodium filiforme	0.1	60	CLA05-11	
Dodonaea hispidula	0.1	100		
Dolichandrone occidentalis	0.1	50		
Ehretia saligna var. *saligna*	0.1	180		
Eriachne melicacea	0.1	30	CLA05-15	
Eriachne obtusa	1	60		
Eriachne pindanica	0.1	30		
Ficus aculeata var. *indecora*	0.1	120		
Fimbristylis oxystachya	0.1	30	CLA05-12	
Galactia tenuiflora	3	100	CLA05-10	
Glycine tomentella	2	20	CLA05-13	
Goodenia sepalosa var. *sepalosa*	0.1	5	CLA01-22=	
Gossypium rotundifolium	0.1	100		
Grevillea pyramidalis subsp. *pyramidalis*	0.1	150		
Grevillea refracta	0.1	100		
Gyrostemon tepperi	0.1	50		
Heliotropium leptaleum	0.1	30	CLA04-08=	
Hybanthus aurantiacus	0.1	40		
Marsdenia viridiflora subsp. *tropica*	0.1	30	CLA05-09	
Melhania oblongifolia	0.1	50		
Murdannia graminea	0.1	40	CLA05-19	
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	30	CLA04-15=	
Persoonia falcata	0.1	150	CLA04-26=	
Polycarpaea longiflora	0.1	70	CLA05-14	
Polygala tepperi	0.1	60	CLA04-05=	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	50	CLA-PL14=	N=6.

Species	Cover	Height (cm)	Specimen	Notes
Premna acuminata	0.1	60	CLA04-12=	
Pterocaulon ? paradoxum	0.1	40	CLA04-04=	Sterile; determination based on broad stem wing.
Ptilotus lanatus	0.1	15	CLA05-06	
Ptilotus polystachyus	0.1	40	CLA05-16	
Schizachyrium fragile	2	30	CLA01-19=	
Setaria surgens	0.1	30		
Sida rohlenae subsp. *occidentalis*	0.1	40		
Solanum cunninghamii	0.1	60	CLA04-11=	
Spermacoce occidentalis	0.1	20	CLA01-11=	
Thaumastochloa pubescens	0.1	20	CLA03-02=	
Tinospora smilacina	0.1	20		
Trianthema pilosum	0.1	10		
Tribulopis angustifolia	0.1	30	CLA-PL31=	
Trichodesma zeylanicum	0.1	80		Var. not determined; characters appear intermediate.
Triodia caelestialis	2	30		
Ventilago viminalis	0.1	70		
Waltheria indica	0.1	50		
Whiteochloa airoides	0.1	70	CLA03-20=	
Yakirra australiensis var. *australiensis*	0.1	25	CLA02-13=	
Zornia muelleriana subsp. *congesta*	0.1	20	CLA05-08	

Cape Leveque Road Biological Survey **Site** CLA06
Described by PL/RM **Date** 5/2/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423690 **mE** 8038266 **mN** 116.280217 **E** -17.741452 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Bauhinia cunninghamii*, *Ficus aculeata* var. *indecora*, *Corymbia greeniana*, *C. zygophylla* low open woodland over *Acacia eriopoda* (*Acacia tumida* var. *kulparn*, *Ventilago viminalis*) tall shrubland over *Dolichandrone occidentalis*, *Acacia platycarpa* (*Grewia retusifolia*) shrubland over *Corchorus sidoides* subsp. *sidoides* scattered low shrubs over *Chrysopogon pallidus* (*Eriachne melicacea*, *Eriachne obtusa*) open tussock grassland and *Triodia caelestialis* scattered hummock grasses over *Galactia tenuiflora* very open herbland.
Veg Condition Very good; cattle scats.
Fire Age No sign of recent fire.
Notes Not much Corymbia around, a patch across the road.

Species	**Cover**	**Height (cm)**	**Specimen**	**Notes**
Acacia eriopoda	18	500		
Acacia platycarpa	4	190	CLA05-20=	
Acacia tumida var. *kulparn*	1	270		
Aristida holathera var. *holathera*	0.1	50	CLA05-01=	
Bauhinia cunninghamii	2	350		
Bonamia oblongifolia	0.1	20	CLA05-03=	
Brachychiton diversifolius subsp. *diversifolius*	0.1	220	CLA06-09	
Buchnera asperata	0.1	30	CLA05-02=	
Byblis filifolia	0.1	25	CLA04-09=	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	20	CLA06-06	
Carissa lanceolata	0.1	120		
Chamaecrista symonii	0.1	30	CLA05-04=	
Chrysopogon pallidus	19	40	CLA04-02=	
Corchorus sidoides subsp. *sidoides*	0.5	40	CLA01-06=	
Corymbia greeniana	1	600	CLA06-08	
Corymbia zygophylla	1	240		
Corynotheca micrantha var. *gracilis*	0.1	40	CLA05-05=	
Cucumis variabilis	0.1	40		Tentative det. TBC Matt Barrett.
Dodonaea hispidula	0.1	190		
Dolichandrone occidentalis	6	190		
Ehretia saligna var. *saligna*	0.1	240		
Eriachne melicacea	1	40	CLA05-15=	
Eriachne obtusa	1	60		
Eriachne pindanica	0.1	40	CLA02-03=	
Ficus aculeata var. *indecora*	1	240		
Fimbristylis oxystachya	0.1	40	CLA05-12=	
Galactia tenuiflora	2	45	CLA06-04	
Goodenia sepalosa var. *sepalosa*	0.1	30	CLA01-22=	
Grevillea pyramidalis subsp. *pyramidalis*	0.1	300		
Grewia retusifolia	2	120	CLA06-02	
Gymnanthera oblonga	0.1	180	CLA06-01	
Gyrostemon tepperi	0.1	40		
Heliotropium leptaleum	0.1	40	CLA04-08=	
Hybanthus aurantiacus	0.1	45		
Murdannia graminea	0.1	40	CLA-PL15=	
Persoonia falcata	0.1	260	CLA04-26=	
Polygala tepperi	0.1	35	CLA04-05=	
Premna acuminata	0.1	60	CLA04-12=	
Ptilotus polystachyus	0.1	110	CLA06-07	
Schizachyrium fragile	0.1	30		
Scleria sp. Pindan	0.1	40	CLA06-05	aff. brownii, but with larger spikelets and seeds; taxon separated by Russell Barrett but not yet

Species	Cover	Height (cm)	Specimen	Notes
				recognised on FloraBase.
Sersalisia sericea	0.1	140	CLA01-33=	
Sida rohlenae subsp. *occidentalis*	0.1	40		
Solanum cunninghamii	0.1	40	CLA04-11=	
Spermacoce occidentalis	0.1	30	CLA01-11=	
Synostemon lissocarpus	0.1	40	CLA04-28=	Appears to be range extension on FloraBase but not; WA specimens on loan, FB not yet updated.
Thaumastochloa pubescens	0.1	20	CLA03-02=	
Tinospora smilacina	0.1	25		
Trianthema pilosum	0.1	20		
Tribulopis angustifolia	0.1	30	CLA-PL31=	
Triodia caelestialis	1	40		
Ventilago viminalis	1	210		
Waltheria indica	0.1	60		
Yakirra australiensis var. *australiensis*	0.1	25	CLA02-13=	

Cape Leveque Road Biological Survey **Site** CLA07
Described by PL/RM **Date** 5/3/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423756 **mE** 8037142 **mN** 116.280799 **E** -17.751613 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Bauhinia cunninghamii*, *Eucalyptus tectifica*, *Corymbia bella*, *Brachychiton diversifolius* subsp. *diversifolius* low woodland over *Acacia tumida* var. *kulparn* (*A. colei* var. *colei, Persoonia falcata*) tall open shrubland over *Grewia retusifolia* (*Ventilago viminalis*) open shrubland over *Acacia adoxa* var. *subglabra*, Crotalaria ramosissima low open shrubland over *Chrysopogon pallidus*, *Sehima nervosum* (*Eriachne obtusa*, *Aristida holathera* var. *holathera*) open tussock grassland and *Triodia caelestialis* open hummock grassland over *Galactia tenuiflora* very open herbland.
Veg Condition Very good; Horse and donkey scats.
Fire Age Very long unburnt.

Species	Cover	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	25		
Acacia adoxa var. *subglabra*	1	45	CLA01-13=	
Acacia colei var. *colei*	2	260	CLA01-03=	
Acacia eriopoda	0.1	240		
Acacia hippuroides	0.1	60	CLA08-03=	
Acacia platycarpa	0.1	50	CLA05-20=	
Acacia tumida var. *kulparn*	4	250		
Aristida holathera var. *holathera*	0.5	55	CLA05-01=	
Aristida hygrometrica	0.1	45	CLA07-18	
Bauhinia cunninghamii	9	350		
Boerhavia gardneri	0.1	40	CLA07-17	
Brachychiton diversifolius subsp. *diversifolius*	3	400	CLA06-09=	
Breynia cernua	0.1	60	CLA07-09	
Buchnera asperata	0.1	70	CLA05-02=	
Carissa lanceolata	0.1	80		
Chrysopogon pallidus	7	45	CLA01-42=	
Corchorus sidoides subsp. *sidoides*	0.1	35		
Corymbia bella	4	900	CLA07-02	
Corymbia flavescens	0.1	1300	CLA07-08	
Crotalaria ramosissima	1	50		
Desmodium filiforme	0.1	25	CLA07-13	
Dolichandrone occidentalis	0.1	80		
Ehretia saligna var. *saligna*	0.1	240		
Eriachne obtusa	2	60		
Eucalyptus tectifica	6	900	CLA07-03	
Euphorbia psilosperma	0.1	25	CLA07-12	
Evolvulus alsinoides var. *decumbens*	0.1	25		
Ficus aculeata var. *indecora*	0.1	110		
Fimbristylis ammobia	0.1	25	CLA07-10	
Galactia tenuiflora	2	25	CLA06-04=	
Goodenia sepalosa var. *sepalosa*	0.1	30	CLA01-22=	
Gossypium rotundifolium	0.1	30		
Grewia retusifolia	3	160	CLA06-02=	
Gymnanthera oblonga	0.1	45	CLA07-11	
Gyrocarpus americanus subsp. *pachyphyllus*	0.1	20	CLA07-19	
Heliotropium leptaleum	0.1	40	CLA04-08=	
Hybanthus aurantiacus	0.1	40		
Indigofera colutea	0.1	10		
Melhania oblongifolia	0.1	45		
Murdannia graminea	0.1	45	CLA-PL15=	
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	50	CLA07-16	
Perotis rara	0.1	20	CLA07-06	
Persoonia falcata	1	270	CLA04-26=	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	25	CLA-PL12=	N=8.
Premna acuminata	0.1	50	CLA04-12=	

Species	Cover	Height (cm)	Specimen	Notes
Pterocaulon ? paradoxum	0.1	50	CLA01-14=	Sterile; determination based on broad stem wing.
Santalum lanceolatum	0.1	120		
Schizachyrium fragile	0.1	45		
Sehima nervosum	6	90	CLA07-01	
Setaria apiculata	0.1	45	CLA01-29=	
Sida hackettiana	0.1	80	CLA07-04	
Solanum cunninghamii	0.1	30	CLA01-34=	
Spermacoce hillii	0.1	25	CLA04-14=	
**Stylosanthes scabra*	0.1	45	CLA07-05	N=1.
Thaumastochloa pubescens	0.1	15	CLA07-07	
Tinospora smilacina	0.1	20		
Trichodesma zeylanicum	0.1	30	CLA08-09=	Var. not determined; characters appear intermediate.
Triodia caelestialis	20	40	CLA01-18=	
Ventilago viminalis	1	190		
Waltheria indica	0.1	50		
Whiteochloa airoides	0.1	130	CLA03-20=	

Cape Leveque Road Biological Survey **Site** CLA08
Described by PL/RM **Date** 5/3/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423742 **mE** 8035077 **mN** 116.280593 **E** -17.770276 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Bauhinia cunninghamii*, *Eucalyptus tectifica*, *Corymbia greeniana*, *Brachychiton diversifolius* subsp. *diversifolius* low woodland over *Hakea arborescens*, *Acacia tumida* var. *kulparn* (*Persoonia falcata*, *Dolichandrone occidentalis*) tall shrubland over *Dodonaea hispidula, Acacia eriopoda*, *Breynia cernua* open shrubland over *Corchorus sidoides* subsp. *sidoides* scattered low shrubs over *Chrysopogon pallidus* (*Whitechloa airoides*, *Sorghum plumosum* var. *plumosum*, *Eriachne obtusa*, *Sehima nervosum*, *Aristida holathera* var. *holathera*) open tussock grassland and *Triodia caelestialis* very open hummock grassland over *Galactia tenuiflora* very open herbland.
Veg Condition Very good; cattle sightings, scats and tracks.
Fire Age No sign of recent fire.

Species	Cover	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	40		
Acacia eriopoda	3	150		
Acacia hippuroides	0.1	90	CLA08-03	
Acacia tumida var. *kulparn*	4	250		
Aristida holathera var. *holathera*	0.5	50	CLA05-01=	
Aristida holathera var. *latifolia*	0.1	80	CLA08-08	
Bauhinia cunninghamii	5	500		
Bonamia oblongifolia	0.1	30	CLA05-03=	
Brachychiton diversifolius subsp. *diversifolius*	3	600		
Breynia cernua	2	100	CLA07-09=	
Buchnera asperata	0.1	60	CLA05-02=	
Buchnera ramosissima	0.1	40	CLA08-07	
Calandrinia strophiolata	0.1	20		
Cassytha capillaris	0.1	30		
Chrysopogon pallidus	20	80	CLA01-42=	
Codonocarpus cotinifolius	0.1	70		
Corchorus sidoides subsp. *sidoides*	1	40		
Corymbia greeniana	4	600	CLA-PL36	
Crotalaria ramosissima	0.1	40		
Dodonaea hispidula	3	150		
Dolichandrone occidentalis	1	500		
Ehretia saligna var. *saligna*	0.1	120		
Eriachne melicacea	0.1	30	CLA05-15=	
Eriachne obtusa	2	30		
Eucalyptus tectifica	4	500	CLA08-01	
Ficus aculeata var. *indecora*	0.1	200		
Galactia tenuiflora	3	40	CLA06-04=	
Goodenia sepalosa var. *sepalosa*	0.1	5	CLA01-22	
Gossypium rotundifolium	0.1	25		
Grevillea pyramidalis subsp. *pyramidalis*	0.1	50		
Grewia retusifolia	0.1	120	CLA06-02=	
Hakea arborescens	4	400	=	
Heliotropium leptaleum	0.1	80	CLA04-08=	
Hybanthus aurantiacus	0.1	50		
Melhania oblongifolia	0.1	30		
Murdannia graminea	0.1	60	CLA-PL15	
Persoonia falcata	1	500	CLA04-26=	
Polygala tepperi	0.1	50	CLA04-05=	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	40	CLA-PL12=	N=5.
Premna acuminata	0.1	350	CLA08-05	
Premna acuminata	0.1	60	CLA04-12=	
Pterocaulon ? paradoxum	0.1	40	CLA01-14=	Sterile; determination based on broad stem wing.
Schizachyrium fragile	0.1	30		
Sehima nervosum	1	80	CLA07-01=	

Species	Cover	Height (cm)	Specimen	Notes
Senna costata	0.1	100	CLA08-04	
Setaria apiculata	0.1	30	CLA01-29=	
Sida hackettiana	0.1	40	CLA07-04=	
Sida rohlenae subsp. *occidentalis*	0.1	40		
Solanum cunninghamii	0.1	40	CLA01-34=	
Sorghum plumosum var. *plumosum*	3	80	CLA08-06	
Spermacoce hillii	0.1	30	CLA04-14=	
Synostemon lissocarpus	0.1	50	CLA01-12=	Appears to be range extension on FloraBase. FB not yet updated.
Thaumastochloa pubescens	0.1	20	CLA03-02=	
Tinospora smilacina	0.1	100		
Trichodesma zeylanicum	0.1	60	CLA08-09	Var. not determined; characters appear intermediate.
Triodia caelestialis	5	40		
Ventilago viminalis	0.1	200		
Waltheria indica	0.1	50		
Whiteochloa airoides	3	80	CLA03-20=	
Yakirra australiensis var. *australiensis*	0.1	20	CLA08-02	

Cape Leveque Road Biological Survey **Site** CLA09
Described by PL/RM **Date** 5/3/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423085 **mE** 8037002 **mN** 116.274465 **E** -17.752855 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Eucalyptus tectifica, Bauhinia cunninghamii* (*Corymbia bella, Brachychiton diversifolius* subsp. *diversifolius*) low woodland over *Acacia tumida* var. *kulparn* (*Ventilago viminalis, Persoonia falcata*) tall open shrubland over *Flueggea virosa* subsp. *melanthesoides* open shrubland over *Corchorus sidoides* subsp. *sidoides* scattered low shrubs over *Chrysopogon pallidus, Aristida holathera* var. *latifolia* (*Whitechloa airoides, Aristida hygrometrica*) tussock grassland over *Triodia caelestialis* very open hummock grassland over *Glycine tomentella* very open herbland.
Veg Condition Very good; Donkey scats, very old wire fence
Fire Age 5+ yrs.

Species	Cover	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	40		
Acacia colei var. *colei*	0.1	220	CLA01-03=	
Acacia platycarpa	0.1	100		
Acacia tumida var. *kulparn*	7	260	CLA02-09=	
Aristida holathera var. *latifolia*	11	70	CLA09-06	
Aristida hygrometrica	1	60	CLA07-18=	
Atalaya hemiglauca	0.1	120		
Bauhinia cunninghamii	6	650		
Bonamia oblongifolia	0.1	25	CLA05-03=	
Brachychiton diversifolius subsp. *diversifolius*	1	700	CLA09-08	
Buchnera asperata	0.1	60	CLA05-02=	
Buchnera ramosissima	0.1	30	CLA08-07=	
Chrysopogon pallidus	19	120	CLA01-42=	
Corchorus sidoides subsp. *sidoides*	0.5	40		
Corymbia bella	2	800	CLA07-02=	
Crotalaria ramosissima	0.1	25		
Cucumis variabilis	0.1	60		Tentative det. TBC Matt Barrett.
Cynanchum sp.	0.1	30	CLA09-07	Poor material; TBC Matt Barrett. No cons sig Cynanchum spp. in the region.
Desmodium filiforme	0.1	30	CLA07-13=	
Ehretia saligna var. *saligna*	0.1	270		
Eragrostis eriopoda	0.1	40		
Eriachne melicacea	0.1	25	CLA05-15=	
Eriachne obtusa	0.1	50		
Eucalyptus tectifica	7	900	CLA07-03=	
Ficus aculeata var. *indecora*	0.1	160		
Flueggea virosa subsp. *melanthesoides*	2	180		
Glycine tomentella	2	40	CLA09-12	
Goodenia sepalosa var. *sepalosa*	0.1	25	CLA01-22=	
Gossypium rotundifolium	0.1	25		
Grevillea pyramidalis subsp. *pyramidalis*	0.1	210		
Heliotropium leptaleum	0.1	40	CLA04-08=	
Hybanthus aurantiacus	0.1	40		
Indigofera colutea	0.1	20		
Melhania oblongifolia	0.1	40	CLA09-04	sens. lat.
Murdannia graminea	0.1	50	CLA-PL15=	
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	50	CLA01-41=	
Passiflora foetida var. *hispida*	0.1	220	N=2.	
Persoonia falcata	0.5	230	CLA04-26=	
Polycarpaea corymbosa var. *corymbosa*	0.1	20	CLA09-10	
Pterocaulon ? paradoxum	0.1	50	CLA01-14=	Sterile; determination based on broad stem wing.

Species	Cover	Height (cm)	Specimen	Notes
Ptilotus lanatus	0.1	30	CLA09-02	
Rhynchosia minima	0.1	25	CLA09-11	
Santalum lanceolatum	0.1	250		
Sehima nervosum	0.1	100	CLA07-01=	
Setaria apiculata	0.1	35	CLA01-29=	
Sida hackettiana	0.1	45	CLA07-04=	
Spermacoce hillii	0.1	25	CLA04-14=	
Tephrosia remotiflora	0.1	40	CLA09-01	
Thaumastochloa pubescens	0.1	20	CLA03-02=	
Tinospora smilacina	0.1	40		
Trianthema pilosum	0.1	20		
Tribulopis angustifolia	0.1	25		
Trichodesma zeylanicum	0.1	30	CLA08-09=	Var. not determined; characters appear intermediate.
Triodia caelestialis	2	40	CLA01-18=	
Urochloa holosericea subsp. *velutina*	0.1	15	CLA09-09	Voucher.
Ventilago viminalis	1	220		
Waltheria indica	0.1	30		
Whiteochloa airoides	7	120	CLA03-20=	
Yakirra australiensis var. *australiensis*	0.1	25		

Cape Leveque Road Biological Survey **Site** CLA10
Described by PL/RM **Date** 5/4/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423727 **mE** 8033722 **mN** 116.280402 **E** -17.782522 **S**
Habitat Clay depression, bordering the Namalaica Claypan to the west.
Soil Light grey, light clay.
Rock Type N/A.
Vegetation Melaleuca alsophila low woodland over *Flueggea virosa* subsp. *melanthesoides* scattered shrubs over **Stylosanthes hamata* (**Mesosphaerum suaveolens*) low open heath over *Eriachne obtusa*, *Sorghum plumosum* var. *plumosum*, *Panicum seminudum* (*Ectrosia schultzii* var. *schultzii*, *Chrysopogon pallidus*) open tussock grassland over *Fimbristylis microcarya* (*F. rara*) rara very open sedgeland.
Veg Condition Good; High density of **Stylosanthes hamata*, **Mesosphaerum suaveolens*; Cattle sightings, scats and tracks.
Fire Age No sign of recent fire.

Species	Cover	Height (cm)	Specimen	Notes
Acacia colei var. *colei*	0.1	30		
Acacia tumida var. *kulparn*	0.1	90		
Bauhinia cunninghamii	0.1	120		
Blumea saxatilis	0.1	20	CLA10-04	
Buchnera asperata	0.1	30	CLA05-02=	
Calandrinia strophiolata	0.1	10	CLA10-12	
**Chloris barbata*	0.1	50	CLA10-16	Number of plants not recorded; treated as N=1.
Chrysopogon pallidus	0.5	60		
Crotalaria ramosissima	0.1	15		
Cyperus carinatus	0.1	40	CLA10-06	
Desmodium filiforme	0.1	25	CLA05-11=	
Digitaria bicornis	0.1	30	CLA10-05	
Ectrosia schultzii var. *schultzii*	2	40	CLA10-09	
Eragrostis cumingii	2	15		
Eriachne obtusa	6	30		
Fimbristylis microcarya	6	30	CLA10-11	
Fimbristylis rara	0.5	30	CLA10-14	
Flueggea virosa subsp. *melanthesoides*	0.5	110		
Gomphrena tenella	0.1	10	CLA10-07	
Gymnanthera oblonga	0.1	50	CLA10-15	
Melaleuca alsophila	18	600	CLA10-01	
**Mesosphaerum suaveolens*	1	30	CLA10-10	N=80.
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	20	CLA10-13	
Panicum seminudum	4	40	CLA10-02	
Physalis angulata	0.1	60	CLA10-18	Number of plants not recorded; treated as N=1.
Schizachyrium fragile	0.1	30		
Setaria surgens	0.1	30		
Sorghum plumosum var. *plumosum*	5	100	CLA-PL42=	
**Stylosanthes hamata*	30	30		N=5000+
Tinospora smilacina	0.1	20		
Triumfetta pentandra	0.1	50	CLA10-17	
Waltheria indica	0.1	10		
Zornia muelleriana subsp. *congesta*	0.1	20	CLA10-08	

Cape Leveque Road Biological Survey **Site** CLA11
Described by PL/RM **Date** 5/4/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423738 **mE** 8033867 **mN** 116.280511 **E** -17.781212 **S**
Habitat Clay plain, bordering Melaleuca alsophila dampland vegetation to the south.
Soil Light reddish brown loamy clay on surface, grey clay at depth.
Rock Type N/A.
Vegetation *Eucalyptus tectifica*, *Bauhinia cunninghamii* low open woodland over *Sorghum plumosum* var. *plumosum* (*Chrysopogon pallidus*) closed tussock grassland over *Zornia muelleriana* subsp. *congesta*, *Gossypium rotundifolium*, *Galactia tenuiflora* very open herbland.
Veg Condition Very good; Cattle scats, tracks, weed species.
Fire Age Very long unburnt.
Notes Vegetation is approx. 200 length North-South. Extends several hundred meters to the west. Also extends east across the Cape Leveque road.

Species	Cover	Height (cm)	Specimen	Notes
Atalaya hemiglauca	0.1	60	CLA11-09	
Bauhinia cunninghamii	4	400		
Blumea saxatilis	0.1	15	CLA10-04=	
Brachychiton diversifolius subsp. *diversifolius*	0.1	100		
Buchnera asperata	0.1	70	CLA05-02=	
Buchnera linearis	0.1	15	CLA11-02	
Buchnera ramosissima	0.1	50	CLA11-07	
Byblis filifolia	0.1	15	CLA-BMa06=	Tentative det. TBC Matt Barrett.
Cajanus marmoratus	0.1	100		
Calandrinia strophiolata	0.1	15	CLA11-04	
Calandrinia tepperiana	0.1	20	CLA11-19	
Carissa lanceolata	0.1	90		
Cartonema parviflorum	0.1	30	CLA11-01	
Chamaecrista absus	0.1	40	CLA11-18	
Chrysopogon pallidus	15	80		
Crotalaria ramosissima	0.1	40		
Cyperus ? cuspidatus	0.1	20	CLA11-17	Voucher.
Cyperus carinatus	0.1	60	CLA10-06=	
Dolichandrone occidentalis	0.1	70		
Drosera broomensis	0.1	2	CLA-PL53=	
Ectrosia schultzii var. *schultzii*	0.1	30	CLA10-09=	
Ehretia saligna var. *saligna*	0.1	60		
Eragrostis cumingii	0.1	30		
Eriachne obtusa	0.1	40		
Eucalyptus tectifica	5	900	CLA11-11	
Euphorbia ? mitchelliana	0.1	30	CLA11-14	TBC Matt Barrett.
Ficus aculeata var. *indecora*	0.1	90		
Fimbristylis rara	0.1	20	CLA11-16	
Flueggea virosa subsp. *melanthesoides*	0.5	100		
Galactia tenuiflora	1	20	CLA01-08=	
Gossypium rotundifolium	1	50		
Grewia retusifolia	0.1	100	CLA06-02=	
Gymnanthera oblonga	0.1	50	CLA10-15=	
Hibiscus apodus	0.1	50	CLA-BMa04=	
Indigofera colutea	0.1	20		
Indigofera hirsuta	0.1	40	CLA11-13	
Indigofera linifolia	0.1	20		
Indigofera linnaei	0.1	30	CLA11-08	
Mitrasacme hispida	0.1	10	CLA11-03	
Mitrasacme nummularia	0.1	90	CLA-PL54=	
Murdannia graminea	0.1	40	CLA-PL15=	
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	70	CLA-PL51=	
Pterocaulon ? paradoxum	0.1	50	CLA01-14=	
Rhynchosia minima	0.1	30		
Sehima nervosum	0.1	80	CLA07-01=	
Setaria surgens	0.1	30		

Species	Cover	Height (cm)	Specimen	Notes
Sorghum plumosum var. *plumosum*	65	100	CLA-PL42=	
Stackhousia intermedia	0.1	60	CLA11-06	
Stylidium pindanicum	0.1	20	CLA-PL52=	N=60.
**Stylosanthes hamata*	0.1	30	N=50.	
Tephrosia remotiflora	0.1	30	CLA09-01=	
Thaumastochloa pubescens	0.1	20	CLA11-05	
Tinospora smilacina	0.1	50		
Triumfetta pentandra	0.1	40	CLA11-12	
Uraria lagopodioides	0.1	30	CLA11-15	
Whiteochloa airoides	0.1	110	CLA03-20=	
Yakirra australiensis var. *australiensis*	0.1	15		
Zornia muelleriana subsp. *congesta*	2	30	CLA10-08=	

Cape Leveque Road Biological Survey **Site** CLA12
Described by PL/RM **Date** 5/4/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423738 **mE** 8029839 **mN** 116.280365 **E** -17.817618 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Ficus aculeata* var. indecora, Bauhinia cunninghamii low open woodland over *Acacia eriopoda* (*Ventilago viminalis*, *Ehretia saligna* var. *saligna*) tall shrubland over *Gossypium australe, Grevillea refracta* open shrubland over *Trichodesma zeylanicum* low open shrubland over *Pterocaulon ? paradoxum* scattered low shrubs over *Eriachne obtusa* (*Aristida holathera var. holathera, Whiteochloa airoides*) open tussock grassland.
Veg Condition Very good. Cattle tracks, cattle bones
Fire Age Very long unburnt.

Species	Cover	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	40		
Acacia adoxa var. *subglabra*	0.1	50	CLA01-13=	
Acacia colei var. *colei*	0.1	200		
Acacia eriopoda	18	600		
Aristida holathera var. *holathera*	3	60	CLA12-15	
Aristida hygrometrica	0.1	30	CLA07-18=	
Bauhinia cunninghamii	1	300		
Bonamia oblongifolia	0.1	20	CLA12-09	
Brachychiton diversifolius subsp. *diversifolius*	0.1	300		
Buchnera asperata	0.1	70	CLA05-02=	
Buchnera ramosissima	0.1	40	CLA08-07=	
Byblis rorida	0.1	30	CLA01-17=	Tentative det. TBC Matt Barrett.
Carissa lanceolata	0.1	100		
Cassytha capillaris	0.1	30		
Chrysopogon pallidus	0.1	100	CLA01-42=	
Corchorus sidoides subsp. *sidoides*	0.1	20		
Corymbia zygophylla	0.1	350		
Crotalaria medicaginea var. *neglecta*	0.1	70	CLA12-11	
Cucumis variabilis	0.1	20		Tentative det. TBC Matt Barrett.
Dolichandrone occidentalis	0.1	300		
Ehretia saligna var. *saligna*	1	200		
Eriachne obtusa	8	60		
Eriachne pindanica	0.1	30	CLA12-02	
Euphorbia psilosperma	0.1	30	CLA12-08	
Evolvulus alsinoides var. *decumbens*	0.1	20		
Ficus aculeata var. *indecora*	3	550		
Fimbristylis oxystachya	0.1	30	CLA12-12	
Flueggea virosa subsp. *melanthesoides*	0.1	160		
Glycine tomentella	0.1	30		
Goodenia sepalosa var. *sepalosa*	0.1	15		
Gossypium australe	2	120	CLA12-06	
Grevillea pyramidalis subsp. *pyramidalis*	0.1	50		
Grevillea refracta	1	160		
Gyrostemon tepperi	0.1	30		
Heliotropium leptaleum	0.1	30	CLA04-08=	
Hybanthus aurantiacus	0.1	30		
Marsdenia viridiflora subsp. *tropica*	0.1	80	CLA12-04, 07	
Melhania oblongifolia	0.1	45	CLA12-14	
Murdannia graminea	0.1	60	CLA-PL15=	
Persoonia falcata	0.1	60	CLA04-26=	
Polygala tepperi	0.1	30	CLA04-05=	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	20	CLA12-13	N=30.
Premna acuminata	0.1	60	CLA04-12=	
Pterocaulon ? paradoxum	0.5	60	CLA01-14=	
Ptilotus polystachyus	0.1	40		
Schizachyrium fragile	0.1	30		
Senna costata	0.1	100	CLA12-16	

Species	Cover	Height (cm)	Specimen	Notes
Sersalisia sericea	0.1	300	CLA01-33=	
Sida rohlenae subsp. *occidentalis*	0.1	30		
Solanum cunninghamii	0.1	40	CLA01-34=	
Spermacoce occidentalis	0.1	30	CLA12-01	
Synostemon lissocarpus	0.1	50	CLA12-10	Appears to be range extension on FloraBase, FB not yet updated.
Tephrosia leptoclada	0.1	30	CLA12-03	
Thaumastochloa pubescens	0.1	30	CLA11-05=	
Trichodesma zeylanicum	3	150		Var. not determined; characters appear intermediate.
Triodia caelestialis	0.1	40		
Ventilago viminalis	1	200		
Waltheria indica	0.1	50		
Whiteochloa airoides	1	60	CLA03-20=	
Yakirra australiensis var. *australiensis*	0.1	20	CLA02-13=	

Cape Leveque Road Biological Survey **Site** CLA13
Described by PL/RM **Date** 5/5/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423274 **mE** 8022422 **mN** 116.275716 **E** -17.884636 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A
Vegetation *Bauhinia cunninghamii*, *Ficus aculeata* var. *indecora*, *Corymbia zygophylla* low woodland over *Dolichandrone occidentalis*, *Acacia eriopoda* (*Persoonia falcata*) tall shrubland over *Trichodesma zeylanicum* (*Corchorus sidoides* subsp. *sidoides*) low open shrubland over *Eriachne obtusa* (*Aristida holathera* var. *latifolia*) open tussock grassland and *Triodia caelestialis* open hummock grassland over *Jacquemontia* sp. Broome (A.A. Mitchell 3028), *Spermacoce occidentalis* very open herbland.
Veg Condition Very good; Some rubbish, cow bones.
Fire Age Very long unburnt.

Species	Cover	Height (cm)	Specimen	Notes
Acacia adoxa var. *subglabra*	0.1	30	CLA01-13=	
Acacia colei var. *colei*	0.1	150		
Acacia eriopoda	9	900		
Aristida holathera var. *latifolia*	3	60	CLA13-03	
Bauhinia cunninghamii	5	450		
Bonamia oblongifolia	0.1	20	CLA05-03=	
Brachychiton diversifolius subsp. *diversifolius*	0.1	200		
Buchnera asperata	0.1	60	CLA05-02=	
Buchnera ramosissima	0.1	40	CLA08-07=	
Byblis rorida	0.1	25	CLA01-17=	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	20	CLA13-07	
Carissa lanceolata	0.1	100		
Cassytha capillaris	0.1	40		
Chamaecrista symonii	0.1	20	CLA13-08	
Chrysopogon pallidus	0.1	60	CLA01-42=	
Corchorus sidoides subsp. *sidoides*	1	35		
Corymbia greeniana	0.1	250	CLA13-09	
Corymbia zygophylla	2	450		
Crotalaria ramosissima	0.1	40		
Cucumis variabilis	0.1	150		Tentative det. TBC Matt Barrett.
Dolichandrone occidentalis	15	500		
Eragrostis eriopoda	0.1	40		
Eriachne obtusa	9	40		
Eriachne pindanica	0.1	30	CLA12-02=	
Evolvulus alsinoides var. *decumbens*	0.1	30		
Ficus aculeata var. *indecora*	3	350		
Galactia tenuiflora	0.1	25	CLA01-08=	
Gardenia pyriformis subsp. *keartlandii*	0.1	150	=	
Gyrostemon tepperi	0.1	70		
Heliotropium leptaleum	0.1	40	CLA04-08=	
Hybanthus aurantiacus	0.1	50		
Jacquemontia sp. Broome (A.A. Mitchell 3028)	2	30	CLA13-01	N=75.
Jasminum didymum	0.1	200	CLA13-05	Subsp. not determined; leaf characters appear intermediate between subsp. didymum and lineare.
Lysiana spathulata subsp. *spathulata*	0.1	110	CLA13-02	
Marsdenia viridiflora subsp. *tropica*	0.1	50	CLA12-07=	
Murdannia graminea	0.1	50	CLA-PL15=	
Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	0.1	20	CLA01-41=	
Persoonia falcata	0.5	400	CLA04-26=	
Polygala tepperi	0.1	50	CLA04-05=	

Species	Cover	Height (cm)	Specimen	Notes
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	30	CLA-PL12=	N=13.
Premna acuminata	0.1	50	CLA04-12=	
Pterocaulon ? paradoxum	0.1	60	CLA01-14=	
Ptilotus polystachyus	0.1	50	CLA13-10	
Schizachyrium fragile	0.1	30	CLA01-19=	
Scleria sp. Pindan	0.1	40	CLA06-05=	aff. brownii, but with larger spikelets and seeds; not yet recognised on FloraBase.
Sida rohlenae subsp. *occidentalis*	0.1	30		
Sida sp. Pindan (B.G. Thomson 3398) PN	0.1	50	CLA13-04	
Solanum cunninghamii	0.1	40	CLA01-34=	
Sorghum plumosum var. *plumosum*	0.1	80		
Spermacoce occidentalis	1	25	CLA01-11=	
Tephrosia leptoclada	0.1	30	CLA12-03=	
Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	0.1	40	CLA13-06	
Thaumastochloa pubescens	0.1	30	CLA03-02=	
Tinospora smilacina	0.1	70		
Trianthema pilosum	0.1	5		
Trichodesma zeylanicum	4	70		Var. not determined; characters appear intermediate.
Triodia caelestialis	11	30		
Velleia panduriformis	0.1	40		
Ventilago viminalis	0.1	200		
Waltheria indica	0.1	50		

Cape Leveque Road Biological Survey **Site** CLA14
Described by PL/RM **Date** 5/5/2018 **Type** Quadrat 50 x 50m
MGA Zone 50 423508 **mE** 8026585 **mN** 116.278076 **E** -17.847019 **S**
Habitat Pindan plain.
Soil Light reddish brown sandy clay loam.
Rock Type N/A.
Vegetation *Bauhinia cunninghamii* (*Corymbia zygophylla*) low open woodland over *Acacia eriopoda* tall shrubland over *Wrightia saligna* scattered shrubs over Trichodesma zeylanicum (*Corchorus sidoides* subsp. *sidoides*) low open shrubland over *Sorghum plumosum* var. plumosum, *Aristida holathera* var. *latifolia*, *A. holathera* var. *holathera*, *Chrysopogon pallidus* very open tussock grassland and *Triodia caelestialis* open hummock grassland.
Veg Condition Very good; Cattle tracks, **Stylosanthes hamata*.
Fire Age No sign of recent fire.

Species	Cover	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	50		
Acacia colei var. *colei*	0.1	200		
Acacia eriopoda	12	600		
Aristida holathera var. *holathera*	1	40		
Aristida holathera var. *latifolia*	1	40		
Bauhinia cunninghamii	2	400		
Bonamia oblongifolia	0.1	20	CLA05-03=	
Brachychiton diversifolius subsp. *diversifolius*	0.1	450		
Buchnera asperata	0.1	60	CLA05-02=	
Byblis rorida	0.1	20	CLA01-17=	Tentative det. TBC Matt Barrett.
Calandrinia strophiolata	0.1	20	CLA01-09=	
Cassytha capillaris	0.1	30		
Chrysopogon pallidus	1	80		
Corchorus sidoides subsp. *sidoides*	3	20		
Corymbia zygophylla	0.5	350		
Crotalaria medicaginea var. *neglecta*	0.1	70		
Crotalaria ramosissima	0.1	40		
Cucumis variabilis	0.1	40		Tentative det. TBC Matt Barrett.
Digitaria brownii	0.1	40		
Dolichandrone occidentalis	0.1	150		
Ehretia saligna var. *saligna*	0.1	300		
Eragrostis eriopoda	0.1	30		
Eriachne melicacea	0.1	30	CLA03-01=	
Eriachne obtusa	0.1	40		
Eriachne pindanica	0.1	30		
Evolvulus alsinoides var. *decumbens*	0.1	25		
Ficus aculeata var. *indecora*	0.1	350		
Flueggea virosa subsp. *melanthesoides*	0.1	140		
Galactia tenuiflora	0.1	15	CLA01-08=	
Goodenia sepalosa var. *sepalosa*	0.1	15	CLA01-22=	
Gyrostemon tepperi	0.1	60		
Heliotropium leptaleum	0.1	25	CLA04-08=	
Hybanthus aurantiacus	0.1	50		
Jasminum didymum	0.1	80	CLA14-05	Subsp. not determined; leaf characters appear intermediate between subsp. didymum and lineare.
Marsdenia angustata	0.1	60	CLA14-03	
Marsdenia viridiflora subsp. *tropica*	0.1	150	CLA12-07=	
Murdannia graminea	0.1	40	CLA-PL15=	
Phyllanthus exilis	0.1	35	CLA14-02	
Polygala tepperi	0.1	50	CLA04-05=	
Polymeria sp. Broome (K.F. Kenneally 9759)	0.1	40	CLA-PL14=	N=15.
Premna acuminata	0.1	120	CLA14-04	
Pterocaulon ? paradoxum	0.1	60	CLA01-14=	

Species	Cover	Height (cm)	Specimen	Notes
Ptilotus polystachyus	0.1	50	CLA06-07=	
Schizachyrium fragile	5	30		
Sida rohlenae subsp. *occidentalis*	0.1	40		
Sida sp. Pindan (B.G. Thomson 3398) PN	0.1	70	CLA03-16=	
Solanum cunninghamii	0.1	45	CLA01-34=	
Sorghum plumosum var. *plumosum*	1	80		
Spermacoce occidentalis	0.1	10	CLA01-11=	
**Stylosanthes hamata*	0.1	50		Number of plants not recorded; treated as N=1.
Tephrosia leptoclada	0.1	25	CLA12-03=	
Thaumastochloa pubescens	0.1	20	CLA03-02=	
Tinospora smilacina	0.1	15		
Trichodesma zeylanicum	6	60	CLA08-09=	Var. not determined; characters appear intermediate.
Triodia caelestialis	12	40		
Velleia panduriformis	0.1	30		
Waltheria indica	0.1	40		
Wrightia saligna	1	160	CLA14-06	
Yakirra australiensis var. *australiensis*	0.1	20		

Appendix 11

Locations of Bilby Sign Evidence

Digging Locations

Digging ID	Survey Method	Easting (mE)	Northing (mN)	Certainty
D01	Sign Plot	423765.87	8046651.54	Moderate
D02	Transect	423703.60	8046763.41	Moderate
D03	Transect	423686.14	8046396.89	Moderate
D04	Transect	423696.78	8046155.62	Moderate
D05	Transect	423750.45	8046235.44	Moderate
D06	Transect	423758.84	8046141.59	Moderate
D07	Transect	423701.44	8045810.92	Moderate
D08	Transect	423701.44	8045810.92	Moderate
D09	Transect	423691.80	8045692.36	Moderate
D10	Transect	423702.19	8045610.20	Moderate
D11	Transect	423701.56	8045555.18	Moderate
D12	Transect	423695.54	8045230.05	Moderate
D13	Transect	423716.45	8045243.17	High
D14	Transect	423729.47	8045211.09	Moderate
D15	Transect	423720.53	8045185.42	Moderate
D16	Transect	423703.72	8045179.11	High
D17	Transect	423698.21	8045150.79	High
D18	Transect	423572.53	8045275.80	Moderate
D19	Transect	423579.79	8045326.28	Moderate
D20	Transect	423594.69	8045632.13	Moderate
D21	Transect	423594.68	8045657.32	Moderate
D22	Transect	423580.27	8045850.37	Moderate
D23	Transect	423556.02	8045875.08	Moderate
D24	Transect	423583.25	8044498.89	High
D25	Transect	423566.69	8044453.22	Moderate
D26	Transect	423575.56	8044752.32	Moderate
D27	Transect	423559.53	8044499.27	Moderate
D28	Transect	423562.14	8044526.12	Moderate
D29	Transect	423550.79	8044541.97	High
D30	Transect	423571.26	8044813.36	Moderate
D31	Transect	423574.59	8044908.03	Moderate
D32	Transect	423569.81	8044932.91	High
D33	Transect	423576.66	8044970.40	Moderate
D34	Transect	423581.32	8045009.90	Moderate
D35	Transect	423701.75	8044947.75	Moderate
D36	Transect	423697.04	8044893.05	Moderate
D37	Transect	423760.55	8044842.42	Moderate
D38	Transect	423703.05	8044763.70	Moderate
D39	Transect	423689.64	8044740.32	Moderate
D40	Transect	423696.66	8044662.97	Moderate
D41	Transect	423696.98	8044458.05	High
D42	Transect	423695.55	8044424.06	High
D43	Transect	423691.18	8044410.16	Moderate
D44	Transect	423743.35	8044445.97	High
D45	Transect	423685.34	8044280.80	Moderate
D46	Transect	423744.35	8044429.04	Moderate
D47	Transect	423698.17	8044271.55	Moderate
D48	Transect	423703.32	8044192.63	Moderate
D49	Transect	423694.47	8043988.61	Moderate
D50	Transect	423734.52	8044027.05	Moderate
D51	Transect	423702.86	8043888.86	High
D52	Transect	423726.65	8043873.50	High
D53	Transect	423695.37	8043794.78	High
D54	Transect	423758.60	8043752.56	High
D55	Transect	423692.92	8043715.21	Low
D56	Transect	423768.22	8043736.61	High
D57	Transect	423688.96	8043692.73	Moderate
D58	Transect	423760.86	8043728.70	Moderate

Digging ID	Survey Method	Easting (mE)	Northing (mN)	Certainty
D59	Transect	423756.02	8043708.35	High
D60	Transect	423722.44	8043652.52	High
D61	Transect	423735.01	8043447.24	Moderate
D62	Transect	423581.87	8043952.86	Moderate
D63	Transect	423575.11	8042340.23	High
D64	Transect	423542.10	8041665.09	Moderate
D65	Transect	423571.41	8041633.73	High
D66	Transect	423728.81	8039222.23	Moderate
D67	Transect	423682.97	8039453.62	Moderate
D68	Transect	423730.84	8039730.26	Low
D69	Transect	423513.84	8040006.60	Moderate
D70	Transect	423561.39	8039882.33	Moderate
D71	Transect	423563.94	8039512.49	Moderate
D72	Transect	423513.95	8039360.56	High
D73	Transect	423520.96	8039339.47	High
D74	Transect	423561.27	8039375.20	High
D75	Transect	423501.92	8039274.32	Moderate
D76	Transect	423496.35	8039277.79	High
D77	Transect	423497.41	8039270.74	Moderate
D78	Transect	423604.88	8039106.18	Moderate
D79	Transect	423548.05	8037502.49	Moderate
D80	Transect	423520.91	8037727.56	High
D81	Transect	423511.48	8038137.47	Moderate
D82	Transect	423504.00	8038467.36	High
D83	Transect	423502.34	8038549.92	High
D84	Transect	423573.85	8038394.42	Moderate
D85	Transect	423510.39	8038813.19	Moderate
D86	Transect	423597.39	8038678.41	Moderate
D87	Transect	423579.01	8038689.59	Moderate
D88	Transect	423516.45	8038926.59	Moderate
D89	Transect	423583.14	8039000.07	Moderate
D90	Transect	423591.80	8039023.62	Low
D91	Transect	423599.19	8039064.36	Moderate
D92	Transect	423685.76	8038680.52	Moderate
D93	Transect	423674.77	8038652.80	High
D94	Transect	423726.36	8038778.58	Moderate
D95	Transect	423722.77	8038697.34	Low
D96	Transect	423720.97	8038697.67	Low
D97	Transect	423721.22	8038691.44	Low
D98	Transect	423678.51	8037897.14	Moderate
D99	Transect	423722.01	8037845.40	Low
D100	Transect	423726.09	8037787.45	Low
D101	Transect	423717.39	8037769.49	Moderate
D102	Transect	423716.08	8037727.75	Moderate
D103	Transect	423710.89	8037553.62	Low
D104	Transect	423706.78	8037531.40	Low
D105	Transect	423742.37	8037286.47	Low
D106	Transect	423782.65	8037218.77	Moderate
D107	Transect	423776.63	8034632.16	Moderate
D108	Sign Plot	423782.19	8034409.42	Moderate
D109	Transect	423739.60	8032481.43	Moderate
D110	Transect	423738.02	8032292.36	Moderate
D111	Transect	423706.36	8032302.12	Moderate
D112	Transect	423709.01	8032221.96	Moderate
D113	Transect	423658.67	8032140.71	Moderate
D114	Transect	423742.57	8031731.65	Moderate
D115	Sign Plot	423734.96	8031632.79	Moderate
D116	Transect	423731.96	8031694.02	Moderate
D117	Transect	423741.36	8031625.58	Moderate
D118	Transect	423765.68	8031597.94	Moderate

Digging ID	Survey Method	Easting (mE)	Northing (mN)	Certainty
D119	Transect	423730.76	8031585.80	Moderate
D120	Transect	423702.98	8031556.69	Moderate
D121	Transect	423733.88	8031531.03	Moderate
D122	Transect	423862.83	8031338.27	Moderate
D123	Transect	423838.65	8030920.89	Moderate
D124	Transect	423886.79	8030675.25	Moderate
D125	Transect	423894.52	8030620.43	Moderate
D126	Transect	423872.82	8030584.60	Moderate
D127	Transect	423924.30	8030526.62	Moderate
D128	Transect	423857.21	8030552.30	Moderate
D129	Transect	423772.42	8030409.46	Moderate
D130	Transect	423768.11	8030412.19	Moderate
D131	Transect	423747.87	8030624.17	Moderate
D132	Transect	423757.94	8030899.75	Moderate
D133	Transect	423698.46	8030940.29	Moderate
D134	Transect	423660.50	8030943.68	Moderate
D135	Transect	423652.98	8030974.52	Moderate
D136	Transect	423674.62	8031010.48	Moderate
D137	Transect	423711.81	8031004.27	Moderate
D138	Transect	423760.12	8031009.22	Moderate
D139	Transect	423742.17	8031030.96	Moderate
D140	Transect	423730.89	8031497.92	Moderate
D141	Transect	423897.26	8027474.39	Low
D142	Transect	423913.43	8027693.43	Low
D143	Transect	423911.17	8028149.27	Low
D144	Transect	423977.64	8028201.55	Moderate
D145	Transect	423936.60	8028906.06	Low
D146	Transect	423815.09	8028430.34	Moderate
D147	Transect	423793.45	8028411.54	Moderate
D148	Transect	423770.11	8027845.61	Moderate
D149	Transect	423781.06	8027835.03	Moderate
D150	Transect	423799.67	8027805.69	Moderate
D151	Transect	423737.98	8027683.99	Low
D152	Transect	423778.56	8027673.09	High
D153	Transect	423767.26	8027643.75	High
D154	Transect	423776.94	8027602.38	Moderate
D155	Transect	423730.95	8027354.49	Moderate
D156	Transect	423323.00	8025543.90	Low
D157	Transect	423311.87	8025518.52	Low
D158	Transect	423217.39	8024305.98	High
D159	Transect	423303.82	8025474.37	High
D160	Transect	423293.16	8025458.07	Moderate
D161	Transect	423282.83	8025409.79	Moderate
D162	Transect	423360.60	8023060.89	Moderate
D163	Transect	423344.20	8023071.24	Moderate
D164	Transect	423301.96	8023095.69	Moderate
D165	Transect	423572.69	8043677.38	Moderate
D166	Transect	423704.67	8045162.60	High

Track Locations

Track Number	Survey Method	Easting (mE)	Northing (mN)	Certainty
T01	Transect	423704.67	8045162.60	High
T02	Transect	423749.60	8043752.90	High
T03	Transect	423770.71	8043733.84	High
T04	Transect	423411.42	8025653.28	High
T05	Transect	423715.21	8042528.58	High
T06	Transect	423774.44	8042547.89	High
T07	Transect	423715.44	8039628.17	High
T08	Transect	423707.65	8039657.74	High

Track Number	Survey Method	Easting (mE)	Northing (mN)	Certainty
T09	Transect	423688.30	8039885.12	High
T10	Transect	423823.53	8030491.84	High
T11	Transect	423258.00	8025316.19	High
T12	Transect	423207.24	8025310.53	High

Burrow Locations

Burrow ID	Survey Method	Easting (mE)	Northing (mN)	Certainty
B01	Transect	423503.23	8039243.33	High
B02	Transect	423519.17	8039280.75	High
B03	Transect	423693.17	8043811.58	High
B04	Transect	423442.81	8039574.79	High
B05	Transect	423501.18	8039274.02	High
B06	Transect	423530.12	8037663.07	Low
B07	Transect	423762.64	8043683.51	Low

Appendix 12

Raw Data from Bilby Sign Plots

Banana Well Gravel Pit 2ha Bilby Sign Plot

Site	SLK0-25 01
Coordinate	423505**mE**, 8025674**mN**
Date	7-May-18
Team	S. Ford and J. King
Time Started	3:25pm
Time Finished	4:00pm
Landform Type	Plain
Soil Type	Sandy soil
Vegetation Structure	Open woodland
Main Overstory Vegetation Species	*Acacia* sp.
Overstory % Cover	5-25
Main Understory Vegetation Species	*Triodia* sp.
Understory % Cover	>30
% of Plot Suitable for Tracking	25-50
Size of Sand Patches	Less than 1m in width
Size of Animal Tracks Seen (% of Plot)	Large animals only (50-75)
Fire Age	>1 year

Species	**Tracks**	**Scats**	**Burrow**	**Digging**	**Digging into Roots of Plants**	**Abundance of all Sign**	**Age of Most Recent Sign**
Varanus sp. (small)	✓					2	1
Varanus sp. (large)		✓	✓	✓		1	1
Lizard (medium)			✓	✓		2	1
Lizard (small)	✓		✓			3	1
Lerista sp. (sand slider)	✓					3	1
Bird (hopping)	✓					1	1
Bos taurus (Cow)	✓					3	3

Habitat Photograph

Banana Well Gravel Pit 2ha Bilby Sign Plot

Site	SLK0-25 01
Coordinate	423505**mE**, 8025674**mN**
Date	7-May-18
Team	S. Ford and J. King
Time Started	3:25pm
Time Finished	4:00pm
Landform Type	Plain
Soil Type	Sandy soil
Vegetation Structure	Open woodland
Main Overstory Vegetation Species	*Acacia* sp.
Overstory % Cover	5-25
Main Understory Vegetation Species	*Triodia* sp.
Understory % Cover	>30
% of Plot Suitable for Tracking	25-50
Size of Sand Patches	Less than 1m in width
Size of Animal Tracks Seen (% of Plot)	Large animals only (50-75)
Fire Age	>1 year

Species	**Tracks**	**Scats**	**Burrow**	**Digging**	**Digging into Roots of Plants**	**Abundance of all Sign**	**Age of Most Recent Sign**
Varanus sp. (small)	✓					2	1
Varanus sp. (large)		✓	✓	✓		1	1
Lizard (medium)			✓	✓		2	1
Lizard (small)	✓		✓			3	1
Lerista sp. (sand slider)	✓					3	1
Bird (hopping)	✓					1	1
Bos taurus (Cow)	✓					3	3

Habitat Photograph

Banana Well Gravel Pit 2ha Bilby Sign Plot

Site	SLK0-25 02
Coordinate	423712**mE**, 8031586**mN**
Date	8-May-18
Team	R. Teale and P. Brooshooft
Time Started	1:00pm
Time Finished	1:30pm
Landform Type	Plain
Soil Type	Sandy soil
Vegetation Structure	Open woodland
Main Overstory Vegetation Species	*Acacia* sp.
Overstory % Cover	5-25
Main Understory Vegetation Species	*Triodia* sp.
Understory % Cover	>30
% of Plot Suitable for Tracking	0-25
Size of Sand Patches	Less than 1m in width
Size of Animal Tracks Seen (% of Plot)	No tracks (>75) and large animals only (<25)
Fire Age	>1 year

Species	**Tracks**	**Scats**	**Burrow**	**Digging**	**Digging into Roots of Plants**	**Abundance of all Sign**	**Age of Most Recent Sign**
Macrotis lagotis (Greater Bilby)				✓	✓ (*Triodia* sp.)	2	2
Notamacropus agilis (Agile Wallaby)		✓				3	2
Varanus sp. (small)				✓		1	1
Varanus sp. (large)				✓		3	2
Bos taurus (Cow)	✓					1	3

Habitat Photograph

Substrate Photograph

Banana Well Gravel Pit 2ha Bilby Sign Plot

Site	SLK0-25 03
Coordinate	423759**mE**, 8034426**mN**
Date	9-May-18
Team	R. Teale and P. Brooshooft
Time Started	3:50pm
Time Finished	4:20pm
Landform Type	Plain
Soil Type	Sandy soil
Vegetation Structure	Open woodland
Main Overstory Vegetation Species	*Corymbia* sp.
Overstory % Cover	>25
Main Understory Vegetation Species	Grass sp.
Understory % Cover	>30
% of Plot Suitable for Tracking	0-25
Size of Sand Patches	Less than 1m in width
Size of Animal Tracks Seen (% of Plot)	Large and medium animals (<25)
Fire Age	>1 year

Species	**Tracks**	**Scats**	**Burrow**	**Digging**	**Digging into Roots of Plants**	**Other Sign**	**Abundance of all Sign**	**Age of Most Recent Sign**
Macrotis lagotis (Greater Bilby)				✓	✓ (grass sp.)		2	3
Notamacropus agilis (Agile Wallaby)	✓						2	2
Macropod (wallaby/kangaroo)	✓	✓					3	2
Varanus sp. (small)			✓				2	2
Varanus sp. (large)			✓				1	2
Lizard (small)	✓						1	1
Bos taurus (Cow)		✓					2	3
Greater Bowerbird (*Ptilonorhynchus nuchalis*)						✓ (Bower)	3	1

Habitat Photograph

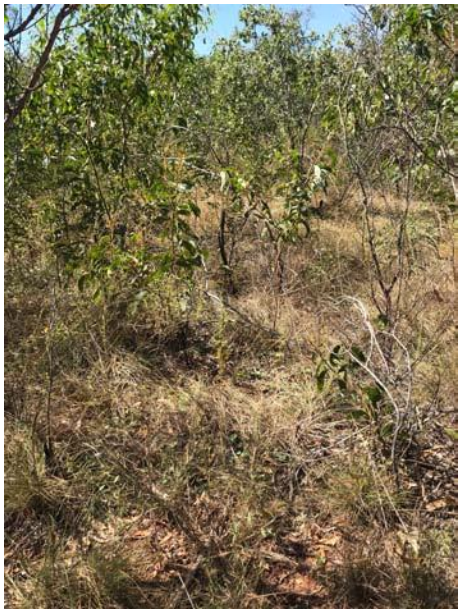
Substrate Photograph

Banana Well Gravel Pit 2ha Bilby Sign Plot

Site	SLK0-25 04
Coordinate	423368**mE**, 8037172**mN**
Date	9-May-18
Team	S. Ford and J. King
Time Started	10:40am
Time Finished	11:10am
Landform Type	Plain
Soil Type	Sandy soil
Vegetation Structure	Shrubland
Main Overstory Vegetation Species	*Eucalyptus* sp. and *Acacia* sp.
Overstory % Cover	>25
Main Understory Vegetation Species	Mixed shrubs and grass sp.
Understory % Cover	>30
% of Plot Suitable for Tracking	0-25
Size of Sand Patches	Less than 1m in width
Size of Animal Tracks Seen (% of Plot)	Large and medium animals (50-75)
Fire Age	>1 year

Species	**Tracks**	**Scats**	**Burrow**	**Digging**	**Digging into Roots of Plants**	**Other Sign**	**Abundance of all Sign**	**Age of Most Recent Sign**
Varanus sp. (small)	✓		✓	✓			1	1
Lizard (medium)			✓				2	3
Lizard (small)			✓				3	3
Bos taurus (Cow)	✓	✓					1	1

Habitat Photograph



Banana Well Gravel Pit 2ha Bilby Sign Plot

Site	SLK0-25 05
Coordinate	423731**mE**, 8046703**mN**
Date	10-May-18
Team	R. Teale and J. King
Time Started	10:00am
Time Finished	10:30am
Landform Type	Plain
Soil Type	Sandy soil
Vegetation Structure	Open woodland
Main Overstory Vegetation Species	*Acacia* sp.
Overstory % Cover	5-25
Main Understory Vegetation Species	Grass sp.
Understory % Cover	<5
% of Plot Suitable for Tracking	25-50
Size of Sand Patches	1-3m in width
Size of Animal Tracks Seen (% of Plot)	Large and medium animals (25-50)
Fire Age	>1 year

Species	**Tracks**	**Scats**	**Burrow**	**Digging**	**Digging into Roots of Plants**	**Abundance of all Sign**	**Age of Most Recent Sign**
Macrotis lagotis (Greater Bilby)				✓	✓ (Grass sp.)	1	1
Notamacropus agilis (Agile Wallaby)		✓				3	2
Varanus sp. (small)			✓			3	2
Bos taurus (Cow)	✓					1	2

Habitat Photograph

Substrate Photograph

Appendix 13

Vascular Flora Recorded from the Study Area

Family	Species	Status
Aizoaceae	*Trianthema pilosum*	
Amaranthaceae	*Achyranthes aspera*	
	**Gomphrena celosioides*	Weed
	Gomphrena flaccida	
	Gomphrena tenella	
	Ptilotus fusiformis	
	Ptilotus lanatus	
	Ptilotus polystachyus	
Apocynaceae	*Carissa lanceolata*	
	Cynanchum sp. (unable to determine; does not represent any listed species of conservation significance)	
	Gymnanthera oblonga	
	Marsdenia angustata	
	Marsdenia viridiflora subsp. *tropica*	
	Wrightia saligna	
Araliaceae	*Trachymene microcephala*	
Asteraceae	*Blumea saxatilis*	
	**Cyanthillium cinereum*	Weed
	Pterocaulon ? paradoxum (sterile)	
Bignoniaceae	*Dolichandrone occidentalis*	
Boraginaceae	*Ehretia saligna* var. *saligna*	
	Heliotropium leptaleum	
	Trichodesma zeylanicum	
Byblidaceae	*Byblis filifolia*	
	Byblis rorida	
Caryophyllaceae	*Polycarpaea corymbosa* var. *corymbosa*	
	Polycarpaea longiflora	
Celastraceae	*Denhamia cunninghamii*	
	Stackhousia intermedia	
Chenopodiaceae	*Salsola australis*	
Combretaceae	*Terminalia kumpaja*	Priority 3
Commelinaceae	*Cartonema parviflorum*	
	Commelina ensifolia	
	Murdannia graminea	
Convolvulaceae	*Bonamia oblongifolia*	Priority 3
	Evolvulus alsinoides var. *decumbens*	
	Ipomoea polymorpha	
	Jacquemontia sp. Broome (A.A. Mitchell 3028)	Priority 1
	**Merremia dissecta* var. *dissecta*	Weed
	Polymeria sp. Broome (K.F. Kenneally 9759)	Priority 3
Cucurbitaceae	**Citrullus lanatus*	Weed
	Cucumis variabilis	
Cyperaceae	*Bulbostylis barbata*	
	Cyperus blakeanus	

Family	Species	Status
Cyperaceae (continued)	*Cyperus carinatus*	
	Cyperus ? cuspidatus	
	Fimbristylis ammobia	
	Fimbristylis littoralis	
	Fimbristylis microcarya	
	Fimbristylis oxystachya	
	Fimbristylis rara	
	Lipocarpha microcephala	
	Scleria sp. Pindan (taxon with affinities to *S. brownii,* not currently recognised by the WA Herbarium)	
Droseraceae	*Drosera broomensis*	
Elatinaceae	*Bergia ammannioides*	
Euphorbiaceae	*Euphorbia ? mitchelliana*	
	Euphorbia psilosperma	
	Mallotus nesophilus	
Fabaceae	*Acacia adoxa* var. *subglabra*	
	Acacia colei var. *colei*	
	Acacia eriopoda	
	Acacia hippuroides	
	Acacia platycarpa	
	Acacia tumida var. *kulparn*	
	Bauhinia cunninghamii	
	Cajanus marmoratus	
	**Centrosema pascuorum*	Weed
	Chamaecrista absus	
	Chamaecrista symonii	
	Crotalaria brevis	
	Crotalaria medicaginea var. *neglecta*	
	Crotalaria ramosissima	
	Cullen martinii	
	Desmodium filiforme	
	Erythrophleum chlorostachys	
	Galactia tenuiflora	
	Glycine tomentella	
	Indigofera colutea	
	Indigofera hirsuta	
	Indigofera linifolia	
	Indigofera linnaei	
	Rhynchosia minima	
	Senna costata	
	Senna notabilis	
	**Stylosanthes hamata*	Weed
	**Stylosanthes scabra*	Weed
	Tephrosia crocea	

Family	Species	Status
Fabaceae (continued)	*Tephrosia leptoclada*	
	Tephrosia remotiflora	
	Tephrosia sp. D Kimberley Flora (R.D. Royce 1848)	
	Uraria lagopodioides	
	Zornia chaetophora	
	Zornia muelleriana subsp. *congesta*	
	Zornia prostrata var. *prostrata*	
Goodeniaceae	*Goodenia sepalosa* var. *sepalosa*	
	Velleia panduriformis	
Gyrostemonaceae	*Codonocarpus cotinifolius*	
	Gyrostemon tepperi	
Hemerocallidaceae	*Corynotheca micrantha* var. *gracilis*	
Hernandiaceae	*Gyrocarpus americanus* subsp. *pachyphyllus*	
Lamiaceae	*Clerodendrum floribundum*	
	Cyanostegia cyanocalyx	
	**Mesosphaerum suaveolens*	Weed
	Premna acuminata	
Lauraceae	*Cassytha capillaris*	
	Cassytha filiformis	
Loganiaceae	*Mitrasacme hispida*	
	Mitrasacme nummularia	
Loranthaceae	*Lysiana spathulata* subsp. *spathulata*	
Lythraceae	*Ammannia multiflora*	
Malvaceae	*Abutilon otocarpum*	
	Adansonia gregorii	
	Brachychiton diversifolius subsp. *diversifolius*	
	Corchorus sidoides subsp. *sidoides*	
	Gossypium australe	
	Gossypium rotundifolium	
	Grewia retusifolia	
	Hibiscus apodus	
	Hibiscus geranioides	
	Melhania oblongifolia	
	**Sida cordifolia*	Weed
	Sida hackettiana	
	Sida rohlenae subsp. *occidentalis*	
	Sida sp. Pindan (B.G. Thomson 3398)	
	**Triumfetta pentandra*	Weed
	Waltheria indica	
Meliaceae	*Owenia reticulata*	
Menispermaceae	*Tinospora smilacina*	
Moraceae	*Ficus aculeata* var. *indecora*	
Myrtaceae	*Corymbia bella*	

Family	Species	Status
Myrtaceae (continued)	*Corymbia flavescens*	
	Corymbia greeniana	
	Corymbia paractia	Priority 1
	Corymbia zygophylla	
	Eucalyptus tectifica	
	Melaleuca alsophila	
Nyctaginaceae	*Boerhavia gardneri*	
Oleaceae	*Jasminum didymum*	
Orobanchaceae	*Buchnera asperata*	
	Buchnera linearis	
	Buchnera ramosissima	
Passifloraceae	**Passiflora foetida* var. *hispida*	Weed
Phyllanthaceae	*Breynia cernua*	
	Flueggea virosa subsp. *melanthesoides*	
	Phyllanthus baccatus	
	Phyllanthus exilis	
	Synostemon lissocarpus	
Poaceae	*Aristida holathera* var. *holathera*	
	Aristida holathera var. *latifolia*	
	Aristida hygrometrica	
	**Cenchrus ciliaris*	Weed
	**Cenchrus echinatus*	Weed
	**Cenchrus setiger*	Weed
	**Chloris barbata*	Weed
	Chrysopogon pallidus	
	Cymbopogon ambiguus	
	Cymbopogon procerus	
	Cynodon convergens	
	**Cynodon dactylon*	Weed
	Digitaria bicornis	
	Digitaria brownii	
	Ectrosia schultzii var. *annua*	
	Ectrosia schultzii var. *schultzii*	
	Eragrostis cumingii	
	Eragrostis eriopoda	
	Eriachne melicacea	
	Eriachne obtusa	
	Eriachne pindanica	
	Heteropogon contortus	
	Panicum seminudum	
	Paspalidium rarum	
	Perotis rara	
	Schizachyrium fragile	

Family	Species	Status
Poaceae (continued)	*Sehima nervosum*	
	Setaria apiculata	
	Setaria surgens	
	Sorghum plumosum var. *plumosum*	
	**Sporobolus ? coromandelianus*	Weed
	Thaumastochloa pubescens	
	Triodia caelestialis	
	Triodia sp. (unable to determine; does not appear to represent any conservation significant species listed for the region)	
	Urochloa holosericea subsp. *velutina*	
	Whiteochloa airoides	
	Xerochloa imberbis	
	Yakirra australiensis var. *australiensis*	
Polygalaceae	*Polygala tepperi*	
Portulacaceae	*Calandrinia strophiolata*	
	Calandrinia tepperiana	
Proteaceae	*Grevillea pyramidalis* subsp. *pyramidalis*	
	Grevillea refracta	
	Hakea arborescens	
	Persoonia falcata	
Rhamnaceae	*Ventilago viminalis*	
Rubiaceae	*Gardenia pyriformis* subsp. *keartlandii*	
	Oldenlandia mitrasacmoides subsp. *mitrasacmoides*	
	Psydrax attenuata var. *tenella*	
	Spermacoce hillii	
	Spermacoce occidentalis	
Santalaceae	*Santalum lanceolatum*	
Sapindaceae	*Atalaya hemiglauca*	
	Dodonaea hispidula	
Sapotaceae	*Sersalisia sericea*	
Scrophulariaceae	*Myoporum montanum*	
Solanaceae	**Physalis angulata*	Weed
	Solanum cunninghamii	
Stylidiaceae	*Stylidium pindanicum*	Priority 3
Violaceae	*Hybanthus aurantiacus*	
Zygophyllaceae	*Tribulopis angustifolia*	
	**Tribulus terrestris*	Weed

Appendix 14

Records of Priority Flora and Weed Species

Priority Flora

Species	Site	Easting (mE)	Northing (mN)	Date	Field No:	Cover (%)	Height (cm)	Notes
Priority 1								
Corymbia paractia	CLA-OPBMa	423135	8023980	5-May-18	CLA-BMa09=			N=2.
	CLA-OPPLDK	422983	8023927	5-May-18	CLA-PL61=			N=1.
	CLA-OPBMa	423166	8023870	5-May-18	CLA-BMa09=			N=1.
	CLA-OPPLDK	423025	8023640	5-May-18	CLA-PL61=			N=3.
	CLA-OPPLDK	423044	8023495	5-May-18	CLA-PL61=			N=5.
	CLA-OPBMa	423277	8023467	5-May-18	CLA-BMa09=			N=3.
	CLA-OPPLDK	423056	8023460	5-May-18	CLA-PL61=			N=2.
	CLA-OPPLDK	423077	8023439	5-May-18	CLA-PL61=			N=1.
	CLA-OPPLDK	423108	8023391	5-May-18	CLA-PL61=			N=11.
	CLA-OPPLDK	423123	8023343	5-May-18	CLA-PL61=			N=1.
	CLA-OPBMa	423207	8023339	5-May-18	CLA-BMa09=			N=10.
	CLA-OPBMa	423286	8023067	5-May-18	CLA-BMa09=			N=1.
	CLA-OPPLDK	423239	8022995	5-May-18	CLA-PL61=			N=2.
	CLA-OPPLDK	423215	8022954	5-May-18	CLA-PL61=			N=2.
	CLA-OPBMa	423291	8022944	5-May-18	CLA-BMa09=			N=2.
	CLA-OPPLDK	423226	8022893	5-May-18	CLA-PL61=			N=1.
	CLA-OPBMa	423389	8022869	5-May-18	CLA-BMa09=			N=1. Ph 369-371.
	CLA-OPBMa	423348	8022859	5-May-18	CLA-BMa09			N=4. Ph 372-374.
	CLA-OPPLDK	423207	8022682	5-May-18	CLA-PL61=			N=2.
	CLA-OPPLDK	423339	8022571	5-May-18	CLA-PL61=			N=1.
	CLA-OPPLDK	423276	8022522	5-May-18	CLA-PL61=			N=3.
	CLA-OPPLDK	423305	8022505	5-May-18	CLA-PL61=			N=5.
	CLA-OPPLDK	423314	8022464	5-May-18	CLA-PL61			N=3. Ph 141-142.
	CLA-OPPLDK	423351	8022356	5-May-18	CLA-PL61=			N=1.
	CLA-OPPLDK	423379	8022352	5-May-18	CLA-PL61=			N=1.
	CLA-OPPLDK	423211	8022157	6-May-18	CLA-PL61=			N=3.
	CLA-OPPLDK	423170	8022139	6-May-18	CLA-PL61=			N=1.
Jacquemontia sp. Broome (A.A. Mitchell 3028)	CLA-OPPLDK	423533	8041634	2-May-18	CLA-PL25=			N=2.

Species	Site	Easting (mE)	Northing (mN)	Date	Field No:	Cover (%)	Height (cm)	Notes
Jacquemontia sp. Broome (A.A. Mitchell 3028)	CLA-OPPLDK	423533	8041609	2-May-18	CLA-PL25			N=2.
(continued)	CLA-OPPLDK	423655	8041543	2-May-18	CLA-PL25=			N=3.
	CLA-OPBMa	423838	8036057	6-May-18	CLA-PL25=			N=5.
	CLA-OPPLDK	423092	8024605	5-May-18	CLA-PL25=			N=18.
	CLA-OPPLDK	422970	8024375	5-May-18	CLA-PL25=			N=8.
	CLA-OPPLDK	423025	8024225	5-May-18	CLA-PL25=			N=2.
	CLA-OPPLDK	422985	8024079	5-May-18	CLA-PL25=			N=50.
	CLA-OPPLDK	422991	8024042	5-May-18	CLA-PL25=			N=2.
	CLA-OPPLDK	423007	8023765	5-May-18	CLA-PL25=			N=28.
	CLA-OPPLDK	423020	8023716	5-May-18	CLA-PL25=			N=5.
	CLA-OPPLDK	423033	8023542	5-May-18	CLA-PL25=			N=20.
	CLA-OPPLDK	423044	8023495	5-May-18	CLA-PL25=			N=27.
	CLA-OPPLDK	423056	8023460	5-May-18	CLA-PL25=			N=1.
	CLA-OPPLDK	423077	8023439	5-May-18	CLA-PL25=			N=2.
	CLA-OPPLDK	423123	8023343	5-May-18	CLA-PL25=			N=20.
	CLA-OPPLDK	423132	8023306	5-May-18	CLA-PL25=			N=40.
	CLA-OPPLDK	423135	8023257	5-May-18	CLA-PL25=			N=70.
	CLA-OPPLDK	423150	8023181	5-May-18	CLA-PL25=			N=36.
	CLA-OPPLDK	423178	8023110	5-May-18	CLA-PL25=			N=3.
	CLA-OPPLDK	423226	8022893	5-May-18	CLA-PL25=			N=40.
	CLA-OPPLDK	423191	8022777	5-May-18	CLA-PL25			N=26.
	CLA-OPBMa	423408	8022738	5-May-18	CLA-PL25=			N=20
	CLA-OPPLDK	423185	8022734	5-May-18	CLA-PL25=			N=10.
	CLA-OPPLDK	423209	8022707	5-May-18	CLA-PL25=			N=3.
	CLA-OPBMa	423408	8022654	5-May-18	CLA-PL25=			N=15.
	CLA-OPPLDK	423300	8022567	5-May-18	CLA-PL25=			N=2.
	CLA-OPBMa	423373	8022563	5-May-18	CLA-PL25=			N=2.
	CLA-OPBMa	423272	8022546	5-May-18	CLA-PL25=			N=20.
	CLA-OPPLDK	423305	8022505	5-May-18	CLA-PL25=			N=3.
	CLA-OPBMa	423411	8022500	5-May-18	CLA-PL25=			N=20.
	CLA-OPBMa	423415	8022477	5-May-18	CLA-PL25=			N=30.

Species	Site	Easting (mE)	Northing (mN)	Date	Field No:	Cover (%)	Height (cm)	Notes
Jacquemontia sp. Broome (A.A. Mitchell 3028)	CLA-OPBMa	423400	8022467	6-May-18		1		
(continued)	CLA-OPPLDK	423314	8022464	5-May-18	CLA-PL25=			N=2.
	CLA-OPBMa	423397	8022454	5-May-18	CLA-PL25=			N=15.
	CLA-OPBMa	423392	8022427	5-May-18	CLA-PL25=			N=6.
	CLA-OPPLDK	423353	8022419	5-May-18	CLA-PL25=			N=4.
	CLA-OPBMa	423133	8022408	5-May-18	CLA-PL25=			N=30.
	CLA13	423303	8022405	5-May-18	CLA13-01	2	30	N=75. Ph 357-364.
	CLA-OPBMa	423247	8022392	5-May-18	CLA-PL25=			N=50.
	CLA-OPBMa	423423	8022314	5-May-18	CLA-PL25=			N=1.
	CLA-OPBMa	423507	8022242	6-May-18	CLA-PL25=			N=10.
	CLA-OPBMa	423471	8022217	6-May-18	CLA-PL25=			N=1.
	CLA-OPPLDK	423342	8022213	6-May-18	CLA-PL25=			N=1.
	CLA-OPPLDK	423183	8022161	6-May-18	CLA-PL25=			N=1.
	CLA-OPPLDK	423170	8022139	6-May-18	CLA-PL25=			N=1.
	CLA-OPPLDK	423386	8022075	6-May-18	CLA-PL25=			N=10.
Priority 3								
Bonamia oblongifolia	CLA-OPPLDK	423630	8046597	1-May-18	CLA-PL03			N=30.
	CLA03	423712	8043368	1-May-18	CLA03-19	0.1	10	N=1.
	CLA05	423728	8039220	2-May-18	CLA05-03	0.1	30	Number of plants not recorded.
	CLA06	423721	8038247	2-May-18	CLA05-03=	0.1	20	Number of plants not recorded.
	CLA09	423108	8036977	3-May-18	CLA05-03=	0.1	25	Number of plants not recorded.
	CLA08	423763	8035051	3-May-18	CLA05-03=	0.1	30	Number of plants not recorded.
	CLA12	423751	8029814	4-May-18	CLA12-09	0.1	20	Number of plants not recorded.
	CLA14	423534	8026562	5-May-18	CLA05-03=	0.1	20	Number of plants not recorded.
	CLA13	423303	8022405	5-May-18	CLA05-03=	0.1	20	Number of plants not recorded.
Polymeria sp. Broome (K.F. Kenneally 9759)	CLA01	423547	8046557	1-May-18	CLA1-20,49	0.1	20	N=4. Photo 61; 283/284.
	CLA02	423557	8045604	1-May-18	CLA02-7,24	0.1	40	N=6.

Species	Site	Easting (mE)	Northing (mN)	Date	Field No:	Cover (%)	Height (cm)	Notes
Polymeria sp. Broome (K.F. Kenneally 9759)	CLA03	423712	8043368	1-May-18	CLA03-07	0.1	40	N=5.
(Continued)	CLA-OPPLDK	423714	8043139	1-May-18	CLA-PL12			N=1.
	CLA-OPPLDK	423714	8042961	1-May-18	CLA-PL12=			N=1.
	CLA-OPPLDK	423709	8042902	1-May-18	CLA-PL12=			N=1.
	CLA-OPPLDK	423705	8042794	1-May-18	CLA-PL14			N=25.
	CLA-OPPLDK	423705	8042693	1-May-18	CLA-PL14=			N=5.
	CLA-OPPLDK	423627	8041962	2-May-18	CLA-PL14=			N=15.
	CLA-OPPLDK	423655	8041954	2-May-18	CLA-PL14=			N=8.
	CLA-OPPLDK	423589	8041911	2-May-18	CLA-PL14=			N=30.
	CLA-OPPLDK	423567	8041865	2-May-18	CLA-PL14=			N=20.
	CLA-OPPLDK	423535	8041805	2-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423535	8041750	2-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423652	8041745	2-May-18	CLA-PL14			N=4.
	CLA-OPPLDK	423534	8041681	2-May-18	CLA-PL14=			N=6.
	CLA-OPPLDK	423533	8041609	2-May-18	CLA-PL14=			N=3.
	CLA-OPPLDK	423536	8041582	2-May-18	CLA-PL14=			N=15.
	CLA-OPPLDK	423533	8041364	2-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423530	8041311	2-May-18	CLA-PL14=			N=6.
	CLA-OPPLDK	423534	8041223	2-May-18	CLA-PL14=			N=3.
	CLA-OPPLDK	423530	8041132	2-May-18	CLA-PL14=			N=5.
	CLA-OPPLDK	423533	8041090	2-May-18	CLA-PL14=			N=3.
	CLA-OPPLDK	423532	8041054	2-May-18	CLA-PL14=			N=4.
	CLA-OPPLDK	423530	8040983	2-May-18	CLA-PL14=			N=2.
	CLA-OPPLDK	423530	8040853	2-May-18	CLA-PL14=			N=3.
	CLA-OPPLDK	423531	8040805	2-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423531	8040739	2-May-18	CLA-PL14=			N=2.
	CLA-OPPLDK	423529	8040616	2-May-18	CLA-PL14=			N=2.
	CLA04	423538	8040428	2-May-18	CLA-PL14=	0.1	30	N=12.
	CLA-OPBMa	423681	8039873	6-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423605	8039868	6-May-18	CLA-PL14=			N=2.
	CLA05	423728	8039220	2-May-18	CLA-PL14=	0.1	50	N=6.

Species	Site	Easting (mE)	Northing (mN)	Date	Field No:	Cover (%)	Height (cm)	Notes
Polymeria sp. Broome (K.F. Kenneally 9759)	CLA-OPPLDK	423564	8038244	2-May-18	CLA-PL14=			N=10.
(Continued)	CLA-OPPLDK	423537	8037898	2-May-18	CLA-PL14=			N=5.
	CLA07	423785	8037124	3-May-18	CLA-PL12=	0.1	25	N=8.
	CLA-OPPLDK	423115	8037095	3-May-18	CLA-PL14=			N=1.
	CLA-OPBMa	423835	8036509	6-May-18	CLA-PL14=			N=1
	CLA08	423763	8035051	3-May-18	CLA-PL12=	0.1	40	N=5.
	CLA-OPPLDK	423785	8034958	3-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423793	8034885	3-May-18	CLA-PL14=			N=3.
	CLA-OPPLDK	423771	8034479	3-May-18	CLA-PL14=			N=2.
	CLA-OPPLDK	423777	8034085	3-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423743	8032898	4-May-18	CLA-PL14=			N=1.
	CLA12	423751	8029814	4-May-18	CLA12-13	0.1	20	N=30.
	CLA-OPPLDK	423824	8027943	5-May-18	CLA-PL14=			N=2.
	CLA-OPPLDK	423838	8027933	5-May-18	CLA-PL14=			N=1.
	CLA14	423534	8026562	5-May-18	CLA-PL14=	0.1	40	N=15.
	CLA-OPPLDK	423098	8024687	5-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	422970	8024375	5-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423035	8024183	5-May-18	CLA-PL14=			N=2.
	CLA-OPPLDK	422985	8024079	5-May-18	CLA-PL14=			N=2.
	CLA-OPPLDK	422983	8023927	5-May-18	CLA-PL14=			N=3.
	CLA-OPPLDK	423025	8023640	5-May-18	CLA-PL14=			N=3.
	CLA-OPPLDK	423056	8023460	5-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423178	8023110	5-May-18	CLA-PL14=			N=2.
	CLA-OPPLDK	423215	8022954	5-May-18	CLA-PL14=			N=3.
	CLA-OPPLDK	423191	8022777	5-May-18	CLA-PL14=			N=3.
	CLA-OPPLDK	423185	8022734	5-May-18	CLA-PL14=			N=1.
	CLA-OPBMa	423151	8022728	5-May-18	CLA-PL14=			N=2.
	CLA-OPPLDK	423240	8022619	5-May-18	CLA-PL14=			N=3.
	CLA-OPPLDK	423276	8022522	5-May-18	CLA-PL14=			N=10.
	CLA-OPPLDK	423314	8022464	5-May-18	CLA-PL14=			N=3.
	CLA13	423303	8022405	5-May-18	CLA-PL12=	0.1	30	N=13.

Species	Site	Easting (mE)	Northing (mN)	Date	Field No:	Cover (%)	Height (cm)	Notes
	CLA-OPBMa	423423	8022314	5-May-18	CLA-PL14=			N=2.
Polymeria sp. Broome (K.F. Kenneally 9759)	CLA-OPBMa	423754	8022219	6-May-18	CLA-PL14=			N=1.
(Continued)	CLA-OPPLDK	423342	8022213	6-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423424	8022206	6-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423278	8022198	6-May-18	CLA-PL14=			N=10.
	CLA-OPBMa	423586	8022106	6-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423156	8022103	6-May-18	CLA-PL14=			N=4.
	CLA-OPBMa	423542	8022102	6-May-18	CLA-PL14=			N=1.
	CLA-OPPLDK	423282	8022058	6-May-18	CLA-PL14=			N=2.
	CLA-OPPLDK	423223	8022050	6-May-18	CLA-PL14=			N=2.
Stylidium pindanicum	CLA-OPPLDK	423712	8033922	4-May-18	CLA-PL52=			N=21.
	CLA11	423767	8033848	4-May-18	CLA-PL52=	0.1	20	N=60.
	CLA-OPPLDK	423896	8033793	4-May-18	CLA-PL52=			N=3.
	CLA-OPPLDK	423729	8033786	4-May-18	CLA-PL52			N=60. Ph 114-116.
	CLA-OPBMa	423903	8033577	4-May-18	CLA-PL52			N=3.
Terminalia kumpaja	CLA-OPPLDK	423588	8038267	2-May-18	CLA-PL32			N=4. Ph 88-89.
	CLA-OPPLDK	422798	8037240	3-May-18	CLA-PL32=			N=1. Ph 325.
	CLA-OPPLDK	422952	8037188	3-May-18	CLA-PL32=			N=30.
	CLA-OPPLDK	422854	8037132	3-May-18	CLA-PL32=			N=3.
	CLA-OPPLDK	423031	8037044	3-May-18	CLA-PL32=			N=1.
	CLA-OPBMa	423842	8032899	5-May-18	CLA-PL32=			N=1.
	CLA-OPBMa	423828	8032437	5-May-18	CLA-PL32=			N=7.
	CLA-OPPLDK	423765	8032432	4-May-18	CLA-PL32=			N=4.
	CLA-OPBMa	423858	8032415	5-May-18	CLA-PL32=			N=3.
	CLA-OPPLDK	423727	8029780	4-May-18	CLA-PL32=			N=1.
	CLA-OPPLDK	422978	8024334	5-May-18	CLA-PL32=			N=8.
	CLA-OPPLDK	422983	8023927	5-May-18	CLA-PL32=			N=1.
	CLA-OPPLDK	423276	8022522	5-May-18	CLA-PL32=			N=1.
	CLA-OPBMa	423489	8022092	6-May-18	CLA-PL32=			N=1.

Weeds

Weed Species	Site	Easting (mE)	Northing (mN)	Date	Field No.	Cover (%)	Height (cm)	Notes
**Cenchrus ciliaris*	CLA-OPBMa	423639	8038080	2-May-18	CLA-BMa02			N=1
	CLA-OPPLDK	423903	8033737	4-May-18				N=8.
	CLA-OPBMa	423749	8022138	6-May-18				N=20
	CLA-OPPLDK	423402	8022104	6-May-18				N=1.
**Cenchrus echinatus*	CLA-OPPLDK	422848	8037233	3-May-18				N=3.
	CLA-OPPLDK	423709	8037069	3-May-18	CLA-PL34			N=2.
**Cenchrus setiger*	CLA-OPPLDK	422995	8023883	5-May-18				N=1000.
	CLA-OPPLDK	423381	8022384	5-May-18				N=400.
**Chloris barbata*	CLA-OPPLDK	423903	8033737	4-May-18	CLA10-16=			N=60.
	CLA10	423750	8033699	4-May-18	CLA10-16	0.1	50	Number of plants not recorded; treated as N=1.
	CLA-OPPLDK	423958	8033640	4-May-18	CLA10-16=			N=26.
**Citrullus lanatus*	CLA-OPPLDK	423632	8042678	1-May-18	CLA-PL19			N=1
	CLA-OPPLDK	423654	8041656	2-May-18				N=1.
	CLA04	423538	8040428	2-May-18		0.1	30	N=1.
	CLA05	423728	8039220	2-May-18		0.1	100	N=2
	CLA-OPPLDK	423563	8038221	2-May-18				N=1.
**Cyanthillium cinereum*	CLA01	423547	8046557	1-May-18		0.1		Number of plants not recorded.
**Cynodon dactylon*	CLA-OPPLDK	424025	8033673	4-May-18				N=200.
	CLA-OPPLDK	423958	8033640	4-May-18				N=12.
**Gomphrena celosioides*	CLA-OPPLDK	424025	8033673	4-May-18	CLA-PL57			scattered.
**Merremia dissecta* var. *dissecta*	CLA-OPPLDK	423650	8039732	2-May-18	CLA-PL30			N=1. Ph 307-309.
**Mesosphaerum suaveolens*	CLA10	423750	8033699	4-May-18	CLA10-10	1	30	N=80.
	CLA-OPPLDK	423700	8033676	4-May-18	CLA10-10=			N=6.
	CLA-OPPLDK	423834	8029817	4-May-18				N=220.
**Passiflora foetida* var. *hispida*	CLA-OPPLDK	422952	8037188	3-May-18				N=1.
	CLA-OPPLDK	422881	8037117	3-May-18				N=3. Ph 326-327.
	CLA-OPPLDK	423084	8037040	3-May-18				N=1.
	CLA09	423108	8036977	3-May-18		0.1	220	N=2.
	CLA-OPPLDK	423772	8034288	3-May-18				N=1.
	CLA-OPPLDK	423958	8033640	4-May-18				N=3.
**Physalis angulata*	CLA10	423750	8033699	4-May-18	CLA10-18	0.1	60	Number of plants not recorded.
**Sida cordifolia*	CLA-OPPLDK	423958	8033640	4-May-18	CLA-PL58a			N=3.
**Sporobolus ? coromandelianus*	CLA-OPPLDK	423903	8033737	4-May-18	CLA-PL56			Tentative det.; TBC Matt Barrett. No specimens held at PERTH.
**Stylosanthes hamata*	CLA-OPPLDK	423621	8045599	1-May-18	CLA-PL04			N=3.
	CLA-OPPLDK	423701	8043214	1-May-18				N=8.
	CLA-OPPLDK	423714	8043139	1-May-18				N=50.

**Stylosanthes hamata*	CLA-OPPLDK	423625	8042810	1-May-18				N=2.
(continued)	CLA-OPPLDK	423666	8042576	1-May-18				N=60.
	CLA-OPPLDK	423567	8041865	2-May-18				N=12.
	CLA-OPPLDK	423652	8041592	2-May-18				N=15.
	CLA-OPPLDK	423533	8041438	2-May-18				N=1.
	CLA-OPPLDK	423532	8040678	2-May-18				N=1.
	CLA-OPPLDK	423650	8039732	2-May-18				N=10.
	CLA11	423767	8033848	4-May-18		0.1	30	N=50.
	CLA-OPPLDK	423896	8033793	4-May-18				N=12.
	CLA-OPPLDK	424025	8033725	4-May-18				N=150.
	CLA10	423750	8033699	4-May-18		30	30	N=5000+
	CLA-OPPLDK	423700	8033676	4-May-18				N=300.
	CLA-OPPLDK	423958	8033640	4-May-18				N=60.
	CLA-OPPLDK	423790	8033612	4-May-18				N=300.
	CLA-OPPLDK	423866	8033581	4-May-18				N=12.
	CLA-OPPLDK	423834	8029817	4-May-18				N=300.
	CLA-OPPLDK	423838	8027933	5-May-18				N=2.
	CLA14	423534	8026562	5-May-18		0.1	50	Number of plants not recorded.
	CLA-OPPLDK	423515	8026057	4-May-18				N=100.
	CLA-OPPLDK	423179	8024948	5-May-18				N=400.
	CLA-OPPLDK	423035	8024183	5-May-18				N=20.
	CLA-OPPLDK	423377	8022376	5-May-18				N=3.
	CLA-OPBMa	423592	8022214	6-Jun-18				N=1000+
	CLA-OPPLDK	423424	8022206	6-May-18				N=300.
	CLA-OPBMa	423756	8022192	6-May-18				N=100+
	CLA-OPPLDK	422996	8022130	5-May-18				N=80.
	CLA-OPBMa	423500	8022120	6-May-18				N=20
	CLA-OPPLDK	423149	8022114	6-May-18				N=500.
	CLA-OPPLDK	423402	8022104	6-May-18				N=300.
	CLA-OPBMa	423542	8022102	6-May-18				N=20
**Stylosanthes scabra*	CLA07	423785	8037124	3-May-18	CLA07-05	0.1	45	N=1.
**Tribulus terrestris*	CLA-OPPLDK	423377	8022376	5-May-18				N=1. Ph 140.
**Triumfetta pentandra*	CLA11	423767	8033848	4-May-18	CLA11-12	0.1	40	Scattered.
	CLA10	423750	8033699	4-May-18	CLA10-17	0.1	50	Scattered.

Attachment C: Biota Significant Fauna Likelihood of Occurrence Assessment

Table 6: Significant fauna likelihood of occurrence assessment for species that are known, likely or may occur within the Development Envelope

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
Greater Bilby (*Macrotis lagotis*)	Vulnerable under BC and EPBC Act	**Known to occur** The Bilby occupies three major habitats; open tussock grasslands on uplands and hills, mulga woodland/shrubland growing on ridges and rises and hummock grasslands in plains and alluvial areas. In Western Australia, there are distinct populations in the south-western Kimberley (DCCEEW, 2023). Targeted Bilby searches were undertaken for both surveys with Biota (2018) reporting Bilby tracks, diggings and burrows (5 of which were active) and GHD (2024) reporting 5 Bilby individuals on two cameras, 31 Bilby burrows (7 of which were active) and a confirmed scat and other secondary evidence (burrows and diggings). Therefore, the Bilby is known to occur within the DE.	**Pindan shrubland** The Bilby was recorded as active within pindan shrubland habitat in the survey area (GHD, 2024). The Bilby may use this habitat for denning, foraging and dispersal. The *Corymbia* and *Bauhinia* Low Open Woodland habitat type is expected to be occasionally used by Bilby. Critical habitat for the Bilby includes any area where the species is known or likely to occur (DCCEEW, 2023). Therefore, these habitats are critical to the survival of the Bilby. Up to 2.4 ha of Bilby habitat may be cleared for the Project.
Northern Brushtail Possum (*Trichosurus vulpecula arnhemensis*)	Vulnerable under BC Act and EPBC Act	**Known to occur** This species occurs mainly in tall eucalypt open forests with large hollow-bearing trees (TSSC, 2021). A targeted survey was undertaken for this species by GHD in 2024. This species was captured on one camera two times within the survey area. A total of 694 trees were recorded suitable for this species within the survey area. Of these, a total of 328 contained hollows suitable or potentially suitable for use. Therefore, the Northern Brushtail Possum is known to occur within the DE.	**Pindan shrubland** Important or critical habitat for this species is not defined (TSSC, 2021). As trees with hollows constitute nesting habitat for this species, the 1 habitat tree with hollow is considered important habitat.
Bare-rumped Sheath-tail Bat (*Saccolaimus saccolaimus*)	Priority 3 under BC Act	**Known to occur** This bat has roosting records from long deep tree hollows in Eucalyptus platphylla, E.minata and E.tetrodonta. Hollows in these trees have also been used as maternity roosts. This species forages over the canopy or along the edge of a variety of woodland, open forest and closed forest types (Schylz and Thomson, 2007). This species was recorded during the GHD (2024) survey a total of 9 times. Therefore, the Bare-rumped Sheath-tail Bat is known to occur within the DE.	**Pindan shrubland** Knowledge of this species foraging and roosting habitats is limited, however the Pindan shrubland habitat is considered likely to be habitat for this species. This habitat is likely to be used as foraging and commuting habitat, which is considered habitat critical to the survival of the species (Schylz and Thomson, 2007). Trees with hollows are likely to provide suitable roosting habitat for the species and is considered important habitat. One tree with a hollow will be cleared.

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
Fork-tail Swift (*Apus pacificus*)	Migratory species under BC and EPBC Act	**Known to occur** This species is found in a range of habitats, from inland open plains to wooded areas (GHD, 2024). A group of approximately 150 Fork-tail Swifts were recorded within the survey area (GHD, 2024). Therefore, the Fork-tail Swift is known to occur within the DE. However, the Fork-tail Swift is likely to occur across the DE during the seasonal non-breeding period. Further, the species forages aerially over habitat, rarely landing.	**Pindan shrubland** All habitats within the DE may be utilised aerially by the species. Up to 2.4 ha of supporting habitat may be cleared.
Northern Coastal Free-tail Bat (*Ozimops cobourgianus*)	Priority 1 under DBCA list	**Known to occur** Ecology of this species is not well understood, but usually associated with mangroves and coastal woodlands where they roost in tree hollows (GHD, 2024). This species was recorded within the DE during the GHD (2024) field survey. Therefore, the Northern Coastal Free-tail Bat is known to occur within the DE.	**Pindan shrubland** Due to limited information on the species, critical or important habitat is not defined. Based on the GHD (2024) report, it is assumed that all habitats would provide suitable foraging, dispersal and roosting habitat for the species. Habitat trees recorded are likely to provide suitable roosting habitat for the species and is considered important habitat. One suitable tree with hollow may be cleared.
Yellow-lipped Cave Bat (*Vespadelus douglasorum*)	Priority 2 under DBCA list	**Known to occur** This species forages in woodlands, particularly riparian vegetation in proximity to rocky habitat where it will roost in caves and crevices (GHD, 2024). This species was recorded within the Pindan shrubland habitat (GHD, 2024). Therefore, the Yellow-lipped Cave Bat is known to occur within the DE.	**Pindan shrubland** Based on the limited ecological information provided it is assumed that this species would utilise the Pindan shrubland for foraging and dispersal only, with no suitable roosting caves or crevices present within the DE. Further, the species may fly-over/disperse through the other habitat types within the DE. Therefore, up to 2.4 ha of supporting habitat may be cleared for the Project.
Grey Falcon (*Falco hypoleucos*)	Vulnerable under BC Act	**Likely to occur** This species inhabits lightly wooded coastal and riverine plains, also near wetlands where surface water attracts prey. There are records of the species within the region, although it is not commonly observed (GHD, 2024). Therefore, the Grey Falcon is likely to occur on an occasional or seasonal basis (when grasses and water are available) within the DE.	**Pindan shrubland** The Pindan shrubland may provide suitable hunting habitat for the Grey Falcon. Up to 2.4 ha of this supporting habitat may be cleared for the Project.
Peregrine Falcon (*Falco peregrinus*)	Other specially protected species under BC Act	**May Occur** This species prefers forests, woodlands, wetlands and open country. The Peregrine Falcon has local records within the Pindan shrubland habitat (GHD, 2024).	**Pindan shrubland** The Pindan shrubland may provide suitable hunting habitat for the Peregrine Falcon. Up to 2.4 ha of this supporting habitat may be cleared for the Project.

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
		Therefore, the Peregrine Falcon may occur within the DE.	
Northern Short-tailed Mouse (*Leggadina lakedownensis*)	Priority 4 under BC Act	**Likely to occur** This species has been recorded in a range of habitats such as tussock grasslands and stony clay hummock grasslands (Pilbara), the ecology of this species is poorly known (GHD, 2024). This species was not recorded during the field surveys (GHD, 2024; Biota, 2018). However, based on the species' distribution and habitat requirements it likely occurs within the DE.	**Pindan shrubland** The Pindan shrubland may provide suitable habitat for this species. Up to 2.4 ha of this supporting habitat may be cleared for the Project.
Gouldian Finch (*Chleobia gouldiae*)	Priority 4 under BC Act	**Likely to occur** This species prefers savannah woodlands with grassy understory on the Dampier Peninsula. This species is known locally and may forage on seed of grasses when seasonally available (GHD, 2024). Therefore, the Gouldian Finch is likely to occur within the DE.	**Pindan shrubland** This species may forage on seed grasses when seasonally available, with the woodland habitat throughout the DE having a paucity of suitable nesting/breeding habitat, and lack of nearby water sources, therefore may be seasonal use only (GHD, 2024). Habitat in the De do not match the known breeding habitat defined within the species' recovery plan (O'Malley, 2006). Up to 2.4 ha of foraging habitat may be cleared.
Osprey (*Pandion haliaetus*)	Migratory under BC Act	**May Occur** This species prefers coastal habitats and terrestrial wetlands, occasionally along inland rivers. This species has previously been recorded in the survey area occupying a nest (GHD, 2024). Therefore, the Osprey is likely to occur within the DE.	**Pindan shrubland** Osprey was previously recorded within the Pindan shrubland habitat (GHD, 2024) occupying a nest. No important habitats/sites nor habitat critical to the survival of the this species is defined. Therefore, this habitat can be considered important habitat. Up to 2.4 ha of this habitat may be cleared for this species.
Dampierland Plain Slider (*Lerista separanda*)	Priority 2 under BC Act	**May Occur** This species prefers sandy substrates and likely to occupy the adjacent pindan dunes recorded by GHD (2024). There is suitable habitat present within DE, mainly low elevation ancient dunes supporting shrubland and the species occurs locally (GHD, 2024). Therefore, the Dampierland Plain Slider may occur within the DE.	**Pindan shrubland** If present, this species would utilise the low elevation ancient dunes supporting shrublands. Critical and important habitats are not defined for this species. Up to 2.4 ha of supporting habitat will be cleared for this Project.
Dampierland Burrowing Snake (*Simoselaps minimus*)	Priority 2 under BC Act	**May Occur** This species prefers deep loose coastal sand dunes and adjacent shrubland areas. There is suitable habitat present within DE, mainly low elevation ancient dunes supporting shrubland and the species occurs locally (GHD, 2024).	**Pindan shrubland** If present, this species would utilise the low elevation ancient dunes supporting shrublands. Critical and important habitats are not

Fauna Species	Status	Likelihood of occurrence	Suitable habitat within the DE
		Therefore, the Dampierland Burrowing Snake may occur within the DE.	defined for this species. Up to 2.4 ha of supporting habitat will be cleared for this Project.
Golden-backed Tree-rat	Priority 4 under DBCA priority fauna list	**May Occur** This species prefers a variety of highland and lowland habitats, including rainforests and riparian areas (on volcanic, lateritic, sandstone and floodplain surfaces), eucalypt-dominated woodlands and savannas (particularly with fruiting trees and shrubs), *Livistona* palm woodlands and rugged sandstone plateaux and screes (AWC, 2018. per comm 31 May). There is suitable habitat present within the DE (GHD, 2024), therefore this species is considered to may occur within the DE.	**Pindan shrubland** If present, this species would utilise the woodland habitat. Critical and important habitats are not defined for this species. Up to 2.4 ha of supporting habitat will be cleared for this Project.
Princess Parrot	Priority 4 under DBCA priority fauna list	**May Occur** This species prefers sand dunes and sand flats in the arid zone of western and central Australia (GHD, 2024). Despite being outside the species' distribution, GHD (2024) reported this species may occur as a seasonal vagrant occasionally. Therefore, this species is considered to may occur within the DE.	**Pindan shrubland** If present, this species would utilise the Pindan shrublands. Up to 2.4 ha of supporting habitat will be cleared for this Project.
Masked Owl	Priority 1 under DBCA priority fauna list	**May Occur** This species occupies a broad range of coastal habitats around most of mainland Australia, and is usually found less than 300 km from the coast. The species inhabits heavy forests, and will hunt over open woodlands, timbered waterways and open country on the fringe of these areas (GHD, 2024). The DE does not contain suitable habitat for this species, however GHD (2024) reported it may hunt over the DE on an occasional basis. Therefore, this species is considered to may occur within the DE.	**Pindan shrubland** Up to 2.4 ha of supporting hunting habitat will be cleared for this Project.

Attachment D: Significant Flora Likelihood of Occurrence Assessment

Flora species	Conservation status	Likelihood	Preferred habitat
Polymeria sp. Broome (K.F. Kenneally 9759)	P3	Known to Occur	Coastal pindan.
Glycine pindanica	P3	Known to Occur	Pindan soils, disturbed soils.
Corymbia paractia	P2	May Occur – recorded in surrounding area during survey	In transition zone between coastal beach dunes and red pindan soils.
Bonamia oblongifolia	P3	May Occur – recorded in surrounding area during survey	Sandy or gravelly soils.
Jacquemontia sp. Broome (AA.Mitchell 3028)	P1	May Occur – recorded in surrounding area during survey	Pindan plain.
Terminalisa kumpaja	P3	May Occur – recorded in surrounding area during survey	Red sand plains.
Aphyllodium glossocarpum	P3	May Occur	On sand in Pindan.
Stylidium pindanicum	P3	May Occur – recorded in surrounding area during survey	Sand and clay; clay flats, seasonal swamps.
Acacia monticola x *tumida* var. *kulparn*	P3	May Occur – recorded in surrounding area during survey	Coastal cliffs, coastal bushland and sand Pindan.