

Exmouth Renewable Power Project - Native Vegetation Clearing Referral Supporting Document

December 2022

Contents

1	Introduction	3
1.1	Project Context.....	3
1.2	Scope and Purpose	3
2	Description of the Activity	5
3	Description of Proposed Clearing	5
3.1	Extent of Proposed Clearing.....	5
3.2	Proposed Clearing Location	5
3.3	Proposed Clearing Method	5
3.4	Avoidance, Mitigation and Management Measures	5
3.5	Restoration of Cleared Areas	6
4	Ecological Survey	9
5	Suitability for the Clearing Referral Process.....	12
4	Assessment Against DWER Criterion	13
4.1	Criterion 1: The area proposed to be cleared is small relative to the total remaining vegetation	13
4.2	Criterion 2: There are no known or likely significant environmental values within the area	14
4.3	Criterion 3: The state of scientific knowledge of native vegetation within the region is adequate.....	17
4.4	Criterion 4: Conditions will not be required to manage environmental impacts.....	18
5	References	19
	Attachment A: Survey Report - <i>Lots 284, 505, 550 and reserve 51970, Exmouth. Biological Survey</i> (360 Environmental, 2021).....	20
	Attachment B: Survey Report - <i>Exmouth Renewable Power Infrastructure. Flora and Fauna Survey</i> (GHD, 2021)	21

1 Introduction

1.1 Project Context

Horizon Power is a Western Australian (WA) Government Trading Enterprise (GTE) and the state's regional and remote energy utility. 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 an experienced asset manager undertaking active management of vast electricity networks across WA, utilising mature and robust operational, health and safety, and environmental systems.

Horizon Power is proposing to construct renewable power infrastructure (the Project) in Exmouth, Western Australia (WA). The final design and footprint required for the Project is yet to be determined, however; the Project will be contained within Lot 505 (herein referred to as the 'Project Area').

Geotechnical survey works are required to inform the Project. The geotechnical survey will require the temporary clearing of native vegetation within the Project Area to allow for test pitting, as well as incidental clearing (driving over and parking on native vegetation) for vehicle / machinery access to test sites for the geotechnical survey works. Specific detail of the proposed clearing is provided in Section 3 of this document.

To support environmental approvals for the Project, 360 Environmental (2021) and GHD (2022) have been engaged by Horizon Power to undertake ecological surveys within the Project Area. The results of these surveys, as relevant to the proposed clearing for the geotechnical survey, are summarised in Section 4 of this document.

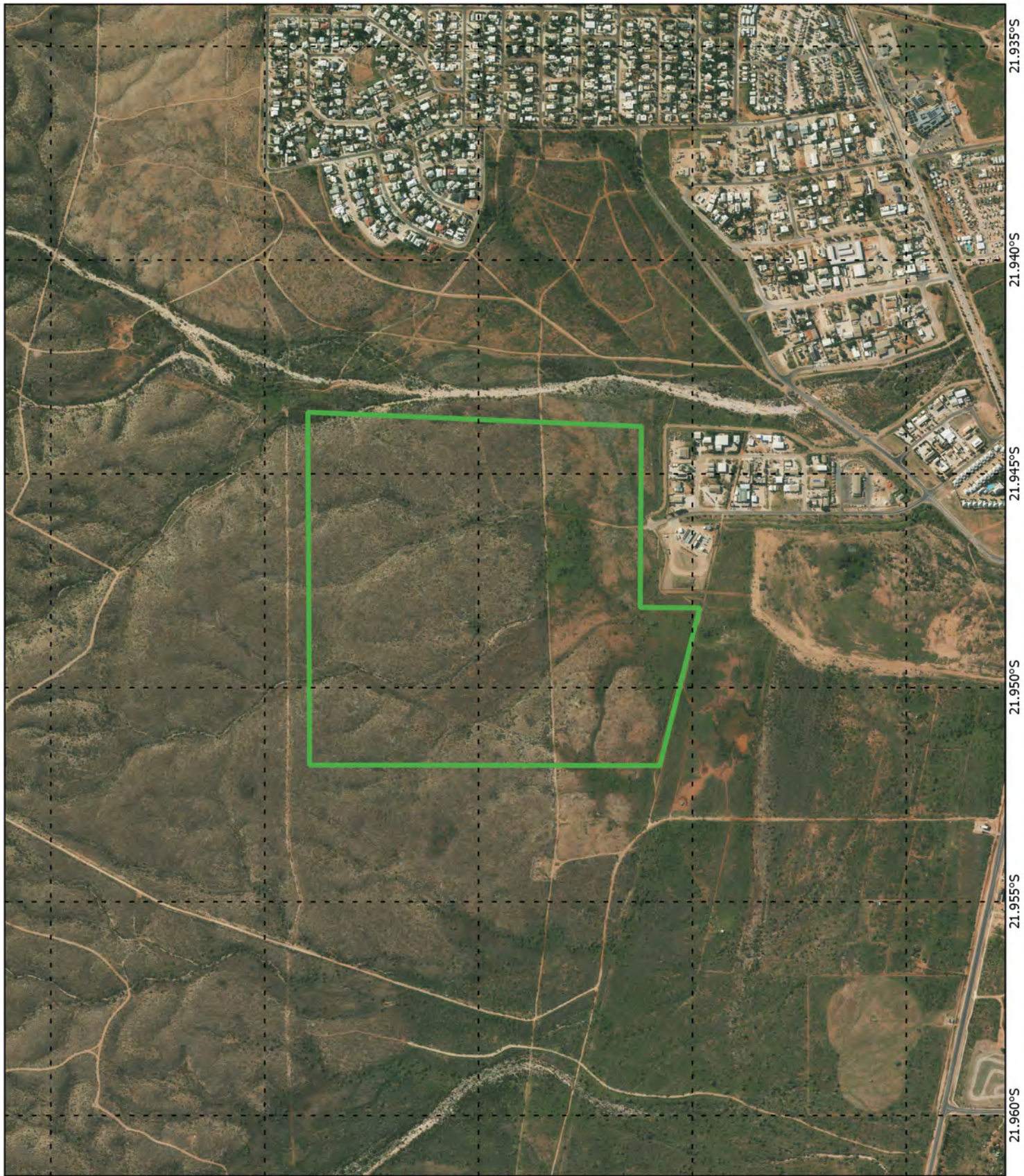
1.2 Scope and Purpose

The scope of this document is limited to the proposed clearing of native vegetation as required for the completion of geotechnical surveys within the Project Area (shown Figure 1).

The purpose of this document is to demonstrate that the proposed clearing of native vegetation satisfies the three Criterion outlined in 'Guideline: Native Vegetation Clearing Referrals' (DWER, 2021) and, as such, should be considered a 'very low environmental impact activity' that does not require a clearing permit.

To demonstrate this, Horizon Power has provided:

- An overview of the activity and a description of the proposed clearing.
- Avoidance, mitigation and management measures applied to minimise the clearing of native vegetation and reduce the likelihood of environmental impacts associated with the activity.
- An assessment of the clearing against the three Criterion specified in DWER (2021).



114.110°E

114.115°E

114.120°E

114.125°E

114.130°E

21.935°S

21.940°S

21.945°S

21.950°S

21.955°S


21.960°S



Figure 1: Project location

Datum: GDA 2020

Legend

 Lot 505

100 0 100 200 m

Originator: R. Lupton	
Team: Env. Sustainability	Date: 15/12/2022
Drawn: R. Lupton	Revision: 1
Project: Exmouth Renewables Project	

2 Description of the Activity

As discussed in Section 1, a geotechnical survey is required within the Project Area (shown Figure 1) to inform the Project. Specifically, survey is required to obtain information on the physical properties of the soil/rock to assess site suitability and determine earthworks and foundation requirements for the Project. Samples will be taken by backhoe test pits to reveal subsurface conditions.

3 Description of Proposed Clearing

3.1 Extent of Proposed Clearing

A total cleared area of 2.14 ha is required for the activity within Lot 505 which is 75 ha in size. This area includes the following:

- **Geotechnical Survey Works:** Up to twelve test pits of 50 m² each (5 m x 10 m) totalling 600 square meters (0.06 ha).
- **Vehicle and Machinery Access:** Due to the absence of designated access tracks within the Project Area, additional areas of native vegetation will be disturbed incidentally by vehicle and machinery movements to access the test pit locations. This is mainly comprised of machinery driving over and parking on native vegetation. This proposed disturbance will be no more than 2.08 ha.

3.2 Proposed Clearing Location

Selection of the test pit locations will be refined on site and will seek to minimise disturbance to native vegetation through selection of areas that are already disturbed and/or support minimal native vegetation.

3.3 Proposed Clearing Method

Clearing of test pit locations and adjacent laydown areas will be undertaken by backhoe (i.e. mechanical clearing).

Development of formal access tracks utilising mechanical clearing is not proposed, however, if required some mechanical clearing may be required to facilitate access.

3.4 Avoidance, Mitigation and Management Measures

As mentioned in Section 3.2, selection of test pits and laydown areas on site will avoid areas of supporting dense native vegetation and/or trees where possible.

Once selected, test pit locations and laydown areas will be demarcated to ensure clearing is limited to the appropriate areas.

The following management measures will be implemented to minimise potential impacts to native flora and fauna within the Project Area:

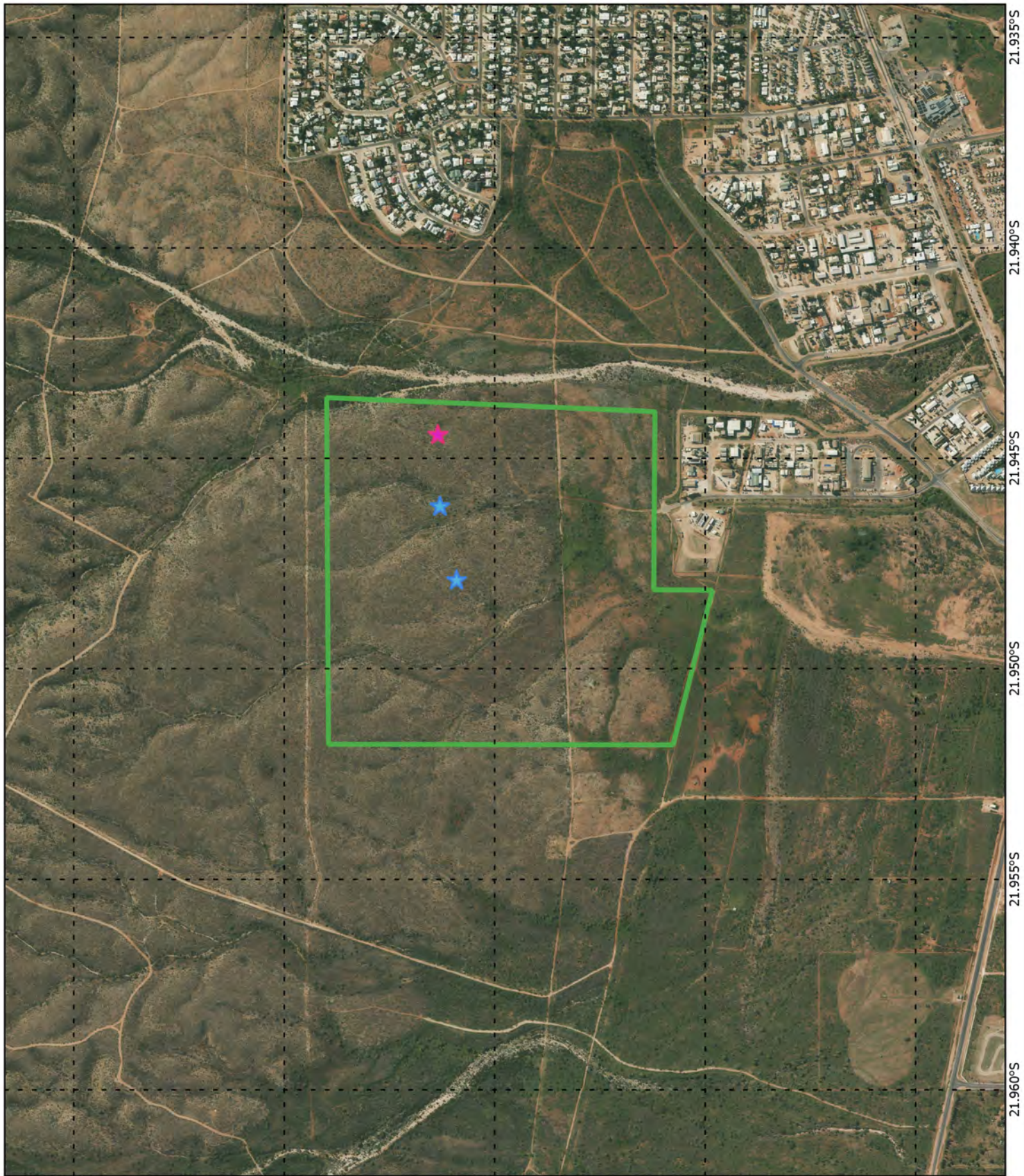
- Where possible, pre-existing access tracks will be used and vehicles and machinery will exit the Project Area along the same route used for access.
- Mechanical clearing for the development of formal access tracks is not proposed.
- Areas of degraded, sparsely vegetated and/or previously cleared areas will be preferentially selected for the location of test pit and laydown areas.
- Works will be undertaken systematically to minimise re-run and compaction of access tracks.
- Standard weed and hygiene management practices which will be applied to these works.
- An avoidance locations map will be supplied to contractors to avoid the single active western pebble mound mouse mound and two possibly active mounds on the site (Figure 2). A 50 m buffer will be applied to these sites.
- Creeks and minor drainage lines, and priority flora and fauna will be avoided if possible (Figure 3).

- Mechanical clearing will be undertaken slowly and in a one-way direction to allow fauna to move offsite if present.

3.5 Restoration of Cleared Areas

Restoration of the site will be limited to management of excavated fill and compaction (where applicable), as follows:

- Topsoil will be stockpiled separately to other excavated materials.
- On completion of test pit works, excavated materials will be placed back into the test pits. Topsoil will then be respread over the surface.
- Recontouring and removal of compaction of soil within the test pit and laydown areas will be undertaken.



114.110°E

114.115°E

114.120°E

114.125°E

114.130°E

21.935°S

21.940°S

21.945°S

21.950°S

21.955°S

21.960°S



Figure 2: Avoidance locations

Datum: GDA 2020

Legend

- Pebble Mound Mouse
- ★ Mound (active)
- ★ Mound (Possibly active)
- Lot 505



100 0 100 200 m



Originator: R. Lupton

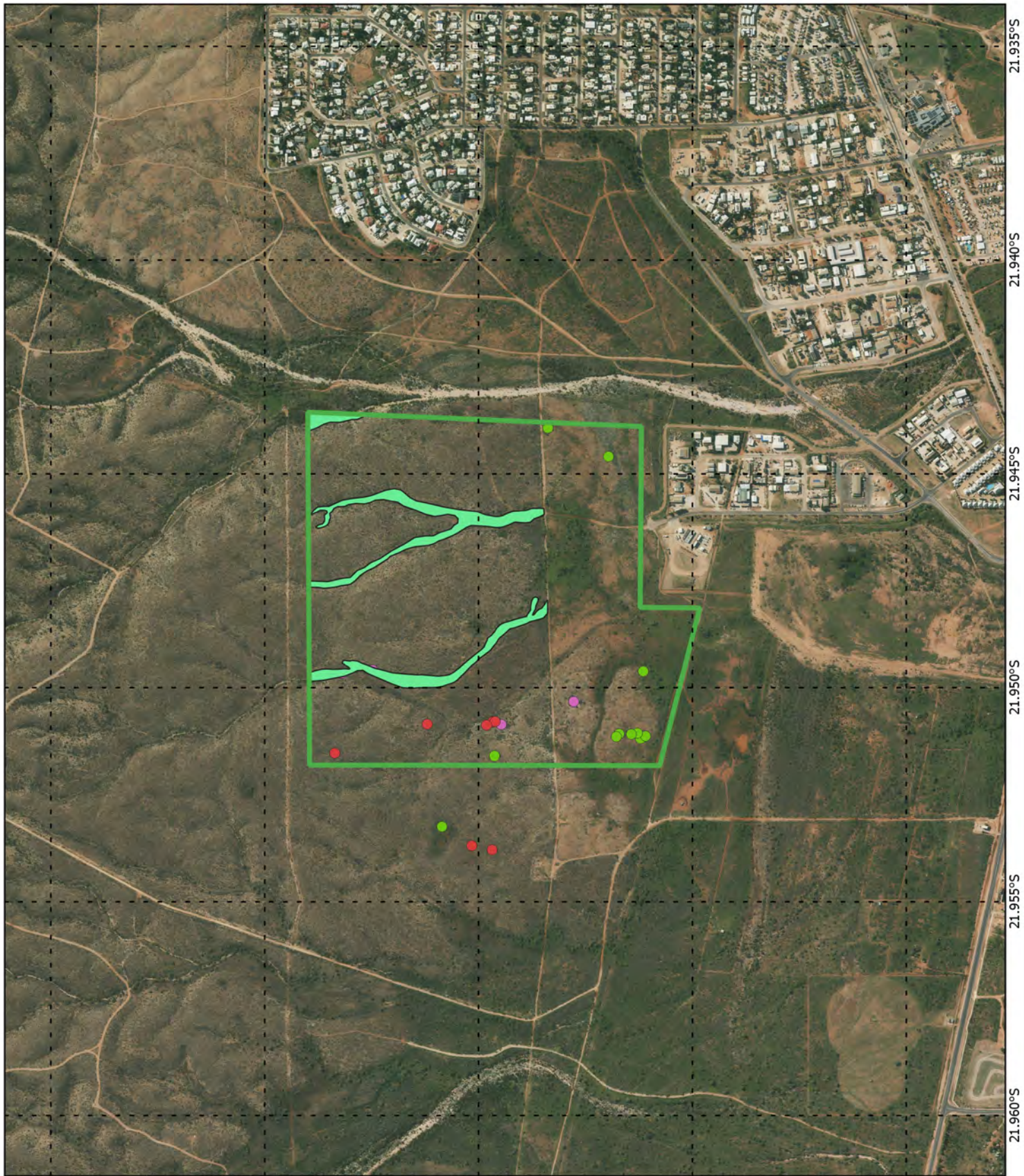
Team: Env. Sustainability

Date: 15/12/2022

Drawn: R. Lupton

Revision: 1

Project: Exmouth Renewables Project



114.110°E

114.115°E

114.120°E

114.125°E

114.130°E

21.935°S
21.940°S
21.945°S
21.950°S
21.955°S
21.960°S



Legend

Lot 505

Habitat types

Creeks and minor drainage lines

Significant Flora

- Corchorus congener*
- Eremophila forrestii* subsp. *capensis*
- Tinospora esiangkara*



100 0 100 200 m



Originator: R. Lupton

Team: Env. Sustainability

Date: 15/12/2022

Drawn: R. Lupton

Revision: 1

Project: Exmouth Renewables Project

Figure 3: Avoid if possible locations

Datum: GDA 2020

4 Ecological Survey

To inform the Project, two ecological surveys have been undertaken to date. These surveys have been appended to this document (Attachment B and C) and are summarised in Table 4-1. The survey undertaken by GHD (2022) presents a more comprehensive survey of Lot 505 post refinement of site selection following the 360 Environmental (2021) survey.

Table 4-1 Summary of Ecological Surveys

Survey	Summary of Findings
<p>Lots 284, 505, 550 and reserve 51970, Exmouth. Biological Survey (360 Environmental, 2021)</p>	<p>Survey Dates: 20 – 26 August 2021</p> <p>Survey Area: Lots 284, 505, 550 and Reserve 51970 (which comprises Lots 1391 and 1493) [approximately 536 ha]</p> <p>Flora / Vegetation Findings (across the entire Survey Area):</p> <ul style="list-style-type: none"> – 257 flora taxa were recorded during the survey. Dominant families were Fabaceae, Poaceae and Malvaceae. – No Threatened flora species listed under the <i>Environmental Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) or <i>Biodiversity Conservation Act 2016</i> (BC Act) were recorded during the survey. Eight priority (P) flora species were recorded. – Fourteen introduced taxa were recorded (including one Declared pest, and two unlisted organisms). No Weeds of National Significance (WONS) were recorded. – Eleven vegetation types were recorded, none of which were representative of a Threatened or Priority Ecological Community. Ten were, however, considered to be of local significance. – Vegetation condition was mapped as ‘Excellent’ to ‘Degraded’. <p>Fauna / Fauna Habitat Findings (across the entire Survey Area):</p> <ul style="list-style-type: none"> – Seven fauna habitat types were identified. – Opportunistic survey methods identified 21 fauna taxa (15 birds, 3 mammals, 3 reptiles). No conservation significant fauna species were recorded. – One introduced species (domesticated horse) was recorded. – Fauna which are considered to have a high or medium likelihood of occurrence within the Survey Area include the Pilbara Leaf-nosed Bat (records approximately 15 km south of Lot 550; no habitat suitable for maternity roosts, however, day roosting and foraging habitat present), Black-footed Rock Wallaby (habitat within the survey area may be used by this species; species records within 1km) and some bird and reptile species. – Two ESAs overlapped the Survey Area. These correlate with the Cape Range National Park and Ningaloo Marine Park (overlapping Lots 284 and 550, and adjacent to Lot 505). No ESAs overlap Lot 505. – Survey Area does not overlap any conservation areas, wetlands of international importance, marine environment or world heritage properties. Nearby conservation areas are the Cape Range National Park (south of the Survey Area), Jurabi Coastal Park (north of the Survey Area) and the Bundegi Coastal Park (north of the Survey Area).

Exmouth
Renewable Power
Infrastructure.
Flora and Fauna
Survey (GHD, 2022)

Survey Dates: 9 – 13 May 2022

Survey Area: Lots 505 and 550 [approximately 118 ha total]

Flora / Vegetation Findings:

- Survey methods within Lot 505 included quadrats and relevés.
- No Threatened flora listed under the EPBC Act or BC Act were recorded within Lot 505 (or Lot 550).
- Three Priority flora were recorded within Lot 505: *Corchorus congener* (P3), *Tinospora esiangkara* (P2) and *Eremophila forrestii* subsp. *capensis* (P3).
- 139 flora taxa were recorded across the entire Survey Area (including 5 introduced taxa – none of which are WONS or Declared pests).
- Five vegetation types were recorded in Lot 505:
 - VT01 – ‘Plains’: *Corymbia hamersleyana* isolated trees over sparse shrubland over **Cenchrus ciliaris* tussock grassland and *Triodia epactia* and *T. basedowii* isolated hummock grasses on sandy/clay/loam plains
 - VT02 – ‘Limestone Hills and Ranges’: *Melaleuca cardiophylla* open mid shrubland over sparse low shrubland over *Triodia wiseana* and *T. epactia* hummock grassland on low undulating rocky limestone hills and ranges
 - VT03 – ‘Drainage Lines’: *Corymbia hamersleyana* open woodland to low isolated trees over *Acacia* spp. tall shrubland over *Senna artemisioides* subsp. *oligophylla*, *Eremophila longifolia* and *Gossypium robinsonii* open mid shrubland over *Triodia epactia* isolated hummock grasses with **Cenchrus ciliaris*, *Cymbopogon ambiguous* and *Themeda triandra* isolated tussock grasses on rocky sandy/loam broad drainage lines
 - VT04 – ‘Cracking Clay depression’: *Acacia* sparse shrubland over *Triodia epactia* sparse hummock grassland with **Cenchrus ciliaris* isolated tussock grasses over mixed open forbland on cracking clay depression
 - ‘Cleared’.
- No Threatened Ecological Communities (TECs) listed under the EPBC Act or BC Act, or State listed Priority Ecological Communities (PECs) were recorded.
- Across the entire Survey Area, vegetation condition varied from ‘Excellent’ (69%) to ‘Poor’ (17.26%), with areas that have been Cleared (1.26%) for access tracks.
- Dominant families were Fabaceae, Malvaceae and Poaceae.

Fauna:

- Survey methods within Lot 505 included acoustic detectors, bird census, remote camera traps and active searching.
- Four fauna habitat types were identified within Lot 505: ‘Creek and minor drainage lines’, ‘Stony/sandy plain’, ‘Undulating Low Hills’ and ‘Cleared’. Habitats were considered to be of ‘Medium’ to ‘High’ value due to the large area, diversity and quality of habitat with good connectivity within the Survey Area.
- Ninety-nine fauna species were recorded within the Survey Area (56 birds, 25 reptiles, 2 amphibians and 16 mammals).
- One significant fauna species was recorded within Lot 505: *Pseudomys chapmani* (P4, Western Pebble-mound Mouse). Within Lot 505, the survey identified one confirmed active mound, two possibly active mounds and ten inactive mounds. Habitat for this species is noted to be stony hillsides with hummock grasslands and little or no soil, with the species constructing distinct, large mounds of pebbles on stony slopes.
- GHD (2022) considered that the following are also likely to occur within the Survey Area:
 - Cape Range Stone Gecko (P2) – Whilst not recorded during the survey, GHD (2022) noted that this species is likely to utilise Undulating Low Hills and Stony/sandy plain habitat, as well as possibly Rocky Gully habitat within the Survey Area.
 - Oriental plover (EPBC Act listed Migratory) – GHD (2022) noted use of the Survey Area would be limited to irregular and opportunistic.

Survey	Summary of Findings
	<ul style="list-style-type: none"><li>– Nine invasive fauna species were recorded.<li>– The buffer area of one Nationally Important Wetland (Cape Range Subterranean Waterways) overlaps Lot 505.

5 Suitability for the Clearing Referral Process

The 'Guideline: Native Vegetation Clearing Referrals' (DWER, 2021) Section 5.3 outlines those clearing activities not considered to be suitable for the Clearing Referral process. Table 5-1 demonstrates that the proposed clearing activity (as outlined in Section 5) is suitable for assessment under the Clearing Referral process.

Table 5-1 Assessment of Suitability for the Clearing Referral Process

Aspect	Assessment	Suitable? (Yes/No)
The referral process cannot be used for proposed clearing on land subject to an agreement to reserve or a conservation covenant under the Soil and Land Conservation Act 1945 (SLC Act)	Land is not subject to a conservation covenant	Yes
The referral process cannot be used for proposed clearing on land subject to an environmental protection covenant under Part VB of the EP Act	Land is not subject to an environmental protection covenant	Yes
The referral process is not suitable for proposed clearing that is not likely to be completed within two years.	The geotechnical survey works will be undertaken within the next two years, with works currently scheduled for 2023 It is expected that survey works at each test pit will be completed within 2 to 3 days, with the program of works estimated to take approximately 2 weeks	Yes
The referral process is not suitable for proposed clearing that will contravene the requirements of a soil conservation notice issued under Part V of the SLC Act	The proposed clearing activity will not contravene the requirements of a soil conservation notice issued under Part V of the SLC Act.	Yes
The referral process is not suitable for proposed clearing that will or is likely to have a significant impact on matters of national environmental significance (MNES)	The proposed clearing is not likely to have a significant impact on MNES (as detailed in Section 4.2). No EPBC Act listed flora, fauna or ecological communities have been recorded with the Project Area by 360 Environmental (2021) or GHD (2022).	Yes
The referral process is not suitable for proposed clearing that includes marine native vegetation clearing activities	No clearing of marine native vegetation is proposed.	Yes
The referral process is not suitable for proposed clearing that may impact on protected or otherwise significant flora or fauna	The proposed clearing is not likely to have a significant impact on protected or otherwise conservation significant flora or fauna (as detailed in Section 4.2). Avoidance zones will be applied to the works.	Yes
The referral process is not suitable for proposed clearing that will be within a highly cleared landscape or an area containing limited or restricted native vegetation types.	The proposed clearing is not within an extensively cleared landscape or an area containing limited or restricted native vegetation types, as detailed in Section 4.1. More than 85% of Pre-European Vegetation Association extents remain.	Yes
The referral process is not suitable for proposed clearing that is on land previously reserved as an environmental offset under the conditions of another approval under the EP Act.	A review of the DWER Offsets Register (via spatial dataset DWER-078; GoWA, 2022) indicates that the land is not reserved as an environmental offset under the conditions of an approval under the EP Act.	Yes

4 Assessment Against DWER Criterion

4.1 Criterion 1: The area proposed to be cleared is small relative to the total remaining vegetation

The proposed clearing activity satisfies Criterion 1, as detailed in the following tables.

Table 4-1 Assessment of the Proposed Clearing Activity Against Criterion 1

Aspect	Assessment
Extent of proposed clearing	The total proposed clearing is 2.14 ha. This is less than the 10 ha threshold for clearing activities located north of the 26° South latitude line.
Threshold for remaining extent of native vegetation association or complex in the relevant IBRA bioregion	More than 30% of the relevant vegetation association (664) remains within the relevant IBRA bioregion (Carnarvon; refer to Table 4-2 below), therefore; a permit is not required on this basis.
Threshold for remaining native vegetation surrounding the boundary of the proposed clearing	Within a 10 km buffer of the proposed clearing more than 30% native vegetation is remaining. Therefore, a permit is not required on this basis.

Table 4-2 Pre-European Vegetation Association Extents, as Relevant to Lot 505 (GHD, 2022)

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	% Remaining	% of current extent in all DBCA managed land (proportion of current extent)
663	State: WA	30,474.41	25,976.66	85.24	28.93
	IBRA Bioregion: Carnarvon	29,068.26	25,866.32	88.98	28.66
	IBRA Subregion: Cape Range	29,068.26	25,866.32	88.98	28.66
	LGA: Shire of Exmouth	30,474.41	25,976.66	85.24	28.93

4.2 Criterion 2: There are no known or likely significant environmental values within the area

The proposed clearing activity satisfies Criterion 2, as detailed in the following tables.

Table 4-3 Assessment of the Proposed Clearing Activity Against Criterion 2

Environmental value	Assessment
Vegetation condition	<p>The GHD (2022) survey report identifies the majority of vegetation in Lot 505 being of 'Excellent' or 'Poor' condition. There are also areas categorised as 'Cleared' (for example, for access tracks), 'Very Good' (including drainage lines) and 'Good' condition.</p> <p>The proposed clearing of 2.14 ha required for this scope of works is not considered likely to alter the condition of the vegetation within Lot 505. The test pits will be preferentially located within areas of Degraded, sparsely vegetated and/or previously cleared areas.</p> <p>Standard weed and hygiene practices will be applied.</p>
Significant fauna	<p>One conservation significant fauna species was recorded within Lot 505 during survey by GHD (2022): the Western Pebble Mouse (P4). Western Pebble Mouse were previously considered to be locally extinct, potentially due to similarities between this species and the sandy inland mouse and difficulty associated in identification of this species. Numerous reports have documented the presence of this species on the peninsula, including fossil records (Baynes and Jones 1993) and potentially active and old mounds (Muir Environmental 1995). GHD has previously identified old mounds in the Learmonth area (Lynch pers comm) but no mounds were confirmed as currently active. Three active or suspected active Western Pebble Mouse mounds identified during the survey will be marked as avoidance areas. The lower slopes of the hills is the key habitat type for this species, and comprises 84% of the surveyed area. Due to the abundance of available habitat and avoidance of the suspected active or potentially active mounds, no significant impacts to Western Pebble Mound Mouse are expected as a result of the geotechnical investigations.</p> <p>As detailed in Table 4-1, GHD (2022) have noted that the Oriental Plover (EPBC Act listed Migratory and Marine; BC Act listed Migratory) and Cape Range Stone Gecko (State listed P2) may occur within Lot 505.</p> <p>The Oriental Plover is a non-breeding visitor to Australia, where the species occurs in both coastal and inland areas, mostly in northern Australia. Most records are along the north-western coast, between Exmouth Gulf and Derby in Western Australia (DCCEE, 2022a). Then Oriental Plover is not anticipated to be reliant on habitat within this area, and the small scale of clearing for geotechnical works is unlikely to impact this species.</p> <p>The Cape Range Stone Gecko was not recorded by GHD (2022) within the Survey Area, however; the species is considered likely to be present within 'Undulating Low Hills' and 'Stony/Sandy Plain' habitat types. These two fauna habitats comprise the majority of Lot 505. Due to the widespread availability of this habitat no significant impact is expected.</p>
Fauna habitat	<p>As detailed in Table 4-1, GHD (2022) recorded the following fauna habitats within Lot 505:</p> <ul style="list-style-type: none"> – Creek and minor drainage lines – Stony/sandy plain – Undulating Low Hills – Cleared <p>Fauna habitats were considered to be of 'Medium' to 'High' value due to the large area, diversity and quality of habitat with good connectivity within the Survey Area (GHD, 2022).</p> <p>No significant impacts to fauna habitat are anticipated as a result of the activity due to the minimal extent of proposed clearing.</p> <p>The clearing of 2.14 ha proposed for this scope of works is not considered likely to significantly impact the fauna habitats present within Lot 505.</p>
Significant ecological linkage	<p>The proposed area is not part of a significant ecological linkage.</p>
Mapped ecological community	<p>No State or Federally listed PEC or TECs were recorded within Lot 505 by GHD (2022).</p> <p>Cameron's Cave is a State listed TEC 'Cameron's Cave Troglitic Community' (Critically Endangered) located within the Exmouth townsite, approximately 1.2 km south of the Project area. The groundwater of Cameron's Cave comes from the highly porous and unconfined Cape Range Group aquifer system. The geotechnical works will not result in altered hydrological regimes (surface or groundwater) with test pits limited to 4m (or until refusal). No water abstraction or ground-breaking activities are proposed. After testing, the soil and</p>

Environmental value	Assessment
	<p>topsoil will be returned to the test pit and recontoured to prevent compaction. No impacts to subterranean fauna are expected.</p> <p>No impacts to TECs or PECs are considered likely to occur associated with the proposed clearing.</p>
Significant flora	<p>As detailed in Table 4-1, GHD (2022), no Threatened flora species listed under the EPBC Act or BC Act were recorded within Lot 505.</p> <p>The following three Priority flora were recorded within Lot 505:</p> <ul style="list-style-type: none"> – <i>Corchorus congener</i> (P3): GHD (2022) notes that this species was also recorded during three other surveys in the Exmouth region between 2019 and 2021. GHD (2022) recorded a total of 105 individuals from 13 locations within the Survey Area during the survey. – <i>Tinospora esiangkara</i> (P2): GHD (2022) notes that this species was also recorded during two other surveys in the Exmouth region between 2019 and 2021. Twenty-seven of the individuals recorded by 360 Environmental (2021) are located within the GHD (2022) Survey Area, and GHD (2022) recorded a further 25 individuals from 23 locations within the Survey Area. – <i>Eremophila forrestii</i> subsp. <i>capensis</i> (P3): GHD (2022) notes that this species was also recorded during two other surveys in the Exmouth region between 2019 and 2021. 360 Environmental (2021) recorded more than 400 individuals of this species during their survey, approximately 68 of which were recorded within the GHD (2022) Survey Area. A further 494 individuals were recorded during the GHD (2022) survey. <p>As these three Priority flora species do not appear to be geographically restricted to the Project Area and are considered to be relatively abundant within the areas surveyed, the proposed clearing of 2.14 ha of native vegetation within the Project Area for this scope of works is not anticipated to significantly impact these species.</p> <p>The Priority species will be avoided if possible, during the geotechnical survey.</p>
Mapped wetlands and/or waterways	<p>The buffer area of the Cape Range Subterranean Waterways intersects Lot 505. This receptor is categorised as a Nationally Important Wetland. No impacts to this receptor are anticipated in association with this scope of works given that the Project is within the buffer area only, and digging activities will be limited to a depth of approximately 4 m.</p> <p>There are no other wetland features overlapping Lot 505. No permanent or semi-permanent watercourses or wetlands overlap the Project Area.</p> <p>There are drainage lines (seasonal only) which extend through the Project Area, as well as one water body which GHD (2022) reported as a seasonal perched seep. This is located on the south-eastern edge of the survey area. Drainage lines will be avoided where possible.</p>
Water resources	<p>The Project Area does not overlap a mapped Public Drinking Water Source Area (PDWSA; DoW, 2022). However, there is a PDWSA (Priority 1) located immediately adjacent to the Project Area, along the western boundary. No impacts to this PDWSA area anticipated in association with the activity as there will be no clearing or ground-breaking activities outside of the Project Area.</p> <p>Depth to groundwater at Exmouth is approximately 1000m (DoW 1999), therefore geotechnical tests to 4m is not expected to impact groundwater resources, quality or composition.</p>
Conservation Reserve	<p>The Project Area does not overlap any conservation areas.</p> <p>Nearby conservation areas include Cape Range National Park (approximately 5.5 km west and south of the Project Area), Jurabi Coastal Park (approximately 13 km west and north of the Project Area) and the Bundegi Coastal Park (approximately 7 km north of the Project Area). No impacts to these conservation areas are anticipated in association with this scope of works.</p>
Land and soil quality	<p>The proposed clearing area has a current low level of soil acidity and a low risk of Acid Sulphate Soils (GoWA 2021a; ASRIS 2022).</p> <p>The proposed clearing area does not intersect any contaminated sites (spatial dataset DWER-059; GoWA, 2022). There are contaminated sites located approximately 600 m north ('Contamination – remediate required') and 1.2 km south-east ('Remediated for restricted use') of the Project Area. No off-site impacts are anticipated in association with the activity. Land and soil quality within the Project Area is also not likely to be impacted by the activity.</p>

Environmental value	Assessment
Heritage-related values and native title matters	<p>There are no Aboriginal Heritage Sites within or immediately adjacent to the Project Area (DPLH, 2022; DCCEEW, 2022b). As noted in Section 3.4, management measures will be in place regarding any currently known heritage values within the site.</p> <p>It is noted that much of the Cape Range area (including the Project Area) is mapped as being part of a 'lodged' request under the name 'Warnangura (Cape Range) Cultural Precinct' for heritage type 'artefacts / scatter, ceremonial, engraving, midden / scatter, mythological, rockshelter, named place, water source'.</p> <p>There are no National Heritage Area or World Heritage Areas mapped as overlapping the Project Area (GHD, 2022). The Ningaloo Coast National Heritage Area is located near to the Project Area, however; no impacts to this receptor are anticipated in association with the activity.</p>

4.3 Criterion 3: The state of scientific knowledge of native vegetation within the region is adequate

The Project Area is located within the Gascoyne Coast sub-region; an area which features high biodiversity and for which extensive environmental survey data is available. The management plan for the Cape Range National Park (DEC, 2010) and combined management plan for the 'Jurabi and Bundegi Coastal Parks, and Muiron Islands' (Shire of Exmouth & CALM, 1999), for example, demonstrate a comprehensive knowledge of the biological attributes of the sub-region, including native vegetation.

The surveys undertaken by 360 Environmental (2021) and GHD (2022), which have been summarised in Section 4 and provided in full in Appendix A and B, demonstrate that the native vegetation present within the Project Area is representative of the wider region and that there are no EPBC Act or BC Act listed Threatened flora or vegetation within the Project Area.

It is, therefore, considered that the state of scientific knowledge of native vegetation within the region is adequate.

4.4 Criterion 4: Conditions will not be required to manage environmental impacts

Due to the low environmental impact of the clearing activity, non-standard controls are not considered to be required to manage environmental impacts for this works. Standard Horizon Power controls will be applied including provision of avoidance zones to contractors and hygiene management.

Avoidance, mitigation and management measures have and/or will be applied to the scope of works, as detailed in Sections 2 and 3. Given the application of these measures, as well as the abundance of native vegetation within and surrounding the Project Area and the limited clearing proposed, it is considered that clearing can be undertaken without conditions being applied to further manage environmental impacts.

5 References

Australian Soil Resource Information System, Available at: <http://www.asris.csiro.au/mapping/viewer.htm>, accessed December 2022

360 Environmental, 2021. *Lots 284, 505, 550 and reserve 51970, Exmouth. Biological Survey*. Report Prepared for Horizon Power

Department of Biodiversity, Conservation and Attractions (DBCA), 2017. *Fauna Profile - Black-footed Rock Wallabies *Petrogale lateralis**. Available at: https://www.dpaw.wa.gov.au/images/documents/plants-animals/animals/animal_profiles/black_footed_rock_wallabies_fauna_profile.pdf, accessed December 2022

Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2022a, Species Profile and Threats Database *Charadrius veredus* — Oriental Plover, Oriental Dotterel, Available at: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=882, accessed December 2022

DCCEEW, 2022b. *Protected Matters Search Tool*. Canberra, ACT. Available at: <https://pmst.awe.gov.au/#/map?lng=131.50634765625003&lat=-28.671310915880834&zoom=5&baseLayers=Imagery,ImageryLabels>, Accessed October 2022

Department of the Environment and Conservation (DEC), 2010. *Cape Range National Park. Management Plan No 65 2010*. Available at: <https://www.dpaw.wa.gov.au/images/documents/parks/management-plans/dearchive/cape-range-2010-print-and-web.pdf>, Accessed October 2022

Department of Planning, Land and Heritage (DPLH), 2022. *Aboriginal Heritage Inquiry System*. Available at: <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS>, Accessed October 2022

Department of Water (DoW) 1999. *Caring for Groundwater on the Exmouth Peninsula*, Available at: 10969.pdf (water.wa.go https://www.dpaw.wa.gov.au/images/documents/plants-animals/animals/animal_profiles/black_footed_rock_wallabies_fauna_profile.pdf v.au), accessed December 2022

DoW, 2022. *Online mapping tool for public drinking water source areas*. Available at: <https://dow.maps.arcgis.com/apps/webappviewer/index.html?id=63ddb4ec2a6e463f84028aa3977bab2b>, Accessed October 2022

Department of Water and Environmental Regulation (DWER), 2021. *Guideline: Native Vegetation Clearing Referrals*. Available at: <https://www.wa.gov.au/service/environment/environment-information-services/guideline-native-vegetation-clearing-referrals>, Accessed October 2022

GHD, 2022. *Exmouth Renewable Power Infrastructure. Flora and Fauna Survey*. Report prepared for Horizon Power.

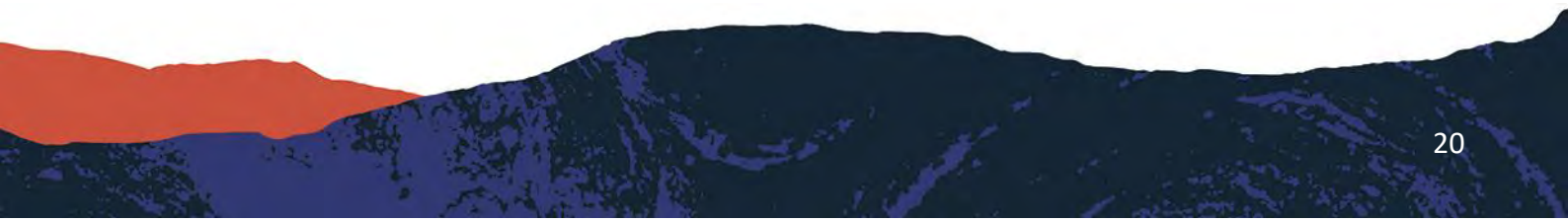
Government of Western Australia (GoWA) (2022). *Data WA*. Available at: <https://data.wa.gov.au/>, Accessed October 2022.

Offsets Register – Projects (DWER-078)

Contaminated Sites Database (DWER-059)

Shire of Exmouth and Department of Conservation and Land Management (CALM), 1999. *Management Plan. Jurabi and Bundegi Coastal Parks, and Muiron Islands. 1999-2009*. Available at: <https://www.dpaw.wa.gov.au/images/documents/parks/management-plans/dearchive/jurabi.pdf>, Accessed October 2022

Attachment A: Survey Report - *Lots 284, 505, 550 and reserve 51970, Exmouth. Biological Survey (360 Environmental, 2021)*





**Lots 284, 505, 550 and Reserve
51970, Exmouth**

Biological Survey

Prepared for
Horizon Power

December 2021

● people ● planet ● professional

Document Reference	Revision	Prepared by	Reviewed by	Admin Review	Submitted to Client	
					Copies	Date
4766AA_Rev0	Internal Draft	B. Duncan C. Walker	B. Eckermann S. Walker	L. Ioannidis	-	21/12/2021
4766AA_Rev1	Client Draft	360 Environmental	Horizon Power	-	1 electronic	22/12/2021

Disclaimer

This report is issued in accordance with, and is subject to, the terms of the contract between the Client and 360 Environmental Pty Ltd, including, without limitation, the agreed scope of the report. To the extent permitted by law, 360 Environmental Pty Ltd shall not be liable in contract, tort (including, without limitation, negligence) or otherwise for any use of, or reliance on, parts of this report without taking into account the report in its entirety and all previous and subsequent reports. 360 Environmental Pty Ltd considers the contents of this report to be current as at the date it was produced. This report, including each opinion, conclusion, and recommendation it contains, should be considered in the context of the report as a whole. The opinions, conclusions and recommendations in this report are limited by its agreed scope. More extensive, or different, investigation, sampling and testing may have produced different results and therefore different opinions, conclusions, and recommendations. Subject to the terms of the contract between the Client and 360 Environmental Pty Ltd, copying, reproducing, disclosing, or disseminating parts of this report is prohibited (except to the extent required by law) unless the report is produced in its entirety including this cover page, without the prior written consent of 360 Environmental Pty Ltd.

© Copyright 2021 360 Environmental Pty Ltd ACN 109 499 041

Executive Summary

Horizon Power commissioned 360 Environmental Pty Ltd (360 Environmental) to undertake a reconnaissance flora and vegetation and basic fauna survey for the proposed construction of renewable power infrastructure in Exmouth, Western Australia.

The Survey Area comprises of areas within Lots 284, 505, and 550 and Reserve 51970 (which comprises of Lots 1391 and 1493). The Survey Area is approximately 536 hectares and is located in the Carnarvon bioregion of Western Australia.

This report presents the results of the field survey undertaken.

Flora and Vegetation

The flora desktop assessment identified 24 conservation significant species occurring within 40 km of the Survey Area. A pre-survey likelihood of occurrence assessment was undertaken and determined 15 species as having a high likelihood of occurrence, five species as having a medium likelihood of occurrence and four species as having a low likelihood of occurrence.

The reconnaissance flora and vegetation survey recorded the floristic composition and vegetation types from 12 relevés, mapping notes and opportunistic observations. A total of 257 taxa were recorded from 153 genera across 58 families.

No Threatened flora species pursuant to the *Environment Protection and Biodiversity Conservation Act 1999* and/or gazetted as Threatened Flora pursuant to the *Biodiversity and Conservation Act 2016* were recorded during the survey.

Eight Priority flora were recorded within the Survey Area:

- Three Priority 2 taxa: *Acanthocarpus rupestris*, *Harnieria kempeana* subsp. *rhadinophylla* and *Tinospora esiangkara*
- Four Priority 3 taxa: *Acacia alexandri*, *Corchorus congener*, *Eremophila forrestii* subsp. *capensis* and *Grevillea calcicola*
- One Priority 1 taxon: *Brachychiton obtusilobus*.

Fourteen introduced taxa were recorded during the survey. One taxon, **Crotalaria incana* subsp. *incana*, is listed as a Declared Pest at the species level under the *Biosecurity and Agriculture Management Act 2007* by the State Department of Primary Industries and Regional Development. Two taxa, **Flaveria trinervia* and **Rumex vesicarius*, are unlisted organisms, which are prohibited entry into Western Australia. No Weeds of National Significance were recorded.

Eleven vegetation types were described and mapped across three broad landforms (drainage lines; hills; and plains) within the Survey Area. Vegetation in the Survey Area was representative of existing broad scale vegetation, and soil and land system mapping for the area. None of the vegetation types were representative of Threatened or Priority Ecological Communities, however 10 vegetation types were considered of local conservation significance.

Vegetation condition within the Survey Area ranged from Excellent to Degraded with the majority considered to be in Very Good condition. Evidence of disturbance included vehicle access tracks, motorbike tracks, weeds and litter.

Vertebrate Fauna

The vertebrate fauna desktop assessment identified 67 conservation significant species occurring within 20 km of the Survey Area. An assessment of the likelihood of occurrence within the Survey Area was undertaken and identified that of the potential conservation significant fauna, three had a high likelihood of occurrence, five had a medium likelihood of occurrence, and 59 had a low likelihood of occurrence.

Fauna habitat mapping was based on a combination of field observations, fauna habitat assessment data and aerial imagery. Seven fauna habitats were mapped within the Survey Area, of which the Drainage line/Creek, Hills (Open Woodland over Tussock Grassland), and Hills (Shrubland over Hummock Grassland) habitats represent the most value to conservation significant fauna and overall fauna assemblages.

The basic terrestrial vertebrate fauna survey recorded the fauna assemblage through opportunistic observations. A total of 21 fauna taxa from 15 families were recorded, comprising 15 bird taxa from 12 families, three mammal taxa from two families, three reptile taxa from two families.

No conservation significant species were recorded during the fauna survey. One introduced species were recorded during the survey, domesticated Horse (*Equus ferus caballus*).

Abbreviations

Abbreviations used through the report are described below in Table 1.

Table 1: Abbreviations

Abbreviation	Description
360 Environmental	360 Environmental Pty Ltd
BAM Act	Biosecurity and Agriculture Management Act 2007
BC Act	Biodiversity Conservation Act 2016
°C	Degree Celsius
CR	Critically Endangered
DBCA	Department of Biodiversity, Conservation and Attractions
DWER	Department of Water and Environmental Regulation
EN	Endangered
EP Act	Environmental Protection Act 1986
EPA	Environmental Protection Authority
EPBC Act	Environment Protection Biodiversity and Conservation Act 1999
ESA	Environmentally Sensitive Area
GDE	Groundwater Dependent Ecosystem
GIS	Geographic Information System
ha	Hectare
IBRA	Interim Biogeographic Regionalisation for Australia
IBSA	Index of Biodiversity Surveys for Assessments
km	Kilometres
m	Metres
MA	Marine
MI	Migratory
MNES	Matters of National Environmental Significance
NVIS	National Vegetation Information System
P	Priority
PEC	Priority Ecological Community
PMST	Protected Matters Search Tool
RE	Range extension
SOI	Species of interest
Survey Area	The Survey Area is located in Exmouth, in the Carnarvon bioregion of Western Australia. It comprises areas within Lots 284, 505, and 550 and Reserve 51970, and is approximately 536 ha.
T	Threatened
TEC	Threatened Ecological Community
TPFL	Threatened and Priority Flora Database

Abbreviation	Description
TPFRF	Threatened and Priority Flora Report Forms
VU	Vulnerable
WA	Western Australia
WAH	Western Australian Herbarium
WoNS	Weeds of National Significance

Table of Contents

1	Introduction	8
1.1	The Project.....	8
1.2	Objectives and Scope.....	8
2	Background	9
2.1	Protection of Flora, Vegetation and Fauna.....	9
2.2	Existing Environment.....	10
3	Methods	14
3.1	Desktop Assessment.....	14
3.2	Field Surveys.....	16
3.3	Flora and Vegetation.....	16
3.4	Vertebrate Fauna.....	18
4	Results	20
4.1	Limitations.....	20
4.2	Flora and Vegetation.....	22
4.3	Vertebrate Fauna.....	40
5	Discussion	49
5.1	Flora and Vegetation.....	49
5.2	Vertebrate Fauna.....	52
6	Assessment against the Ten Clearing Principles	56
7	Assessment against Matters of National Environmental Significance	63
7.1	Listed Threatened Species and Ecological Communities.....	63
7.2	Listed Migratory Taxa.....	64
7.3	Wetlands of International Importance.....	65
7.4	Commonwealth Marine Environment.....	65
7.5	World Heritage Properties.....	65
7.6	Assessment Conclusion.....	65
8	Potential Impact on Flora, Vegetation and Fauna	66
8.1	Flora and Vegetation.....	66
8.2	Fauna.....	66
9	References	67
10	Report Disclaimer	70

List of Tables

Table 1: Abbreviations	iii
Table 2: Land Systems within the Survey Area	11
Table 3: Broad Vegetation Types within the State, Regional and Local Representation (Government of Western Australia, 2019)	12
Table 4: Database Searches of the Survey Area	15
Table 5: Likelihood of Occurrence Criteria	16
Table 6: Limitations and Constraints Associated with the Survey	20

Table 7: Flora of Conservation Significance within the Survey Area	24
Table 8: Introduced Flora Species within the Survey Area.....	30
Table 9: Vegetation Types Occurring within the Survey Area.....	32
Table 10: Locally Significant Vegetation Units in the Survey Area.....	38
Table 11: DBCA records located within (x) and within 1 km (+) of each Survey Area.	40
Table 12: Fauna Habitat Type Descriptions with the Survey Area.....	43
Table 13: Overview of Vertebrate Fauna Taxa Recorded	47
Table 14: Overview of Vertebrate Fauna Taxa Recorded (Lot 284).....	47
Table 15: Overview of Vertebrate Fauna Taxa Recorded (Lot 550).....	47
Table 16: Overview of Vertebrate Fauna Taxa Recorded (Lot 505).....	48
Table 17: Overview of Vertebrate Fauna Species Recorded (Reserve 51970).....	48
Table 18: Assessment of the Ten Clearing Principles	56

List of Graphs

Graph 1: Long term and Monthly Total Rainfall, Maximum and Minimum temperatures for Learmonth Airport WA (5007) (Bureau of Meteorology, 2021).....	10
--	----

List of Plates

Plate 1: <i>Acanthocarpus rupestris</i> (P2) specimen collected from the Survey Area.	25
Plate 2: <i>Harnieria kempeana</i> subsp. <i>rhadinophylla</i> (P2) habitat (left) and plant (right).....	26
Plate 3: <i>Tinospora esiangkara</i> (P2) habitat (left) and leaves (right).....	26
Plate 4: <i>Acacia alexandri</i> (P3) habitat (left), leaves and flowers (right).....	27
Plate 5: <i>Corchorus congener</i> (P3) specimen collected from the Survey Area.	27
Plate 6: <i>Eremophila forrestii</i> subsp. <i>capensis</i> (P3) habitat (left), leaves and flower (right).	28
Plate 7: <i>Grevillea calcicola</i> (P3) specimen collected within the Survey Area.....	28
Plate 8: <i>Brachychiton obtusilobus</i> (P4) habitat (left), and leaf (right).	29
Plate 9: <i>Sida</i> sp. Nov specimen collected within the Survey Area.....	30

List of Figures (out of text)

Figure 1: Site Location
Figure 2: IBRA Subregions
Figure 3: Soil Land Systems and Hydrography
Figure 4: Broad Vegetation Types
Figure 5: Conservation and Environmentally Sensitive Areas
Figure 6: Survey Effort
Figure 7: DBCA Threatened and Priority Flora Locations
Figure 8: DBCA Threatened and Priority Ecological Communities
Figure 9: Flora of Conservation Significance
Figure 10: Introduced Flora Recorded
Figure 11: Vegetation Types
Figure 12: Vegetation Condition
Figure 13: DBCA Threatened and Priority Fauna Locations
Figure 14: Fauna Habitat

List of Appendices

Appendix A Literature Review

Appendix B Database Searches

Appendix C Flora Likelihood of Occurrence

Appendix D Inventory of Vascular Flora

Appendix E Threatened and Priority Flora Report Forms

Appendix F Threatened and Priority Flora Report Forms

Appendix G Fauna Likelihood Assessment

Appendix H Fauna Habitat Assessments

Appendix I Vertebrate Fauna Inventory

1 Introduction

1.1 The Project

Horizon Power commissioned 360 Environmental Pty Ltd (360 Environmental) to undertake a reconnaissance flora and vegetation and basic fauna survey for the proposed construction of renewable power infrastructure in Exmouth, Western Australia (the Survey Area).

The Survey Area comprises areas within Lots 284, 505, and 550 and Reserve 51970 (which comprises Lots 1391 and 1493) (Figure 1). The Survey Area is approximately 536 hectares and is located in the Carnarvon bioregion of Western Australia.

1.2 Objectives and Scope

The purpose of the survey was to delineate key flora and fauna values within the Survey Area and identify potential environmental sensitivities that may impact the project.

The scope of works includes:

- Undertake a biological field survey comprising a reconnaissance flora survey and basic fauna survey
- Provide a combined technical report detailing the findings of the biological survey
- Include an Assessment against the Ten Clearing Principles
- Include a summary letter to outline any recommendations arising from the biological survey
- Include relevant maps and shapefiles that could be used to support a native vegetation clearing permit application
- Supply a geospatial data package prepared in accordance with Index of Biodiversity Surveys for Assessments (IBSA) requirements.

This report presents the results of the field survey undertaken to support the above objectives.

2 Background

2.1 Protection of Flora, Vegetation and Fauna

Western Australian flora and fauna is protected formally and informally by legislative and non-legislative measures:

Legislative measures:

- *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *WA Biodiversity Conservation Act 2016* (BC Act)
- *WA Environmental Protection Act 1986* (EP Act)
- *WA Biosecurity and Agriculture Management Act 2007* (BAM Act).

Non-legislative measures:

- WA Department of Biodiversity Conservation and Attractions (DBCA) Priority lists for fauna, flora and ecological communities
- Weeds of National Significance (WoNS)
- Recognition of locally significant populations by DBCA.

These protection mechanisms are supported by guidance documents published by the Environmental Protection Authority (EPA) and Department of the Environment:

- Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (Environmental Protection Authority, 2016)
- Technical Guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (Environmental Protection Authority, 2020)
- Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999 (Department of the Environment, 2013)
- Survey Guidelines for Australia’s Threatened Mammals (Department of Sustainability Environment Population and Communities, 1999)
- Survey Guidelines for Australia’s Threatened Reptiles (Department of Sustainability Environment Water Population and Communities, 2011)
- Survey Guidelines for Australia’s Threatened Birds Under the Environment Protection And Biodiversity Conservation Act 1999 (Department of the Environment Water Heritage and the Arts, 2010).

2.2 Existing Environment

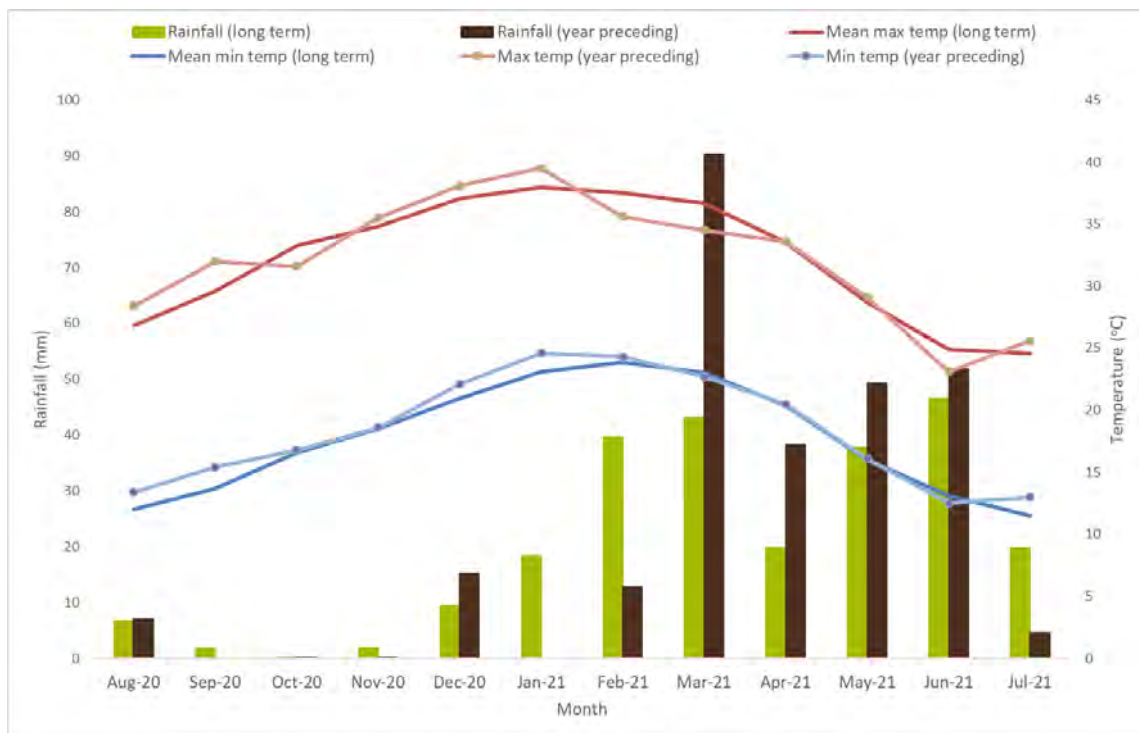
2.2.1 Climate

The closest long-term Bureau of Meteorology weather station with a complete dataset is Learmonth Airport WA (Station 5008), located approximately 38.5 km south of the Survey Area.

Climate statistics were calculated utilising data from the most current climate normal, which is defined as a 30 year interval (Bureau of Meteorology, 2007), where possible. A climate normal is a period long enough to include year-to-year variations while avoiding the influence of longer-term changes in climate (Bureau of Meteorology, 2007).

The long-term mean minimum temperature for Learmonth Airport WA ranges from 11.5°C (July) to 23.9°C (February) (1991 to 2020) and the long-term mean maximum temperature ranges from 24.6°C (July) to 38.0°C (January) (Graph 1) (Bureau of Meteorology, 2021).

The Learmonth Airport WA weather station recorded 269.6 mm of rainfall in the 12 months prior to the survey (August 2020 to July 2021), which is 24.9 mm above the long-term average of 244.7 mm (Bureau of Meteorology, 2021). In the three months prior to the survey (May to July 2021), 105.6 mm of rainfall was recorded, which is 1.6 mm above the long-term average of 104.0 mm for the same time period (Bureau of Meteorology, 2021).



Graph 1: Long term and Monthly Total Rainfall, Maximum and Minimum temperatures for Learmonth Airport WA (5007) (Bureau of Meteorology, 2021).

2.2.2 Interim Biogeographic Regionalisation of Australia

The Interim Biogeographic Regionalisation of Australia (IBRA) divides Australia into 89 bioregions based on major biological, geographical and geological attributes. These bioregions are subdivided into 419 subregions as part of a refinement of the IBRA framework (Department of the Environment and Energy, 2016). The Survey Area occurs within the Carnarvon bioregion and the Cape Range (CAR01) subregion (Figure 2).

The Cape Range (CAR01) subregion is characterised by a mosaic of saline alluvial plains with samphire and saltbush low shrublands, Bowgada low woodland on sandy ridges and plains, Snakewood scrub on clay flats, and tree to shrub steppe over hummock grasslands on and between red sand dune fields (Kendrick and Mau, 2002). The subregion is represented by *Acacia* shrublands over *Triodia* on limestone (*Acacia startii* or *Acacia bivenosa*) and red dunefields, *Triodia* hummock grasslands with sparse *Eucalyptus* trees and shrubs on the Cape Range.

2.2.3 Soil Landscapes Systems

Soil landscapes and land system mapping of Western Australia describes broad soil and landscape characteristics from regional to local scales, ranging from 1:20,000 to 1:250,000 (Department of Primary Industries and Regional Development, 2018). The Survey Area occurs within two land systems (Table 2, Figure 3).

Table 2: Land Systems within the Survey Area

Land System		Description (Department of Primary Industries and Regional Development, 2018)	Extent within the Survey Area*
Name	Code		
Learmonth System	204Le	Sandy outwash plains marginal to the Cape Range, supporting mainly soft spinifex hummock grasslands with scattered <i>Acacia</i> shrubs.	2.2 ha 0.4%
Range System	204Ra	Dissected limestone plateaux, hills and ridges with gorges and steep stony slopes supporting hard spinifex, sparse shrubs and <i>Eucalypts</i> .	533.0 ha 99.6%

* Small discrepancies in extents (i.e., not adding up to the exact area extent of the Survey Area) are due to rounding.

2.2.4 Hydrography

The Survey Area does not intersect any major watercourses or water bodies that are mapped by State Government GIS databases (Department of Water and Environmental Regulation, 2018). The closest watercourses to the Survey Area are two minor tributaries flowing into the Exmouth Gulf, which are located approximately 100 m north and 360 m south of Lot 505, respectively (Figure 3). Drainage lines are present within the Survey Area, especially within Lots 505 and 550.

2.2.5 Broad Vegetation Types

Mapping of pre-European vegetation in Western Australia was completed on a broad scale (1:1,000,000) by Beard (1976). These vegetation types were later refined by Shepherd *et al.* (2002) resulting in 819 vegetation types.

Four broad vegetation system associations are mapped over the Survey Area (Figure 4). Representation of the system associations at a local, regional and state level is shown in Table 3.

- **Cape Range 662:** Spinifex complexes. Hummock grassland with scattered low trees over dwarf shrubs or mixed short grass and spinifex mixed species (*Triodia* spp.). This vegetation association represents 0.3% of the Survey Area.
- **Cape Range 663:** Shrub-steppe. Hummock grassland with scattered shrubs or mallee (*Triodia* spp., *Acacia* spp., *Grevillea* spp., *Eucalyptus* spp.). This vegetation association represents 62% of the Survey Area.
- **Cape Range 664:** Sparse low tree-steppe. Hummock grassland with sparse Eucalypts (bloodwoods and snappy gum, *Triodia* spp., *Corymbia dichromophloia*, *Corymbia opaca*, *Eucalyptus leucophloia*). This vegetation association represents 37.6% of the Survey Area.
- **Cape Range 676:** Samphire. *Tecticornia* spp. communities in saline areas. This vegetation association represents 0.1% of the Survey Area.

Table 3: Broad Vegetation Types within the State, Regional and Local Representation (Government of Western Australia, 2019)

System and Vegetation Association	Extent			
	Pre-European (ha)	Current (ha)	Remaining (%)	Managed in DBCA Lands (%)*
Representation across Western Australia				
Cape Range 662	284,795.92	282,125.59	99.06	7.58
Cape Range 663	30,474.41	25,976.66	85.24	28.93
Cape Range 664	83,774.94	82,154.14	98.07	67.52
Cape Range 676	2,063,413.95	1,963,881.55	95.18	15.44
Representation across the Carnarvon Bioregion				
Cape Range 662	282,709.68	281,679.33	99.64	7.44
Cape Range 663	29,068.26	25,866.32	88.98	28.66
Cape Range 664	83,739.62	82,154.14	98.11	67.52
Cape Range 676	51,983.51	51,232.57	98.56	29.35
Representation across the Cape Range Subregion				
Cape Range 662	282,709.68	281,679.33	99.64	7.44
Cape Range 663	29,068.26	25,866.32	88.98	28.66
Cape Range 664	83,739.62	82,154.14	98.11	67.52
Cape Range 676	29,193.60	28,442.66	97.43	15.87

System and Vegetation Association	Extent			
	Pre-European (ha)	Current (ha)	Remaining (%)	Managed in DBCA Lands (%)*
Representation across the Shire of Exmouth				
Cape Range 662	194,410.67	193,595.74	99.58	6.96
Cape Range 663	30,474.41	25,976.66	85.24	28.93
Cape Range 664	83,774.94	82,154.14	98.07	67.52
Cape Range 676	9,605.60	8,890.36	92.55	48.03

*as a portion of the current extent

2.2.6 Environmentally Sensitive and Conservation Areas

Environmentally Sensitive Areas (ESAs) are declared by the Department of Water and Environmental Regulation (DWER) to prevent the degradation of important environmental values such as Threatened flora, Threatened Ecological Communities (TECs) or significant wetlands. The Survey Area overlaps two mapped ESAs (Figure 5). The ESAs are correlated to Cape Range National Park and Ningaloo Marine Park (Department of Water and Environmental Regulation, 2018). Both ESAs overlap Lots 284 and 550, and one is adjacent to Lot 505.

The Survey Area is not identified within a Conservation Area (Figure 5). The nearest conservation areas are:

- Bundegi Coastal Park (R 40728), located approximately 50 m southeast of Lot 284 and is vested under the Executive Director Department of CALM and the Shire of Exmouth
- Cape Range National Park (R 27288) located approximately 3 km west of Lot 550 and is vested under the Conservation Commission of Western Australia
- Jurabi Coastal Park (R 40729) located approximately 2.4 km north of Lot 284 and is vested under the Executive Director Department of CALM and the Shire of Exmouth
- Ningaloo Marine Park, located approximately 900 m east of Lot 284 and is vested under the Marine Parks and Reserves Authority.

3 Methods

The biological survey documented by this report was undertaken in accordance with relevant EPA and Department of the Environment guidelines (see Section 2.1).

3.1 Desktop Assessment

3.1.1 Literature Review

Background information on the Survey Area and surrounds was compiled prior to the field survey (see Section 2). Historical vegetation mapping (Beard, 1976; Shepherd, Beeston and Hopkins, 2002), land systems mapping (Department of Primary Industries and Regional Development, 2018), and the IBRA classification system (Kendrick and Mau, 2002) were consulted to provide broad contextual knowledge of the vegetation units and habitat likely to be encountered within the Survey Area.

The literature review also considered a selection of biological reports detailing assessments undertaken in the region, that were either publicly available or provided by client:

- Exmouth Lighthouse Resort Borefield – Ecological Survey Report (Strategen JBS&G, 2020), located approximately 2.8 km west of Lot 284
- Learmonth (Exmouth) Line Rebuild Flora and Fauna Survey (GHD, 2019), partially overlapping with Lot 505 and Reserve 51970
- Learmonth Pipeline Fabrication Facility - Detailed Flora, Vegetation and Targeted Survey (360 Environmental Pty Ltd, 2018), located approximately 33.9 km south of Reserve 51970
- Minilya-Exmouth Road Biological Survey, Main Roads WA (GHD, 2016), located approximately 2.0 km south of Reserve 51970.

3.1.2 Database Searches

Database searches were undertaken to compile a list of potential flora and fauna and identify potential conservation significant flora, fauna, and ecological communities within or surrounding the Survey Areas (Table 4). In addition, an EPBC Protected Matters Search (PMST) was undertaken to identify the potential for Matters of National Environmental Significance (MNES) to occur within or surrounding the Survey Area (Department of Agriculture Water and the Environment, 2020b).

The search area for each parameter was varied to reflect distances recommended by DBCA.

Table 4: Database Searches of the Survey Area

Database Name	Date Received	Search Target	Search Area
Threatened and Priority Ecological Communities database search (Department of Biodiversity Conservation and Attractions, 2021c)	18 June 2021	TECs and PECs	100 km buffer around the Survey Area
Threatened and Priority Flora (TPFL) database search (Department of Biodiversity Conservation and Attractions, 2020b)	3 May 2021	Threatened and Priority Flora	100 km buffer around the Survey Area
Western Australian Herbarium flora database search (Department of Biodiversity Conservation and Attractions, 2021e)			
DBCAs Threatened and Priority Fauna database search (Department of Biodiversity Conservation and Attractions, 2021d)	4 May 2021	Threatened and Priority Fauna	50 km buffer around the Survey Area
NatureMap (Department of Biodiversity Conservation and Attractions, 2020a)	6 August 2021	Threatened and Priority flora and fauna, and inventory of potential flora and fauna	40 km buffer around the Survey Area
Protected Matters Search Tool (Department of Agriculture Water and the Environment, 2021a)	6 August 2021	Commonwealth listed Threatened flora and fauna and TECs	50 km buffer around the Survey Area

3.1.3 Likelihood of Occurrence

Conservation significant flora and fauna species identified from the desktop assessment were assessed to determine the likelihood of their occurrence within the Survey Area, both prior to and post field survey. The assessment was completed based on the likelihood of occurrence criteria presented in Table 5.

Only species either recorded within the Survey Area or considered as having a high likelihood of occurrence will be discussed in detail. Species classified as having a medium or low likelihood of occurrence based on the above criteria will not be discussed unless a justification for this classification is required.

Fauna species listed as Marine only under the EPBC Act were not included as conservation significant species as the Marine only listed species identified by the desktop assessment were common and widespread, the Marine only listed species do not constitute matters of national environmental significance (MNES) under the EPBC Act, and the Survey Area does not contain any marine habitat.

Table 5: Likelihood of Occurrence Criteria

Rank	Criteria
Previously Recorded	The species has been previously recorded in the Survey Area.
High (Likely to occur)	<ul style="list-style-type: none"> • There are existing records of the flora species in close proximity to the Survey Area (within 5 km), and for fauna has been recorded within 10 km of the Survey Area in the last 15 years • The species is strongly linked to a specific habitat, which is present in the Survey Area; or • The species has more general habitat preferences, and suitable habitat is present.
Medium (May occur)	<ul style="list-style-type: none"> • There are existing records of the species from the locality (within 15 km for flora and 20km for fauna), however: <ul style="list-style-type: none"> ○ The species is strongly linked to a specific habitat, of which only a small amount is present in the Survey Area; or ○ The species has more general habitat preferences, but only some suitable habitat is present. • There is suitable habitat in the Survey Area, but the species is recorded infrequently in the locality.
Low (Unlikely to occur)	<ul style="list-style-type: none"> • The species is linked to a specific habitat, which is absent from the Survey Area; or • 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 • There is some suitable habitat in the Survey Area, however the species is very infrequently recorded in the locality.

3.2 Field Surveys

The reconnaissance flora and vegetation survey, and basic terrestrial vertebrate fauna survey was undertaken by Principal Botanist Ben Eckermann (Flora License FB62000262), Senior Botanist Jason Webb (Flora License FB62000168) and Ecologist Bridget Duncan (Flora License FB62000272) from 20 – 26 August 2021. The survey effort is shown in Figure 6.

3.3 Flora and Vegetation

3.3.1 Establishment of Flora Sites

Relevés comprised unbounded sites of approximately 50 x 50 m where possible, or alternate configurations approximately equating to 2500 m² (as required in areas such as drainage lines and gullies). A comprehensive record of the flora present at the time of sampling was recorded.

Flora site location was recorded using a handheld Garmin GPS unit, with points recorded at the start and finish point of linear relevés, and the central point of circular relevés. At each relevé, the following was recorded using a Fulcrum mobile data collection device:

- Site code
- Date and personnel
- Landform and soil description

- Relevant site descriptors including slope, aspect and fire history
- Inventory of vascular flora including the approximate maximum height and percentage foliar cover for each taxon recorded
- Vegetation description in accordance with the National Vegetation Information System (NVIS), Level 5 'association', whereby the dominant growth form, height, cover and species (three species) for the three traditional strata (upper, mid and ground) are described
- Vegetation condition in accordance with the Eremaean and Northern Botanical Provinces vegetation condition scale (Environmental Protection Authority, 2016), and evidence of disturbance (for example clearing, rubbish, weed incursion and evidence of feral animals and dieback) where present
- Photograph of the vegetation occurring within the site.

A total of 12 relevés were established within the Survey Area. An additional 51 mapping notes were completed to aid vegetation mapping delineation.

3.3.2 Opportunistic Flora

Additional flora taxa observed opportunistically near relevés or while traversing on foot within the Survey Area were also recorded. Where populations of conservation significant flora taxa, Declared Pests or WoNS were encountered, a GPS location and a count of the individuals present was recorded.

3.3.3 Targeted Searching

Prior to the survey, a list of conservation significant flora with the likelihood to occur within the Survey Area was compiled (see Section 3.1.3). Field personnel familiarised themselves with photographs, reference samples and descriptions of these taxa before conducting the survey.

The entire Survey Area was not systematically searched. Personnel actively searched for conservation significant flora species in and around flora sites, while traversing on foot within the Survey Area and in known locations or preferred habitat encountered in the Survey Area.

Where Priority flora taxa were encountered in the field, a GPS location was taken and a count of individuals was recorded, followed by a search in the local vicinity to determine if any other individuals were present nearby and delineate population boundaries where relevant. Specimens of any potential conservation significant flora that could not be identified in the field were collected for identification and lodgement at the Western Australian Herbarium (WAH).

3.3.4 Taxonomy and Nomenclature

Where field identification of plant taxa was not possible, specimens were collected for identification using resources of the WAH. Identification of flora collections was completed by experienced Taxonomist Pierre-Louis de Kock, Senior Botanist Ben Eckermann and Ecologist Bridget Duncan.

The finalised species list was checked against FloraBase (Western Australian Herbarium, 2021) to determine the conservation status and known distribution of each taxon. Introduced species were compared against the current BAM Act Declared Pest list and the WoNS list to determine their control status (Department of Agriculture Water and the Environment, 2021b; Department of Primary Industries and Regional Development, 2021).

Any conservation significant flora taxa, including potential Priority taxa, range extensions and potential new taxa were submitted to the WAH for verification and lodgement. Where relevant, Threatened and Priority Flora Report Forms (TPFRFs) were submitted to DBCA.

3.3.5 Vegetation Unit and Condition Mapping

Broad vegetation and condition mapping was conducted in the field, with boundaries delineated over aerial photography, at a scale of 1:5,000. Broad vegetation units and condition mapping were refined based on taxonomic identification of flora collections, and mapping notes taken during the field survey. Finalised polygons were digitised and produced as electronic mapping data using GIS software.

3.4 Vertebrate Fauna

3.4.1 Fauna Habitat Assessment

Fauna habitat assessments were undertaken throughout the Survey Area to identify fauna habitat values. Habitat assessment locations are shown in Figure 6. The following information was collected at each site using Fulcrum, a mobile data collection app:

- Site photo
- Landform
- Soil type and colour
- Rock types, surface stone cover and size classes
- Key habitat and microhabitat features including leaf litter, logs, burrows, rocky outcrops, rock crevices, hollows, water sources
- Habitat quality, fire history and evidence of disturbance
- General description of vegetation structure.

Fauna habitat mapping was based on a combination of field observations, fauna habitat assessment data and vegetation mapping undertaken by 360 Environmental.

3.4.2 Opportunistic Observations

Opportunistic observations of fauna were recorded throughout the Survey Area. Observations of primary evidence (direct sightings, calls) and secondary evidence (tracks, scats, diggings etc.) were recorded.

3.4.3 Identification and Taxonomy

Terrestrial vertebrate fauna taxa were identified in the field.

Where there was doubt on a species name (through subsequent name changes or taxonomic reviews), an effort was made to determine the current scientific name for each taxon. Taxonomy and nomenclature in this report follows the WA Museum checklist 2021 (Western Australian Museum, 2021) where relevant. The finalised species list was reviewed by Zoologist Poppy (Christina) Walker.

4 Results

4.1 Limitations

Limitations and constraints of the flora, vegetation and fauna survey are detailed below in Table 6.

Table 6: Limitations and Constraints Associated with the Survey

Variable	Degree of Limitation	Potential Constraints on Survey Outcomes
Survey Scope	Partial	<p>The reconnaissance flora and vegetation survey was undertaken in accordance with EPA (Environmental Protection Authority, 2016) and was considered appropriate to support approvals applications.</p> <p>Targeted searching for flora of conservation significance was undertaken, however systematic searches were not feasible. Rather, targeted searching focussed on habitat suitable for P1 and P2 flora.</p> <p>A basic terrestrial vertebrate fauna survey was undertaken. The survey was completed in August, which is considered outside of the recommended season for reptiles, birds and mammals according to the EPA guidance (Environmental Protection Authority, 2020). Amphibian species that breed during autumn and winter are included in this timing, however none were recorded during the survey. The survey timing was considered a limitation for the basic terrestrial vertebrate fauna survey.</p>
Availability of Data	No	All data required to complete the scope of works including regional and local contextual information was available.
Site Access	No	The Survey Area was accessed by vehicle and on foot, except for the southern portion of Reserve 51970, which could not be accessed as this property was fenced. This comprised a paddock with horses, and it was surveyed from the fence line. It was not considered to be a limitation.
Survey Intensity and Resources	No	<p>Twelve relevés were sampled across the Survey Area. An additional 51 mapping notes were undertaken to aid vegetation mapping and delineation.</p> <p>Given the size of the Survey Area, it was not feasible to systematically search the Survey Area. Additional flora species, and populations of conservation significant flora species and weed species may be recorded with additional survey effort.</p> <p>Sufficient time was allocated to the flora and vegetation survey, given the size and complexity of the Survey Area, and the expected level of survey intensity.</p> <p>The survey effort was considered adequate to assess the flora and vegetation values of the Survey Area and provide information required to support approvals applications.</p> <p>A total of 19 fauna habitat assessments were completed during the survey. A detailed or targeted survey may yield additional fauna species.</p>

Variable	Degree of Limitation	Potential Constraints on Survey Outcomes
Experience	No	<p>The flora, vegetation and fauna survey was undertaken by Principal Botanist Ben Eckermann, Senior Botanist Jason Webb, and Ecologist Bridget Duncan. The team has over 20 years' experience conducting surveys of similar scope throughout Western Australia.</p> <p>Identification of flora collections was completed by experienced taxonomist Pierre-Louis de Kock at the WAH. Relevant WAH specialists were consulted for difficult specimens, and any specimens with novel characteristics were submitted to the WAH for formal identification (accessions 9180 and 9184). Identifications were undertaken by WAH taxonomist Michael Hislop.</p>
Timing, weather, season	<p>Not a limitation for the flora and vegetation survey</p> <p>A partial limitation for the fauna survey</p>	<p>The recommended primary survey period for flora and vegetation surveys for the region as per the EPA Technical Guidance occurs 6 – 8 weeks post wet season (March – June).</p> <p>The survey was completed in August, which is outside of the recommended primary survey period. However, many flora taxa were still in flower and could be confidently identified. Therefore, the timing was not considered a limitation for the flora and vegetation survey.</p> <p>The timing was considered outside of the recommended season for reptiles, birds and mammals according to the EPA guidance (Environmental Protection Authority, 2020). The main objective of a basic fauna survey is to delineate fauna habitat values, which is based on vegetation mapping. For these reasons, the timing was considered a partial limitation for the fauna vertebrate terrestrial fauna survey.</p>
Life Forms Sampled	No	<p>The Survey Area was traversed by vehicle and on foot and representative sites of all remnant vegetation was sampled. All flora species encountered within the Survey Area were recorded.</p> <p>A total of 257 vascular flora taxa were recorded from the Survey Area, comprising 94.6% native flora taxa and 5.4% introduced flora taxa.</p> <p>Of the 257 flora taxa recorded, four taxa (1.6%), could not be identified to species level because they were sterile at the time of the survey. This was not considered a constraint as it represented a small portion of the flora sampled.</p> <p>None of the unknown flora taxa collected were analogous to Priority flora taxa identified by the database searches as likely to occur within the Survey Area, however one unconfirmed flora specimen was considered a potential novel taxon.</p> <p>All vertebrate fauna species were readily identified in the field.</p>

Variable	Degree of Limitation	Potential Constraints on Survey Outcomes
Mapping Reliability	Partial	<p>Mapping reliability ranges from high where the area was traversed on foot, to medium and low where the area was not traversed or could not be accessed.</p> <p>Vegetation types were described and mapped based on relevé data and additional mapping notes taken during the field survey. The southern portion of Reserve 51970 could not be accessed due to it being a fenced private property. Two vegetation types (H3 and P7) were described on the basis of mapping notes as no relevés were established in these units in the field. This was not considered to be a limitation for a reconnaissance flora and vegetation survey.</p> <p>High resolution aerial mapping current at the time of the survey was used to differentiate vegetation at a scale of 1:5,000.</p> <p>Fauna habitat mapping was based largely on vegetation mapping and there were no further constraints on mapping reliability.</p>
Disturbances (fire, flood etc.)	No	<p>Areas of disturbance associated with access tracks, motorbike tracks and weeds were recorded but were not a constraint on the results of the survey.</p>
Completeness	No	<p>The survey was considered complete for a reconnaissance flora and vegetation survey, and all vegetation types were surveyed and delineated within the Survey Area.</p> <p>The survey was considered complete for a basic terrestrial vertebrate fauna survey and a minimum of one fauna habitat assessment was completed for each habitat type.</p>

4.2 Flora and Vegetation

4.2.1 Literature Review

The key findings of the flora and vegetation reports reviewed are summarised in Appendix A.

4.2.2 Database Searches

Database searches identified 24 conservation significant flora species occurring within 40 km of the Survey Area (Figure 7, Appendix B), comprising:

- No Threatened species
- One Priority 1 species
- Eleven Priority 2 species
- Ten Priority 3 species
- Two Priority 4 species.

One additional species (*Owenia acidula*, P3) was identified within 2 km by the literature review (Appendix A).

No State or Commonwealth listed TECs or State listed PECs were identified within the Survey Area by the database searches. Two State listed TECs occur within 100 km of the Survey Area (Department of Biodiversity Conservation and Attractions, 2021c) (Figure 8):

- Cape Range Remipede Community (Bundera Sinkhole) (Critically Endangered) – 61 km southwest of Lot 550
- Camerons Cave Troglobitic Community (Critically Endangered) – 690 m south of Lot 505.

4.2.3 Likelihood of Occurrence

The pre-survey likelihood of occurrence assessment identified that of the 24 conservation significant flora species identified by the database searches:

- None had previously been recorded within the Survey Area
- Fifteen were considered to have a high likelihood of occurrence
- Five were considered to have a medium likelihood of occurrence
- Four were considered to have a low likelihood of occurrence.

Following the survey, the likelihood of occurrence was re-evaluated and identified that of the 24 conservation significant flora species identified by the database searches:

- Eight were recorded within the Survey Area
- Seven were considered to have a high likelihood of occurrence
- Four were considered to have a medium likelihood of occurrence
- Five were considered to have a low likelihood of occurrence.

The likelihood of occurrence assessment is provided in Appendix C.

4.2.4 Flora Composition

The survey recorded a total of 257 taxa from 153 genera across 58 families (Appendix D). The dominant families were Fabaceae (38 taxa), Poaceae (37 taxa) and Malvaceae (23 taxa). The most dominant genus was Acacia (11 taxa).

4.2.5 Flora of Conservation Significance

4.2.5.1 Threatened or Priority Flora

No Threatened flora species pursuant to the EPBC Act 1999 and/or gazetted as Threatened pursuant to the BC Act 2016 were recorded during the survey.

Eight Priority flora taxa as listed by DBCA were recorded within the Survey Area (Table 7, Figure 9), comprising:

- Three Priority 2 taxa
- Four Priority 3 taxa
- One Priority 4 taxon.

Copies of the Threatened and Priority Flora Report forms submitted to DBCA are provided in Appendix F. A summary of the conservation significant flora recorded within the Survey Area is detailed in Table 7, with each taxon described below.

Table 7: Flora of Conservation Significance within the Survey Area

Taxon (status)	Number of Individuals	Habitat within the Survey Area (Flora site)	Location within the Survey Area		
			Lot 284	Lot 550	Reserve 51970
Priority 2					
<i>Acanthocarpus rupestris</i>	5	Opportunistically recorded in drainage lines		+	
<i>Harnieria kempeana</i> subsp. <i>rhadinophylla</i>	36	Drainage lines with brown-red clay loam sand soils (HER09 and opportunistically)		+	
<i>Tinospora esiangkara</i>	27	Opportunistically recorded in drainage lines and sandy plains	+	+	
Priority 3					
<i>Acacia alexandri</i>	542	Recorded in drainage lines growing on brown-red sandy clay loam (HER08, HER09 and opportunistically)		+	
<i>Corchorus congener</i>	2	Undulating plains with light brown and red clay loam sand over limestone (HER05) and red sandy plains with recemented limestone (HER11)	+		+
<i>Eremophila forrestii</i> subsp. <i>capensis</i>	462	Hilltops and rises with brown-red clay sandy loam soils (HER03, HER10 and opportunistically)		+	+
<i>Grevillea calcicola</i>	4	Drainage lines with brown-red clay loam sand soils (HER09) and opportunistically recorded in rocky limestone gorges		+	
Priority 4					
<i>Brachychiton obtusilobus</i>	26	Opportunistically recorded in rocky limestone gorges		+	

***Acanthocarpus rupestris* (P2)**

Acanthocarpus rupestris (P2) is a rhizomatous, tufted perennial herb to 0.5 m tall that flowers between May and June. The taxon occurs on red sand and on limestone (Western Australian Herbarium, 2021). The WAH has eight specimens lodged with records on the Cape Range peninsula and from Shark Bay (Western Australian Herbarium, 2021).

A total of five individuals of *Acanthocarpus rupestris* (P2) (Plate 1) were recorded within the Survey Area in vegetation type D1, which is described as a limestone drainage line with *Corymbia hamersleyana* isolated trees, various *Acacia* spp. and *Triodia epactia* hummock grasses.



Plate 1: *Acanthocarpus rupestris* (P2) specimen collected from the Survey Area.

***Harnieria kempeana* subsp. *rhadinophylla* (P2)**

Harnieria kempeana subsp. *rhadinophylla* (P2) is an erect or sprawling, spreading, straggly shrub to 1 m tall that flowers between May and September. The taxon occurs on calcareous loam amongst limestone rocks and in creek banks. The WAH has six specimens lodged that are spatially restricted around Exmouth and within the Cape Range National Park.

A total of 36 individuals of *Harnieria kempeana* subsp. *rhadinophylla* (P2) (Plate 2) were recorded within the Survey Area in vegetation type H3. The taxon occurred on limestone rocks along a drainage line and on mid-slopes. *Harnieria kempeana* subsp. *rhadinophylla* (P2) was growing in association with *Acacia* and *Senna* species.



Plate 2: *Harnieria kempeana* subsp. *rhadinophylla* (P2) habitat (left) and plant (right).

***Tinospora esiangkara* (P2)**

Tinospora esiangkara (P2) is a climber to 2 m tall characterised by large stems with brown, flaky bark. *Tinospora esiangkara* (P2) flowers in July and occurs on pebbly orange-brown calcareous loam on limestone outcrops or ridges near creek banks. The WAH has eight specimens lodged with distribution restricted to the Cape Range peninsula.

A total of 27 individuals of *Tinospora esiangkara* (P2) (Plate 3) were recorded within the Survey Area in vegetation types D1, H3 and P5. The taxon was growing in drainage lines among limestone rocks, on hill slopes and on plains. *Tinospora esiangkara* (P2) was recorded in association with *Corymbia hamersleyana*, *Acacia* spp. and *Melaleuca cardiophylla* shrubs, and *Triodia epactia* hummock grasses.



Plate 3: *Tinospora esiangkara* (P2) habitat (left) and leaves (right).

***Acacia alexandri* (P3)**

Acacia alexandri (P3) is an open or moderately dense, sometimes wispy shrub 1.5 to 3 m tall that flowers in June or between August to September. *Acacia alexandri* (P3) occurs on limestone in stony creeks or steep rocky slopes (Western Australian Herbarium, 2021). The WAH has 24 specimens lodged, with records spatially restricted to the Cape Range peninsula (Western Australian Herbarium, 2021).

More than 500 individuals of *Acacia alexandri* (P3) (Plate 4) were recorded within the Survey Area in vegetation types D1, H2 and H3. The taxon was growing in stony drainage lines and associated limestone hillslopes. *Acacia alexandri* (P3) was recorded growing in association with various *Acacia* and *Triodia* species.



Plate 4: *Acacia alexandri* (P3) habitat (left), leaves and flowers (right).

***Corchorus congener* (P3)**

Corchorus congener (P3) is a spreading shrub to 0.6 m tall that flowers between April and June or August and November. The taxon grows in sand and red sandy loam with limestone on sand dunes and plains. The WAH has 24 specimens lodged, which are distributed across the Carnarvon and Pilbara bioregions (Western Australian Herbarium, 2021).

Two individuals of *Corchorus congener* (P3) (Plate 5) were recorded within the Survey Area in vegetation types P4 and P5, which are described as *Acacia* spp. shrublands over *Triodia epactia* hummock grasslands. Additionally, *Corchorus congener* (P3) was growing in association with various tussock grasses and herbs.



Plate 5: *Corchorus congener* (P3) specimen collected from the Survey Area.

***Eremophila forrestii* subsp. *capensis* (P3)**

Eremophila forrestii subsp. *capensis* (P3) is a sparsely to much-branched shrub to 1.4 m tall that grows on brown rocky soils over limestone on ridges. The WAH has 19 specimens lodged from the Cape Range peninsula.

More than 400 individuals of *Eremophila forrestii* subsp. *capensis* (P3) (Plate 6) were recorded within the Survey Area in vegetation types D1, H1, H2 and H3. The taxon occurred on mid-slopes, hills and gorges on limestone rocks. *Eremophila forrestii* subsp. *capensis* (P3) was growing in association with various *Acacia* and *Triodia* species.



Plate 6: *Eremophila forrestii* subsp. *capensis* (P3) habitat (left), leaves and flower (right).

***Grevillea calcicola* (P3)**

Grevillea calcicola (P3) is a small straggly tree or shrub with several stems to 4 m tall. The taxon flowers in May or between July and August and occurs on limestone hilltops. The WAH has 18 specimens lodged with distribution restricted to the Cape Range peninsula (Western Australian Herbarium, 2021).

Four individuals of *Grevillea calcicola* (P3) (Plate 7) were recorded within the Survey Area in vegetation types D1 and H3. The taxon was growing in association with various *Acacia* species and *Triodia epactia*.



Plate 7: *Grevillea calcicola* (P3) specimen collected within the Survey Area.

***Brachychiton obtusilobus* (P4)**

Brachychiton obtusilobus (P4) is a tree 3.5 to 6 m tall that flowers between August and September. The taxon occurs on skeletal soils in rocky limestone ranges, gorges and occasionally

on sandplains (Western Australian Herbarium, 2021). The WAH has 15 specimens lodged with records distributed along the Cape Range peninsula (Western Australian Herbarium, 2021).

A total of 26 individuals of *Brachychiton obtusilobus* (P4) (Plate 8) were recorded within the Survey Area in vegetation types D1, H2 and H3. The taxon was growing in gorges and limestone breakaways in association with *Ficus brachypoda*.



Plate 8: *Brachychiton obtusilobus* (P4) habitat (left), and leaf (right).

4.2.5.2 Flora of Other Conservation Significance

Flora may be considered of other conservation significance if it represents a range extension, novel taxon, species that play a keystone role in a community, has relic status, is locally endemic, or represents the extent of a species range.

Of the total vascular flora of the Survey Area, 32 taxa may be considered flora of other conservation significance (Figure 9). Of these, 31 represent range extensions of the species distribution (50 km from known location, Appendix D), and one is a potentially novel taxon, which is described below.

Of the 31 taxa representing range extensions, 11 were confirmed by a taxonomist through identification of a specimen. The remaining 20 taxa were identified in the field.

***Sida* sp. Nov**

This taxon was identified as *Sida* sp. Pindar (A. Mitchell 3585), given its resemblance. However, upon further examination, it was noted to have different leaf shape and indumentum. Mike Hislop of the WAH has noted these features are likely to represent an unrecognised taxon, however fruiting material would be required to further investigate this taxon (M. Hislop, pers. comm., 11 November 2021).

Three individuals of *Sida* sp. Nov were recorded from one location in the Survey Area, within Lot 550. The plants were growing on a limestone hilltop of Excellent vegetation condition. *Sida* sp. Nov was recorded in association with *Acacia bivenosa*, *Melaleuca cardiophylla* and *Triodia glabra*.

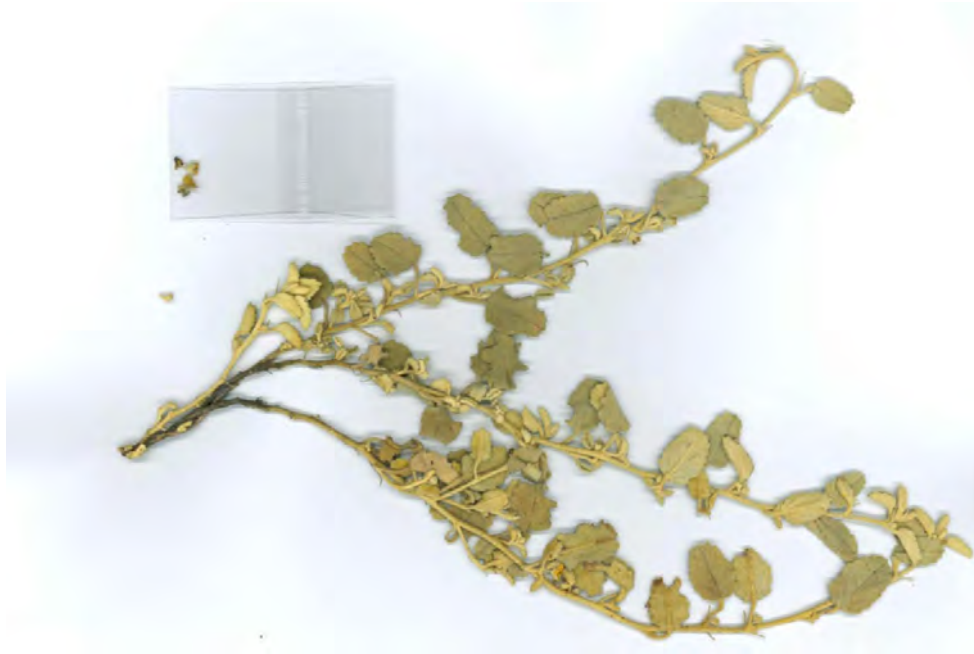


Plate 9: *Sida* sp. Nov specimen collected within the Survey Area.

4.2.6 Introduced Flora

A total of 14 introduced taxa were recorded within the Survey Area, representing 5.4% of the total taxa recorded (Table 8, Figure 10).

One taxon, **Crotalaria incana* subsp. *incana*, is listed as a Declared Pest at the species level under the BAM Act (Department of Primary Industries and Regional Development, 2021).

Two taxa, **Flaveria trinervia* and **Rumex vesicarius*, are unlisted organisms, which are prohibited entry into Western Australia.

No taxa were listed as WoNS (Department of Agriculture Water and the Environment, 2021b).

Table 8: Introduced Flora Species within the Survey Area

Species	Common Name	Status under BAM Act
<i>*Aerva javanica</i>	Kapok Bush	Permitted – s11
<i>*Asphodelus fistulosus</i>	Onion Weed	Permitted – s11
<i>*Bidens bipinnata</i>	Bipinnate Beggartick	Permitted – s11
<i>*Cenchrus ciliaris</i>	Buffel Grass	Permitted – s11
<i>*Cenchrus setiger</i>	Birdwood Grass	Permitted – s11
<i>*Chloris pumilio</i>	-	Permitted – s11
<i>*Crotalaria incana</i> subsp. <i>incana</i>	Woolly Rattlepod	Declared Pest, Prohibited - s12 at the species level
<i>*Datura leichhardtii</i> subsp. <i>leichhardtii</i>	Native Thornapple	Permitted – s11 at the species level
<i>*Flaveria trinervia</i>	Speedy Weed	Unlisted - s14
<i>*Malvastrum americanum</i>	Spiked Malvastrum	Permitted – s11

Species	Common Name	Status under BAM Act
* <i>Rumex vesicarius</i>	Ruby Dock	Unlisted - s14
* <i>Setaria verticillata</i>	Whorled Pigeon Grass	Permitted – s11
* <i>Sigesbeckia orientalis</i>	Indian Weed	Permitted – s11
* <i>Sonchus oleraceus</i>	Common Sowthistle	Permitted – s11

4.2.7 Unconfirmed Flora

Four specimens (1.6% of the taxa recorded) could not be identified to species level because the taxa were sterile at the time of the survey. All but one of these (Herb sp.) have been assigned a confirmed genus and one (*Thysanotus ?exfimbriatus*) has been tentatively identified to species level.

Two of the unconfirmed flora taxa, *Angianthus* sp. and Herb sp., may represent duplicates of taxa that were confirmed within the Survey Area. One of the unconfirmed flora taxa, *Sida* sp. Nov, was considered a species of conservation interest (Section 4.2.5.2).

None of the unconfirmed flora taxa were analogous to Priority flora taxa identified by the database searches.

4.2.8 Vegetation Types

Eleven vegetation types were described and mapped across three broad landforms (drainage lines; hills; and plains) within the Survey Area (Table 9, Figure 11):

- Three vegetation types were recorded within Lot 284
- Six vegetation types were recorded within Lot 505
- Four vegetation types were recorded within Lot 550
- Five vegetation types were recorded within Reserve 51970.

Detailed site sheets for each quadrat are provided in Appendix F.



4.2.9 Vegetation Condition



Vegetation condition within the Survey Area ranged from Excellent to Degraded, with the majority (57.1%) considered to be in Very Good condition (Figure 12):

- Excellent (102.0 ha / 19.0%)
- Very Good (306.1 ha / 57.1%)
- Good (43.0 ha / 8.0%)
- Poor (62.9 ha / 11.7%)
- Degraded (22.1 ha / 4.1%).



Evidence of disturbance included vehicle access tracks, motorbike tracks, weeds, and litter.



Table 9: Vegetation Types Occurring within the Survey Area


Vegetation Unit and Description*	Total Area, Proportion of the Survey Area	Sites	Vegetation Condition	Photograph
Drainage lines				
D1: <i>Corymbia hamersleyana</i> (and/or <i>Eucalyptus xerothermica</i>) low isolated trees to low open woodland over <i>Acacia alexandri</i> , <i>Acacia tetragonophylla</i> and <i>Acacia bivenosa</i> tall open shrubland to tall shrubland over <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>Tephrosia rosea</i> var. <i>clementii</i> and <i>Senna ferraria</i> low sparse shrubland over <i>Triodia epactia</i> sparse hummock grassland to open hummock grassland with <i>Dichanthium sericeum</i> subsp. <i>humilius</i> isolated tussock grasses	17.0 ha 3.2%	HER08 HER09	Good to Excellent	
Hills				
H1: <i>Corymbia hamersleyana</i> low open woodland over <i>Senna glutinosa</i> subsp. <i>pruinosa</i> and <i>Acacia bivenosa</i> mid open shrubland over <i>Ptilotus obovatus</i> and <i>Corchorus crozophorifolius</i> low open shrubland over <i>Triodia epactia</i> open hummock grassland with * <i>Cenchrus ciliaris</i> open tussock grassland	3.4 ha 0.6%	HER03	Good	

Vegetation Unit and Description*	Total Area, Proportion of the Survey Area	Sites	Vegetation Condition	Photograph
<p>H2: <i>Acacia bivenosa</i> tall sparse shrubland over <i>Melaleuca cardiophylla</i> mid sparse shrubland over <i>Triodia glabra</i> (and/or <i>Triodia wiseana</i>) open hummock grassland to hummock grassland with <i>Goodenia tenuiloba</i>, <i>Haloragis gossei</i> var. <i>inflata</i> isolated herbs to sparse herbland</p>	<p>156.6 ha 29.2%</p>	<p>HER06 HER07 HER10</p>	<p>Very Good to Excellent</p>	
<p>H3: <i>Melaleuca cardiophylla</i>, <i>Acacia alexandri</i> and <i>Acacia arida</i> tall open shrubland over <i>Triodia epactia</i> (and/or <i>Triodia wiseana</i>) open hummock grassland</p>	<p>144.4 ha 26.9%</p>	<p>Mapping notes</p>	<p>Very Good to Excellent</p>	

Vegetation Unit and Description*	Total Area, Proportion of the Survey Area	Sites	Vegetation Condition	Photograph
Plains				
<p>P1: <i>Corymbia hamersleyana</i> low open woodland over <i>Acacia tetragonophylla</i> tall open shrubland over *<i>Cenchrus ciliaris</i> tussock grassland with <i>Cullen cinereum</i>, <i>Swainsona pterostylis</i> and <i>Erodium cygnorum</i> sparse herbland</p>	<p>4.2 ha 0.8%</p>	<p>HER01</p>	<p>Poor to Very Good</p>	
<p>P2: <i>Acacia synchronicia</i> tall open shrubland over *<i>Cenchrus ciliaris</i> closed tussock grassland with <i>Salsola australis</i> and <i>Ptilotus xerophilus</i> isolated herbs</p>	<p>37.4 ha 7.0%</p>	<p>HER02</p>	<p>Degraded to Good</p>	

Vegetation Unit and Description*	Total Area, Proportion of the Survey Area	Sites	Vegetation Condition	Photograph
<p>P3: <i>Corymbia hamersleyana</i> low isolated trees over <i>Triodia epactia</i> isolated hummock grasses with <i>*Cenchrus ciliaris</i> tussock grassland and <i>Swainsona pterostylis</i> and mixed herbs open herbland</p>	<p>36.5 ha 6.8%</p>	<p>HER04</p>	<p>Degraded to Very Good</p>	
<p>P4: <i>Acacia synchronicia</i>, <i>Acacia bivenosa</i> and <i>Eremophila longifolia</i> tall open shrubland over <i>Triodia epactia</i> open hummock grassland with <i>*Cenchrus ciliaris</i> sparse tussock grassland and <i>Swainsona pterostylis</i> sparse herbland</p>	<p>10.2 ha 1.9%</p>	<p>HER05</p>	<p>Poor to Good</p>	

Vegetation Unit and Description*	Total Area, Proportion of the Survey Area	Sites	Vegetation Condition	Photograph
<p>P5: <i>Acacia tetragonophylla</i>, <i>Exocarpos aphyllus</i> and <i>Acacia bivenosa</i> low to mid sparse shrubland over <i>Ptilotus obovatus</i> low sparse shrubland over <i>Triodia epactia</i> (and/or <i>Triodia glabra</i>) open hummock grassland with *<i>Cenchrus ciliaris</i> and <i>Eriachne mucronata</i> sparse tussock grassland and <i>Goodenia tenuiloba</i> and <i>Ptilotus helipteroides</i> sparse herbland</p>	<p>97.1 ha 18.1%</p>	<p>HER11</p>	<p>Poor to Very Good</p>	
<p>P6: <i>Atriplex bunburyana</i>, <i>Frankenia pauciflora</i> and <i>Surreya diandra</i> low open shrubland over *<i>Cenchrus ciliaris</i> sparse tussock grassland with <i>Sclerolaena recurvicuspis</i> isolated herbs</p>	<p>0.1 ha <0.1%</p>	<p>HER12</p>	<p>Good</p>	

Vegetation Unit and Description*	Total Area, Proportion of the Survey Area	Sites	Vegetation Condition	Photograph
<p>P7: <i>Acacia synchronica</i>, <i>Acacia tetragonophylla</i> and <i>Stylobasium spathulatum</i> open shrubland over <i>Frankenia pauciflora</i>, <i>Sclerolaena diacantha</i> and <i>Atriplex bunburyana</i> low open shrubland over <i>Lawrenzia densiflora</i> and <i>Ptilotus exaltatus</i> herbland</p>	<p>29.0 ha 5.4%</p>	<p>Mapping notes</p>	<p>Poor to Very Good</p>	

*Brackets indicate species that may or may not be present, but were observed as dominant at some of the sites and mapping notes that make up the vegetation type

4.2.10 Vegetation of Conservation Significance

Threatened and Priority Ecological Communities

No vegetation considered representative of any TECs or PECs was recorded within the Survey Area.

Vegetation of Other Conservation Significance

Vegetation may be of significance for a range of reasons, other than a listing as a TEC or a PEC, including (Environmental Protection Authority, 2016):

- Vegetation extent being below a threshold level
- Scarcity
- Unusual species
- Novel combinations of species
- A role as a refuge
- A role as a key habitat for threatened species or large populations representing a significant proportion of the local to regional total population of a species
- Being representative of the range of a unit (particularly a good local and/or regional example of a unit in 'prime' habitat, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range); and/or
- A restricted distribution.

Out of the 11 vegetation types, 10 were considered locally significant as they supported Priority flora taxa, taxa representing range extensions, novel taxa, and/or due to their restricted distribution (Table 10).

Table 10: Locally Significant Vegetation Units in the Survey Area

Vegetation Type	Reasoning for Significance
D1	Supports <i>Acacia alexandri</i> [^] (P3), <i>Acanthocarpus rupestris</i> [^] (P2), <i>Brachychiton obtusilobus</i> [^] (P4), <i>Cassytha filiformis</i> [^] (RE), <i>Eremophila forrestii</i> subsp. <i>capensis</i> [^] (P3), <i>Eriachne tenuiculmis</i> ⁺ (RE), <i>Grevillea calcicola</i> [^] (P3), <i>Harnieria kempeana</i> subsp. <i>rhadinophylla</i> [^] (P2), <i>Paspalidium basicladum</i> ⁺ (RE), <i>Phyllanthus exilis</i> ⁺ (RE), <i>Polygala glaucifolia</i> [^] (RE), <i>Santalum lanceolatum</i> ⁺ (RE), <i>Stemodia viscosa</i> [^] (RE), and <i>Tinospora esiangkara</i> [^] (P2)
H1	Supports <i>Eremophila forrestii</i> subsp. <i>capensis</i> [^] (P3) and <i>Eremophila latrobei</i> subsp. <i>latrobei</i> [^] (RE). Vegetation unit H1 extends to the south of Reserve 51970 and therefore it is not considered to be locally restricted, despite its Survey Area cover being 0.6%
H2	Supports <i>Acacia alexandri</i> [^] (P3), <i>Brachychiton obtusilobus</i> [^] (P4), <i>Dactyloctenium radulans</i> ⁺ (RE), <i>Eremophila forrestii</i> subsp. <i>capensis</i> [^] (P3), <i>Euphorbia boophthona</i> ⁺ (RE), <i>Phyllanthus exilis</i> ⁺ (RE), <i>Polygala glaucifolia</i> [^] (RE), <i>Ptilotus auriculifolius</i> ⁺ (RE), <i>Sida</i> sp. <i>Nov</i> [^] (SOI) and <i>Tephrosia supina</i> [^] (RE)

Vegetation Type	Reasoning for Significance
H3	Supports <i>Acacia alexandri</i> [^] (P3), <i>Brachychiton obtusilobus</i> [^] (P4), <i>Eremophila forrestii</i> subsp. <i>capensis</i> [^] (P3), <i>Euphorbia australis</i> var. <i>subtomentosa</i> [^] (RE), <i>Grevillea calcicola</i> [^] (P3), <i>Harnieria kempeana</i> subsp. <i>rhadinophylla</i> [^] (P2), <i>Sesbania cannabina</i> ⁺ (RE), <i>Solanum horridum</i> ⁺ (RE), <i>Stemodia viscosa</i> [^] (RE), and <i>Tinospora esiangkara</i> [^] (P2)
P1	Supports <i>Cullen cinereum</i> [^] (RE). Vegetation unit P1 was restricted, covering 0.8% of the Survey Area. This vegetation type extends east and south of Reserve 51970, however these areas appear to be in Poor condition due to historical clearing, vehicle access tracks and proximity to urban dwellings. The extent of this vegetation type outside of the Survey Area appears to have been reduced due to disturbances. For these reasons, the vegetation unit is considered locally restricted
P2	Supports <i>Euphorbia boophthona</i> ⁺ (RE).
P3	Supports <i>Acacia colei</i> var. <i>colei</i> ⁺ (RE), <i>Cullen cinereum</i> [^] (RE), <i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i> ⁺ (RE), <i>Eremophila forrestii</i> subsp. <i>capensis</i> [^] (P3), <i>Heliotropium diversifolium</i> ⁺ (RE), <i>Heliotropium inexplicitum</i> ⁺ (RE), <i>Notoleptopus decaisnei</i> ⁺ (RE) and <i>Polygala glaucifolia</i> [^] (RE)
P4	Supports <i>Corchorus congener</i> [^] (P3), <i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i> ⁺ (RE), <i>Euphorbia boophthona</i> ⁺ (RE) and <i>Hibiscus sturtii</i> var. <i>grandiflorus</i> ⁺ (RE)
P5	Supports <i>Acacia sibilans</i> [^] (RE), <i>Corchorus congener</i> [^] (P3), <i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i> ⁺ (RE), <i>Euphorbia boophthona</i> ⁺ (RE), <i>Hakea chordophylla</i> ⁺ (RE), <i>Heliotropium inexplicitum</i> ⁺ (RE), <i>Lawrenzia densiflora</i> [^] (RE), <i>Polycarpaea corymbosa</i> var. <i>corymbosa</i> ⁺ (RE), <i>Polygala glaucifolia</i> [^] (RE), <i>Schizachyrium fragile</i> [^] (RE), <i>Senna glutinosa</i> subsp. <i>×luerssenii</i> ⁺ (RE), <i>Solanum horridum</i> ⁺ (RE), <i>Tephrosia supina</i> [^] (RE), <i>Tinospora esiangkara</i> [^] (P2) and <i>Yakirra australiensis</i> var. <i>australiensis</i> ⁺ (RE)
P6	Vegetation unit P6 was highly restricted as it covered less than 0.1% of the Survey Area. This vegetation type extends to the east of Lot 284 and therefore it is not considered to be locally restricted
P7	Supports <i>Lawrenzia densiflora</i> [^] (RE)

[^] Indicates the taxon was collected and identified by a taxonomist of the WAH

⁺ Indicated the taxon was identified in the field

4.2.11 Groundwater Dependent Ecosystems

Most vegetation in the Survey Area comprised xerophytic species, whose dependence on groundwater is virtually negligible. One vadophyte or facultative phreatophyte, *Eucalyptus xerothermica*, was recorded from vegetation type D1. Vadophytes rely on sources of soil moisture such as precipitation, and their dependence on groundwater fluctuates from low to moderate (Onshore Environmental, 2013; Rio Tinto Iron Ore, 2018). *Eucalyptus xerothermica* is drought tolerant but susceptible to decline when groundwater becomes limiting (Muir Environmental, 1995). Occurrence alone does not confirm the presence of a ground water dependent ecosystem (GDE), rather further investigation on groundwater levels will determine whether vegetation type D1 is representative of a potential GDE.

4.3 Vertebrate Fauna

4.3.1 Literature Review

The key findings of the literature review are summarised in Appendix A.

4.3.2 Database Searches

Database searches identified 67 conservation significant terrestrial vertebrate fauna species potentially occurring within the Survey Area, comprising:

- Sixty bird species
- Three mammal species
- Four reptile species
- No amphibian species.

The results of the DBCA Threatened and Priority Fauna database search are mapped in Figure 13. Database searches are displayed in their entirety in Appendix B.

DBCA records located in the vicinity of each Survey Area are displayed in Table 11.

Table 11: DBCA records located within (x) and within 1 km (+) of each Survey Area.

Taxa	Conservation Status		Survey Area			
	State	Federal	Lot 284	Lot 550	Lot 505	Reserve 51970
Terrestrial Vertebrate Fauna						
<i>Actitis hypoleucos</i> (Common Sandpiper)	IA	MI, MA				+
<i>Chlidonias leucopterus</i> (White-winged Black Tern)	IA	MI, MA				+
<i>Hydroprogne caspia</i> (Caspian Tern)	IA	MI, MA				+
<i>Pandion cristatus</i> (Eastern Osprey)	IA	MI, MA	+			+
<i>Petrogale lateralis lateralis</i> (Black-footed Rock-wallaby)	EN	EN		+		
<i>Phaethon rubricauda</i> (Red-tailed Tropicbird)	P4, IA	MI, MA			+	
<i>Thalasseus bergii</i> (Crested Tern)	IA	MI, MA				+
Invertebrate and Aquatic Fauna						
<i>Indohya damocles</i> (Cameron's Cave Pseudoscorpion)	CR				+	+
<i>Milyeringa veritas</i> (Cave Gudgeon, Blind Gudgeon)	VU	VU		x	+	+
<i>Stygiochiropus isolatus</i> (stygiochiropus millipede (Cape Range))	VU			+		
<i>Stygiochiropus peculiaris</i> (Cameron's Cave Millipede)	CR				+	+

4.3.3 Likelihood of Occurrence

The likelihood of occurrence assessment within the Survey Area for conservation significant fauna species identified by the databases searches found that:

- Three species had a high likelihood of occurrence
- Five species had a medium likelihood of occurrence
- Fifty-nine species had a low likelihood of occurrence.

The results of the likelihood of occurrence assessment are presented in Appendix G.

Species listed as Marine only under the EPBC Act, such as the Black Winged Stilt (*Himantopus himantopus*), Australian Pelican (*Pelecanus conspicillatus*), Rainbow Bee-eater (*Merops ornatus*) etc, as well as marine dependent species including whales, dolphins, turtles, and sea snakes have been excluded from the likelihood of occurrence list as there is no marine habitat present within the Survey Area.

Lot 284

No conservation significant fauna taxa were considered to have a high likelihood of occurrence in Lot 284.

Three fauna taxa were deemed to have a medium likelihood of occurrence in Lot 284:

- *Aprasia rostrata* (Ningaloo Worm Lizard)
- *Falco peregrinus* (Peregrine Falcon)
- *Lerista allochira* (Cape Range Slider).

Lot 550

Three fauna taxa were deemed to have a high likelihood of occurrence in Lot 550:

- *Diplodactylus capensis* (Cape Range Stone Gecko)
- *Glareola maldivarum* (Oriental Pratincole)
- *Petrogale lateralis lateralis* (Black-footed Rock-wallaby).

Three fauna taxa were deemed to have a medium likelihood of occurrence in Lot 550:

- *Charadrius veredus* (Oriental Plover)
- *Falco peregrinus* (Peregrine Falcon)
- *Rhinonicteris aurantia* (Pilbara Leaf-nosed Bat).

Lot 505

One fauna taxon, *Glareola maldivarum* (Oriental Pratincole), was deemed to have a high likelihood of occurrence in Lot 505.

Two fauna taxa were deemed to have a medium likelihood of occurrence in Lot 505:

- *Charadrius veredus* (Oriental Plover)
- *Falco peregrinus* (Peregrine Falcon).

Reserve 51970

One fauna taxon, *Glareola maldivarum* (Oriental Pratincole), was deemed to have a high likelihood of occurrence in Reserve 51970.

Two fauna taxa were deemed to have a medium likelihood of occurrence in Reserve 51970:

- *Charadrius veredus* (Oriental Plover)
- *Falco peregrinus* (Peregrine Falcon).

4.3.4 Fauna Habitat

Seven fauna habitats were identified and mapped within the Survey Area (Figure 14). Habitat condition varied from High quality to Disturbed throughout the Survey Area, with the most prolific disturbances being weeds, litter and vehicle tracks.

A description, extent within the Survey Area and a representative photo is provided for each fauna habitat in Table 12. Small discrepancies in fauna habitat extents (i.e., not adding up to the exact area extent of the Survey Area) are due to rounding. Fauna habitat mapping is presented in Figure 14 and site sheets for each habitat assessment are shown in Appendix H.

4.3.4.1 Lot 284

Two fauna habitats were identified and mapped within the Survey Area. Habitat condition was of High quality for the majority of the Survey Area, however, the eastern side had a significant patch of Good and Disturbed quality habitat. Disturbances included weeds, litter and vehicle tracks.

4.3.4.2 Lot 550

Three fauna habitats were identified and mapped within the Survey Area. Habitat was of High quality throughout the majority of the Survey Area. A small patch of Good and Disturbed habitat existed in the northeast corner of the Survey Area, disturbances in this area included weeds, litter and vehicle tracks.



4.3.4.3 Lot 505



Five fauna habitats were identified and mapped within the Survey Area. Habitat condition was of High quality for the majority of the Survey Area, however, the eastern side, closest to existing buildings and infrastructure was of Good and Disturbed quality. Disturbances included weeds, litter and vehicle tracks.



4.3.4.4 Reserve 51970

Four fauna habitats were identified and mapped within the Survey Area. Habitat condition was Disturbed for the majority of the Survey Area, with an area of Good quality to the southwest. Disturbances included weeds, litter and vehicle tracks.

Table 12: Fauna Habitat Type Descriptions with the Survey Area

Fauna Habitat	Total Area, Proportion of the Survey Area	Habitat Description	Representative Photo
Drainage line/Creek	17.0 ha 3.2%	<p>Calcrete and limestone slopes and gullies with thin soils, shallow bedrock and exposed rock faces. Vegetation consists of isolated <i>Corymbia hamersleyana</i> and/or <i>Eucalyptus xerothermica</i> trees over <i>Acacia</i> shrubland and <i>Triodia epactia</i> hummock grassland.</p> <p>Trees, shrubs and grasses provide shelter, refuge and nesting opportunities for birds, mammals, and reptiles. Microhabitats include <i>Triodia</i> hummocks and rock slopes with abundant crevices that provide shelter for a variety of species. Small rock faces containing shallow overhangs were occasionally observed.</p>	
Hills (Open Woodland over Tussock Grassland)	3.4 ha 0.6%	<p>Calcrete and limestone hills with <i>Corymbia hamersleyana</i> open woodland over <i>Acacia</i> and <i>Senna</i> shrubland, <i>Triodia epactia</i> hummock grassland and *<i>Cenchrus ciliaris</i> tussock grassland.</p> <p>Trees, shrubs and grasses provide shelter, refuge and nesting opportunities for birds, mammals, and reptiles. Microhabitats include <i>Triodia</i> hummocks and rock crevices that provide shelter for a variety of species.</p>	

Fauna Habitat	Total Area, Proportion of the Survey Area	Habitat Description	Representative Photo
Hills (Shrubland over Hummock Grassland)	301.0 ha 56.2%	<p>Calcrete and limestone hills with <i>Melaleuca cardiophylla</i> and <i>Acacia</i> shrubland over <i>Triodia epactia</i>, <i>Triodia glabra</i> and/or <i>Triodia wiseana</i> hummock grassland.</p> <p>Shrubs and grasses provide shelter, refuge and nesting opportunities for birds, mammals, and reptiles. Microhabitats include <i>Triodia</i> hummocks and rock crevices that provide shelter for a variety of species.</p>	
Plains (Woodland)	40.7 ha 7.6%	<p><i>Corymbia hamersleyana</i> open woodland over <i>Acacia</i> shrubland or <i>Triodia epactia</i> isolated hummocks, *<i>Cenchrus ciliaris</i> tussock grassland and mixed herbs.</p> <p>Trees, shrubs and grasses provide shelter, refuge and nesting opportunities for birds, mammals, and reptiles. Microhabitats include <i>Triodia</i> hummocks that provide shelter for a variety of small fauna species.</p>	

Fauna Habitat	Total Area, Proportion of the Survey Area	Habitat Description	Representative Photo
Plains (Shrubland over Tussock Grassland)	107.2 ha 20.0%	<p><i>Acacia synchronicia</i> shrubland over *<i>Cenchrus ciliaris</i> tussock grassland.</p> <p>Shrubs and grasses provide shelter, refuge and nesting opportunities for birds, mammals, and reptiles.</p>	
Plains (Shrubland over Hummock Grassland)	37.4 ha 7.0%	<p><i>Acacia</i> shrubland over <i>Triodia epactia</i> and/or <i>Triodia glabra</i> hummock grassland and *<i>Cenchrus ciliaris</i> tussock grassland.</p> <p>Shrubs and grasses provide shelter, refuge and nesting opportunities for birds, mammals, and reptiles. Microhabitats include <i>Triodia</i> hummocks that provide shelter for a variety of small fauna species.</p>	

Fauna Habitat	Total Area, Proportion of the Survey Area	Habitat Description	Representative Photo
Plains (Shrubland with <i>Atriplex</i> and <i>Frankenia</i>)	29.1 ha 5.4%	<p>Shrublands containing <i>Atriplex</i>, <i>Frankenia</i> and <i>Sclerolaena</i>, some <i>Acacia</i> shrubs and *<i>Cenchrus ciliaris</i> tussock grassland in parts.</p> <p>Shrubs and grasses provide shelter, refuge and nesting opportunities for birds, mammals, and reptiles.</p>	

4.3.5 Fauna Records

The terrestrial vertebrate fauna survey recorded a total of 20 fauna taxa from 15 families, summarised in Table 13. A detailed vertebrate fauna inventory is presented in Appendix I.

Table 13: Overview of Vertebrate Fauna Taxa Recorded

Fauna group	Number of taxa	Number of families
Birds	15	12
Mammals	3	2
Reptiles	3	2
Amphibians	0	0
Total	20	15

4.3.5.1 Lot 284

The terrestrial vertebrate fauna survey recorded a total of eight fauna taxa from seven families within Lot 284. The inventory of fauna recorded is summarised in Table 14.

Table 14: Overview of Vertebrate Fauna Taxa Recorded (Lot 284)

Family	Scientific Name	Common Name	Recording Method
Cracticidae	<i>Cracticus nigrogularis</i>	Pied Butcherbird	Sighting
	<i>Gymnorhina tibicen</i>	Australian Magpie	Sighting
Oreoicidae	<i>Oreoica gutturalis</i>	Crested Bellbird	Call
Estrildidae	<i>Taeniopygia guttata</i>	Zebra Finch	Sighting
Meliphagidae	<i>Gavicalis virescens</i>	Singing Honeyeater	Sighting
Phasianidae	<i>Coturnix ypsilophora</i>	Brown Quail	Sighting
Macropodidae	<i>Osphranter</i> sp.	N/A	Scat
Varanidae	<i>Varanus</i> sp.	N/A	Diggings

4.3.5.2 Lot 550

The terrestrial vertebrate fauna survey recorded a total of nine fauna taxa from five families within Lot 550. The inventory of fauna recorded is summarised in Table 15.

Table 15: Overview of Vertebrate Fauna Taxa Recorded (Lot 550)

Family	Scientific Name	Common Name	Recording Method
Accipitridae	<i>Haliastur sphenurus</i>	Whistling Kite	Call, sighting
Cacatuidae	<i>Cacatua sanguinea</i>	Little Corella	Sighting
	<i>Eolophus roseicapilla</i>	Galah	Sighting
Meliphagidae	<i>Gavicalis virescens</i>	Singing Honeyeater	Sighting

Family	Scientific Name	Common Name	Recording Method
Pomatostomidae	<i>Pomatostomus superciliosus</i>	White-browed Babbler	Call
Psittacidae	<i>Barnardius zonarius</i>	Australian Ringneck	Sighting
Macropodidae	<i>Osphranter robustus</i>	Euro	Sighting
	<i>Osphranter</i> sp.	N/A	Scat
Scincidae	<i>Ctenotus</i> sp.	N/A	Sighting

4.3.5.3 Lot 505

The terrestrial vertebrate fauna survey recorded a total of three fauna taxa from three families within Lot 505. The inventory of fauna recorded is summarised in Table 16.

Table 16: Overview of Vertebrate Fauna Taxa Recorded (Lot 505)

Family	Scientific Name	Common Name	Recording Method
Cacatuidae	<i>Eolophus roseicapilla</i>	Galah	Sighting
Columbidae	<i>Ocyphaps lophotes</i>	Crested Pigeon	Sighting
Varanidae	<i>Varanus giganteus</i>	Perentie	Sighting

4.3.5.4 Reserve 51970

The terrestrial vertebrate fauna survey recorded a total of three fauna taxa from three families within Reserve 51970. The inventory of fauna recorded is summarised in Table 17.

Table 17: Overview of Vertebrate Fauna Species Recorded (Reserve 51970)

Family	Scientific Name	Common Name	Recording Method
Equidae	<i>Equus ferus caballus</i>	Horse (Domesticated)	Sighting
Meliphagidae	<i>Gavicalis virescens</i>	Singing Honeyeater	Call
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark	Sighting

4.3.6 Conservation Significant Fauna

No fauna species of conservation significance (Threatened or Priority), or evidence of these species such as tracks, scats, nest, diggings, burrows or direct sightings were recorded within or directly surrounding the Survey Area.

5 Discussion

5.1 Flora and Vegetation

5.1.1 Flora Composition

The suite of flora taxa recorded during the survey is considered typical for the respective areas (Beard 1976) and aligns with the database search results obtained.

Rainfall recorded for the three months prior to the survey was considered within the expected range for the bioregion. Despite the survey being undertaken outside of the recommended primary survey period, many flora taxa were still in flower and could be confidently identified. Floristic diversity was considered high, however additional annual and ephemeral species may be recorded after significant rainfall.

5.1.2 Survey Adequacy

The Survey Area was sampled with 12 relevés and an additional 51 mapping notes. Of the 11 vegetation types defined, two (H3 and P7) were not sampled through relevés and were defined on the basis of mapping notes only; these two vegetation types were accessible on foot, and representative sites could be established with additional survey effort. The flora and vegetation survey effort was in accordance with the scope of works, and in accordance with EPA guidelines for a reconnaissance flora and vegetation survey in the Carnarvon bioregion (Environmental Protection Authority, 2016).

The inventory of vascular flora, and records of conservation significant flora and weed species was compiled using site data and opportunistic observations made while traversing between sites and during targeted searching within potential habitat. The entire Survey Area was not systematically searched, and therefore additional flora taxa, and records of conservation significant flora and weed species may be recorded with additional survey effort.

5.1.3 Flora of Conservation Significance

No Threatened flora species pursuant to the EPBC Act 1999 and/or gazetted as Threatened Flora pursuant to the BC Act 2016 were identified by the database searches or recorded within the Survey Area.

A total of eight Priority flora taxa were recorded within the Survey Area. None of the Priority flora recorded during the survey represented range extensions.

5.1.3.1 Flora of Other Conservation Significance

Thirty-one taxa recorded within the Survey Area represent potential range extensions of >50 km from a known record.

One taxon, *Sida* sp. Nov, recorded within the Survey Area is a potentially novel taxon. This taxon was not identified as conservation significant in the field and therefore it was not targeted throughout the survey. As a result, *Sida* sp. Nov was recorded at a single location within the Survey Area, and more individuals may be recorded with additional survey effort. Although this taxon is novel and carries no state listing, it should be treated as a conservation significant species until confirmed otherwise.

5.1.4 Likelihood of Occurrence

Of the 24 Priority flora identified by the database searches, eight were recorded from the Survey Area. Of the remaining 16 taxa, seven were considered to retain a high likelihood of occurrence:

- *Calandrinia* sp. Cape Range (F. Obbens FO 10/18) (P2) was recorded 6.7 km from the Survey Area, growing in red-brown sandy clay loam on skeletal soils between rocks over limestone. It is possible that this small and cryptic taxon would be present in the low hills between rock crevices.
- *Cucumis* sp. Barrow Island (D.W. Goodall 1264) (P2) is a herbaceous vine that grows on red sandy loams on sandplain swales, footslopes of basalt, limestone plateau and calcrete slopes. It was recorded 8.1 km from the Survey Area, and it is possible that this taxon would occur within the Survey Area, particularly in Lots 505 and 550.
- *Eremophila occidentalis* (P2) was recorded 11.8 km from the Survey Area. This taxon is a shrub to 1.5 m tall that flowers between August and September. It grows on orange or red-brown deep sands on limestone ranges, dunes and sandplains. It is possible that this shrub would occur within the Survey Area, particularly in Lot 284 and Reserve 51970.
- *Tephrosia* sp. North West Cape (G. Marsh 81) (P2) is a small herb with orange flowers that occurs on orange sands and red-brown clay loam on limestone outcrops and rocks. This taxon was recorded 1.6 km from the Survey Area, and it is possible that it would occur in the hills and gullies of the Survey Area, particularly in Lot 550.
- *Acacia startii* (P3) is a dense, rounded, much-branched shrub to 2 m high that flowers between July and August. It occurs on calcareous loam with limestone pebbles on stony hills and along watercourses. The taxon was recorded 10.9 km from the Survey Area. It is possible that this taxon would occur within the Survey Area in the drainage and hills landforms.
- *Phyllanthus fuernrohrii* (P3) was recorded 5.4 km from the Survey Area, growing in sand over limestone along a creek bank and on limestone cliffs. This taxon is a low shrub that flowers in February or May to September, and it may occur in the drainage and hills landforms of the Survey Area.
- *Stackhousia umbellata* (P3) is a spreading perennial herb to 0.7 m high that flowers between May and August. The WAH has a total of 21 records of *Stackhousia umbellata*, the nearest approximately 3.7 km from the Survey Area. This taxon grows on sandy soils on limestone, and it may occur across the Survey Area. All *Stackhousia* encountered within the Survey Area were checked, however were all identified as *Stackhousia* sp. Mid west coastal (D & B Bellairs 6561).

A further four taxa were considered to have a medium likelihood of occurrence due to presence of habitat and records within 50 km, and the remaining five were considered to have a low likelihood of occurring due to no habitat within the Survey Area, and/or very distant records. Given the floristic diversity of the drainage lines (vegetation type D1), there is a high likelihood that more species would be recorded with more intense surveys, including some of conservation significance.

5.1.5 Introduced Flora

Fourteen introduced taxa were recorded within the Survey Area (5.4% of recorded taxa); one is listed as a DP, and two are unlisted. The remaining introduced taxa have a legal status of Permitted – s11, and do not have an assigned control category.

Weed species richness and abundance was greatest on vehicle access tracks due to the area being used for recreational four-wheel driving and motorbike use. **Bidens bipinnata* was present in high abundance along every drainage channel surveyed, likely spread by rainfall and fauna. It is expected that any additional surveys and searches through the Survey Area would record more weed locations, particularly along drainage lines, vehicle access tracks and within Lot 284, which was partially accessed due to time constraints.

5.1.6 Vegetation Types

No vegetation representative of any TECs or PECs was recorded in the Survey Area.

Mapping reliability ranged from high in areas where flora sites and mapping notes were completed within intact vegetation, to moderate or low in areas that were not traversed, such as:

- The southern portion of Reserve 51970 was not able to be surveyed due to it being a fenced private property, therefore map notes were completed from the fence line
- Lot 284 was partially traversed due to time constraints; however, aerial imagery indicates the area having vegetation consistent with the mapping notes completed in the field.

Three broad landforms (drainage lines; hills; and plains) were recorded within the Survey Area. Vegetation within the Survey Area was representative of existing broad scale vegetation and soil and land system mapping for the area.

Drainage lines (D1)

This landform was located across Lots 505 and 550, with the majority being in the latter. Drainage lines comprised deep gullies in the central and western portion of Lot 550 and low lying creeklines in Lot 505 and the eastern portion of Lot 550. Drainage lines were characterised by isolated trees of *Corymbia hamersleyana* or *Eucalyptus xerothermica*, various *Acacia* and *Senna* shrubs, *Triodia epactia* hummock grasses, and *Dichanthium sericeum* subsp. *humilius* isolated tussock grasses. This landform comprised limestone and calcrete rocks over brown-red clay loam sand soils.

Hills (H1, H2 and H3)

A large portion of the Survey Area comprised rocky limestone and calcrete hills and slopes, with red-brown clay loam sand. Hills were present on Lots 505 and 550, and on Reserve 51970. Hill tops were characterised by *Acacia bivenosa* and *Melaleuca cardiophylla* shrubs over *Triodia* hummock grassland, dominated by *Triodia glabra* or *Triodia wiseana*. Slopes were dominated by various *Acacia* species and *Triodia epactia* hummock grasses. Trees such as *Corymbia hamersleyana* were present only in vegetation type H1 on a low calcrete rise.

Plains (P1, P2, P3, P4, P5, P6 and P7)

Plains were present across the Survey Area, with the majority being in Reserve 51970. Plains were characterised by the presence of limestone, calcrete, quartz and carbonate sediments over brown-red clay loam sand or red sand soils. The vegetation on the plains of Lots 505, 550 and Reserve 51970 was represented by isolated trees to open woodlands of *Corymbia hamersleyana* (vegetation types P1 and P3) over *Acacia* species and tussock grasslands dominated by *Cenchrus ciliaris*. A portion of the plains on Lot 284 (vegetation types P6 and P7) were represented by chenopods such as *Atriplex bunburyana* and *Sclerolaena diacantha*, and other small shrubs (*Frankenia pauciflora* and *Surreya diandra*).

5.2 Vertebrate Fauna

5.2.1 Fauna Habitat

The fauna habitats that occur within the Survey Area provide a range of values to fauna as refuge, foraging and breeding habitat. All fauna habitats identified in the Survey Area during the field survey are common throughout both the surrounding remnant vegetation areas and the overall bioregion and subregion. The seven broad fauna habitats identified within the Survey Area are typical of the Carnarvon bioregion and consistent with habitats identified by previous studies in the region (GHD, 2016, 2019; 360 Environmental Pty Ltd, 2018; Strategen JBS&G, 2020). At least one fauna habitat assessment was conducted within each habitat type.

The Drainage line/Creek, Hills (Open Woodland over Tussock Grassland) and Hills (Shrubland over Hummock Grassland) habitats are high value to a number of conservation significant fauna. Numerous shallow caves and overhangs provide habitat for the Black-footed Rock-wallaby (Endangered), and potential roosting habitat for bat species such as the Pilbara Leaf-nosed Bat (Vulnerable), although particularly deep caves that offer the necessary microclimate for large Pilbara Leaf-Nosed Bat roosts were not observed within the Survey Area. The tussock grasses on limestone substrate found in these habitats are also preferred by the Cape Range Stone Gecko (Priority 2) and Cape Range Slider (Priority 3). The Peregrine Falcon (Other Specially Protected) may find nesting opportunities in *Eucalyptus* and *Corymbia* trees and larger rocky outcrops.

The Drainage line/Creek habitats are valuable for their role as an ecological linkage, as the habitat provides continuous corridors of vegetation cover that allow fauna to traverse large distances. These habitats may also occasionally flood, providing a temporary water source for fauna species.

Habitat condition varied throughout the Survey Area. Large portions of the Survey Area were of High Quality, but some areas were of Good and Disturbed quality having been impacted by weeds, litter and vehicle tracks.

5.2.2 Conservation Significant Fauna

5.2.2.1 Birds

Oriental Plover (*Charadrius veredus*) – Migratory, Marine

The Oriental Plover typically prefers grasslands and thinly vegetated plains, and open areas such as recently burnt country and heavily grazed pastures. During the hottest times of the day large flocks can be found on areas of wet ground associated with wetlands (Menkhorst *et al.*, 2017). As this species breeds in China and Mongolia, the Survey Area would be used for foraging only.

The Oriental Plover was not recorded during the survey, but database searches show historical records of this species 4 km from Reserve 51970, Lot 505 and Lot 550 Survey Areas. The Plains habitats may be used by the species.

Oriental Pratincole (*Glareola maldivarum*) – Migratory, Marine

The Oriental Pratincole typically prefers plains, shallow wet and dry edges of open bare wetlands and tidal mudflats and beaches for habitat (Pizzey and Knight, 2013). As this species breeds in Pakistan, India and parts of south-east Asia, the Survey Area would be used for foraging only (Pizzey and Knight, 2013).

The Oriental Pratincole was not recorded during the survey, but database searches show several recent records of this species 2 km from Reserve 51970, Lot 505 and Lot 550 Survey Areas, suggesting that it is highly likely to occur in the Survey Area. The Plains habitats may be used by the species.

Peregrine Falcon (*Falco peregrinus*) – Other Specially Protected

The Peregrine Falcon is an uncommon but wide-ranging bird across Australia (Barrett *et al.*, 2003). It occurs mainly along rivers and ranges as well as wooded watercourses and lakes. It nests primarily on cliffs, granite outcrops and quarries, although is also known to occupy existing raptor and corvid stick nests (Menkhorst *et al.*, 2017). The diet of the Peregrine Falcon has been well studied and primarily includes flocking species such as parrots, pigeons and on the east coast, European Starlings (Olsen and Fuentes, 2008).

The Peregrine Falcon typically nests on cliff ledges or in refurbished nests built by other raptors or corvids (Pizzey and Knight, 2013) and may therefore use the Drainage line/Creek habitat for breeding, particularly major drainage lines with steep gullying and rockfaces. All habitats within the Survey Area may be used for hunting.

5.2.2.2 Mammals

Black-footed Rock-wallaby (*Petrogale lateralis lateralis*) – Endangered

The Black-footed Rock-wallaby has widely scattered populations through central and western Australia and some coastal islands of Western and Southern Australia. The species is well known to avoid human interaction and is cryptic in nature, never venturing far from rock shelter and preferring larger gorges and cave systems with little disturbance (Menkhorst and Knight, 2004).

The Black-footed Rock-wallaby was not detected during the survey. The desktop assessment identified records from 2019 approximately 500 m north of the Lot 550 Survey Area. The rock faces, gullies, shallow caves and overhangs identified within the Lot 550 Survey Area are suitable habitat for this species. The Drainage line/Creek, Hills (Open Woodland over Tussock Grassland) and Hills (Shrubland over Hummock Grassland) habitats may be used by the species.

Pilbara Leaf-nosed Bat (*Rhinonictoris aurantia* Pilbara form) – Vulnerable

The Pilbara Leaf-nosed Bat was originally considered to be the same species as the Orange Leaf-nosed Bat, which occurs in the Kimberley, Northern Territory, and northwest Queensland. However, it is now considered to be a separate form based on morphology (Van Dyck and Strahan, 2008). Formal reclassification has been difficult due to the small Pilbara population size (Van Dyck and Strahan, 2008). During the dry season the species roosts in deep, warm, humid caves or mines and forages nearby; in the wet season the species is more widespread and may not require caves for roosting (Menkhorst and Knight, 2004).

The Pilbara Leaf-nosed Bat was not detected during the survey. The desktop assessment identified records approximately 15 km south of the Lot 550, Lot 505 and Reserve 51970 Survey Areas. No deep, complex caves with a suitable microclimate required for maternity roosts. However, shallow caves and overhangs identified within the Lot 550 Survey Area may be used for day roosting. All habitats within the Survey Area may be used for foraging.

5.2.2.3 Reptiles

Cape Range Stone Gecko (*Diplodactylus capensis*) – Priority 2

The Cape Range Stone Gecko is known to prefer the hummock grassland habitats on limestone substrate present on the northern end of the North West Cape (Wilson and Swan, 2017).

The Cape Range Stone Gecko was not detected during the survey. The desktop assessment identified records from 2007 less than 2 km from the Lot 550 Survey Area. The Drainage line/Creek, Hills (Open Woodland over Tussock Grassland) and Hills (Shrubland over Hummock Grassland) habitats may be used by the species.

Ningaloo Worm Lizard (*Aprasia rostrata*) – Priority 3

The Ningaloo Worm Lizard is found on the Monte Bello islands and Northwest Cape south to Yardie Creek and Learmonth and inland to Bullara Station. They are known to occur on white coastal dunes and red Pindan dunes with *Triodia* (Wilson and Swan, 2017).

The Ningaloo Worm Lizard was not detected during the survey. The desktop assessment identified records from 2008 less than 4 km south southwest from the Lot 284 Survey Area. The Plains (Shrubland over Tussock Grassland) and Plains (Shrubland with *Atriplex* and *Frankenia*)

habitat with sandier soils in Lot 284 may be used by the species, however, they prefer the coastal dune habitat just west of Lot 284.

Cape Range Slider (*Lerista allochira*) – Priority 3

The Cape Range Slider is known only from the North West Cape peninsula, inhabiting a known range of approximately 70 km north-south and 20 km east-west (Department of Biodiversity Conservation and Attractions, 2021b). They are found on dissected limestone gorges and plateaus (Wilson and Swan, 2017).

The Cape Range Slider was not detected during the survey. The desktop assessment identified records from 2018 less than 5 km west from the Lot 284 Survey Area. The rockier areas of the Plains (Shrubland over Tussock Grassland) habitat in Lot 284 may be used by the species, however, nearest records are from the western coast of the Northwest Cape.

6 Assessment against the Ten Clearing Principles

The proposed clearing activities have been assessed against the Ten Clearing Principles as defined in the Department of Environment Regulations' (2014) Guide to Assessment: Clearing of Native Vegetation under the *Environmental Protection Act 1986*, taking into account the current extent and condition of the native vegetation within the Survey Area (Table 18).

Table 18: Assessment of the Ten Clearing Principles

Principle	Assessment
Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity	<p>A flora desktop assessment inclusive of NatureMap, PMST and DBCA database searches, and a review of relevant literature was undertaken to identify conservation significant flora taxa that have been recorded within 100 km of the Survey Area. A total of 24 conservation significant flora were identified by the database searches within 40 km of the Survey Area, including one Priority 1 taxa, 11 Priority 2 taxa, 10 Priority 3 taxa and two Priority 4 taxa. One additional taxon (<i>Owenia acidula</i>, P3) was identified by the literature review as occurring within 2 km of the Survey Area. No Threatened flora taxa were identified by the desktop assessment as occurring in the vicinity of the Survey Area.</p> <p>The pre-survey likelihood of occurrence assessment identified 15 conservation significant flora taxa as having a high likelihood of occurrence, five taxa as having a medium likelihood of occurrence, and four as having a low likelihood of occurrence.</p> <p>A total of 257 flora taxa from 153 genera across 58 families were recorded. No Threatened flora taxa pursuant to the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and/or gazetted as Threatened flora pursuant to the Biodiversity Conservation Act 2016 (BC Act) were recorded during the flora and vegetation survey. A total of eight DBCA listed Priority flora taxa were recorded within the Survey Area, comprising three Priority 2 taxa, four Priority 3 taxa, and one Priority 4 taxa. Following the survey, an additional seven taxa of conservation significance were considered have a high likelihood of occurrence within the Survey Area.</p> <p>Four flora specimens collected from the Survey Area could not be identified to taxa level. All but one of these (Herb sp.) have been assigned a confirmed genus and one (<i>Thysanotus ?exfimbriatus</i>) has been tentatively identified to species level. One of the unconfirmed flora taxa, <i>Sida</i> sp. Nov, was considered a species of conservation interest due to potentially representing a novel taxon. The remaining three unconfirmed flora taxa are considered unlikely to represent flora of conservation significance due to lack of features analogous to conservation significant flora considered likely to occur in the area.</p>

Principle	Assessment
	<p>A total of 32 flora taxa may be considered flora of other conservation significance, of which 31 represent range extensions of the species distribution (50 km from known location), and one is a potentially novel taxon.</p> <p>The Survey Area occurs across four broad vegetation associations, Cape Range 662, 663, 664 and 676. The EPA's Guidance Statement No. 33 has identified a threshold of the retention of 30% of pre-European extent of each community and advises that ecological communities with levels below 30% should be fully retained (Environmental Protection Authority, 2008). All broad vegetation units within the Survey Areas well above the 30% threshold, with over 85% of the pre-European extent of each remaining at the state, bioregion, subregion, and local government authority levels (Government of Western Australia, 2019).</p> <p>Two Threatened Ecological Communities (TECs) were identified within 100 km of the Survey Area by the database searches. Neither of these overlap the Survey Area. No DBCA listed PECs were identified within 50 km of the Karratha Survey Area by the database searches.</p> <p>The Survey Area comprises eleven vegetation types. No vegetation considered representative of any TECs or PECs was recorded within the Survey Area.</p> <p>Vegetation condition within the Survey Area ranged from Excellent to Degraded, with the majority considered to be in Very Good condition:</p> <ul style="list-style-type: none"> • Excellent (102.0 ha / 19.0%) • Very Good (306.1 ha / 57.1%) • Good (43.0 ha / 8.0%) • Poor (62.9 ha / 11.7%) • Degraded (22.1 ha / 4.1%). <p>Assessed Outcome: The suite of flora taxa, vegetation and habitat recorded during the survey is considered typical for the area, and widespread beyond the Survey Area. No Threatened flora or Ecological Communities were recorded within the Survey Area. No Priority Ecological Communities were recorded. Eight Priority flora taxa were recorded within the Survey Area, and a further seven Priority flora taxa were considered to have a high likelihood of occurrence. A total of 31 flora taxa may be considered range extensions of the species distribution. One taxon recorded, <i>Sida</i> sp. Nov, potentially represents a novel taxon. Majority of the vegetation of the Survey Area was considered to be in Very Good condition. The proposed clearing may be at variance with this principle.</p>

Principle	Assessment
<p>Principle (b) – Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significant habitat for fauna indigenous to Western Australia</p>	<p>Database searches identified 67 conservation significant terrestrial vertebrate fauna species potentially occurring within the Survey Area. The post-survey likelihood of occurrence assessment determined that three conservation significant fauna taxa were considered to have a high likelihood of occurrence, five were considered to have a medium likelihood of occurrence and the remaining 59 taxa were considered to have a low likelihood of occurrence.</p> <p>The three taxa considered to have a high likelihood of occurrence were:</p> <ul style="list-style-type: none"> • <i>Diplodactylus capensis</i> (Cape Range Stone Gecko) • <i>Glareola maldivarum</i> (Oriental Pratincole) • <i>Petrogale lateralis lateralis</i> (Black-footed Rock-wallaby). <p>The five taxa considered to have a medium likelihood of occurrence were:</p> <ul style="list-style-type: none"> • <i>Aprasia rostrata</i> (Ningaloo Worm Lizard) • <i>Charadrius veredus</i> (Oriental Plover) • <i>Falco peregrinus</i> (Peregrine Falcon) • <i>Lerista allochira</i> (Cape Range Slider) • <i>Rhinonictes aurantia</i> (Pilbara Leaf-nosed Bat). <p>Twenty fauna taxa from 15 families were recorded during the field survey, comprising 15 bird taxa, three mammal taxa and three reptile taxa. No fauna species of conservation significance (Threatened or Priority), or evidence of these species such as tracks, scats, nest, diggings, burrows or direct sightings were recorded within or directly surrounding the Survey Area.</p> <p>Seven fauna habitat types were identified during the survey. These included: Drainage line/Creek, Hills (Open Woodland over Tussock Grassland), Hills (Shrubland over Hummock Grassland), Plains (Woodland), Plains (Shrubland over Tussock Grassland), Plains (Shrubland over Hummock Grassland) and Plains (Shrubland with Atriplex and Frankenia).</p> <p>Assessed Outcome: The Black-footed Rock-wallaby and Cape Range Stone Gecko are considered to be dependent on the Drainage line/Creek, Hills (Open Woodland over Tussock Grassland) and Hills (Shrubland over Hummock Grassland) habitats found on Lot 550. The Cape Range Slider may be dependent on the rockier areas of the Plains (Shrubland over Tussock Grassland) habitat on Lot 284. The Ningaloo Worm Lizard may be dependent on the Plains (Shrubland over Tussock Grassland) and Plains (Shrubland with Atriplex and Frankenia) habitat with sandier soils on Lot 284.</p>

Principle	Assessment
	<p>Due to the reduced range, habitat preferences and shy nature of the Black-footed Rock-wallaby and the small known ranges and habitat preferences of the Cape Range Stone Gecko, disturbance within the Survey Area is likely to significantly impact the taxa.</p> <p>Due to the small known ranges and habitat preferences of the Cape Range Slider and Ningaloo Worm Lizard, disturbance within the Survey Area may significantly impact the taxa, if they are found to occur within the Survey Area.</p> <p>The proposed clearing may be at variance with this principle.</p>
<p>Principle (c) – Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora</p>	<p>No Threatened flora taxa pursuant to the EPBC Act and/or gazetted as Threatened pursuant to the BC Act were identified by database searches or recorded during the survey.</p> <p>Assessed Outcome: Given that no Threatened flora were expected to occur, or recorded, within the Survey Area, the proposed clearing is not considered to be at variance with this principle.</p>
<p>Principle (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 (TEC).</p>	<p>The database search did not identify any TECs and/or their buffers within 100 km of the Survey Area. Furthermore, none of the vegetation recorded during the survey was considered analogous to any TECs.</p> <p>Assessed Outcome: No TECs have been recorded within the Survey Area. The proposed clearing is not considered to be at variance with this principle.</p>
<p>Principle (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</p>	<p>The Survey Area occurs across four broad vegetation system associations, Cape Range 662, 663, 664 and 676 (Beard, 1976; Shepherd, Beeston and Hopkins, 2002). The vegetation types within the Survey Area are considered to be broadly representative of the broad vegetation system associations.</p> <p>The EPA’s Guidance Statement No. 33 has identified a threshold of the retention of 30% of pre-European extent of each community, and advises that ecological communities with levels below 30% should be fully retained (Environmental Protection Authority, 2008). All broad vegetation systems associations mapped within the Survey Area remain well above the 30% threshold, each having over 85% of the pre-European extent remaining (Government of Western Australia, 2019).</p> <p>The remnant vegetation is significant to the following threatened fauna taxa that were considered as having high likelihood of occurrence within the Survey Area:</p> <ul style="list-style-type: none"> • <i>Diplodactylus capensis</i> (Cape Range Stone Gecko) • <i>Petrogale lateralis lateralis</i> (Black-footed Rock-wallaby).

Principle	Assessment
	<p>The remnant vegetation is significant to the following threatened fauna taxa that were considered as having medium likelihood of occurrence within the Survey Area:</p> <ul style="list-style-type: none"> • <i>Aprasia rostrata</i> (Ningaloo Worm Lizard) • <i>Lerista allochira</i> (Cape Range Slider). <p>Assessed Outcome: The remnant vegetation contains habitat for four threatened fauna taxa (the Cape Range Stone Gecko, the Black-footed Rock-wallaby, the Ningaloo Worm Lizard, and the Cape Range Slider), however, the broad vegetation system associations mapped across the Survey Area are well above the EPA's 30% retention threshold. The proposed clearing is not considered to be at variance with this principle.</p>
<p>Principle (f) – Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland</p>	<p>The Survey Area does not intersect any major watercourses or water bodies that are mapped by the State Government GIS database (Department of Water and Environmental Regulation, 2018). The closest watercourses are two minor tributaries flowing into the Exmouth Gulf, which are located approximately 100 m north and 360 m south of Lot 505, respectively. Vegetation type D1 occurs within drainage lines that are not formally recognised by the State Government GIS database; however, the vegetation is considered to be representative of riparian vegetation.</p> <p>Assessed Outcome: Vegetation type D1 within the Survey Area is considered representative of riparian vegetation as it occurs within drainage lines. Horizon Power has surveyed an area of land greater than the required to allow for design flexibility based on findings from the environment and heritage surveys. It is recommended that Horizon Power avoid clearing of the vegetation associated with the drainage lines; however, should the final design require the clearing in this area, then the proposed clearing may be at variance with this principle. It is noted that Section 49 c of the <i>Energy Operators (Powers) Act 1979</i> (Minister for Energy, 1979) allows Horizon Power to make or alter, streams or watercourses drainage to establish, maintain, utilise, and operate, any supply system.</p>
<p>Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation</p>	<p>The Department of Water and Environmental Regulation (DWER) has defined land degradation as including the following (DER, 2014):</p> <ul style="list-style-type: none"> • The clearing of vegetation • Decline in vegetation condition • Soil erosion and soil acidity (caused by wind and water erosion due to vegetation clearing) • Salinity or

Principle	Assessment
	<ul style="list-style-type: none"> • Waterlogging/flooding. <p>Vegetation condition within the Karratha Survey Area ranged from Poor to Very Good comprising (rounded to one decimal place):</p> <ul style="list-style-type: none"> • Poor (0.4 ha / 0.3%) • Good (26.8 ha / 18.2%) • Very Good (119.7 ha / 81.5%). <p>Assessed Outcome: During construction, management measures will be put in place to prevent soil erosion from wind and water. As an operational and maintenance requirement (such as the prevention of dust deposition on the solar panels, and minimising disturbance to the environment and the loss of public amenity in the establishment of a wind farm), the final solar and wind farm footprint will not include areas of bare earth. Soil coverings may include a combination of reinstated native vegetation, gravels and/or hardstand (bitumen). Furthermore, the design of the site will include stormwater management. These management measures will reduce land degradation, however if not implemented, clearing may result in appreciable land degradation. Therefore, clearing may be at variance with this principle.</p>
<p>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</p>	<p>The Survey Area overlaps two mapped ESAs, which are correlated to Cape Range National Park and Ningaloo Marine Park (Department of Water and Environmental Regulation, 2021).</p> <p>The Survey Area does not intersect any Conservation Areas (Department of Biodiversity Conservation and Attractions, 2021a). The nearest Conservation Area is the Bundegi Coastal Park (R 40728) vested under the Executive Director Department of CALM and the Shire of Exmouth, which is located 50 m southeast of Lot 284.</p> <p>Assessed Outcome: Lots 284, 505 and 550 are mapped over or are adjacent to ESAs. Lot 284 is adjacent to a Conservation Area. Maintaining native vegetation near conservation reserves provides a buffer to the reserve and protects it from edge effects. The development footprint should be planned to minimise impacts and to provide an adequate buffer size to the conservation areas. The proposed clearing may be at variance with this principle.</p>
<p>Principle (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</p>	<p>The long-term annual average rainfall recorded at the Learmonth Airport WA weather station is 244.7 mm (1991 to 2020) (Bureau of Meteorology, 2021).</p>

Principle	Assessment
	<p>The Survey Area does not intersect any major watercourses or water bodies mapped by the State Government GIS database (Department of Water and Environmental Regulation, 2018). Drainage lines are present in Lots 505 and 550.</p> <p>The drainage lines were mapped as vegetation type D1, which was associated with a vadophyte or facultative phreatophyte, <i>Eucalyptus xerothermica</i>. Further investigation will determine whether vegetation type D1 is representative of a potential GDE.</p> <p>The proposed clearing is adjacent to existing vehicle tracks; therefore, it is not expected to cause deterioration in the quality of surface or underground water.</p> <p>Assessed Outcome: Drainage lines are present within the Survey Area, specifically in Lots 505 and 550. Horizon Power has surveyed an area of land greater than the required to allow for design flexibility based on findings from the environment and heritage surveys. It is recommended that Horizon Power avoid clearing of the vegetation associated with the drainage lines; however, should the final design require the clearing of this native vegetation, then appropriate management of surface and potential underground water flows is required. Furthermore, an investigation on groundwater levels should be conducted prior to clearing of native vegetation that has the potential to represent a GDE. If appropriate management actions are implemented, the proposed clearing is unlikely to be at variance with this principle.</p>
<p>Principle (j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding</p>	<p>The Survey Area does not intersect any major watercourses or water bodies mapped by the State Government GIS database (Department of Water and Environmental Regulation, 2018). Drainage lines occur within the Survey Area, which are not mapped by the State Government GIS database.</p> <p>The proposed clearing within the Survey Area could cause, or exacerbate, the incidence of flooding in the local area.</p> <p>Assessed Outcome: If appropriate management actions are implemented the proposed clearing is unlikely to be at variance with this principle.</p>

7 Assessment against Matters of National Environmental Significance

The results obtained from the biological survey have provided information to assess if significant impact is 'likely' and whether a 'referral' action is recommended.

Based on the Significant Impact Criteria from the Matters of National Environmental Significance – Significant Impact Guidelines 1.1 (Department of the Environment, 2013) the following needs to be considered. This assessment assumes the clearing footprint can be flexible and designed to minimise impact.

7.1 Listed Threatened Species and Ecological Communities

7.1.1 Threatened Ecological Communities

No Commonwealth or State listed TECs were identified within the Survey Area by the database searches.

No TECs were recorded within the Survey Area.

7.1.2 Threatened Flora

No Threatened flora species pursuant to the EPBC Act were identified as occurring within 100 km of the Survey Area by the database searches. No Threatened flora were recorded within the Survey Area, and it is considered unlikely that Threatened species are present within the Survey Area.

7.1.3 Threatened Fauna

No Threatened fauna taxa pursuant to the EPBC Act were recorded within the Survey Area.

One Threatened fauna taxon pursuant to the EPBC Act was considered as having a high likelihood of occurrence within the Survey Area, and one taxon was considered as having a medium likelihood of occurrence within the Survey Area.

***Petrogale lateralis lateralis* (Black-footed Rock-wallaby) – Endangered – High Likelihood (Lot 550)**

The Black-footed Rock-wallaby has widely scattered populations through central and western Australia and some coastal islands of Western and Southern Australia. The species is well known to avoid human interaction and is cryptic in nature, never venturing far from rock shelter and preferring larger gorges and cave systems with little disturbance (Menkhorst and Knight, 2004).

The Black-footed Rock-wallaby was not detected during the survey. The desktop assessment identified records from 2019 approximately 500 m north of Lot 550. The rock faces, gullies, shallow caves and overhangs identified within Lot 550 are suitable habitat for this species. The Drainage line/Creek, Hills (Open Woodland over Tussock Grassland) and Hills (Shrubland over Hummock Grassland) habitats may be used by the species.

***Rhinonictoris aurantia* Pilbara form (Pilbara Leaf-nosed Bat) – Vulnerable – Medium Likelihood (Lot 550)**

The Pilbara Leaf-nosed Bat was originally considered to be the same species as the Orange Leaf-nosed Bat, which occurs in the Kimberley, Northern Territory, and northwest Queensland. However, it is now considered to be a separate form based on morphology (Van Dyck and Strahan, 2008). Formal reclassification has been difficult due to the small Pilbara population size (Van Dyck and Strahan, 2008). During the dry season the species roosts in deep, warm, humid caves or mines and forages nearby; in the wet season the species is more widespread and may not require caves for roosting (Menkhorst and Knight, 2004).

The Pilbara Leaf-nosed Bat was not detected during the survey. The desktop assessment identified records approximately 15 km south of Lots 550 and 505, and Reserve 51970. No deep, complex caves with a suitable microclimate required for maternity roosts were recorded within the Survey Area. However, shallow caves and overhangs identified within Lot 550 may be used for day roosting. All habitats within the Survey Area may be used for foraging.

7.2 Listed Migratory Taxa

Migratory shorebirds utilise nearby coastal areas, beaches, and tidal flats, however, no migratory birds were recorded during the survey within the Survey Area and are considered unlikely to be dependent on the habitat within the Survey Area.

One migratory taxon was considered as having a high likelihood of occurrence within the Survey Area, and one migratory taxon was considered as having a medium likelihood of occurrence within the Survey Area.

***Glareola maldivarum* (Oriental Pratincole) – Migratory, Marine – High Likelihood (Lot 550, Lot 505, Reserve 51970)**

The Oriental Pratincole typically prefers plains, shallow wet and dry edges of open bare wetlands and tidal mudflats and beaches for habitat (Pizzey and Knight, 2013). As this species breeds in Pakistan, India and parts of south-east Asia, the Survey Area would be used for foraging only (Pizzey and Knight, 2013).

The Oriental Pratincole was not recorded during the survey, but database searches show several recent records of this species 2 km from Reserve 51970, and Lots 505 and 550, suggesting that it is highly likely to occur in the Survey Area. The Plains habitats may be used by the species.

***Charadrius veredus* (Oriental Plover) – Migratory, Marine – Medium Likelihood (Lot 550, Lot 505, Reserve 51970)**

The Oriental Plover typically prefers grasslands and thinly vegetated plains, and open areas such as recently burnt country and heavily grazed pastures. During the hottest times of the day large flocks can be found on areas of wet ground associated with wetlands (Menkhorst *et al.*, 2017). As this species breeds in China and Mongolia, the Survey Area would be used for foraging only.

The Oriental Plover was not recorded during the survey, but database searches show historical records of this species 4 km from Reserve 51970, and Lots 505 and 550. The Plains habitats may be used by the species.

7.3 Wetlands of International Importance

No Wetlands of International Importance are present within the Survey Area (Department of the Environment and Energy, 2015b).

7.4 Commonwealth Marine Environment

There is no marine environment present within the Survey Area (Department of the Environment and Energy, 2015a).

7.5 World Heritage Properties

There are no world heritage properties present within the Survey Area, however one property, the Ningaloo Coast, is adjacent to Lot 284 (Department of Agriculture Water and the Environment, 2020a). This world heritage property envelops the Cape Range peninsula on the northern and western side, and its boundary is located 50 m southeast of Lot 284.

7.6 Assessment Conclusion

The assessment of significance is dependent on the size and location of the clearing footprint, and on the condition of the vegetation to be cleared. Given the high biological diversity and value of fauna habitat present within the Survey Area, a referral to the Department of the Environment is considered likely.

8 Potential Impact on Flora, Vegetation and Fauna

8.1 Flora and Vegetation

No Threatened flora taxa pursuant to the EPBC Act were recorded during the survey.

No vegetation representative of any Commonwealth listed TECs was recorded within the Survey Areas.

The potential impacts of vegetation clearing within the Survey Areas are:

- Direct impacts of removal of flora taxa and vegetation
- Indirect impacts including construction rubbish drift and dust on remaining vegetation during construction
- Introduction or spread of weeds or disease into the surrounding vegetation
- Indirect impacts of altered hydrological regimes.

8.2 Fauna

No Threatened fauna taxa pursuant to the EPBC Act were recorded within the Survey Area.

The potential impacts of vegetation clearing on fauna within the Survey Areas are:

- Indirect impacts of removal of fauna habitat
- Death or injury to fauna during clearing.

9 References

360 Environmental Pty Ltd (2018) *Learmonth Pipeline Fabrication Facility - Detailed Flora, Vegetation and Targeted Survey*.

Barrett, G. *et al.* (2003) *The new atlas of Australian birds*. Melbourne, Australia: Royal Australasian Ornithologists Union.

Beard, J. S. (1976) *Vegetation survey of Western Australia. Western Australia 1: 1 000 000 vegetation series. Design and cartography by Dept. of Geography, University of W.A.*

Bureau of Meteorology (2007) *About Climate Statistics*. Available at: <http://www.bom.gov.au/climate/cdo/about/about-stats.shtml> (Accessed: 18 February 2021).

Bureau of Meteorology (2021) *Monthly climate data statistics*. Available at: www.bom.gov.au/climate/data.

Department of Agriculture Water and the Environment (2020a) *Australia, World Heritage Areas - GIS Dataset*. Available at: [https://data.gov.au/dataset/ds-environment-6C54FE6C-2773-47C6-8CBC-4722F29081EF/details?q=world heritage area](https://data.gov.au/dataset/ds-environment-6C54FE6C-2773-47C6-8CBC-4722F29081EF/details?q=world%20heritage%20area).

Department of Agriculture Water and the Environment (2020b) *Protected Matters Search Tool*. Canberra, Australia. Available at: <http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf>.

Department of Agriculture Water and the Environment (2021a) *Protected Matters Search Tool*. Canberra, Australia. Available at: <http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf>.

Department of Agriculture Water and the Environment (2021b) *Weeds of National Significance*. Available at: <https://weeds.org.au/>.

Department of Biodiversity Conservation and Attractions (2020a) *NatureMap*. Perth, Australia. Available at: <https://naturemap.dpaw.wa.gov.au/>.

Department of Biodiversity Conservation and Attractions (2020b) *Threatened and Priority Flora database (TPFL) request (custom search)*. Perth, Australia.

Department of Biodiversity Conservation and Attractions (2021a) *DBCA - Legislated Lands and Waters (DBCA-011) GIS Dataset*. Perth, Australia. Available at: <https://catalogue.data.wa.gov.au/dataset/dbca-legislated-lands-and-waters>.

Department of Biodiversity Conservation and Attractions (2021b) *NatureMap*. Perth, Western Australia. Available at: <https://naturemap.dpaw.wa.gov.au/>.

Department of Biodiversity Conservation and Attractions (2021c) *Threatened and Priority Ecological Communities database request (custom search)*. Perth, Australia.

Department of Biodiversity Conservation and Attractions (2021d) *Threatened and Priority Fauna database request (custom search)*. Perth, Australia.

Department of Biodiversity Conservation and Attractions (2021e) *Western Australia Herbarium Flora Database (custom search)*. Perth, Australia.

Department of Environment Regulation (2014) *A guide to the assessment of applications to clear native vegetation*. Available at: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf.

Department of Primary Industries and Regional Development (2018) *Soil Landscape Mapping -*

- Systems (DPIRD-064) - GIS Dataset*. Perth, Australia. Available at:
<https://catalogue.data.wa.gov.au/dataset/soil-landscape-mapping-systems>.
- Department of Primary Industries and Regional Development (2021) *Declared plants*. Available at: <https://www.agric.wa.gov.au/organisms>.
- Department of Sustainability Environment Population and Communities (1999) *Survey Guidelines for Australia's Threatened Mammals*. Canberra, Australia. Available at:
<http://www.environment.gov.au/system/files/resources/b1c6b237-12d9-4071-a26e-ee816caa2b39/files/survey-guidelines-mammals.pdf>.
- Department of Sustainability Environment Water Population and Communities (2011) *Survey guidelines for Australia's threatened reptiles: Guidelines for detecting reptiles listed as threatened under the EPBC Act*. Canberra, Australia. Available at:
<http://www.environment.gov.au/resource/survey-guidelines-australias-threatened-reptiles-guidelines-detecting-reptiles-listed>.
- Department of the Environment (2013) *Matters of National Environmental Significance: Significant impact guidelines 1.1*. Canberra, Australia. Available at:
http://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf (Accessed: 24 July 2018).
- Department of the Environment and Energy (2015a) *Commonwealth Marine Regions - GIS Dataset*. Available at: <https://data.gov.au/data/dataset/commonwealth-marine-regions>.
- Department of the Environment and Energy (2015b) *Ramsar Wetlands of Australia - GIS Dataset*. Available at: <https://catalogue.data.wa.gov.au/id/dataset/ramsar-sites>.
- Department of the Environment Water Heritage and the Arts (2010) *Survey guidelines for Australia's threatened birds: Guidelines for detecting birds listed as threatened under the EPBC Act*. Canberra, Australia. Available at:
<http://www.environment.gov.au/system/files/resources/107052eb-2041-45b9-9296-b5f514493ae0/files/survey-guidelines-birds-april-2017.pdf> (Accessed: 24 July 2018).
- Department of Water and Environmental Regulation (2018) *Hydrography, Linear (Hierarchy) (DWER-031) - GIS Dataset*. Perth, Australia: Landgate. Available at:
<https://catalogue.data.wa.gov.au/dataset/hydrography-linear-hierarchy>.
- Department of Water and Environmental Regulation (2021) *Clearing Regulations - Environmentally Sensitive Areas (DWER-046) - GIS Dataset*.
- Van Dyck, S. and Strahan, R. (2008) *The mammals of Australia*. 3rd edn. Sydney, Australia: New Holland Publishers.
- Environmental Protection Authority (2008) *Guidance Statement No. 33 Environmental Guidance for Planning and Development*.
- Environmental Protection Authority (2016) *Technical Guidance - Flora and Vegetation surveys for Environmental Impact Assessment*. Perth, Australia. Available at:
http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA_Technical_Guidance_-_Flora_and_Vegetation_survey_Dec13.pdf.
- Environmental Protection Authority (2020) *Technical Guidance - Terrestrial vertebrate fauna surveys for environmental impact assessment*. Perth, Australia. Available at:
<https://www.epa.wa.gov.au/policies-guidance/technical-guidance-terrestrial-vertebrate-fauna-surveys-environmental-impact>.

- GHD (2016) *Minilya-Exmouth Road Biological Survey, Main Roads WA*.
- GHD (2019) *Learmonth (Exmouth) Line Rebuild Flora and Fauna Survey*.
- Government of Western Australia (2019) *2018 Statewide Vegetation Statistics - Full Report*. Available at: <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics/resource/b7bd60c2-bff6-4637-b213-ae4706412c7>.
- Kendrick, P. and Mau, R. (2002) *Carnarvon 1 (CAR1 - Cape Range subregion)*.
- Menkhorst, P. et al. (2017) *The Australian bird guide*. Australia: CSIRO Publishing.
- Menkhorst, P. and Knight, F. (2004) *A Field Guide to the Mammals of Australia*. Edited by D. Meagher. Melbourne, Australia: Oxford University Press.
- Minister for Energy (1979) *Energy Operators (Powers) Act 1979*. Available at: [https://www.legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_42682.htm/\\$FILE/Energy Operators \(Powers\) Act 1979 - %5B06-b0-01%5D.html?OpenElement](https://www.legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_42682.htm/$FILE/Energy%20Operators%20(Powers)%20Act%201979-%5B06-b0-01%5D.html?OpenElement).
- Muir Environmental (1995) *Potential Long Term Impacts of the Yandicoogina Iron Ore Project on Riverine Species along Marillana Creek*.
- Olsen, J. and Fuentes, E. (2008) 'Dietary shifts based upon prey availability in Peregrine Falcons and Australian Hobbies breeding near Canberra, Australia', *Journal of Raptor Research*, 42, pp. 125–137.
- Onshore Environmental (2013) *Orebody (OB) 29, 30, 35 - Groundwater Dependent Vegetation Impact Assessment*.
- Pizzey and Knight (2013) *Birds of Australia, Digital Edition*. Melbourne, Australia: Gibbon Multimedia.
- Rio Tinto Iron Ore (2018) *Assessment of Groundwater Dependent Vegetation Distribution on the Robe River - Targeted Riparian Vegetation Survey – Stage 1*.
- Shepherd, D. P., Beeston, G. R. and Hopkins, A. J. M. (2002) *Native Vegetation in Western Australia Technical Report 249*. Perth, Australia.
- Strategen JBS&G (2020) *Exmouth Lighthouse Resort Borefield - Ecological Survey Report*.
- Western Australian Herbarium (2021) *FloraBase - The Western Australian Flora*. Perth, Australia. Available at: <https://florabase.dpaw.wa.gov.au>.
- Western Australian Museum (2021) *Checklist of the Terrestrial Vertebrate Fauna of Western Australia*. Available at: <http://museum.wa.gov.au/research/departments/terrestrial-zoology/checklist-terrestrial-vertebrate-fauna-western-australia>.
- Wilson, S. and Swan, G. (2017) *A complete guide to reptiles of Australia*. 5th edn, *Reptiles of Australia*. 5th edn. Australia: New Holland Publishers.

10 Report Disclaimer

This report is produced strictly in accordance with the scope of services set out in the contract or otherwise agreed in accordance with the contract. 360 Environmental makes no representations or warranties in relation to the nature and quality of soil and water other than the visual observation and analytical data in this report.

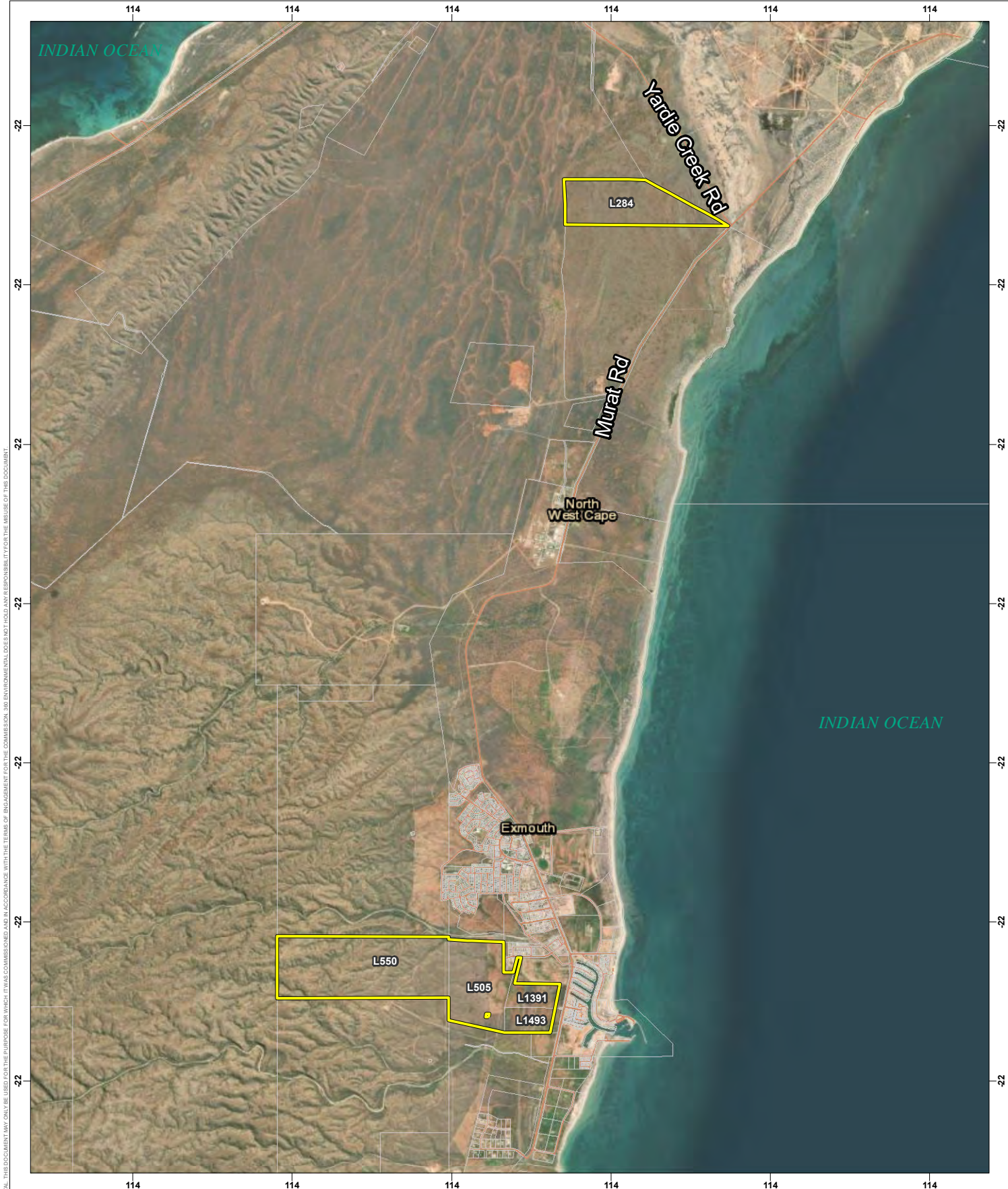
In the preparation of this report, 360 Environmental has relied upon documents, information, data and analyses ('client's information') provided by the client and other individuals and entities. In most cases where client's information has been relied upon, such reliance has been indicated in this report. Unless expressly set out in this report, 360 Environmental has not verified that the client's information is accurate, exhaustive, or current and the validity and accuracy of any aspect of the report including, or based upon, any part of the client's information is contingent upon the accuracy, exhaustiveness, and currency of the client's information. 360 Environmental shall not be liable to the client or any other person in connection with any invalid or inaccurate aspect of this report where that invalidity or inaccuracy arose because the client's information was not accurate, exhaustive, and current or arose because of any information or condition that was concealed, withheld, misrepresented, or otherwise not fully disclosed or available to 360 Environmental.

Aspects of this report, including the opinions, conclusions, and recommendations it contains, are based on the results of the investigation, sampling and testing set out in the contract and otherwise in accordance with normal practices and standards. The investigation, sampling and testing are designed to produce results that represent a reasonable interpretation of the general conditions of the site that is the subject of this report. However, due to the characteristics of the site, including natural variations in site conditions, the results of the investigation, sampling and testing may not accurately represent the actual state of the whole site at all points.

It is important to recognise that site conditions, including the extent and concentration of contaminants, can change with time. This is particularly relevant if this report, including the data, opinions, conclusions, and recommendations it contains, are to be used a considerable time after it was prepared. In these circumstances, further investigation of the site may be necessary.

Subject to the terms of the contract between the Client and 360 Environmental Pty Ltd, copying, reproducing, disclosing, or disseminating parts of this report is prohibited (except to the extent required by law) unless the report is produced in its entirety including this page, without the prior written consent of 360 Environmental Pty Ltd.

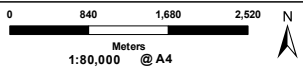
Figures



COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

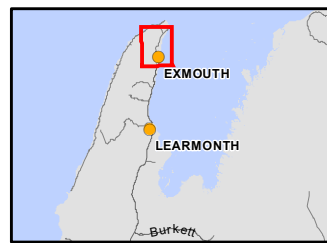
Legend

- Cadastral Lines
- Survey Boundary



NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360 environmental
 a 10 Bernondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

PROJECT ID 4766	DATE 29/11/2021
---------------------------	---------------------------

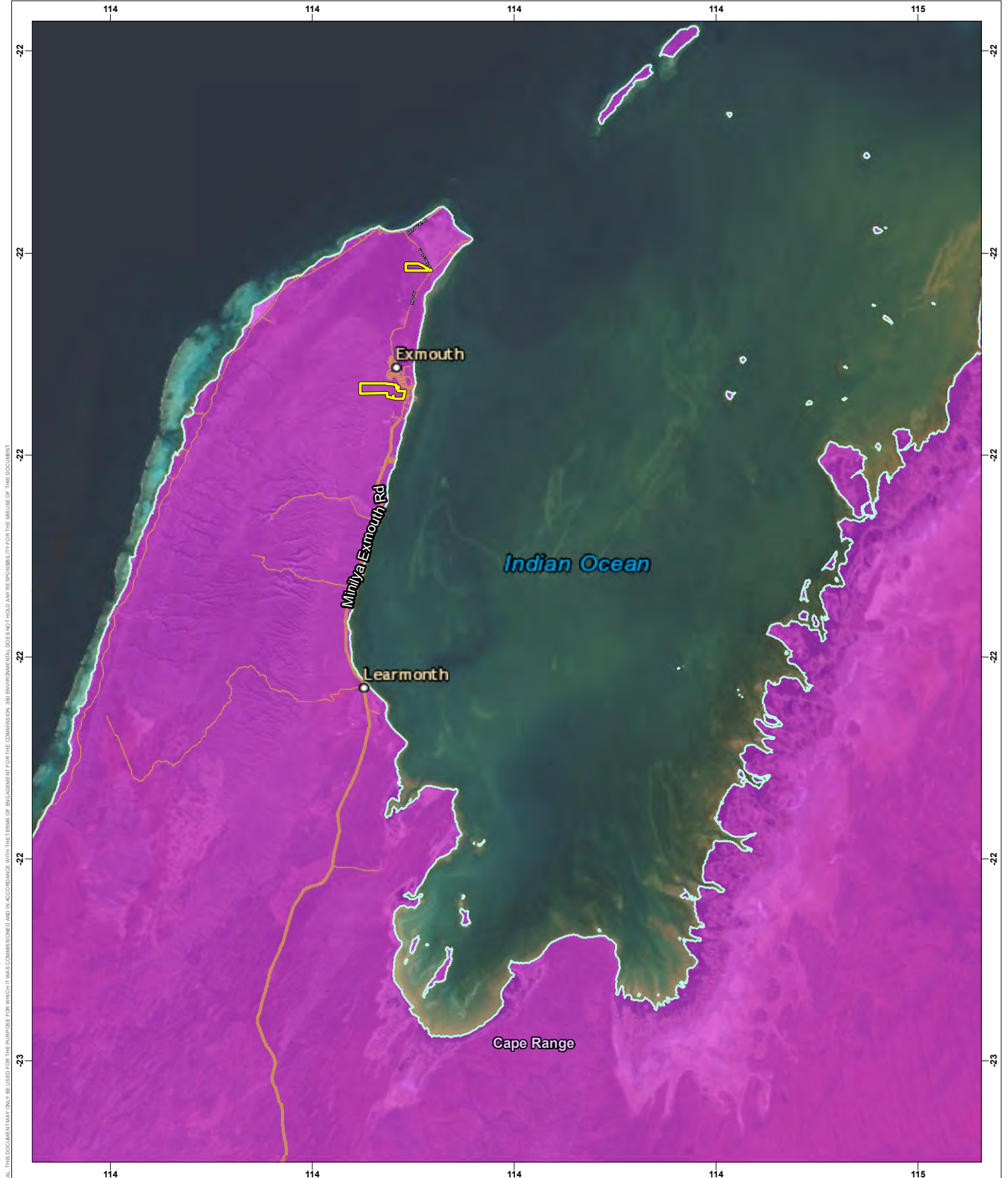
HORIZONTAL DATUM AND PROJECTION
GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth

Biological Survey
Figure 1
Site Location

Presented by **SLIP ENABLER**
 - LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 © Western Australian Land Information Authority 2021



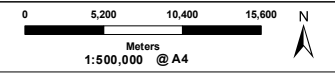
COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR WHICH IT WAS COMMISSIONED. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

- Survey Boundary
- IBRA Regions
- IBRA Subregions**
- Cape Range

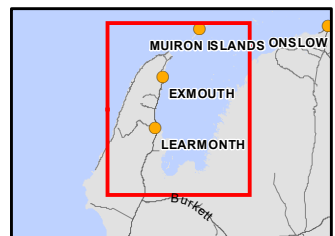
Presented by **SLIP ENABLER**

- LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 © Western Australian Land Information Authority 2021



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360 environmental
 a 10 Bermondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

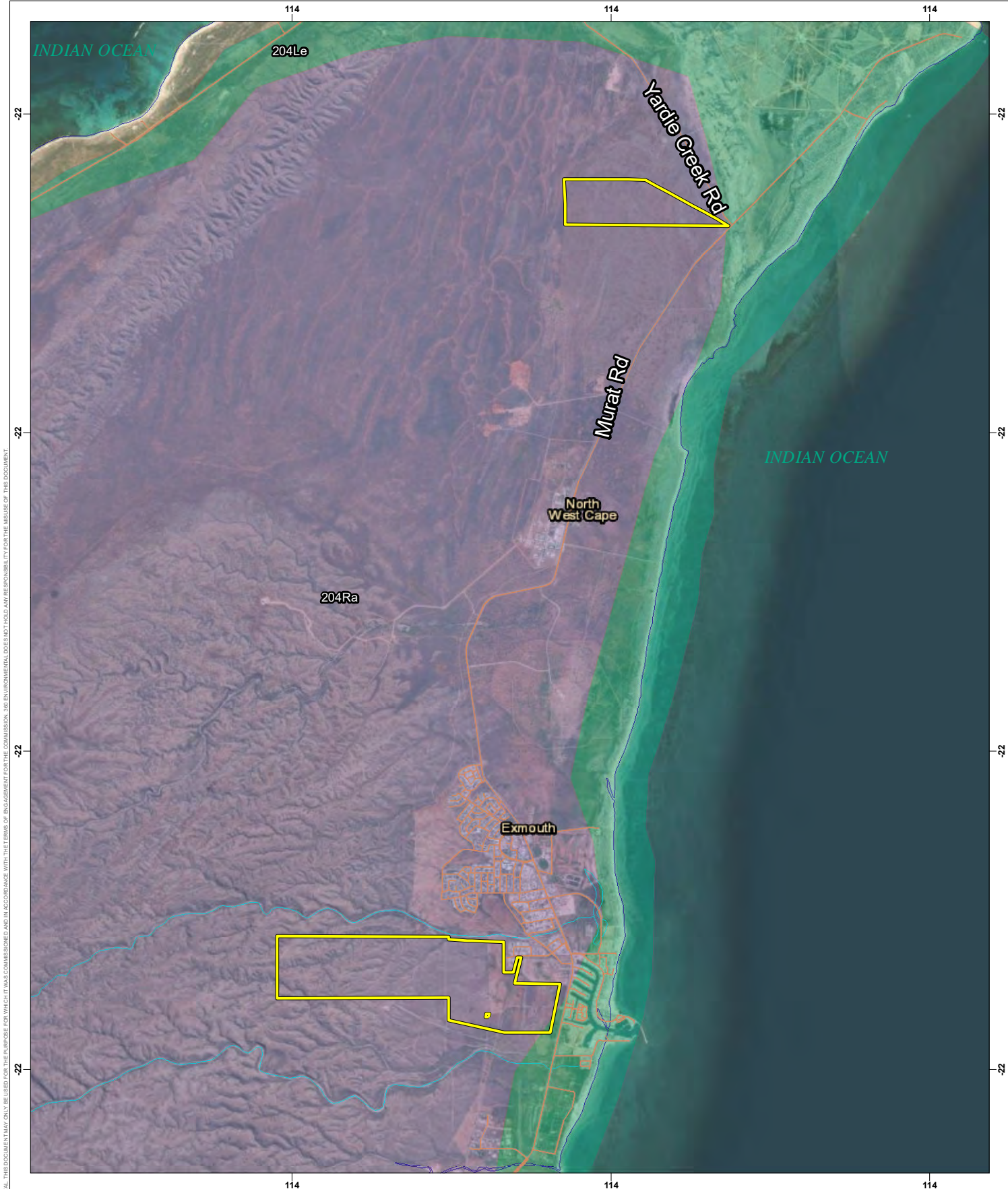
PROJECT ID 4766	DATE 24/11/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
 GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth

Biological Survey
Figure 2
IBRA Subregions



COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR WHICH IT WAS COMMISSIONED. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

Survey Boundary

Hydrography

- Coastal Waterline
- Minor Tributary

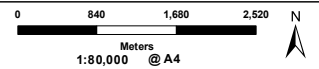
Soil Land System

204Le: Sandy outwash plains marginal to the Cape Range, supporting mainly soft spinifex hummock grasslands with scattered acacia shrubs.

204Ra: Dissected limestone plateaux, hills and ridges with gorges and steep stony slopes supporting hard spinifex, sparse shrubs and eucalypts.

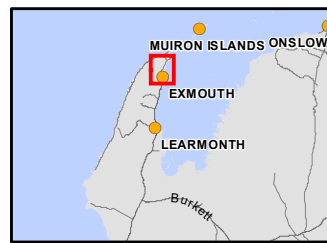


- LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 © Western Australian Land Information Authority 2021



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360 environmental
 a 10 Berrondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

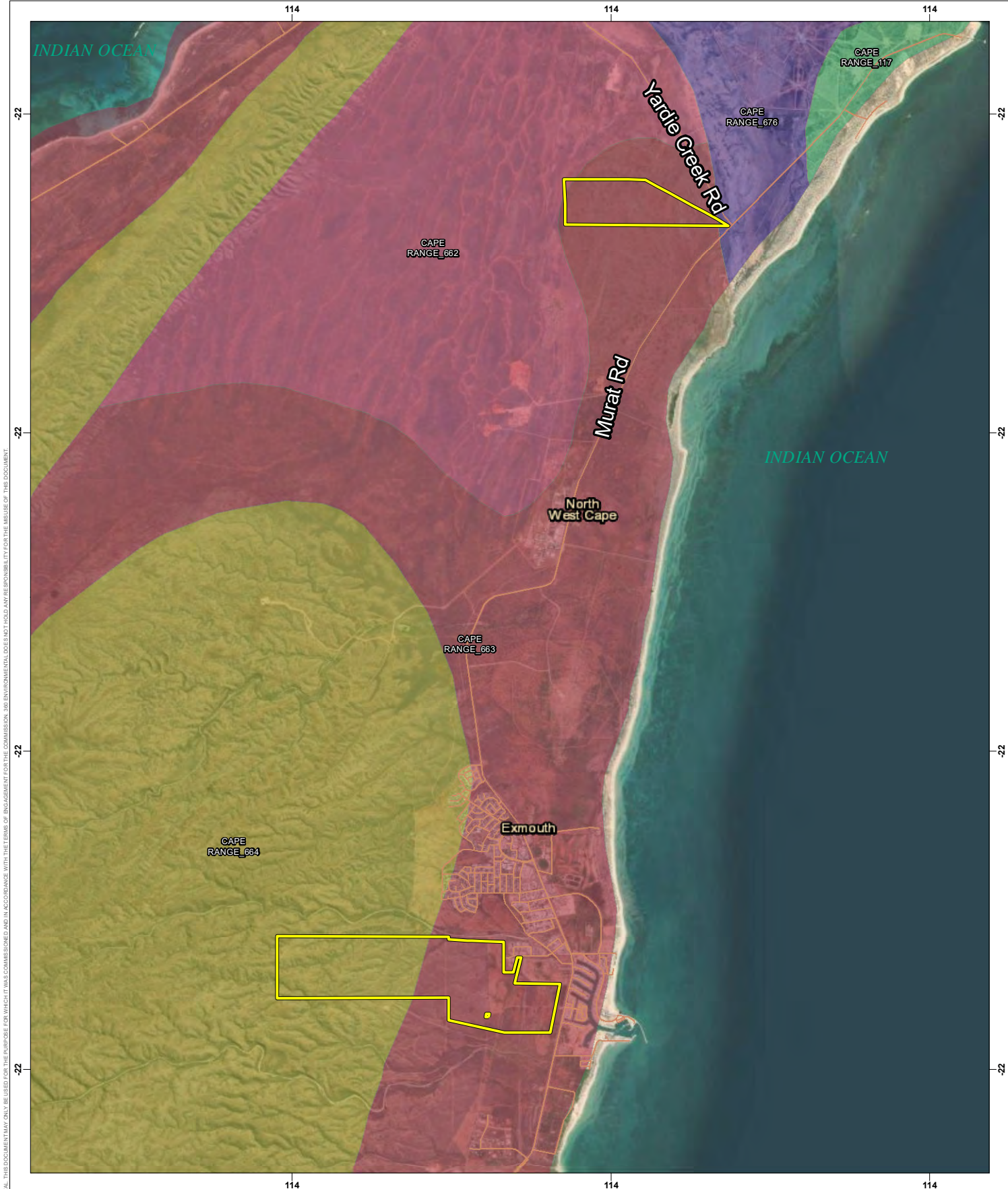
PROJECT ID 4766	DATE 24/11/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey
Figure 3
Soil Land Systems and Hydrography



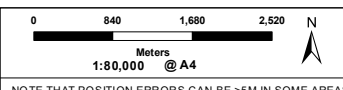
COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

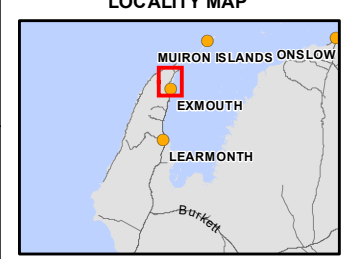
- Survey Boundary
- Broad Vegetation Types**
- CAPE RANGE_117: Grass-steppe
- CAPE RANGE_662: Spinifex complexes
- CAPE RANGE_663: Shrub-steppe
- CAPE RANGE_664: Sparse low tree-steppe
- CAPE RANGE_676: Samphire

Presented by
SLIP ENABLER

- LOCALITY MAP SOURCED FROM LANDGATE 2021
- OTHER DATA SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
(© Western Australian Land Information Authority 2021)



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS



360 environmental a 10 Berrondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

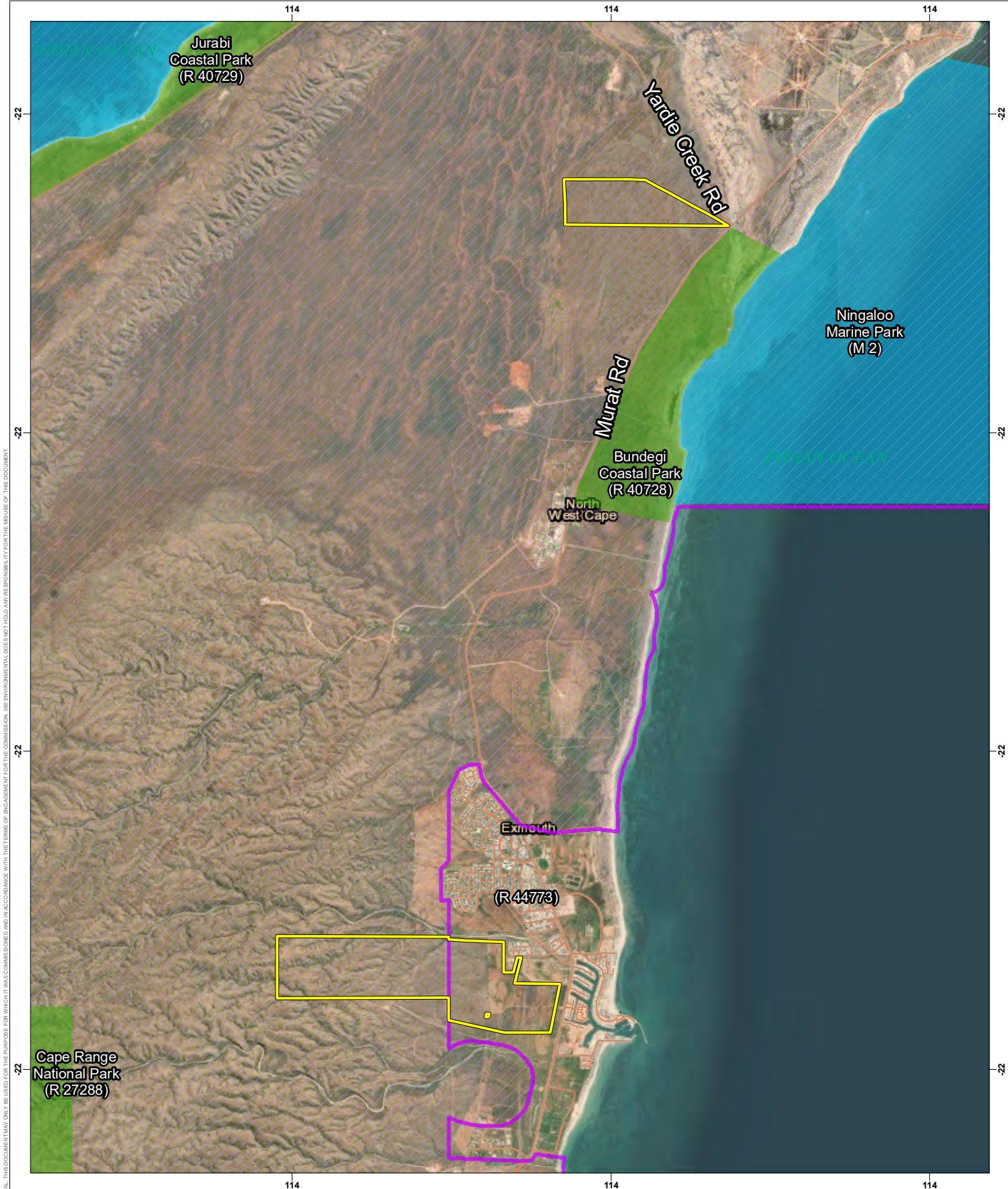
PROJECT ID 4766	DATE 24/11/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
Lot 284, Lot 505, Lot 550, Reserve 51970,
Exmouth

Biological Survey
Figure 4
Broad Vegetation Types



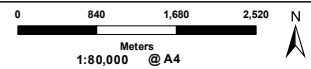
COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR WHICH IT WAS COMMISSIONED. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

- Survey Boundary
 - Environmentally Sensitive Areas
- DBCA Managed Lands and Waters**
- DBCA Managed Land
 - DBCA Managed Marine

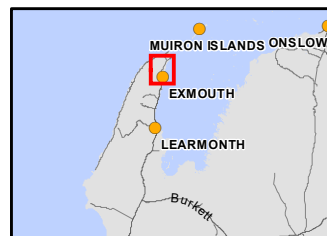
Presented by **SLIP ENABLER**

- LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 © Western Australian Land Information Authority 2021



-NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS-

LOCALITY MAP



360
 environmental
 a 10 Bernonsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

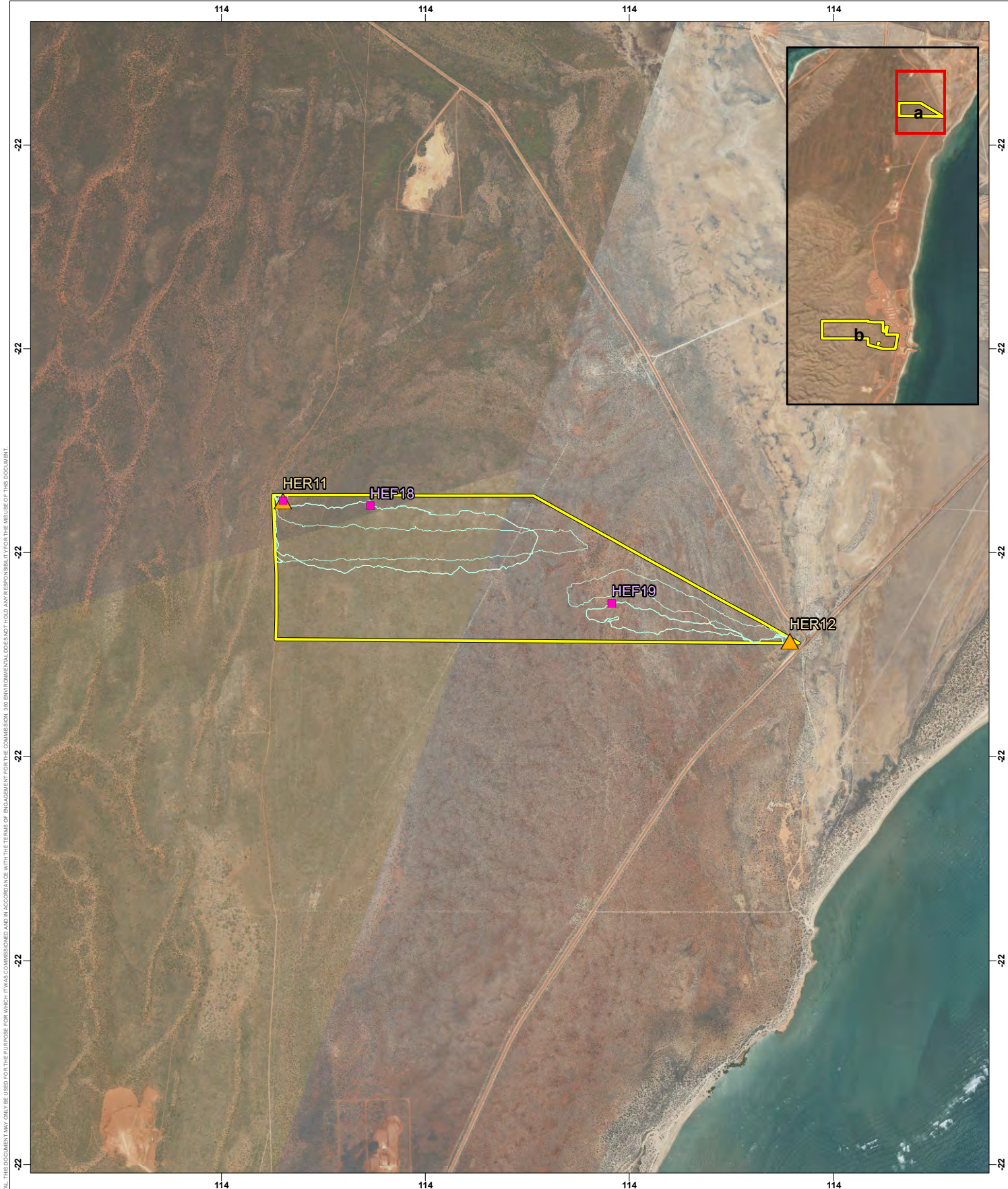
PROJECT ID 4766	DATE 24/11/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
 GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

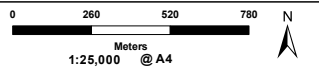
Figure 5 Conservation and Environmentally Sensitive Areas



COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR WHICH IT WAS COMMISSIONED. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

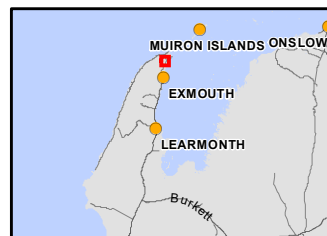
Legend

- Survey Boundary
- GPS Tracks
- ▲ Releves
- Fauna Habitat Assessment



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



Presented by
SLIP ENABLER

- LOCALITY MAP SOURCED FROM LANDGATE 2021
- OTHER DATA SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
(© Western Australian Land Information Authority 2021)

360
environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

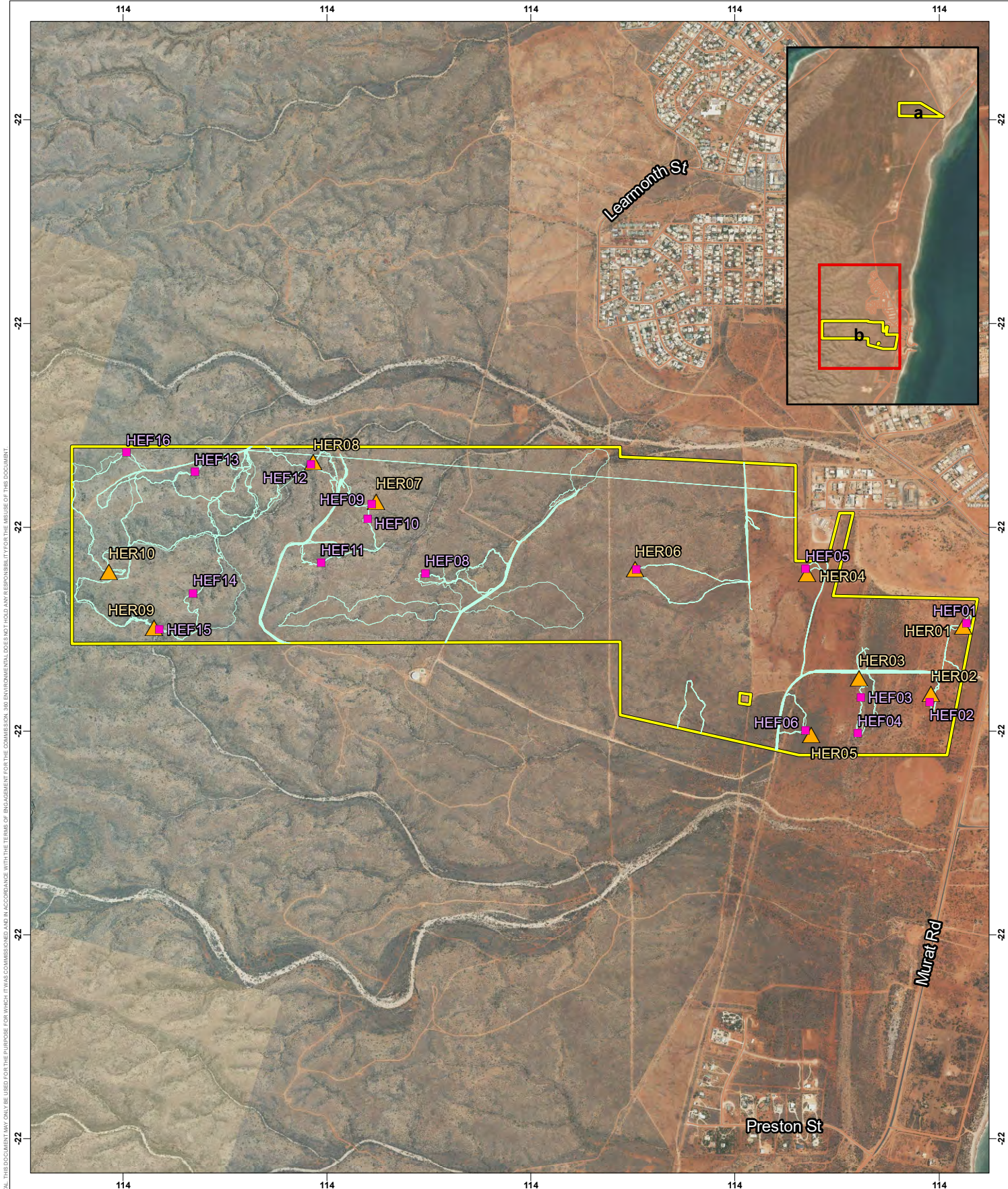
PROJECT ID 4766	DATE 29/11/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
Lot 284, Lot 505, Lot 550, Reserve 51970,
Exmouth
Biological Survey

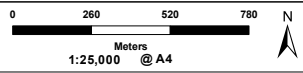
Figure 6a
Survey Effort



COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

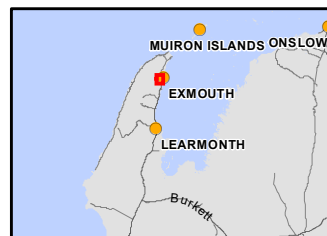
Legend

- Survey Boundary
- GPS Tracks
- ▲ Releves
- Fauna Habitat Assessment



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360 environmental
 a 10 Berrondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

PROJECT ID 4766	DATE 29/11/2021
---------------------------	---------------------------

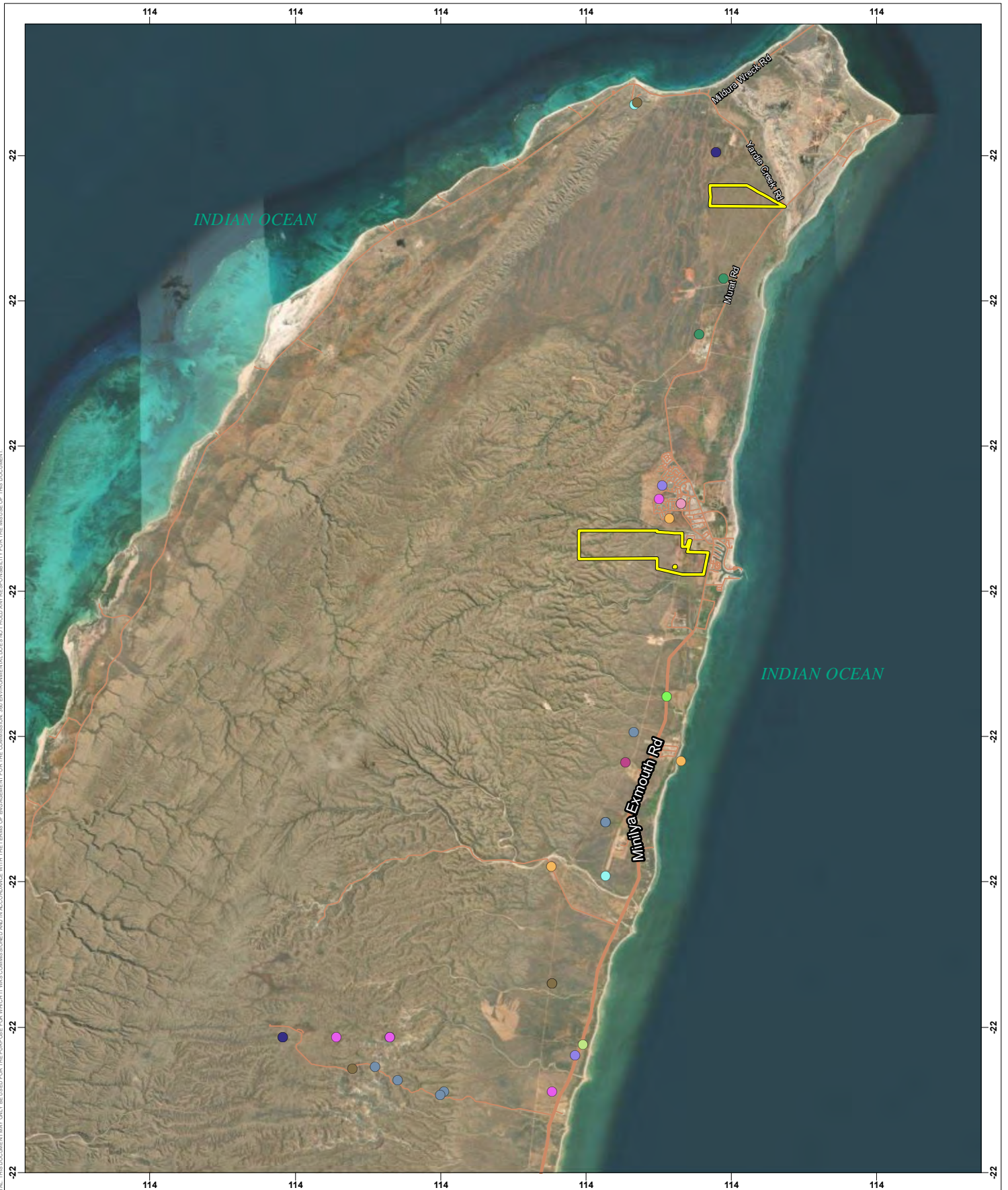
HORIZONTAL DATUM AND PROJECTION
 GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

Figure 6b
 Survey Effort

Presented by **SLIP ENABLER**
 - LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 © Western Australian Land Information Authority 2021



COPYRIGHT: THIS DOCUMENT IS THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSES FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

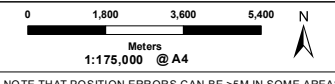
Survey Boundary

DBCAs Threatened and Priority Flora

- Acacia alexandri* (P3)
- Acanthocarpus rupestris* (P2)
- Brachychiton obtusilobus* (P4)
- Corchorus congener* (P3)
- Cucumis* sp. Barrow Island (D.W. Goodall 1264) (P2)
- Daviesia pleurophylla* (P2)
- Eremophila forrestii* subsp. *capensis* (P3)
- Eremophila youngii* subsp. *lepidota* (P2)
- Grevillea calcicola* (P3)
- Gymnanthera cunninghamii* (P3)
- Stackhousia umbellata* (P2)
- Tephrosia* sp. North West Cape (G. Marsh 81) (P2)
- Tinospora esiangkara* (P2)

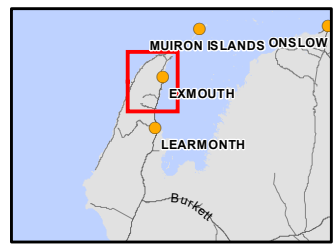
Presented by **SLIP ENABLER**

- LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 © Western Australian Land Information Authority 2021



-NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360 environmental
 a 10 Bermondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

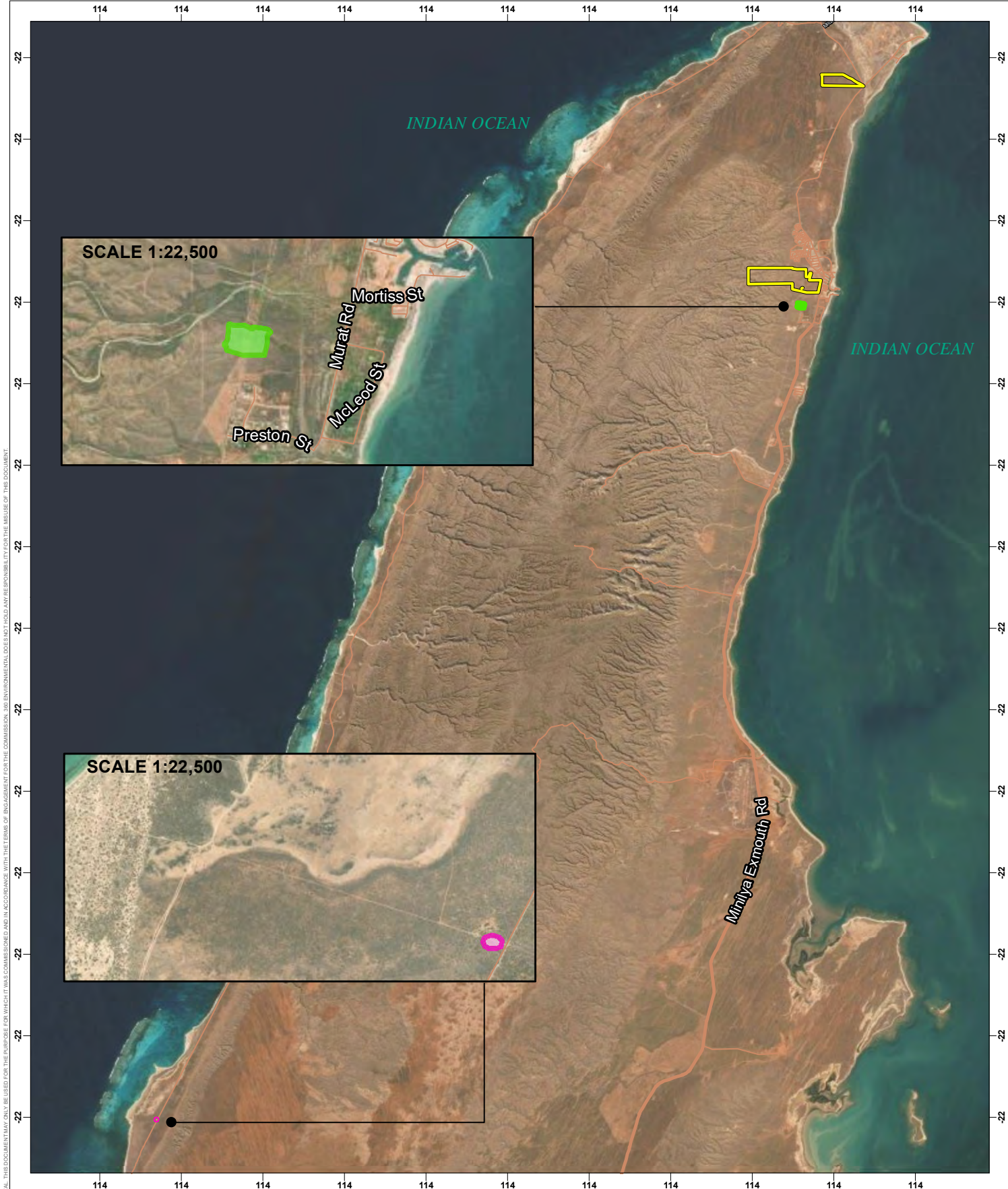
PROJECT ID 4766	DATE 24/11/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
 GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

Figure 7
DBCAs Threatened and
Priority Flora Locations



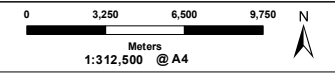
COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR WHICH IT WAS COMMISSIONED. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

- Survey Boundary
- Threatened and Priority Ecological Communities**
- Camerons Cave Troglitic Community
- Cape Range Remipede Community (Bundera Sinkhole)

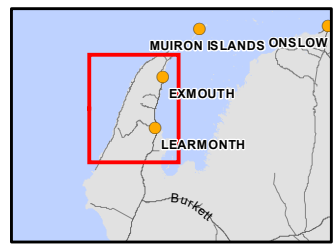
Presented by **SLIP ENABLER**

- LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 © Western Australian Land Information Authority 2021



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360 environmental
 a 10 Berrondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

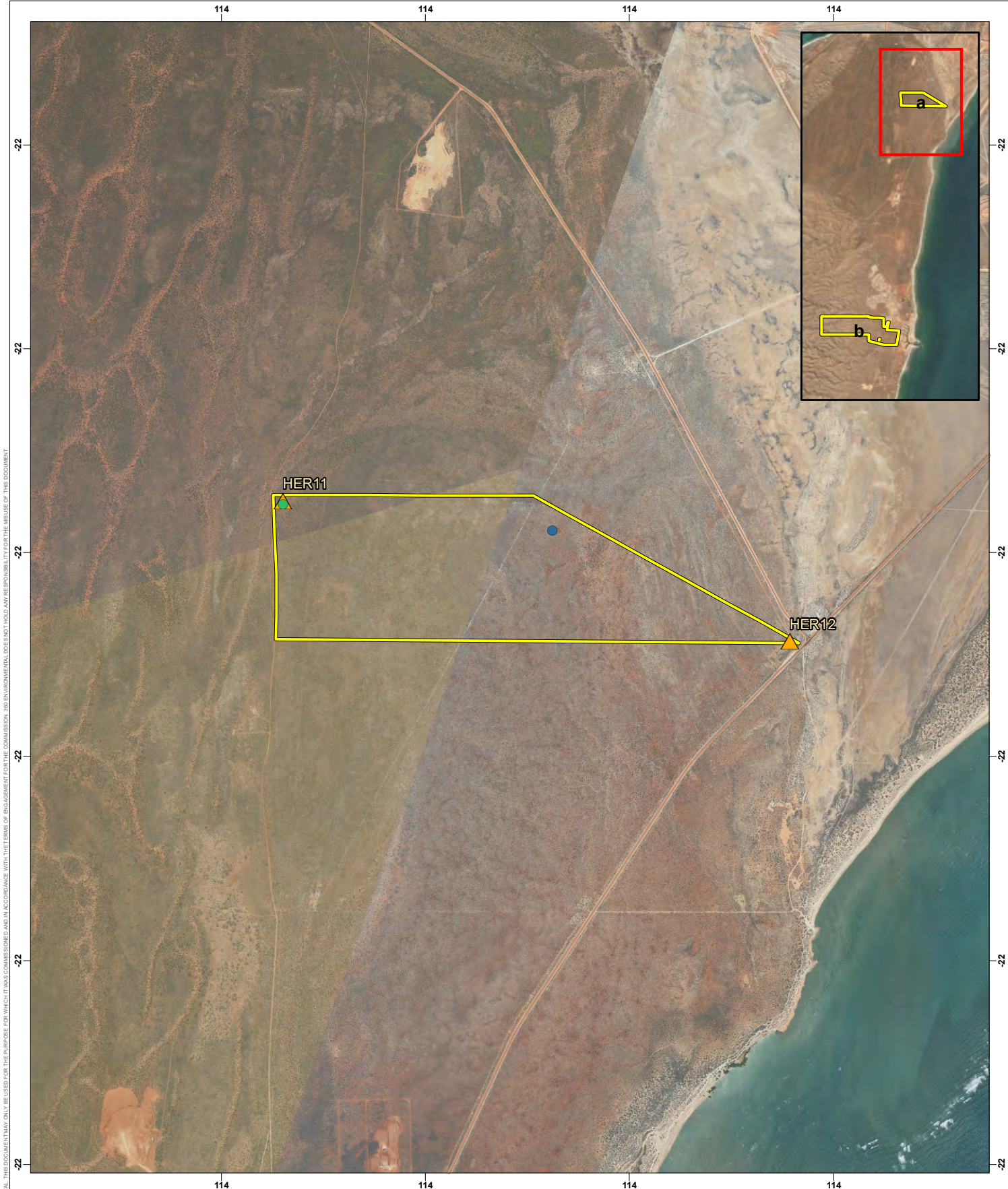
PROJECT ID 4766	DATE 24/11/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
 GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

Figure 8
DBCAs Threatened and Priority Ecological Communities



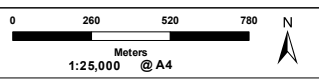
COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

- Survey Boundary
- Releves
- Flora of Conservation Significance**
- Corchorus congener* (P3)
- Tinospora esiangkara* (P2)

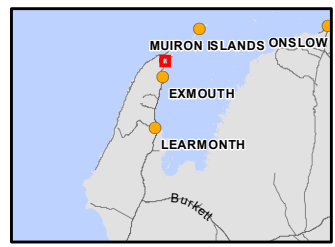
Presented by **SLIP ENABLER**

- LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 (© Western Australian Land Information Authority 2021)



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360 environmental
 a 10 Bermondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

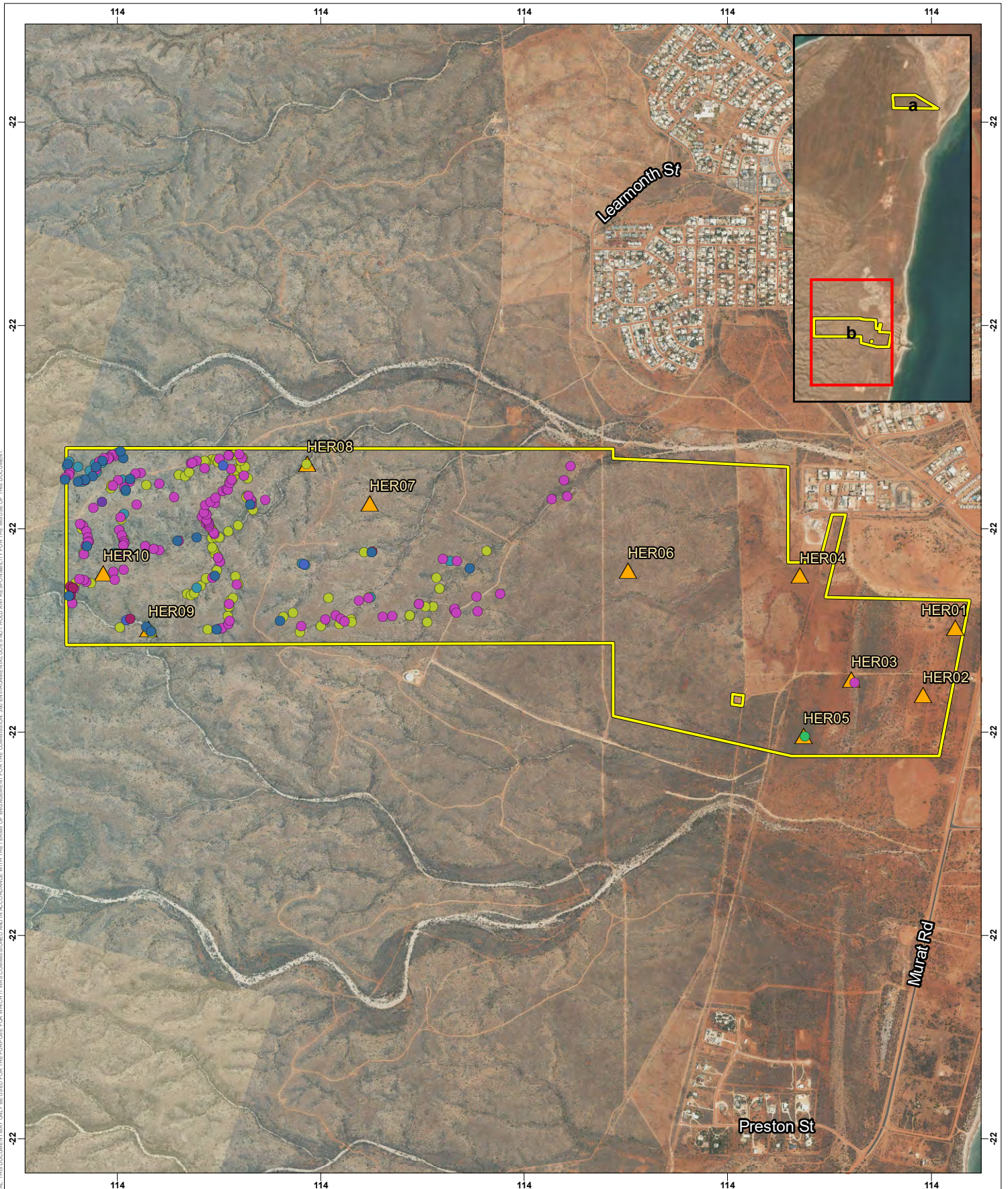
PROJECT ID 4766	DATE 09/12/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
 GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

Figure 9a
Flora of Conservation Significance



COPYRIGHT: THIS DOCUMENT IS THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

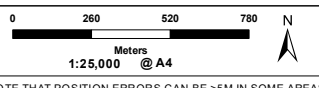
Legend

- Survey Boundary
- ▲ Releves

Flora of Conservation Significance

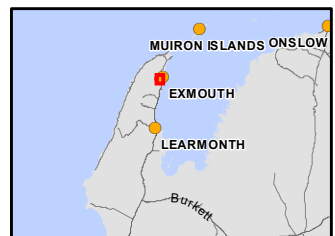
- *Acacia alexandri* (P3)
- *Acanthocarpus rupestris* (P2)
- *Brachychiton obtusilobus* (P4)
- *Corchorus congener* (P3)
- *Eremophila forrestii* subsp. *capensis* (P3)
- *Grevillea calcicola* (P3)
- *Hamieria kempeana* subsp. *rhadinophylla* (P2)
- *Sida* sp. (SOI)
- *Tinospora esiangkara* (P2)

SLIP ENABLER
 - LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 © Western Australian Land Information Authority



NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360 environmental
 a 10 Berrondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

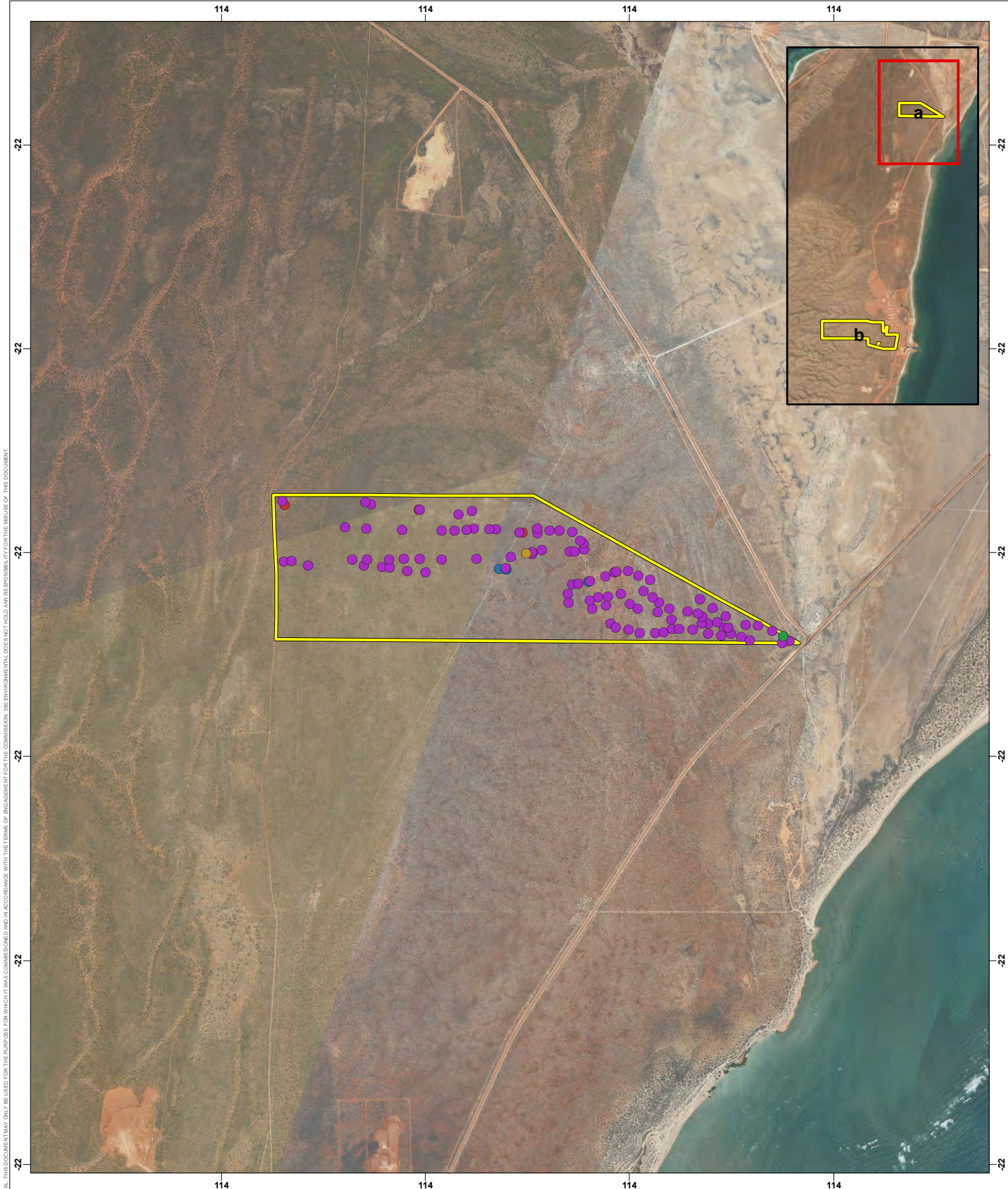
PROJECT ID 4766	DATE 09/12/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
 GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

Figure 9b
Flora of Conservation Significance



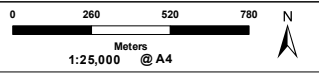
COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

- Survey Boundary
- Introduced Flora**
- **Aerva javanica*
- **Cenchrus ciliaris*
- **Bidens bipinnata*
- **Cenchrus setiger*
- **Setaria verticillata*

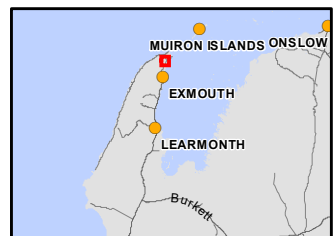
Presented by **SLIP ENABLER**

- LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 (© Western Australian Land Information Authority 2021)



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360 environmental
 a 10 Bermondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

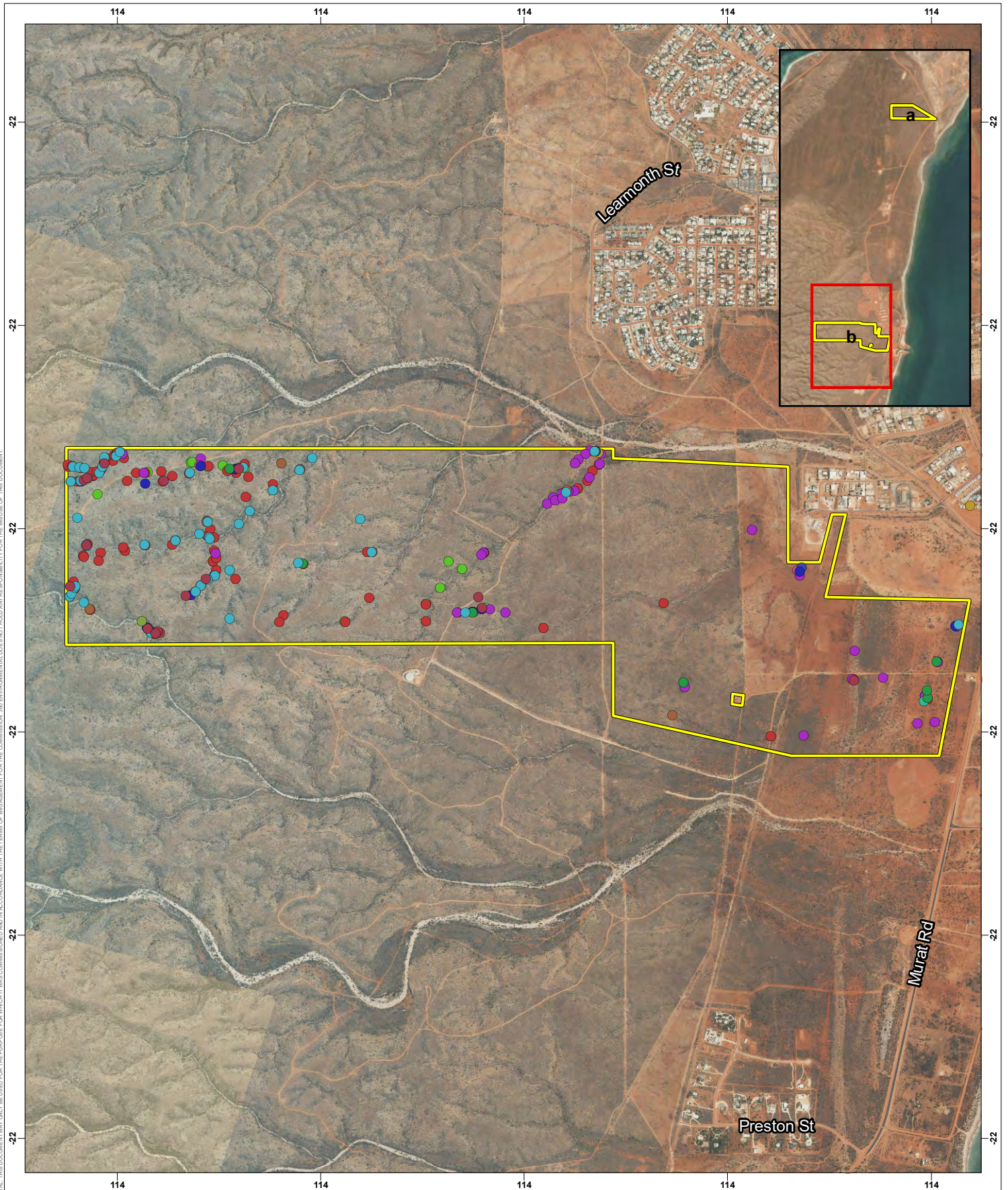
PROJECT ID 4766	DATE 08/12/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
 GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

Figure 10a
 Introduced Flora Recorded



COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

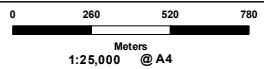
Survey Boundary

Introduced Flora

- **Aerva javanica*
- **Asphodelus fistulosus*
- **Bidens bipinnata*
- **Cenchrus ciliaris*
- **Cenchrus setiger*
- **Chloris pumilio*
- **Crotalaria incana subsp. incana*
- **Datura leichhardtii subsp. leichhardtii*
- **Flaveria trinervia*
- **Malvastrum americanum*
- **Rumex vesicarius*
- **Setaria verticillata*
- **Sigesbeckia orientalis*
- **Sonchus oleraceus*

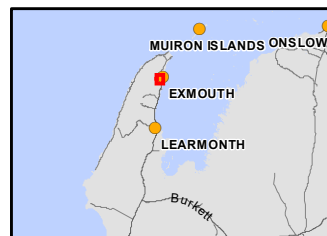


- LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 © Western Australian Land Information Authority 2021



NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360
 environmental
 a 10 Bernonsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

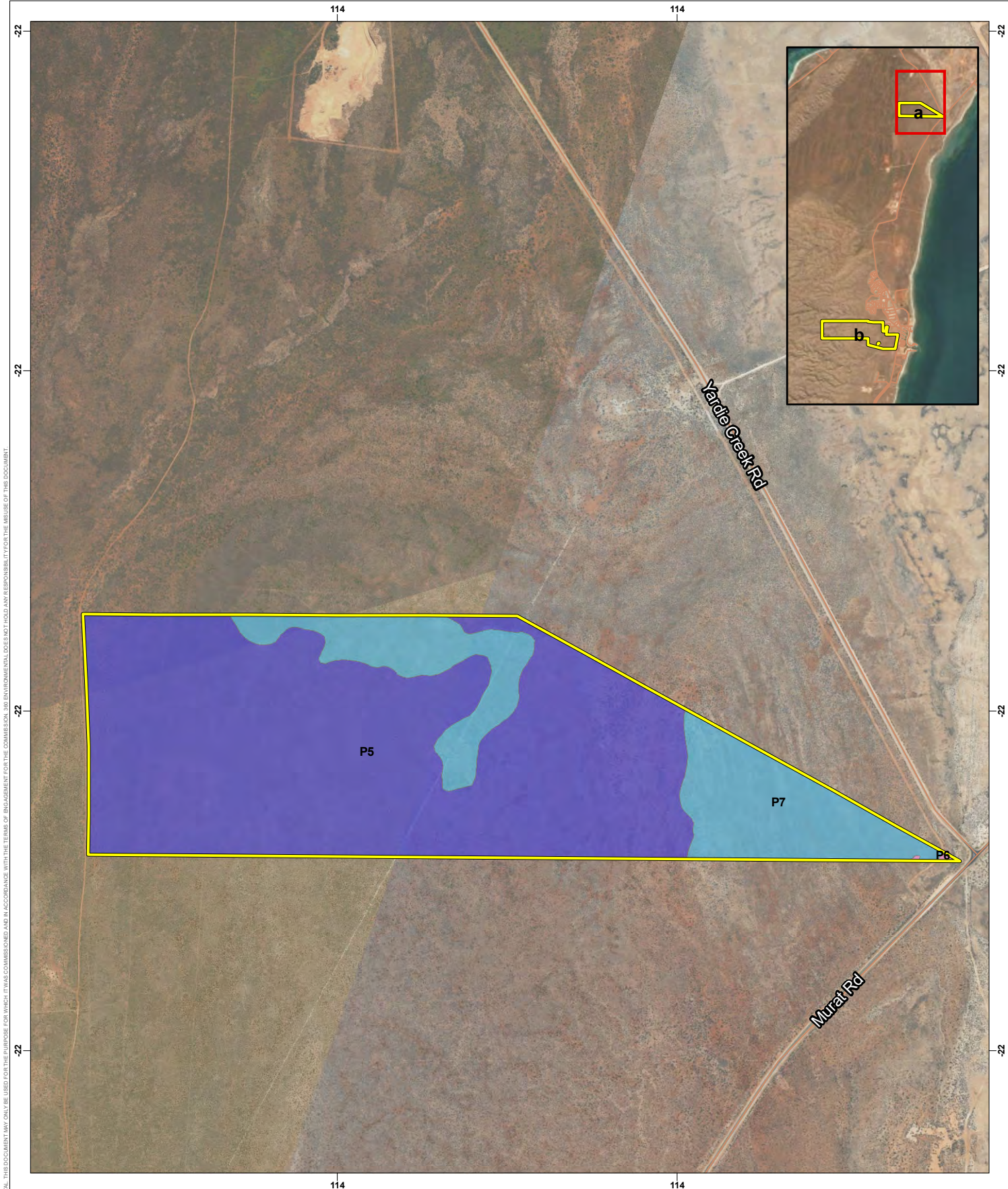
PROJECT ID 4766	DATE 08/12/2021
--------------------	--------------------

HORIZONTAL DATUM AND PROJECTION
GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

Figure 10b
 Introduced Flora Recorded



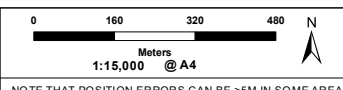
COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

- Survey Boundary
- Vegetation Types**
- P5
- P6
- P7

Presented by
SLIP ENABLER

- LOCALITY MAP SOURCED FROM LANDGATE 2021
- OTHER DATA SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
(© Western Australian Land Information Authority 2021)



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS



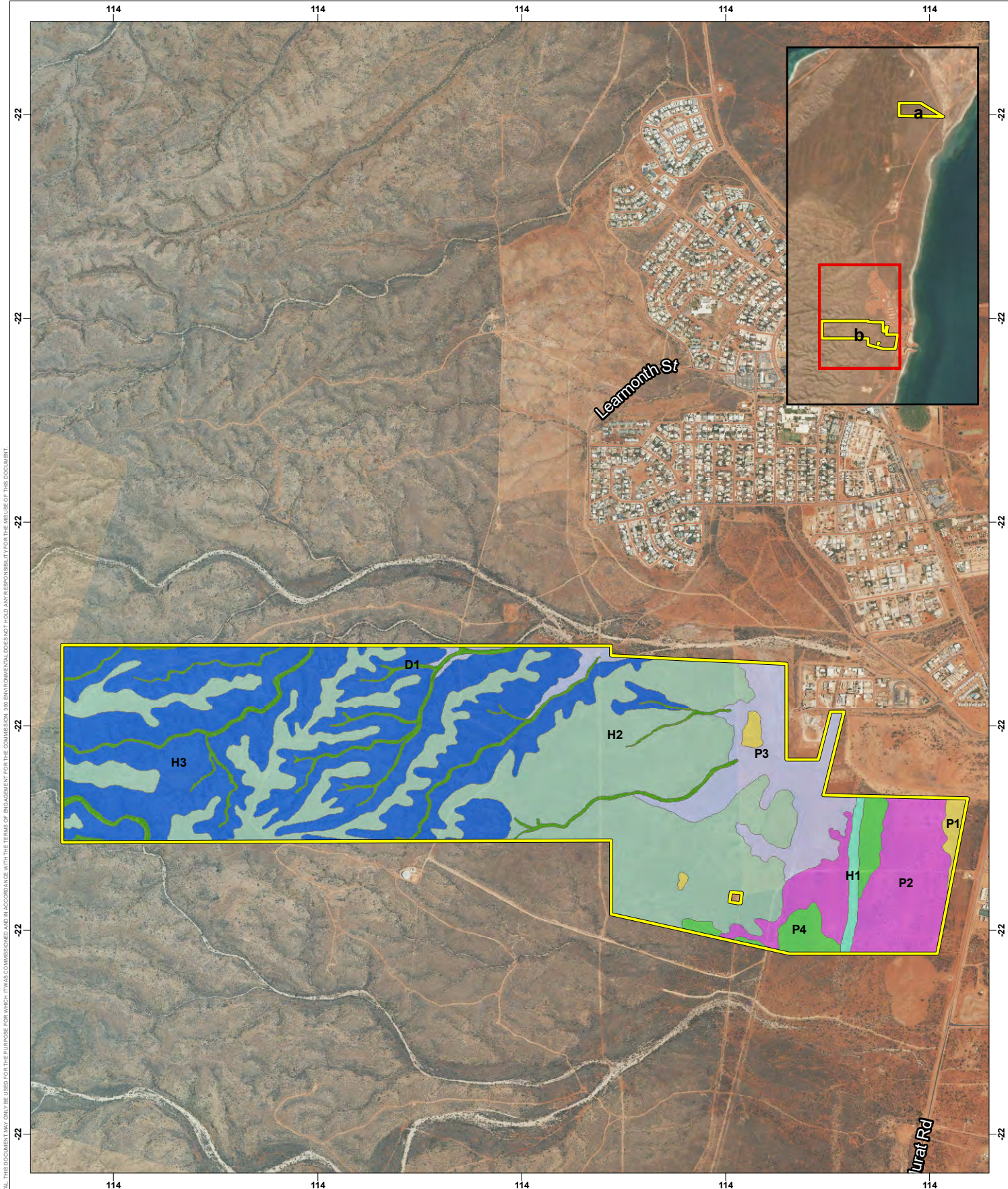
360 environmental
a 10 Berrondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

PROJECT ID 4766	DATE 25/11/2021
HORIZONTAL DATUM AND PROJECTION GCS GDA 1994	

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

Figure 11a
 Vegetation Types



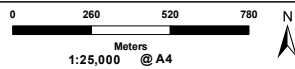
COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

Survey Boundary

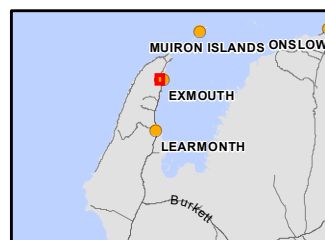
Vegetation Types

- D1
- H1
- H2
- H3
- P1
- P2
- P3
- P4



NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360
environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

PROJECT ID	DATE
4766	25/11/2021

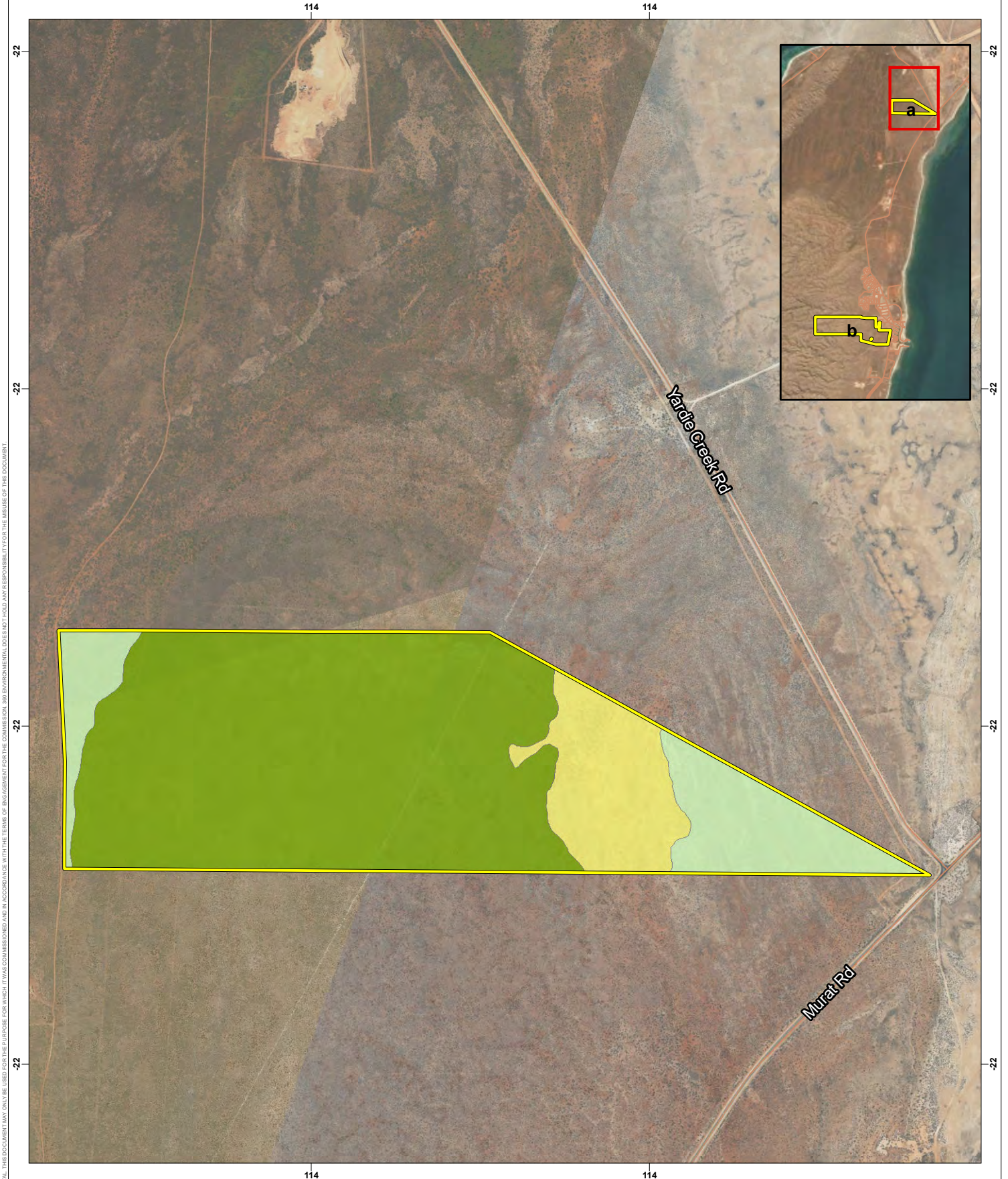
HORIZONTAL DATUM AND PROJECTION
GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
Lot 284, Lot 505, Lot 550, Reserve 51970,
Exmouth
Biological Survey

Figure 11b
Vegetation Types

Presented by **SLIP ENABLER**
- LOCALITY MAP SOURCED FROM LANDGATE 2021
- OTHER DATA SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
(© Western Australian Land Information Authority 2021)



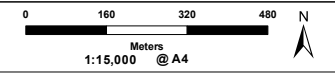
COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

- Survey Boundary
- Vegetation Condition**
- Very Good
- Good
- Poor

Presented by
SLIP ENABLER

- LOCALITY MAP SOURCED FROM LANDGATE 2021
- OTHER DATA SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
(© Western Australian Land Information Authority 2021)



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS



360
environmental
a 10 Berrondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

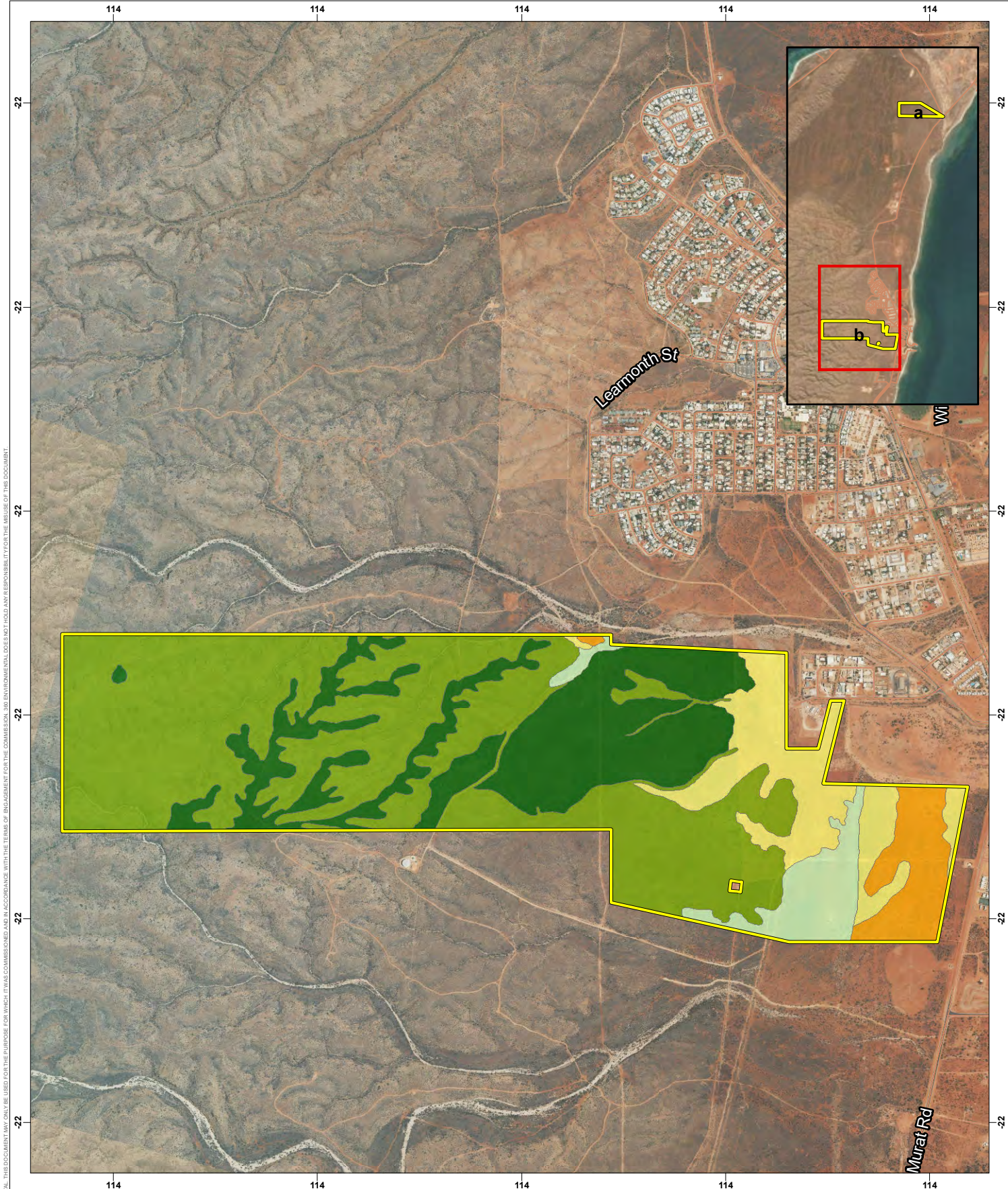
PROJECT ID 4766	DATE 25/11/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
Lot 284, Lot 505, Lot 550, Reserve 51970,
Exmouth
Biological Survey

Figure 12a
Vegetation Condition



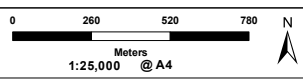
COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

- Survey Boundary
- Vegetation Condition**
- Excellent
- Very Good
- Good
- Poor
- Degraded

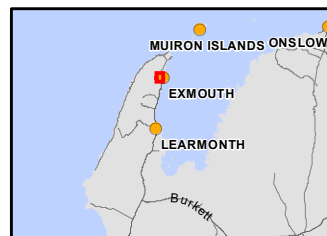
Presented by **SLIP ENABLER**

- LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 © Western Australian Land Information Authority 2021



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360 environmental
 a 10 Berrondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

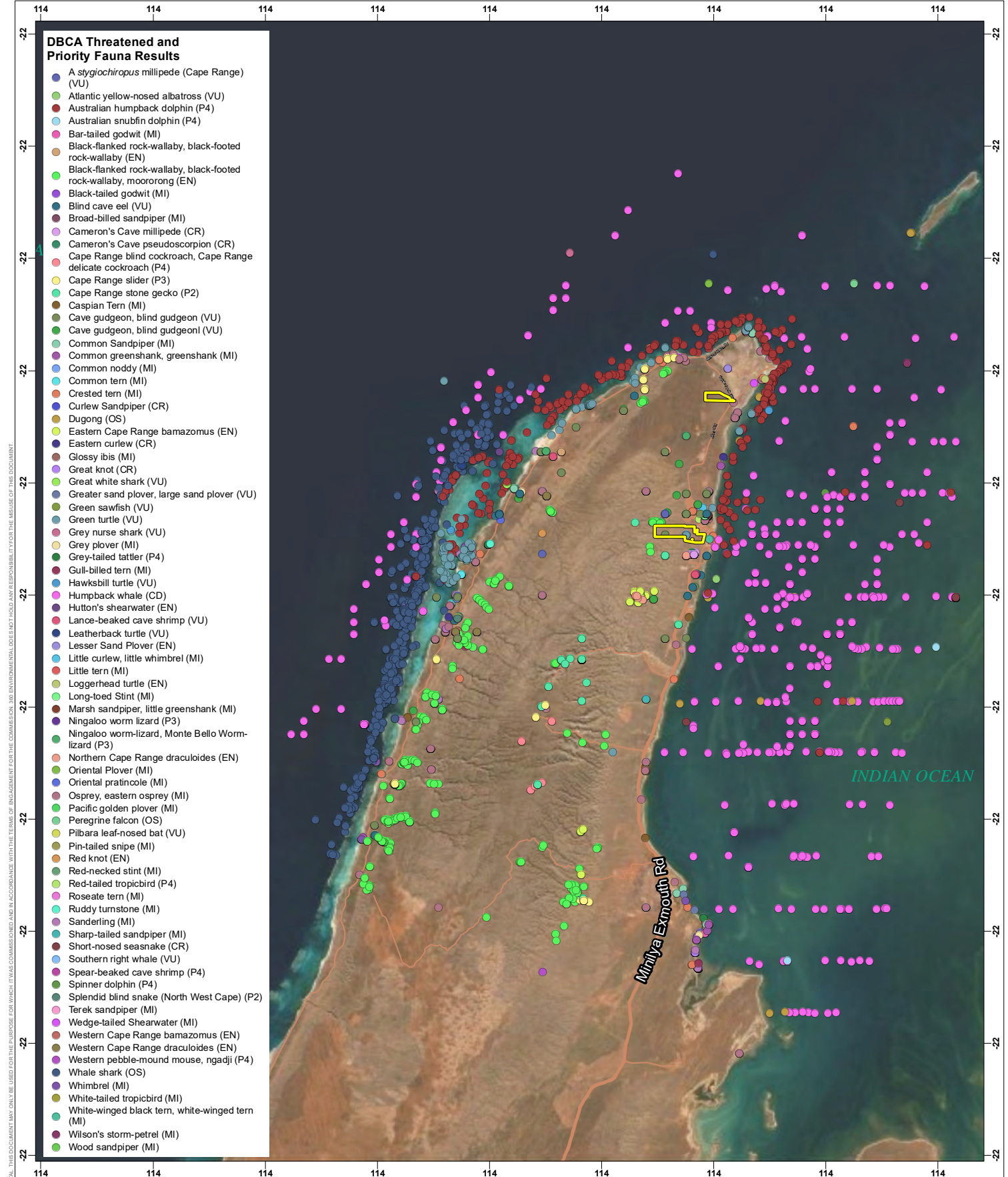
PROJECT ID 4766	DATE 25/11/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
 GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

Figure 12b
Vegetation Condition



Legend

Survey Boundary

Presented by **SLIP ENABLER**

- LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 © Western Australian Land Information Authority 2021

0 4,600 9,200 13,800
 Meters
 1:450,000 @ A4

NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP

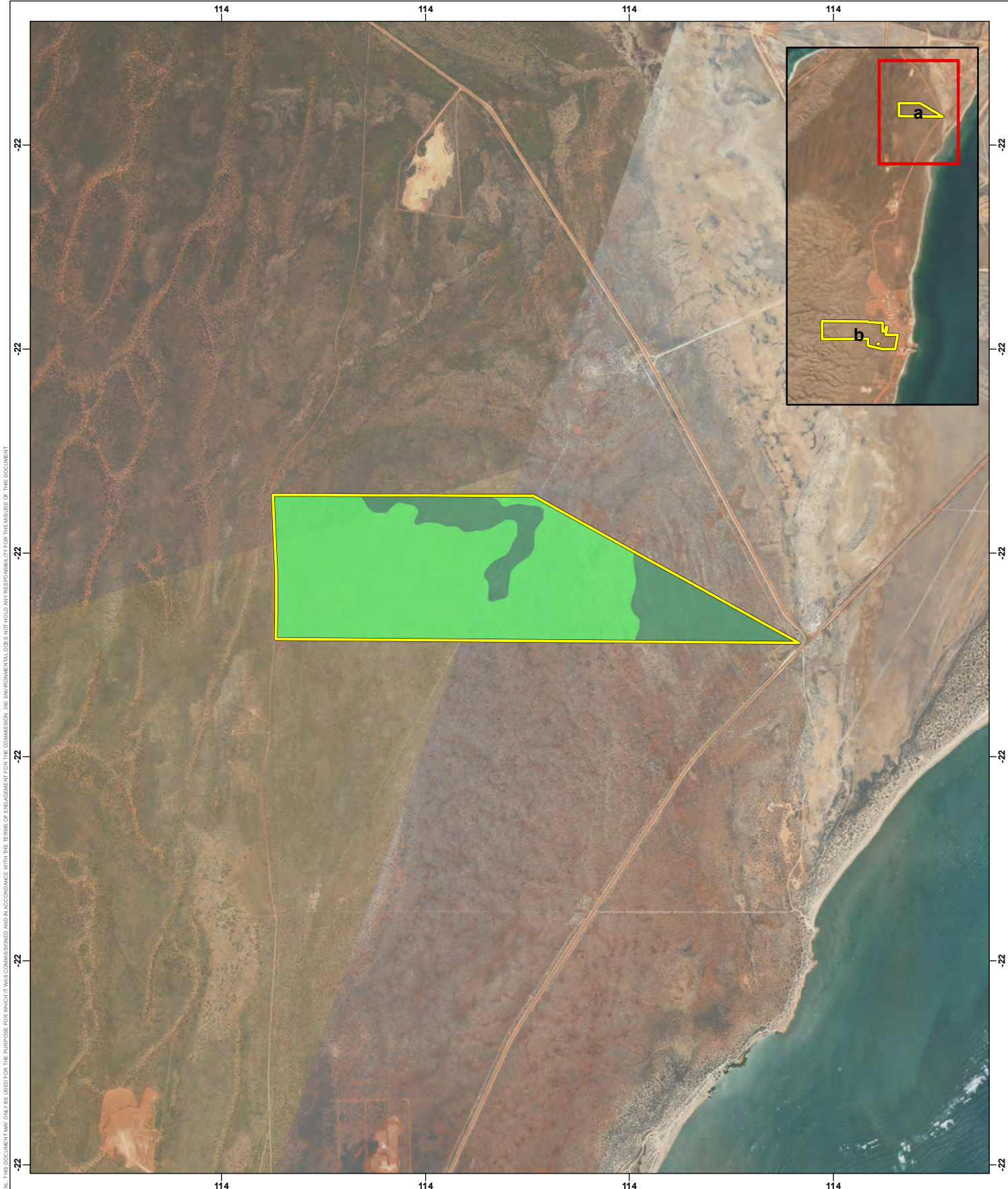
360 environmental
 a 10 Berrondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 w www.360environmental.com.au

PROJECT ID 4766	DATE 25/11/2021		
HORIZONTAL DATUM AND PROJECTION GCS GDA 1994			
CREATED LF	CHECKED BD	APPROVED BD	REVISION 0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

Figure 13
DBCA Threatened and
Priority Flora Locations

COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR WHICH IT WAS COMMISSIONED AND NO LIABILITY FOR THE MISUSE OF THIS DOCUMENT.



COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THE DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

Survey Boundary

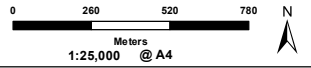
FaunaHab

Plains (Shrubland over Tussock Grassland)

Plains (Shrubland with Atriplex and Frankenia)

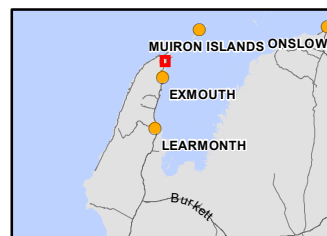
SLIP ENABLER

- LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 (© Western Australian Land Information Authority 2021)



-NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



360 environmental
 a 10 Berrondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 www.360environmental.com.au

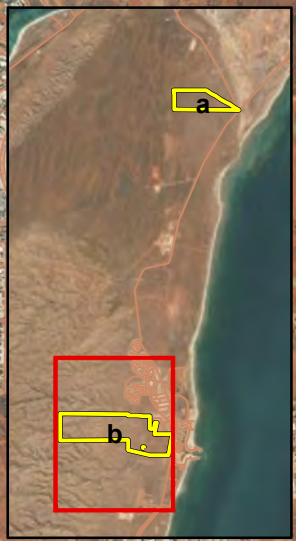
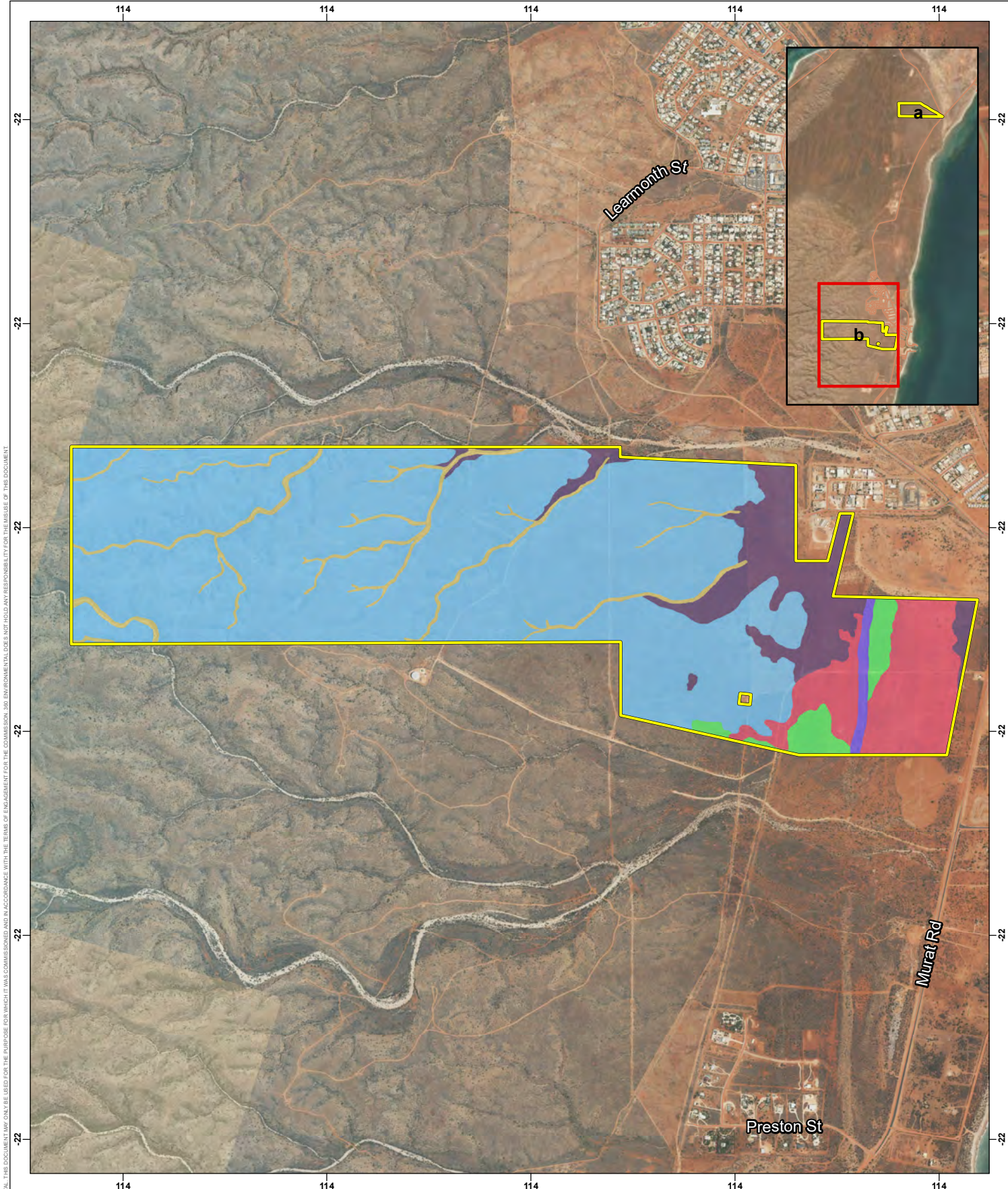
PROJECT ID 4766	DATE 22/12/2021
---------------------------	---------------------------

HORIZONTAL DATUM AND PROJECTION
 GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

Figure 14a
Fauna Habitat



COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THE DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

Legend

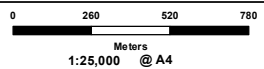
Survey Boundary

FaunaHab

- Drainage line/Creek
- Hills (Open Woodland over Tussock Grassland)
- Hills (Shrubland over Hummock Grassland)
- Plains (Shrubland over Hummock Grassland)
- Plains (Shrubland over Tussock Grassland)
- Plains (Woodland)

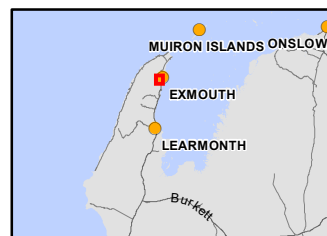
Powered by **SLIP ENABLER**

- LOCALITY MAP SOURCED FROM LANDGATE 2021
 - OTHER DATA SOURCED LANDGATE 2021
 - AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
 (© Western Australian Land Information Authority 2021)



-NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS-

LOCALITY MAP



360 environmental
 a 10 Berrondsey St, West Leederville, 6007 WA
 t (08) 9388 8360
 f (08) 9381 2360
 www.360environmental.com.au

PROJECT ID	DATE
4766	22/12/2021

HORIZONTAL DATUM AND PROJECTION
 GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
LF	BD	BD	0

Horizon power
 Lot 284, Lot 505, Lot 550, Reserve 51970,
 Exmouth
Biological Survey

Figure 14b
Fauna Habitat

Appendices

Appendix A Literature Review

Report	Project Area	Survey Timing	Survey Effort	Conservation Significant Ecological Communities	Conservation Significant Flora	Introduced Flora
Exmouth Lighthouse Resort Borefield – Ecological Survey Report (Strategen JBS&G, 2020)	2.8 km west of Lot 284	June 2020	Reconnaissance flora and vegetation survey: <ul style="list-style-type: none"> • Seven relevés 	None recorded.	<ul style="list-style-type: none"> • <i>Daviesia pleurophylla</i> (P2) • <i>Brachychiton obtusilobus</i> (P4) 	None recorded.
Learmonth (Exmouth) Line Rebuild Flora and Fauna Survey (GHD, 2019)	Partially overlapping with Lot 505 and Reserve 51970	May 2019	<ul style="list-style-type: none"> • Reconnaissance flora and vegetation survey (23 relevés) • Walking traverses 	None recorded.	<ul style="list-style-type: none"> • <i>Tephrosia</i> sp. North West Cape (G. Marsh 81) (P2) • <i>Tinospora esiangkara</i> (P2) • <i>Corchorus congener</i> (P3) • <i>Eremophila forrestii</i> subsp. <i>capensis</i> (P3) 	<ul style="list-style-type: none"> • <i>*Cenchrus ciliaris</i> • <i>*Chloris barbata</i>
Minilya-Exmouth Road Biological Survey, Main Roads WA (GHD, 2016)	2.0 km south of Reserve 51970	October 2015	Detailed flora and vegetation survey: <ul style="list-style-type: none"> • Twenty-nine quadrats 	None recorded	<ul style="list-style-type: none"> • <i>Acacia alexandri</i> (P3) • <i>Corchorus congener</i> (P3) • <i>Owenia acidula</i> (P3) 	<ul style="list-style-type: none"> • <i>*Aerva javanica</i> • <i>*Asphodelus fistulosus</i> • <i>*Avena sativa</i> • <i>*Bidens bipinnata</i> • <i>*Cenchrus ciliaris</i> • <i>*Chenopodium murale</i> • <i>*Chloris barbata</i> • <i>*Citrullus lanatus</i> • <i>*Crotalaria incana</i> subsp. <i>incana</i> • <i>*Cynodon dactylon</i> • <i>*Flaveria trinervia</i> • <i>*Lactuca serriola</i> • <i>*Malvastrum americanum</i> • <i>*Momordica balsamma</i> • <i>*Passiflora foetida</i> • <i>*Salvia verbenaca</i> • <i>*Sigesbeckia orientalis</i> • <i>*Solanum nigrum</i>

Report	Project Area	Survey Timing	Survey Effort	Conservation Significant Ecological Communities	Conservation Significant Flora	Introduced Flora
						<ul style="list-style-type: none"> • <i>*Sonchus asper</i> • <i>*Tamarix aphylla</i> (Declared Pest, WoNS) • <i>*Vachellia farnesiana</i>
Learmonth Pipeline Fabrication Facility - Detailed Flora, Vegetation and Targeted Survey (360 Environmental Pty Ltd, 2018)	33.9 km south of Reserve 51970	May 2017 September 2017 August 2018	<ul style="list-style-type: none"> • Detailed flora and vegetation survey (46 quadrats) • Targeted flora survey 	None recorded.	<ul style="list-style-type: none"> • <i>Corchorus congener</i> (P3) 	<ul style="list-style-type: none"> • <i>*Aerva javanica</i> • <i>*Bidens subalternans</i> var. <i>simulans</i> • <i>*Cenchrus ciliaris</i> • <i>*Chenopodium murale</i> • <i>*Solanum nigrum</i> • <i>*Sonchus oleraceus</i> • <i>*Sisymbrium orientale</i> • <i>*Vachellia farnesiana</i>

Conservation significant flora or vegetation	(Strategen JBS&G, 2020)	(GHD, 2019)	(GHD, 2016)	(360 Environmental Pty Ltd, 2018)
	2.8 km west of Lot 284	Partially overlapping with Lot 505 and Reserve 51970	2.0 km south of Reserve 51970	33.0 km south of Reserve 51970
P1				
<i>Calytrix</i> sp. Learmonth (S. Fox EMopp 1)		★		✓
P2				
<i>Acacia ryaniana</i>		★		
<i>Acanthocarpus rupestris</i>	★	★		
<i>Calandrinia</i> sp. Cape Range (F. Obbens FO 10/18)	★	★		
<i>Crinum flaccidum</i>			★	
<i>Daviesia pleurophylla</i>	✓	★		
<i>Eremophila occidens</i>	★	★		
<i>Harnieria kempeana</i> subsp. <i>rhadinophylla</i>	★	★		
<i>Tephrosia</i> sp. North West Cape (G. Marsh 81)	★	✓		
<i>Tinospora esiangkara</i>	★	✓	★	
<i>Verticordia serotina</i>	★	★		
P3				
<i>Acacia alexandri</i>	★	★	✓	
<i>Acacia startii</i>	★	★		
<i>Corchorus congener</i>	★	✓	✓	✓

Conservation significant flora or vegetation	(Strategen JBS&G, 2020)	(GHD, 2019)	(GHD, 2016)	(360 Environmental Pty Ltd, 2018)
	2.8 km west of Lot 284	Partially overlapping with Lot 505 and Reserve 51970	2.0 km south of Reserve 51970	33.0 km south of Reserve 51970
<i>Eremophila forrestii</i> subsp. <i>capensis</i>	★	✓		
<i>Grevillea calcicola</i>	★	★		
<i>Gymnanthera cunninghamii</i>		★		
<i>Helminthostachys zeylanica</i>		★		
<i>Owenia acidula</i>			✓	
<i>Phyllanthus fuernrohrii</i>	★	★		
<i>Stackhousia umbellata</i>	★	★		
P4				
<i>Brachychiton obtusilobus</i>	✓	★		
<i>Eremophila youngii</i> subsp. <i>lepidota</i>	★	★		
Threatened and Priority Ecological Communities				
Camerons Cave Troglobitic Community (CR)	★	★		
Tussock grasslands or grassy tall or low shrublands of the Yarcowie Land System (Carnarvon Basin) (P1)			★	
Lake Mcleod invertebrate assemblages (P3)			★	

✓ Denotes species was found during survey

★ Denotes species was identified by database searches during desktop assessment, which typically include an additional buffer around the Project Area, but were not found during survey

Report	Project Area	Survey Timing	Survey Effort	Conservation Significant Fauna	Fauna Habitats
Exmouth Lighthouse Resort Borefield – Ecological Survey Report (Strategen JBS&G, 2020)	2.8 km west of Lot 284	June 2020	Desktop Assessment	N/A	N/A
Learmonth (Exmouth) Line Rebuild Flora and Fauna Survey (GHD, 2019)	Partially overlapping with Lot 505 and Reserve 51970	May 2019	Basic fauna survey	<ul style="list-style-type: none"> • <i>Falco peregrinus</i> (OS) • <i>Pandion haliaetus</i> (MI) 	<ul style="list-style-type: none"> • Rocky plains • Creeklines and minor drainage lines • Mixed shrublands on sandy loam plains • Clay flats
Minilya-Exmouth Road Biological Survey, Main Roads WA (GHD, 2016)	2.0 km south of Reserve 51970	October 2015	Basic fauna survey	<ul style="list-style-type: none"> • <i>Pandion haliaetus</i> (MI) • <i>Merops ornatus</i> (MI) 	<ul style="list-style-type: none"> • Mosaic plains • Low rocky outcrop • Creekline • Flats • Pebbly dune • Dune system • Calcareous shield • Mixed scrub on stony slope • Drainage line • Open grass plains with emergent <i>Acacia</i> shrubs • Chenopod plains • Claypan • Scrub on rolling dune • Floodplain

Appendix B Database Searches

Threatened and Priority Flora DBCA Database Search Results

Taxon	ConsStatus	WARank	PopNumber	Location	District	Vesting	Purpose1	Purpose2	CountDate	InFlower	HabNotes	SoilCondit	Landform	RockType	SoilType	SoilColor	Aspect	AssSpecies	Veg_domA1	Veg_domB1	Veg_domC1	Veg_domD1	
<i>Acacia alexandri</i>	3		1.000000	5.3 km west of Exmouth-Miniya Road on Charles Knife Road, 22.5 km south of Exmouth, North West Cape. Crown Lease L 3114 996: Lyndon Lot 164.	EXMOUTH	PLB	PAS		29/08/1988	Y	Karst formation. Rocky. With <i>Triodia</i> .		SLOPE					<i>Acacia bivenosa</i>	<i>Acacia bivenosa</i>				
<i>Acacia alexandri</i>	3		3.000000	Charles Knife Road, 3.8 km west of T-junction with Miniya Exmouth Road, ca 14 km west-north-west of Learmonth. Crown Lease L 3114 996: Lyndon Lot 164.	EXMOUTH	PLB	PAS		05/08/1986	N	Range: Massive outcropping. Open mallee over very open low scrub <i>Ficus</i> , <i>Cassia</i> , <i>Exocarpus</i> over spinifex.		SLOPE	LIMESTN			E	<i>Eucalyptus apaca</i> , <i>Acacia pyrifolia</i> , <i>Acacia arida</i> , <i>Acacia bivenosa</i>	<i>Eucalyptus apaca</i>	<i>Acacia pyrifolia</i>	<i>Acacia bivenosa</i>	<i>Acacia arida</i>	
<i>Acacia alexandri</i>	3		4.000000	Charles Knife Road, 6.2 km west of T-junction with Miniya Exmouth Road, ca 15.5 km north-north-west of Learmonth. Crown Lease L 3114 996: Lydon Lot 164.	EXMOUTH	PLB	PAS		05/08/1986	N	Gravel pit. Powdery soil. White limestone. <i>Leptosema</i> sp. over spinifex.			LIMESTN	LOAM	PINK		<i>Eucalyptus faecunda</i> , <i>Melaleuca cardiophylla</i> , <i>Hibbertia spicata</i> , <i>Grevillea calcicola</i>	<i>Eucalyptus faecunda</i>	<i>Melaleuca cardiophylla</i>	<i>Grevillea calcicola</i>	<i>Hibbertia spicata</i>	
<i>Acacia alexandri</i>	3		7.000000	About 8 km south of Exmouth, extending from [Cape Range] limestone Mine, ca 3 km west of Exmouth Miniya Road, through to the coast (4.6 km).	EXMOUTH	NON	UCL		24/11/1997	N	Shrub-steppe with <i>Acacia pyrifolia</i> , <i>Senna artemisioides</i> sp. oligophylla.	DRY		LIMESTN	SAND	RED		<i>Acacia bivenosa</i> , <i>Triodia basedowii</i> , <i>Triodia pungens</i> , <i>Melaleuca cardiophylla</i>	<i>Acacia bivenosa</i>	<i>Triodia basedowii</i>	<i>Melaleuca cardiophylla</i>	<i>Triodia pungens</i>	
<i>Acanthocarpus rupestris</i>	2		2.000000	UCL 3.5 miles (5.633 km) south of Exmouth township.	EXMOUTH	NON	UCL		15/05/1965	Y			OD_CREEK	LIMESTN	SAND	RED							
<i>Daviesia pleurophylla</i>	2		1.000000	In dune ca 150 m north of northern fence of Harold Holt Naval Base, Exmouth. Rifle Range. Lot 284 Murat Road. Crown Reserve 37664.	EXMOUTH	LGA	FIR		12/10/2001	Y	Low inland dune running north-south with loosley sorted sand. Shrubland.		RI_DUNE		SAND	RED_BRWN		<i>Myoporum montanum</i> , <i>Acacia coriacea</i> , <i>Grevillea stenobotrya</i>	<i>Myoporum montanum</i>	<i>Acacia coriacea</i>	<i>Grevillea stenobotrya</i>		
<i>Grevillea calcicola</i>	3		1.000000	Cape Range National Park (Crown Reserve 27288; Expl. Lic. 081786 Pending, Bauxite Australia). 7 km from main road (Miniya Exmouth Road), on Charles Knife Road.	EXMOUTH	CC	NPK		30/08/1964	N													
<i>Grevillea calcicola</i>	3		4.000000	Freehold, 1 Yardie Creek Road, North West Cape. Lighthouse Hill, northernmost ridge of Cape Range, [700 m south from Vlamingh Head].	EXMOUTH	PRI			17/06/1995	N	Soil Condition (Skeletal): Exposed. Low coastal heath with <i>Triodia</i> sp., <i>Atriplex</i> spp., <i>Scaevola</i> spp., and <i>Sarcostemma</i> sp.		CREST	LIMESTN		RED		<i>Ficus platypoda</i>	<i>Ficus platypoda</i>				
<i>Tinospora esiangkara</i>	2		2.000000	UCL North West Cape, ca 10 km south of Exmouth centre in creek south of Mowbowra Creek, 150 to 200 m west of powerline parallel to main road.	EXMOUTH	NON	UCL		24/07/1995	Y	Low creek bank near end of low spur. Calcareous.		OUTCROP	LIMESTN	LOAM	ORANGE	E	<i>Commicarpus australis</i> , <i>Enchylaena tomentosa</i> , <i>Evolvulus alsinoides</i>	<i>Commicarpus australis</i>	<i>Evolvulus alsinoides</i>	<i>Enchylaena tomentosa</i>		

Western Australian Herbarium Database Search Results

Taxon	Cons_Code	Plant_Desc	Site	Vegetation	Locality	Date
<i>Acacia alexandri</i>	3	Open bush to 1.5 m.			Shothole Canyon, Exmouth	28/10/1983
<i>Acacia alexandri</i>	3	Spreading shrub 2 m tall; canopy erect, yellow green as are branches; phyllodes 10 cm x 5 mm, soft, fleshy, subtended by paired spiny stipules.	E slope of range, massive outcropping limestone.	Open mallee <i>Eucalyptus opaca</i> (glossy leaves), over very open low scrub <i>Acacia pyrifolia</i> , <i>Ficus</i> , <i>Cassia</i> , <i>Exocarpus</i> spp. with <i>Acacia arida</i> , <i>A. bivenosa</i> over tall spinifex.	On Charles Knife Road 3.8 km W of T-junction with Murat Road (main road), ca 14 km WNW of Learmonth	5/08/1986
<i>Acacia alexandri</i>	3	Open bush to 1.5 m.			Shothole Canyon, Exmouth	9/09/1983
<i>Acacia alexandri</i>	3	Glabrous shrub 2.5 m tall; stems slender, erect; smooth grey bark, becoming greenish brown then dull reddish yellow-green on branchlets; phyllodes erect, dull, fleshy, yellow green, subtended by 2 dark brown spiny stipules; infl. paired, spreading away f	Gradual slope NW aspect, near foot of subdued stony ridge on crest of range, pale pinkish brown loam and surface limestone, some massive pavements.	Open shrub mallee of <i>Eucalyptus</i> aff. <i>opaca</i> over scrub of <i>Acacia bivenosa</i> , <i>A. pyrifolia</i> , <i>Hibiscus</i> sp., <i>Ipomaea costata</i> and <i>Exocarpus</i> sp.	On Charles Knife Road, 11.1 km W of T-junction with Murat Road (main road), ca 20 km NW of Learmonth	5/08/1986
<i>Acacia alexandri</i>	3	Sterile, spreading shrub to 1.5 m x 1.5 m; basal bark dark grey, fissured irregularly, moderately dense canopy; phyllodes erect fleshy, olive green; branchlets red brown then greenish brown as they mature.	Gravel pit, pink powdery loam and white limestone.	<i>Eucalyptus</i> aff. <i>foecunda</i> OSM over low scrub with <i>Melaleuca</i> ? <i>cardiophylla</i> , <i>Hibbertia spicata</i> , <i>Leptosema</i> sp., <i>Grevillea calcicola</i> over spinifex.	On Charles Knife Road 6.2 km W of T-junction with Murat Road (main road), ca 15.5 km NNW of Learmonth	5/08/1986
<i>Brachychiton obtusilobus</i>	4	Tree ca 5 m tall. Bark smooth, pale grey. Leaves glossy green. Fruits mainly dry, empty. Pods matte black, in clusters of up to 5.	Limestone ridge.	With low tree and shrub vegetation.	Charles Knife Road, Cape Range National Park, ca 10 km from the Exmouth main road	2/05/1977
<i>Brachychiton obtusilobus</i>	4	Tree 15 ft. In pod.	Sandy plain.	Spinifex and scrub.	Between Exmouth township and U.S. Base at North West Cape	21/07/1964
<i>Brachychiton obtusilobus</i>	4	Spreading tree to 25 ft. Flowers greenish; fruit black.	On hill top at base of gorge.		Cape Range, 9 miles N of Learmonth	30/08/1960
<i>Brachychiton obtusilobus</i>	4	Tree 5 m.	In rocky, limestone soil.		Charles Knife Road, Cape Range National Park,	3/05/1977
<i>Corchorus congener</i>	3				Hall Street, Exmouth townsite	26/07/2011
<i>Corchorus congener</i>	3				2 km E of Lighthouse, Exmouth, Cape Range	18/09/1964
<i>Corchorus congener</i>	3	Spreading shrub 35 cm; flowers yellow.	In red loam with limestone.		5-6 miles S of Exmouth	25/05/1965
<i>Corchorus congener</i>	3	Shrub.	Pleistocene deep red sandplains with an adjacent small limestone rise.	Sparse shrubland of <i>Acacia bivenosa</i> , <i>Senna glutinosa</i> subsp. <i>pruinosa</i> over low dense shrubland of <i>A. gregorii</i> and mid-dense hummock grassland of <i>Triodia epactia</i> and <i>T. basedowii</i> . As the limestone rise progresses S, the vegetation grades into shrubland of	Unallocated Crown Land, ca. 12.04 km N (8 degrees) of Exmouth and ca. 45.46 km SE (129 degrees) of Vlaming Head Lighthouse	1/10/2009
<i>Corchorus congener</i>	3	Shrub.	Coastal plain. Red-brown sandy loam.	Shrubland of <i>Acacia bivenosa</i> and <i>A. synchronica</i> over hummock grassland of <i>Triodia epactia</i> .	Unallocated Crown Land, located on Shothole Canyon Road, ca. 13.05 km SSW (195 degrees) of Exmouth and ca. 27.41 km S (184 degrees) of Vlaming Head Lighthouse	25/09/2009
<i>Cucumis</i> sp. Barrow Island (D.W. Goodall 1264)	2	Herbaceous perennial vine with up to 5 flower fascicles per leaf axil, growing up to 2 m tall.	Wide, 3m deep wash in a limestone landscape.	Tussock grassland of <i>Cenchrus ciliaris</i> and a tall shrub overstorey of <i>Acacia tetragonophylla</i> .	E side of North West Cape and 11.1 from Exmouth on a bearing of 190 degrees on main road to Learmonth, Pilbara Region	1/05/2017
<i>Daviesia pleurophylla</i>	2	Broom-like, single or few stemmed, to 3 m. Petals yellow and dark red.	N-S sand dune, summit of dune. Deep red sand.	Shrubland dominated by this species.	Exmouth, Harold Holt Navel Base, c. 150 m N of northern fence of base. Carnarvon District	12/10/2001
<i>Eremophila forrestii</i> subsp. <i>capensis</i>	3	Shrubs to 1 m. Unusually few stemmed, rarely much branched, corolla pale carmine on both surfaces unspotted or spotted deep carmine in the tube and on the base of the lower lip but very variable, new growth often lemon yellow.	On limestone slopes.	Amongst Mallee over spinifex.	2.9 km E of No 2 Oil Well, Charles Knife Road, Cape Range	24/08/1986
<i>Eremophila forrestii</i> subsp. <i>capensis</i>	3	Shrub.	Pleistocene deep red sandplains with an adjacent small limestone rise.	Sparse shrubland of <i>Acacia bivenosa</i> , <i>Senna glutinosa</i> subsp. <i>pruinosa</i> over low dense shrubland of <i>A. gregorii</i> and mid-dense hummock grassland of <i>Triodia epactia</i> and <i>T. basedowii</i> . As the limestone rise progresses S, the vegetation grades into shrubland of	Unallocated Crown Land, ca. 12.04 km N (8 degrees) of Exmouth and ca. 45.46 km SE (129 degrees) of Vlaming Head Lighthouse	1/10/2009
<i>Eremophila youngii</i> subsp. <i>lepidota</i>	4	Straggly shrub, 2-2.5 m. Flowers red-pink; leaves narrow, lanceolate, grey.	Red soil.		56 km on Exmouth Road	21/08/1986
<i>Grevillea calcicola</i>	3	Shrub 3-4 m high. Flowers cream.			Cape Range, N of Learmonth	30/08/1960
<i>Grevillea calcicola</i>	3	Shrub 3-4 m high with cream flowers.			Cape Range, N of Learmonth	30/08/1960
<i>Gymnanthera cunninghamii</i>	3	Perennial shrub, 2 m high x 1 m wide. White flowers.	Drainage line and nearby floodplain. Red-brown clay loam over limestone.	<i>Corymbia hamersleyana</i> over <i>Triodia epactia</i> , <i>Triodia angusta</i> and <i>Cenchrus ciliaris</i> .	Within 100 m of Minilya-Exmouth Road, Exmouth	31/10/2016
<i>Stackhousia umbellata</i>	3	Petals bright yellow.	Creek bed in canyon. Limestone rubble.		Shothole Canyon Road	/08/1978
<i>Stackhousia umbellata</i>	3	Shrub.		Shrubland of <i>Hibbertia spicata</i> subsp. <i>spicata</i> over hummock grassland of <i>Triodia wiseana</i> . <i>Acacia tetragonophylla</i> and <i>A. synchronica</i> tall shrubland over <i>Triodia epactia</i> and <i>Cenchrus ciliaris</i> grasslands.	Unallocated Crown Land, ca. 13.57 km N (357 degrees) of Exmouth and ca. 1.53 km SE (143 degrees) of Vlaming Head Lighthouse	27/09/2009
<i>Tephrosia</i> sp. North West Cape (G. Marsh 81)	2	Low perennial shrub, 0.3 m high x 0.1 m wide.	Plain. Red brown clay-loam over limestone.		Within 100 m of Minilya-Exmouth Road, Exmouth	31/10/2016
<i>Tephrosia</i> sp. North West Cape (G. Marsh 81)	2	Herb 5 cm x 20 cm. Flowers peach.	Limestone rise. Orange pindan soil over exposed limestone rock. Burnt c. 3 years ago.	Low shrubs. Associated species: <i>Acacia bivenosa</i> , <i>A. gregorii</i> , <i>Triodia</i> sp., <i>Solanum lasiophyllum</i> , <i>S. diversiflorum</i> , <i>Indigofera monophylla</i> , <i>Melaleuca</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>Corymbia hamersleyana</i> , <i>Eremophila forrestii</i> .	Stokes-Hughes Road at the back (western edge) of Exmouth township	27/06/2019

Threatened and Priority Ecological Communities Database Search Results

COM_ID	COM_NAME	STATE_CATG	COMM_CATG	BUFFER	HECTARES
Bundera	Cape Range Remipede Community (Bundera Sinkhole)	Critically Endangered		2000	0.2844000000
Camerons Cave	Camerons Cave Troglobitic Community	Critically Endangered		500	11.1804000000

Conservation Significant Fauna DBCA Database Search Results

SCI_NAME	COM_NAME	CLASS	WA_LISTING	WA_status	EPBCstatus
<i>Actitis hypoleucos</i>	Common Sandpiper	BIRD	Specially Protected - migratory	MI	MI
<i>Anous stolidus</i>	common noddy	BIRD	Specially Protected - migratory	MI	MI
<i>Ardena pacifica</i>	Wedge-tailed Shearwater	BIRD	Specially Protected - migratory	MI	MI
<i>Arenaria interpres</i>	Ruddy turnstone	BIRD	Specially Protected - migratory	MI	MI
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	BIRD	Specially Protected - migratory	MI	MI
<i>Calidris alba</i>	Sanderling	BIRD	Specially Protected - migratory	MI	MI
<i>Calidris canutus</i>	Red knot	BIRD	Threatened - Endangered	EN	EN
<i>Calidris ferruginea</i>	Curlew Sandpiper	BIRD	Threatened - Critically endangered	CR	CR
<i>Calidris ruficollis</i>	Red-necked stint	BIRD	Specially Protected - migratory	MI	MI
<i>Calidris subminuta</i>	Long-toed Stint	BIRD	Specially Protected - migratory	MI	MI
<i>Calidris tenuirostris</i>	Great knot	BIRD	Threatened - Critically endangered	CR	CR
<i>Charadrius leschenaultii</i>	Greater sand plover, large sand plover	BIRD	Threatened - Vulnerable	VU	MI
<i>Charadrius mongolus</i>	Lesser Sand Plover	BIRD	Threatened - Endangered	EN	EN
<i>Charadrius veredus</i>	Oriental Plover	BIRD	Specially Protected - migratory	MI	MI
<i>Chlidonias leucopterus</i>	White-winged black tern, white-winged tern	BIRD	Specially Protected - migratory	MI	MI
<i>Falco peregrinus</i>	Peregrine falcon	BIRD	Specially Protected - other specially protected	OS	
<i>Gallinago stenura</i>	Pin-tailed snipe	BIRD	Specially Protected - migratory	MI	MI
<i>Gelochelidon nilotica</i>	Gull-billed tern	BIRD	Specially Protected - migratory	MI	MI
<i>Glareola maldivarum</i>	Oriental pratincole	BIRD	Specially Protected - migratory	MI	MI
<i>Hydroprogne caspia</i>	Caspian Tern	BIRD	Specially Protected - migratory	MI	MI
<i>Limicola falcinellus</i>	Broad-billed sandpiper	BIRD	Specially Protected - migratory	MI	MI
<i>Limosa lapponica</i>	Bar-tailed godwit	BIRD	Specially Protected - migratory	MI	MI
<i>Limosa limosa</i>	Black-tailed godwit	BIRD	Specially Protected - migratory	MI	MI
<i>Numenius madagascariensis</i>	Eastern curlew	BIRD	Threatened - Critically endangered	CR	CR
<i>Numenius minutus</i>	Little curlew, little whimbrel	BIRD	Specially Protected - migratory	MI	MI
<i>Numenius phaeopus</i>	Whimbrel	BIRD	Specially Protected - migratory	MI	MI
<i>Oceanites oceanicus</i>	Wilson's storm-petrel	BIRD	Specially Protected - migratory	MI	MI
<i>Pandion cristatus</i>	Osprey, eastern osprey	BIRD	Specially Protected - migratory	MI	MI
<i>Phaethon lepturus</i>	White-tailed tropicbird	BIRD	Specially Protected - migratory	MI	MI
<i>Phaethon rubricauda</i>	Red-tailed tropicbird	BIRD	Priority	P4	MI
<i>Plegadis falcinellus</i>	Glossy ibis	BIRD	Specially Protected - migratory	MI	MI
<i>Pluvialis fulva</i>	Pacific golden plover	BIRD	Specially Protected - migratory	MI	MI
<i>Pluvialis squatarola</i>	Grey plover	BIRD	Specially Protected - migratory	MI	MI
<i>Puffinus huttoni</i>	Hutton's shearwater	BIRD	Threatened - Endangered	EN	
<i>Sterna dougallii</i>	Roseate tern	BIRD	Specially Protected - migratory	MI	MI
<i>Sterna hirundo</i>	Common tern	BIRD	Specially Protected - migratory	MI	MI
<i>Sternula albifrons</i>	Little tern	BIRD	Specially Protected - migratory	MI	MI
<i>Thalassarche chlororhynchos</i>	Atlantic yellow-nosed albatross	BIRD	Threatened - Vulnerable	VU	MI
<i>Thalasseus bergii</i>	Crested tern	BIRD	Specially Protected - migratory	MI	MI
<i>Tringa brevipes</i>	Grey-tailed tattler	BIRD	Priority	P4	MI
<i>Tringa glareola</i>	Wood sandpiper	BIRD	Specially Protected - migratory	MI	MI
<i>Tringa nebularia</i>	Common greenshank, greenshank	BIRD	Specially Protected - migratory	MI	MI
<i>Tringa stagnatilis</i>	Marsh sandpiper, little greenshank	BIRD	Specially Protected - migratory	MI	MI
<i>Xenus cinereus</i>	Terek sandpiper	BIRD	Specially Protected - migratory	MI	MI

Conservation Significant Fauna DBCA Database Search Results

SCI_NAME	COM_NAME	CLASS	WA_LISTING	WA_status	EPBCstatus
<i>Dugong dugon</i>	Dugong	MAMMAL	Specially Protected - other specially protected	OS	
<i>Eubalaena australis</i>	Southern right whale	MAMMAL	Threatened - Vulnerable	VU	EN
<i>Megaptera novaeangliae</i>	Humpback whale	MAMMAL	Specially Protected - conservation dependent	CD	VU
<i>Orcaella heinsohni</i>	Australian snubfin dolphin	MAMMAL	Priority	P4	MI
<i>Petrogale lateralis lateralis</i>	black-flanked rock-wallaby, black-footed rock-wallaby, moororong	MAMMAL	Threatened - Endangered	EN	EN
<i>Pseudomys chapmani</i>	Western pebble-mound mouse, ngadji	MAMMAL	Priority	P4	
<i>Rhinonictes aurantia</i> (Pilbara)	Pilbara leaf-nosed bat	MAMMAL	Threatened - Vulnerable	VU	VU
<i>Sousa sahalensis</i>	Australian humpback dolphin	MAMMAL	Priority	P4	MI
<i>Stenella longirostris</i>	Spinner dolphin	MAMMAL	Priority	P4	MI
<i>Aipysurus apraefrontalis</i>	Short-nosed seasnake	REPTILE	Threatened - Critically endangered	CR	CR
<i>Anilius splendidus</i>	splendid blind snake (North West Cape)	REPTILE	Priority	P2	
<i>Aprasia rostrata</i>	Ningaloo worm lizard	REPTILE	Priority	P3	
<i>Caretta caretta</i>	loggerhead turtle	REPTILE	Threatened - Endangered	EN	EN
<i>Chelonia mydas</i>	Green turtle	REPTILE	Threatened - Vulnerable	VU	VU
<i>Dermochelys coriacea</i>	leatherback turtle	REPTILE	Threatened - Vulnerable	VU	EN
<i>Diplodactylus capensis</i>	Cape Range stone gecko	REPTILE	Priority	P2	
<i>Eretmochelys imbricata</i>	Hawksbill turtle	REPTILE	Threatened - Vulnerable	VU	VU
<i>Lerista allochira</i>	Cape Range slider	REPTILE	Priority	P3	

NatureMap Species Report

Created By Guest user on 06/08/2021

Kingdom Plantae
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 114° 07' 16" E, 21° 56' 45" S
Buffer 40km
Group By Conservation Status

Conservation Status	Species	Records
Non-conservation taxon	569	2115
Priority 1	1	1
Priority 2	10	44
Priority 3	10	78
Priority 4	2	12
TOTAL	592	2250

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Priority 1				
1.	49009 <i>Calytrix sp. Learmonth (S. Fox EMopp 1)</i>		P1	Y
Priority 2				
2.	13071 <i>Acacia ryaniana</i>		P2	
3.	1210 <i>Acanthocarpus rupestris</i>		P2	
4.	49022 <i>Calandrinia sp. Cape Range (F. Obbens FO 10/18)</i>		P2	
5.	1491 <i>Crinum flaccidum (Native Crinum)</i>		P2	
6.	14375 <i>Daviesia pleurophylla</i>		P2	
7.	15032 <i>Eremophila occidens</i>		P2	
8.	17327 <i>Harnieria kempeana subsp. rhadinophylla</i>		P2	Y
9.	46053 <i>Tephrosia sp. North West Cape (G. Marsh 81)</i>		P2	
10.	17345 <i>Tinospora esiangkara</i>		P2	Y
11.	12457 <i>Verticordia serotina</i>		P2	
Priority 3				
12.	13074 <i>Acacia alexandri</i>		P3	
13.	13076 <i>Acacia startii</i>		P3	
14.	18411 <i>Corchorus congener</i>		P3	
15.	29715 <i>Eremophila forrestii subsp. capensis</i>		P3	
16.	1972 <i>Grevillea calcicola</i>		P3	
17.	12832 <i>Gymnanthera cunninghamii</i>		P3	
18.	16 <i>Helminthostachys zeylanica</i>		P3	
19.	19 <i>Lygodium flexuosum</i>		P3	
20.	4677 <i>Phyllanthus fuernrohrii (Sand Sponge)</i>		P3	
21.	4736 <i>Stackhousia umbellata</i>		P3	
Priority 4				
22.	12714 <i>Brachychiton obtusilobus</i>		P4	
23.	16040 <i>Eremophila youngii subsp. lepidota</i>		P4	
Non-conservation taxon				
24.	9080 <i>Abutilon cunninghamii</i>			
25.	4891 <i>Abutilon fraseri (Lantern Bush)</i>			
26.	11325 <i>Abutilon indicum var. australiense</i>			
27.	4895 <i>Abutilon lepidum</i>			
28.	4901 <i>Abutilon otocarpum (Desert Chinese Lantern)</i>			
29.	<i>Abutilon sp.</i>			
30.	14115 <i>Abutilon sp. Cape Range (A.S. George 1312)</i>			
31.	42920 <i>Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)</i>			
32.	3223 <i>Acacia arida</i>			
33.	3241 <i>Acacia bivenosa</i>			
34.	3270 <i>Acacia coriacea (Wirewood)</i>			
35.	13500 <i>Acacia coriacea subsp. coriacea</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
36.	3356 <i>Acacia gregorii</i> (Gregory's Wattle)			
37.	29015 <i>Acacia pyrifolia</i> var. <i>pyrifolia</i>			
38.	3534 <i>Acacia sclerosperma</i> (Limestone Wattle)			
39.	13078 <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i>			
40.	29135 <i>Acacia sericophylla</i>			
41.	3549 <i>Acacia spathulifolia</i>			
42.	19456 <i>Acacia stellaticeps</i>			
43.	13070 <i>Acacia synchronicia</i>			
44.	3577 <i>Acacia tetragonophylla</i> (Kurara, Wakalpuka)			
45.	3606 <i>Acacia xiphophylla</i>			
46.	1208 <i>Acanthocarpus preissii</i>			
47.	1209 <i>Acanthocarpus robustus</i>			
48.	1211 <i>Acanthocarpus verticillatus</i>			
49.	48409 <i>Acetabularia caliculis</i>			
50.	2645 <i>Achyranthes aspera</i> (Chaff Flower)			
51.	7817 <i>Actinobole uliginosum</i> (Flannel Cudweed)			
52.	4583 <i>Adriana tomentosa</i>			
53.	17422 <i>Adriana tomentosa</i> var. <i>tomentosa</i>			
54.	2646 <i>Aerva javanica</i> (Kapok Bush)	Y		
55.	4739 <i>Alectryon oleifolius</i>			
56.	11487 <i>Alectryon oleifolius</i> subsp. <i>oleifolius</i>			
57.	2653 <i>Alternanthera pungens</i> (Khaki Weed)	Y		
58.	4904 <i>Alyogyne cuneiformis</i> (Coastal Hibiscus)			
59.	4907 <i>Alyogyne pinoniana</i> (Sand Hibiscus)			
60.	26453 <i>Amansia rhodantha</i>			
61.	2657 <i>Amaranthus clementii</i>			
62.	20018 <i>Amaranthus undulatus</i>			
63.	126 <i>Amphibolis antarctica</i> (Sea Nymph)			
64.	2369 <i>Amyema benthamii</i>			
65.	2372 <i>Amyema fitzgeraldii</i> (Pincushion Mistletoe)			
66.	2380 <i>Amyema miquelii</i> (Stalked Mistletoe)			
67.	13266 <i>Amyema miraculosa</i> subsp. <i>miraculosa</i>			
68.	2383 <i>Amyema preissii</i> (Wireleaf Mistletoe)			
69.	11874 <i>Amyema sanguinea</i> var. <i>sanguinea</i>			
70.	35872 <i>Anadyomene plicata</i>			
71.	35858 <i>Anadyomene wrightii</i>			
72.	40910 <i>Androcalva luteiflora</i> (Yellow-flowered Rulingia)			
73.	7822 <i>Angianthus acrohyalinus</i> (Hook-leaf Angianthus)			
74.	7827 <i>Angianthus cunninghamii</i> (Coast Angianthus)			
75.	26469 <i>Anotrichium tenue</i>			
76.	7838 <i>Arctotheca calendula</i> (Cape Weed, African Marigold)	Y		
77.	207 <i>Aristida contorta</i> (Bunched Kerosene Grass)			
78.	210 <i>Aristida holathera</i>			
79.	12063 <i>Aristida holathera</i> var. <i>holathera</i>			
80.	217 <i>Aristida nitidula</i> (Flat-awned Threawn)			
81.	26486 <i>Asparagopsis taxiformis</i>			
82.	1364 <i>Asphodelus fistulosus</i> (Onion Weed)	Y		
83.	2451 <i>Atriplex bunburyana</i> (Silver Saltbush)			
84.	2453 <i>Atriplex codonocarpa</i> (Flat-topped Saltbush)			
85.	2463 <i>Atriplex isatidea</i> (Coast Saltbush)			
86.	2476 <i>Atriplex semilunaris</i> (Annual Saltbush)			
87.	235 <i>Avena sativa</i> (Common Oat)	Y		
88.	6828 <i>Avicennia marina</i> (White Mangrove)			
89.	26498 <i>Avrainvillea obscura</i>			
90.	1799 <i>Banksia ashbyi</i> (Ashby's Banksia)			
91.	33400 <i>Banksia ashbyi</i> subsp. <i>boreoscaia</i>			
92.	7854 <i>Bidens bipinnata</i> (Bipinnate Beggartick)	Y		
93.	46338 <i>Bidens subalternans</i> var. <i>simulans</i>	Y		
94.	26507 <i>Boerghesia forbesii</i>			
95.	2769 <i>Boerhavia burbridgeana</i>			
96.	2770 <i>Boerhavia coccinea</i> (Tar Vine, Wituka)			
97.	2775 <i>Boerhavia schomburgkiana</i>			
98.	<i>Boerhavia</i> sp.			
99.	11167 <i>Bonamia erecta</i>			
100.	26509 <i>Bornetella oligospora</i>			
101.	240 <i>Bothriochloa ewartiana</i> (Desert Bluegrass)			
102.	7871 <i>Brachyscome ciliaris</i>			
103.	<i>Breynia desorii</i>			
104.	750 <i>Bulbostylis barbata</i>			
105.	2860 <i>Calandrinia polyandra</i> (Parakeelya)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
106.	2864 <i>Calandrinia ptychosperma</i>			
107.	7906 <i>Calotis plumulifera</i>			
108.	5484 <i>Calytrix truncatifolia</i>			
109.	3749 <i>Canavalia rosea</i> (Wild Jack Bean)			
110.	2976 <i>Capparis lasiantha</i> (Split Jack, Balqarda)			
111.	2978 <i>Capparis mitchellii</i> (Wild Orange)			
112.	<i>Capparis</i> sp.			
113.	2981 <i>Capparis spinosa</i>			
114.	48291 <i>Capparis spinosa</i> subsp. <i>nummularia</i>			
115.	2797 <i>Carpobrotus rossii</i> (Karkalla)			
116.	<i>Carpobrotus</i> sp. subsp. <i>Thevenard Island</i> (M. White 050)			
117.	2948 <i>Cassytha aurea</i>			
118.	12073 <i>Cassytha aurea</i> var. <i>aurea</i>			
119.	2949 <i>Cassytha capillaris</i>			
120.	11242 <i>Cassytha racemosa</i> forma <i>pilosa</i>			
121.	6569 <i>Catharanthus roseus</i> (Pink Periwinkle)	Y		
122.	26554 <i>Caulerpa brachypus</i>			
123.	26556 <i>Caulerpa cactoides</i>			
124.	42620 <i>Caulerpa chemnitzia</i>			
125.	35158 <i>Caulerpa corynephora</i>			
126.	26559 <i>Caulerpa cupressoides</i>			
127.	27378 <i>Caulerpa cupressoides</i> var. <i>lycopodium</i>			
128.	44547 <i>Caulerpa lamourouxii</i>			
129.	26568 <i>Caulerpa lentillifera</i>			
130.	44551 <i>Caulerpa macrodisca</i>			
131.	26576 <i>Caulerpa serrulata</i>			
132.	26577 <i>Caulerpa sertularioides</i>			
133.	258 <i>Cenchrus ciliaris</i> (Buffel Grass)	Y		
134.	26606 <i>Ceratodictyon spongiosum</i>			
135.	26618 <i>Champia parvula</i>			
136.	26619 <i>Champia stipitata</i>			
137.	12796 <i>Cheilanthes adiantoides</i>			
138.	31 <i>Cheilanthes austrotenuifolia</i>			
139.	37 <i>Cheilanthes lasiophylla</i> (Woolly Cloak Fern)			
140.	2489 <i>Chenopodium gaudichaudianum</i> (Cottony Saltbush)			
141.	266 <i>Chloris barbata</i> (Purpletop Chloris)	Y		
142.	272 <i>Chloris virgata</i> (Feathertop Rhodes Grass)	Y		
143.	26628 <i>Chondria armata</i>			
144.	13114 <i>Chorizema racemosum</i>			
145.	47174 <i>Chrysocephalum apiculatum</i> subsp. <i>pilbarensis</i>			
146.	273 <i>Chrysopogon fallax</i> (Golden Beard Grass)			
147.	26658 <i>Cladophora vagabunda</i>			
148.	44726 <i>Cladophoropsis vaucheriiformis</i>			
149.	2988 <i>Cleome viscosa</i> (Tickweed, Tjinduwadhu)			
150.	6732 <i>Clerodendrum tomentosum</i>			
151.	13689 <i>Clerodendrum tomentosum</i> var. <i>lanceolatum</i>			
152.	13690 <i>Clerodendrum tomentosum</i> var. <i>tomentosum</i>			
153.	35917 <i>Codium arabicum</i>			
154.	26686 <i>Coelarthrum opuntia</i>			
155.	1165 <i>Commelina ensifolia</i> (Wandering Jew, Buargu)			
156.	2776 <i>Commicarpus australis</i> (Perennial Tar Vine)			
157.	19880 <i>Convolvulus angustissimus</i>			
158.	<i>Corchorus</i> Scholl			
159.	18410 <i>Corchorus camaronensis</i>			
160.	13560 <i>Corchorus crozophorifolius</i>			
161.	4862 <i>Corchorus parviflorus</i>			
162.	<i>Corchorus</i> sp.			
163.	4865 <i>Corchorus tridens</i>			
164.	17093 <i>Corymbia hamersleyana</i>			
165.	17092 <i>Corymbia opaca</i>			
166.	17084 <i>Corymbia zygophylla</i>			
167.	1284 <i>Corynotheca flexuosissima</i>			
168.	1286 <i>Corynotheca pungens</i>			
169.	3137 <i>Crassula colorata</i> (Dense Stonecrop)			
170.	11563 <i>Crassula colorata</i> var. <i>colorata</i>			
171.	3774 <i>Crotalaria cunninghamii</i> (Green Birdflower, Bilbun)			
172.	18147 <i>Crotalaria incana</i> subsp. <i>incana</i>	Y		
173.	3783 <i>Crotalaria medicaginea</i>			
174.	20179 <i>Crotalaria medicaginea</i> var. <i>neglecta</i>			
175.	17439 <i>Cullen lachnostachys</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
176.	17118 <i>Cullen leucanthum</i>			
177.	17120 <i>Cullen pogonocarpum</i>			
178.	6662 <i>Cuscuta australis</i> (Australian Dodder)			
179.	279 <i>Cymbopogon ambiguus</i> (Scentgrass)			
180.	128 <i>Cymodocea angustata</i>			
181.	13730 <i>Cymodocea rotundata</i>			
182.	129 <i>Cymodocea serrulata</i>			
183.	6584 <i>Cynanchum floribundum</i> (Dumara Bush, Tjipa)			
184.	48280 <i>Cynanchum viminalis</i> subsp. <i>australe</i>			
185.	6680 <i>Cynoglossum australe</i> (Australian Hound's-tongue)			
186.	777 <i>Cyperus bulbosus</i> (Bush Onion, Tjanmata)			
187.	814 <i>Cyperus squarrosus</i>			
188.	818 <i>Cyperus vaginatus</i> (Stiffleaf Sedge)			
189.	290 <i>Dactyloctenium radulans</i> (Button Grass)			
190.	7448 <i>Dampiera incana</i> (Hoary Dampiera)			
191.	11723 <i>Dampiera incana</i> var. <i>incana</i>			
192.	26740 <i>Dasya frutescens</i>			
193.	47241 <i>Datura leichhardtii</i> subsp. <i>leichhardtii</i>	Y		
194.	6218 <i>Daucus glochidiatus</i> (Australian Carrot)			
195.	7958 <i>Decazesia hecatocephala</i>			
196.	13741 <i>Dichanthium sericeum</i> subsp. <i>humilius</i>			
197.	29616 <i>Dichotomaria marginata</i>			
198.	29615 <i>Dichotomaria obtusata</i>			
199.	7164 <i>Dicladantha forrestii</i>			
200.	6754 <i>Dicrastylis cordifolia</i>			
201.	313 <i>Digitaria ctenantha</i> (Comb Finger Grass)			
202.	4456 <i>Diplolaena grandiflora</i> (Wild Rose)			
203.	4745 <i>Diplopeltis eriocarpa</i> (Hairy Pepperflower)			
204.	4747 <i>Diplopeltis intermedia</i>			
205.	11669 <i>Diplopeltis intermedia</i> var. <i>intermedia</i>			
206.	7169 <i>Dipteracanthus australasicus</i>			
207.	11320 <i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>			
208.	11746 <i>Dipteracanthus australasicus</i> subsp. <i>corynothecus</i>			
209.	2499 <i>Dissocarpus paradoxus</i> (Curious Saltbush)			
210.	6966 <i>Duboisia hopwoodii</i> (Pituri, Kundugu)			
211.	31274 <i>Duperreya commixta</i>			
212.	33501 <i>Dysphania cristata</i> (Crested Goosefoot)			
213.	2504 <i>Dysphania plantaginella</i>			
214.	328 <i>Echinochloa colona</i> (Awnless Barnyard Grass)	Y		
215.	2989 <i>Emblingia calceoliflora</i>			
216.	2511 <i>Enchylaena tomentosa</i> (Barrier Saltbush)			
217.	12064 <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Barrier Saltbush)			
218.	357 <i>Enneapogon caeruleus</i> (Limestone Grass)			
219.	360 <i>Enneapogon lindleyanus</i> (Wiry Nineawn, Purple-head Nineawn)			
220.	375 <i>Eragrostis cumingii</i> (Cuming's Love Grass)			
221.	378 <i>Eragrostis dielsii</i> (Mallee Lovegrass)			
222.	380 <i>Eragrostis eriopoda</i> (Woollybutt Grass, Wangurnu)			
223.	381 <i>Eragrostis falcata</i> (Sickle Lovegrass)			
224.	389 <i>Eragrostis minor</i> (Smaller Stinkgrass)	Y		
225.	2513 <i>Eremophea spinosa</i>			
226.	7198 <i>Eremophila deserti</i>			
227.	15052 <i>Eremophila forrestii</i> subsp. <i>forrestii</i>			
228.	7215 <i>Eremophila glabra</i> (Tar Bush)			
229.	7234 <i>Eremophila longifolia</i> (Berrigan, Tulypurpa)			
230.	16363 <i>Eremophila maculata</i> subsp. <i>brevifolia</i> (Native Fuchsia)			
231.	16733 <i>Eremophila setacea</i>			
232.	23997 <i>Eremophila tietkensis</i>			
233.	400 <i>Eriachne aristidea</i>			
234.	411 <i>Eriachne helmsii</i> (Buck Wanderrrie Grass)			
235.	413 <i>Eriachne mucronata</i> (Mountain Wanderrrie Grass)			
236.	414 <i>Eriachne obtusa</i> (Northern Wanderrrie Grass)			
237.	4332 <i>Erodium botrys</i> (Long Storksbill)	Y		
238.	4335 <i>Erodium cygnorum</i> (Blue Heronsbill)			
239.	3871 <i>Erythrina vespertilio</i> (Yulbah)			
240.	26821 <i>Erythroclonium muelleri</i>			
241.	33519 <i>Eucalyptus baiophylla</i>			
242.	35345 <i>Eucalyptus camaldulensis</i> subsp. <i>obtusata</i> (Blunt-budded River Red Gum)			
243.	5752 <i>Eucalyptus prominens</i>			
244.	15597 <i>Eucalyptus ultima</i>			
245.	14548 <i>Eucalyptus victrix</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
246.	15592 <i>Eucalyptus xerothermica</i>			
247.	26827 <i>Eucheuma denticulatum</i>			
248.	11011 <i>Eulalia aurea</i>			
249.	4617 <i>Euphorbia australis (Namana)</i>			
250.	35307 <i>Euphorbia australis var. australis</i>			
251.	4619 <i>Euphorbia biconvexa</i>			
252.	4623 <i>Euphorbia coghlanii (Namana)</i>			
253.	4626 <i>Euphorbia drummondii (Caustic Weed, Piwi)</i>			
254.	4635 <i>Euphorbia myrtoides</i>			
255.	4644 <i>Euphorbia shakoensis</i>			
256.	4647 <i>Euphorbia tannensis</i>			
257.	12097 <i>Euphorbia tannensis subsp. eremophila (Desert Spurge)</i>			
258.	42879 <i>Euphorbia trigonosperma</i>			
259.	11416 <i>Evolvulus alsinoides var. decumbens</i>			
260.	11200 <i>Evolvulus alsinoides var. villosicalyx</i>			
261.	10977 <i>Exocarpos aphyllus (Leafless Ballart)</i>			
262.	10765 <i>Exocarpos sparteus (Broom Ballart, Djuk)</i>			
263.	19648 <i>Ficus brachypoda</i>			
264.	1753 <i>Ficus platypoda (Native Fig, Makartu)</i>			
265.	12096 <i>Ficus virens var. virens</i>			
266.	35558 <i>Flaveria trinervia (Speedy Weed)</i>	Y		
267.	5209 <i>Frankenia pauciflora (Seaheath)</i>			
268.	26835 <i>Galaxaura rugosa</i>			
269.	26837 <i>Ganonema farinosum</i>			
270.	26841 <i>Gayralia oxysperma</i>			
271.	35913 <i>Gelidiopsis scoparia</i>			
272.	3938 <i>Glycine canescens (Silky Glycine)</i>			
273.	3941 <i>Glycine tabacina (Glycine Pea)</i>			
274.	2677 <i>Gomphrena celosioides (Gomphrena Weed)</i>	Y		
275.	7509 <i>Goodenia forrestii</i>			
276.	7526 <i>Goodenia microptera</i>			
277.	12574 <i>Goodenia prostrata</i>			
278.	7556 <i>Goodenia tenuiloba</i>			
279.	4918 <i>Gossypium robinsonii (Wild Cotton)</i>			
280.	4919 <i>Gossypium sturtianum (Sturt's Desert Rose)</i>			
281.	11559 <i>Gossypium sturtianum var. sturtianum</i>			
282.	35899 <i>Gracilaria canaliculata</i>			
283.	2001 <i>Grevillea eriostachya (Flame Grevillea, Kaliny-kalinypa)</i>			
284.	2012 <i>Grevillea gordoniana</i>			
285.	2096 <i>Grevillea stenobotrya</i>			
286.	2117 <i>Grevillea variifolia (Cape Range Grevillea)</i>			Y
287.	15686 <i>Grevillea variifolia subsp. bundera</i>			
288.	15685 <i>Grevillea variifolia subsp. variifolia</i>			
289.	2784 <i>Gyrostemon ramulosus (Corkybark)</i>			
290.	2207 <i>Hakea stenophylla</i>			
291.	16897 <i>Hakea stenophylla subsp. stenophylla</i>			
292.	29840 <i>Halgania cyanea var. Allambi Stn (B.W. Strong 676)</i>			
293.	26891 <i>Halimeda cylindracea</i>			
294.	26892 <i>Halimeda discoidea</i>			
295.	26894 <i>Halimeda macroloba</i>			
296.	26898 <i>Halimeda velasquezii</i>			
297.	47213 <i>Halimeda versatilis</i>			
298.	130 <i>Halodule pinifolia</i>			
299.	131 <i>Halodule uninervis</i>			
300.	164 <i>Halophila ovalis (Sea Wrack)</i>			
301.	165 <i>Halophila spinulosa</i>			
302.	6174 <i>Haloragis gossei</i>			
303.	23464 <i>Haloragis gossei var. inflata</i>			
304.	6180 <i>Haloragis trigonocarpa</i>			
305.	17782 <i>Hannafordia quadrivalvis subsp. recurva</i>			
306.	6705 <i>Heliotropium crispatum</i>			
307.	17305 <i>Heliotropium glanduliferum</i>			
308.	6713 <i>Heliotropium ovalifolium</i>			
309.	26912 <i>Helminthocladia australis</i>			
310.	5171 <i>Hibbertia spicata</i>			
311.	11481 <i>Hibbertia spicata subsp. spicata</i>			
312.	4925 <i>Hibiscus coatesii</i>			
313.	4930 <i>Hibiscus goldsworthii</i>			
314.	4933 <i>Hibiscus leptocladus</i>			
315.	4942 <i>Hibiscus sturtii (Sturt's Hibiscus)</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
316.	5215 <i>Hybanthus aurantiacus</i>			
317.	5219 <i>Hybanthus enneaspermus</i>			
318.	35905 <i>Hydropuntia eucheumatoides</i>			
319.	8086 <i>Hypochaeris glabra</i> (Smooth Catsear)	Y		
320.	17113 <i>Indigofera boviparda</i> subsp. <i>boviparda</i>			
321.	45436 <i>Indigofera chamaeclada</i> subsp. <i>pubens</i>			
322.	3973 <i>Indigofera colutea</i> (Sticky Indigo)			
323.	3980 <i>Indigofera linifolia</i>			
324.	3981 <i>Indigofera linnaei</i> (Birdsville Indigo)			
325.	3982 <i>Indigofera monophylla</i>			
326.	3987 <i>Indigofera trita</i>			
327.	6624 <i>Ipomoea costata</i> (Rock Morning Glory, Kanti)			
328.	6633 <i>Ipomoea muelleri</i> (Poison Morning Glory, Yumbu)			
329.	6635 <i>Ipomoea pes-caprae</i>			
330.	11312 <i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i>			
331.	6637 <i>Ipomoea polymorpha</i>			
332.	6641 <i>Ipomoea yardiensis</i> (Yardie Morning Glory)			
333.	458 <i>Iseilema dolichotrichum</i>			
334.	459 <i>Iseilema eremaeum</i>			
335.	11 <i>Isoetes drummondii</i> (Quillwort)			
336.	12 <i>Isoetes inflata</i>			
337.	13 <i>Isoetes mongerensis</i>			
338.	14 <i>Isoetes muelleri</i>			
339.	3989 <i>Isotropis atropurpurea</i> (Poison Sage)			
340.	26983 <i>Jania adhaerens</i>			
341.	6501 <i>Jasminum didymum</i>			
342.	12059 <i>Jasminum didymum</i> subsp. <i>lineare</i> (Desert Jasmine)			
343.	29056 <i>Jasminum</i> sp. <i>Exmouth</i> (G. Marsh 77)			
344.	26992 <i>Kentrophora pectinella</i>			
345.	3664 <i>Labichea cassioides</i>			
346.	6733 <i>Lantana camara</i> (Common Lantana)	Y		
347.	<i>Launaea sarmentosa</i>			
348.	8098 <i>Launaea sarmentosa</i>			
349.	4960 <i>Lawrenzia viridigrisea</i>			
350.	7588 <i>Lechenaultia subcymosa</i> (Wide-branching Leschenaultia)			
351.	48421 <i>Leiomenia lacunata</i>			
352.	3032 <i>Lepidium muelleri-ferdinandii</i>			
353.	3035 <i>Lepidium pedicellosum</i>			
354.	3037 <i>Lepidium phlebopetalum</i> (Veined Peppergrass)			
355.	3039 <i>Lepidium platypetalum</i> (Slender Peppergrass)			
356.	16489 <i>Leptosema macrocarpum</i>			
357.	18351 <i>Leucaena leucocephala</i> subsp. <i>leucocephala</i>	Y		
358.	7403 <i>Lobelia heterophylla</i> (Wing-seeded Lobelia)			
359.	16798 <i>Logania litoralis</i>			
360.	4060 <i>Lotus australis</i> (Austral Trefoil)			
361.	24021 <i>Lotus australis</i> var. <i>australis</i>			
362.	4061 <i>Lotus cruentus</i> (Redflower Lotus)			
363.	2546 <i>Maireana integra</i>			
364.	2556 <i>Maireana planifolia</i> (Low Bluebush)			
365.	2558 <i>Maireana polypterygia</i> (Gascoyne Bluebush)			
366.	11662 <i>Maireana tomentosa</i> subsp. <i>tomentosa</i>			
367.	4658 <i>Mallotus nesophilus</i>			
368.	4962 <i>Malvastrum americanum</i> (Spiked Malvastrum)	Y		
369.	12949 <i>Marsdenia australis</i>			
370.	76 <i>Marsilea hirsuta</i> (Nardoo)			
371.	<i>Marsilea</i> sp.			
372.	5879 <i>Melaleuca bracteata</i> (River Teatree)			
373.	5887 <i>Melaleuca cardiophylla</i> (Tangling Melaleuca)			
374.	5051 <i>Melhania oblongifolia</i>			
375.	27074 <i>Microdictyon umbilicatum</i>			
376.	7082 <i>Mimulus gracilis</i>			
377.	8107 <i>Minuria cunninghamii</i> (Bush Minuria)			
378.	8110 <i>Minuria leptophylla</i> (Minnie Daisy)			
379.	4097 <i>Mirbelia ramulosa</i>			
380.	4105 <i>Mirbelia viminalis</i>			
381.	<i>Monotaxis grandoculis</i>			
382.	6490 <i>Muellerolimon salicorniaceum</i>			
383.	17158 <i>Myoporum montanum</i> (Native Myrtle)			
384.	2573 <i>Neobassia astrocarpa</i>			
385.	6974 <i>Nicotiana glauca</i> (Tree Tobacco)	Y		

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
386.	6976 <i>Nicotiana occidentalis</i> (Native Tobacco)			
387.	11331 <i>Nicotiana occidentalis</i> subsp. <i>obliqua</i>			
388.	11856 <i>Nicotiana occidentalis</i> subsp. <i>occidentalis</i>			
389.	2364 <i>Olax aurantia</i>			
390.	7338 <i>Oldenlandia crouchiana</i>			
391.	42024 <i>Olearia</i> sp. <i>Kennedy Range</i> (G. Byrne 66)			
392.	18256 <i>Opercularia spermacocea</i>			
393.	12782 <i>Ophioglossum gramineum</i>			
394.	17 <i>Ophioglossum lusitanicum</i> (Adders Tongue)			
395.	18 <i>Ophioglossum polyphyllum</i>			
396.	46834 <i>Osmundaria melvillii</i>			
397.	503 <i>Panicum decompositum</i> (Native Millet, Kaltu-kaltu)			
398.	11232 <i>Paractaenum novae-hollandiae</i> subsp. <i>novae-hollandiae</i>			
399.	12670 <i>Parietaria cardiostegia</i>			
400.	3673 <i>Parkinsonia aculeata</i> (Parkinsonia)	Y		
401.	518 <i>Paspalidium clementii</i> (Clements Paspalidium)			
402.	525 <i>Paspalidium tabulatum</i>			
403.	20611 <i>Pembertonia latisquamea</i>			
404.	27121 <i>Penicillus nodulosus</i>			
405.	34997 <i>Peripleura arida</i>			
406.	35003 <i>Peripleura hispidula</i> var. <i>setosa</i>			
407.	3674 <i>Petalostylis cassioides</i>			
408.	17626 <i>Phyllanthus erwinii</i>			
409.	45696 <i>Phyllanthus hamelinii</i> (Shark Bay Phyllanthus)			
410.	4680 <i>Phyllanthus maderaspatensis</i>			
411.	6010 <i>Pileanthus limacis</i> (Coastal Coppercup)			
412.	5230 <i>Pimelea ammocharis</i>			
413.	11185 <i>Pimelea microcephala</i> subsp. <i>microcephala</i>			
414.	19744 <i>Pittosporum angustifolium</i>			
415.	41300 <i>Pittosporum phillyreoides</i> (Weeping Pittosporum, Yaliti)			
416.	6910 <i>Plectranthus intraterraneus</i>			
417.	35276 <i>Plectranthus scutellarioides</i>			
418.	8167 <i>Pluchea dentex</i>			
419.	17816 <i>Pluchea ferdinandi-muelleri</i>			
420.	43944 <i>Pluchea longiseta</i>			
421.	8168 <i>Pluchea rubelliflora</i>			
422.	6491 <i>Plumbago zeylanica</i> (Native Plumbago)			
423.	45237 <i>Podolepis aristata</i> subsp. <i>aristata</i>			
424.	45242 <i>Podolepis remota</i>			
425.	6653 <i>Polymeria ambigua</i> (Morning Glory)			
426.	27171 <i>Polysiphonia blandii</i>			
427.	27186 <i>Portieria hornemannii</i>			
428.	2882 <i>Portulaca intraterranea</i>			
429.	2884 <i>Portulaca oleracea</i> (Purslane, Wakati)			
430.	32415 <i>Pottia scabrifolia</i>			
431.	8189 <i>Pseudognaphalium luteoalbum</i> (Jersey Cudweed)			
432.	8192 <i>Pterocaulon sphacelatum</i> (Apple Bush, Fruit Salad Plant)			
433.	8193 <i>Pterocaulon sphaeranthoides</i>			
434.	15426 <i>Pterostylis aspera</i>			
435.	27204 <i>Ptilocladia vestita</i>			
436.	2696 <i>Ptilotus astrolasius</i>			
437.	2699 <i>Ptilotus axillaris</i> (Mat Mulla Mulla)			
438.	2711 <i>Ptilotus clementii</i> (Tassel Top)			
439.	2717 <i>Ptilotus divaricatus</i> (Climbing Mulla Mulla)			
440.	2721 <i>Ptilotus exaltatus</i> (Tall Mulla Mulla)			
441.	2727 <i>Ptilotus gaudichaudii</i>			
442.	2731 <i>Ptilotus helipteroides</i> (Hairy Mulla Mulla)			
443.	2746 <i>Ptilotus nobilis</i> (Tall Mulla Mulla)			
444.	2747 <i>Ptilotus obovatus</i> (Cotton Bush)			
445.	2751 <i>Ptilotus polystachyus</i> (Prince of Wales Feather)			
446.	2766 <i>Ptilotus villosiflorus</i>			
447.	41063 <i>Quoya loxocarpa</i>			
448.	41061 <i>Quoya paniculata</i>			
449.	3061 <i>Raphanus raphanistrum</i> (Wild Radish)	Y		
450.	2582 <i>Rhagodia eremaea</i> (Thorny Saltbush)			
451.	2583 <i>Rhagodia latifolia</i>			
452.	2584 <i>Rhagodia preissii</i>			
453.	11240 <i>Rhagodia preissii</i> subsp. <i>obovata</i>			
454.	5295 <i>Rhizophora stylosa</i> (Spotted-leaved Red Mangrove)			
455.	13291 <i>Rhodanthe condensata</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
456.	13301 <i>Rhodanthe floribunda</i>			
457.	13246 <i>Rhodanthe humboldtiana</i>			
458.	13297 <i>Rhodanthe psammophila</i>			
459.	13254 <i>Rhodanthe stricta</i>			
460.	4191 <i>Rhynchosia minima (Rhynchosia)</i>			
461.	<i>Riccia bifurca</i>			
462.	<i>Riccia limbata</i>			
463.	<i>Riccia vesiculosa</i>			
464.	45146 <i>Roebuckiella oncocarpa</i>			
465.	48884 <i>Roepera aurantiaca</i>			
466.	48891 <i>Roepera fruticulosa</i>			
467.	48900 <i>Roepera retivalvis</i>			
468.	46434 <i>Rumex hypogaeus</i>	Y		
469.	114 <i>Ruppia maritima (Sea Tassel)</i>			
470.	30434 <i>Salsola australis</i>			
471.	6484 <i>Samolus repens (Creeping Brookweed)</i>			
472.	14026 <i>Samolus sp. Shark Bay (M.E. Trudgen 7410)</i>			
473.	2357 <i>Santalum lanceolatum (Northern Sandalwood, Yarnguli)</i>			
474.	7606 <i>Scaevola crassifolia (Thick-leaved Fan-flower)</i>			
475.	7608 <i>Scaevola cunninghamii</i>			
476.	12584 <i>Scaevola pulchella</i>			
477.	7643 <i>Scaevola sericophylla</i>			
478.	7644 <i>Scaevola spinescens (Currant Bush, Maroon)</i>			
479.	7648 <i>Scaevola tomentosa (Raggedleaf Fanflower)</i>			
480.	41660 <i>Schenkia australis</i>			
481.	41646 <i>Schenkia clementii</i>			
482.	13285 <i>Schoenia ayersii</i>			
483.	2609 <i>Sclerolaena diacantha (Grey Copperburr)</i>			
484.	8877 <i>Sclerolaena gardneri</i>			
485.	2628 <i>Sclerolaena recurvicauspis</i>			
486.	2633 <i>Sclerolaena uniflora (Two-spined Saltbush)</i>			
487.	25880 <i>Senecio hamersleyensis</i>			
488.	8213 <i>Senecio magnificus (Showy Groundsel)</i>			
489.	20161 <i>Senecio pinnatifolius</i>			
490.	25883 <i>Senecio pinnatifolius var. pinnatifolius</i>			
491.	12280 <i>Senna artemisioides subsp. oligophylla</i>			
492.	18443 <i>Senna ferraria</i>			
493.	12305 <i>Senna glutinosa subsp. chatelainiana</i>			
494.	12307 <i>Senna glutinosa subsp. glutinosa</i>			
495.	12309 <i>Senna glutinosa subsp. pruinosa</i>			
496.	12312 <i>Senna notabilis</i>			
497.	46818 <i>Seringia hermanniifolia (Crinkle-leaved firebush)</i>			
498.	<i>Sesbania sp.</i>			
499.	2818 <i>Sesuvium portulacastrum</i>			
500.	606 <i>Setaria dielsii (Diels' Pigeon Grass)</i>			
501.	613 <i>Setaria verticillata (Whorled Pigeon Grass)</i>	Y		
502.	4966 <i>Sida arenicola</i>			
503.	4970 <i>Sida calyxhymenia (Tall Sida)</i>			
504.	4977 <i>Sida fibulifera (Silver Sida)</i>			
505.	4982 <i>Sida kingii</i>			
506.	18149 <i>Sida rohlenae subsp. rohlenae</i>			
507.	4989 <i>Sida spinosa (Spiny Sida)</i>			
508.	8223 <i>Sigesbeckia orientalis (Indian Weed)</i>	Y		
509.	27280 <i>Siphonocladus tropicus</i>			
510.	3072 <i>Sisymbrium orientale (Indian Hedge Mustard)</i>	Y		
511.	6998 <i>Solanum cleistogamum</i>			
512.	7002 <i>Solanum diversiflorum</i>			
513.	7018 <i>Solanum lasiophyllum (Flannel Bush, Mindjulu)</i>			
514.	47173 <i>Solanum lycopersicum (Tomato)</i>	Y		
515.	27281 <i>Solieria robusta</i>			
516.	8231 <i>Sonchus oleraceus (Common Sowthistle)</i>	Y		
517.	619 <i>Sorghum plumosum (Plume Canegrass)</i>			
518.	1312 <i>Sowerbaea laxiflora (Purple Tassels)</i>			
519.	625 <i>Spinifex longifolius (Beach Spinifex)</i>			
520.	635 <i>Sporobolus virginicus (Marine Couch)</i>			
521.	27310 <i>Spyridia filamentosa</i>			
522.	4734 <i>Stackhousia muricata</i>			
523.	43601 <i>Stackhousia sp. Mid west coastal (D. & B. Bellairs 6561)</i>			
524.	7098 <i>Stemodia grossa (Marsh Stemodia, Mindjaara)</i>			
525.	48755 <i>Stemodia sp. Carnarvon (W.R. Barker 2154)</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
526.	17295 <i>Stemodia</i> sp. Onslow (A.A. Mitchell 76/148)			
527.	8237 <i>Streptoglossa decurrens</i>			
528.	8238 <i>Streptoglossa liatroides</i>			
529.	12492 <i>Striga squamigera</i>			
530.	3182 <i>Stylobasium spathulatum</i> (Pebble Bush)			
531.	12353 <i>Stylosanthes hamata</i> (Verano Stylo)	Y		
532.	43203 <i>Surreya diandra</i>			
533.	13592 <i>Swainsona calcicola</i>			
534.	13596 <i>Swainsona complanata</i>			
535.	12356 <i>Swainsona formosa</i>			
536.	4231 <i>Swainsona kingii</i>			
537.	4233 <i>Swainsona leeana</i>			
538.	4242 <i>Swainsona pterostylis</i>			
539.	13339 <i>Synaptantha tillaeacea</i> var. <i>tillaeacea</i>			
540.	132 <i>Syringodium isoetifolium</i>			
541.	36447 <i>Tecoma stans</i> var. <i>stans</i>	Y		
542.	33236 <i>Tecticornia halocnemoides</i> (Shrubby Samphire)			
543.	33238 <i>Tecticornia halocnemoides</i> subsp. <i>tenuis</i>			
544.	33317 <i>Tecticornia indica</i>			
545.	33318 <i>Tecticornia indica</i> subsp. <i>leiostachya</i> (Samphire)			
546.	31618 <i>Tecticornia pruinosa</i>			
547.	33220 <i>Tecticornia pterygosperma</i> subsp. <i>denticulata</i>			
548.	49017 <i>Tephrosia gardneri</i>			
549.	19531 <i>Tephrosia rosea</i> var. <i>clementii</i>			
550.	48603 <i>Teucrium teucriiflorum</i>			
551.	169 <i>Thalassia hemprichii</i>			
552.	133 <i>Thalassodendron ciliatum</i>			
553.	2644 <i>Threlkeldia diffusa</i> (Coast Bonefruit)			
554.	44710 <i>Thryptomene dampieri</i>			
555.	46756 <i>Thysanotus exfimbriatus</i>			
556.	44305 <i>Trianthema pilosum</i>			
557.	4375 <i>Tribulus cistoides</i>			
558.	4377 <i>Tribulus hirsutus</i>			
559.	4378 <i>Tribulus hystrix</i>			
560.	4379 <i>Tribulus macrocarpus</i>			
561.	4380 <i>Tribulus occidentalis</i> (Perennial Caltrop)			
562.	18072 <i>Tribulus suberosus</i>			
563.	6727 <i>Trichodesma zeylanicum</i> (Camel Bush, Kumbalin)			
564.	1360 <i>Tricoryne corynothecoides</i>			
565.	29477 <i>Tricoryne</i> sp. Mullewa (G.J. Keighery 12080)			
566.	145 <i>Triglochin hexagona</i> (Six-point Arrowgrass)			
567.	679 <i>Triodia angusta</i>			
568.	13131 <i>Triodia epactia</i>			
569.	48467 <i>Triodia glabra</i>			
570.	696 <i>Triodia pungens</i> (Soft Spinifex)			
571.	17873 <i>Triodia schinzii</i>			
572.	704 <i>Triodia wiseana</i> (Limestone Spinifex)			
573.	706 <i>Triraphis mollis</i> (Needle Grass)			
574.	14694 <i>Triumfetta clementii</i>			
575.	13481 <i>Triumfetta ramosa</i>			
576.	17529 <i>Triumfetta tenuiseta</i>			
577.	27348 <i>Udotea argentea</i>			
578.	30716 <i>Vachellia farnesiana</i> (Mimosa Bush)	Y		
579.	36143 <i>Valonia fastigiata</i>			
580.	46438 <i>Valonia ventricosa</i>			
581.	6081 <i>Verticordia forrestii</i> (Forrest's Featherflower)			
582.	4323 <i>Vigna lanceolata</i> (Maloga Vigna, Wega)			
583.	31391 <i>Vigna</i> sp. Hamersley Clay (A.A. Mitchell PRP 113)			
584.	48983 <i>Vincetoxicum cinerascens</i>			
585.	48987 <i>Vincetoxicum flexuosum</i>			
586.	48986 <i>Vincetoxicum lineare</i>			
587.	48829 <i>Wahlenbergia capillaris</i>			
588.	<i>Wahlenbergia</i> sp.			
589.	7393 <i>Wahlenbergia tumidifruca</i>			
590.	5106 <i>Waltheria indica</i>			
591.	725 <i>Whiteochloa airoides</i>			
592.	1400 <i>Wurmbea odorata</i>			

Conservation Codes
T - Rare or likely to become extinct

Name	ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
------	----	--------------	-------------	-------------------	------------------------------------

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 wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap Species Report

Created By Guest user on 06/08/2021

Kingdom Animalia
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 114° 07' 16" E, 21° 56' 45" S
Buffer 40km
Group By Conservation Status

Conservation Status	Species	Records
Non-conservation taxon	1078	8470
Other specially protected fauna	5	1027
Presumed extinct	3	4
Priority 2	2	37
Priority 3	2	29
Priority 4	10	211
Protected under international agreement	34	963
Rare or likely to become extinct	33	715
TOTAL	1167	11456

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Rare or likely to become extinct				
1.	25350 <i>Aipysurus apraefrontalis</i> (Short-nosed Seasnake)		T	
2.	33905 <i>Bamazomus subsolanus</i> (Eastern Cape Range Bamazomus)		T	Y
3.	33906 <i>Bamazomus vespertinus</i> (Western Cape Range Bamazomus)		T	Y
4.	24784 <i>Calidris ferruginea</i> (Curlew Sandpiper)		T	
5.	24790 <i>Calidris tenuirostris</i> (Great Knot)		T	
6.	34034 <i>Carcharias taurus</i> (Grey Nurse Shark)		T	
7.	34031 <i>Carcharodon carcharias</i> (Great White Shark)		T	
8.	25335 <i>Caretta caretta</i> (Loggerhead Turtle)		T	
9.	25575 <i>Charadrius leschenaultii</i> (Greater Sand Plover)		T	
10.	25576 <i>Charadrius mongolus</i> (Lesser Sand Plover)		T	
11.	25336 <i>Chelonia mydas</i> (Green Turtle)		T	
12.	25346 <i>Dermochelys coriacea</i> (Leatherback Turtle)		T	
13.	33907 <i>Draculoides brooksi</i> (Northern Cape Range Draculoides)		T	Y
14.	33909 <i>Draculoides julianneae</i> (Western Cape Range Draculoides)		T	Y
15.	25473 <i>Eretmochelys imbricata</i> (Hawksbill Turtle)		T	
16.	25342 <i>Eretmochelys imbricata</i> subsp. <i>bissa</i> (Hawksbill Turtle)		T	
17.	24043 <i>Eubalaena australis</i> (Southern Right Whale)		T	
18.	34145 <i>Indohya damocles</i> (Cameron's Cave Pseudoscorpion)		T	Y
19.	34025 <i>Milyeringa veritas</i> (Cave Gudgeon, Blind Gudgeon)		T	
20.	25344 <i>Natator depressus</i> (Flatback Turtle)		T	
21.	24798 <i>Numenius madagascariensis</i> (Eastern Curlew)		T	
22.	34038 <i>Ophisternon candidum</i> (Blind Cave Eel)		T	
23.	24142 <i>Petrogale lateralis</i> subsp. <i>lateralis</i> (Black-flanked Rock-wallaby, Black-footed Rock-wallaby)		T	
24.	34037 <i>Pristis zijsron</i> (Green Sawfish)		T	
25.	24236 <i>Pseudomys fieldi</i> (Shark Bay Mouse, Djoongari)		T	
26.	24715 <i>Puffinus huttoni</i> (Hutton's Shearwater)		T	
27.	48595 <i>Sternula nereis</i> subsp. <i>nereis</i> (Fairy Tern)		T	
28.	33963 <i>Stygiocaris lancifera</i> (Lance-beaked Cave Shrimp)		T	
29.	33967 <i>Stygiochiropus isolatus</i> (a <i>stygiochiropus</i> millipede (Cape Range), millipede)		T	Y
30.	33968 <i>Stygiochiropus peculiaris</i> (Cameron's Cave Millipede)		T	Y
31.	33969 <i>Stygiochiropus sympatricus</i> (a <i>stygiochiropus</i> millipede (Cape Range), millipede)		T	Y
32.	34007 <i>Thalassarche chlororhynchos</i> (Atlantic Yellow-nosed Albatross)		T	
33.	24249 <i>Zyzomys pedunculatus</i> (Central Rock-rat, Antina)		T	
Presumed extinct				
34.	24161 <i>Bettongia lesueur</i> subsp. <i>graii</i> (Boodie (inland), Burrowing Bettong (inland))		X	
35.	24218 <i>Leporillus apicalis</i> (Lesser Stick-nest Rat)		X	
36.	24164 <i>Potorous platyops</i> (Broad-faced Potoroo)		X	

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Protected under international agreement				
37.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
38.	25634 <i>Anous stolidus</i> (Common Noddy)		IA	
39.	48573 <i>Ardenna pacifica</i> (Wedge-tailed Shearwater)		IA	
40.	25736 <i>Arenaria interpres</i> (Ruddy Turnstone)		IA	
41.	24779 <i>Calidris acuminata</i> (Sharp-tailed Sandpiper)		IA	
42.	24780 <i>Calidris alba</i> (Sanderling)		IA	
43.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
44.	24789 <i>Calidris subminuta</i> (Long-toed Stint)		IA	
45.	24378 <i>Charadrius veredus</i> (Oriental Plover)		IA	
46.	41332 <i>Chlidonias leucopterus</i> (White-winged Black Tern, white-winged tern)		IA	
47.	24793 <i>Gallinago stenura</i> (Pin-tailed Snipe)		IA	
48.	47954 <i>Gelochelidon nilotica</i> (Gull-billed Tern)		IA	
49.	24481 <i>Glareola maldivarum</i> (Oriental Pratincole)		IA	
50.	48587 <i>Hydroprogne caspia</i> (Caspian Tern)		IA	
51.	25739 <i>Limicola falcinellus</i> (Broad-billed Sandpiper)		IA	
52.	30932 <i>Limosa lapponica</i> (Bar-tailed Godwit)		IA	
53.	25741 <i>Limosa limosa</i> (Black-tailed Godwit)		IA	
54.	24799 <i>Numenius minutus</i> (Little Curlew, Little Whimbrel)		IA	
55.	25742 <i>Numenius phaeopus</i> (Whimbrel)		IA	
56.	24497 <i>Oceanites oceanicus</i> (Wilson's Storm-petrel)		IA	
57.	41347 <i>Onychoprion anaethetus</i> (Bridled Tern)		IA	
58.	48591 <i>Pandion cristatus</i> (Osprey, Eastern Osprey)		IA	
59.	24662 <i>Phaethon lepturus</i> (White-tailed Tropicbird)		IA	
60.	24382 <i>Pluvialis fulva</i> (Pacific Golden Plover)		IA	
61.	24383 <i>Pluvialis squatarola</i> (Grey Plover)		IA	
62.	24716 <i>Puffinus pacificus</i> (Wedge-tailed Shearwater)		IA	
63.	25640 <i>Sterna dougallii</i> (Roseate Tern)		IA	
64.	25642 <i>Sterna hirundo</i> (Common Tern)		IA	
65.	48593 <i>Sternula albifrons</i> (Little Tern)		IA	
66.	48597 <i>Thalasseus bergii</i> (Crested Tern)		IA	
67.	24806 <i>Tringa glareola</i> (Wood Sandpiper)		IA	
68.	24808 <i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
69.	24809 <i>Tringa stagnatilis</i> (Marsh Sandpiper, little greenshank)		IA	
70.	41351 <i>Xenus cinereus</i> (Terek Sandpiper)		IA	
Other specially protected fauna				
71.	24084 <i>Dugong dugon</i> (Dugong)		S	
72.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
73.	24051 <i>Megaptera novaeangliae</i> (Humpback Whale)		S	
74.	24098 <i>Phascogale calura</i> (Red-tailed Phascogale, Kenngoor)		S	
75.	42358 <i>Rhincodon typus</i> (Whale Shark)		S	
Priority 2				
76.	44647 <i>Anilius splendidus</i> (splendid blind snake (North West Cape), blind snake (Milyering Well))		P2	Y
77.	34146 <i>Diplodactylus capensis</i> (Cape Range Stone Gecko)		P2	Y
Priority 3				
78.	24992 <i>Aprasia rostrata</i> (Ningaloo worm-lizard, Monte Bello Worm-lizard)		P3	
79.	25120 <i>Lerista allochira</i> (Cape Range Slider)		P3	
Priority 4				
80.	24222 <i>Mesembriomys macrurus</i> (Golden-backed Tree-rat)		P4	
81.	33985 <i>Nocticola flabella</i> (Cape Range delicate cockroach, Cape Range Blind Cockroach)		P4	Y
82.	24060 <i>Orcaella heinsohni</i> (Australian Snubfin Dolphin)		P4	
83.	24663 <i>Phaethon rubricauda</i> (Red-tailed Tropicbird)		P4	
84.	24233 <i>Pseudomys chapmani</i> (Western Pebble-mound Mouse, Ngadjji)		P4	
85.	43368 <i>Rhinonicteris aurantia</i> (Orange Leaf-nosed bat)		P4	
86.	24115 <i>Sminthopsis longicaudata</i> (Long-tailed Dunnart)		P4	
87.	48107 <i>Sousa sahalensis</i> (Australian humpback dolphin)		P4	
88.	33964 <i>Stygiocaris stylifera</i> (Spear-beaked Cave Shrimp)		P4	
89.	24803 <i>Tringa brevipes</i> (Grey-tailed Tattler)		P4	
Non-conservation taxon				
90.	? ?			
91.	<i>Ablabys taenianotus</i>			
92.	<i>Abudefduf bengalensis</i>			
93.	<i>Abudefduf saxatilis</i>			
94.	<i>Abudefduf sexfasciatus</i>			
95.	<i>Abudefduf sordidus</i>			
96.	<i>Abudefduf vaigiensis</i>			
97.	24559 <i>Acanthagenys rufogularis</i> (Spiny-cheeked Honeyeater)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
98.	<i>Acanthocephala abbreviata</i>			
99.	<i>Acanthopagrus latus</i>			
100.	25332 <i>Acanthopis wellsi</i> (Pilbara Death Adder)			
101.	<i>Acanthurus dussumieri</i>			
102.	<i>Acanthurus nigrofuscus</i>			
103.	<i>Acanthurus triostegus</i>			
104.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
105.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
106.	24282 <i>Accipiter fasciatus</i> subsp. <i>fasciatus</i> (Brown Goshawk)			
107.	<i>Adventor elongatus</i>			
108.	25544 <i>Aegotheles cristatus</i> (Australian Owlet-nightjar)			
109.	24301 <i>Aegotheles cristatus</i> subsp. <i>cristatus</i> (Australian Owlet-nightjar)			
110.	25351 <i>Aipysurus duboisii</i> (Dubois' Seasnake)			
111.	25355 <i>Aipysurus laevis</i> (Olive Seasnake)			
112.	42369 <i>Aipysurus mosaicus</i> (Mosaic Seasnake)			
113.	<i>Albula forsteri</i>			
114.	<i>Alectis ciliaris</i>			
115.	<i>Alectis indica</i>			
116.	<i>Alepes apercna</i>			
117.	<i>Aluterus monoceros</i>			
118.	<i>Aluterus scriptus</i>			
119.	<i>Aluterus</i> sp.			Y
120.	<i>Ambassis vachellii</i>			
121.	<i>Amblycirrhitus bimacula</i>			
122.	<i>Amblyeleotris wheeleri</i>			
123.	<i>Amblygaster leiogaster</i>			
124.	<i>Amblygobius phalaena</i>			
125.	<i>Amblyomma triguttatum</i>			
126.	30831 <i>Amphibolurus gilberti</i> (Ta-ta, Gilbert's Dragon)			
127.	30833 <i>Amphibolurus longirostris</i> (Long-nosed Dragon)			
128.	<i>Amphiprion perideraion</i>			
129.	<i>Amphiprion rubrocinctus</i>			
130.	<i>Amphiprion sandaracinos</i>			Y
131.	25647 <i>Amytornis striatus</i> (Striated Grasswren)			
132.	<i>Anacanthus barbatus</i>			
133.	<i>Anampses caeruleopunctatus</i>			
134.	<i>Anampses geographicus</i>			
135.	<i>Anampses meleagrides</i>			
136.	<i>Anapistula troglobia</i>			Y
137.	24312 <i>Anas gracilis</i> (Grey Teal)			
138.	<i>Anas platyrhynchos</i> subsp. <i>domesticus</i>			
139.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
140.	47414 <i>Anhinga novaehollandiae</i> (Australasian Darter)			
141.	25318 <i>Antaresia perthensis</i> (Pygmy Python)			
142.	25241 <i>Antaresia stimsoni</i> subsp. <i>stimsoni</i> (Stimson's Python)			
143.	<i>Antennarius nummifer</i>			
144.	25670 <i>Anthus australis</i> (Australian Pipit)			
145.	24599 <i>Anthus australis</i> subsp. <i>australis</i> (Australian Pipit)			
146.	<i>Antichiropus</i> sp.			
147.	<i>Apistus carinatus</i>			
148.	<i>Apogon angustatus</i>			
149.	<i>Apogon argyrogaster</i>			
150.	<i>Apogon aureus</i>			
151.	<i>Apogon breviceaudatus</i>			
152.	<i>Apogon chrysotaenia</i>			
153.	<i>Apogon cookii</i>			
154.	<i>Apogon cyanosoma</i>			
155.	<i>Apogon doederleini</i>			
156.	<i>Apogon fasciatus</i>			
157.	<i>Apogon fraenatus</i>			
158.	<i>Apogon kallopterus</i>			
159.	<i>Apogon moluccensis</i>			
160.	<i>Apogon multilineatus</i>			Y
161.	<i>Apogon nigripinnis</i>			
162.	<i>Apogon pallidofasciatus</i>			
163.	<i>Apogon poecilopterus</i>			
164.	<i>Apogon rueppellii</i>			
165.	<i>Apogon semiornatus</i>			
166.	<i>Apogon septemstriatus</i>			
167.	<i>Apogon</i> sp.			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
168.	<i>Apogon taeniophorus</i>			
169.	<i>Apogon timorensis</i>			
170.	<i>Apogon trimaculatus</i>			
171.	<i>Apolemichthys trimaculatus</i>			
172.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
173.	<i>Archamia fucata</i>			
174.	25558 <i>Ardea ibis</i> (Cattle Egret)			
175.	25559 <i>Ardea intermedia</i> (Intermediate Egret)			
176.	41324 <i>Ardea modesta</i> (great egret, white egret)			
177.	24341 <i>Ardea pacifica</i> (White-necked Heron)			
178.	25560 <i>Ardea sacra</i> (Eastern Reef Egret, Eastern Reef Heron)			
179.	24343 <i>Ardea sacra</i> subsp. <i>sacra</i> (Eastern Reef Egret, Eastern Reef Heron)			
180.	24610 <i>Ardeotis australis</i> (Australian Bustard)			
181.	<i>Argiophe protensa</i>			
182.	<i>Argiophe trifasciata</i>			
183.	<i>Argyrosomus japonicus</i>			
184.	<i>Arius thalassinus</i>			
185.	<i>Arothron manilensis</i>			
186.	<i>Arothron stellatus</i>			
187.	25566 <i>Artamus cinereus</i> (Black-faced Woodswallow)			
188.	24352 <i>Artamus cinereus</i> subsp. <i>melanops</i> (Black-faced Woodswallow)			
189.	25567 <i>Artamus leucorhynchus</i> (White-breasted Woodswallow)			
190.	24354 <i>Artamus leucorhynchus</i> subsp. <i>leucopygialis</i> (White-breasted Woodswallow)			
191.	24355 <i>Artamus minor</i> (Little Woodswallow)			
192.	24356 <i>Artamus personatus</i> (Masked Woodswallow)			
193.	<i>Artema atlanta</i>			
194.	<i>Asadipus cape</i>			
195.	<i>Aseraggodes</i> sp.			
196.	<i>Aseraggodes whitleyi</i>			
197.	25320 <i>Aspidites melanocephalus</i> (Black-headed Python)			
198.	<i>Aspidontus dussumieri</i>			
199.	<i>Aspidontus taeniatus</i>			
200.	<i>Assiculus punctatus</i>			
201.	<i>Asterropteryx semipunctatus</i>			
202.	<i>Atelomycterus fasciatus</i>			
203.	<i>Atherinomorus lacunosus</i>			
204.	<i>Atherinomorus vaigiensis</i>			
205.	<i>Atrosalaria</i> sp.			
206.	<i>Australoschendyla capensis</i>			Y
207.	<i>Austrochthonius easti</i>			
208.	24318 <i>Aythya australis</i> (Hardhead)			
209.	<i>Backbourkia collina</i>			
210.	24044 <i>Balaenoptera acutorostrata</i> (Dwarf Minke Whale)			
211.	<i>Banjos banjos</i>			
212.	<i>Barnardius zonarius</i>			
213.	<i>Bathygobius cocosensis</i>			
214.	<i>Bathygobius cyclopterus</i>			
215.	<i>Bathygobius fuscus</i>			
216.	<i>Bathygobius laddi</i>			
217.	<i>Batrachomoeus occidentalis</i>			
218.	<i>Batrachomoeus</i> sp.			
219.	<i>Belone</i> sp.			
220.	<i>Belonepterygion fasciolatum</i>			
221.	<i>Bengalla bertmaini</i>			Y
222.	<i>Blenniella chrysospilos</i>			
223.	<i>Blenniid</i> sp.			
224.	<i>Blennodesmus scapularis</i>			
225.	<i>Bodianus axillaris</i>			
226.	<i>Bodianus bilunulatus</i>			
227.	<i>Boreohesperus capensis</i>			
228.	<i>Brachysomophis cirrocheilos</i>			
229.	25331 <i>Brachyurophis approximans</i> (North-western Shovel-nosed Snake)			
230.	<i>Bregmaceros japonicus?</i>			
231.	<i>Bregmaceros</i> sp.			
232.	<i>Brosomphyciops pautzkei</i>			
233.	<i>Brosomphyciops</i> sp.			
234.	<i>Bryaninops loki</i>			
235.	<i>Bulbonaricus brauni</i>			Y
236.	24359 <i>Burhinus grallarius</i> (Bush Stone-curlew)			
237.	47897 <i>Butorides striata</i> (Striated Heron, Mangrove Heron)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
238.	25715 <i>Cacatua roseicapilla</i> (Galah)			
239.	25716 <i>Cacatua sanguinea</i> (Little Corella)			
240.	24727 <i>Cacatua sanguinea</i> subsp. <i>westralensis</i> (Little Corella)			
241.	42307 <i>Cacomantis pallidus</i> (Pallid Cuckoo)			
242.	24269 <i>Calamanthus campestris</i> (Rufous Fieldwren)			
243.	<i>Calamanthus campestris</i> subsp. <i>campestris</i>			Y
244.	<i>Callionymus grossi</i>			
245.	<i>Callionymus sublaevis</i>			
246.	<i>Callipallene novaezealandiae</i>			Y
247.	<i>Callogobius sclateri</i>			
248.	<i>Callogobius</i> sp.6			
249.	<i>Calloplelesioptis altivelis</i>			
250.	<i>Cantherhines fronticinctus</i>			Y
251.	<i>Cantherhines pardalis</i>			
252.	<i>Canthigaster coronata</i>			
253.	<i>Canthigaster janthinoptera</i>			
254.	<i>Caracanthus unipinna</i>			
255.	<i>Carangoides caeruleopinnatus</i>			
256.	<i>Carangoides chrysophrys</i>			
257.	<i>Carangoides coeruleopinnatus</i>			
258.	<i>Carangoides equula</i>			
259.	<i>Carangoides hedlandensis</i>			
260.	<i>Carangoides humerosus</i>			
261.	<i>Carangoides malabaricus</i>			
262.	<i>Carangoides</i> sp.			
263.	<i>Carangoides talamparoides</i>			
264.	<i>Caranx bucculentus</i>			
265.	<i>Caranx ignobilis</i>			
266.	<i>Caranx sexfasciatus</i>			
267.	<i>Carcharhinus amblyrhynchos</i>			
268.	<i>Carcharhinus brevipinna</i>			
269.	<i>Carcharhinus caudatus</i>			
270.	<i>Carcharhinus limbatus</i>			
271.	<i>Carcharhinus melanopterus</i>			
272.	<i>Carcharhinus</i> sp.			
273.	25015 <i>Carlia munda</i> (Shaded-litter Rainbow Skink)			
274.	25017 <i>Carlia triacantha</i> (Desert Rainbow Skink)			
275.	<i>Centriscus cristatus</i>			
276.	<i>Centriscus scutatus</i>			
277.	<i>Centroberyx australis</i>			
278.	<i>Centrogenys vaigiensis</i>			
279.	<i>Centrolophus niger</i>			
280.	25600 <i>Centropus phasianinus</i> (Pheasant Coucal)			
281.	<i>Centropyge eibli</i>			
282.	<i>Centropyge tibicen</i>			
283.	<i>Cephalopholis boenak</i>			
284.	<i>Cephalopholis sonnerati</i>			
285.	<i>Cercamia eremia</i>			
286.	<i>Cercamia</i> sp.			
287.	<i>Cercophonius granulatus</i>			
288.	24564 <i>Certhionyx variegatus</i> (Pied Honeyeater)			
289.	24181 <i>Chaerephon jobensis</i> (Greater Northern Freetail-bat, Northern Mastiff Bat)			
290.	<i>Chaetodermis penicilligera</i>			
291.	<i>Chaetodon adiergastos</i>			
292.	<i>Chaetodon assarius</i>			
293.	<i>Chaetodon citrinellus</i>			
294.	<i>Chaetodon lunula</i>			
295.	<i>Chaetodon meyeri</i>			
296.	<i>Chaetodon punctatofasciatus</i>			
297.	<i>Chaetodon trifascialis</i>			
298.	<i>Chaetodon unimaculatus</i>			
299.	<i>Chaetodontoplus duboulayi</i>			
300.	<i>Chaetodontoplus personifer</i>			
301.	24186 <i>Chalinolobus gouldii</i> (Gould's Wattled Bat)			
302.	<i>Chanos chanos</i>			
303.	24377 <i>Charadrius ruficapillus</i> (Red-capped Plover)			
304.	<i>Cheilinus chlorourus</i>			
305.	<i>Cheilio inermis</i>			
306.	<i>Cheilodipterus macrodon</i>			
307.	<i>Cheilodipterus quinquelineatus</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
308.	<i>Chelmon marginalis</i>			
309.	<i>Chelonodon patoca</i>			
310.	24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck)			
311.	47909 <i>Cheramoeca leucosterna</i> (White-backed Swallow)			
312.	<i>Chiloscyllium punctatum</i>			
313.	<i>Chirocentrus dorab</i>			
314.	<i>Chitulia ornata</i>			
315.	<i>Choerodon cauteroma</i>			
316.	<i>Choerodon cephalotes</i>			
317.	<i>Choerodon schoenleinii</i>			
318.	<i>Choerodon</i> sp.			
319.	<i>Choerodon vitta</i>			
320.	<i>Choeroichthys brachysoma</i>			
321.	<i>Choeroichthys latispinosus</i>			
322.	<i>Chroicocephalus novaehollandiae</i>			
323.	<i>Chromis fumea</i>			
324.	<i>Chromis margaritifer</i>			
325.	<i>Chromis weberi</i>			
326.	<i>Chromis westaustralis</i>			
327.	24431 <i>Chrysococcyx basalis</i> (Horsfield's Bronze Cuckoo)			
328.	<i>Chthiononetes tenuis</i>			
329.	24288 <i>Circus approximans</i> (Swamp Harrier)			
330.	24289 <i>Circus assimilis</i> (Spotted Harrier)			
331.	<i>Cirrhilabrus randalli</i>			
332.	<i>Cirrhilabrus</i> sp.			
333.	<i>Cirrhimuraena calamus</i>			
334.	<i>Cirrhichthys aprinus</i>			
335.	<i>Cirrhichthys oxycephalus</i>			
336.	<i>Cirrhitis pinnulatus</i>			
337.	<i>Cirripectes filamentosus</i>			
338.	<i>Cirripectes hutchinsi</i>			
339.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
340.	24612 <i>Colluricincla harmonica</i> subsp. <i>kolichisi</i> (Grey Shrike-thrush)			
341.	24613 <i>Colluricincla harmonica</i> subsp. <i>rufiventris</i> (Grey Shrike-thrush)			
342.	24399 <i>Columba livia</i> (Domestic Pigeon)	Y		
343.	<i>Colurodontis paxmani</i>			
344.	<i>Conger cinereus</i>			
345.	<i>Conger</i> sp.			
346.	<i>Congrogadus malayanus</i>			Y
347.	<i>Congrogadus spinifer</i>			
348.	<i>Congrogadus subducens</i>			
349.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
350.	24362 <i>Coracina novaehollandiae</i> subsp. <i>novaehollandiae</i> (Black-faced Cuckoo-shrike)			
351.	24363 <i>Coracina novaehollandiae</i> subsp. <i>subpallida</i> (Black-faced Cuckoo-shrike)			
352.	<i>Coradion chrysozonus</i>			
353.	<i>Coris aygula</i>			
354.	<i>Coris caudimacula</i>			
355.	<i>Cormocephalus aurantipes</i>			
356.	<i>Cormocephalus strigosus</i>			
357.	24416 <i>Corvus bennetti</i> (Little Crow)			
358.	25593 <i>Corvus orru</i> (Torresian Crow)			
359.	<i>Coryphaena hippurus</i>			
360.	<i>Coryphopterus duospilus</i>			
361.	<i>Coryphopterus</i> sp.			
362.	<i>Coryphopterus</i> sp.4			
363.	<i>Cosmophasis baehrae</i>			
364.	24671 <i>Coturnix pectoralis</i> (Stubble Quail)			
365.	25701 <i>Coturnix ypsilophora</i> (Brown Quail)			
366.	24673 <i>Coturnix ypsilophora</i> subsp. <i>australis</i> (Brown Quail)			
367.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
368.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
369.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
370.	<i>Craterocephalus mugiloides</i>			
371.	<i>Craterocephalus pauciradiatus</i>			
372.	24919 <i>Crenadactylus ocellatus</i> subsp. <i>horni</i> (Clawless Gecko)			
373.	<i>Crossopriza lyoni</i>			
374.	25020 <i>Cryptoblepharus plagioccephalus</i>			
375.	<i>Cryptocentrus</i> sp.			
376.	<i>Cryptoerithus harveyi</i>			
377.	<i>Ctenochaetus strigosus</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
378.	<i>Ctenogobiops pomasticus</i>			
379.	25458 <i>Ctenophorus caudicinctus</i> (Ring-tailed Dragon)			
380.	24865 <i>Ctenophorus caudicinctus</i> subsp. <i>caudicinctus</i> (Ring-tailed Dragon)			
381.	24868 <i>Ctenophorus clayi</i> (Collared Dragon)			
382.	24872 <i>Ctenophorus femoralis</i> (Dune Dragon)			
383.	25459 <i>Ctenophorus isolepis</i> (Crested Dragon, Military Dragon)			
384.	24876 <i>Ctenophorus isolepis</i> subsp. <i>isolepis</i> (Crested Dragon, Military Dragon)			
385.	24882 <i>Ctenophorus nuchalis</i> (Central Netted Dragon)			
386.	30897 <i>Ctenophorus parviceps</i> (Western Heath Dragon, Northern Heath Dragon)			
387.	24886 <i>Ctenophorus reticulatus</i> (Western Netted Dragon)			
388.	25036 <i>Ctenotus duricola</i>			
389.	25043 <i>Ctenotus grandis</i> subsp. <i>titan</i>			
390.	25044 <i>Ctenotus hanloni</i>			
391.	25046 <i>Ctenotus iapetus</i>			
392.	25048 <i>Ctenotus inornatus</i>			
393.	25463 <i>Ctenotus pantherinus</i> (Leopard Ctenotus)			
394.	25064 <i>Ctenotus pantherinus</i> subsp. <i>ocellifer</i> (Leopard Ctenotus)			
395.	25069 <i>Ctenotus rufescens</i>			
396.	25073 <i>Ctenotus saxatilis</i> (Rock Ctenotus)			
397.	25090 <i>Cyclodomorphus melanops</i> subsp. <i>melanops</i> (Slender Blue-tongue)			
398.	<i>Cyclodomorphus</i> sp.			
399.	25375 <i>Cyclorana maini</i> (Sheep Frog)			
400.	<i>Cyclosa camelodes</i>			
401.	24322 <i>Cygnus atratus</i> (Black Swan)			
402.	<i>Cymbacephalus nematophthalmus</i>			
403.	<i>Cymolutes praetextatus</i>			
404.	<i>Cynoglossus</i> sp.			
405.	<i>Cypselurus</i> sp.			
406.	<i>Cyrtbill darwini</i>			
407.	25547 <i>Dacelo leachii</i> (Blue-winged Kookaburra)			
408.	<i>Dactyloptena orientalis</i>			
409.	<i>Dactyloptena papilio</i>			
410.	<i>Dactylopus dactylopus</i>			
411.	<i>Dampetrus isolatus</i>			Y
412.	<i>Dascyllus aruanus</i>			
413.	<i>Dascyllus reticulatus</i>			
414.	<i>Dascyllus trimaculatus</i>			
415.	<i>Dasyatis kuhlii</i>			
416.	24091 <i>Dasykaluta rosamondae</i> (Little Red Kaluta)			
417.	<i>Decapterus macrosoma</i>			
418.	<i>Decapterus russelli</i>			
419.	24995 <i>Delma australis</i>			
420.	25001 <i>Delma nasuta</i>			
421.	25002 <i>Delma pax</i>			
422.	30829 <i>Delma tealei</i>			
423.	25004 <i>Delma tincta</i>			
424.	25292 <i>Demansia calodera</i> (Black-necked Whipsnake)			
425.	25295 <i>Demansia psammophis</i> subsp. <i>cupreiceps</i> (Yellow-faced Whipsnake)			
426.	<i>Dendrochirus brachypterus</i>			
427.	<i>Dendrochirus zebra</i>			
428.	24324 <i>Dendrocygna arcuata</i> (Wandering Whistling Duck, Chestnut Whistling Duck)			
429.	<i>Dentex tumifrons</i>			
430.	<i>Dexillus muelleri</i>			
431.	<i>Diademichthys lineatus</i>			
432.	<i>Diancistrus alleni</i>			
433.	25607 <i>Dicaeum hirundinaceum</i> (Mistletoebird)			
434.	24441 <i>Dicaeum hirundinaceum</i> subsp. <i>hirundinaceum</i> (Mistletoebird)			
435.	<i>Diodon</i> sp.			
436.	24926 <i>Diplodactylus conspicillatus</i> (Fat-tailed Gecko)			
437.	24938 <i>Diplodactylus ornatus</i>			
438.	24944 <i>Diplodactylus savagei</i> (Southern Pilbara Beak-faced Gecko)			
439.	42400 <i>Diporiphora adductus</i> (Carnarvon Dragon)			
440.	33915 <i>Draculoides vinei</i> (Cape Range Draculoides)			
441.	24470 <i>Dromaius novaehollandiae</i> (Emu)			
442.	<i>Dunedinia occidentalis</i>			Y
443.	<i>Echeneis naucrates</i>			
444.	<i>Ecsenius bicolor</i>			
445.	<i>Ecsenius lineatus</i>			
446.	<i>Ecsenius oculatus</i>			
447.	<i>Ecsenius oculus</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
448.	<i>Ecsenius yaeyamaensis</i>			
449.	<i>Egretta garzetta</i>			
450.	<i>Egretta novaehollandiae</i>			
451.	<i>Elanus axillaris</i>			
452.	25540 <i>Elanus caeruleus</i> (Black-shouldered Kite)			
453.	24290 <i>Elanus caeruleus</i> subsp. <i>axillaris</i> (Australian Black-shouldered Kite)			
454.	<i>Elops hawaiensis</i>			
455.	47937 <i>Eiseyornis melanops</i> (Black-fronted Dotterel)			
456.	24631 <i>Emblema pictum</i> (Painted Finch)			
457.	<i>Engyprosopon</i> ? sp.			Y
458.	<i>Engyprosopon</i> sp.			
459.	<i>Enneapterygius gracilis</i>			
460.	<i>Enneapterygius larsonae</i>			
461.	<i>Enneapterygius philippinus</i>			
462.	<i>Enneapterygius tusitalae</i> ?			
463.	<i>Enneapterygius tutuilae</i>			
464.	<i>Entomacrodus decussatus</i>			
465.	<i>Entomacrodus striatus</i>			
466.	<i>Entomacrodus thalassinus</i>			
467.	<i>Eolophus roseicapillus</i>			
468.	24653 <i>Eopsaltria pulverulenta</i> (Mangrove Robin)			
469.	25362 <i>Ephalophis greyae</i>			
470.	25578 <i>Ephippiorhynchus asiaticus</i> (Black-necked Stork)			
471.	<i>Epinephelus areolatus</i>			
472.	<i>Epinephelus bilobatus</i>			
473.	<i>Epinephelus coioides</i>			
474.	<i>Epinephelus fasciatus</i>			
475.	<i>Epinephelus melanostigma</i>			
476.	<i>Epinephelus quoyanus</i>			
477.	<i>Epinephelus rivulatus</i>			
478.	<i>Epinephelus sexfasciatus</i>			
479.	<i>Epinephelus</i> sp.			
480.	24567 <i>Epthianura albifrons</i> (White-fronted Chat)			
481.	24568 <i>Epthianura aurifrons</i> (Orange Chat)			
482.	24570 <i>Epthianura tricolor</i> (Crimson Chat)			
483.	<i>Equulites moretoniensis</i>			
484.	24258 <i>Equus caballus</i> (Horse)	Y		
485.	42404 <i>Eremiascincus isolepis</i>			
486.	43381 <i>Eremiascincus pallidus</i> (Western Narrow-banded Skink, Narrow-banded Sand Swimmer)			
487.	25109 <i>Eremiascincus richardsonii</i> (Broad-banded Sand Swimmer)			
488.	24837 <i>Eremionis carteri</i> (Spinifex-bird)			
489.	24379 <i>Erythronys cinctus</i> (Red-kneed Dotterel)			
490.	47938 <i>Esacus magnirostris</i> (Beach Stone-curlew, Beach Thick-knee)			
491.	<i>Ethmostigmus rubripes</i>			
492.	<i>Euasteron ursulae</i>			
493.	<i>Eubalichthys caeruleoguttatus</i>			
494.	<i>Euristhmus nudiceps</i>			
495.	<i>Eusurculus pistillum</i>			
496.	<i>Eviota bipunctata</i>			Y
497.	<i>Eviota melasma</i>			
498.	<i>Eviota sebreei</i>			
499.	<i>Eviota</i> sp.			
500.	<i>Eviota</i> sp. 1			
501.	<i>Exallias brevis</i>			
502.	25621 <i>Falco berigora</i> (Brown Falcon)			
503.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
504.	25623 <i>Falco longipennis</i> (Australian Hobby)			
505.	24041 <i>Felis catus</i> (Cat)	Y		
506.	<i>Feroxodon multistriatus</i>			
507.	<i>Fistularia commersonii</i>			
508.	<i>Fistularia petimba</i>			
509.	<i>Foa fo</i>			
510.	<i>Foa</i> sp.			Y
511.	<i>Fowleria aurita</i>			
512.	<i>Fowleria variegata</i>			
513.	25727 <i>Fulica atra</i> (Eurasian Coot)			
514.	25301 <i>Furina ornata</i> (Moon Snake)			
515.	<i>Fusigobius maximus</i>			Y
516.	25730 <i>Gallirallus philippensis</i> (Buff-banded Rail)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
517.	24765 <i>Gallirallus philippensis</i> subsp. <i>mellori</i> (Buff-banded Rail)			
518.	<i>Gambusia holbrooki</i>			
519.	42314 <i>Gavicalis virescens</i> (Singing Honeyeater)			
520.	<i>Gazza minuta</i>			
521.	24952 <i>Gehyra australis</i>			
522.	24956 <i>Gehyra pilbara</i>			
523.	24958 <i>Gehyra punctata</i>			
524.	24959 <i>Gehyra variegata</i>			
525.	24401 <i>Geopelia cuneata</i> (Diamond Dove)			
526.	24402 <i>Geopelia humeralis</i> (Bar-shouldered Dove)			
527.	25585 <i>Geopelia striata</i> (Zebra Dove)			
528.	24404 <i>Geophaps plumifera</i> (Spinifex Pigeon)			
529.	<i>Gerres filamentosus</i>			
530.	<i>Gerres oblongus?</i>			Y
531.	<i>Gerres</i> sp.			
532.	<i>Gerres subfasciatus</i>			
533.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
534.	24276 <i>Gerygone tenebrosa</i> (Dusky Gerygone)			
535.	<i>Glaucosoma buergeri</i>			
536.	<i>Glaucosoma hebraicum</i>			
537.	<i>Glaucosoma magnificum</i>			
538.	<i>Glennhuntia glennhunti</i>			Y
539.	24054 <i>Globicephala macrorhynchus</i> (Short-finned Pilot Whale)			
540.	<i>Gnathanodon speciosus</i>			
541.	<i>Gnatholepis cauerensis</i>			
542.	<i>Gobiodon axillaris</i>			
543.	<i>Gobiodon citrinus</i>			
544.	<i>Gobiodon histrio</i>			
545.	<i>Gobiodon quinquestrigatus</i>			
546.	<i>Gobiopsis aoria</i>			
547.	<i>Gobiopsis bravoii</i>			Y
548.	<i>Gonorynchus greyi</i>			
549.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
550.	<i>Grammatobothus polyophthalmus</i>			
551.	<i>Grammatoryncus bicarinatus</i>			
552.	<i>Grammistes sexlineatus</i>			
553.	<i>Gymnocranius griseus</i>			
554.	<i>Gymnothorax buroensis</i>			
555.	<i>Gymnothorax eurostus</i>			
556.	<i>Gymnothorax flavimarginatus</i>			
557.	<i>Gymnothorax nudivomer</i>			Y
558.	<i>Gymnothorax pictus</i>			
559.	<i>Gymnothorax pseudothyrsoides</i>			
560.	<i>Gymnothorax</i> sp.			
561.	<i>Gymnothorax undulatus</i>			
562.	<i>Gymnothorax zonipectis</i>			
563.	<i>Gymnura australis</i>			
564.	25627 <i>Haematopus fuliginosus</i> (Sooty Oystercatcher)			
565.	24487 <i>Haematopus longirostris</i> (Pied Oystercatcher)			
566.	24293 <i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)			
567.	25541 <i>Haliastur indus</i> (Brahminy Kite)			
568.	24295 <i>Haliastur sphenurus</i> (Whistling Kite)			
569.	<i>Halicampus grayi</i>			
570.	<i>Halicampus spirostris</i>			Y
571.	<i>Halichoeres biocellatus</i>			
572.	<i>Halichoeres margaritaceus</i>			
573.	<i>Halichoeres marginatus</i>			
574.	<i>Halichoeres melanochir</i>			
575.	<i>Halichoeres nebulosus</i>			
576.	<i>Halietaea brevicaudata?</i>			
577.	<i>Halietaea</i> sp. W1			
578.	<i>Halietaea</i> sp. W2			
579.	<i>Halophryne diemensis</i>			
580.	<i>Halophryne ocellatus</i>			
581.	24297 <i>Hamirostra melanosternon</i> (Black-breasted Buzzard)			
582.	<i>Helcogramma decurrens</i>			
583.	<i>Helcogramma striata</i>			
584.	<i>Hemigaleus australiensis</i>			
585.	<i>Hemigaleus</i> sp.			
586.	<i>Hemipristis elongata</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
587.	<i>Hemiramphus far</i>			
588.	<i>Heniochus acuminatus</i>			
589.	<i>Herklotsichthys blackburni</i>			
590.	<i>Herklotsichthys koningsbergeri</i>			
591.	24961 <i>Heteronotia binoei</i> (Bynoe's Gecko)			
592.	24962 <i>Heteronotia spelea</i> (Desert Cave Gecko, Pilbara Cave Gecko)			
593.	<i>Heteropoda hermitis</i>			
594.	<i>Heteropriacanthus cruentatus</i>			
595.	<i>Heurodes turritus</i>			
596.	47965 <i>Hieraaetus morphnoides</i> (Little Eagle)			
597.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
598.	<i>Hippocampus montebelloensis</i>			Y
599.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
600.	<i>Histrio histrio</i>			
601.	<i>Hoggicosa snelli</i>			
602.	<i>Hologymnosus annulatus</i>			
603.	<i>Hologymnosus doliatus</i>			Y
604.	<i>Hoplichthys citrinus</i>			
605.	25366 <i>Hydrophis elegans</i> (Elegant Seasnake, Bar-bellied Seasnake)			
606.	44656 <i>Hydrophis major</i> (Olive-headed seasnake, greater seasnake)			
607.	42410 <i>Hydrophis ornatus</i> (Ornate Reef Seasnake, Sea Snake)			
608.	43385 <i>Hydrophis stokesii</i> (Stoke's Seasnake, Sea Snake)			
609.	<i>Hypnos monopterygium</i>			
610.	<i>Hypoatherina temminckii</i>			
611.	<i>Ichthyoscopus insperatus</i>			
612.	<i>Ideoblothrus papillon</i>			Y
613.	<i>Ideoblothrus woodi</i>			Y
614.	<i>Indohya humphreysi</i>			Y
615.	<i>Indolpium</i> sp.			
616.	<i>Inegocia japonica</i>			
617.	<i>Inimicus sinensis</i>			
618.	<i>Isopedella tindalei</i>			
619.	<i>Istiblennius edentulus</i>			
620.	<i>Istiblennius lineatus</i>			
621.	<i>Istiblennius meleagris</i>			
622.	<i>Istigobius decoratus</i>			
623.	<i>Istiophorus platypterus</i>			
624.	<i>Jalmenus clementi</i>			Y
625.	<i>Kyphosus</i> sp.			
626.	<i>Labracinus lineatus</i>			
627.	<i>Labrichthys unilineatus</i>			
628.	<i>Labroides dimidiatus</i>			
629.	<i>Lactoria cornuta</i>			
630.	<i>Lactoria fornasini</i>			
631.	<i>Lagocephalus scleratus</i>			
632.	24367 <i>Lalage tricolor</i> (White-winged Triller)			
633.	<i>Lampona quinqueplagiata</i>			
634.	<i>Lamponina scutata</i>			
635.	25637 <i>Larus novaehollandiae</i> (Silver Gull)			
636.	24511 <i>Larus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Silver Gull)			
637.	25638 <i>Larus pacificus</i> (Pacific Gull)			
638.	<i>Latrodectus hasseltii</i>			
639.	<i>Leiognathus bindus</i>			
640.	<i>Leiognathus leuciscus</i>			
641.	<i>Leiognathus</i> sp.			
642.	<i>Lepidotrigla</i> sp.			
643.	<i>Leptasteron platyconductor</i>			
644.	<i>Leptoscarus vaigiensis</i>			
645.	<i>Leptus waldockae</i>			Y
646.	25125 <i>Lerista bipes</i>			
647.	30928 <i>Lerista clara</i>			
648.	25133 <i>Lerista elegans</i>			
649.	30929 <i>Lerista jacksoni</i>			
650.	25148 <i>Lerista lineopunctulata</i>			
651.	25482 <i>Lerista macropisthopus</i>			
652.	25151 <i>Lerista macropisthopus</i> subsp. <i>fusciceps</i>			
653.	<i>Lerista miopus</i>			Y
654.	25155 <i>Lerista muelleri</i>			
655.	25484 <i>Lerista planiventralis</i>			
656.	25163 <i>Lerista planiventralis</i> subsp. <i>planiventralis</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
657.	<i>Lethrinus atkinsoni</i>			
658.	<i>Lethrinus genivittatus</i>			
659.	<i>Lethrinus haematopterus</i>			Y
660.	<i>Lethrinus laticaudis</i>			
661.	<i>Lethrinus miniatus</i>			
662.	<i>Lethrinus nebulosus</i>			
663.	<i>Lethrinus olivaceus</i>			
664.	<i>Lethrinus punctulatus</i>			
665.	<i>Lethrinus rubrioperculatus</i>			
666.	<i>Lethrinus</i> sp.			
667.	<i>Liachirus whiteyi</i>			Y
668.	25005 <i>Lialis burtonis</i>			
669.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
670.	24582 <i>Lichmera indistincta</i> subsp. <i>indistincta</i> (Brown Honeyeater)			
671.	<i>Limnichthys fasciatus</i>			
672.	<i>Liocranium praepositum</i>			
673.	<i>Liopropoma susumi</i>			
674.	<i>Liza alata</i>			
675.	<i>Liza</i> sp.			
676.	<i>Liza subviridis</i>			
677.	<i>Lobotes surinamensis</i>			
678.	<i>Lophiocharon trisignatus</i>			
679.	<i>Lophiodes mutilus</i>			Y
680.	30933 <i>Lucasium stenodactylum</i>			
681.	30934 <i>Lucasium wombeyi</i>			
682.	<i>Lutjanid</i> sp.			
683.	<i>Lutjanus carponotatus</i>			
684.	<i>Lutjanus erythropterus</i>			
685.	<i>Lutjanus fulviflamma</i>			
686.	<i>Lutjanus lemniscatus</i>			
687.	<i>Lutjanus lutjanus</i>			
688.	<i>Lutjanus malabaricus</i>			
689.	<i>Lutjanus vitta</i>			
690.	<i>Lychas mjobergi</i>			
691.	<i>Macropharyngodon negrosensis</i>			
692.	<i>Macropharyngodon ornatus</i>			
693.	25489 <i>Macropus robustus</i> (Euro, Biggada)			
694.	24135 <i>Macropus robustus</i> subsp. <i>erubescens</i> (Euro, Biggada)			
695.	24136 <i>Macropus rufus</i> (Red Kangaroo, Marlu)			
696.	<i>Malthopsis</i> n. sp. 8			Y
697.	25651 <i>Malurus lamberti</i> (Variegated Fairy-wren)			
698.	25652 <i>Malurus leucopterus</i> (White-winged Fairy-wren)			
699.	24583 <i>Manorina flavigula</i> (Yellow-throated Miner)			
700.	<i>Masasteron gracilis</i>			
701.	<i>Masasteron sampeyae</i>			
702.	<i>Maurolicus javanicus</i>			
703.	<i>Megalaspis cordyla</i>			
704.	<i>Meiakanthus grammistes</i>			
705.	47997 <i>Melanodryas cucullata</i> (Hooded Robin)			
706.	25665 <i>Melithreptus gularis</i> (Black-chinned Honeyeater)			
707.	24736 <i>Melopsittacus undulatus</i> (Budgerigar)			
708.	<i>Mene maculata</i>			
709.	25184 <i>Menetia greyii</i>			
710.	25491 <i>Menetia surda</i>			
711.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)			
712.	<i>Metavelifer multiradiatus</i>			
713.	<i>Microcanthus strigatus</i>			
714.	<i>Microcarbo melanoleucos</i>			
715.	25542 <i>Milvus migrans</i> (Black Kite)			
716.	<i>Minous</i> sp.			
717.	<i>Minous versicolor</i>			
718.	25545 <i>Mirafra javanica</i> (Horsfield's Bushlark, Singing Bushlark)			
719.	24213 <i>Mirounga leonina</i> (Southern Elephant Seal)			
720.	<i>Missulena occatoria</i>			
721.	<i>Miturga occidentalis</i>			
722.	24904 <i>Moloch horridus</i> (Thorny Devil)			
723.	<i>Monacanthus chinensis</i>			
724.	<i>Monocentris japonicus</i>			
725.	<i>Monodactylus argenteus</i>			
726.	25191 <i>Morethia lineocellata</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
727.	25495 <i>Morethia ruficauda</i>			
728.	25193 <i>Morethia ruficauda</i> subsp. <i>exquisita</i>			
729.	48008 <i>Morus serrator</i> (Australasian Gannet)			
730.	<i>Mugil cephalus</i>			
731.	<i>Muraenesox cinereus</i>			
732.	<i>Muraenesox</i> sp.			Y
733.	<i>Muraenichthys gymnotus</i>			
734.	24223 <i>Mus musculus</i> (House Mouse)	Y		
735.	<i>Myripristis berndti</i>			
736.	<i>Myripristis kuntee</i>			
737.	<i>Myripristis murdjan</i>			
738.	<i>Myripristis</i> sp.			
739.	<i>Narcine westraliensis</i>			
740.	<i>Naso brevirostris</i>			
741.	<i>Naso unicornis</i>			
742.	<i>Nectamia bandanensis</i>			
743.	<i>Nectamia fusca</i>			
744.	<i>Nectamia savayensis</i>			
745.	<i>Nelusetta ayraudi</i>			
746.	<i>Nemipterus peronii</i>			
747.	25422 <i>Neobatrachus aquilonius</i> (Northern Burrowing Frog)			
748.	25424 <i>Neobatrachus fulvus</i> (Tawny Trilling Frog)			
749.	25427 <i>Neobatrachus sutor</i> (Shoemaker Frog)			
750.	25685 <i>Neochmia ruficauda</i> (Star Finch)			
751.	<i>Neoglyphidodon melas</i>			
752.	<i>Neoglyphidodon nigroris</i>			
753.	<i>Neopomacentrus azysron</i>			
754.	<i>Neopomacentrus cyanomos</i>			
755.	<i>Neosebastes occidentalis</i>			
756.	<i>Nephila edulis</i>			
757.	<i>Nephila plumipes</i>			
758.	25497 <i>Nephurus levis</i>			
759.	24968 <i>Nephurus levis</i> subsp. <i>occidentalis</i>			
760.	24095 <i>Ningai timealeyi</i> (Pilbara Ningai)			
761.	25747 <i>Ninox connivens</i> (Barking Owl)			
762.	<i>Nomindra leeuweni</i>			
763.	<i>Norfolkia brachylepis</i>			
764.	<i>Norfolkia</i> sp.			
765.	<i>Notograptus guttatus</i>			
766.	24224 <i>Notomys alexis</i> (Spinifex Hopping-mouse)			
767.	25499 <i>Notoscincus ornatus</i>			
768.	25197 <i>Notoscincus ornatus</i> subsp. <i>ornatus</i>			
769.	<i>Notsodipus bidgemia</i>			
770.	<i>Notsodipus capensis</i>			
771.	25564 <i>Nycticorax caledonicus</i> (Rufous Night Heron)			
772.	24194 <i>Nyctophilus geoffroyi</i> (Lesser Long-eared Bat)			
773.	24742 <i>Nymphicus hollandicus</i> (Cockatiel)			
774.	<i>Ocrisiona leucocomis</i>			
775.	24407 <i>Ocyphaps lophotes</i> (Crested Pigeon)			
776.	<i>Ogilbia</i> sp.			
777.	<i>Omegophora armilla</i>			
778.	<i>Omobranchus germani</i>			
779.	<i>Omobranchus rotundiceps</i>			
780.	<i>Omobranchus</i> sp.			
781.	<i>Onigocia spinosa</i>			
782.	<i>Ophichthus celebicus?</i>			
783.	<i>Opistognathus darwiniensis</i>			
784.	<i>Opistognathus inornata</i>			Y
785.	<i>Opistognathus inornatus</i>			
786.	<i>Oplopomus</i> sp.			Y
787.	24061 <i>Orcinus orca</i> (Killer Whale)			
788.	<i>Oreo capensis</i>			
789.	24618 <i>Oreoica gutturalis</i> (Crested Bellbird)			
790.	34012 <i>Oreoica gutturalis</i> subsp. <i>pallescens</i> (Crested Bellbird, central)			
791.	<i>Ornithodoros gurneyi</i>			
792.	24085 <i>Oryctolagus cuniculus</i> (Rabbit)	Y		
793.	48034 <i>Osphranter robustus</i> (Euro, Biggada)			
794.	<i>Ostracion cubicus</i>			
795.	<i>Ostracion meleagris</i>			
796.	34016 <i>Ovis aries</i> (Sheep)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
797.	<i>Oxycheilinus unifasciatus</i>			
798.	<i>Oxymonacanthus longirostris</i>			
799.	24620 <i>Pachycephala lanioides</i> (White-breasted Whistler)			
800.	25678 <i>Pachycephala melanura</i> (Mangrove Golden Whistler)			
801.	24621 <i>Pachycephala melanura</i> subsp. <i>melanura</i> (Mangrove Golden Whistler)			
802.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
803.	<i>Pallenopsis cidaribatus</i>			
804.	<i>Parablennius postocolomaculatus</i>			
805.	<i>Paracentropogon</i> sp.			
806.	<i>Paracentropogon vespa</i>			
807.	<i>Parachaetodon ocellatus</i>			
808.	<i>Parachaeturichthys polynema</i>			
809.	<i>Paracirrhites arcatus</i>			
810.	<i>Paracirrhites forsteri</i>			
811.	<i>Paradiplogrammus enneactis</i>			
812.	<i>Paramonacanthus choirocephalus</i>			
813.	<i>Paranymphon bifilarium</i>			Y
814.	<i>Parapercis diplospilus</i>			
815.	<i>Parapercis millepunctata</i>			
816.	<i>Parapercis multiplicata</i>			
817.	<i>Parapercis nebulosa</i>			
818.	<i>Paraplagusia bilineata</i>			
819.	<i>Paraploactis pulvinus</i>			
820.	<i>Paraploactis</i> sp.			Y
821.	<i>Paraplotosus albilabris</i>			
822.	<i>Paraplotosus butleri</i>			
823.	<i>Paraplotosus</i> sp.			
824.	<i>Parapriacanthus ransonneti</i>			
825.	<i>Parascopsis</i> sp.			
826.	<i>Parascorpaena picta</i>			
827.	<i>Parastromateus niger</i>			
828.	25681 <i>Pardalotus punctatus</i> (Spotted Pardalote)			
829.	24627 <i>Pardalotus rubricatus</i> (Red-browed Pardalote)			
830.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
831.	<i>Parexoceetus brachypterus</i>			
832.	<i>Parupeneus barberinoides</i>			
833.	<i>Parupeneus cyclostomus</i>			
834.	<i>Parupeneus multifasciatus</i>			
835.	<i>Parupeneus pleurostigma</i>			
836.	<i>Parupeneus</i> sp.			
837.	<i>Parupeneus spilurus</i>			
838.	<i>Pataecus</i> sp.			
839.	<i>Pegasus volitans</i>			
840.	<i>Pelates quadrilineatus</i>			
841.	<i>Pelates sexlineatus</i>			
842.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)			
843.	<i>Pellona ditchela</i>			
844.	<i>Pempheris mangula</i>			
845.	<i>Pempheris</i> n.sp			
846.	<i>Pempheris</i> sp.			
847.	<i>Pempheris ypsilychnus</i>			
848.	<i>Pentapodus emeryii</i>			
849.	<i>Pentapodus porosus</i>			
850.	<i>Pentapodus</i> sp.			
851.	<i>Pentapodus vitta</i>			
852.	<i>Periophthalmus argentilineatus</i>			
853.	<i>Peristrominous dolosus</i>			
854.	<i>Pervagor janthinosoma</i>			
855.	48060 <i>Petrochelidon ariel</i> (Fairy Martin)			
856.	48061 <i>Petrochelidon nigricans</i> (Tree Martin)			
857.	24659 <i>Petroica goodenovii</i> (Red-capped Robin)			
858.	<i>Petroscirtes breviceps</i>			
859.	<i>Petroscirtes mitratus</i>			
860.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
861.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
862.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
863.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
864.	<i>Plagiotremus rhinorhynchus</i>			
865.	<i>Plagiotremus tapeinosoma</i>			
866.	24102 <i>Planigale maculata</i> (Common Planigale)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
867.	24842 <i>Platalea regia</i> (Royal Spoonbill)			
868.	<i>Platax batavianus</i>			
869.	<i>Platax</i> sp.			
870.	<i>Platycephalus arenarius</i>			
871.	<i>Platycephalus endrachtensis</i>			
872.	24751 <i>Platycercus zonarius</i> subsp. <i>zonarius</i> (Port Lincoln Parrot)			
873.	<i>Plectorhinchus flavomaculatus</i>			
874.	<i>Plectorhinchus pictus</i>			
875.	<i>Plectorhinchus unicolor</i>			
876.	<i>Plectroglyphidodon johnstonianus</i>			
877.	<i>Plectroglyphidodon lacrymatus</i>			
878.	<i>Plectroglyphidodon leucozonus</i>			
879.	<i>Plectropomus maculatus</i>			
880.	<i>Plesiops coeruleolineatus</i>			
881.	<i>Plesiops verecundus</i>			
882.	<i>Plotosus lineatus</i>			
883.	25703 <i>Podargus strigoides</i> (Tawny Frogmouth)			
884.	24679 <i>Podargus strigoides</i> subsp. <i>brachypterus</i> (Tawny Frogmouth)			
885.	<i>Poecilia reticulata</i>			
886.	24907 <i>Pogona minor</i> subsp. <i>minor</i> (Dwarf Bearded Dragon)			
887.	24681 <i>Poliiocephalus poliocephalus</i> (Hoary-headed Grebe)			
888.	<i>Polydactylus multiradiatus</i>			
889.	<i>Polydactylus plebius</i>			
890.	<i>Polyipnus triphanos?</i>			
891.	<i>Pomacanthus semicirculatus</i>			
892.	<i>Pomacentrus coelestis</i>			
893.	<i>Pomacentrus milleri</i>			
894.	<i>Pomacentrus moluccensis</i>			
895.	<i>Pomacentrus nagasakiensis</i>			
896.	<i>Pomacentrus</i> sp.			
897.	<i>Pomacentrus vaiuli</i>			
898.	<i>Pomadasy s argenteus</i>			
899.	<i>Pomadasy s maculatus</i>			
900.	25706 <i>Pomatostomus temporalis</i> (Grey-crowned Babbler)			
901.	24769 <i>Porzana fluminea</i> (Australian Spotted Crane)			
902.	<i>Prethopalpus alexanderi</i>			Y
903.	<i>Prethopalpus infernalis</i>			Y
904.	<i>Priacanthus hamrur</i>			
905.	<i>Priacanthus tayenus</i>			
906.	<i>Priolepis cincta</i>			
907.	<i>Priolepis nuchifasciata</i>			
908.	<i>Priolepis semidoliata</i>			
909.	<i>Pristipomoides argyrogrammicus</i>			
910.	<i>Pristipomoides typus</i>			
911.	<i>Pristotis obtusirostris</i>			
912.	<i>Psammodytes ocellatus</i>			
913.	<i>Psammoperca waigiensis</i>			
914.	<i>Psenes arafurensis?</i>			
915.	<i>Psenes seriollela?</i>			Y
916.	<i>Psettodes erumei</i>			
917.	<i>Pseudamiops</i> sp.			
918.	24105 <i>Pseudantechinus roryi</i> (Rory's Pseudantechinus)			
919.	24106 <i>Pseudantechinus woolleyae</i> (Woolley's Pseudantechinus)			
920.	<i>Pseudanthias cooperi</i>			
921.	<i>Pseudanthias</i> sp.			
922.	25261 <i>Pseudechis australis</i> (Mulga Snake)			
923.	<i>Pseudobalistes fuscus</i>			
924.	<i>Pseudocalliurichthys goodladi</i>			
925.	<i>Pseudocaranx dentex</i>			
926.	<i>Pseudochromis cyanotaenia</i>			
927.	<i>Pseudochromis fuscus</i>			
928.	<i>Pseudochromis marshallensis</i>			
929.	<i>Pseudochromis quinquedentatus</i>			
930.	<i>Pseudochromis tapeinosoma</i>			
931.	<i>Pseudochromis wilsoni</i>			
932.	<i>Pseudogramma polyacanthum</i>			
933.	<i>Pseudojuloides elongatus</i>			
934.	<i>Pseudolampona marun</i>			Y
935.	<i>Pseudomonacanthus peroni</i>			
936.	24237 <i>Pseudomys hermannsburgensis</i> (Sandy Inland Mouse)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
937.	42416 <i>Pseudonaja mengdeni</i> (Western Brown Snake)			
938.	25263 <i>Pseudonaja modesta</i> (Ringed Brown Snake)			
939.	25432 <i>Pseudophryne douglasi</i> (Gorge Toadlet)			
940.	<i>Pseudoplesiops rosae</i>			
941.	<i>Pseudorhombus arsius</i>			
942.	<i>Pseudorhombus dupliocellatus</i>			
943.	<i>Pseudorhombus jenynsii</i>			
944.	<i>Pseudorhombus quinquocellatus</i>			
945.	<i>Pseudorhombus</i> sp.			
946.	24390 <i>Psophodes occidentalis</i> (Western Wedgebill, Chiming Wedgebill)			
947.	<i>Pteragogus enneacanthus</i>			
948.	<i>Pterapogon mirifica</i>			
949.	<i>Ptereleotris evides</i>			
950.	25711 <i>Pterodroma mollis</i> (Soft-plumaged Petrel)			
951.	<i>Pterois antennata</i>			
952.	<i>Pterois russelli</i>			
953.	<i>Pterois volitans</i>			
954.	24172 <i>Pteropus alecto</i> (Black Flying-fox)			
955.	24173 <i>Pteropus scapulatus</i> (Little Red Flying-fox)			
956.	<i>Ptilonorhynchus guttatus</i>			
957.	25724 <i>Ptilonorhynchus maculatus</i> (Spotted Bowerbird)			
958.	24757 <i>Ptilonorhynchus maculatus</i> subsp. <i>guttatus</i> (Western Bowerbird)			
959.	42323 <i>Ptilotula keartlandi</i> (Grey-headed Honeyeater)			
960.	24711 <i>Puffinus assimilis</i> subsp. <i>assimilis</i> (Little Shearwater)			
961.	25009 <i>Pygopus nigriceps</i>			
962.	24278 <i>Pyrrholaemus brunneus</i> (Redthroat)			
963.	<i>Rachycentron canadum</i>			
964.	<i>Rainfordia opercularis</i>			
965.	<i>Ranzania laevis</i>			
966.	<i>Rastrelliger kanagurta</i>			
967.	<i>Ratabulus diversidens</i>			Y
968.	<i>Ratabulus fulviguttatus</i>			
969.	24245 <i>Rattus rattus</i> (Black Rat)	Y		
970.	<i>Rhabdamia cypselurus</i>			
971.	<i>Rhabdamia gracilis</i>			
972.	<i>Rhabdosargus sarba</i>			
973.	<i>Rhagada capensis</i>			Y
974.	<i>Rhinecanthus aculeatus</i>			
975.	48096 <i>Rhipidura albiscapa</i> (Grey Fantail)			
976.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
977.	24454 <i>Rhipidura leucophrys</i> subsp. <i>leucophrys</i> (Willie Wagtail)			
978.	24457 <i>Rhipidura phasiana</i> (Mangrove Grey Fantail)			
979.	<i>Rhizoprionodon acutus</i>			
980.	<i>Rhynchobatus djiddensis</i>			
981.	24982 <i>Rhynchoedura ornata</i> (Western Beaked Gecko)			
982.	<i>Rhynchostracion nasus</i>			
983.	24174 <i>Saccolaimus flaviventris</i> (Yellow-bellied Sheath-tailed Bat)			
984.	<i>Salarias fasciatus</i>			
985.	<i>Salarias ramosus</i>			
986.	<i>Salarias sexfilum</i>			
987.	<i>Sargocentron rubrum</i>			
988.	<i>Sargocentron tiere</i>			
989.	<i>Saurida argentea</i>			
990.	<i>Saurida gracilis</i>			
991.	<i>Saurida grandisquamis</i>			
992.	<i>Saurida nebulosa</i>			
993.	<i>Saurida</i> sp.			
994.	<i>Saurida undosquamis</i>			
995.	<i>Scaevius milii</i>			
996.	<i>Scarus aereginosus</i>			Y
997.	<i>Scarus schlegeli</i>			
998.	<i>Scolopendra morsitans</i>			
999.	<i>Scolopsis monogramma</i>			
1000.	<i>Scolopsis</i> sp.			
1001.	<i>Scolopsis taenioptera</i>			
1002.	<i>Scolopsis xenochrous</i>			Y
1003.	<i>Scomberoides commersonianus</i>			
1004.	<i>Scomberoides lysan</i>			
1005.	<i>Scomberomorus commerson</i>			
1006.	<i>Scomberomorus queenslandicus</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
1007.	<i>Scorpaenodes guamensis</i>			
1008.	<i>Scorpaenodes littoralis</i>			
1009.	<i>Scorpaenodes</i> sp.			
1010.	<i>Scorpaenodes varipinnis</i>			
1011.	<i>Scorpaenopsis diabolus</i>			
1012.	<i>Scorpaenopsis papuensis</i>			
1013.	24200 <i>Scotorepens greyii</i> (Little Broad-nosed Bat)			
1014.	<i>Secutor insidiator</i>			
1015.	<i>Secutor interruptus</i>			
1016.	<i>Selar</i> sp.			
1017.	<i>Selaroides leptolepis</i>			
1018.	<i>Selenotoca multifasciata</i>			
1019.	<i>Seriolina nigrofasciata</i>			
1020.	<i>Siganus fuscescens</i>			
1021.	<i>Siganus</i> sp.			
1022.	<i>Siganus spinus</i>			
1023.	<i>Siganus trispilos</i>			Y
1024.	<i>Silhouettea insinuans</i>			Y
1025.	<i>Sillago analis</i>			
1026.	<i>Sillago burrus</i>			
1027.	<i>Sillago ciliata</i>			
1028.	<i>Sillago lutea</i>			
1029.	<i>Sillago maculata</i>			
1030.	<i>Sillago</i> sp.			
1031.	<i>Sillago vittata</i>			
1032.	25266 <i>Simoselaps bertholdi</i> (Jan's Banded Snake)			
1033.	25267 <i>Simoselaps littoralis</i> (West Coast Banded Snake)			
1034.	30948 <i>Smicromis brevirostris</i> (Weebill)			
1035.	24116 <i>Sminthopsis macroura</i> (Stripe-faced Dunnart)			
1036.	<i>Sphyaena barracuda</i>			
1037.	<i>Sphyaena obtusata</i>			
1038.	<i>Spratelloides gracilis</i>			
1039.	<i>Spratelloides robustus</i>			
1040.	<i>Stanulus talboti</i>			
1041.	<i>Stegastes fasciolatus</i>			
1042.	<i>Stegastes obreptus</i>			
1043.	<i>Stephanolepis auratus</i>			Y
1044.	24521 <i>Sterna bengalensis</i> (Lesser Crested Tern)			
1045.	24522 <i>Sterna bergii</i> (Crested Tern)			
1046.	48594 <i>Sternula nereis</i> (Fairy Tern)			
1047.	<i>Stethojulis bandanensis</i>			
1048.	<i>Stethojulis interrupta</i>			
1049.	<i>Stethojulis strigiventer</i>			
1050.	25656 <i>Stipiturus ruficeps</i> (Rufous-crowned Emu-wren)			
1051.	24556 <i>Stipiturus ruficeps</i> subsp. <i>ruficeps</i> (Rufous-crowned Emu-wren)			
1052.	<i>Storena sinuosa</i>			
1053.	25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove)	Y		
1054.	24924 <i>Strophurus ciliaris</i> subsp. <i>aberrans</i>			
1055.	24927 <i>Strophurus elderi</i>			
1056.	24932 <i>Strophurus jeanae</i>			
1057.	24941 <i>Strophurus rankini</i>			
1058.	24946 <i>Strophurus strophurus</i>			
1059.	<i>Stygirochiropus communis</i>			
1060.	<i>Suezichthys cyanolaemus</i>			
1061.	<i>Sufflamen bursa</i>			
1062.	<i>Sufflamen chrysopterus</i>			
1063.	<i>Sufflamen fraenatus</i>			
1064.	<i>Suggrundus</i> sp.			
1065.	<i>Sunagocia otaitensis</i>			
1066.	25269 <i>Suta fasciata</i> (Rosen's Snake)			
1067.	<i>Synanceia horrida</i>			
1068.	<i>Synchiropus morrisoni</i>			
1069.	<i>Synodus hoshinonis?</i>			Y
1070.	<i>Synodus jaculum</i>			
1071.	<i>Synodus</i> sp.			
1072.	<i>Synodus variegatus</i>			
1073.	25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
1074.	24207 <i>Tachyglossus aculeatus</i> (Short-beaked Echidna)			
1075.	<i>Taenioides buchanani</i>			Y
1076.	30870 <i>Taeniopygia guttata</i> (Zebra Finch)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
1077.	<i>Taeniura lymna</i>			
1078.	24175 <i>Taphozous georgianus</i> (Common Sheath-tailed Bat)			
1079.	<i>Tathicarpus butleri</i>			
1080.	<i>Terapon jarbua</i>			
1081.	<i>Terapon puta</i>			
1082.	<i>Terapon theraps</i>			
1083.	<i>Thalasseus bengalensis</i>			
1084.	<i>Thalassoma amblycephalum</i>			
1085.	<i>Thalassoma hardwicke</i>			
1086.	<i>Thalassoma lunare</i>			
1087.	<i>Thalassoma lutescens</i>			
1088.	<i>Thalassoma purpureum</i>			
1089.	<i>Thalassoma</i> sp.			
1090.	<i>Thamnaconus modestoides</i>			
1091.	<i>Thereuopoda lesueurii</i>			
1092.	24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
1093.	<i>Thryssa hamiltonii</i>			
1094.	<i>Thryssa mystax?</i>			
1095.	<i>Thryssa setirostris</i>			
1096.	<i>Thysanophrys cirronasus</i>			
1097.	25202 <i>Tiliqua multifasciata</i> (Central Blue-tongue)			
1098.	25207 <i>Tiliqua rugosa</i> subsp. <i>rugosa</i>			
1099.	25548 <i>Todiramphus chloris</i> (Collared Kingfisher)			
1100.	24306 <i>Todiramphus chloris</i> subsp. <i>pilbara</i> (Pilbara Collared Kingfisher)			
1101.	42351 <i>Todiramphus pyrrhopygius</i> (Red-backed Kingfisher)			
1102.	25549 <i>Todiramphus sanctus</i> (Sacred Kingfisher)			
1103.	<i>Torquigener pallimaculatus</i>			
1104.	<i>Torquigener tuberculiferus</i>			
1105.	<i>Torquigener whitleyi</i>			
1106.	<i>Trachinocephalus myops</i>			
1107.	<i>Trachinotus blochii</i>			
1108.	<i>Trachurus novaezelandiae</i>			
1109.	<i>Trachyrhynchus longirostris</i>			Y
1110.	<i>Trachyspina capensis</i>			
1111.	<i>Tragulichthys jaculiferus</i>			
1112.	<i>Tragulichthys</i> sp.			Y
1113.	<i>Triacanthus biaculeatus</i>			
1114.	<i>Triacanthus</i> sp.			
1115.	48141 <i>Tribonyx ventralis</i> (Black-tailed Native-hen)			
1116.	<i>Trichiurus lepturus</i>			
1117.	<i>Trichiurus</i> sp.			
1118.	<i>Trichocyclops nigropunctatus</i>			
1119.	<i>Trichocyclops septentrionalis</i>			Y
1120.	<i>Trimma lantana</i>			
1121.	<i>Trimma okinawae</i>			
1122.	<i>Trimma</i> sp.			
1123.	<i>Tuoba sydneyensis</i>			
1124.	24851 <i>Turnix velox</i> (Little Button-quail)			
1125.	30954 <i>Tursiops aduncus</i> (Indo-Pacific Bottlenose Dolphin)			
1126.	<i>Tylosurus crocodilus</i>			
1127.	<i>Tyrannochthonius brooksi</i>			Y
1128.	<i>Tyrannochthonius butleri</i>			Y
1129.	<i>Ulua mentalis</i>			
1130.	<i>Upeneus moluccensis</i>			
1131.	<i>Upeneus</i> sp.			
1132.	<i>Upeneus tragula</i>			
1133.	<i>Upeneus vittatus</i>			
1134.	<i>Uraspis secunda</i>			Y
1135.	<i>Urodacus hoplurus</i>			
1136.	<i>Uropterygius concolor</i>			
1137.	<i>Valamugil buchanani</i>			
1138.	<i>Valenciennesa longipinnis</i>			
1139.	<i>Valenciennesa muralis</i>			
1140.	<i>Vanderhorstia ornatissima</i>			
1141.	24386 <i>Vanellus tricolor</i> (Banded Lapwing)			
1142.	25209 <i>Varanus acanthurus</i> (Spiny-tailed Monitor)			
1143.	25210 <i>Varanus brevicauda</i> (Short-tailed Pygmy Monitor)			
1144.	25212 <i>Varanus eremius</i> (Pygmy Desert Monitor)			
1145.	25216 <i>Varanus giganteus</i> (Perentie)			
1146.	25218 <i>Varanus gouldii</i> (Bungarra or Sand Monitor)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
1147.	25526 <i>Varanus tristis</i> (Racehorse Monitor)			
1148.	<i>Velifer hypselopterus</i>			
1149.	<i>Velifer</i> sp.			
1150.	24205 <i>Vespadelus finlaysoni</i> (Finlayson's Cave Bat)			
1151.	<i>Wandella waldockae</i>			
1152.	<i>Wesmaldra learmonth</i>			
1153.	<i>Wyndundra kennedy</i>			
1154.	<i>Xenophilus margaritaceus</i>			
1155.	<i>Xiphiasia setifer</i>			
1156.	<i>Yardiella humphreysi</i>			Y
1157.	<i>Yongeichthys criniger</i>			Y
1158.	<i>Yongeichthys nebulosus</i>			
1159.	<i>Zabidius novemaculeatus</i>			
1160.	<i>Zebrosoma scopas</i>			
1161.	<i>Zebrias cancellatus</i>			
1162.	<i>Zebrias quagga</i>			
1163.	<i>Zephyrichthys barryi</i>			
1164.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silvereye)			
1165.	24857 <i>Zosterops luteus</i> (Yellow White-eye)			
1166.	<i>Zosterops luteus</i> subsp. <i>balstoni</i>			
1167.	24248 <i>Zyzomys argurus</i> (Common Rock-rat)			

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 wholly 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.



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: 06/08/21 17:37:28

[Summary](#)

[Details](#)

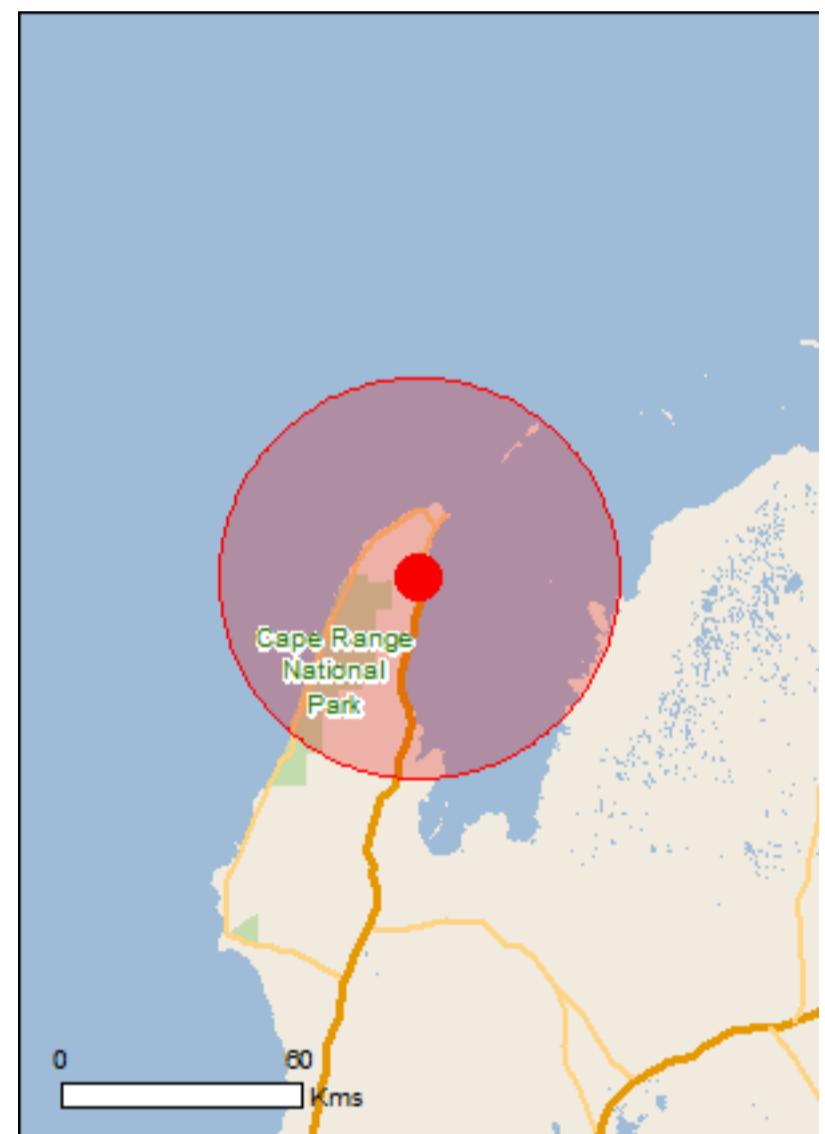
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

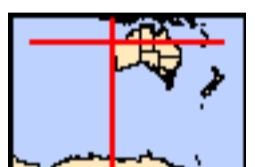
[Acknowledgements](#)



This map may contain data which are
©Commonwealth of Australia
(Geoscience Australia), ©PSMA 2015

[Coordinates](#)

Buffer: 50.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	33
Listed Migratory Species:	50

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:	8
Commonwealth Heritage Places:	1
Listed Marine Species:	80
Whales and Other Cetaceans:	29
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	2

Extra Information

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

State and Territory Reserves:	11
Regional Forest Agreements:	None
Invasive Species:	13
Nationally Important Wetlands:	2
Key Ecological Features (Marine)	4

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Status
The Ningaloo Coast	WA	Declared property

National Heritage Properties		[Resource Information]
Name	State	Status
Natural		
The Ningaloo Coast	WA	Listed place

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 Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Fish		
Milyeringa veritas Blind Gudgeon [66676]	Vulnerable	Species or species habitat known to occur within area
Ophisternon candidum Blind Cave Eel [66678]	Vulnerable	Species or species habitat known to occur within area
Mammals		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur within area
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area
Rhinonictoris aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
Reptiles		
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or

Name	Status	Type of Presence
<i>Eretmochelys imbricata</i> Hawksbill Turtle [1766]	Vulnerable	related behaviour known to occur within area Breeding known to occur within area
<i>Natator depressus</i> Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to 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
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Species or species

Name	Threatened	Type of Presence
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		habitat likely to occur within area Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding 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 known to 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 known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species

Name	Threatened	Type of Presence
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	habitat may occur within area Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Species or species habitat 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		
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely 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 may occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely 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 - EXMOUTH ADMIN & HF TRANSMITTING Defence - EXMOUTH NAVAL HF RECEIVING STATION (H/F Receiving Station, Learmonth, WA) Defence - EXMOUTH VLF TRANSMITTER STATION Defence - LEARMONTH - RAAF BASE Defence - LEARMONTH RADAR SITE - TWIN TANKS EXMOUTH Defence - LEARMONTH RADAR SITE - VLAMING HEAD EXMOUTH Defence - LEARMONTH TRANSMITTING STATION

Commonwealth Heritage Places [\[Resource Information \]](#)

Name	State	Status
Natural Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

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
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
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 may occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed		Species or species

Name	Threatened	Type of Presence
Shearwater [1043] Puffinus pacificus		habitat likely to occur within area
Wedge-tailed Shearwater [1027] Rostratula benghalensis (sensu lato)		Breeding known to occur within area
Painted Snipe [889] Thalassarche impavida	Endangered*	Species or species habitat likely to occur within area
Campbell Albatross, Campbell Black-browed Albatross [64459] Tringa nebularia	Vulnerable	Species or species habitat may occur within area
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Fish		
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
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 latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		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

Name	Threatened	Type of Presence area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spirostris 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 angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		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 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
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammals		
Dugong dugon Dugong [28]		Breeding known to occur within area

Name	Threatened	Type of Presence
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 known 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 foliosquama Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus laevis Olive Seasnake [1120]		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	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [1111]		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 acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia simus Dwarf Sperm Whale [58]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area

Name	Status	Type of Presence
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Species or species habitat known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		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
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Name	Label
Gascoyne	Multiple Use Zone (IUCN VI)
Ningaloo	Recreational Use Zone (IUCN IV)

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Bundegi Coastal Park	WA
Burnside And Simpson Island	WA
Cape Range	WA
Gnandaroo Island	WA
Jurabi Coastal Park	WA
Muiron Islands	WA
Tent Island	WA
Victor Island	WA
Whalebone Island	WA
Whitmore,Roberts,Doole Islands And Sandalwood Landing	WA
Y Island	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 Resources 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
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		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
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
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 may occur within area

Nationally Important Wetlands

[\[Resource Information \]](#)

Name	State
Cape Range Subterranean Waterways	WA
Exmouth Gulf East	WA

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Canyons linking the Cuvier Abyssal Plain and the	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west

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

-21.94569 114.1208

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.

© Commonwealth of Australia

Department of Agriculture Water and the Environment

GPO Box 858

Canberra City ACT 2601 Australia

+61 2 6274 1111

Appendix C

Flora Likelihood of Occurrence

Appendix: Assessment of the Likelihood of Occurrence of Threatened and Priority Flora as per Desktop Assessment Database Searches surrounding the Survey Area

Distance to Nearest Record from the Survey Area is based on a distance analysis undertaken against 2021 DBCA database. High = Suitable habitat present and records less than 5 km from the Survey Area, Medium = Suitable habitat present and records between 5 km and 15 km from the Survey Area, and Low = No suitable habitat present and/or records greater than 15 km from the Survey Area, Unknown = Insufficient information available to classify. CR= Listed as Critically Endangered under the EPBC Act, EN = Listed as Endangered under the EPBC Act, VU = listed as Vulnerable under the EPBC Act. T = Threatened under the BC Act, P = Priority Listed, Ranked and Listed by the DBCA. Likelihoods are assessed both pre and post survey based on knowledge of the Survey Area, nearest known records, known flowering period of flora taxa and knowledge gained from the survey effort during ground truthing.

Species	Conservation Status			Source		Distance to Nearest Record (km)	Flowering Period	Preferred Habitat	Habitat occurs within the Survey Area	Pre-Survey Likelihood of Occurrence	Post-Survey Likelihood of Occurrence
	DBCA	EPBC	NatureMap	PMST	DBCA						
<i>Calytrix sp. Learmonth (S. Fox EMopp 1)</i>	P1		X			35.6	Aug	Rocky high point on limestone deposits.	Yes	Medium	Low
<i>Acacia ryaniana</i>	P2		X			39.2	Jun - Nov	White or red sand, coastal sand dunes, flats. ²	No	Low	Low
<i>Acanthocarpus rupestris</i>	P2		X		X	4.2	May - Jun	Red sand, limestone. ²	Yes	High	Recorded
<i>Calandrinia sp. Cape Range (F. Obbens FO 10/18)</i>	P2		X			6.7	Jun - Sep	Red-brown sandy clay loam, skeletal soils between rocks over limestone.	Yes	Medium	High
<i>Crinum flaccidum</i>	P2		X			38.4	Oct - Dec or Jan or May	Loam, clay, sandstone. Swamps, creeks. ²	No	Low	Low
<i>Cucumis sp. Barrow Island (D.W. Goodall 1264)</i>	P2				X	8.1	May - Oct	Red sandy loams. Sandplain swales, footslopes of basalt, limestone plateau, calcrete slopes.	Yes	Medium	High
<i>Daviesia pleurophylla</i>	P2		X		X	2.5	Aug - Oct	Deep red-brown sands. Sand dunes, dune crests.	No	High	Medium
<i>Eremophila occidentis</i>	P2		X			11.8	Jul - Aug	Orange/red-brown deep sands. Limestone ranges, dunes, sandplains. ²	Yes	High	High
<i>Harnieria kempeana subsp. rhadinophylla</i>	P2		X			8.9	May - Sep	Calcareous loam, brown sands. Amongst limestone rocks, on creek banks, bases of gorges. ²	Yes	High	Recorded
<i>Tephrosia sp. North West Cape (G. Marsh 81)</i>	P2		X		X	1.6	May - Jul	Orange sands, red-brown clay loam. Limestone outcrops, rocks.	Yes	High	High
<i>Tinospora esiangkara</i>	P2		X		X	6.7	Aug - Sep	Pebbly orange-brown calcareous loam. Limestone outcrops or ridges, near creek bank. ²	Yes	High	Recorded
<i>Verticordia serotina</i>	P2		X			10.7	Aug - Sep	Red sand. Sand dunes. ²	No	High	Medium
<i>Acacia alexandri</i>	P3		X		X	5.6	Jun - Sep	Limestone. Stony creeks, steep rocky slopes. ²	Yes	High	Recorded
<i>Acacia startii</i>	P3		X			10.9	Jul - Aug	Calcareous loam with limestone pebbles. Stony hills and watercourses. ²	Yes	High	High
<i>Corchorus congener</i>	P3		X		X	0.5	Apr - Oct	Sand, red sandy loam with limestone. Sand dunes, plains. ²	Yes	High	Recorded
<i>Eremophila forrestii subsp. capensis</i>	P3		X		X	1.2	Jun - Jul	Brown rocky soils, limestone. Ridges. ²	Yes	High	Recorded

¹ Department of Agriculture, Water and Environment (2020) ²Western Australian Herbarium (2020)

Species	Conservation Status			Source		Distance to Nearest Record (km)	Flowering Period	Preferred Habitat	Habitat occurs within the Survey Area	Pre-Survey Likelihood of Occurrence	Post-Survey Likelihood of Occurrence
	DBCA	EPBC	NatureMap	PMST	DBCA						
<i>Grevillea calcicola</i>	P3		X		X	3.7	Aug, Sep	Limestone hilltops. ²	Yes	High	Recorded
<i>Gymnanthera cunninghamii</i>	P3		X		X	16.5	Jan - Dec	Sandy soils. In areas surrounding permanent or semi-permanent water courses, among rocks on Burrup Peninsula. ²	No	High	Medium
<i>Helminthostachys zeylanica</i>	P3		X			18.4	May	Black peat. Shady sites in gallery forest, margins of creek. ²	No	Low	Low
<i>Lygodium flexuosum</i>	P3		X			33.2	Mar or Jun - Aug	Sand. Damp, shaded sites near rocky cliffs and gorges. ²	No	Low	Low
<i>Phyllanthus fuemrohrii</i>	P3		X			5.4	Feb and May - Sept	Sand over limestone, creek beds, limestone cliffs. ²	Yes	High	High
<i>Stackhousia umbellata</i>	P3		X		X	3.7	May - Aug	Sandy soils on limestone. ²	Yes	High	High
<i>Brachychiton obtusilobus</i>	P4		X		X	1.1	Aug - Sep	Skeletal soils. Rocky limestone ranges, gorges, occasionally sandplains. ²	Yes	Medium	Recorded
<i>Eremophila youngii</i> subsp. <i>lepidota</i>	P4		X		X	1	Jan or Mar or Jun or Aug - Sep	Stony red sandy loam. Flats plains, floodplains, sometimes semi-saline, clay flats. ²	Yes	Medium	Medium

Appendix D

Inventory of Vascular Flora

Appendix: Inventory of Vascular Flora

Family	Taxon	Status (distance to nearest record)
Acanthaceae	<i>Dicladanthera forrestii</i>	
	<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>	
	<i>Harnieria kempeana</i> subsp. <i>rhadinophylla</i>	P2
Aizoaceae	<i>Trianthema pilosum</i>	
Amaranthaceae	* <i>Aerva javanica</i>	
	<i>Amaranthus undulatus</i>	
	<i>Ptilotus auriculifolius</i>	RE (149km E)
	<i>Ptilotus clementii</i>	
	<i>Ptilotus divaricatus</i>	
	<i>Ptilotus exaltatus</i>	
	<i>Ptilotus helipteroides</i>	
	<i>Ptilotus obovatus</i> var. <i>obovatus</i>	
	<i>Ptilotus polystachyus</i>	
	<i>Ptilotus xerophilus</i>	
	<i>Surreya diandra</i>	
Apiaceae	<i>Daucus glochidiatus</i>	
Apocynaceae	<i>Cynanchum viminale</i> subsp. <i>australe</i>	
	<i>Vincetoxicum lineare</i>	
Asparagaceae	<i>Acanthocarpus preissii</i>	
	<i>Acanthocarpus rupestris</i>	P2
	<i>Acanthocarpus verticillatus</i>	
	<i>Thysanotus ?exfimbriatus</i>	
Asphodelaceae	* <i>Asphodelus fistulosus</i>	
Asteraceae	<i>Angianthus milnei</i>	
	<i>Angianthus</i> sp.	
	* <i>Bidens bipinnata</i>	
	<i>Calotis plumulifera</i>	
	* <i>Flaveria trinervia</i>	
	<i>Minuria leptophylla</i>	
	<i>Olearia</i> sp. Kennedy Range (G.Byrne 66)	
	<i>Peripleura arida</i>	
	<i>Pluchea dentex</i>	
	<i>Podolepis aristata</i> subsp. <i>aristata</i>	
	<i>Pterocaulon sphacelatum</i>	
	<i>Pterocaulon sphaeranthoides</i>	
	<i>Rhodanthe floribunda</i>	
	<i>Rhodanthe stricta</i>	
	<i>Roebuckiella oncocarpa</i>	
	* <i>Sigesbeckia orientalis</i>	
	* <i>Sonchus oleraceus</i>	
	<i>Streptoglossa bubakii</i>	
	<i>Streptoglossa decurrens</i>	
	<i>Streptoglossa liatroides</i>	
Boraginaceae	<i>Heliotropium crispatum</i>	
	<i>Heliotropium diversifolium</i>	RE (103km E)
	<i>Heliotropium glanduliferum</i>	
	<i>Heliotropium inexplicitum</i>	RE (101km SE)
	<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>	

Appendix: Inventory of Vascular Flora

Family	Taxon	Status (distance to nearest record)
Brassicaceae	<i>Stenopetalum pedicellare</i>	
Capparaceae	<i>Capparis lasiantha</i>	
	<i>Capparis mitchellii</i>	
	<i>Capparis spinosa</i> subsp. <i>nummularia</i>	
Caryophyllaceae	<i>Polycarpaea corymbosa</i> var. <i>corymbosa</i>	RE (98km E)
Celastraceae	<i>Stackhousia</i> sp. Mid west coastal (D & B Bellairs 6561)	
Chenopodiaceae	<i>Atriplex bunburyana</i>	
	<i>Atriplex semilunaris</i>	
	<i>Dissocarpus paradoxus</i>	
	<i>Dysphania melanocarpa</i> forma <i>leucocarpa</i>	
	<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	RE (111km SE)
	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	
	<i>Eremophea spinosa</i>	
	<i>Maireana planifolia</i>	
	<i>Maireana tomentosa</i> subsp. <i>tomentosa</i>	
	<i>Neobassia astrocarpa</i>	
	<i>Rhagodia baccata</i>	
	<i>Rhagodia eremaea</i>	
	<i>Salsola australis</i>	
	<i>Sclerolaena recurvicauspis</i>	
	<i>Sclerolaena uniflora</i>	
	<i>Threlkeldia diffusa</i>	
Cleomaceae	<i>Arivela viscosa</i>	
Colchicaceae	<i>Wurmbea odorata</i>	
Commelinaceae	<i>Commelina ensifolia</i>	
Convolvulaceae	<i>Convolvulus clementii</i>	
	<i>Duperreya commixta</i>	
	<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	
	<i>Ipomoea costata</i>	
	<i>Ipomoea muelleri</i>	
	<i>Polymeria ambigua</i>	
Cucurbitaceae	<i>Cucumis variabilis</i>	
Cyperaceae	<i>Bulbostylis barbata</i>	
Dilleniaceae	<i>Hibbertia capensis</i>	
Euphorbiaceae	<i>Euphorbia australis</i> var. <i>subtomentosa</i>	RE (94km E)
	<i>Euphorbia biconvexa</i>	
	<i>Euphorbia boophthona</i>	RE (69km E)
	<i>Euphorbia sharkoensis</i>	
	<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>	
	<i>Euphorbia trigonosperma</i>	
Fabaceae	<i>Acacia alexandri</i>	P3
	<i>Acacia arida</i>	
	<i>Acacia bivenosa</i>	
	<i>Acacia colei</i> var. <i>colei</i>	RE (90km SE)
	<i>Acacia coriacea</i> subsp. <i>coriacea</i>	
	<i>Acacia gregorii</i>	
	<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>	
	<i>Acacia sericophylla</i>	

Appendix: Inventory of Vascular Flora

Family	Taxon	Status (distance to nearest record)
Fabaceae	<i>Acacia sibilans</i>	RE (134km S)
	<i>Acacia synchronicia</i>	
	<i>Acacia tetragonophylla</i>	
	* <i>Crotalaria incana</i> subsp. <i>incana</i>	
	<i>Crotalaria medicaginea</i> var. <i>neglecta</i>	
	<i>Cullen cinereum</i>	RE (74km SE)
	<i>Cullen pogonocarpum</i>	
	<i>Erythrina vespertilio</i>	
	<i>Glycine canescens</i>	
	<i>Indigofera colutea</i>	
	<i>Indigofera linifolia</i>	
	<i>Indigofera monophylla</i>	
	<i>Isotropis atropurpurea</i>	
	<i>Leptosema macrocarpum</i>	
	<i>Lotus cruentus</i>	
	<i>Rhynchosia minima</i>	
	<i>Senna artemisioides</i> subsp. <i>helmsii</i>	
	<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	
	<i>Senna ferraria</i>	
	<i>Senna glutinosa</i> subsp. <i>×luerssenii</i>	RE (95km S)
	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	
	<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	
	<i>Senna notabilis</i>	
	<i>Sesbania cannabina</i>	RE (58km SE)
	<i>Swainsona complanata</i>	
	<i>Swainsona formosa</i>	
	<i>Swainsona kingii</i>	
	<i>Swainsona pterostylis</i>	
<i>Tephrosia rosea</i> var. <i>clementii</i>		
<i>Tephrosia supina</i>	RE (76km S)	
Frankeniaceae	<i>Frankenia pauciflora</i>	
Gentianaceae	<i>Schenkia australis</i>	
Geraniaceae	<i>Erodium cygnorum</i>	
Goodeniaceae	<i>Dampiera incana</i> var. <i>incana</i>	
	<i>Goodenia microptera</i>	
	<i>Goodenia tenuiloba</i>	
	<i>Lechenaultia subcymosa</i>	
	<i>Scaevola cunninghamii</i>	
	<i>Scaevola spicigera</i>	
	<i>Scaevola spinescens</i>	
	<i>Scaevola tomentosa</i>	
Gyrostemonaceae	<i>Gyrostemon ramulosus</i>	
Haloragaceae	<i>Haloragis gossei</i> var. <i>inflata</i>	
Lamiaceae	<i>Clerodendrum tomentosum</i>	
Lauraceae	<i>Cassytha aurea</i> var. <i>aurea</i>	
	<i>Cassytha filiformis</i>	RE (95km SE)
Loranthaceae	<i>Amyema preisii</i>	
Malvaceae	<i>Abutilon lepidum</i>	

Appendix: Inventory of Vascular Flora

Family	Taxon	Status (distance to nearest record)
Malvaceae	<i>Abutilon</i> sp. Dioicum (A.A. Mitchell PRP 1618)	
	<i>Brachychiton obtusilobus</i>	P4
	<i>Corchorus congener</i>	P3
	<i>Corchorus crozophorifolius</i>	
	<i>Gossypium robinsonii</i>	
	<i>Hannafordia quadrivalvis</i> subsp. <i>recurva</i>	
	<i>Hibiscus goldsworthii</i>	
	<i>Hibiscus</i> sp. Gardneri (A.L. Payne PRP 1435)	
	<i>Hibiscus sturtii</i> var. <i>grandiflorus</i>	RE (224km E)
	<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	
	<i>Lawrenzia densiflora</i>	RE (56km S)
	<i>Lawrenzia viridigrisea</i>	
	* <i>Malvastrum americanum</i>	
	<i>Melhania oblongifolia</i>	
	<i>Sida calyxhymenia</i>	
	<i>Sida fibulifera</i>	
	<i>Sida kingii</i>	
	<i>Sida rohlena</i> subsp. <i>rohlena</i>	
	<i>Sida</i> sp. Nov	SOI
	<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	
<i>Triumfetta clementii</i>		
<i>Waltheria indica</i>		
Menispermaceae	<i>Tinospora esiangkara</i>	P2
Moraceae	<i>Ficus brachypoda</i>	
Myrtaceae	<i>Corymbia hamersleyana</i>	
	<i>Eucalyptus xerothermica</i>	
	<i>Melaleuca cardiophylla</i>	
Nyctaginaceae	<i>Boerhavia coccinea</i>	
Oleaceae	<i>Jasminum didymum</i> subsp. <i>lineare</i>	
Other	Herb sp.	
Phyllanthaceae	<i>Notoleptopus decaisnei</i>	RE (147km E)
	<i>Phyllanthus erwinii</i>	
	<i>Phyllanthus exilis</i>	RE (328km E)
	<i>Phyllanthus maderaspatensis</i>	
Pittosporaceae	<i>Pittosporum phillyreoides</i>	
Plantaginaceae	<i>Stemodia viscosa</i>	RE (154km SE)
Plumbaginaceae	<i>Muellerolimon salicorniaceum</i>	
	<i>Plumbago zeylanica</i>	
Poaceae	<i>Aristida contorta</i>	
	<i>Aristida holathera</i> var. <i>holathera</i>	
	<i>Aristida nitidula</i>	
	* <i>Cenchrus ciliaris</i>	
	* <i>Cenchrus setiger</i>	
	* <i>Chloris pumilio</i>	RE (77km E)
	<i>Chrysopogon fallax</i>	
	<i>Cymbopogon ambiguus</i>	
	<i>Dactyloctenium radulans</i>	RE (86km SE)
	<i>Dichanthium sericeum</i> subsp. <i>humilius</i>	

Appendix: Inventory of Vascular Flora

Family	Taxon	Status (distance to nearest record)
Poaceae	<i>Digitaria ctenantha</i>	
	<i>Enneapogon caerulescens</i>	
	<i>Eragrostis cumingii</i>	
	<i>Eragrostis dielsii</i>	
	<i>Eragrostis eriopoda</i>	
	<i>Eragrostis falcata</i>	
	<i>Eragrostis leptocarpa</i>	
	<i>Eriachne aristidea</i>	
	<i>Eriachne mucronata</i>	
	<i>Eriachne obtusa</i>	
	<i>Eriachne tenuiculmis</i>	RE (220km E)
	<i>Eulalia aurea</i>	
	<i>Iseilema dolichotrichum</i>	
	<i>Iseilema eremaeum</i>	
	<i>Paraneurachne muelleri</i>	
	<i>Paspalidium basicladum</i>	RE (91km SE)
	<i>Paspalidium clementii</i>	
	<i>Paspalidium tabulatum</i>	
	<i>Schizachyrium fragile</i>	RE (329km E)
	<i>Setaria dielsii</i>	
	* <i>Setaria verticillata</i>	
	<i>Themeda triandra</i>	
	<i>Triodia epactia</i>	
	<i>Triodia glabra</i>	
<i>Triodia wiseana</i>		
<i>Triraphis mollis</i>		
<i>Yakirra australiensis</i> var. <i>australiensis</i>	RE (94km E)	
Polygalaceae	<i>Polygala glaucifolia</i>	RE (94km S)
Polygonaceae	* <i>Rumex vesicarius</i>	RE (310km E)
Portulacaceae	<i>Calandrinia ptychosperma</i>	
	<i>Portulaca oleracea</i>	
Proteaceae	<i>Grevillea calcicola</i>	P3
	<i>Grevillea stenobotrya</i>	
	<i>Grevillea variifolia</i> var. <i>variifolia</i>	
	<i>Hakea chordophylla</i>	RE (199km E)
	<i>Hakea lorea</i> subsp. <i>lorea</i>	
Pteridaceae	<i>Cheilanthes austrotenuifolia</i>	
Rubiaceae	<i>Dolichocarpa crouchiana</i>	
Santalaceae	<i>Exocarpos aphyllus</i>	
	<i>Exocarpos sparteus</i>	
	<i>Santalum lanceolatum</i>	RE (154km SW)
Sapindaceae	<i>Alectryon oleifolius</i> subsp. <i>oleifolius</i>	
	<i>Diplopeltis eriocarpa</i>	
	<i>Dodonaea viscosa</i> subsp. <i>mucronata</i>	
Scrophulariaceae	<i>Eremophila forrestii</i>	
	<i>Eremophila forrestii</i> subsp. <i>capensis</i>	P3
	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	
	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	RE (140km E)

Appendix: Inventory of Vascular Flora

Family	Taxon	Status (distance to nearest record)
Scrophulariaceae	<i>Eremophila longifolia</i>	
Solanaceae	* <i>Datura leichhardtii</i> subsp. <i>leichhardtii</i>	
	<i>Nicotiana occidentalis</i>	
	<i>Solanum diversiflorum</i>	
	<i>Solanum horridum</i>	RE (163km E)
Solanaceae	<i>Solanum lasiophyllum</i>	
Surianaceae	<i>Stylobasium spathulatum</i>	
Thymelaeaceae	<i>Pimelea ammocharis</i>	
Urticaceae	<i>Parietaria cardiostegia</i>	
Violaceae	<i>Afrohybanthus aurantiacus</i>	
Zygophyllaceae	<i>Roepera aurantiaca</i>	
	<i>Roepera retivalvis</i>	
	<i>Tribulus cistoides</i>	
	<i>Tribulus hirsutus</i>	
	<i>Tribulus macrocarpus</i>	
	<i>Tribulus occidentalis</i>	
	<i>Tribulus suberosus</i>	

Appendix E

Threatened and Priority Flora Report Forms

FLORA SITE SHEET

Project Name 4766 Horizon Exmouth
Site: HER01
Location MGA 50 203682 mE 7569820 mN

Described by: BD, JW
Date: 20/08/2021
Type: RELEVE

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Clay, Loam, Sand
Soil Colour: Red



Vegetation: *Corymbia hamersleyana* low open woodland over *Acacia tetragonophylla* tall sparse shrubland over *Cullen cinereum* mid open shrubland over **Cenchrus ciliaris* tall tussock grassland over *Rhynchosia minima*, *Erodium cygnorum* and *Swainsona pterostylis* low open herbland

Condition: Poor **Disturbance:** Litter, Weeds
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
<i>Acacia coriacea</i> subsp. <i>coriacea</i>	400	0.1	
<i>Acacia tetragonophylla</i>	300	9	
* <i>Bidens bipinnata</i>	40	0.1	
* <i>Cenchrus ciliaris</i>	75	35	
* <i>Cenchrus setiger</i>	70	0.1	
<i>Convolvulus clementii</i>	40	0.1	
<i>Corymbia hamersleyana</i>	300	2	
<i>Cucumis variabilis</i>	30	0.1	
<i>Cullen cinereum</i>	150	11	
<i>Eragrostis leptocarpa</i>	30	0.1	
<i>Erodium cygnorum</i>	30	2	
<i>Euphorbia biconvexa</i>	35	0.1	
<i>Glycine canescens</i>	150	0.1	
<i>Haloragis gossei</i> var. <i>inflata</i>	30	0.1	
<i>Ipomoea costata</i>	300	2	
<i>Ipomoea muelleri</i>	10	0.1	
<i>Lotus cruentus</i>	20	0.1	
* <i>Malvastrum americanum</i>	50	0.1	
<i>Nicotiana occidentalis</i>	30	0.1	
<i>Ptilotus xerophilus</i>	70	0.1	
<i>Rhynchosia minima</i>	160	5	
<i>Roebuckiella oncocarpa</i>	15	0.1	
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	120	0.1	
* <i>Sigesbeckia orientalis</i>	120	0.1	
<i>Solanum lasiophyllum</i>	10	0.1	
<i>Swainsona pterostylis</i>	30	2	
<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>	200	0.1	

FLORA SITE SHEET

Project Name 4766 Horizon Exmouth
Site: HER02
Location MGA 50 203539 mE 7569487 mN

Described by: BD, JW
Date: 21/08/2021
Type: RELEVE

Landform: Plain
Slope: Flat
Rock Type: Calcrete, Quartz
Soil Type: Clay, Loam
Soil Colour: Brown, Red



Vegetation: *Acacia synchronicia* tall open shrubland **Cenchrus ciliaris* low closed tussock grassland over *Ptilotis xerophilus* and *Salsola australis* low sparse herbland

Condition: Poor **Disturbance:** Weeds
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
<i>Acacia synchronicia</i>	450	12	
* <i>Aerva javanica</i>	20	0.1	
<i>Calotis plumulifera</i>	20	0.1	
* <i>Cenchrus ciliaris</i>	30	80	
* <i>Chloris pumilio</i>	60	0.1	
<i>Erodium cygnorum</i>	20	0.1	
<i>Euphorbia biconvexa</i>	10	0.1	
<i>Euphorbia boophthona</i>	60	0.1	
<i>Goodenia tenuiloba</i>	30	0.1	
<i>Indigofera colutea</i>	10	0.1	
<i>Ptilotis helipteroides</i>	40	0.1	
<i>Ptilotis xerophilus</i>	50	1	
<i>Rhagodia baccata</i>	60	0.1	
<i>Salsola australis</i>	40	0.5	
<i>Setaria dielsii</i>	40	0.1	
* <i>Setaria verticillata</i>	30	0.1	
<i>Solanum lasiophyllum</i>	15	0.1	

FLORA SITE SHEET

Project Name 4766 Horizon Exmouth
Site: HER03
Location MGA 50 203213 mE 7569557 mN

Described by: BD, JW
Date: 21/08/2021
Type: RELEVE



Landform: Rise
Slope: Gentle
Rock Type: Calcrete, Limestone
Soil Type: Clay, Loam
Soil Colour: Brown, Red

Vegetation: *Corymbia hamersleyana* low open woodland over *Senna glutinosa* subsp. *pruinosa* and *Acacia bivenosa* mid sparse shrubland over *Ptilotus obovatus* var. *obovatus* and *Corchorus crozophorifolius* low sparse shrubland over *Triodia epactia* low open hummock grassland over **Cenchrus ciliaris* low open tussock grassland

Condition: Very Good **Disturbance:** Weeds
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
<i>Abutilon lepidum</i>	40	0.1	
<i>Acacia bivenosa</i>	150	0.5	
<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>	10	0.1	
<i>Afrohybanthus aurantiacus</i>	10	0.1	
<i>Alectryon oleifolius</i> subsp. <i>oleifolius</i>	150	0.1	
<i>Amyema preisii</i>	100	0.1	
* <i>Bidens bipinnata</i>	50	0.1	
<i>Calandrinia Ptychosperma</i>	5	0.1	
* <i>Cenchrus ciliaris</i>	30	15	
<i>Corchorus crozophorifolius</i>	100	1	
<i>Corymbia hamersleyana</i>	450	3	
<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>	10	0.1	
<i>Dysphania melanocarpa</i> forma <i>leucocarpa</i>	10	0.1	
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	20	0.1	
<i>Enneapogon caerulescens</i>	25	0.1	
<i>Eremophila forrestii</i> subsp. <i>capensis</i>	15	0.1	P3
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	20	0.1	
<i>Erodium cygnorum</i>	5	0.1	
<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	15	0.1	
<i>Goodenia microptera</i>	30	0.1	
<i>Gossypium robinsonii</i>	250	0.1	
<i>Hakea lorea</i> subsp. <i>lorea</i>	150	0.1	
<i>Indigofera colutea</i>	10	0.1	
<i>Indigofera monophylla</i>	30	0.1	
<i>Ipomoea costata</i>	20	0.1	
<i>Maireana tomentosa</i> subsp. <i>tomentosa</i>	50	0.1	
<i>Melhania oblongifolia</i>	10	0.1	
<i>Nicotiana occidentalis</i>	20	0.1	
<i>Paspalidium clementii</i>	20	0.1	
<i>Phyllanthus maderaspatensis</i>	20	0.1	
<i>Portulaca oleracea</i>	5	0.1	
<i>Ptilotus obovatus</i> var. <i>obovatus</i>	80	5	
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	130	0.1	
<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	180	3	
<i>Solanum diversiflorum</i>	20	0.1	
<i>Solanum lasiophyllum</i>	20	0.1	
* <i>Sonchus oleraceus</i>	50	0.1	
<i>Stenopetalum pedicellare</i>	10	0.1	
<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>	60	0.1	
<i>Triodia epactia</i>	30	15	

FLORA SITE SHEET

Project Name 4766 Horizon Exmouth
Site: HER04
Location MGA 50 202965 mE 7570063 mN

Described by: BD, JW
Date: 21/08/2021
Type: RELEVE

Landform: Plain
Slope: Flat
Rock Type: Limestone
Soil Type: Clay, Loam, Sand
Soil Colour: Brown, Red



Vegetation: *Corymbia hamersleyana* low open woodland over *Triodia epactia* low sparse hummock grassland over
**Cenchrus ciliaris* low tussock grassland over *Swainsona pterostylis* low open herbland

Condition: Poor **Disturbance:** Litter, Weeds
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
<i>Acacia bivenosa</i>	100	0.1	
<i>Acacia colei</i> var. <i>colei</i>	160	0.1	
<i>Calandrinia Ptychosperma</i>	5	0.1	
* <i>Cenchrus ciliaris</i>	50	40	
<i>Convolvulus clementii</i>	10	0.1	
<i>Corymbia hamersleyana</i>	550	1	
* <i>Crotalaria incana</i> subsp. <i>incana</i>	160	0.1	
<i>Crotalaria medicaginea</i> var. <i>neglecta</i>	40	0.1	
<i>Cullen cinereum</i>	60	0.1	
<i>Cullen pogonocarpum</i>	60	0.1	
* <i>Datura leichhardtii</i> subsp. <i>leichhardtii</i>	50	0.1	
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	20	0.1	
<i>Eragrostis dielsii</i>	5	0.1	
<i>Erodium cygnorum</i>	10	0.1	
<i>Glycine canescens</i>	30	0.1	
<i>Goodenia microptera</i>	40	0.1	
<i>Hakea lorea</i> subsp. <i>lorea</i>	250	0.1	
<i>Haloragis gossei</i> var. <i>inflata</i>	30	0.1	
<i>Heliotropium crispatum</i>	30	0.1	
<i>Heliotropium diversifolium</i>	20	0.1	
<i>Heliotropium inexplicitum</i>	10	0.1	
<i>Indigofera colutea</i>	20	0.1	
<i>Indigofera linifolia</i>	20	0.1	
<i>Ipomoea muelleri</i>	10	0.1	
* <i>Malvastrum americanum</i>	100	0.1	
<i>Notoleptopus decaisnei</i>	10	0.1	
<i>Polygala glaucifolia</i>	5	0.1	
<i>Ptilotus exaltatus</i>	100	0.1	
<i>Ptilotus helipteroides</i>	30	0.1	
<i>Ptilotus polystachyus</i>	40	0.1	
<i>Ptilotus xerophilus</i>	50	0.1	
<i>Rhynchosia minima</i>	10	0.1	
<i>Salsola australis</i>	50	0.1	
<i>Sida fibulifera</i>	10	0.1	
<i>Sida kingii</i>	50	0.1	
<i>Solanum lasiophyllum</i>	60	0.1	
<i>Streptoglossa bubakii</i>	70	0.1	
<i>Swainsona pterostylis</i>	50	15	
<i>Tribulus hirsutus</i>	5	0.1	
<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>	100	0.1	
<i>Triodia epactia</i>	30	2	

FLORA SITE SHEET

Project Name 4766 Horizon Exmouth
Site: HER05
Location MGA 50 202998 mE 7569277 mN

Described by: BD, JW
Date: 21/08/2021
Type: RELEVE

Landform: Undulating plain
Slope: Flat
Rock Type: Limestone
Soil Type: Clay, Loam
Soil Colour: Light Brown, Red



Vegetation: *Acacia synchronicia* tall sparse shrubland over *Acacia bivenosa* and *Eremophila longifolia* mid sparse shrubland over *Triodia epactia* low open hummock grassland over **Cenchrus ciliaris* low sparse tussock grassland over *Swainsona pterostylis* low sparse herbland

Condition: Good **Disturbance:** Weeds
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
<i>Abutilon lepidum</i>	60	0.1	
<i>Acacia bivenosa</i>	200	6	
<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>	200	0.1	
<i>Acacia synchronicia</i>	300	8	
* <i>Cenchrus ciliaris</i>	20	9	
<i>Chrysopogon fallax</i>	90	0.1	
<i>Convolvulus clementii</i>	150	0.1	
<i>Corchorus congener</i>	15	0.1	P3
<i>Eragrostis dielsii</i>	5	0.1	
<i>Eremophila longifolia</i>	180	0.5	
<i>Erodium cygnorum</i>	10	0.1	
<i>Euphorbia boophthona</i>	30	0.1	
<i>Euphorbia sharkoensis</i>	5	0.1	
<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	15	0.1	
<i>Glycine canescens</i>	20	0.1	
<i>Goodenia microptera</i>	20	0.1	
<i>Haloragis gossei</i> var. <i>inflata</i>	50	0.1	
<i>Heliotropium crispatum</i>	10	0.1	
<i>Hibiscus sturtii</i> var. <i>grandiflorus</i>	20	0.1	
<i>Indigofera colutea</i>	10	0.1	
<i>Indigofera monophylla</i>	20	0.1	
<i>Ipomoea costata</i>	180	0.1	
<i>Nicotiana occidentalis</i>	70	0.1	
<i>Paspalidium clementii</i>	20	0.1	
<i>Phyllanthus maderaspatensis</i>	20	0.1	
<i>Pterocaulon sphacelatum</i>	15	0.1	
<i>Ptilotus helipteroides</i>	30	0.1	
<i>Ptilotus xerophilus</i>	40	0.1	
<i>Rhynchosia minima</i>	10	0.1	
<i>Roebuckiella oncocarpa</i>	10	0.1	
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	110	0.1	
<i>Solanum diversiflorum</i>	10	0.1	
<i>Solanum lasiophyllum</i>	30	0.1	
<i>Swainsona pterostylis</i>	40	5	
<i>Tribulus hirsutus</i>	5	0.1	
<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>	180	0.1	
<i>Triodia epactia</i>	40	20	
<i>Triraphis mollis</i>	50	0.1	
<i>Waltheria indica</i>	15	0.1	

FLORA SITE SHEET

Project Name 4766 Horizon Exmouth
Site: HER06
Location MGA 50 202181 mE 7570072 mN

Described by: BD, JW
Date: 21/08/2021
Type: RELEVE



Landform: Stony rise
Slope: Gentle
Rock Type: Calcrete, mudstone
Soil Type: Clay, Loam, Sand
Soil Colour: Brown, Red

Vegetation: *Melaleuca cardiophylla* mid sparse shrubland over *Triodia glabra* low open hummock grassland

Condition: Excellent **Disturbance:** None
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
<i>Dolichocarpa crouchiana</i>	15	0.1	
<i>Euphorbia biconvexa</i>	10	0.1	
<i>Goodenia microptera</i>	40	0.1	
<i>Haloragis gossei</i> var. <i>inflata</i>	20	0.1	
<i>Hibiscus</i> sp. <i>Gardneri</i> (A.L. Payne PRP 1435)	15	0.1	
<i>Leptosema macrocarpum</i>	30	0.1	
<i>Melaleuca cardiophylla</i>	160	9	
<i>Polygala glaucifolia</i>	5	0.1	
<i>Ptilotus xerophilus</i>	20	0.1	
<i>Roepera retivalvis</i>	20	0.1	
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	50	0.1	
<i>Solanum diversiflorum</i>	10	0.1	
<i>Triodia glabra</i>	30	15	
<i>Triodia wiseana</i>	40	0.1	

FLORA SITE SHEET

Project Name 4766 Horizon Exmouth
Site: HER07
Location MGA 50 200994 mE 7570380 mN

Described by: BD, JW
Date: 22/08/2021
Type: RELEVE

Landform: Hilltop
Slope: Gentle
Rock Type: Calcrete, Limestone
Soil Type: Clay, Loam, Sand
Soil Colour: Brown, Red



Vegetation: *Melaleuca cardiophylla* mid sparse shrubland over *Triodia wiseana* low hummock grassland over *Goodenia microptera* low sparse herbland

Condition: Excellent **Disturbance:** None
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
<i>Abutilon lepidum</i>	15	0.1	
<i>Acacia bivenosa</i>	10	0.1	
<i>Acacia tetragonophylla</i>	30	0.1	
<i>Dolichocarpa crouchiana</i>	5	0.1	
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	70	0.1	
<i>Goodenia microptera</i>	30	1	
<i>Haloragis gossei</i> var. <i>inflata</i>	10	0.1	
<i>Heliotropium crispatum</i>	5	0.1	
<i>Indigofera monophylla</i>	15	0.1	
<i>Leptosema macrocarpum</i>	30	0.1	
<i>Melaleuca cardiophylla</i>	120	8	
<i>Paspalidium clementii</i>	5	0.1	
<i>Phyllanthus exilis</i>	10	0.1	
<i>Polygala glaucifolia</i>	5	0.1	
<i>Roepera retivalvis</i>	15	0.1	
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	5	0.1	
<i>Solanum diversiflorum</i>	10	0.1	
<i>Stackhousia</i> sp. Mid west coastal (D & B Bellairs 656)	20	0.1	
<i>Triodia glabra</i>	40	0.1	
<i>Triodia wiseana</i>	40	35	

FLORA SITE SHEET

Project Name 4766 Horizon Exmouth
Site: HER08
Location MGA 50 200706 mE 7570567 mN

Described by: BD, JW
Date: 22/08/2021
Type: RELEVE



Landform: Drainage line
Slope: Gentle
Rock Type: Calcrete, Limestone
Soil Type: Clay, Loam, Sand
Soil Colour: Brown, Red

Vegetation: *Corymbia hamersleyana* low open woodland over *Acacia arida* tall shrubland over *Gossypium robinsonii* and *Dodonaea viscosa* subsp. *mucronata* mid sparse shrubland over *Senna artemisioides* subsp. *oligophylla* and *Tephrosia rosea* var. *clementii* low sparse shrubland over *Triodia epactia* low open hummock grassland

Condition: Very Good **Disturbance:** Weeds
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
<i>Acacia alexandri</i>	350	0.1	P3
<i>Acacia arida</i>	300	35	
<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>	250	0.1	
<i>Acacia tetragonophylla</i>	120	0.1	
<i>Afrohybanthus aurantiacus</i>	10	0.1	
<i>Arivela viscosa</i>	20	0.1	
* <i>Bidens bipinnata</i>	40	0.1	
<i>Corchorus crozophorifolius</i>	70	0.1	
<i>Corymbia hamersleyana</i>	450	2	
<i>Cymbopogon ambiguus</i>	70	0.1	
<i>Dicladanthera forrestii</i>	20	0.1	
<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>	10	0.1	
<i>Dodonaea viscosa</i> subsp. <i>mucronata</i>	200	0.5	
<i>Dolichocarpa crouchiana</i>	10	0.1	
<i>Goodenia microptera</i>	20	0.1	
<i>Gossypium robinsonii</i>	200	1	
<i>Indigofera monophylla</i>	10	0.1	
<i>Jasminum didymum</i> subsp. <i>lineare</i>	30	0.1	
<i>Melaleuca cardiophylla</i>	160	0.1	
<i>Paspalidium tabulatum</i>	30	0.1	
<i>Phyllanthus exilis</i>	10	0.1	
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	50	1	
* <i>Sigesbeckia orientalis</i>	40	0.1	
<i>Stackhousia</i> sp. Mid west coastal (D & B Bellairs 656)	10	0.1	
<i>Tephrosia rosea</i> var. <i>clementii</i>	40	0.5	
<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>	50	0.1	
<i>Triodia epactia</i>	40	25	

FLORA SITE SHEET

Project Name 4766 Horizon Exmouth
Site: HER09
Location MGA 50 199993 mE 7569742 mN

Described by: BD, BE
Date: 24/08/2021
Type: RELEVE

Landform: Drainage line
Slope: Gentle
Rock Type: Limestone
Soil Type: Clay, Loam, Sand
Soil Colour: Brown, Red



Vegetation: *Eucalyptus xerothematica* low woodland over *Acacia arida*, *Dodonaea viscosa* var. *mucronata* and *Acacia alexandri* tall open shrubland over *Jasminum didymum* subsp. *lineare*, *Senna ferraria* and *Trichodesma zeylanicum* var. *zeylanicum* mid sparse shrubland over *Triodia epactia* low sparse hummock grassland

Condition: Very Good **Disturbance:** Weeds
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
<i>Abutilon lepidum</i>	10	0.1	
<i>Acacia alexandri</i>	350	2	P3
<i>Acacia arida</i>	240	4	
<i>Acacia bivenosa</i>	150	0.1	
<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>	450	2	
<i>Acacia sericophylla</i>	250	0.1	
<i>Acacia tetragonophylla</i>	200	0.1	
<i>Acanthocarpus preissii</i>	130	0.1	
<i>Afrohybanthus aurantiacus</i>	10	0.1	
<i>Aristida nitidula</i>	40	0.1	
* <i>Bidens bipinnata</i>	50	0.1	
<i>Capparis mitchellii</i>	20	0.1	
<i>Cheilanthes austrotenuifolia</i>	10	0.1	
<i>Corchorus crozophorifolius</i>	20	0.1	
<i>Cucumis variabilis</i>	10	0.1	
<i>Cymbopogon ambiguus</i>	70	0.1	
<i>Dicladanthera forrestii</i>	10	0.1	
<i>Dodonaea viscosa</i> subsp. <i>mucronata</i>	300	8	
<i>Dolichocarpa crouchiana</i>	20	0.1	
<i>Duperreya commixta</i>	220	0.1	
<i>Eucalyptus xerothematica</i>	400	12	
<i>Euphorbia sharkoensis</i>	5	0.1	
<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>	10	0.1	
<i>Glycine canescens</i>	180	0.1	
<i>Goodenia tenuiloba</i>	40	0.1	
<i>Gossypium robinsonii</i>	10	0.1	
<i>Grevillea calcicola</i>	30	0.1	P3
<i>Haloragis gossei</i> var. <i>inflata</i>	20	0.1	
<i>Harnieria kempeana</i> subsp. <i>rhadinophylla</i>	10	0.1	P2
<i>Hibbertia capensis</i>	50	0.1	
<i>Indigofera monophylla</i>	20	0.1	
<i>Ipomoea costata</i>	250	0.1	
<i>Jasminum didymum</i> subsp. <i>lineare</i>	150	1	
* <i>Malvastrum americanum</i>	20	0.1	
<i>Melaleuca cardiophylla</i>	150	0.1	
<i>Melhania oblongifolia</i>	30	0.1	
<i>Nicotiana occidentalis</i>	40	0.1	
<i>Olearia</i> sp. <i>Kennedy Range</i> (G.Byrne 66)	250	0.1	
<i>Paspalidium basicladum</i>	20	0.1	
<i>Peripleura arida</i>	40	0.1	
<i>Phyllanthus maderaspatensis</i>	30	0.1	
<i>Pluchea dentex</i>	10	0.1	
<i>Polygala glaucifolia</i>	5	0.1	
<i>Rhynchosia minima</i>	10	0.1	
* <i>Rumex vesicarius</i>	30	0.1	
<i>Senna ferraria</i>	150	0.1	

Taxon	Height (cm)	Cover (%)	Notes
<i>Sida rohlenae</i> subsp. <i>rohlenae</i>	10	0.1	
* <i>Sigesbeckia orientalis</i>	50	0.1	
<i>Solanum lasiophyllum</i>	40	0.1	
* <i>Sonchus oleraceus</i>	30	0.1	
<i>Stemodia viscosa</i>	10	0.1	
<i>Tinospora esiangkara</i>	5	0.1	P2
<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>	120	1	
<i>Triodia epactia</i>	40	5	

FLORA SITE SHEET

Project Name 4766 Horizon Exmouth
Site: HER10
Location MGA 50 199782 mE 7570015 mN

Described by: BD, BE
Date: 24/08/2021
Type: RELEVE

Landform: Hilltop
Slope: Gentle
Rock Type: Calcrete, Limestone
Soil Type: Clay, Loam, Sand
Soil Colour: Brown, Red



Vegetation: *Melaleuca cardiophylla*, *Acacia arida* and *Acacia pyrifolia* var. *pyrifolia* mid sparse shrubland over *Triodia wiseana* low hummock grassland over *Goodenia tenuiloba* low isolated herbs

Condition: Very Good **Disturbance:** Litter
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
<i>Acacia arida</i>	140	2	
<i>Acacia bivenosa</i>	190	0.1	
<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>	180	1	
<i>Acacia tetragonophylla</i>	30	0.1	
<i>Corymbia hamersleyana</i>	200	0.1	
<i>Dichanthium sericeum</i> subsp. <i>humilius</i>	20	0.1	
<i>Dolichocarpa crouchiana</i>	15	0.1	
<i>Eremophila forrestii</i> subsp. <i>capensis</i>	70	0.1	P3
<i>Euphorbia boophthona</i>	10	0.1	
<i>Euphorbia sharkoensis</i>	5	0.1	
<i>Goodenia tenuiloba</i>	40	0.5	
<i>Haloragis gossei</i> var. <i>inflata</i>	20	0.1	
Herb sp.	10	0.1	
<i>Indigofera monophylla</i>	10	0.1	
<i>Leptosema macrocarpum</i>	40	0.1	
<i>Melaleuca cardiophylla</i>	140	3	
<i>Paspalidium clementii</i>	30	0.1	
<i>Phyllanthus erwinii</i>	5	0.1	
<i>Podolepis aristata</i> subsp. <i>aristata</i>	20	0.1	
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	50	0.1	
<i>Solanum diversiflorum</i>	20	0.1	
<i>Solanum lasiophyllum</i>	40	0.1	
<i>Stackhousia</i> sp. Mid west coastal (D & B Bellairs 656)	15	0.1	
<i>Tribulus suberosus</i>	20	0.1	
<i>Triodia wiseana</i>	40	35	

FLORA SITE SHEET

Project Name 4766 Horizon Exmouth
Site: HER11
Location MGA 50 203612 mE 7582515 mN

Described by: BD, BE
Date: 25/08/2021
Type: RELEVE

Landform: Sandy plain
Slope: Flat
Rock Type: Recemented limestone
Soil Type: Sand
Soil Colour: Red



Vegetation: *Acacia tetragonophylla*, *Gyrostemon ramulosus* and *Exocarpos aphyllus* mid sparse shrubland over *Cynanchum viminalis* subsp. *australe* low sparse shrubland over *Triodia epactia* and *Triodia glabra* low open hummock grassland over **Cenchrus ciliaris* and *Eriachne mucronata* low sparse tussock grassland over *Goodenia tenuiloba* and *Ptilotus helipteroides* low sparse herbland

Condition: Good **Disturbance:** Weeds
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
<i>Abutilon</i> sp. <i>Dioicum</i> (A.A. Mitchell PRP 1618)	40	0.1	
<i>Acacia bivenosa</i>	30	0.1	
<i>Acacia sericophylla</i>	200	0.1	
<i>Acacia tetragonophylla</i>	160	2	
<i>Acanthocarpus verticillatus</i>	60	0.1	
<i>Afrohybanthus aurantiacus</i>	30	0.1	
<i>Aristida contorta</i>	15	0.1	
<i>Aristida holathera</i> var. <i>holathera</i>	30	0.1	
<i>Arivela viscosa</i>	30	0.1	
* <i>Bidens bipinnata</i>	40	0.1	
<i>Bulbostylis barbata</i>	15	0.1	
* <i>Cenchrus ciliaris</i>	40	6	
<i>Chrysopogon fallax</i>	70	0.1	
<i>Corchorus congener</i>	20	0.1	P3
<i>Cucumis variabilis</i>	140	0.1	
<i>Cynanchum viminalis</i> subsp. <i>australe</i>	90	1	
<i>Dichanthium sericeum</i> subsp. <i>humilius</i>	20	0.1	
<i>Dolichocarpa crouchiana</i>	10	0.1	
<i>Duperreya commixta</i>	100	0.1	
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	20	0.1	
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	100	0.1	
<i>Enneapogon caeruleus</i>	15	0.1	
<i>Eragrostis cumingii</i>	8	0.1	
<i>Eragrostis eriopoda</i>	30	0.1	
<i>Eremophila forrestii</i>	120	0.1	
<i>Eriachne aristidea</i>	60	0.1	
<i>Eriachne mucronata</i>	40	1	
<i>Erodium cygnorum</i>	10	0.1	
<i>Euphorbia boophthona</i>	20	0.1	
<i>Euphorbia shakoensis</i>	10	0.1	
<i>Euphorbia trigonosperma</i>	10	0.1	
<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	10	0.1	
<i>Exocarpos aphyllus</i>	110	1	
<i>Goodenia tenuiloba</i>	30	2	
<i>Grevillea variifolia</i> var. <i>variifolia</i>	160	0.1	
<i>Gyrostemon ramulosus</i>	170	1	
<i>Hakea chordophylla</i>	230	0.1	
<i>Haloragis gossei</i> var. <i>inflata</i>	20	0.1	
<i>Hannafordia quadrivalvis</i> subsp. <i>recurva</i>	60	0.1	
<i>Heliotropium crispatum</i>	20	0.1	
<i>Heliotropium glanduliferum</i>	20	0.1	
<i>Heliotropium inexplicitum</i>	15	0.1	
<i>Hibiscus sturtii</i> var. <i>platyclamys</i>	30	0.1	
<i>Indigofera colutea</i>	10	0.1	
<i>Indigofera linifolia</i>	10	0.1	
<i>Indigofera monophylla</i>	20	0.1	

Taxon	Height (cm)	Cover (%)	Notes
<i>Iseilema dolichotrichum</i>	10	0.1	
<i>Isotropis atropurpurea</i>	50	0.1	
<i>Jasminum didymum</i> subsp. <i>lineare</i>	50	0.1	
<i>Melaleuca cardiophylla</i>	200	0.1	
<i>Melthania oblongifolia</i>	20	0.1	
<i>Nicotiana occidentalis</i>	30	0.1	
<i>Paraneurachne muelleri</i>	30	0.1	
<i>Paspalidium clementii</i>	10	0.1	
<i>Phyllanthus erwinii</i>	5	0.1	
<i>Podolepis aristata</i> subsp. <i>aristata</i>	10	0.1	
<i>Polycarpaea corymbosa</i> var. <i>corymbosa</i>	10	0.1	
<i>Polygala glaucifolia</i>	10	0.1	
<i>Portulaca oleracea</i>	8	0.1	
<i>Ptilotus clementii</i>	80	0.1	
<i>Ptilotus exaltatus</i>	40	0.1	
<i>Ptilotus helipteroides</i>	15	0.5	
<i>Ptilotus obovatus</i> var. <i>obovatus</i>	10	0.1	
<i>Ptilotus polystachyus</i>	100	0.1	
<i>Scaevola cunninghamii</i>	50	0.1	
<i>Scaevola tomentosa</i>	120	0.1	
<i>Schizachyrium fragile</i>	40	0.1	
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	100	0.1	
<i>Senna notabilis</i>	15	0.1	
<i>Sida</i> sp. <i>spiciform panicles</i> (E. Leyland s.n. 14/8/90)	140	0.1	
<i>Solanum diversiflorum</i>	10	0.1	
<i>Solanum horridum</i>	5	0.1	
<i>Solanum lasiophyllum</i>	40	0.1	
<i>Stylobasium spathulatum</i>	150	0.1	
<i>Swainsona kingii</i>	5	0.1	
<i>Thysanotus ?eximbriatus</i>	90	0.1	
<i>Trianthema pilosum</i>	10	0.1	
<i>Tribulus hirsutus</i>	10	0.1	
<i>Tribulus macrocarpus</i>	5	0.1	
<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>	110	0.1	
<i>Triodia epactia</i>	40	15	
<i>Triodia glabra</i>	40	10	
<i>Triraphis mollis</i>	30	0.1	
<i>Yakirra australiensis</i> var. <i>australiensis</i>	10	0.1	

FLORA SITE SHEET

Project Name 4766 Horizon Exmouth
Site: HER12
Location MGA 50 205938 mE 7581873 mN

Described by: BD, BE
Date: 25/08/2021
Type: RELEVE



Landform: Saline plain
Slope: Flat
Rock Type: Carbonate sediments
Soil Type: Clay, Loam
Soil Colour: Light Brown

Vegetation: *Frankenia pauciflora* low sparse shrubland over *Atriplex bunburyana* low open chenopod shrubland over **Cenchrus ciliaris* low sparse tussock grassland over *Surreya diandra* and *Sclerolaena recurvicauspis* low sparse herbland

Condition: Good **Disturbance:** Litter, Weeds
Fire Age: >10 years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
<i>Acacia bivenosa</i>	150	0.1	
<i>Atriplex bunburyana</i>	50	14	
<i>Atriplex semilunaris</i>	40	0.1	
* <i>Cenchrus ciliaris</i>	30	5	
<i>Dissocarpus paradoxus</i>	10	0.1	
<i>Eragrostis falcata</i>	30	0.1	
<i>Euphorbia sharkoensis</i>	10	0.1	
<i>Frankenia pauciflora</i>	20	9	
<i>Lawrenca viridigrisea</i>	60	0.1	
<i>Maireana tomentosa</i> subsp. <i>tomentosa</i>	20	0.1	
<i>Muellerolimon salicorniaceum</i>	20	0.1	
<i>Portulaca oleracea</i>	10	0.1	
<i>Ptilotus obovatus</i> var. <i>obovatus</i>	50	0.1	
<i>Rhagodia eremaea</i>	30	0.1	
<i>Scaevola spinescens</i>	100	0.1	
<i>Sclerolaena recurvicauspis</i>	15	1	
<i>Sclerolaena uniflora</i>	10	0.1	
<i>Surreya diandra</i>	15	5	

Appendix F Threaten and Priority Flora Report Forms



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Acacia alexandri</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u> </u> DegMinSec <u> </u> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.943408389999998</u> Long / Easting: <u>114.0939599</u> ZONE: <u> </u>	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: <u> </u> Map used: <u> </u> Boundary polygon captured <input type="checkbox"/> Map Scale: <u> </u>
LAND TENURE: Nature reserve National park Conservation park	Timber reserve State forest Water reserve	Private property Pastoral lease UCL <input checked="" type="checkbox"/>
	Rail reserve MRWA road reserve SLK/Pole to	Shire road reserve Other Crown reserve Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u>	Area observed (m²): _____															
EFFORT: <u>Time spent surveying (minutes):</u> _____	No. of minutes spent / 100 m²: _____															
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/> <u>Extrapolation</u> <u>Estimate</u>	Count Method: <u>Actual count - individuals</u>															
(Refer to field manual for list)																
WHAT COUNTED: <u>Plants</u> <input checked="" type="checkbox"/> <u>Clumps</u> <u>Clonal stems</u>																
TOTAL POP'N STRUCTURE:																
	<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td></td> <td></td> <td></td> <td><u>2</u></td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive				<u>2</u>	Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive				<u>2</u>												
Dead																
	Area of pop (m²): _____ Note: Pls record count as numbers (not percentages) for database.															
QUADRATS PRESENT:																
	<table border="1"> <thead> <tr> <th>No.</th> <th>Size</th> <th>Data attached</th> <th>Total area of quadrats (m²):</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No.	Size	Data attached	Total area of quadrats (m ²):											
No.	Size	Data attached	Total area of quadrats (m ²):													
Summary Quad. Totals: Alive																
REPRODUCTIVE STATE:																
	<table border="1"> <thead> <tr> <th>Clonal</th> <th>Vegetative</th> <th>Flowerbud</th> <th>Flower</th> </tr> </thead> <tbody> <tr> <td>Immature fruit</td> <td>Fruit</td> <td>Dehisced fruit</td> <td>Percentage in flower: %</td> </tr> </tbody> </table>	Clonal	Vegetative	Flowerbud	Flower	Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %							
Clonal	Vegetative	Flowerbud	Flower													
Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %													

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill <input checked="" type="checkbox"/>	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall sparse shrubland (*A. bivenosa*)

2. Mid sparse shrubland (*M. cardiophylla*)

3. Low open hummock grassland (*T. glabra*)

- 4.

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: Last Fire: Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Acacia alexandri</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input checked="" type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.943652790000002</u> Long / Easting: <u>114.09800769</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <input type="checkbox"/> Edge survey	<input checked="" type="checkbox"/> Partial survey	<input type="checkbox"/> Full survey	Area observed (m²): _____
EFFORT: _____	Time spent surveying (minutes): _____	No. of minutes spent / 100 m²: _____	
POP'N COUNT ACCURACY: <input checked="" type="checkbox"/> Actual	<input type="checkbox"/> Extrapolation	<input type="checkbox"/> Estimate	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<input checked="" type="checkbox"/> Plants	<input type="checkbox"/> Clumps	<input type="checkbox"/> Clonal stems
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
Alive			4
Dead			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<input type="checkbox"/> Clonal Immature fruit	<input type="checkbox"/> Vegetative Fruit	<input type="checkbox"/> Flowerbud Dehiscid fruit
			<input type="checkbox"/> Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill <input checked="" type="checkbox"/>	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall sparse shrubland (*A. bivenosa*)

2. Mid sparse shrubland (*M. cardiophylla*)

3. Low open hummock grassland (*T. glabra*)

- 4.

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Acacia alexandri</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.947047600000001</u> Long / Easting: <u>114.098246200000001</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <input type="checkbox"/> Edge survey	<input checked="" type="checkbox"/> Partial survey	<input type="checkbox"/> Full survey	Area observed (m²): _____
EFFORT: _____	Time spent surveying (minutes): _____	No. of minutes spent / 100 m²: _____	
POP'N COUNT ACCURACY: <input checked="" type="checkbox"/> Actual	<input type="checkbox"/> Extrapolation	<input type="checkbox"/> Estimate	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<input checked="" type="checkbox"/> Plants	<input type="checkbox"/> Clumps	<input type="checkbox"/> Clonal stems
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
Alive			2
Dead			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<input type="checkbox"/> Clonal Immature fruit	<input type="checkbox"/> Vegetative Fruit	<input type="checkbox"/> Flowerbud Dehiscid fruit
			<input type="checkbox"/> Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill <input checked="" type="checkbox"/>	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall sparse shrubland (*A. bivenosa*)

2. Mid sparse shrubland (*M. cardiophylla*)

3. Low open hummock grassland (*T. glabra*)

- 4.

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licencing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Bridget Duncan Role: Ecologist Signed: _____ Date: 22 / 12 / 2021

Record: _____

Please return completed form to **Species And Communities Branch DBCA,**

Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer,** Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Acacia alexandri</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>26/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u> </u> DegMinSec <u> </u> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.9510164</u> Long / Easting: <u>114.0942007</u> ZONE: <u> </u>	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: <u> </u> Map used: <u> </u> Boundary polygon captured <input type="checkbox"/> Map Scale: <u> </u>
LAND TENURE: Nature reserve National park Conservation park	Timber reserve State forest Water reserve	Private property Pastoral lease UCL <input checked="" type="checkbox"/>
		Rail reserve MRWA road reserve SLK/Pole to
		Shire road reserve Other Crown reserve Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u>	Area observed (m²): _____															
EFFORT: <u>Time spent surveying (minutes):</u> _____	No. of minutes spent / 100 m²: _____															
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/> <u>Extrapolation</u> <u>Estimate</u>	Count Method: <u>Actual count - individuals</u>															
(Refer to field manual for list)																
WHAT COUNTED: <u>Plants</u> <input checked="" type="checkbox"/> <u>Clumps</u> <u>Clonal stems</u>																
TOTAL POP'N STRUCTURE:																
	<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td></td> <td></td> <td></td> <td><u>3</u></td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive				<u>3</u>	Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive				<u>3</u>												
Dead																
	Area of pop (m²): _____ Note: Pls record count as numbers (not percentages) for database.															
QUADRATS PRESENT:																
	<table border="1"> <thead> <tr> <th>No.</th> <th>Size</th> <th>Data attached</th> <th>Total area of quadrats (m²):</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No.	Size	Data attached	Total area of quadrats (m ²):											
No.	Size	Data attached	Total area of quadrats (m ²):													
Summary Quad. Totals: Alive																
REPRODUCTIVE STATE:																
	<table border="1"> <thead> <tr> <th>Clonal</th> <th>Vegetative</th> <th>Flowerbud</th> <th>Flower</th> </tr> </thead> <tbody> <tr> <td>Immature fruit</td> <td>Fruit</td> <td>Dehisced fruit</td> <td>Percentage in flower: %</td> </tr> </tbody> </table>	Clonal	Vegetative	Flowerbud	Flower	Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %							
Clonal	Vegetative	Flowerbud	Flower													
Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %													

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill <input checked="" type="checkbox"/>	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall sparse shrubland (*A. bivenosa*)

2. Mid sparse shrubland (*M. cardiophylla*)

3. Low open hummock grassland (*T. glabra*)

- 4.

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Acacia alexandri</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>26/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u>-21.9492887</u> DegMinSec _____ UTMs <input checked="" type="checkbox"/> <u>114.1083404</u> Lat / Northing: _____ Long / Easting: _____ ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS _____ Map _____ No. satellites: _____ Boundary polygon captured _____ Map Scale: _____
LAND TENURE: Nature reserve National park Conservation park	Timber reserve State forest Water reserve	Private property Pastoral lease UCL <input checked="" type="checkbox"/>
	Rail reserve MRWA road reserve SLK/Pole to	Shire road reserve Other Crown reserve Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u>	Area observed (m²): _____															
EFFORT: <u>Time spent surveying (minutes):</u> _____	No. of minutes spent / 100 m²: _____															
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/> <u>Extrapolation</u> <u>Estimate</u>	Count Method: <u>Actual count - individuals</u>															
(Refer to field manual for list)																
WHAT COUNTED: <u>Plants</u> <input checked="" type="checkbox"/> <u>Clumps</u> <u>Clonal stems</u>																
TOTAL POP'N STRUCTURE:																
	<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td></td> <td></td> <td></td> <td><u>7</u></td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive				<u>7</u>	Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive				<u>7</u>												
Dead																
QUADRATS PRESENT:	Area of pop (m²): _____															
Summary Quad. Totals: Alive	Note: Pls record count as numbers (not percentages) for database.															
REPRODUCTIVE STATE:	Total area of quadrats (m²): _____															
	<table border="1"> <thead> <tr> <th>No.</th> <th>Size</th> <th>Data attached</th> <th>Total area of quadrats (m²):</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No.	Size	Data attached	Total area of quadrats (m ²):											
No.	Size	Data attached	Total area of quadrats (m ²):													
	<table border="1"> <thead> <tr> <th>Clonal</th> <th>Vegetative</th> <th>Flowerbud</th> <th>Flower</th> </tr> <tr> <th>Immature fruit</th> <th>Fruit</th> <th>Dehisced fruit</th> <th>Percentage in flower: %</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Clonal	Vegetative	Flowerbud	Flower	Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %							
Clonal	Vegetative	Flowerbud	Flower													
Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %													

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill <input checked="" type="checkbox"/>	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall sparse shrubland (*A. bivenosa*)

2. Mid sparse shrubland (*M. cardiophylla*)

3. Low open hummock grassland (*T. glabra*)

- 4.

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Acanthocarpus rupestris</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>22/8/2021</u>	CONSERVATION STATUS: <u>P2</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u>-21.94762514</u> DegMinSec _____ UTMs <input checked="" type="checkbox"/> _____ Lat / Northing: _____ Long / Easting: <u>114.10538529999999</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS _____ Map _____ No. satellites: _____ Boundary polygon captured _____ Map Scale: _____
LAND TENURE:		
Nature reserve	Timber reserve	Private property
National park	State forest	Pastoral lease
Conservation park	Water reserve	UCL <input checked="" type="checkbox"/>
		Rail reserve
		MRWA road reserve
		SLK/Pole to
		Shire road reserve
		Other Crown reserve
		Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m ²): _____
EFFORT: _____	Time spent surveying (minutes): _____	No. of minutes spent / 100 m ² : _____	
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
Alive			5
Dead			
Area of pop (m ²): _____ Note: Pls record count as numbers (not percentages) for database.			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
Total area of quadrats (m ²): _____			
REPRODUCTIVE STATE:	Clonal Immature fruit	Vegetative Fruit	Flowerbud Dehiscid fruit
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: <small>Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)</small>	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill <input checked="" type="checkbox"/>	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Low isolated trees (*C. hamersleyana*)

2. Tall open shrubland (*A. alexandria*, *A. tetragonophylla*, *A. bivenosa*)

3. Low sparse shrubland (*S. artemoides* subsp. *oligophylla*, *T. rosea* var. *clementii*, *S. ferraria*)

4. Low sparse hummock grassland (*T. epactia*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: _____

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Brachychiton obstusilobus</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P4</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u>-21.9437672</u> DegMinSec _____ UTMs <input checked="" type="checkbox"/> <u>114.0930879</u> Lat / Northing: _____ Long / Easting: _____ ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS _____ Map _____ No. satellites: _____ Map used: _____ Boundary polygon captured _____ Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>1</u>
<u>Dead</u>			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehisced fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam	Brown	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam	White	Permanently
Slope	Limestone	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line					
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. _____
2. Tall open shurbland (*M. cardiophylla*, *A. alexandri*, *A. arida*)
3. Low open hummock grassland (*T. epactia*)
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Brachychiton obstusilobus</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P4</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.944466500000001</u> Long / Easting: <u>114.094320800000001</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> SLK/Pole to
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>			No. of minutes spent / 100 m²: _____
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>1</u>
<u>Dead</u>			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehiscid fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input checked="" type="checkbox"/>	Granite	(on soil surface; eg	Sand	Red	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line	Carbonate				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. _____
2. Tall open shurbland (*M. cardiophylla*, *A. alexandri*, *A. arida*)
3. Low open hummock grassland (*T. epactia*)
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Brachychiton obstusilobus</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P4</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input checked="" type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.947700900000001</u> Long / Easting: <u>114.0939623</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> SLK/Pole to
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>1</u>
<u>Dead</u>			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehiscid fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>					
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(B. attenuata, B. illicifolia);
2. Open shrubland
(Hibbertia sp., Acacia spp.);
3. Isolated clumps of
sedges (Mesomelaena
tetragona)

1. _____
2. Tall open shurbland (M. cardiophylla, A. alexandri, A. arida)
3. Low open hummock grassland (T. epactia)
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: Last Fire: Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licencing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Brachychiton obstusilobus</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P4</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u>-21.94819167</u> DegMinSec _____ UTMs <input checked="" type="checkbox"/> _____ Lat / Northing: _____ Long / Easting: <u>114.10233762999999</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS _____ Map _____ No. satellites: _____ Boundary polygon captured _____ Map Scale: _____
LAND TENURE:		
Nature reserve	Timber reserve	Private property
National park	State forest	Pastoral lease
Conservation park	Water reserve	UCL <input checked="" type="checkbox"/>
		Rail reserve
		MRWA road reserve
		SLK/Pole to
		Shire road reserve
		Other Crown reserve
		Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u>	Area observed (m²): _____															
EFFORT: <u>Time spent surveying (minutes):</u> _____	No. of minutes spent / 100 m²: _____															
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/> <u>Extrapolation</u> <u>Estimate</u>	Count Method: <u>Actual count - individuals</u>															
(Refer to field manual for list)																
WHAT COUNTED: <u>Plants</u> <input checked="" type="checkbox"/> <u>Clumps</u> <u>Clonal stems</u>																
TOTAL POP'N STRUCTURE:																
	<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td></td> <td></td> <td></td> <td>1</td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive				1	Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive				1												
Dead																
	Area of pop (m²): _____ Note: Pls record count as numbers (not percentages) for database.															
QUADRATS PRESENT:																
	<table border="1"> <thead> <tr> <th>No.</th> <th>Size</th> <th>Data attached</th> <th>Total area of quadrats (m²):</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No.	Size	Data attached	Total area of quadrats (m ²):											
No.	Size	Data attached	Total area of quadrats (m ²):													
Summary Quad. Totals: Alive																
REPRODUCTIVE STATE:																
	<table border="1"> <thead> <tr> <th>Clonal</th> <th>Vegetative</th> <th>Flowerbud</th> <th>Flower</th> </tr> </thead> <tbody> <tr> <td>Immature fruit</td> <td>Fruit</td> <td>Dehisced fruit</td> <td>Percentage in flower: %</td> </tr> </tbody> </table>	Clonal	Vegetative	Flowerbud	Flower	Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %							
Clonal	Vegetative	Flowerbud	Flower													
Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %													

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>					
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. _____
2. Tall open shurbland (*M. cardiophylla*, *A. alexandri*, *A. arida*)
3. Low open hummock grassland (*T. epactia*)
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Brachychiton obstusilobus</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>22/8/2021</u>	CONSERVATION STATUS: <u>P4</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input checked="" type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.949670309999998</u> Long / Easting: <u>114.10527007</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>			No. of minutes spent / 100 m²: _____
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>1</u>
<u>Dead</u>			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehisced fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat <input checked="" type="checkbox"/>	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. _____
2. Tall open shurbland (*M. cardiophylla*, *A. alexandri*, *A. arida*)
3. Low open hummock grassland (*T. epactia*)
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: Last Fire: Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licencing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Brachychiton obstusilobus</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>26/8/2021</u>	CONSERVATION STATUS: <u>P4</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.948088590000001</u> Long / Easting: <u>114.10878669</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>1</u>
<u>Dead</u>			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehiscid fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand <input checked="" type="checkbox"/>	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam	Brown	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam	White	Permanently
Slope	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat <input checked="" type="checkbox"/>	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line					
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. _____
2. Tall open shurbland (*M. cardiophylla*, *A. alexandri*, *A. arida*)
3. Low open hummock grassland (*T. epactia*)
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licencing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Brachychiton obstusilobus</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>26/8/2021</u>	CONSERVATION STATUS: <u>P4</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): Exmouth		Reserve no: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input checked="" type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.955808000000001</u> Long / Easting: <u>114.124487</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
Nature reserve	Timber reserve	Private property
National park	State forest	Pastoral lease
Conservation park	Water reserve	UCL <input checked="" type="checkbox"/>
		Rail reserve
		MRWA road reserve
		SLK/Pole to
		Shire road reserve
		Other Crown reserve
		Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u>	Area observed (m ²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m ² : _____
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/> <u>Extrapolation</u> <u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)	
WHAT COUNTED: <u>Plants</u> <input checked="" type="checkbox"/> <u>Clumps</u> <u>Clonal stems</u>	
TOTAL POP'N STRUCTURE:	Area of pop (m ²): _____
Alive	Note: Pls record count as numbers (not percentages) for database.
Dead	
QUADRATS PRESENT:	Total area of quadrats (m ²): _____
Summary Quad. Totals: Alive	
REPRODUCTIVE STATE:	Flower Percentage in flower: %
Clonal Immature fruit	Vegetative Fruit
Flowerbud Dehiscid fruit	

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand <input checked="" type="checkbox"/>	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam	Brown	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam	White	Permanently
Slope	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat <input checked="" type="checkbox"/>	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line					
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. _____
2. Tall open shurbland (*M. cardiophylla*, *A. alexandri*, *A. arida*)
3. Low open hummock grassland (*T. epactia*)
4. _____

ASSOCIATED

SPECIES:

Other (non-dominant) spp _____

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Corchorus congener</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>21/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u>-21.836577999999999</u> DegMinSec _____ UTMs <input checked="" type="checkbox"/> _____ Lat / Northing: _____ Long / Easting: <u>114.124487</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS _____ Map _____ No. satellites: _____ Map used: _____ Boundary polygon captured _____ Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>1</u>
<u>Dead</u>			
QUADRATS PRESENT:	No.	Size 50x50	Data attached <input checked="" type="checkbox"/>
Summary Quad. Totals: Alive			Total area of quadrats (m²): <u>2500</u>
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehisced fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat <input checked="" type="checkbox"/>	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line					
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall open shrubland (*A. synchronica*, *A. bivenosa*, *E. longifolia*)

2. Low open hummock grassland (*T. epactia*)

3. Low tussock grassland (*C. ciliaris*)

4. Low open herbland (*S. pterostylis*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Corchorus congener</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>25/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input checked="" type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.943661209999998</u> Long / Easting: <u>114.09329459</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>1</u>
<u>Dead</u>			
QUADRATS PRESENT:	<u>No.</u>	<u>Size 50x50</u>	<u>Data attached</u> <input checked="" type="checkbox"/>
Summary Quad. Totals: Alive			Total area of quadrats (m²): <u>2500</u>
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehisced fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand <input checked="" type="checkbox"/>	Red	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam	White	Permanently
Slope	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat <input checked="" type="checkbox"/>	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line					
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(B. attenuata, B. illicifolia);
2. Open shrubland
(Hibbertia sp., Acacia spp.);
3. Isolated clumps of
sedges (Mesomelaena
tetragona)

1. Tall open shrubland (A. synchronicia, A. bivenosa, E. longifolia)

2. Low open hummock grassland (T. epactia)

3. Low tussock grassland (C. ciliaris)

4. Low open herbland (S. pterostylis)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Eremophila forrestii subsp. capensis</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u>-21.94385832</u> DegMinSec _____ UTMs <input checked="" type="checkbox"/> _____ Lat / Northing: _____ Long / Easting: <u>114.09303996</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS _____ Map _____ No. satellites: _____ Map used: _____ Boundary polygon captured _____ Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<input type="checkbox"/> Partial survey	<input checked="" type="checkbox"/> Full survey	Area observed (m²): _____
EFFORT: _____	Time spent surveying (minutes): _____	No. of minutes spent / 100 m²: _____	
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<input type="checkbox"/> Extrapolation	<input type="checkbox"/> Estimate	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<input checked="" type="checkbox"/> Plants	<input type="checkbox"/> Clumps	<input type="checkbox"/> Clonal stems
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
Alive			6
Dead			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<input type="checkbox"/> Clonal Immature fruit	<input type="checkbox"/> Vegetative Fruit	<input type="checkbox"/> Flowerbud Dehisced fruit
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Low open woodland (*C. hamersleyana*)

2. Mid open shrubland (*S. glutinosa* subsp. *pruinosa*, *A. bivenosa*)

3. Low open shrubland (*P. obovatus*, *C. crozophorifolius*)

4. Low open hummock grassland (*T. epactia*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Eremophila forrestii subsp. capensis</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u>-21.94380275</u> DegMinSec _____ UTMs <input checked="" type="checkbox"/> _____ Lat / Northing: _____ Long / Easting: <u>114.0983744300001</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS _____ Map _____ No. satellites: _____ Boundary polygon captured _____ Map Scale: _____
LAND TENURE:		
Nature reserve	Timber reserve	Private property
National park	State forest	Pastoral lease
Conservation park	Water reserve	UCL <input checked="" type="checkbox"/>
		Rail reserve
		MRWA road reserve
		SLK/Pole to
		Shire road reserve
		Other Crown reserve
		Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u>	Area observed (m²): _____															
EFFORT: <u>Time spent surveying (minutes):</u> _____	No. of minutes spent / 100 m²: _____															
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/> <u>Extrapolation</u> <u>Estimate</u>	Count Method: <u>Actual count - individuals</u>															
(Refer to field manual for list)																
WHAT COUNTED: <u>Plants</u> <input checked="" type="checkbox"/> <u>Clumps</u> <u>Clonal stems</u>																
TOTAL POP'N STRUCTURE:																
	<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td></td> <td></td> <td></td> <td>10</td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive				10	Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive				10												
Dead																
	Area of pop (m²): _____ Note: Pls record count as numbers (not percentages) for database.															
QUADRATS PRESENT:																
	<table border="1"> <thead> <tr> <th>No.</th> <th>Size</th> <th>Data attached</th> <th>Total area of quadrats (m²):</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No.	Size	Data attached	Total area of quadrats (m ²):											
No.	Size	Data attached	Total area of quadrats (m ²):													
Summary Quad. Totals: Alive																
REPRODUCTIVE STATE:																
	<table border="1"> <thead> <tr> <th>Clonal</th> <th>Vegetative</th> <th>Flowerbud</th> <th>Flower</th> </tr> </thead> <tbody> <tr> <td>Immature fruit</td> <td>Fruit</td> <td>Dehisced fruit</td> <td>Percentage in flower: %</td> </tr> </tbody> </table>	Clonal	Vegetative	Flowerbud	Flower	Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %							
Clonal	Vegetative	Flowerbud	Flower													
Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %													

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall open shrubland (*M. cardiophylla*, *A. alexandri*, *A. arida*)

2. Low open hummock grassland (*T. epactia*)

- 3.

- 4.

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Eremophila forrestii subsp. capensis</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u> </u> DegMinSec <u> </u> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.946906859999999</u> Long / Easting: <u>114.09803087</u> ZONE: <u> </u>	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: <u> </u> Map used: <u> </u> Boundary polygon captured <input type="checkbox"/> Map Scale: <u> </u>
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> SLK/Pole to
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<input type="checkbox"/> Partial survey	<input checked="" type="checkbox"/> Full survey	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<input type="checkbox"/> Extrapolation	<input type="checkbox"/> Estimate	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<input checked="" type="checkbox"/> Plants	<input type="checkbox"/> Clumps	<input type="checkbox"/> Clonal stems
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
Alive			1
Dead			
QUADRATS PRESENT:			
Summary Quad. Totals: Alive	No.	Size	Data attached
REPRODUCTIVE STATE:	<input type="checkbox"/> Clonal Immature fruit	<input type="checkbox"/> Vegetative Fruit	<input type="checkbox"/> Flowerbud Dehiscid fruit
			<input type="checkbox"/> Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall sparse shrubland (*A. bivenosa*)

2. Mid sparse shrubland (*M. cardiophylla*)

3. Low open hummock grassland (*T. glabra*)

4. Sparse herbland (*G. tenuiloba*, *H. gossei* var. *inflata*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Eremophila forrestii subsp. capensis</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input checked="" type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.949204009999999</u> Long / Easting: <u>114.09223316000001</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>2</u>
<u>Dead</u>			
QUADRATS PRESENT:			
Summary Quad. Totals: Alive	No.	Size	Data attached
			Total area of quadrats (m²):
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehiscid fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(B. attenuata, B. illicifolia);
2. Open shrubland
(Hibbertia sp., Acacia spp.);
3. Isolated clumps of
sedges (Mesomelaena
tetragona)

1. Tall open shrubland (M. cardiophylla, A. alexandri, A. arida)

2. Low open hummock grassland (T. epactia)

- 3.

- 4.

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: Last Fire: Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licencing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Eremophila forrestii subsp. capensis</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>26/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.950277700000001</u> Long / Easting: <u>114.10426645</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>4</u>
<u>Dead</u>			
QUADRATS PRESENT:			
Summary Quad. Totals: Alive	No.	Size	Data attached
			Total area of quadrats (m²):
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehisced fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(B. attenuata, B. illicifolia);
2. Open shrubland
(Hibbertia sp., Acacia spp.);
3. Isolated clumps of
sedges (Mesomelaena
tetragona)

1. Tall open shrubland (M. cardiophylla, A. alexandri, A. arida)

2. Low open hummock grassland (T. epactia)

- 3.

- 4.

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Eremophila forrestii subsp. capensis</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>26/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input checked="" type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.949595599999999</u> Long / Easting: <u>114.10872307</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>10</u>
<u>Dead</u>			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehisced fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall open shrubland (*M. cardiophylla*, *A. alexandri*, *A. arida*)

2. Low open hummock grassland (*T. epactia*)

- 3.

- 4.

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Eremophila forrestii subsp. capensis</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>26/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u>-21.9445546</u> DegMinSec _____ UTMs <input checked="" type="checkbox"/> _____ Lat / Northing: _____ Long / Easting: <u>114.1138495</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS _____ Map _____ No. satellites: _____ Map used: _____ Boundary polygon captured _____ Map Scale: _____
LAND TENURE: Nature reserve National park Conservation park	Timber reserve State forest Water reserve	Private property Pastoral lease UCL <input checked="" type="checkbox"/>
	Rail reserve MRWA road reserve SLK/Pole to	Shire road reserve Other Crown reserve Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u>	Area observed (m²): _____															
EFFORT: <u>Time spent surveying (minutes):</u> _____	No. of minutes spent / 100 m²: _____															
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/> <u>Extrapolation</u> <u>Estimate</u>	Count Method: <u>Actual count - individuals</u>															
(Refer to field manual for list)																
WHAT COUNTED: <u>Plants</u> <input checked="" type="checkbox"/> <u>Clumps</u> _____ <u>Clonal stems</u> _____																
TOTAL POP'N STRUCTURE:																
	<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td></td> <td></td> <td></td> <td>1</td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive				1	Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive				1												
Dead																
	Area of pop (m²): _____ Note: Pls record count as numbers (not percentages) for database.															
QUADRATS PRESENT:																
	<table border="1"> <thead> <tr> <th>No.</th> <th>Size</th> <th>Data attached</th> <th>Total area of quadrats (m²):</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No.	Size	Data attached	Total area of quadrats (m ²):											
No.	Size	Data attached	Total area of quadrats (m ²):													
Summary Quad. Totals: Alive																
REPRODUCTIVE STATE:																
	<table border="1"> <thead> <tr> <th>Clonal</th> <th>Vegetative</th> <th>Flowerbud</th> <th>Flower</th> </tr> </thead> <tbody> <tr> <td>Immature fruit</td> <td>Fruit</td> <td>Dehisced fruit</td> <td>Percentage in flower: %</td> </tr> </tbody> </table>	Clonal	Vegetative	Flowerbud	Flower	Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %							
Clonal	Vegetative	Flowerbud	Flower													
Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %													

CONDITION OF PLANTS: Healthy Moderate _____ Poor _____ Senescent _____

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall open shrubland (*M. cardiophylla*, *A. alexandri*, *A. arida*)

2. Low open hummock grassland (*T. epactia*)

- 3.

- 4.

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licencing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Eremophila forrestii subsp. capensis</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>21/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u>-21.953305</u> DegMinSec _____ UTMs <input checked="" type="checkbox"/> <u>114.126633</u> Lat / Northing: _____ Long / Easting: _____ ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS _____ Map _____ No. satellites: _____ Boundary polygon captured _____ Map Scale: _____
LAND TENURE: Nature reserve National park Conservation park	Timber reserve State forest Water reserve	Private property Pastoral lease UCL <input checked="" type="checkbox"/>
	Rail reserve MRWA road reserve SLK/Pole to	Shire road reserve Other Crown reserve Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u>	Area observed (m²): _____															
EFFORT: <u>Time spent surveying (minutes):</u> _____	No. of minutes spent / 100 m²: _____															
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/> <u>Extrapolation</u> <u>Estimate</u>	Count Method: <u>Actual count - individuals</u>															
(Refer to field manual for list)																
WHAT COUNTED: <u>Plants</u> <input checked="" type="checkbox"/> <u>Clumps</u> <u>Clonal stems</u>																
TOTAL POP'N STRUCTURE:																
	<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td></td> <td></td> <td></td> <td>1</td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive				1	Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive				1												
Dead																
QUADRATS PRESENT:	Area of pop (m²): _____															
Summary Quad. Totals: Alive	Note: Pls record count as numbers (not percentages) for database.															
REPRODUCTIVE STATE:	Total area of quadrats (m²): <u>2500</u>															
	<table border="1"> <thead> <tr> <th>No.</th> <th>Size 50x50</th> <th>Data attached <input checked="" type="checkbox"/></th> <th>Total area of quadrats (m²):</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No.	Size 50x50	Data attached <input checked="" type="checkbox"/>	Total area of quadrats (m ²):											
No.	Size 50x50	Data attached <input checked="" type="checkbox"/>	Total area of quadrats (m ²):													
	<table border="1"> <thead> <tr> <th>Clonal</th> <th>Vegetative</th> <th>Flowerbud</th> <th>Flower</th> </tr> </thead> <tbody> <tr> <td>Immature fruit</td> <td>Fruit</td> <td>Dehisced fruit</td> <td>Percentage in flower: %</td> </tr> </tbody> </table>	Clonal	Vegetative	Flowerbud	Flower	Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %							
Clonal	Vegetative	Flowerbud	Flower													
Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %													

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Low open woodland (*C. hamersleyana*)

2. Mid open shrubland (*S. glutinosa* subsp. *pruinosa*, *A. bivenosa*)

3. Low open shrubland (*P. obovatus*, *C. crozophorifolius*)

4. Low open hummock grassland (*T. epactia*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Grevillea calcicola</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u>-21.9506525</u> DegMinSec _____ UTMs <input checked="" type="checkbox"/> _____ Lat / Northing: _____ Long / Easting: <u>114.0944974500001</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS _____ Map _____ No. satellites: _____ Boundary polygon captured _____ Map Scale: _____
LAND TENURE: Nature reserve National park Conservation park	Timber reserve State forest Water reserve	Private property Pastoral lease UCL <input checked="" type="checkbox"/>
	Rail reserve MRWA road reserve SLK/Pole to	Shire road reserve Other Crown reserve Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u>	Area observed (m²): _____															
EFFORT: <u>Time spent surveying (minutes):</u> _____	No. of minutes spent / 100 m²: _____															
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/> <u>Extrapolation</u> <u>Estimate</u>	Count Method: <u>Actual count - individuals</u>															
(Refer to field manual for list)																
WHAT COUNTED: <u>Plants</u> <input checked="" type="checkbox"/> <u>Clumps</u> _____ <u>Clonal stems</u> _____																
TOTAL POP'N STRUCTURE:																
	<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td></td> <td></td> <td></td> <td>1</td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive				1	Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive				1												
Dead																
	Area of pop (m²): _____ Note: Pls record count as numbers (not percentages) for database.															
QUADRATS PRESENT:																
	<table border="1"> <thead> <tr> <th>No.</th> <th>Size</th> <th>Data attached</th> <th>Total area of quadrats (m²):</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No.	Size	Data attached	Total area of quadrats (m ²):											
No.	Size	Data attached	Total area of quadrats (m ²):													
Summary Quad. Totals: Alive																
REPRODUCTIVE STATE:																
	<table border="1"> <thead> <tr> <th>Clonal</th> <th>Vegetative</th> <th>Flowerbud</th> <th>Flower</th> </tr> </thead> <tbody> <tr> <td>Immature fruit</td> <td>Fruit</td> <td>Dehisced fruit</td> <td>Percentage in flower: %</td> </tr> </tbody> </table>	Clonal	Vegetative	Flowerbud	Flower	Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %							
Clonal	Vegetative	Flowerbud	Flower													
Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %													

CONDITION OF PLANTS: Healthy Moderate _____ Poor _____ Senescent _____

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Low isolated trees (*C. hamersleyana*)

2. Tall open shrubland (*A. alexandria*, *A. tetragonophylla*, *A. bivenosa*)

3. Low sparse shrubland (*S. artemoides* subsp. *oligophylla*, *T. rosea* var. *clementii*, *S. ferraria*)

4. Low sparse hummock grassland (*T. epactia*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Grevillea calcicola</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>23/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u> </u> DegMinSec <u> </u> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.94389485</u> Long / Easting: <u>114.09879017999999</u> ZONE: <u> </u>	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: <u> </u> Map used: <u> </u> Boundary polygon captured <input type="checkbox"/> Map Scale: <u> </u>
LAND TENURE: Nature reserve National park Conservation park	Timber reserve State forest Water reserve	Private property Pastoral lease UCL <input checked="" type="checkbox"/>
	Rail reserve MRWA road reserve SLK/Pole to	Shire road reserve Other Crown reserve Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u>	Area observed (m²): _____															
EFFORT: <u>Time spent surveying (minutes):</u> _____	No. of minutes spent / 100 m²: _____															
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/> <u>Extrapolation</u> <u>Estimate</u>	Count Method: <u>Actual count - individuals</u>															
(Refer to field manual for list)																
WHAT COUNTED: <u>Plants</u> <input checked="" type="checkbox"/> <u>Clumps</u> <u>Clonal stems</u>																
TOTAL POP'N STRUCTURE:																
	<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td></td> <td></td> <td></td> <td>1</td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive				1	Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive				1												
Dead																
	Area of pop (m²): _____ Note: Pls record count as numbers (not percentages) for database.															
QUADRATS PRESENT:																
	<table border="1"> <thead> <tr> <th>No.</th> <th>Size</th> <th>Data attached</th> <th>Total area of quadrats (m²):</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No.	Size	Data attached	Total area of quadrats (m ²):											
No.	Size	Data attached	Total area of quadrats (m ²):													
Summary Quad. Totals: Alive																
REPRODUCTIVE STATE:																
	<table border="1"> <thead> <tr> <th>Clonal</th> <th>Vegetative</th> <th>Flowerbud</th> <th>Flower</th> </tr> </thead> <tbody> <tr> <td>Immature fruit</td> <td>Fruit</td> <td>Dehisced fruit</td> <td>Percentage in flower: %</td> </tr> </tbody> </table>	Clonal	Vegetative	Flowerbud	Flower	Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %							
Clonal	Vegetative	Flowerbud	Flower													
Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %													

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Low isolated trees (*C. hamersleyana*)

2. Tall open shrubland (*A. alexandria*, *A. tetragonophylla*, *A. bivenosa*)

3. Low sparse shrubland (*S. artemoides* subsp. *oligophylla*, *T. rosea* var. *clementii*, *S. ferraria*)

4. Low sparse hummock grassland (*T. epactia*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: Last Fire: Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Grevillea calcicola</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>22/8/2021</u>	CONSERVATION STATUS: <u>P3</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.948183109999999</u> Long / Easting: <u>114.10233971</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>2</u>
<u>Dead</u>			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehisced fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Low isolated trees (*C. hamersleyana*)

2. Tall open shrubland (*A. alexandria*, *A. tetragonophylla*, *A. bivenosa*)

3. Low sparse shrubland (*S. artemoides* subsp. *oligophylla*, *T. rosea* var. *clementii*, *S. ferraria*)

4. Low sparse hummock grassland (*T. epactia*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: Last Fire: Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Harnieria kempeana subsp. rhadinophylla</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P2</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): Exmouth		Reserve no: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input checked="" type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.949788600000002</u> Long / Easting: <u>114.09319449</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
Nature reserve	Timber reserve	Private property
National park	State forest	Pastoral lease
Conservation park	Water reserve	UCL <input checked="" type="checkbox"/>
		Rail reserve
		MRWA road reserve
		SLK/Pole to
		Shire road reserve
		Other Crown reserve
		Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u> <u>Partial survey</u> <input checked="" type="checkbox"/> <u>Full survey</u>	Area observed (m²): _____															
EFFORT: <u>Time spent surveying (minutes):</u> _____	No. of minutes spent / 100 m²: _____															
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/> <u>Extrapolation</u> <input type="checkbox"/> <u>Estimate</u> <input type="checkbox"/>	Count Method: <u>Actual count - individuals</u>															
(Refer to field manual for list)																
WHAT COUNTED: <u>Plants</u> <input checked="" type="checkbox"/> <u>Clumps</u> <input type="checkbox"/> <u>Clonal stems</u> <input type="checkbox"/>																
TOTAL POP'N STRUCTURE:																
	<table border="1"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td></td> <td></td> <td></td> <td>3</td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive				3	Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive				3												
Dead																
	Area of pop (m²): _____															
	<small>Note: Pls record count as numbers (not percentages) for database.</small>															
QUADRATS PRESENT:																
	<table border="1"> <thead> <tr> <th>No.</th> <th>Size</th> <th>Data attached</th> <th>Total area of quadrats (m²):</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No.	Size	Data attached	Total area of quadrats (m ²):											
No.	Size	Data attached	Total area of quadrats (m ²):													
Summary Quad. Totals: Alive																
REPRODUCTIVE STATE:																
	<table border="1"> <thead> <tr> <th>Clonal</th> <th>Vegetative</th> <th>Flowerbud</th> <th>Flower</th> </tr> </thead> <tbody> <tr> <td>Immature fruit</td> <td>Fruit</td> <td>Dehisced fruit</td> <td>Percentage in flower: %</td> </tr> </tbody> </table>	Clonal	Vegetative	Flowerbud	Flower	Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %							
Clonal	Vegetative	Flowerbud	Flower													
Immature fruit	Fruit	Dehisced fruit	Percentage in flower: %													

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: <small>Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)</small>	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat <input checked="" type="checkbox"/>	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line					
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland (B. attenuata, B. illicifolia);
 2. Open shrubland (Hibbertia sp., Acacia spp.);
 3. Isolated clumps of sedges (Mesomelaena tetragona)

- Tall open shrubland (M. cardiophylla, A. alexandri, A. arida)
- Low open hummock grassland (T. epactia)
-
-

ASSOCIATED SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 Australian Soil and Land Survey Field Handbook guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: Last Fire: Season/Month: _____ Year: >10 Fire Intensity: High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**, Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Tinospora esiangkara</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P2</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.944044850000001</u> Long / Easting: <u>114.09311968</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <input type="checkbox"/> Edge survey	<input checked="" type="checkbox"/> Partial survey	<input type="checkbox"/> Full survey	Area observed (m²): _____
EFFORT: _____	Time spent surveying (minutes): _____	No. of minutes spent / 100 m²: _____	
POP'N COUNT ACCURACY: <input checked="" type="checkbox"/> Actual	<input type="checkbox"/> Extrapolation	<input type="checkbox"/> Estimate	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<input checked="" type="checkbox"/> Plants	<input type="checkbox"/> Clumps	<input type="checkbox"/> Clonal stems
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
Alive			1
Dead			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<input type="checkbox"/> Clonal Immature fruit	<input type="checkbox"/> Vegetative Fruit	<input type="checkbox"/> Flowerbud Dehiscid fruit
			<input type="checkbox"/> Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall sparse shrubland (*A. bivenosa*)

2. Mid sparse shrubland (*M. cardiophylla*)

3. Low open hummock grassland (*T. glabra*)

4. Sparse herbland (*G. tenuiloba*, *H. gossei* var. *inflata*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Tinospora esiangkara</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>23/8/2021</u>	CONSERVATION STATUS: <u>P2</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.944702190000001</u> Long / Easting: <u>114.09456613</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>1</u>
<u>Dead</u>			
QUADRATS PRESENT:			
Summary Quad. Totals: Alive	No.	Size	Data attached
			Total area of quadrats (m²):
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehiscid fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall sparse shrubland (*A. bivenosa*)

2. Mid sparse shrubland (*M. cardiophylla*)

3. Low open hummock grassland (*T. glabra*)

4. Sparse herbland (*G. tenuiloba*, *H. gossei* var. *inflata*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Tinospora esiangkara</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P2</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> <u>24</u> DegMinSec <u>00</u> UTMs <input checked="" type="checkbox"/> <u>50</u> Lat / Northing: <u>-21.947018929999999</u> Long / Easting: <u>114.09759456</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS _____ Map _____ No. satellites: _____ Map used: _____ Boundary polygon captured _____ Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> SLK/Pole to
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<input type="checkbox"/> Partial survey	<input checked="" type="checkbox"/> Full survey	Area observed (m²): _____
EFFORT: _____	Time spent surveying (minutes): _____	No. of minutes spent / 100 m²: _____	
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<input type="checkbox"/> Extrapolation	<input type="checkbox"/> Estimate	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<input checked="" type="checkbox"/> Plants	<input type="checkbox"/> Clumps	<input type="checkbox"/> Clonal stems
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
Alive			1
Dead			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<input type="checkbox"/> Clonal Immature fruit	<input type="checkbox"/> Vegetative Fruit	<input type="checkbox"/> Flowerbud Dehisced fruit
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall sparse shrubland (*A. bivenosa*)

2. Mid sparse shrubland (*M. cardiophylla*)

3. Low open hummock grassland (*T. glabra*)

4. Sparse herbland (*G. tenuiloba*, *H. gossei* var. *inflata*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licencing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Tinospora esiangkara</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>24/8/2021</u>	CONSERVATION STATUS: <u>P2</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.950313640000001</u> Long / Easting: <u>114.09396584</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>1</u>
<u>Dead</u>			
QUADRATS PRESENT:			
Summary Quad. Totals: Alive	No.	Size	Data attached
			Total area of quadrats (m²):
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehisced fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(B. attenuata, B. illicifolia);
2. Open shrubland
(Hibbertia sp., Acacia spp.);
3. Isolated clumps of
sedges (Mesomelaena
tetragona)

1. Tall sparse shrubland (A. bivenosa)

2. Mid sparse shrubland (M. cardiophylla)

3. Low open hummock grassland (T. glabra)

4. Sparse herbland (G. tenuiloba, H. gossei var. inflata)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Tinospora esiangkara</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>26/8/2021</u>	CONSERVATION STATUS: <u>P2</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input checked="" type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.950690179999999</u> Long / Easting: <u>114.101282</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
<u>Alive</u>			<u>1</u>
<u>Dead</u>			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehiscid fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall sparse shrubland (*A. bivenosa*)

2. Mid sparse shrubland (*M. cardiophylla*)

3. Low open hummock grassland (*T. glabra*)

4. Sparse herbland (*G. tenuiloba*, *H. gossei* var. *inflata*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licencing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Tinospora esiangkara</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>22/8/2021</u>	CONSERVATION STATUS: <u>P2</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.947674469999999</u> Long / Easting: <u>114.10536423000001</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <input type="checkbox"/> Edge survey	<input checked="" type="checkbox"/> Partial survey	<input type="checkbox"/> Full survey	Area observed (m²): _____
EFFORT: _____	Time spent surveying (minutes): _____	No. of minutes spent / 100 m²: _____	
POP'N COUNT ACCURACY: <input checked="" type="checkbox"/> Actual	<input type="checkbox"/> Extrapolation	<input type="checkbox"/> Estimate	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<input checked="" type="checkbox"/> Plants	<input type="checkbox"/> Clumps	<input type="checkbox"/> Clonal stems
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
Alive			1
Dead			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<input type="checkbox"/> Clonal Immature fruit	<input type="checkbox"/> Vegetative Fruit	<input type="checkbox"/> Flowerbud Dehisced fruit
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall sparse shrubland (*A. bivenosa*)

2. Mid sparse shrubland (*M. cardiophylla*)

3. Low open hummock grassland (*T. glabra*)

4. Sparse herbland (*G. tenuiloba*, *H. gossei* var. *inflata*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Tinospora esiangkara</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>22/8/2021</u>	CONSERVATION STATUS: <u>P2</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) DecDegrees <input checked="" type="checkbox"/> DegMinSec <input type="checkbox"/> UTMs <input checked="" type="checkbox"/> Lat / Northing: <u>-21.948374210000001</u> Long / Easting: <u>114.10970937</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured <input type="checkbox"/> Map Scale: _____
LAND TENURE:		
<input type="checkbox"/> Nature reserve	<input type="checkbox"/> Timber reserve	<input type="checkbox"/> Private property
<input type="checkbox"/> National park	<input type="checkbox"/> State forest	<input type="checkbox"/> Pastoral lease
<input type="checkbox"/> Conservation park	<input type="checkbox"/> Water reserve	<input checked="" type="checkbox"/> UCL
		<input type="checkbox"/> Rail reserve
		<input type="checkbox"/> MRWA road reserve
		<input type="checkbox"/> Shire road reserve
		<input type="checkbox"/> Other Crown reserve
		<input type="checkbox"/> Specify other: _____

AREA ASSESSMENT: <input type="checkbox"/> Edge survey	<input checked="" type="checkbox"/> Partial survey	<input type="checkbox"/> Full survey	Area observed (m²): _____
EFFORT: _____	Time spent surveying (minutes): _____	No. of minutes spent / 100 m²: _____	
POP'N COUNT ACCURACY: <input checked="" type="checkbox"/> Actual	<input type="checkbox"/> Extrapolation	<input type="checkbox"/> Estimate	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<input checked="" type="checkbox"/> Plants	<input type="checkbox"/> Clumps	<input type="checkbox"/> Clonal stems
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
Alive			1
Dead			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<input type="checkbox"/> Clonal Immature fruit	<input type="checkbox"/> Vegetative Fruit	<input type="checkbox"/> Flowerbud Dehiscid fruit
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(*B. attenuata*, *B. illicifolia*);
2. Open shrubland
(*Hibbertia* sp., *Acacia* spp.);
3. Isolated clumps of
sedges (*Mesomelaena*
tetragona)

1. Tall sparse shrubland (*A. bivenosa*)

2. Mid sparse shrubland (*M. cardiophylla*)

3. Low open hummock grassland (*T. glabra*)

4. Sparse herbland (*G. tenuiloba*, *H. gossei* var. *inflata*)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licencing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under *Standard Report Forms*

TAXON: <u>Tinospora esiangkara</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>25/8/2021</u>	CONSERVATION STATUS: <u>P2</u> New population: <input checked="" type="checkbox"/>
OBSERVER/S <u>Bridget Duncan, Ben Eckermann, Jason Webb</u>	PHONE: <u>9388 8360</u>
ROLE: <u>Botanist</u>	ORGANISATION: <u>360 Environmental</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place): <u>Exmouth</u>		Reserve no.: _____
DBC DISTRICT: <u>Western Pilbara</u>	LGA: <u>Shire of Exmouth</u>	Land manager present: _____
DATUM: GDA94 / MGA94 AGD84 / AMG84 WGS84 Unknown	COORDINATES: (If UTM coords provided, Zone is also required) Lat / Northing: <u>-21.837740279999998</u> Long / Easting: <u>114.1446579</u> ZONE: _____	METHOD USED: GPS <input checked="" type="checkbox"/> Differential GPS UTMs <input checked="" type="checkbox"/> No. satellites: _____ Map <input type="checkbox"/> Map used: _____ Boundary polygon captured Map Scale: _____
LAND TENURE:		
Nature reserve	Timber reserve	Private property
National park	State forest	Pastoral lease
Conservation park	Water reserve	UCL <input checked="" type="checkbox"/>
		Rail reserve
		MRWA road reserve
		SLK/Pole to
		Shire road reserve
		Other Crown reserve
		Specify other: _____

AREA ASSESSMENT: <u>Edge survey</u>	<u>Partial survey</u> <input checked="" type="checkbox"/>	<u>Full survey</u>	Area observed (m²): _____
EFFORT: <u>Time spent surveying (minutes):</u>	No. of minutes spent / 100 m²: _____		
POP'N COUNT ACCURACY: <u>Actual</u> <input checked="" type="checkbox"/>	<u>Extrapolation</u>	<u>Estimate</u>	Count Method: <u>Actual count - individuals</u>
(Refer to field manual for list)			
WHAT COUNTED:	<u>Plants</u> <input checked="" type="checkbox"/>	<u>Clumps</u>	<u>Clonal stems</u>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
Alive			1
Dead			
QUADRATS PRESENT:	No.	Size	Data attached
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	<u>Clonal</u>	<u>Vegetative</u>	<u>Flowerbud</u>
	<u>Immature fruit</u>	<u>Fruit</u>	<u>Dehisced fruit</u>
			Flower Percentage in flower: %

CONDITION OF PLANTS: Healthy Moderate Poor Senescent

COMMENT: _____

THREATS – type, agent and supporting information: Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)	Current impact (N-E)	Potential impact (L-E)	Potential Threat Onset (S-L)
• Complete vegetation clearing - Energy resource enterprise	<u>N</u>	<u>H</u>	<u>M</u>
• Weed invasion - General	<u>L</u>	<u>M</u>	<u>M</u>
•			

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database



Threatened and Priority Flora Report Form

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand	Red <input checked="" type="checkbox"/>	Well drained
Hill	Dolerite	gravel, quartz fields)	Sandy loam <input checked="" type="checkbox"/>	Brown <input checked="" type="checkbox"/>	Seasonally
Ridge	Laterite	0-10%	Loam	Yellow	inundated <input checked="" type="checkbox"/>
Outcrop	Ironstone	10-30%	Clay loam <input checked="" type="checkbox"/>	White	Permanently
Slope <input checked="" type="checkbox"/>	Limestone <input checked="" type="checkbox"/>	30-50%	Light clay	Grey	inundated
Flat	Quartz	50-100%	Peat	Black	Tidal
Open depression	Specify other:		Specify other:	Specify other:	
Drainage line <input checked="" type="checkbox"/>	Calcrete				
Closed depression	Specific Landform Element				
Wetland	(Refer to field manual for additional values)				
CONDITION OF SOIL:	Dry	Moist	Waterlogged	Inundated	

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland
(B. attenuata, B. illicifolia);
2. Open shrubland
(Hibbertia sp., Acacia spp.);
3. Isolated clumps of
sedges (Mesomelaena
tetragona)

1. Low-mid sparse shrubland (A. tetragonophylla, E. aphyllus, A. bivenosa)

2. Low sparse shrubland (P. obovatus)

3. Low open hummock grassland (T. epactia)

4. Low sparse tussock grassland (C. ciliaris, E. mucronata)

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formation should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine Excellent Very good Good Degraded Completely degraded

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: >10 **Fire Intensity:** High Medium Low No signs of fire

FENCING: Not required Present Replace / repair Required Length req'd: _____

ROADSIDE MARKERS: Not required Present Replace / reposition Required Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

DRF PERMIT/ LICENCE No: FB26000262, FB26000272 Note if only observing plants (i.e. no specimens or plant material is taken) then no permit/licence is required. For further information on permit and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website/ Any actions carried out under the licence/permit should be recorded above in the OTHER COMMENTS section.

SPECIMEN: Collectors No: _____ WA Herb. Regional Herb. District Herb. Other: _____

ATTACHED: Map Mudmap Photo GIS data Field notes Other: Additional records attached

COPY SENT TO: Regional Office District Office Other: _____

Submitter of Record: Bridget Duncan Role: Ecologist Signed:  Date: 22 / 12 / 2021

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database

Appendix G

Fauna Likelihood Assessment

Conservation Status: State - Listed under Biodiversity Conservation Act 2016 or Department of Biodiversity, Conservation and Attractions Conservation, Federal - Listed under Environmental Protection and Biodiversity Conservation Act 1999. CR - Critically Database: NM - NatureMap, PMST - EPBC Protected Matters Search Tool, DBCA - DBCA Threatened and Priority Fauna database search, DBCA 15 yrs - DBCA records within 10 km of the Survey Area and within the last 15 yrs.

Family	Scientific Name	Common Name	Conservation Status		Database				Likelihood of Occurrence	Justification
			State	Federal	NM	PMST	DBCA	DBCA 15 yrs		
Aves										
Apodidae	<i>Apus pacificus</i>	Pacific Swift (Fork-tailed Swift)	MI	MI, MA		x			Low	No nearby records. Uses airspace over varied habitat.
Charadriidae	<i>Charadrius leschenaultii</i>	Greater Sand Plover	VU	VU, MI, MA	x		x	4	Low	Recent nearby records. No suitable habitat (tidal flats).
	<i>Charadrius mongolus</i>	Lesser Sand Plover	EN	EN, MI, MA	x		x	3	Low	Recent nearby records. No suitable habitat (tidal flats).
	<i>Charadrius veredus</i>	Oriental Plover	MI	MI, MA		x	x	0	Medium	Nearby historical records. Suitable habitat present (grasslands, vegetated plains).
	<i>Pluvialis fulva</i>	Pacific Golden Plover	MI	MI, MA			x	0	Low	Nearby records. No suitable habitat (coastal areas, tidal flats).
	<i>Pluvialis squatarola</i>	Grey Plover	MI	MI, MA	x		x	9	Low	Recent nearby records. No suitable habitat (coastal areas, tidal flats).
Diomedidae	<i>Thalassarche chlororhynchos</i>	Yellow-nosed Albatross	VU	MI, MA	x		x	0	Low	Nearby record. No suitable habitat (pelagic).
Falconidae	<i>Falco hypoleucos</i>	Grey Falcon	VU	VU		x			Low	No nearby records. Preferred nesting habitat absent. May use the Survey Area for hunting.
	<i>Falco peregrinus</i>	Peregrine Falcon	OS		x		x	1	Medium	Recent nearby records. May use the Survey Area for hunting.
Fregatidae	<i>Fregata ariel</i>	Lesser Frigatebird	MI	MI, MA		x			Low	No nearby records. No suitable habitat (pelagic).
Glareolidae	<i>Glareola maldivarum</i>	Oriental Pratincole	MI	MI, MA	x	x	x	5	High	Recent nearby records. Suitable habitat present (open plains).
Hirundinidae	<i>Hirundo rustica</i>	Barn Swallow	MI	MI, MA		x			Low	No nearby records. Suitable habitat present (near coastal, open country, wetlands).
Laridae	<i>Anous stolidus</i>	Common Noddy (Brown Noddy)	MI	MI, MA		x	x	0	Low	Recent records > 10 km. No suitable habitat (colony islands, pelagic).
	<i>Chlidonias leucopterus</i>	White-winged Black Tern	MI	MI, MA	x		x	5	Low	Recent nearby records. No suitable habitat (fresh to saline coastal and subcoastal wetlands).
	<i>Gelochelidon nilotica</i>	Gull-billed Tern	MI	MI, MA	x		x	0	Low	Recent records > 10 km. No suitable habitat (coastal areas).
	<i>Hydroprogne caspia</i>	Caspian Tern	MI	MI, MA	x		x	4	Low	Recent nearby records. No suitable habitat (sheltered coastal waters, lakes, temporary wetlands).
	<i>Onychoprion anaethetus</i>	Bridled Tern	MI	MI, MA	x				Low	No nearby records. No suitable habitat (pelagic).
	<i>Sterna dougallii</i>	Roseate Tern	MI	MI, MA	x		x	0	Low	Nearby records. No suitable habitat (pelagic).
	<i>Sterna hirundo</i>	Common Tern	MI	MI, MA	x		x	3	Low	Recent nearby records. No suitable habitat (pelagic).
	<i>Sternula albifrons</i>	White-shafted Little Tern	MI	MI, MA	x		x	2	Low	Recent nearby records. No suitable habitat (coastal areas, beaches).
	<i>Sternula nereis nereis</i>		VU	VU		x			Low	No nearby records. No suitable habitat (coastal areas).
<i>Thalasseus bergii</i>	Crested Tern (Greater Crested Tern)	MI	MI, MA	x		x	26	Low	Recent nearby records. No suitable habitat (coastal areas, beaches, salt lakes).	
Motacillidae	<i>Motacilla cinerea</i>	Grey Wagtail	MI	MI, MA		x			Low	No nearby records. No suitable habitat (coastal, lakes, running water).
	<i>Motacilla tschutschensis</i>	Yellow Wagtail	MI	MI, MA		x			Low	No nearby records. No suitable habitat (open wet plains and meadows).
Oceanitidae	<i>Oceanites oceanicus</i>	Wilson's Storm Petrel	MI	MI, MA	x		x	0	Low	Records > 10 km. No suitable habitat (pelagic).
Pandionidae	<i>Pandion haliaetus</i>	Osprey		MI, MA		x			Low	No nearby records. No suitable habitat (coastal areas, beaches).
Pandionidae	<i>Pandion haliaetus cristatus</i>	Eastern Osprey	MI		x		x	36	Low	Recent nearby records. No suitable habitat (coastal areas, beaches, lakes).
Phaethontidae	<i>Phaethon lepturus</i>	White-tailed Tropicbird	MI	MI, MA	x		x	0	Low	Nearby records. No suitable habitat (pelagic).
	<i>Phaethon rubricauda</i>	Red-tailed Tropicbird	MI, P4	MI, MA	x		x	1	Low	Recent nearby records. No suitable habitat (pelagic).

Family	Scientific Name	Common Name	Conservation Status		Database				Likelihood of Occurrence	Justification
			State	Federal	NM	PMIST	DBCA	DBCA 15 yrs		
Phaethontidae	<i>Ardenna carneipes</i>	Flesh-footed Shearwater	VU	MI, MA		x			Low	No nearby records. No suitable habitat (pelagic).
	<i>Ardenna pacifica</i>	Wedge-tailed Shearwater	MI	MI, MA	x		x	4	Low	Recent nearby records. No suitable habitat (pelagic).
	<i>Calonectris leucomelas</i>	Streaked Shearwater	MI	MI, MA		x			Low	No nearby records. No suitable habitat (coastal areas).
	<i>Macronectes giganteus</i>	Southern Giant Petrel	MI	EN, MI, MA		x			Low	No nearby records. No suitable habitat (coastal areas).
Procellariidae	<i>Pterodroma mollis</i>	Soft-plumaged Petrel		VU, MA		x			Low	No nearby records. No suitable habitat (pelagic).
	<i>Puffinus huttoni</i>	Hutton's Shearwater	EN	MA	x		x	0	Low	Records > 10 km. No suitable habitat (pelagic).
Psittaculidae	<i>Pezoporus occidentalis</i>	Night Parrot	CR	EN		x			Low	No nearby records. No suitable habitat (spinifex and samphire margins of salt lakes).
Rostratulidae	<i>Rostratula australis</i>	Australian Painted Snipe	EN	EN, MA		x			Low	No nearby records. No suitable habitat (well vegetated wetlands).
Scolopacidae	<i>Actitis hypoleucos</i>	Common Sandpiper	MI	MI, MA	x	x	x	11	Low	Recent nearby records. No suitable habitat (coastal and interior wetlands).
	<i>Arenaria interpres</i>	Ruddy Turnstone	MI	MI, MA	x		x	8	Low	Recent nearby records. No suitable habitat (coastal areas, tidal flats, beaches).
	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	MI	MI, MA	x	x	x	7	Low	Recent nearby records. No suitable habitat (coastal and interior wetlands).
	<i>Calidris alba</i>	Sanderling	MI	MI, MA	x		x	3	Low	Recent nearby records. No suitable habitat (tidal flats, beaches).
	<i>Calidris canutus</i>	Red Knot	EN	EN, MI, MA		x	x	0	Low	Nearby historical records. No suitable habitat (coastal areas, tidal flats).
	<i>Calidris falcinellus</i>	Broad-billed Sandpiper	MI	MI, MA			x	0	Low	Recent records > 10 km. No suitable habitat (mudflats).
	<i>Calidris ferruginea</i>	Curlew Sandpiper	CR	CR, MI, MA		x	x	0	Low	Records > 10 km. No suitable habitat (inter-tidal mudflats).
	<i>Calidris melanotos</i>	Pectoral Sandpiper	MI	MI, MA		x			Low	No nearby records. No suitable habitat (coastal and interior wetlands).
	<i>Calidris ruficollis</i>	Red-necked Stint	MI	MI, MA	x		x	4	Low	Recent nearby records. No suitable habitat (tidal and inland mudflats, beaches).
	<i>Calidris subminuta</i>	Long-toed Stint	MI	MI, MA	x		x	5	Low	Recent nearby records. No suitable habitat (fresh wetlands).
	<i>Gallinago stenura</i>	Pin-tailed Snipe	MI	MI, MA	x		x	1	Low	Recent nearby records. No suitable habitat (wetlands, claypans).
	<i>Limosa lapponica</i>	Bar-tailed Godwit	MI	MI, MA	x	x	x	2	Low	Recent nearby records. No suitable habitat (coastal areas, tidal flats).
	<i>Limosa lapponica menzbieri</i>		CR, MI	CR		x			Low	No nearby records. No suitable habitat (coastal areas, tidal flats).
	<i>Limosa limosa</i>	Black-tailed Godwit	MI	MI, MA			x	0	Low	Recent records > 10 km. No suitable habitat (inland wetlands).
	<i>Numenius madagascariensis</i>	Far Eastern Curlew (Eastern Curlew)	CR	CE, MI, MA	x	x	x	1	Low	Recent nearby records. No suitable habitat (coastal areas, tidal flats).
	<i>Numenius minutus</i>	Little Curlew	MI	MI, MA	x		x	4	Low	Recent nearby records. No suitable habitat (wetlands, flooded areas).
	<i>Numenius phaeopus</i>	Whimbrel	MI	MI, MA	x		x	19	Low	Recent nearby records. No suitable habitat (coastal areas, tidal flats).
	<i>Tringa brevipes</i>	Grey-tailed Tattler	MI, P4	MI, MA	x		x	29	Low	Recent nearby records. No suitable habitat (coastal areas, tidal flats).
	<i>Tringa glareola</i>	Wood Sandpiper	MI	MI, MA	x		x	8	Low	Recent nearby records. No suitable habitat (freshwater wetlands).
	<i>Tringa nebularia</i>	Common Greenshank	MI	MI, MA	x	x	x	24	Low	Recent nearby records. No suitable habitat (coastal areas, permanent and temporary wetlands).
<i>Tringa stagnatilis</i>	Marsh Sandpiper	MI	MI, MA	x		x	1	Low	Nearby records. No suitable habitat (fresh to saline inland wetlands).	
<i>Xenus cinereus</i>	Terek Sandpiper	MI	MI, MA	x		x	1	Low	Recent records > 15 km. No suitable habitat (tidal flats).	

Family	Scientific Name	Common Name	Conservation Status		Database				Likelihood of Occurrence	Justification
			State	Federal	NMI	PMIST	DBCA	DBCA 15 yrs		
Threskiornithidae	<i>Plegadis falcinellus</i>	Glossy Ibis	MI	MI, MA			x	0	Low	Nearby historical records. No suitable habitat (shallow freshwater, dry grasslands).
Mammalia										
Dasyuridae	<i>Dasyurus hallucatus</i>	Northern Quoll	EN	EN		x			Low	No nearby records. No suitable habitat (rocky escarpments, beaches).
Macropodidae	<i>Petrogale lateralis lateralis</i>	Black-footed Rock-wallaby	EN		x	x	x	79	High	2019 records < 500 m from Survey Area (Lot 550). Suitable habitat present (rock crevices, caves).
Rhinonycteridae	<i>Rhinonycteris aurantia (Pilbara form)</i>	Pilbara Leaf-nosed Bat	VU	VU		x	x	0	Medium	Records > 15 km. Survey Area does not contain deep, humid caves necessary for dry season roosting, however, small shallow caves may be used during wet season and all habitats may be used for foraging.
Reptilia										
Diplodactylidae	<i>Diplodactylus capensis</i>	Cape Range Stone Gecko	P2		x		x	1	High	Recent nearby records. 2007 record < 2 km from Survey Area (Lot 550). Restricted to the rocky northern end of North West Cape, WA.
Pygopodidae	<i>Aprasia rostrata</i>	Ningaloo Worm Lizard	P3		x		x	2	Medium	Recent nearby records. 2008 record < 4 km from Survey Area (Lot 284). North West Cape south to Yardie Creek and Learmonth and inland to Bullara Station, WA. Suitable habitat present (white coastal dunes, red dunes with <i>Triodia</i>).
Scincidae	<i>Lerista allochira</i>	Cape Range Slider	P3		x		x	8	Medium	Recent nearby records. 2018 records < 5 km from the Survey Area (Lot 284). North West Cape, WA. Suitable habitat present (dissected limestone gorges and plateaus).
Typhlopidae	<i>Anilius splendidus</i>		P2				x	0	Low	Records > 10 km. Western edge of North West Cape, WA (known from one specimen). May use habitats in the Survey Area (shrublands on coral limestone and a thin veneer of sand).

Appendix H

Fauna Habitat Assessments

Site01

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	20/08/2021	Personnel	BD
Zone	50	Easting	203697
		Northing	7569835
Landform and soil		Rock	
Landform	Plain	Rock type/s	None
Soil type	Clay loam	Surface stone cover	
Soil colour	Red	Surface stone size classes present	
Condition		Habitat Features	
Quality	Disturbed	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	
Disturbance	Litter, Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	<i>Corymbia hamersleyana</i>
Mid stratum	Absent		
Ground stratum	Low (>0.5 m)	Open tussock grassland (20-50%)	* <i>Cenchrus ciliaris</i>



Fulcrum photo ID 136-138

Site02

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	21/08/2021	Personnel	BD
Zone	50	Easting	203535
		Northing	7569447
Landform and soil		Rock	
Landform	Plain	Rock type/s	Calcrete, Quartz
Soil type	Clay loam	Surface stone cover	0 - 5%
Soil colour	Brown, Red	Surface stone size classes present	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm)
Condition		Habitat Features	
Quality	Disturbed	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Absent		
Mid stratum	Tall (>2 m)	Open shrubland and/or heathland (20-50%)	<i>Acacia synchronicia</i>
Ground stratum	Low (>0.5 m)	Closed tussock grassland (>80%)	* <i>Cenchrus ciliaris</i>



Fulcrum photo ID 139-141

Site03

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	21/08/2021	Personnel	BD
Zone	50	Easting	203222
		Northing	7569464
Landform and soil		Rock	
Landform	Upper slope	Rock type/s	Calcrete, Limestone
Soil type	Clay loam	Surface stone cover	0 - 5%
Soil colour	Brown, Red	Surface stone size classes present	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm)
Condition		Habitat Features	
Quality	Very good	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	<i>Corymbia hamersleyana</i>
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	<i>Senna glutinosa pruinosa, Acacia bivenosa</i>
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	<i>Triodia epactia</i>



Fulcrum photo ID 149-150

Site04

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	21/08/2021	Personnel	BD
Zone	50	Easting	203210
		Northing	7569288
Landform and soil		Rock	
Landform	Upper slope	Rock type/s	Calcrete, Limestone
Soil type	Clay loam	Surface stone cover	50 - 75%
Soil colour	Brown, Red	Surface stone size classes present	Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)
Condition		Habitat Features	
Quality	High quality	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	Rock crevices
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	<i>Corymbia hamersleyana</i>
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	<i>Acacia arida</i>
Ground stratum	Low (>0.5 m)	Isolated hummock grasses (<0.25%)	<i>Triodia epactia</i>



Fulcrum photo ID 153-154

Site05

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey				
Date	21/08/2021	Personnel	BD		
Zone	50	Easting	202956	Northing	7570088
Landform and soil			Rock		
Landform	Plain	Rock type/s	Limestone		
Soil type	Clay loam	Surface stone cover	0 - 5%		
Soil colour	Brown, Red	Surface stone size classes present	Small Stones (0.6 - 2 cm)		
Condition			Habitat Features		
Quality	Disturbed		Water Source	Absent	
Fire History	Little or no fire evidence (>5 years)		Microhabitats		
Disturbance	Litter, Weeds				
Introduced fauna	None observed				
Vegetation					
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	<i>Corymbia hamersleyana</i>		
Mid stratum	Absent				
Ground stratum	Low (>0.5 m)	Tussock grassland (50-80%)	<i>*Cenchrus ciliaris</i>		



Fulcrum photo ID 157-158

Site06

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey				
Date	21/08/2021	Personnel	BD		
Zone	50	Easting	202973	Northing	7569296
Landform and soil			Rock		
Landform	Undulating plain	Rock type/s	Limestone		
Soil type	Clay loam	Surface stone cover	5 - 25%		
Soil colour	Brown, Red	Surface stone size classes present	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm)		
Condition			Habitat Features		
Quality	High quality		Water Source	Absent	
Fire History	Little or no fire evidence (>5 years)		Microhabitats		
Disturbance	Weeds				
Introduced fauna	None observed				
Vegetation					
Upper stratum	Absent				
Mid stratum	Tall (>2 m)	Open shrubland and/or heathland (20-50%)	<i>Acacia synchronicia, Acacia bivenosa</i>		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	<i>Triodia epactia</i>		



Fulcrum photo ID 159-160

Site07

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	21/08/2021	Personnel	BD
Zone	50	Easting	202188
		Northing	7570070
Landform and soil		Rock	
Landform	Upper slope	Rock type/s	Calcrete
Soil type	Clay loam	Surface stone cover	5 - 25%
Soil colour	Brown, Red	Surface stone size classes present	Stones (2 - 6 cm), Small Rocks (6 - 20 cm)
Condition		Habitat Features	
Quality	High quality	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	
Disturbance	None observed		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	<i>Melaleuca cardiophylla</i>
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	<i>Triodia glabra</i>



Fulcrum photo ID 167-170

Site08

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	22/08/2021	Personnel	BD
Zone	50	Easting	201225
		Northing	7570031
Landform and soil		Rock	
Landform	Mid slope	Rock type/s	Calcrete, Limestone
Soil type	Clay loam	Surface stone cover	50 - 75%
Soil colour	Brown, Red	Surface stone size classes present	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm)
Condition		Habitat Features	
Quality	High quality	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	Hummocks
Disturbance	None observed		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	<i>Melaleuca cardiophylla</i>
Ground stratum	Mid (0.5-1 m)	Open hummock grassland (20-50%)	<i>Triodia wiseana</i>



Fulcrum photo ID 178-179

Site09

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	22/08/2021	Personnel	BD
Zone	50	Easting	200975
		Northing	7570368
Landform and soil		Rock	
Landform	Upper slope	Rock type/s	Calcrete, Limestone
Soil type	Clay loam	Surface stone cover	50 - 75%
Soil colour	Brown, Red	Surface stone size classes present	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm)
Condition		Habitat Features	
Quality	High quality	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	Hummocks
Disturbance	None observed		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	<i>Melaleuca cardiophylla</i>
Ground stratum	Low (>0.5 m)	Hummock grassland (50-80%)	<i>Triodia glabra</i> , <i>Triodia wiseana</i>



Fulcrum photo ID 182-183

Site10

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	22/08/2021	Personnel	BD
Zone	50	Easting	200957
		Northing	7570293
Landform and soil		Rock	
Landform	Mid slope	Rock type/s	Calcrete, Limestone
Soil type	Clay loam	Surface stone cover	50 - 75%
Soil colour	Brown, Red	Surface stone size classes present	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)
Condition		Habitat Features	
Quality	High quality	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	Hummocks, Rock crevices
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	<i>Corymbia hamersleyana</i>
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	<i>Acacia arida</i> , <i>Melaleuca cardiophylla</i> , <i>Gossypium robinsonii</i>
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	<i>Triodia wiseana</i>



Fulcrum photo ID 184-186

Site11

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	22/08/2021	Personnel	BD
Zone	50	Easting	200751
		Northing	7570076
Landform and soil		Rock	
Landform	Mid slope	Rock type/s	Calcrete, Limestone
Soil type	Clay loam	Surface stone cover	50 - 75%
Soil colour	Brown, Red	Surface stone size classes present	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Condition		Habitat Features	
Quality	High quality	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	Rock crevices
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	<i>Corymbia hamersleyana</i>
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	<i>Acacia arida</i>
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	<i>Triodia epactia</i>



Fulcrum photo ID 189-190

Site12

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	22/08/2021	Personnel	BD
Zone	50	Easting	200692
		Northing	7570553
Landform and soil		Rock	
Landform	Drainage line	Rock type/s	Calcrete, Laterite
Soil type	Clay loam	Surface stone cover	50 - 75%
Soil colour	Brown, Red	Surface stone size classes present	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm)
Condition		Habitat Features	
Quality	High quality	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	<i>Corymbia hamersleyana</i>
Mid stratum	Tall (>2 m)	Open shrubland and/or heathland (20-50%)	<i>Acacia arida</i>
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	<i>Triodia epactia</i>



Fulcrum photo ID 197-199

Site13

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	22/08/2021	Personnel	BD
Zone	50	Easting	200165
		Northing	7570508
Landform and soil		Rock	
Landform	Drainage line	Rock type/s	Calcrete, Limestone
Soil type	Clay loam	Surface stone cover	50 - 75%
Soil colour	Brown, Red	Surface stone size classes present	Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Condition		Habitat Features	
Quality	High quality	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	Rock crevices
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Absent		
Mid stratum	Tall (>2 m)	Shrubland and/or heathland (50-80%)	<i>Acacia arida</i> , <i>Gossypium robinsonii</i> (drainage), <i>Ficus brachypoda</i> , <i>Grev</i>
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	<i>Triodia epactia</i>



Fulcrum photo ID 203-206

Site14

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	24/08/2021	Personnel	BD
Zone	50	Easting	200167
		Northing	7569915
Landform and soil		Rock	
Landform	Drainage line	Rock type/s	Limestone
Soil type	Clay loam	Surface stone cover	50 - 75%
Soil colour	Brown, Red	Surface stone size classes present	Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Condition		Habitat Features	
Quality	High quality	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	Leaf litter, Rock crevices
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Low (<10 m)	Isolated trees (<0.25%)	<i>Ficus brachypoda</i>
Mid stratum	Tall (>2 m)	Shrubland and/or heathland (50-80%)	<i>Acacia alexandri</i> , <i>Senna artemisioides oligophylla</i> , <i>Grevillea pyramidalis</i>
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	<i>Triodia epactia</i>



Fulcrum photo ID 211-214

Site15

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	24/08/2021	Personnel	BD
Zone	50	Easting	200019
		Northing	7569736
Landform and soil		Rock	
Landform	Mid slope	Rock type/s	Limestone
Soil type	Clay loam	Surface stone cover	50 - 75%
Soil colour	Brown, Red	Surface stone size classes present	Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)
Condition		Habitat Features	
Quality	High quality	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	Caves, Rock crevices
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	<i>Corymbia hamersleyana</i>
Mid stratum	Tall (>2 m)	Sparse shrubland and/or heathland (0.25-20%)	<i>Grevillea pyramidalis</i> , <i>Dodonaea viscosa mucronata</i>
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	<i>Triodia epactia</i>



Fulcrum photo ID 215-218

Site16

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	24/08/2021	Personnel	BD
Zone	50	Easting	199850
		Northing	7570596
Landform and soil		Rock	
Landform	Drainage line	Rock type/s	Laterite
Soil type	Clay loam	Surface stone cover	50 - 75%
Soil colour	Brown, Red	Surface stone size classes present	Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m), Boulders (>2 m)
Condition		Habitat Features	
Quality	High quality	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	Rock crevices
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Absent		
Mid stratum	Tall (>2 m)	Open shrubland and/or heathland (20-50%)	<i>Acacia sericophylla</i> , <i>Ficus brachypoda</i> , <i>Dodonaea viscosa mucronata</i> , <i>Corymbia hamersleyana</i>
Ground stratum	Low (>0.5 m)	Sparse fernland (0.25-20%)	* <i>Bidens bipinnata</i>



Fulcrum photo ID 229-231

Site17

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	25/08/2021	Personnel	BD
Zone	50	Easting	203613
		Northing	7582515
Landform and soil		Rock	
Landform	Plain	Rock type/s	Limestone
Soil type	Sand	Surface stone cover	0 - 5%
Soil colour	Red	Surface stone size classes present	Small Rocks (6 - 20 cm)
Condition		Habitat Features	
Quality	Very good	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	Burrows, Hummocks
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	<i>Acacia sericophylla, Hibiscus sturtii var. platyklamys</i>
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	<i>Triodia epactia, Triodia glabra</i>



Fulcrum photo ID 232-23

Site18

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	25/08/2021	Personnel	BD
Zone	50	Easting	204011
		Northing	7582501
Landform and soil		Rock	
Landform	Plain	Rock type/s	Limestone
Soil type	Sandy clay	Surface stone cover	5 - 25%
Soil colour	Red	Surface stone size classes present	Small Stones (0.6 - 2 cm), Stones (2 - 6 cm)
Condition		Habitat Features	
Quality	High quality	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m) to Low (<1 m)	Sparse shrubland and/or heathland (0.25-20%)	<i>Asyncho, Scaevola spinescens, Lawrenzia densiflora, Atriplex semiluna</i>
Ground stratum	Low (>0.5 m)	Sparse tussock grassland (0.25-20%)	* <i>Cenchrus ciliaris</i>



Fulcrum photo ID 234-235

Site19

Project	4766 Lots 284, 505, 550 and Reserve 51970 Exmouth Biological Survey		
Date	25/08/2021	Personnel	BD
Zone	50	Easting	205123
		Northing	7582043
Landform and soil		Rock	
Landform	Plain	Rock type/s	Limestone
Soil type	Sandy loam	Surface stone cover	0 - 5%
Soil colour	Red	Surface stone size classes present	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm)
Condition		Habitat Features	
Quality	Good	Water Source	Absent
Fire History	Little or no fire evidence (>5 years)	Microhabitats	
Disturbance	Weeds		
Introduced fauna	None observed		
Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	<i>Acacia tetragonophylla, Acacia synchronicia</i>
Ground stratum	Low (>0.5 m)	Sparse tussock grassland (0.25-20%)	* <i>Cenchrus ciliaris</i>



Fulcrum photo ID 240-241

Appendix I

Vertebrate Fauna Inventory

Conservation Status: State - Listed under Biodiversity Conservation Act 2016 or Department of Biodiversity, Conservation and Attractions Conservation, Federal - Listed under Environmental Protection and Biodiversity Conservation Act 1999. CR - Critically Endangered, EN - Endangered, VU - Vulnerable, MI - Migratory, OS - Other Specially Protected fauna, MA - Marine, P - Listed as Priority by DBCA.

Database: NM - NatureMap, PMST - EPBC Protected Matters Search Tool, DBCA - DBCA Threatened and Priority Fauna database search, Field - Recorded during the current field survey.

Literature: A - Learmonth (Exmouth) Line Rebuild Flora and Fauna Survey (GHD, 2019) , B - Minilya-Exmouth Road Biological Survey, Main Roads WA (GHD, 2016)

Family	Scientific Name	Common Name	Conservation Status		Database				Literature	
			State	Federal	NM	PMST	DBCA	Field	A	B
Amphibian										
Pelodyadidae	<i>Cyclorana maini</i>	Sheep Frog			x					
Limnodynastidae	<i>Neobatrachus aquilonius</i>	Northern Burrowing Frog			x					
Limnodynastidae	<i>Neobatrachus fulvus</i>	Tawny Trilling Frog			x					
Myobatrachidae	<i>Pseudophryne douglasi</i>	Gorge Toadlet			x					
Aves										
Acanthizidae	<i>Calamanthus campestris</i>	Rufous Fieldwren			x					x
Acanthizidae	<i>Gerygone fusca</i>	Western Gerygone			x					
Acanthizidae	<i>Gerygone tenebrosa</i>	Dusky Gerygone			x					
Acanthizidae	<i>Pyrrholaemus brunneus</i>	Redthroat			x					
Acanthizidae	<i>Smicronis brevirostris</i>	Weebill			x					
Accipitridae	<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk			x					
Accipitridae	<i>Accipiter fasciatus</i>	Brown Goshawk		MA	x					
Accipitridae	<i>Accipiter fasciatus fasciatus</i>				x					
Accipitridae	<i>Aquila audax</i>	Wedge-tailed Eagle			x					x
Accipitridae	<i>Circus approximans</i>	Swamp Harrier		MA	x					
Accipitridae	<i>Circus assimilis</i>	Spotted Harrier			x					
Accipitridae	<i>Elanus axillaris</i>	Black-shouldered Kite			x				x	x
Accipitridae	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle		MA	x					
Accipitridae	<i>Haliastur indus</i>	Brahminy Kite		MA	x					
Accipitridae	<i>Haliastur sphenurus</i>	Whistling Kite		MA	x			x	x	x
Accipitridae	<i>Hamirostra isura</i>	Square-tailed Kite							x	
Accipitridae	<i>Hamirostra melanosternon</i>	Black-breasted Buzzard			x					
Accipitridae	<i>Hieraaetus morphnoides</i>	Little Eagle			x					x
Accipitridae	<i>Milvus migrans</i>	Black Kite			x					x
Aegothelidae	<i>Aegotheles cristatus cristatus</i>				x					
Alaudidae	<i>Mirafra javanica</i>	Horsfield's Bush Lark			x					

Family	Scientific Name	Common Name	Conservation Status		Database				Literature	
			State	Federal	NM	PMST	DBCA	Field	A	B
Alcedinidae	<i>Dacelo leachii</i>	Blue-winged Kookaburra			x					
Alcedinidae	<i>Todiramphus pyrrhopygius</i>	Red-backed Kingfisher			x					
Alcedinidae	<i>Todiramphus sanctus</i>	Sacred Kingfisher		MA	x				x	x
Alcedinidae	<i>Todiramphus sordidus pilbara</i>	Pilbara Collared Kingfisher			x					
Anatidae	<i>Anas gracilis</i>	Grey Teal			x					
Anatidae	<i>Anas platyrhynchos</i>	Mallard			x					
Anatidae	<i>Anas superciliosa</i>	Pacific Black Duck			x					
Anatidae	<i>Aythya australis</i>	Hardhead			x					
Anatidae	<i>Chenonetta jubata</i>	Australian Wood Duck (Wood Duck, Maned Duck)			x					
Anatidae	<i>Cygnus atratus</i>	Black Swan			x					
Anatidae	<i>Dendrocygna arcuata</i>	Wandering Whistling Duck (Chestnut Whistling Duck)		MA	x					
Anhingidae	<i>Anhinga novaehollandiae</i>	Australasian Darter			x					
Apodidae	<i>Apus pacificus</i>	Pacific Swift (Fork-tailed Swift)	MI	MI, MA		x				
Ardeidae	<i>Ardea alba modesta</i>	Great Egret			x					
Ardeidae	<i>Ardea intermedia</i>	Intermediate Egret		MA	x					
Ardeidae	<i>Bubulcus coromandus</i>	Eastern Cattle Egret			x					
Ardeidae	<i>Butorides striata</i>	Striated Heron (Mangrove Heron)			x					
Ardeidae	<i>Egretta garzetta</i>	Little Egret		MA	x					
Ardeidae	<i>Egretta novaehollandiae</i>	White-faced Heron			x					
Ardeidae	<i>Egretta sacra sacra</i>				x					
Ardeidae	<i>Nycticorax caledonicus</i>	Nankeen Night Heron (Rufous Night Heron)		MA	x					
Artamidae	<i>Artamus cinereus</i>	Black-faced Woodswallow			x				x	
Artamidae	<i>Artamus cinereus melanops</i>				x					
Artamidae	<i>Artamus leucorynchus</i>	White-breasted Woodswallow			x					
Artamidae	<i>Artamus leucorynchus leucopygialis</i>				x					
Artamidae	<i>Artamus minor</i>	Little Woodswallow			x					
Artamidae	<i>Artamus personatus</i>	Masked Woodswallow			x					
Artamidae	<i>Cracticus nigrogularis</i>	Pied Butcherbird			x			x	x	x
Artamidae	<i>Cracticus torquatus</i>	Grey Butcherbird			x					
Artamidae	<i>Gymnorhina tibicen</i>	Australian Magpie			x			x		

Family	Scientific Name	Common Name	Conservation Status		Database				Literature	
			State	Federal	NM	PMST	DBCA	Field	A	B
Burhinidae	<i>Burhinus grallarius</i>	Bush Stone-curlew (Bush Thick-knee)			x					
Burhinidae	<i>Esacus magnirostris</i>	Beach Stone-curlew (Beach Thick-knee)		MA	x					
Cacatuidae	<i>Cacatua sanguinea</i>	Little Corella			x			x	x	x
Cacatuidae	<i>Cacatua sanguinea westralensis</i>	Western Little Corella			x					
Cacatuidae	<i>Eolophus roseicapilla</i>	Galah			x			x	x	x
Cacatuidae	<i>Nymphicus hollandicus</i>	Cockatiel			x					x
Campephagidae	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike		MA	2				x	x
Campephagidae	<i>Lalage tricolor</i>	White-winged Triller			x					
Casuariidae	<i>Dromaius novaehollandiae</i>	Emu			x				x	x
Charadriidae	<i>Charadrius leschenaultii</i>	Greater Sand Plover	VU	VU, MI, MA	x		x			
Charadriidae	<i>Charadrius mongolus</i>	Lesser Sand Plover	EN	EN, MI, MA	x		x			
Charadriidae	<i>Charadrius ruficapillus</i>	Red-capped Plover		MA	x					
Charadriidae	<i>Charadrius veredus</i>	Oriental Plover	MI	MI, MA		x	x			
Charadriidae	<i>Eiseyornis melanops</i>	Black-fronted Dotterel			x					
Charadriidae	<i>Erythronys cinctus</i>	Red-kneed Dotterel			x					
Charadriidae	<i>Pluvialis fulva</i>	Pacific Golden Plover	MI	MI, MA			x			
Charadriidae	<i>Pluvialis squatarola</i>	Grey Plover	MI	MI, MA	x		x			
Charadriidae	<i>Vanellus tricolor</i>	Banded Lapwing			x					
Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork			x					
Columbidae	<i>Columba livia</i>	Domestic Pigeon (Rock Dove)			x	x				
Columbidae	<i>Geopelia cuneata</i>	Diamond Dove			x					x
Columbidae	<i>Geopelia humeralis</i>	Bar-shouldered Dove			x					
Columbidae	<i>Geopelia striata</i>	Zebra Dove			x					
Columbidae	<i>Geophaps plumifera</i>	Spinifex Pigeon			x					
Columbidae	<i>Ocyphaps lophotes</i>	Crested Pigeon			x			x	x	
Columbidae	<i>Phaps chalcoptera</i>	Common Bronzewing			x					
Corvidae	<i>Corvus bennetti</i>	Little Crow			x					x
Corvidae	<i>Corvus orru</i>	Torresian Crow			x				x	x
Cuculidae	<i>Centropus phasianinus</i>	Pheasant Coucal			x					
Cuculidae	<i>Chalcites basalis</i>	Horsfield's Bronze Cuckoo		MA	x				x	x

Family	Scientific Name	Common Name	Conservation Status		Database				Literature	
			State	Federal	NM	PMST	DBCA	Field	A	B
Cuculidae	<i>Heteroscenes pallidus</i>	Pallid Cuckoo		MA	x					
Dicaeidae	<i>Dicaeum hirundinaceum</i>	Mistletoebird			x					
Dicaeidae	<i>Dicaeum hirundinaceum hirundinaceum</i>				x					
Diomedeidae	<i>Thalassarche chlororhynchos</i>	Yellow-nosed Albatross	VU	MI, MA	x		x			
Estrildidae	<i>Emblema pictum</i>	Painted Finch			x					
Estrildidae	<i>Neochmia ruficauda</i>	Star Finch			x					
Estrildidae	<i>Taeniopygia guttata</i>	Zebra Finch			x			x	x	x
Falconidae	<i>Falco berigora</i>	Brown Falcon			x				x	x
Falconidae	<i>Falco cenchroides</i>	Australian Kestrel (Nankeen Kestrel)		MA	x				x	x
Falconidae	<i>Falco hypoleucos</i>	Grey Falcon	VU	VU		x				
Falconidae	<i>Falco longipennis</i>	Australian Hobby			x					x
Falconidae	<i>Falco peregrinus</i>	Peregrine Falcon	OS		x		x		x	
Fregatidae	<i>Fregata ariel</i>	Lesser Frigatebird	MI	MI, MA		x				
Glareolidae	<i>Glareola maldivarum</i>	Oriental Pratincole	MI	MI, MA	x	x	x			
Haematopodidae	<i>Haematopus fuliginosus</i>	Sooty Oystercatcher			x					
Haematopodidae	<i>Haematopus longirostris</i>	Pied Oystercatcher			x					
Hirundinidae	<i>Cheramoeca leucosterna</i>	White-backed Swallow								x
Hirundinidae	<i>Hirundo neoxena</i>	Welcome Swallow		MA	x					
Hirundinidae	<i>Hirundo rustica</i>	Barn Swallow	MI	MI, MA		x				
Hirundinidae	<i>Petrochelidon ariel</i>	Fairy Martin			x					
Hirundinidae	<i>Petrochelidon nigricans</i>	Tree Martin		MA	x					x
Laridae	<i>Anous stolidus</i>	Common Noddy (Brown Noddy)	MI	MI, MA		x	x			
Laridae	<i>Chlidonias leucopterus</i>	White-winged Black Tern	MI	MI, MA	x		x			
Laridae	<i>Gelochelidon nilotica</i>	Gull-billed Tern	MI	MI, MA	x		x			
Laridae	<i>Hydroprogne caspia</i>	Caspian Tern	MI	MI, MA	x		x			
Laridae	<i>Larus novaehollandiae</i>	Silver Gull		MA	x					
Laridae	<i>Onychoprion anaethetus</i>	Bridled Tern	MI	MI, MA	x					
Laridae	<i>Sterna dougallii</i>	Roseate Tern	MI	MI, MA	x		x			
Laridae	<i>Sterna hirundo</i>	Common Tern	MI	MI, MA	x		x			
Laridae	<i>Sternula albifrons</i>	White-shafted Little Tern	MI	MI, MA	x		x			
Laridae	<i>Sternula nereis</i>	Fairy Tern		MA	x					
Laridae	<i>Sternula nereis nereis</i>		VU	VU		x				

Family	Scientific Name	Common Name	Conservation Status		Database				Literature	
			State	Federal	NM	PMST	DBCA	Field	A	B
Laridae	<i>Thalasseus bengalensis</i>	Lesser Crested Tern		MA	x					
Laridae	<i>Thalasseus bergii</i>	Crested Tern (Greater Crested Tern)	MI	MI, MA	x		x			
Locustellidae	<i>Cincloramphus cruralis</i>	Brown Songlark								x
Locustellidae	<i>Cincloramphus mathewsi</i>	Rufous Songlark							x	
Locustellidae	<i>Poodytes carteri</i>	Spinifexbird			x				x	
Maluridae	<i>Amytornis whitei</i>	Rufous Grasswren								x
Maluridae	<i>Malurus assimilis</i>	Purple-backed Fairywren			x				x	x
Maluridae	<i>Malurus leucopterus</i>	White-winged Fairywren			x					x
Maluridae	<i>Stipiturus ruficeps</i>	Rufous-crowned Emu-wren			x					
Maluridae	<i>Stipiturus ruficeps ruficeps</i>				x					
Meliphagidae	<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater			x					x
Meliphagidae	<i>Certhionyx variegatus</i>	Pied Honeyeater			x					
Meliphagidae	<i>Epthianura albifrons</i>	White-fronted Chat			x					
Meliphagidae	<i>Epthianura tricolor</i>	Crimson Chat			x					
Meliphagidae	<i>Gavicalis virescens</i>	Singing Honeyeater			x			x	x	x
Meliphagidae	<i>Lichmera indistincta</i>	Brown Honeyeater			x					
Meliphagidae	<i>Lichmera indistincta indistincta</i>				x					
Meliphagidae	<i>Manorina flavigula</i>	Yellow-throated Miner			x			x	x	x
Meliphagidae	<i>Ptilotula keartlandi</i>	Grey-headed Honeyeater			x				x	
Meliphagidae	<i>Ptilotula ornata</i>	Yellow-plumed Honeyeater							x	
Meliphagidae	<i>Ptilotula penicillata</i>	White-plumed Honeyeater								x
Meliphagidae	<i>Sugomel niger</i>	Black Honeyeater							x	
Meropidae	<i>Merops ornatus</i>	Rainbow Bee-eater		MA	x				x	x
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark		MA	x			x	x	x
Motacillidae	<i>Anthus australis</i>	Australian Pipit							x	
Motacillidae	<i>Anthus australis australis</i>			MA						x
Motacillidae	<i>Motacilla cinerea</i>	Grey Wagtail	MI	MI, MA		x				
Motacillidae	<i>Motacilla tschutschensis</i>	Yellow Wagtail	MI	MI, MA		x				
Oceanitidae	<i>Oceanites oceanicus</i>	Wilson's Storm Petrel	MI	MI, MA	x		x			
Oreoicidae	<i>Oreoica gutturalis</i>	Crested Bellbird			x			x	x	x
Otididae	<i>Ardeotis australis</i>	Australian Bustard			x				x	x
Pachycephalidae	<i>Colluricincla harmonica kolichisi</i>				x					
Pachycephalidae	<i>Pachycephala lanioides</i>	White-breasted Whistler			x					

Family	Scientific Name	Common Name	Conservation Status		Database				Literature	
			State	Federal	NM	PMST	DBCA	Field	A	B
Pachycephalidae	<i>Pachycephala melanura melanura</i>				x					
Pachycephalidae	<i>Pachycephala rufiventris</i>	Rufous Whistler			x					x
Pandionidae	<i>Pandion haliaetus</i>	Osprey		MI, MA		x				x
Pandionidae	<i>Pandion haliaetus cristatus</i>	Eastern Osprey	MI		x		x		x	
Pardalotidae	<i>Pardalotus rubricatus</i>	Red-browed Pardalote			x			x		
Pardalotidae	<i>Pardalotus striatus</i>	Striated Pardalote			x					
Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian Pelican		MA	x					
Petroicidae	<i>Melanodryas cucullata</i>	Hooded Robin							x	
Petroicidae	<i>Peneothello pulverulenta</i>	Mangrove Robin			x					
Petroicidae	<i>Petroica goodenovii</i>	Red-capped Robin			x					
Phaethontidae	<i>Phaethon lepturus</i>	White-tailed Tropicbird	MI	MI, MA	x		x			
Phaethontidae	<i>Phaethon rubricauda</i>	Red-tailed Tropicbird	MI, P4	MI, MA	x		x			
Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant			x					
Phalacrocoracidae	<i>Phalacrocorax varius</i>	Pied Cormorant (Australian Pied Cormorant)			x					
Phasianidae	<i>Coturnix ypsilophora</i>	Brown Quail			x			x		
Podargidae	<i>Podargus strigoides</i>	Tawny Frogmouth			x					
Podicipedidae	<i>Poliiocephalus poliocephalus</i>	Hoary-headed Grebe			x					
Podicipedidae	<i>Tachybaptus novaehollandiae</i>	Australasian Grebe (Black-throated Grebe)			x					
Pomatostomidae	<i>Pomatostomus superciliosus</i>	White-browed Babbler						x		
Pomatostomidae	<i>Pomatostomus temporalis</i>	Grey-crowned Babbler			x					
Procellariidae	<i>Ardenna carneipes</i>	Flesh-footed Shearwater	VU	MI, MA		x				
Procellariidae	<i>Ardenna pacifica</i>	Wedge-tailed Shearwater	MI	MI, MA	x		x			
Procellariidae	<i>Calonectris leucomelas</i>	Streaked Shearwater	MI	MI, MA		x				
Procellariidae	<i>Macronectes giganteus</i>	Southern Giant Petrel	MI	EN, MI, MA		x				
Procellariidae	<i>Pterodroma mollis</i>	Soft-plumaged Petrel		VU, MA		x				
Procellariidae	<i>Puffinus huttoni</i>	Hutton's Shearwater	EN	MA	x		x			
Psittaculidae	<i>Barnardius zonarius</i>	Australian Ringneck			x			x		x
Psittaculidae	<i>Barnardius zonarius zonarius</i>	Port Lincoln Parrot			x				x	
Psittaculidae	<i>Melopsittacus undulatus</i>	Budgerigar			x				x	x
Psittaculidae	<i>Pezoporus occidentalis</i>	Night Parrot	CR	EN		x				

Family	Scientific Name	Common Name	Conservation Status		Database				Literature	
			State	Federal	NM	PMST	DBCA	Field	A	B
Psophodidae	<i>Psophodes occidentalis</i>	Western Wedgebill (Chiming Wedgebill)								x
Ptilonorhynchidae	<i>Chlamydera guttata</i>	Western Bowerbird			x					
Ptilonorhynchidae	<i>Chlamydera maculata</i>	Spotted Bowerbird			x					
Rallidae	<i>Fulica atra</i>	Eurasian Coot			x					
Rallidae	<i>Hypotaenidia philippensis</i>	Buff-banded Rail		MA	2					
Rallidae	<i>Porzana fluminea</i>	Australian Spotted Crake (Australian Crake)			x					
Rallidae	<i>Tribonyx ventralis</i>	Black-tailed Nativehen			x					
Recurvirostridae	<i>Himantopus himantopus</i>	Black-winged Stilt		MA	x					
Rhipiduridae	<i>Rhipidura albiscapa</i>	Grey Fantail			x					
Rhipiduridae	<i>Rhipidura leucophrys</i>	Willie Wagtail			x					
Rhipiduridae	<i>Rhipidura leucophrys leucophrys</i>				x					
Rhipiduridae	<i>Rhipidura phasiana</i>	Mangrove Grey Fantail (Mangrove Fantail)			x					
Rostratulidae	<i>Rostratula australis</i>	Australian Painted Snipe	EN	EN, MA		x				
Scolopacidae	<i>Actitis hypoleucos</i>	Common Sandpiper	MI	MI, MA	x	x	x			
Scolopacidae	<i>Arenaria interpres</i>	Ruddy Turnstone	MI	MI, MA	x		x			
Scolopacidae	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	MI	MI, MA	x	x	x			
Scolopacidae	<i>Calidris alba</i>	Sanderling	MI	MI, MA	x		x			
Scolopacidae	<i>Calidris canutus</i>	Red Knot	EN	EN, MI, MA		x	x			
Scolopacidae	<i>Calidris falcinellus</i>	Broad-billed Sandpiper	MI	MI, MA			x			
Scolopacidae	<i>Calidris ferruginea</i>	Curlew Sandpiper	CR	CE, MI, MA		x	x			
Scolopacidae	<i>Calidris melanotos</i>	Pectoral Sandpiper	MI	MI, MA		x				
Scolopacidae	<i>Calidris ruficollis</i>	Red-necked Stint	MI	MI, MA	x		x			
Scolopacidae	<i>Calidris subminuta</i>	Long-toed Stint	MI	MI, MA	x		x			
Scolopacidae	<i>Gallinago stenura</i>	Pin-tailed Snipe	MI	MI, MA	x		x			
Scolopacidae	<i>Limosa lapponica</i>	Bar-tailed Godwit	MI	MI, MA	x	x	x			
Scolopacidae	<i>Limosa lapponica menzbieri</i>		CR, MI	CE		x				
Scolopacidae	<i>Limosa limosa</i>	Black-tailed Godwit	MI	MI, MA			x			
Scolopacidae	<i>Numenius madagascariensis</i>	Far Eastern Curlew (Eastern Curlew)	CR	CE, MI, MA	x	x	x			

Family	Scientific Name	Common Name	Conservation Status		Database				Literature	
			State	Federal	NM	PMST	DBCA	Field	A	B
Scolopacidae	<i>Numenius minutus</i>	Little Curlew	MI	MI, MA	x		x			
Scolopacidae	<i>Numenius phaeopus</i>	Whimbrel	MI	MI, MA	x		x			
Scolopacidae	<i>Tringa brevipes</i>	Grey-tailed Tattler	MI, P4	MI, MA	x		x			
Scolopacidae	<i>Tringa glareola</i>	Wood Sandpiper	MI	MI, MA	x		x			
Scolopacidae	<i>Tringa nebularia</i>	Common Greenshank	MI	MI, MA	x	x	x			
Scolopacidae	<i>Tringa stagnatilis</i>	Marsh Sandpiper	MI	MI, MA	x		x			
Scolopacidae	<i>Xenus cinereus</i>	Terek Sandpiper	MI	MI, MA	x		x			
Strigidae	<i>Ninox connivens</i>	Barking Owl			x					
Threskiornithidae	<i>Platalea regia</i>	Royal Spoonbill			x					
Threskiornithidae	<i>Plegadis falcinellus</i>	Glossy Ibis	MI	MI, MA			x			
Threskiornithidae	<i>Threskiornis spinicollis</i>	Straw-necked Ibis		MA	x					
Turnicidae	<i>Turnix velox</i>	Little Buttonquail			x					x
Zosteropidae	<i>Zosterops luteus</i>	Yellow White-eye (Canary White-eye)			x					
Mammalia										
Bovidae	<i>Bos primigenius taurus</i>	European Cattle								x
Bovidae	<i>Capra aegagrus hircus</i>	Goat				x				
Bovidae	<i>Ovis aries</i>	Sheep			x					x
Canidae	<i>Canis familiaris familiaris</i>	Dog				x				
Canidae	<i>Vulpes vulpes</i>	Red Fox				x				x
Dasyuridae	<i>Dasyurus hallucatus</i>	Northern Quoll	EN	EN		x				
Dasyuridae	<i>Pseudantechinus roryi</i>	Rory Cooper's false antechinus			x					
Dasyuridae	<i>Sminthopsis macroura</i>	Stripe-faced Dunnart			x					x
Emballonuridae	<i>Taphozous georgianus</i>	Common Sheath-tailed Bat			x					
Equidae	<i>Equus ferus caballus</i>	Horse				x		x		
Felidae	<i>Felis catus</i>	Cat			x	x				x
Leporidae	<i>Oryctolagus cuniculus</i>	Rabbit			x	x				x
Macropodidae	<i>Osphranter robustus</i>	Euro			x			x		x
Macropodidae	<i>Osphranter robustus erubescens</i>	Euro, Biggada			x					
Macropodidae	<i>Osphranter rufus</i>	Red Kangaroo, Marlu			x			x		x
Macropodidae	<i>Petrogale lateralis lateralis</i>	Black-footed Rock-wallaby	EN		x	x	x			
Muridae	<i>Mus musculus</i>	House Mouse			x	x				x
Muridae	<i>Notomys alexis alexis</i>	Spinifex Hopping-mouse			x					x
Muridae	<i>Pseudomys hermannsburgensis</i>	Sandy Inland Mouse			x					

Family	Scientific Name	Common Name	Conservation Status		Database				Literature	
			State	Federal	NM	PMST	DBCA	Field	A	B
Muridae	<i>Rattus rattus</i>	Black Rat			x	x				
Rhinonycteridae	<i>Rhinonycteris aurantia</i>	Orange Leaf-nosed Bat	P4			x	x			
Tachyglossidae	<i>Tachyglossus aculeatus acanthion</i>	Short-beaked Echidna			x					x
Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat			x					
Vespertilionidae	<i>Vespadelus finlaysoni</i>	Finlayson's Cave Bat			x					
Reptilia										
Agamidae	<i>Ctenophorus femoralis</i>	Dune Dragon			x					x
Agamidae	<i>Ctenophorus isolepis isolepis</i>	Central Military Dragon			x					x
Agamidae	<i>Ctenophorus nuchalis</i>	Central Netted Dragon			x					
Agamidae	<i>Ctenophorus parviceps</i>	Northern Heath Dragon			x					
Agamidae	<i>Ctenophorus reticulatus</i>	Western Netted Dragon			x					
Agamidae	<i>Diporiphora adductus</i>	Carnarvon Dragon			x					
Agamidae	<i>Gowidon longirostris</i>	Long-nosed Dragon			x					x
Agamidae	<i>Lophognathus gilberti</i>	Top End Ta-Ta Dragon			x					
Agamidae	<i>Pogona minor minor</i>	Western Bearded Dragon			x					x
Carphodactylidae	<i>Nephrurus levis</i>				x					
Carphodactylidae	<i>Nephrurus levis occidentalis</i>				x					x
Diplodactylidae	<i>Crenadactylus ocellatus</i>	South-western Clawless Gecko			x					
Diplodactylidae	<i>Diplodactylus capensis</i>	Cape Range Stone Gecko	P2		x		x			
Diplodactylidae	<i>Diplodactylus conspicillatus</i>	Variable Fat-tailed Gecko			x					
Diplodactylidae	<i>Diplodactylus ornatus</i>				x					
Diplodactylidae	<i>Lucasium stenodactylus</i>				x					x
Diplodactylidae	<i>Strophurus ciliaris aberrans</i>				x					
Diplodactylidae	<i>Strophurus jeanae</i>				x					
Diplodactylidae	<i>Strophurus rankini</i>				x					
Diplodactylidae	<i>Strophurus strophurus</i>				x					
Elapidae	<i>Acanthophis wellsi</i>	Pilbara Death Adder			x					
Elapidae	<i>Brachyuropis approximans</i>				x					
Elapidae	<i>Demansia calodera</i>	Black-necked Whipsnake			x					
Elapidae	<i>Demansia psammophis cupreiceps</i>				x					x
Elapidae	<i>Ephalophis greyae</i>			MA	x					
Elapidae	<i>Furina ornata</i>	Moon Snake			x					
Elapidae	<i>Pseudechis australis</i>	Mulga Snake			x					

Family	Scientific Name	Common Name	Conservation Status		Database				Literature	
			State	Federal	NM	PMST	DBCA	Field	A	B
Scincidae	<i>Eremiascincus pallidus</i>	Western Narrow-banded Skink			x					
Scincidae	<i>Eremiascincus richardsonii</i>	Broad-banded Sand Swimmer			x					
Scincidae	<i>Lerista allochira</i>		P3		x		x			
Scincidae	<i>Lerista bipes</i>				x					x
Scincidae	<i>Lerista clara</i>				x					
Scincidae	<i>Lerista elegans</i>				x					
Scincidae	<i>Lerista lineopunctulata</i>				x					
Scincidae	<i>Lerista macropisthopus</i>				x					
Scincidae	<i>Lerista macropisthopus fusciceps</i>				x					
Scincidae	<i>Lerista miopus</i>				x					
Scincidae	<i>Lerista planiventralis</i>				x					
Scincidae	<i>Lerista planiventralis planiventralis</i>				x					x
Scincidae	<i>Menetia greyii</i>				x					
Scincidae	<i>Menetia surda</i>	Western Dwarf Skink			x					
Scincidae	<i>Morethia lineocellata</i>				x					
Scincidae	<i>Morethia ruficauda</i>				x					
Scincidae	<i>Morethia ruficauda exquisita</i>				x					
Scincidae	<i>Notoscincus ornatus ornatus</i>				x					
Scincidae	<i>Tiliqua multifasciata</i>	Central Blue-tongue			x					
Scincidae	<i>Tiliqua rugosa rugosa</i>	Bobtail			x					
Typhlopidae	<i>Anilius splendidus</i>		P2				x			
Varanidae	<i>Varanus acanthurus</i>	Spiny-tailed Goanna			x					
Varanidae	<i>Varanus brevicauda</i>	Short-tailed Pygmy Goanna			x					
Varanidae	<i>Varanus eremius</i>	Pygmy Desert Goanna			x					
Varanidae	<i>Varanus giganteus</i>	Perentie			x			x		
Varanidae	<i>Varanus gouldii</i>	Bungarra or Sand Goanna			x					x
Varanidae	<i>Varanus sp.</i>							x		
Varanidae	<i>Varanus tristis</i>	Racehorse Goanna			x					



360

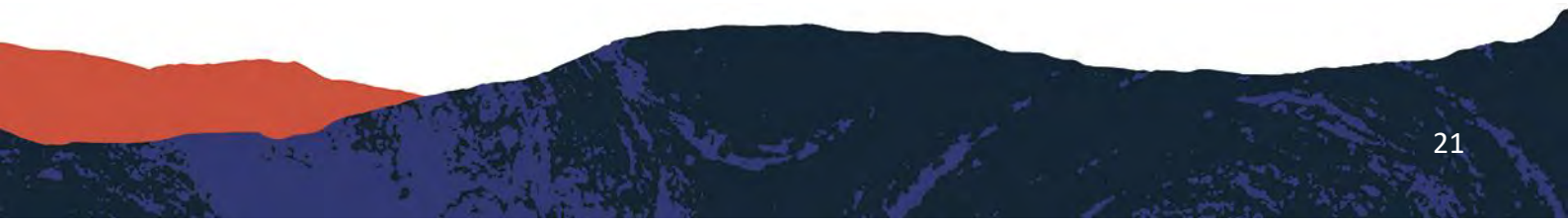
environmental



10 Bermondsey Street West Leederville WA 6007 **t** (+618) 9388 8360 **f** (+618) 9381 2360
PO BOX 14, West Perth WA 6872
w 360environmental.com.au **e** admin@360environmental.com.au

● people ● planet ● professional

Attachment B: Survey Report - *Exmouth Renewable Power Infrastructure. Flora and Fauna Survey* (GHD, 2021)





Exmouth Renewable Power Infrastructure



Flora and Fauna Survey

Horizon Power

14 December 2022

→ The Power of Commitment



Project name		Exmouth Renewable Power Infrastructure: Flora and Fauna Survey					
Document title		Exmouth Renewable Power Infrastructure					
Project number		12579699					
File name		12579699-Rep-A_Horizon Power Exmouth Renewables Flora and Fauna survey.docx					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S3	A	E Lynch, G Gaikhorst	A. Sleep		D Farrar		13/7/2022
S4	0	E Lynch	D Farrar		D Farrar		15/12/22

GHD ABN 39 008 488 373

999 Hay Street,

Perth, Western Australia 6000, Australia

T 61-8-6222 8222 | **F** 61-8-6222 8555 | **E** permail#ghd.com | **ghd.com**

© GHD 2022

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

Executive Summary

Horizon Power is proposing to construct renewable power infrastructure in Exmouth, Western Australia. The proposed development sites comprise of two existing Lots (505 and 550) located south-west of the township of Exmouth. Lot 505 is approximately 97.47 hectares (ha) and Lot 550 is approximately 20.06 ha in size.

360 Environmental undertook a Reconnaissance flora and vegetation survey and Basic terrestrial vertebrate fauna survey in August 2021 which included both Lots 505 and 550 (360 Environmental 2021).

GHD Pty Ltd (GHD) was engaged by Horizon Power to undertake a single-phase Detailed flora and vegetation survey and Basic and Targeted fauna survey of the proposed development sites (herein referred to as the survey area). The purpose of this assessment was to:

- Identify key flora, vegetation and fauna constraints within the survey area
- Build on previous work undertaken by 360 Environmental (2021)
- To support and inform potential environmental approvals, such as a native vegetation clearing permit application and referral under the *Environmental Protection Act 1986* (EP act) and/or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), as relevant.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.6 and the assumptions and qualifications contained throughout the report.

Key findings

Flora and Vegetation

Five vegetation types were described and mapped across four broad landforms (plains; limestone hills and ranges; drainage lines; and cracking clay depression) within the survey area. The vegetation within the survey area is considered to be representative of the existing broad-scale vegetation in the surrounding area.

No Threatened Ecological Communities listed under EPBC Act or *Biodiversity Conservation Act 2016* (BC Act) or Priority Ecological Communities listed by Department of Biodiversity, Conservation and Attractions (DBCA) were identified within the survey area during the field survey.

The condition of the vegetation within the survey area ranged from Excellent to Poor, with the majority (69%) considered to be in Excellent condition. The survey area covered a total of 117.53 ha of which only 1.60 ha (1.4%) is cleared (vehicle tracks). The vegetation structure is largely intact across the survey area with typical species diversity for the bioregion. Areas adjacent to vehicle tracks, within the sandy/clay floodplain and drainage areas had higher introduced species cover, in particular **Cenchrus ciliaris*.

One hundred and thirty-nine flora taxa (including subspecies and varieties) representing 43 families and 98 genera were recorded from the survey area during the field survey. This total comprised 134 native taxa and five introduced flora taxa. The five introduced flora taxa included: **Aerva javanica* (Kapok), **Bidens bipinnata* (Bipinnate beggartick), **Cenchrus ciliaris* (Buffel grass), **Passiflora foetida* (Stinking passion flower) and **Vachellia farnesiana* (Mimosa bush). None of the five introduced/naturalised flora taxa identified during the survey are listed as a Declared Pest under the *Biosecurity and Management Act 2007* or a Weed of National Significance (WoNS).

No Threatened flora listed under the EPBC Act or BC Act were recorded from the survey area. Seven DBCA listed Priority taxa were recorded from the survey area:

- *Acanthocarpus rupestris* (Priority 2)
- *Tinospora esiangkara* (Priority 2)
- *Acacia alexandri* (Priority 3)
- *Corchorus congener* (Priority 3)
- *Eremophila forrestii* subsp. *capensis* (Priority 3)
- *Grevillea calcicola* (Priority 3)

- *Brachychiton obtusilobus* (Priority 4).

The likelihood of occurrence assessment post-field survey concluded that no additional significant flora are considered likely to occur within the survey area given that suitable search effort did not record these species and/or due to lack of suitable habitat present.

Fauna

Four broad fauna habitat types (excluding cleared areas) were identified within the survey area based on the predominant landforms, soil and vegetation structure in the area (Sandy/Rocky Plain; Creeklines and Minor drainage systems; Undulating Low hills; Rocky Gully). The fauna habitats of the survey area are part of a contiguous, largely intact area of remnant vegetation within unallocated Crown land that lies west of Exmouth town site, nearby DBCA managed areas (Cape Range National Park), Water Corporation Borefields and pastoral areas. One water body was found in Lot 505 and appears to be a seasonal perched seep on the south eastern edge of the survey area. All creeks and drainage lines traversed only carry seasonal flow.

The value of the habitats within the survey area was considered to range in value from medium to high depending on the amount of previous disturbance identified. Medium importance was identified where previous clearing had occurred and where, in some cases, the area held water or had regenerated. The high significance areas were because of the large area, diversity and quality of habitat types (e.g. good to excellent structural and floristic diversity within each habitat type and its proximity to existing habitat feature like Rocky Gully), good connectivity and for supporting known and potential habitat values for significant fauna. The habitats within the survey area are considered to be well represented within the local area and are probably well represented within the greater study area, given the extent of the corresponding native vegetation associations remaining.

The vertebrate fauna assessment identified 99 fauna species, including 56 species of birds, 25 reptile, two amphibian and 16 mammals during the survey. Of these species, six species are considered introduced and include the Asian House Gecko, House Mouse, Black Rat, Dog, Rabbit and Cat. The species recorded during the survey are typical for the habitat they were found in and are generally (other than significant species recorded) well represented in the region in similar habitats.

Three significant fauna species were recorded during the field surveys:

- Peregrine Falcon (*Falco peregrinus*), Listed Other Specially Protected under the BC Act
- Cape Range Slider (*Lerista allochira*), Listed Priority 3 by DBCA
- Western Pebble-mound Mouse (*Pseudomys chapmani*), Listed Priority 4 by DBCA.

A likelihood of occurrence assessment for significant fauna concluded that an additional three species (Black-footed Rock Wallaby (Endangered under the EPBC Act and BC Act), Cape Range Stone Gecko (Priority 2 by DBCA) and Oriental Plover (Migratory (International Agreement) under the EPBC Act and BC Act) are considered likely to occur within the survey area.

Contents

1.	Introduction	1
1.1	Background	1
1.2	Purpose of this report	1
1.3	Project location	1
1.4	Scope of works	1
1.5	Relevant legislation and requirements	1
1.6	Limitations and assumptions	2
2.	Methodology	3
2.1	Desktop review	3
2.2	Field survey	3
2.2.1	Flora and vegetation	3
2.2.2	Fauna	5
2.3	Limitations	10
2.3.1	Desktop limitations	10
2.3.2	Field survey limitations	10
3.	Desktop assessment	12
3.2	Regional biogeography	12
3.3	Geology, landforms and soils	13
3.4	Wetlands and watercourses	13
3.5	Land Use	13
3.5.1	Conservation Reserves	13
3.5.2	Environmentally Sensitive Areas	13
3.6	Vegetation and flora	14
3.6.1	Broad vegetation mapping and extent	14
3.6.2	Significant Ecological Communities	14
3.6.3	Flora Diversity	15
3.6.4	Significant Flora	15
3.7	Fauna	15
3.7.1	Fauna Diversity	15
3.7.2	Significant Fauna	15
3.1	Previous studies	16
4.	Survey results	17
4.1	Vegetation	17
4.1.1	Vegetation Types	17
4.1.2	Vegetation Condition	21
4.1.3	Significant Ecological Communities	21
4.2	Flora	21
4.2.1	Flora inventory	21
4.2.2	Introduced flora	21
4.2.3	Significant Flora	22
4.3	Fauna	26
4.3.1	Fauna Habitat Types	26
4.3.2	Fauna Diversity	32

4.3.3	Significant Fauna	32
5.	Discussion and conclusion	38
5.1	Flora and Vegetation	38
5.2	Fauna	38
6.	References	40

Table index

Table 1	Data collected at each quadrat and relevé	4
Table 2	Locations and effort for Nocturnal searches	6
Table 3	Remote camera locations	6
Table 4	Active searches completed	7
Table 5	Bird Census locations undertaken in the survey area	8
Table 6	Bat Detector locations in the Survey Area	9
Table 7	Acoustic Detector locations in the Survey Area	10
Table 8	Survey Limitations	10
Table 9	Extent of pre-European vegetation associations mapped in the survey area (Beard 1976, GoWA 2019)	14
Table 10	Previous biological surveys undertaken in close proximity of the survey area	16
Table 11	Vegetation types identified within the survey area	18
Table 12	Vegetation condition	21
Table 13	Fauna habitats within the survey area	28
Table 14	Peregrine Falcon sighting location	32
Table 15	Location and images of Western Pebble-mound Mouse mounds	33
Table 16	Cape Range Slider location record	36
Table 17	Significant fauna identified as present or likely to occur within the survey area	36

Appendices

Appendix A	Figures
Appendix B	Relevant legislation, background information and conservation codes
Appendix C	Desktop searches
Appendix D	Flora survey data
Appendix E	Fauna survey data

1. Introduction

1.1 Background

Horizon Power is proposing to construct renewable power infrastructure in Exmouth, Western Australia (WA). The proposed development sites comprise of two existing Lots (505 and 550) located south-west of the township of Exmouth.

360 Environmental undertook a Reconnaissance flora and vegetation survey and Basic terrestrial vertebrate fauna survey in August 2021 which included both Lots 505 and 550 (360 Environmental 2021). The scope of work for this survey was to build on the 360 Environmental (2021) survey to support and inform potential environmental approvals, such as a native vegetation clearing permit application and/or referral under the *Environmental Protection Act 1986* (EP Act) and/or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), as relevant.

1.2 Purpose of this report

GHD Pty Ltd (GHD) was engaged by Horizon Power to undertake a Detailed flora and vegetation survey and Basic and Targeted fauna survey of the proposed development sites (herein referred to as the survey area).

The purpose of the assessment was to identify key flora, vegetation and fauna constraints within the survey area. This report details the findings of these assessments, which will be used to identify and assess the key constraints and inform the environmental assessment and approvals process.

1.3 Project location

The survey area comprises of two development sites, Lots 505 and 550, located immediately south and south-east of Exmouth town. Lot 505 is 97.47 hectares (ha) and Lot 550 is 20.06 ha in size. The total survey area is 117.53 ha. The location of the survey area is presented in Figure 1, Appendix A.

A desktop study area was defined for the desktop-based searches of the assessment, which includes a 20 km buffer around the survey area.

1.4 Scope of works

The scope of works completed to fulfil the purpose of the assessment included:

- A desktop assessment of the study area to identify biological features and constraints, which may be in, or near the survey area
- A single season Detailed flora and vegetation field survey to verify/ground truth the desktop assessment findings
- A Targeted survey for significant flora identified in the desktop assessment
- A Basic and Targeted fauna survey including fauna habitat mapping based upon vegetation units
- Prepare a concise technical report on the biological survey (this report)
- Provide spatial/mapping data collected during the survey.

1.5 Relevant legislation and requirements

In WA some ecological communities, flora and fauna are protected under both Federal and State Government legislation. In addition, regulatory authorities also provide a range of guidance and information on expected standards and protocols for environmental surveys.

An overview of key legislation and guidelines, conservation codes and background information relevant to this biological survey is provided in Appendix B.

1.6 Limitations and assumptions

This report has been prepared by GHD for Horizon Power and may only be used and relied on by Horizon Power for the purpose agreed between GHD and Horizon Power as set out in Section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Horizon Power arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by for Horizon Power and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Site conditions may change after the date of the field survey. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

This report has assessed desktop environmental aspects and flora, vegetation and fauna values in the field for the survey area. Should this area change or be refined, further assessment may be required if it extends beyond the survey area extent.

2. Methodology

2.1 Desktop review

Prior to the commencement of the field survey, a desktop review was undertaken to identify relevant environmental information pertaining to the survey area and to assist in survey design. This included a review of:

- Previous reports undertaken in the area, specifically the 360 Environmental biological survey report of Lots 284, 505, 550 and reserve 51970 (360 Environmental 2021)
- The Department of Climate Change, Energy, the Environment and Water (DCCEE) Protected Matters Search Tool (PMST) to identify communities and species listed under EPBC Act potentially occurring within the study area (DCCEE 2022a) (Appendix C)
- The Department of Biodiversity, Conservation and Attractions (DBCA) Threatened Ecological Community (TEC) and Priority Ecological Community (PEC) to identify significant communities previously recorded in the study area
- The DBCA Threatened and Priority Flora (TPFL) database and the WA Herbarium database (WAHERB) and the DBCA threatened fauna database to identify significant flora and fauna previously recorded within the study area listed under the *Biodiversity Conservation Act 2016* (BC Act) and by the DBCA
- The DBCA *NatureMap* database for flora and fauna species previously recorded in the study area (DBCA 2007–) (Appendix C)
- Existing publicly available datasets, including previous pre-European vegetation mapping of the survey area (Beard 1976), aerial photography, wetland and hydrological data to provide background information on the variability of the environment, likely vegetation units and fauna habitats and to identify areas that potentially contain TECs and PECs
- Environmentally Sensitive Areas (ESAs) and DBCA managed conservation estates and reserves.

Where the desktop information is associated with spatial data, this has been presented on Figure 2a and 2b, Appendix A.

2.2 Field survey

2.2.1 Flora and vegetation

GHD Senior Ecologist Erin Lynch (flora license no. FB62000081-2) completed a single season Detailed flora and vegetation survey of the survey area from the 9 to 13 May 2022. The field survey was undertaken to identify and describe the dominant vegetation units, assess vegetation condition and identify and record vascular flora taxa present at the time of survey. Targeted searches for significant flora taxa and significant ecological communities were also undertaken during the field survey.

The survey methodology employed by GHD was undertaken with reference to the Environmental Protection Authority (EPA) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016).

Data collection

The survey methods involved a combination of sampling quadrats, relevés and photographic reference points located in identified vegetation units and walking transects. Ten quadrats and six relevés were recorded across the survey area. Quadrat and relevé locations are shown on Figure 3, Appendix A.

Quadrats (measuring 50 m x 50 m – area of 2500 m²) were located within each identified vegetation unit. A minimum of three quadrats were located within each identified vegetation unit, except where the total area of the vegetation type covered a small geographical area or there was limited vegetation. Relevés (unmarked search area) were completed to supplement quadrat data and to represent vegetation types of an irregular distribution (such as gullies and drainage lines). Relevés were undertaken maintaining a 2,500 m² search area where

possible. Field data at each quadrat and relevé was recorded on a pro-forma data sheet and included the parameters detailed in Table 1.

Table 1 Data collected at each quadrat and relevé

Aspect	Measurement
Collection attributes	Site code, personnel/recorder, date, quadrat dimensions, photograph of the quadrat.
Physical features	Aspect, slope, landform, soil attributes, ground surface cover, leaf and wood litter.
Location	Coordinates recorded in GDA94 datum using a hand-held GPS tool to accuracy approximately \pm 2-5 m.
Vegetation condition	Vegetation condition was assessed using the condition rating scale adapted by Environmental Protection Authority (EPA) (2016) for the Eremaean and Northern Botanical Province.
Disturbance	Level and nature of disturbances (e.g. weed presence, fire and time since last fire, impacts from grazing, clearing).
Flora	List of dominant flora from each structural layer, list of all species within the quadrat including average height and cover (using National Vegetation Information System (NVIS)).

A flora inventory was compiled from taxa listed in described quadrats and relevés and from opportunistic floristic records throughout the survey area. The data is provided in Appendix D.

Vegetation units

Vegetation units were identified and boundaries delineated using a combination of aerial photography, topographical features and field data/observations. Vegetation units were described based on structure, dominant taxa and cover characteristics as defined by quadrat and relevé data and field observations. Vegetation unit descriptions follow NVIS and are consistent with NVIS Level V (Association). At Level V up to three taxa per stratum are used to describe the association (NVIS Technical Working Group 2017).

Vegetation condition

The vegetation condition was assessed and mapped in accordance with the vegetation condition rating scale for the Eremaean and Northern Botanical Provinces of Western Australia (devised by Trudgen (1988) and adapted by EPA (2016)). The scale recognises the intactness of vegetation and consists of six rating levels. The vegetation condition rating scale is located in Appendix B.

Targeted significant flora searches

The results of the 360 Environmental (2021) flora survey and the desktop assessment were reviewed and a target list of significant flora taxa compiled. Ecological information (e.g. habitat, associated flora taxa and phenology) was sourced from *FloraBase* (WA Herbarium 1998-) and other relevant publications where available.

The Targeted flora survey was completed con-currently with the vegetation and flora assessment, with timing occurring in early May 2021 to coincide with the flowering period for the majority of the target taxa for the bioregion. Suitable and preferred habitat for significant flora taxa in the survey area was traversed on foot. While traverses were meandering (Figure 3, Appendix A), they were spaced approximately 50 m apart, which is considered suitable for the target species and vegetation encountered in the survey area. Locations within the survey area with differing hydrology, fire or disturbance history to the surrounding areas were also searched where identified. Where significant flora taxa were identified the locations and number of plants present were recorded using handheld GPS units (\pm 2-5 m accuracy). A representative collection was also made for confirmation by the WA Herbarium.

Flora identification and nomenclature

Species well known to the survey botanist were identified in the field; all other species were collected and assigned a unique collection number to facilitate tracking. All specimens collected during the field assessment were dried and processed in accordance with the requirements of the WA Herbarium. Species were identified by

the use of taxonomic literature, electronic keys and online electronic databases with reference to specimens at the WA Herbarium. Relevant taxonomic experts were also consulted where required.

The conservation status of all recorded flora was compared against the current lists available on *FloraBase* (WA Herbarium 1998–) and the EPBC Act Threatened species database provided by DCCEEW (2022b).

2.2.2 Fauna

GHD Senior Zoologist Glen Gaikhorst undertook a Basic (low-intensity) and Targeted fauna survey in conjunction with the flora and vegetation survey. An assessment of the likelihood of conservation significant fauna and their habitats occurring within the survey area was undertaken. The survey area was traversed on foot over the course of the field survey to identify and describe the dominant fauna habitat types present and their condition, assess habitat connectivity, and identify and record fauna species within the survey area. Remote cameras, bat detectors and avian fauna acoustic recorders were deployed throughout the survey area. Thirty-one active searches (both general foraging and targeted Cape Range Slider searches) and nocturnal surveys were conducted throughout the survey area, the location of each assessment point is presented in Figure 3, Appendix A.

The survey methodology employed by GHD was undertaken in accordance with the *Technical Guidance – Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA 2020).

Habitat assessment

The survey area was assessed for habitat characteristics based on soil, topography, and vegetation structural complexity, connectivity, disturbance, type and extent of resource availability and value for fauna. Specifically, the assessment included:

- Habitat structure (e.g. vegetation type, presence/absence of over-storey, mid-storey, understorey, and ground cover), based on vegetation type mapping
- Presence/absence of refuge including fallen timber (coarse woody debris), hollow-bearing trees and stags and rocks/breakaways
- Location of the habitat within the survey area in comparison to the habitat within the surrounding landscape
- Habitat connectivity and identification of wildlife corridors within and immediately adjacent to the survey area
- Identification and evaluation of key habitat features and types identified during the desktop assessment relevant to fauna of conservation significance
- Evaluation of the likelihood of occurrence of significant fauna within the survey area based on presence of suitable habitat.

Opportunistic fauna searches

Opportunistic fauna searches were conducted across the survey area. Opportunistic searches involved:

- Searching the survey area for tracks, scats, bones, diggings and feeding areas for both native and feral species
- Searching through microhabitats including turning over logs or rocks, turning over leaf litter and examining tree hollows and hollow logs
- Visual and aural surveys, which accounted for many bird species potentially utilising the survey area
- Observed fauna were recorded and where conservation significant fauna were identified, photographs, GPS points and habitat data were recorded.

Targeted fauna searches

Based on the results of the desktop assessment which included 360 Environmental (2021) several significant fauna species were identified as likely to occur within the survey area. These species included Black-footed Rock Wallaby (*Petrogale lateralis lateralis*) (Endangered under the EPBC Act and BC Act), Peregrine Falcon (*Falco peregrinus*) (Other Specially Protected (OS) under the BC Act), Cape Range Stone Gecko (*Diplodactylus capensis*) (Priority (P) 2 listed by DBCA) and Cape Range Slider (*Lerista allochira*) (P3 listed by DBCA). These species were not assessed in 360 Environmental (2021) and therefore targeted via nocturnal searching, remote

cameras, active searches, bird census surveys, bat detector recorders and bird acoustic recorders, as detailed in the following sections.

Nocturnal searching

Spotlighting was undertaken to locate nocturnal species such as nocturnal reptiles, mammals and birds that may otherwise remain undetected using other survey techniques. This search type was undertaken to target Black-footed Rock Wallaby (T) and Cape Range Stone Gecko (P2). Hand held or head mounted spotlights were used for a minimum of one hour by two personnel over two nights. The nocturnal searches undertaken are presented below in Table 2. Spotlighting was also conducted from the vehicle while driving to the survey area and between spotlighting areas.

Table 2 Locations and effort for Nocturnal searches

Type	Survey Area	Habitat Type	Location (start point)		Date	Distance	Comment
			Easting	Northing			
Nocturnal	Lot 550	Rocky Gully	200222.09	7569679.27	10.5.2022	797 m	Into the rocky gullies
Nocturnal	Lot 550	Rocky Gully	200253.148	7570104.73	11.5.2022	1110 m	Into and across the rocky gully ridge lines
Nocturnal	Lot 550	Rocky Gully	200096.461	7570517.73	10.5.2022	689 m	Into the rocky gullies
Nocturnal	Lot 505	Sandy/Stony Plain and Undulating Low Hills	202718.182	7569599.39	10.5.2022	2270 m	Walking and driving the survey area.
Nocturnal	Lot 505	Sandy/Stony Plain and Undulating Low Hills	202692.441	7570164.85	11.5.2022	1310 m	

Remote Cameras

Ten remote sensor cameras (Reconyx-Hyperfire) were deployed across various habitat types within the survey area. Cameras were used for targeting significant fauna species such as Black-footed Rock Wallaby (T) and for species inventory recording small, medium and large mammals, birds and reptiles. Cameras were baited with sardines and peanut butter to attract fauna species within the survey area. For each camera location the time, date deployed, date recovered and the GPS coordinates were recorded (Table 3). Remote cameras were deployed under licence BA27000626 (Lodgement No. 08-014409-1).

Table 3 Remote camera locations

Camera No.	Survey area	Habitat Type	Location		Date deployed	Date recovered	Days total	Comment
			Easting	Northing				
sg6	Lot 550	Undulating Low Hills	200279.45	7569801.67	13.5.2022	23.5.2022	10	Positioned on active Western Pebble-mound Mouse mound
sg6	Lot 550	Undulating Low Hills	200091.45	7569769.67	09.5.2022	13.5.2022	5	
R58	Lot 550	Rocky Gully	200224.46	7570466.73	09.5.2022	23.5.2022	14	
sg5	Lot 550	Undulating Low Hills/ ridge line	200129.45	7570146.67	09.5.2022	23.5.2022	14	
R56	Lot 550	Rocky Gully	200279.46	7570355.73	09.5.2022	23.5.2022	14	
R47	Lot 550	Undulating Low Hills/ ridge line	200217.45	7570040.67	09.5.2022	23.5.2022	14	

Camera No.	Survey area	Habitat Type	Location		Date deployed	Date recovered	Days total	Comment
			Easting	Northing				
r60	Lot 505	Undulating Low Hills	202403.44	7570523.44	13.5.2022	23.5.2022	10	Positioned on active Western Pebble-mound Mouse mound
Sg1	Lot 505	Drainage line	202495.44	7570366.44	09.5.2022	23.5.2022	14	
r59	Lot 505	Drainage line	202496.44	7569966.44	09.5.2022	23.5.2022	14	
r60	Lot 505	Sandy/Stony Plain	202573.94	7569633.47	09.5.2022	13.5.2022	5	

Active Searches

Two types of active searches were conducted, searches targeting Cape Range Slider (P3) and general foraging. General foraging only differed by the location of the search i.e. Plain or undulating low hill, while Cape Range Slider (P3) searches targeted rocky gullies around *Ficus* sp. or Mallee/*Corymbia* sp. in layers of leaf litter. The searches are listed in Table 4.

Table 4 Active searches completed

Active search type	Survey area	Habitat Type	Location		Date	Effort (minutes)	Comment
			Easting	Northing			
Foraging	Lot 505	Sandy/Stony Plain	202602.11	7570409.5	10.5.2022	120 m	Junk and litter
Foraging	Lot 505	Sandy/Stony Plain	202371.88	7570578.69	10.5.2022	60 m	
Foraging	Lot 505	Sand Plain	202821.61	7570512.66	10.5.2022	50 m	
Foraging	Lot 505	Limestone Outcrops	202442.82	7570273.82	10.5.2022	60 m	
Foraging	Lot 505	Sandy/Stony Plain	202730.34	7570327.22	10.5.2022	80 m	Junk and litter
Foraging	Lot 505	Sandy/Stony Plain	202846.79	7569729.01	10.5.2022	60 m	Junk and litter
Foraging	Lot 505	Sandy/Stony Plain	202270.91	7569599.98	11.5.2022	60 m	
Foraging	Lot 505	Undulating Low Hills	202170.13	7570025.00	11.5.2022	60 m	
Foraging	Lot 505	Sandy/Stony Plain	202574.99	7570011.15	11.5.2022	60 m	
Foraging	Lot 505	Sandy/Stony Plain	202937.30	7570001.61	11.5.2022	60 m	
Foraging	Lot 505	Sandy/Stony Plain	202820.51	7570145.7	11.5.2022	50 m	
Foraging	Lot 505	Drainage Line	202144.55	7570610.29	11.5.2022	60 m	
Foraging	Lot 505	Undulating Low Hills	202209.80	7570381.15	11.5.2022	140 m	Limited litter
Slider	Lot 550	Rocky Gully	200123.97	7569901.01	12.5.2022	60 m	Good <i>Ficus</i> sp. litter
Slider	Lot 550	Rocky Gully	200185.22	7569918.43	12.5.2022	40 m	Good <i>Ficus</i> sp. litter
Slider	Lot 550	Rocky Gully	200203.25	7569881.15	12.5.2022	30 m	<i>Corymbia</i> sp. litter

Active search type	Survey area	Habitat Type	Location		Date	Effort (minutes)	Comment
			Easting	Northing			
Slider	Lot 550	Rocky Gully	200212.71	7569950.19	12.5.2022	50 m	Good <i>Ficus</i> sp. Litter
Slider	Lot 550	Rocky Gully	200267.33	7570002.97	12.5.2022	40 m	Good <i>Ficus</i> sp. Litter
Slider	Lot 550	Rocky Gully	200235.92	7570099.74	12.5.2022	40 m	Good <i>Ficus</i> sp. Litter
Slider	Lot 550	Rocky Gully	200222.79	7569968.01	12.5.2022	40 m	Good <i>Ficus</i> sp. Litter
Slider	Lot 550	Rocky Gully	200254.55	7570088.15	12.5.2022	60 m	Good <i>Ficus</i> sp. litter
Slider	Lot 550	Rocky Gully	200263.29	7570147.12	12.5.2022	40 m	Good <i>Ficus</i> sp. Litter
Slider	Lot 550	Rocky Gully	200260.69	7570184.2	12.5.2022	40 m	Good <i>Ficus</i> sp. Litter
Slider	Lot 550	Rocky Gully	200143.67	7570194.61	12.5.2022	40 m	<i>Corymbia</i> sp. Litter
Slider	Lot 550	Rocky Gully	200290.54	7570135.77	12.5.2022	40 m	<i>Corymbia</i> sp. Litter
Slider	Lot 550	Rocky Gully	200280.36	7569745.96	12.5.2022	60 m	<i>Corymbia</i> sp. Litter
Slider	Lot 550	Rocky Gully	200189.77	7570524.48	12.5.2022	60 m	<i>Corymbia</i> sp. Litter
Slider	Lot 550	Rocky Gully	200136.59	7570466.29	13.5.2022	60 m	<i>Corymbia</i> sp. Litter
Slider	Lot 550	Rocky Gully	200149.2	7570410.68	13.5.2022	30 m	Good <i>Ficus</i> sp. Litter
Slider	Lot 550	Rocky Gully	200237.83	7570443.54	13.5.2022	40 m	Good <i>Ficus</i> sp. Litter
Slider	Lot 550	Rocky Gully	200130.21	7570331.16	13.5.2022	30 m	<i>Brachychiton</i> sp. litter

Bird Census surveys

Bird Census surveys were undertaken within the survey area. The assessment targeted any significant birds that may utilise the survey area such as the Peregrine Falcon (OS). Each survey comprised of a 20 minute census of birds within an unbounded 2 ha area. This approach is the standard method used by Birds Australia for the Bird Atlas project. Birds detected visually (using binoculars) and/or aurally over a 20 minute period were recorded. Numbers of each species observed were also recorded. All systematic bird surveys were undertaken within four hours of dawn or two hours of dusk, as these are the times of day when birds are most active. In addition to systematic surveys, general observations of birds were also made opportunistically. The below table (Table 5) provides a central point for each bird census.

Table 5 Bird Census locations undertaken in the survey area

Type	Survey Area	Habitat Type	Location (start point)		Date	Comment
			Easting	Northing		
Bird Census	Lot 505	Sandy/Stony Plain	202536.92	7570386.36	10.5.2022	
Bird Census	Lot 505	Sandy/Stony Plain	202846.81	7570360.06	10.5.2022	
Bird Census	Lot 505	Sandy/Stony Plain	202832.59	7569580.41	10.5.2022	Small water seep present
Bird Census	Lot 550	Undulating Low Hills	200216.73	7570369.08	12.5.2022	

Type	Survey Area	Habitat Type	Location (start point)		Date	Comment
			Easting	Northing		
Bird Census	Lot 550	Rocky Gully	200294.61	7570275.60	12.5.2022	
Bird Census	Lot 550	Rocky Gully	200140.64	7570299.85	12.5.2022	
Bird Census	Lot 550	Undulating Low Hills	200126.41	7570062.8	12.5.2022	
Bird Census	Lot 505	Sandy/Stony Plain	202603.76	7569863.97	11.5.2022	
Bird Census	Lot 505	Sandy/Stony Plain	202210.94	7569857.47	11.5.2022	
Bird Census	Lot 505	Sandy/Stony Plain	202697.52	7570018.17	11.5.2022	
Bird Census	Lot 550	Undulating Low Hills	200340.60	7569626.12	12.5.2022	
Bird Census	Lot 550	Undulating Low Hills	200153.86	7569728.09	12.5.2022	Some Limestone Outcrops
Bird Census	Lot 505	Undulating Low Hills	202240.55	7570137.38	10.5.2022	
Bird Census	Lot 505	Undulating Low Hills	202618.13	7570214.95	10.5.2022	Some Limestone Outcrops

Bat Detector recorders

Bat Detector units (SM4 Songmeter and Anabat Swift) were deployed to target a range of micro bats, but focusing on any significant bat species if present, including the North-western Free-tail Bat (*Mormopterus (Ozimops) cobourgianus*) (P1). Detectors were set for up to two nights at selected locations. Bat detectors were positioned in areas where bat species were likely to be present i.e. water bodies or fly-ways such as rocky gullies or ridgelines. Bat detectors were programmed to record from 25 minutes pre-dusk to 25 minutes post-dawn. For each detector the time and date deployed and recovered, and the GPS coordinates were recorded (Table 6).

Data from the bat detectors was downloaded and analysed for the presence of animals following the field survey. Data from the detectors was analysed by Dr Erin Westerhuis to determine species using Kaleidoscope ® bat analysis software and a series of graphical reference comparison calls.

Table 6 Bat Detector locations in the Survey Area

Type	Unit Type	Survey Area	Habitat Type	Location (start point)		Date Deployed	Nights	Comment
				Easting	Northing			
Bat Detector	SM4	Lot 550	Rocky Gully	200145.52	7569884.41	9.5.2022	1	Can hear buzzing from power lines
Bat Detector	SM4	Lot 550	Rocky Gully	200096.46	7570517.73	10.5.2022	1	Can hear buzzing from power lines
Bat Detector	SM4	Lot 505	Undulating Low Hills	202669.52	7569699.12	11.5.2022	1	Town noise and Horizon Power generators
Bat Detector	SM4	Lot 550	Undulating Low Hills	200145.52	7569884.41	9.5.2022	2	Can hear buzzing from power lines
Bat Detector	Swift	Lot 550	Undulating Low Hills	200155.86	7569725.09	11.5.2022	2	Can hear buzzing from power lines
Bat Detector	Swift	Lot 505	Undulating Low Hills	202574.99	7570011.14	11.5.2022	2	Town noise and Horizon Power generators

Bird acoustic recorders

Bird acoustic recorders were set primarily for detecting nocturnal birds. Acoustic detectors (SM4 Songmeter Acoustic recorders) were deployed in areas where birds might be recorded i.e. utilising water bodies and large hummock Triodia plain as preferred habitat for some species. The Exmouth area is outside of the medium priority area for Night Parrot surveys (Department of Parks and Wildlife 2007) and therefore did not require the four nights of recording per location that is required within the medium priority area. The detectors were set for two nights and programmed to record for 25 minutes from pre-dusk to 25 minutes post-dawn. For each detector the time and date

deployed and recovered, and the GPS coordinates were recorded (Table 7). Data from the recorders was downloaded and analysed by Nigel Jackett, an Ecologist with considerable experience in analysis and identification of bird acoustic data.

Table 7 Acoustic Detector locations in the Survey Area

Type	Unit Type	Survey Area	Habitat Type	Location (start point)		Date Deployed	Nights	Comment
				Easting	Northing			
Acoustic Detector	SM4 Ac1	Lot 550	Rocky Gully	200145.52	7569884.41	9.5.2022	2	Can hear buzzing from power lines
Acoustic Detector	SM4 Ac1	Lot 505	Undulating Low Hills	202574.99	7570011.14	11.5.2022	2	Town noise and Horizon Power generators

Fauna species identification and nomenclature

Identification of fauna species was made in the field using available field guides and electronic guides (e.g. Morcombe 2004). Where identification was not possible, photographs of specimens were collected to be later identified.

Nomenclature used in this report follows that used by the WA Museum and the DBCA *NatureMap* database (DBCA 2007–) for all species groups.

2.3 Limitations

2.3.1 Desktop limitations

The DCCEE PMST is based on bioclimatic modelling for the potential presence of species. As such, this does not represent actual records of the species within the area. The records from the DBCA searches of significant fauna provide more accurate information for the general area and local occurrence. However, some collection, sighting or trapping records cannot be dated and often misrepresent the current range of threatened species.

2.3.2 Field survey limitations

The EPA (2016; 2020) states that flora and fauna survey reports for environmental impact assessment in WA should contain a section describing the limitations of the survey methods used. The limitations and constraints associated with this field survey are discussed in Table 8.

Table 8 Survey Limitations

Aspect	Constraint	Comment
Sources of information and availability of contextual information	Nil	Adequate information is available for the survey area. This information includes broad scale (1:250,000) mapping by Beard (1976) and digitised by Shepherd <i>et al.</i> (2002).
Proportion of flora collected and identified (based on sampling, timing and intensity) Proportion of fauna identified, recorded and/or collected	Minor	The vegetation survey was a single season survey and was undertaken post wet season (early May). Six to eight weeks post wet season (March-June) is considered the optimal time to undertake vegetation surveys in the Eremaean botanical province. Rainfall was above average for the three months prior to the survey. The rainfall received was sufficient for the majority of the flora to flower/fruit and be detectable in the field. The vegetation survey was a Detailed assessment, undertaken to identify and describe the dominant vegetation units and map significant flora. The fauna assessment sampled those species that can be easily seen, heard or have distinctive signs, such as tracks, scats, diggings, etc. Remote equipment was deployed to sample species that maybe cryptic or rare that would not have been identified during a reconnaissance survey and seasonal variation within species often requires targeted surveys at a particular time of the year. Of the fauna species recorded during the survey, all were identified to species level.

Aspect	Constraint	Comment
Flora determination	Minor	<p>Flora determination was undertaken by GHD Botanist/Ecologist in the field and GHD botanist/taxonomist at the WA Herbarium.</p> <p>Four taxa were identified to genus level only, and three taxa could be tentatively identified to species level, due to lack of flowering and/or fruiting material required for identification. Two of these species are identified as likely to be Priority flora.</p> <p>The taxonomy and conservation status of the WA flora is dynamic. This report was prepared with reliance on taxonomy and conservation status current at the time of report development, but it should be noted this may change in response to ongoing research and review of the International Union for Conservation Nature criteria.</p>
Mapping reliability	Minor	<p>The vegetation types were mapped using high-resolution ESRI aerial imagery obtained from Landgate, topographical features, previous broad scale mapping (Beard 1976) and field data.</p> <p>Data were recorded in the field using hand-held GPS tools (e.g. Android® tablets and Garmin GPS). Certain atmospheric factors and other sources of error can affect the accuracy of GPS receivers. The Garmin® GPS units and Android® tablets used for this survey are accurate to within $\pm 2 - 5$ m on average. Therefore the data points consisting of coordinates recorded from the GPS may contain inaccuracies. However, the aerial imagery displayed on the interactive tablet surface allowed for greater accuracy as field staff could use key visual indicators (such as tree canopies, cleared areas, etc.) to more accurately locate points.</p>
Timing/weather/season/cycle	Nil	<p>The field survey was undertaken in early Autumn 2022. In the three months prior to the flora survey (February-April), Learmonth Airport (Bureau of Meteorology (BoM) 2022) recorded 188.8 mm of rainfall. This is above average compared with the long-term average for the same period at Learmonth (99.5 mm). The daily weather conditions during the field survey included:</p> <ul style="list-style-type: none"> - Maximum temperatures ranging from 25-32 C - Minimum temperature ranging from 16-19 C - Rainfall 31.6 mm on Friday 13th. <p>The weather conditions recorded during the survey are considered unlikely to have impacted the survey results.</p>
Disturbances (e.g. fire, flood, accidental human intervention)	Minor	<p>Parts of the survey area have been subject to historical disturbances such as clearing and weeds. These disturbances did not impact the survey.</p> <p>Bat detectors and bird acoustic recorders were used in the survey area. Both Lots 505 and 550 had background noise interference. Lot 550 had powerlines running along the northern boundary and had a distinct audible hum at around 15-18 khz and one pole had a broken top (tin flap near the t-bar of the insulators) vibrating in the breeze creating a second interference. The hum could be heard all over the site. At Lot 505 the main interference came from the large generators next to the survey area. Their interference ranged from 15 to approx. 25 khz. Due to the close proximity to town, other loud noises (such as cars) were also heard during night survey. At both sites the bat and acoustic data collection was contaminated which impacted on the identification of some calls within the khz range.</p>
Resources	Nil	<p>Adequate resources were employed during the field survey. Ten person days were spent undertaking the survey using an experienced Ecologist and Zoologist</p>
Access restrictions	Nil	<p>There were no access problems or constraints that limited survey effort or coverage.</p>
Experience levels	Nil	<p>The Ecologist and Zoologist who executed the survey are practitioners suitably qualified and experienced. The GHD Senior Ecologist has over 15 years' experience leading and conducting vegetation and flora surveys (reconnaissance, detailed and targeted) in the northern bioregion, including undertaking numerous flora and vegetation surveys in the Cape Range sub-region.</p>

Aspect	Constraint	Comment
		The Senior Zoologist has over 25 years' experience in undertaking fauna surveys across arid regions of Western Australia, including numerous basic and targeted surveys in the Cape Range sub-region.

3. Desktop assessment

3.1 Climate

The Northwest Cape has an arid climate and is characterised by a hot summer period (December to March) and a mild winter season (August to November). Rainfall is generally received during late summer, as a result of unpredictable downpours and cyclonic low-pressure systems and southerly troughs arriving from the southwest (May to July). The closest meteorological recording station is located at Learmonth Airport (No. 005007), located approximately 35 km south of the survey area. Climate data from this station indicates the mean maximum temperature ranges from 38°C in January to 24.4°C in July. The mean minimum temperature ranges from 34.8°C in January to 21.8°C in July. The mean annual rainfall is 251 mm (Plate 1; BoM 2022).

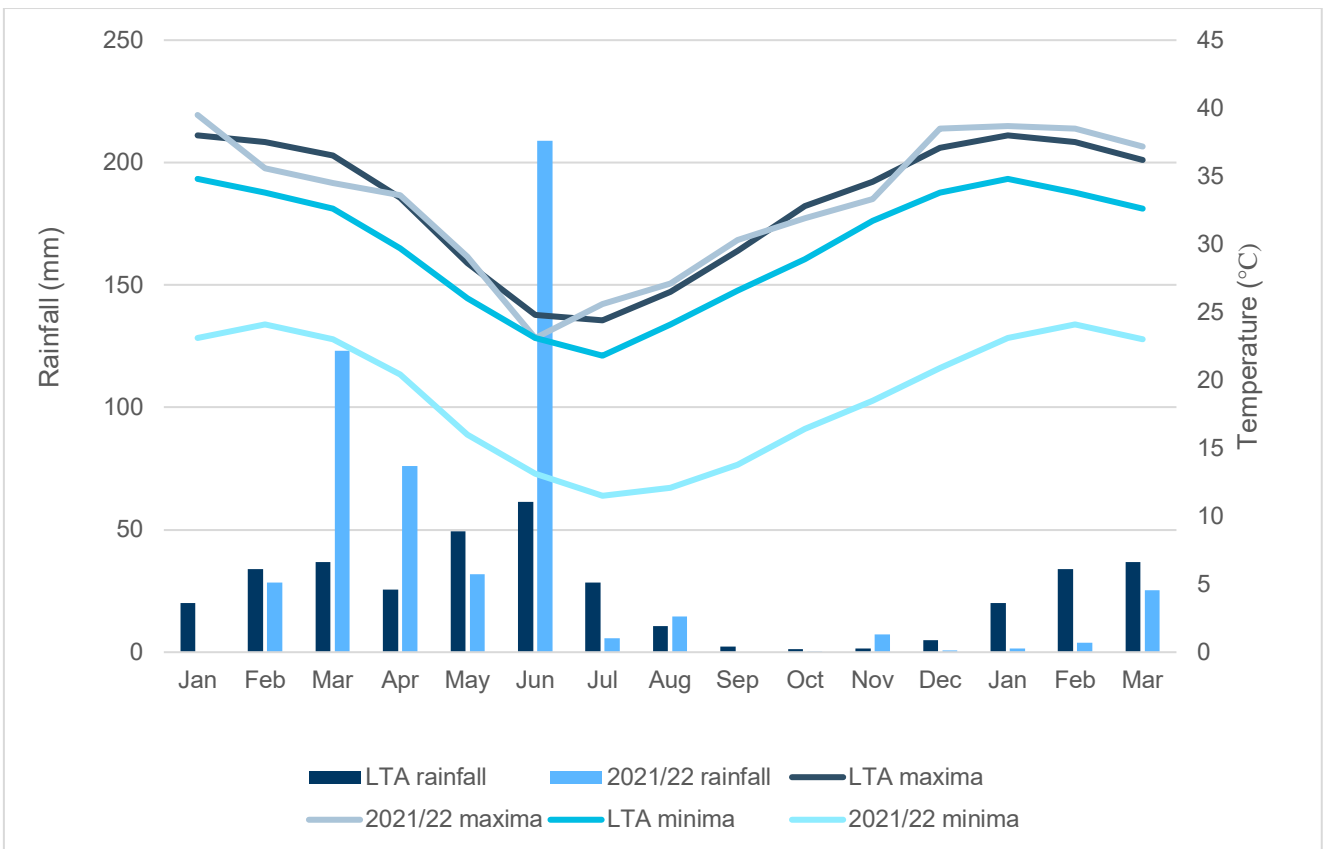


Plate 1 Climate data for Learmonth – long term average (BoM 2022).

3.2 Regional biogeography

The Interim Biogeographic Regionalisation for Australia (IBRA) recognises 85 bioregions (biogeographic regions) across Australia primarily delineated on the basis of climate, geomorphology, landform lithology, flora and fauna. The survey area is situated within the Cape Range (CAR1) sub-region of the Carnarvon bioregion. The Carnarvon bioregion is composed of quaternary alluvial, aeolian and marine sediments overlying Cretaceous strata (Kendrick and Mau 2002).

Cape Range and Giralia dunefields form the northern part of Carnarvon Basin. Rugged tertiary limestone ranges and extensive areas of red aeolian dunefield, Quaternary coastal beach dunes and mud flats. *Acacia* shrublands over *Triodia* on limestone (*Acacia stuartii* or *A. bivenosa*) and red dunefields, *Triodia* hummock grasslands with sparse *Eucalyptus* trees and shrubs on the Cape Range. Extensive hummock grasslands (*Triodia*) on the Cape Range and eastern dune-fields. Tidal mudflats of sheltered embayments of Exmouth Gulf support extensive mangroves. Beach dunes with *Spinifex* communities. An extensive mosaic of saline alluvial plains with samphire and saltbush low shrublands along the eastern hinterland of Exmouth Gulf (Kendrick and Mau 2002).

3.3 Geology, landforms and soils

The Cape Range is composed of a sequence of predominantly calcareous sedimentary rocks of Palaeocene-Pliocene age, overlain by Pliocene-Holocene alluvial, littoral and shallow water marine sediments on the coastal plain, which border the range.

The survey area is located within the Cape Giralia Coastal Soil-Landscape Zone of the Exmouth Province (Tille 2006). The Cape Giralia Coastal Zone is based on the Giralia Anticline geomorphic province and a combination of the Cape Range, Coastal Dunes, Giralia Range and (western) Winning Plains geomorphic districts. The Zone is described as sandy plains, alluvial plains and hills and ranges (with some stony plains) on Cainozoic deposits and marine limestone over sedimentary rocks of the Carnarvon Basin. Soils include red deep sands and red loamy earths with some shallow calcareous loams, red/brown non-cracking clays and stony soils (Tille 2006).

Based on soil mapping by Northcote et al. (1960-1968), one soil type, Fy2, is mapped within the survey area. Fy2 is described as rugged limestone ranges, deeply dissected and with cliff faces forming their margins. The area is dominated by bare limestone and there are pockets of shallow calcareous loams.

3.4 Wetlands and watercourses

The Exmouth region is subject to cyclones, which cause strong winds and storms leading to inundation of the coastal zone. Flooding of the coastal plains occurs as a result of the combination of rain, high tides and low-lying landforms. There are numerous minor, ephemeral drainage lines that intersect the survey area which generally flow down from the ranges to the Gulf of Exmouth. The survey area does not intersect any permanent or semi-permanent watercourses or wetlands.

The buffer area of one Nationally Important Wetland, the Cape Range Subterranean Waterways, intersects the survey area. This wetland is characterised by subterranean waterways and crevicular system in karstic limestone and coastal limestones, and is accessible through anchialine pools, wells, bores and caves (DEE 2017). The wetland meets five of the six criteria for Nationally Important Wetlands in Australia, including playing an important ecological role and supporting endemic stygofauna such as the Blind Gudgeon (*Milyeringa veritas*), the Blind Cave Eel (*Ophisternon candidum*) and the only southern hemisphere representatives of entire classes, orders, families and genera of crustaceans (DEE 2017).

3.5 Land Use

3.5.1 Conservation Reserves

No DBCA managed lands intersect the survey area. One conservation reserve, Cape Range National Park (R 27288, Class A) is located approximately 4 km west of the survey area (Figure 2a, Appendix A).

3.5.2 Environmentally Sensitive Areas

Lot 550 is mapped within an ESA. This ESA almost covers the entire Cape Range Peninsula except a small area around Exmouth town (including Lot 505). This ESA relates to a Register of the National Estate (RNE) area. RNE is no longer current, instead the survey area now falls within a National Heritage Place (The Ningaloo Coast) protected under the EPBC Act.

3.6 Vegetation and flora

3.6.1 Broad vegetation mapping and extent

The survey area is situated in the Carnarvon Botanical District of the Eremaean Botanical Province, which is the largest botanical province in Western Australia. The Cape Range area is rich in flora with a range of habitats found over the Peninsula.

Broad scale (1:250,000) pre-European vegetation mapping of the area was completed by Beard (1976) at an association level. The mapping indicates two vegetation associations are present within the survey area:

- Hummock grasslands with scattered shrubs or mallee, *Triodia* spp., *Acacia* spp., *Grevillea* spp., *Eucalyptus* spp. (vegetation association 663)
- Hummock grasslands, sparse tree-steppe; Hummock grassland with sparse *Eucalyptus* e.g. Bloodwoods and Snappy gum, *Triodia* spp., *Corymbia dichromophloia*, *Corymbia opaca*, *Eucalyptus leucophloia* (vegetation association 664).

The pre-European mapping has been adapted and digitised by Shepherd *et al.* (2002). The extent of vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DBCA (latest update March 2019 – GoWA 2019). As shown in Table 9, the current extent remaining of vegetation association 663 and 664 at the State, IBRA bioregion, IBRA subregion and Local Government Area (LGA) levels are greater than 85 % of their calculated pre-European extents.

Table 9 Extent of pre-European vegetation associations mapped in the survey area (Beard 1976, GoWA 2019)

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed land (proportion of current extent)
663	State: Western Australia	30,474.41	25,976.66	85.24	28.93
	IBRA bioregion: Carnarvon	29,068.26	25,866.32	88.98	28.66
	IBRA subregion: Cape Range	29,068.26	25,866.32	88.98	28.66
	LGA: Shire of Exmouth	30,474.41	25,976.66	85.24	28.93
664	State: Western Australia	83,774.94	82,154.14	98.07	67.52
	IBRA bioregion: Carnarvon	83,739.62	82,154.14	98.11	67.52
	IBRA subregion: Cape Range	83,739.62	82,154.14	98.11	67.52
	LGA: Shire of Exmouth	83,774.94	82,154.14	98.07	67.52

3.6.2 Significant Ecological Communities

Searches of the DCCEEW PMST did not identify any Federally listed TECs within a 20 km radius of the survey area. The DBCA TEC/PEC databases identified one TEC, the Camerons Cave Troglobitic Community, which is listed as Critically Endangered under the BC Act. This TEC is located approximately 600-700 m south of the survey area (Figure 2a, Appendix A).

Camerons Cave troglobitic community (obligatory cave inhabitants) is known only from Camerons Cave on the Cape Range peninsula. The community contains a unique assemblage of species, at least eight of which are known only from this location (DEC 2012). The assemblage is related to those in some other caves, however, all species with congeneric members in caves in Cape Range have, to date, proved to be distinct species (DEC

2012). The assemblage relies on particulate and dissolved sources of organic carbon for food (DEC 2012). This food source is allochthonous, that is, comes in from outside the cave at the surface (DEC 2012). The community is also reliant on the humid conditions in Camerons Cave, which are created through contact with the water table and specific surface conditions (DEC 2012).

Camerons Cave is located south of Exmouth townsite, north of Heron Way. The cave is a doline (sinkhole) about 10 m x 15 m in diameter, with a hole in the middle that drops into a horizontal cave that goes down to and beyond the watertable (DEC 2012). Camerons Cave has a maximum depth of 17 m and is approximately 65 m long by up to 34 m wide (DEC 2012). The roof of the cave is 5 m thick and the cave entrance occurs at an altitude of about 13 m (DEC 2012). It is unprotected and the area around the cave is subject to various proposed developments (DEC 2012).

3.6.3 Flora Diversity

A search of the *NatureMap* database identified 452 flora taxa, representing 94 families and 242 genera previously recorded within 20 km of the survey area. This total comprised 422 native flora taxa and 30 naturalised (introduced) flora taxa. Dominant families recorded included Fabaceae (54 taxa), Malvaceae (36 taxa), Asteraceae (33 taxa) and Poaceae (33 taxa).

The *NatureMap* database search is provided in Appendix C.

3.6.4 Significant Flora

The DCCEEW PMST, *NatureMap* database and DBCA TPFL and WAHERB databases identified the presence/potential presence of 31 conservation significant flora species within the study area. The desktop searches recorded:

- One taxa under the EPBC Act and/or Threatened under the BC Act
- Two Priority 1 taxa
- 12 Priority 2 taxa
- 12 Priority 3 taxa
- Four Priority 4 taxa.

The locations of significant flora registered on the DBCA databases within a 20 km radius of the survey area are mapped on Figure 2, Appendix A. Significant flora identified in the desktop assessment are provided in the likelihood of occurrence table (Appendix C).

3.7 Fauna

3.7.1 Fauna Diversity

The *NatureMap* database search identified 276 vertebrate fauna species previously recorded within the study area (DBCA 2007–). This total comprised of 176 bird, 77 reptile, 19 mammal and four amphibian species. Of the 276 fauna species previously recorded, 268 are native and 8 are naturalised (introduced) species (DBCA 2007–) (Appendix C).

3.7.2 Significant Fauna

Searches of the DCCEEW PMST, *NatureMap* (significant species only), and DBCA databases identified the presence/potential presence of 92 significant vertebrate fauna taxa within the study area. This total does include those species that are exclusively marine, however for the terrestrial likelihood of occurrence assessment in Appendix E, exclusively marine species have been excluded as no marine habitat is present within the survey area.

The species list included:

- 21 species listed as Threatened under the EPBC Act and/or BC Act

- 38 bird species listed as Migratory (International Agreement) only under the EPBC Act and/or BC Act
- One species listed as Specially Protected or Conservation Dependent under the BC Act
- Seven species listed as Priority by DBCA
- 25 species listed as Marine movement (not marine exclusive).

The significant fauna identified in the desktop assessment are provided in the likelihood of occurrence table (Appendix E).

3.1 Previous studies

A summary of previous studies reviewed to inform this assessment are listed and key results summarised in Table 10. Priority flora records from the 360 Environmental (2021) survey are presented in Figure 2, Appendix A.

Table 10 Previous biological surveys undertaken in close proximity of the survey area

Report	Survey area	Survey effort and timing	Key results
Minilya-Exmouth Road Biological Survey, Main Roads WA (GHD 2016)	Minilya-Exmouth Road, south of Reserve 51970. Total 1922.7 ha	Detailed flora and vegetation survey. October 2015	<ul style="list-style-type: none"> – No TECs or PECs recorded in the survey area. – No Threatened flora was recorded during the survey. Three Priority flora were recorded: <ul style="list-style-type: none"> • <i>Acacia alexandri</i> (P3) • <i>Corchorus congener</i> (P3) • <i>Owenia acidula</i> (P3) – Two Migratory bird species were recorded, Osprey and Rainbow Bee-eater.
Learmonth (Exmouth) Line Rebuild Flora and Fauna Survey (GHD 2019)	Extends from near Welch St, Exmouth, south to RAAF Learmonth. Total of 157.9 ha	Reconnaissance flora and vegetation survey. May 2019	<ul style="list-style-type: none"> – No TECs or PECs were identified within the survey area. – No Threatened flora recorded. Four priority species listed by the DBCA were recorded: <ul style="list-style-type: none"> • <i>Corchorus congener</i> (P3) • <i>Eremophila forrestii</i> subsp. <i>capensis</i> (P3) • <i>Tephrosia</i> sp. North West Cape (G. Marsh 81) (P2) • <i>Tinospora esiangkara</i> (P2) – No Threatened or Priority fauna species or evidence of their presence was recorded during the assessment. – The Peregrine Falcon, listed as “Other Specially Protected” under the BC Act and Osprey, listed Migratory, were both recorded during the survey.
Lots 284, 505, 550 and Reserve 51970, Exmouth Biological Survey (360 Environmental 2021)	Lots 284, 505, 550 and Reserve 51970. Total of 536 ha Overlaps current survey area.	Reconnaissance flora and vegetation survey and basic fauna survey. August 2021	<ul style="list-style-type: none"> – No TECs or PECs were identified within the survey area. – No Threatened flora were recorded. Eight priority flora were recorded during the survey: <ul style="list-style-type: none"> • <i>Acanthocarpus rupestris</i> (P2) • <i>Harnieria kempeana</i> subsp. <i>rhadinophylla</i> (P2) • <i>Tinospora esiangkara</i> (P2) • <i>Acacia alexandri</i> (P3) • <i>Corchorus congener</i> (P3) • <i>Eremophila forrestii</i> subsp. <i>capensis</i> (P3) • <i>Grevillea calcicola</i> (P3) • <i>Brachychiton obtusilobus</i> (P1) – No significant fauna species were recorded during the fauna survey.

4. Survey results

4.1 Vegetation

4.1.1 Vegetation Types



The landscape of the survey area ranged from the sandy/clay/loam plains with some rocky outcrops to low undulating hills with broad drainage lines and a small depression of cracking clay, up to the rocky limestone ranges consisting of deeply dissected gullies, rocky hillslopes and major drainage lines and creek beds.



Five vegetation types aligning with broad landforms were identified and described from within the survey area (not including cleared areas for tracks). A brief description of these vegetation types are as follows:


- Plains
 - VT01 – *Corymbia hamersleyana* isolated trees over sparse shrubland over **Cenchrus ciliaris* tussock grassland and *Triodia epactia* and *T. basedowii* isolated hummock grasses on sandy/clay/loam plains
- Limestone Hills and Ranges
 - VT02 – *Melaleuca cardiophylla* open mid shrubland over sparse low shrubland over *Triodia wiseana* and *T. epactia* hummock grassland on low undulating rocky limestone hills and ranges
- Drainage Lines
 - VT03 – *Corymbia hamersleyana* open woodland to low isolated trees over *Acacia* spp. tall shrubland over *Senna artemisioides* subsp. *oligophylla*, *Eremophila longifolia* and *Gossypium robinsonii* open mid shrubland over *Triodia epactia* isolated hummock grasses with **Cenchrus ciliaris*, *Cymbopogon ambiguous* and *Themeda triandra* isolated tussock grasses on rocky sandy/loam broad drainage lines
 - VT05 – *Corymbia hamersleyana* (+/- *Eucalyptus xerothermica*) isolated trees to low open woodland with occasional *Ficus brachypoda* and *Brachychiton obtusifolius* over *Acacia* spp. tall shrubland over *Senna artemisioides* subsp. *oligophylla*, *Melaleuca cardiophylla* and *Eremophila* spp. open mid shrubland over *Triodia epactia* and *Triodia wiseana* open hummock grassland with *Themeda triandra* and *Cymbopogon ambiguous* sparse tussock grasses in gullies, steep rocky hillslopes and major drainage lines with limestone outcropping
- Cracking clay depression
 - VT04 – *Acacia* sparse shrubland over *Triodia epactia* sparse hummock grassland with **Cenchrus ciliaris* isolated tussock grasses over mixed open forbland on cracking clay depression.

The vegetation types are described in further detail in Table 11 and mapped in Figure 4, Appendix A.

Table 11 Vegetation types identified within the survey area

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of survey area (%)	Sampling sites	Photograph
VT01	<p><i>Corymbia hamersleyana</i> low isolated trees over <i>Acacia tetragonophylla</i>, <i>Acacia bivenosa</i> and <i>Scaevola spinescens</i> sparse shrubland over *<i>Cenchrus ciliaris</i> tussock grassland and <i>Triodia epactia</i> and <i>T. basedowii</i> isolated hummock grasses on sand/clay/loam plains with occasional limestone outcropping.</p>	<p>21.18 18.02%</p>	<p>EXQ01, EXQ05, EXQ07</p>	
VT02	<p><i>Melaleuca cardiophylla</i>, <i>Acacia arida</i> and <i>Acacia bivenosa</i> open mid shrubland over <i>Indigofera monophylla</i>, <i>Leptosema macrocarpum</i> and <i>Solanum</i> spp. sparse low shrubland over <i>Triodia wiseana</i> and <i>T. epactia</i> hummock grassland on low undulating rocky limestone hills and ranges.</p>	<p>84.16 71.61%</p>	<p>EXQ02, EXQ03, EXQ06, EXQ08</p>	

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of survey area (%)	Sampling sites	Photograph
VT03	<p><i>Corymbia hamersleyana</i> open woodland to low isolated trees over <i>Acacia arida</i>, <i>Acacia bivenosa</i> and <i>Acacia coriacea</i> subsp. <i>coriacea</i> tall shrubland over <i>Senna artemisioides</i> subsp. <i>oligophylla</i>, <i>Eremophila longifolia</i> and <i>Gossypium robinsonii</i> open mid shrubland over <i>Indigofera monophylla</i>, <i>Corchorus crozophorifolius</i> and <i>Melhania oblongifolia</i> low open shrubland over <i>Triodia epactia</i> isolated hummock grasses with <i>*Cenchrus ciliaris</i>, <i>Cymbopogon ambiguous</i> and <i>Themeda triandra</i> isolated tussock grasses along rocky sandy/loam broad drainage lines.</p>	<p>4.15 3.53%</p>	<p>EXR01, EXR02</p>	
VT04	<p><i>Acacia tetragonophylla</i>, <i>A. bivenosa</i> and <i>A. synchronicia</i> sparse mid shrubland over <i>Triodia epactia</i> sparse hummock grassland with <i>*Cenchrus ciliaris</i> isolated tussock grasses over <i>Sida fibulifera</i>, <i>Streptoglossa decurrens</i> and <i>Vigna</i> sp. Hamersley Clay (A.A. Mitchell PRP 113) open forbland on cracking clay depression.</p>	<p>0.44 0.37%</p>	<p>EXQ04</p>	

Vegetation type	Vegetation Type Description	Extent (ha) and proportion of survey area (%)	Sampling sites	Photograph
VT05	<i>Corymbia hamersleyana</i> (+/- <i>Eucalyptus xerothermica</i>) isolated trees to low open woodland with occasional <i>Ficus brachypoda</i> and <i>Brachychiton obtusifolius</i> over <i>Acacia arida</i> , <i>A. coriacea</i> subsp. <i>coriacea</i> , <i>Acacia alexandri</i> and <i>Dodonaea viscosa</i> subsp. <i>mucronata</i> tall shrubland over <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>Melaleuca cardiophylla</i> and <i>Eremophila</i> spp. open mid shrubland over <i>Triodia epactia</i> and <i>Triodia wiseana</i> open hummock grassland with <i>Themeda triandra</i> and <i>Cymbopogon ambiguous</i> sparse tussock grasses over <i>Melhania oblongifolia</i> , <i>Corchorus crozophorifolius</i> and * <i>Bidens bipinnata</i> low open shrubland/forbland in gullies, steep rocky hillslopes and major drainage lines with limestone outcropping.	6.00 5.11%	EXR03, EXR04, EXR05, EXR06	
Cleared	Areas devoid of native vegetation, such as cleared tracks	1.60 1.36%	-	-

4.1.2 Vegetation Condition

The condition of the vegetation within the survey area ranged from Excellent to Poor, with the majority (69%) considered to be in Excellent condition. The survey area covered a total of 117.53 ha of which only 1.60 ha (1.4%) is cleared (vehicle tracks). The extents of the vegetation condition within the survey area are detailed in Table 12 and mapped in Figure 5, Appendix A. The vegetation structure is largely intact across the survey area with typical species diversity for the bioregion. Areas adjacent to vehicle tracks, within the sandy/clay floodplain and drainage areas had higher introduced species cover, in particular **Cenchrus ciliaris*. The time since the last fire is approximately greater than five years ago for the majority of the survey area, with no signs of an inappropriate fire regime on native species diversity. It was evident that there had been fire less than 5 years ago on the eastern side of the main track in Lot 505.

Table 12 Vegetation condition

Vegetation Condition	Extent in survey area (ha)	% within the survey area
Excellent	81.65	69.47
Very Good	11.77	10.01
Good	2.23	1.90
Poor	20.28	17.26
Cleared	1.60	1.26
Total	117.53	100.00

4.1.3 Significant Ecological Communities

No TECs listed under the EPBC Act or BC Act or PECs listed by the DBCA were identified within the survey area during the field survey.

4.2 Flora

4.2.1 Flora inventory

One hundred and thirty-nine flora taxa (including subspecies and varieties) representing 43 families and 97 genera were recorded from the survey area during the field survey. This total comprised 134 native taxa and five introduced flora taxa.

Dominant families recorded from the survey area included:

- Fabaceae (22 taxa)
- Malvaceae (19 taxa)
- Poaceae (14 taxa).

The full list of flora identified within the survey area compiled by site and species list by family is provided in Appendix D.

4.2.2 Introduced flora

Five introduced flora taxa were recorded from the survey area:

- **Aerva javanica* (Kapok)
- **Bidens bipinnata* (Bipinnate beggartick)
- **Cenchrus ciliaris* (Buffel grass)
- **Passiflora foetida* (Stinking passion flower)
- **Vachellia farnesiana* (Mimosa bush)

None of the five introduced/naturalised flora taxa identified during the survey are listed as a Declared Pest under the *Biosecurity and Management Act 2007* or a Weed of National Significance (WoNS).

**Cenchrus ciliaris* was the most common introduced species recorded within the survey area, commonly occurring on the sand/clay plains, along drainage lines and disturbed areas. All of the introduced flora recorded have been previously recorded from the Carnarvon bioregion.

4.2.3 Significant Flora

No Threatened flora listed under the EPBC Act or BC Act were recorded from the survey area.

Seven DBCA listed Priority taxa were recorded from the survey area:

- *Acanthocarpus rupestris* (P2)
- *Tinospora esiangkara* (P2)
- *Acacia alexandri* (P3)
- *Corchorus congener* (P3)
- *Eremophila forrestii* subsp. *capensis* (P3)
- *Grevillea calcicola* (P3)
- *Brachychiton obtusilobus* (P4).

The locations of the significant flora identified during the survey are mapped on Figure 6, Appendix A and listed in Appendix D. Completed Threatened and Priority Report Forms (TPRF) for significant flora taxa recorded during the survey are presented in Appendix D.

Significant flora records previously recorded within the survey area by 360 Environmental (2021) were verified in the field. These records were not duplicated during the current survey and additional records were only recorded if the population size was greater than that recorded by 360 Environmental (2021).

***Acanthocarpus rupestris* (P2)**

Acanthocarpus rupestris (P2) is a rhizomatous, tufted perennial herb to 0.5 m high which flowers in May to June (WA Herbarium 1998-). It is known to occur on red sand and limestone (WA Herbarium 1998-). Records of this species are only known from the Shark Bay and Exmouth regions (WA Herbarium 1998-). This species was recorded by 360 Environmental during the 2021 survey however these records occur outside of the current survey boundary.

Thirty-two individuals of *Acanthocarpus rupestris* (P2) (Plate 2) were recorded from ten locations within the survey area. All records were identified within Lot 550 growing in association with the rocky limestone gullies and drainage lines.



Plate 2 *Acanthocarpus rupestris* in situ

***Tinospora esiangkara* (P2)**

Tinospora esiangkara (P2) is a climber growing up to 2 m tall with large stems and brown, flaky bark (WA Herbarium 1998-). It has green flowers, flowering in July (WA Herbarium 1998-). It is known to occur on pebbly

orange-brown calcareous loam, limestone outcrops or ridges and near creek banks (WA Herbarium 1998-). This species is currently only known from the Cape Range peninsula (WA Herbarium 1998-). A total of 27 individuals of *Tinospora esiangkara* (P2) were opportunistically recorded by 360 Environmental (2021), of which three are located within the current Lot 550 survey boundary.

Twenty-five individuals of *Tinospora esiangkara* (P2) (Plate 3) were recorded from 23 locations during the survey. Therefore in total, 28 individuals have been recorded within the survey area. This species was recorded on the rocky limestone hills, gullies and drainage areas.



Plate 3 *Tinospora esiangkara* in situ

***Acacia alexandri* (P3)**

Acacia alexandri (P3) is an open or moderately dense, sometimes wispy shrub which grows from 1.5 to 3 m tall (WA Herbarium 1998-). It flowers in June or August to September and occurs on limestone, stony creeks and steep rocky slopes (WA Herbarium 1998-). The distribution of this species is currently restricted to the Cape Range peninsula (WA Herbarium 1998-). 360 Environmental (2021) recorded more than 500 individuals of *Acacia alexandri* (P3), of which approximately 152 individuals were recorded within the current Lot 550 survey boundary.

A total of 560 individuals of *Acacia alexandri* (P3) (Plate 4) were recorded from 192 locations during the survey. Therefore in total, 712 individuals have been recorded within the survey area. This species was recorded from the rocky limestone slopes, gullies and drainage lines located within Lot 550.



Plate 4 *Acacia alexandri* leaves and pods

***Corchorus congener* (P3)**

Corchorus congener (P3) is a spreading shrub, to 0.6 m tall with yellow flowers (WA Herbarium 1998-). It flowers between April to June or August to November and occurs on red sandy loam with limestone, sand dunes and plains (WA Herbarium 1998-). This species is distributed across the Carnarvon and Pilbara bioregions (WA Herbarium 1998-). This species was recorded by 360 Environmental (2021) however none were recorded in the current survey boundary.

A total of 105 individuals of *Corchorus congener* (P3) (Plate 5 and Plate 6) were recorded from 13 locations within the survey area. This species was recorded growing in association with sandy/clay plains and drainage areas.



Plate 5 *Corchorus congener* in situ



Plate 6 *Corchorus congener* flower

***Eremophila forrestii* subsp. *capensis* (P3)**

Eremophila forrestii subsp. *capensis* (P3) is a sparsely to much-branched shrub, to 1.4 m tall (WA Herbarium 1998-). This species is known to occur on brown, rocky soils, limestone and along ridges (WA Herbarium 1998-). This distribution of this species is currently restricted to the Cape Range peninsula (WA Herbarium 1998-). 360 Environmental (2021) recorded more than 400 individuals of *Eremophila forrestii* subsp. *capensis*, of which approximately 68 individuals were recorded within the current survey boundary (Lot 550).

A total of 494 individuals of *Eremophila forrestii* subsp. *capensis* (P3) (Plate 7 and Plate 8) were recorded from 114 locations during the survey. Therefore in total, 562 individuals have been recorded within the survey area. This species was recorded across the rocky limestone hills, slopes, gullies and drainage lines.



Plate 7 *Eremophila forrestii* subsp. *capensis* flower



Plate 8 *Eremophila forrestii* subsp. *capensis* habitat

***Grevillea calcicola* (P3)**

Grevillea calcicola (P3) is a small straggly tree or shrub (several-stemmed), growing to 4 m high with cream-white flowers (WA Herbarium 1998-). This species flowers in May or July to August and grows on limestone hilltops (WA Herbarium. 1998-) The distribution of this species is restricted to the Cape Range peninsula. 360 Environmental (2021) recorded four individuals of *Grevillea calcicola*, none of which are located within the current survey area boundary.

Twenty-seven individuals of *Grevillea calcicola* (P3) (Plate 9) were recorded from 22 locations within the survey area. This species was recorded along the rocky limestone slopes, gullies and drainage lines.



Plate 9 *Grevillea calcicola* in situ

***Brachychiton obtusilobus* (P4)**

Brachychiton obtusilobus (P4) is a tree growing to 3.5 to 6 m high with cream flowers (WA Herbarium 1998-). It flowers between August to September (WA Herbarium 1998-). This species occurs on skeletal soils of rocky limestone ranges, gorges and occasionally sandplains (WA Herbarium 1998-). The distribution of *Brachychiton obtusilobus* (P3) is along the Cape Range peninsula (WA Herbarium 1998-). 360 Environmental (2021) recorded a total of 26 individuals, however only one of these records is located within the current survey boundary (Lot 550).

A total of 18 individuals of *Brachychiton obtusilobus* (Plate 10) were recorded from 16 locations during the survey. Therefore a total of 19 have been recorded within the survey area. This species was recorded growing in association with rocky limestone hillslopes and gullies.



Plate 10 *Brachychiton obtusilobus* in situ

Likelihood of occurrence assessment

A likelihood of occurrence assessment was conducted post-field survey for significant flora species identified in the desktop assessment (Appendix D). This assessment took into account previous records, habitat requirements, efficacy and intensity of the survey, flowering times and the cryptic nature of the species.

The likelihood of occurrence assessment post-field survey concluded that no additional significant flora are considered likely to occur within the survey area given that suitable search effort did not record these species and/or due to lack of suitable habitat present.

4.3 Fauna

4.3.1 Fauna Habitat Types

Four broad fauna habitat types (excluding cleared areas/tracks) were identified within the survey area based on the predominant landforms, soil and vegetation structure in the area. The habitat types identified closely correspond to the vegetation types outlined in Section 4.1.1. The fauna habitat are:

- Stony/Sandy Plain
- Creeklines and Minor Drainage Lines
- Undulating Low hills
- Rocky Gully

The fauna habitats of the survey area are part of a contiguous, largely intact area of remnant vegetation within unallocated Crown land that lies west of Exmouth town site, nearby DBCA managed areas (Cape Range National Park), Water Corporation Borefields and pastoral lands.

The fauna habitats of the survey area are part of a much larger area of similar habitats within the local area and greater study area - consisting of sandy and stony plains, undulating low hills with drainage lines and creeks, with rocky gullies forming higher into Cape Range.

One water body was found in the survey area in Lot 505 and appears to be a seasonal perched seep on the south eastern edge of the survey area. All creeks and drainage lines traversed only carry seasonal flow.

The habitats within survey area Lot 505 have been impacted to some degree by past disturbances including clearing, rubbish dumping, track establishment, Telstra easement and some geotechnical/pit investigations, most of which dates >10 years ago. Most of the disturbance is limited to the areas adjacent the existing track and east towards town and the existing generator facility. Fire evidence was also recorded on the eastern side of Lot 505 the survey and affected most of the northern side of the road. The remainder of the survey area appeared to be long un-burnt. Recent Rabbit activity in the form of fresh tracks and scat piles were commonly recorded, however the impacts caused by Rabbit appeared to be restricted to a few individuals.

Lot 550 has little evidence of disturbance despite the existing track and no evidence of recent fire was recorded.

Habitat Value

The survey area provide a diversity of habitat types for native fauna species including species of conservation significance.


The value of the habitats within the survey area was considered to range in value from medium to high depending on the amount of previous disturbance identified. Medium importance was identified where previous clearing had occurred and where, in some cases, the area held water or had regenerated. Areas of high significance were because of the large area, diversity and quality of habitat types (e.g. good to excellent structural and floristic diversity within each habitat type and its proximity to existing habitat feature like Rocky Gully), good connectivity and for supporting known and potential habitat values for significant fauna.


The habitats within the survey area are considered to be well represented within the local area and are probably well represented within the greater study area, given the extent of the corresponding native vegetation associations remaining. However, it is difficult to determine the habitat quality of the vegetation for significant fauna in the greater study area (e.g. does the surrounding vegetation contain the necessary structure and microhabitats for breeding fauna species).



Both Lot 505 and 550 had active Western Pebble-mound Mouse (P4) present. This species was thought to be locally extinct in the Cape Range region despite a potentially active mound recorded in 1995 (Muir Environmental 1995). The field study confirmed that the mouse is present at least on the eastern side of the range and active mounds present.


The broad habitat types are described in further detail in Table 13 and mapped in Figure 7, Appendix A.

Table 13 Fauna habitats within the survey area

Habitat Type	Extent (ha) and proportion of survey area (%)	Representative photograph
<p>Stony/Sandy Plain</p> <p>This habitat type has patches of sandy loam, small clay pans or rocky plain with areas of limestone out cropping in association with low undulating rises. Looks to be the ecotone between the undulating low hills of the eastern portion of the Cape Range and coastal sand plains. Vegetation consists of scattered <i>Corymbia hamersleyana</i> over a sparse to open mixed <i>Acacia</i> shrubland over a <i>Triodia</i> hummock grassland. The hummock grasslands form a dense ground cover and provides refuge for reptiles (such as snakes, skinks, goannas and dragons) and small mammals and ground dwelling birds. The shrubs and scattered trees provide refuge for native birds. Rocky outcrops contain small crevices and caves which provide refuge for reptile species. The majority of the habitat was well connected, with some minor clearing as a result of access tracks.</p> <p>This habitat type aligns with vegetation type VT01 and VT04.</p> <p>Significant fauna:</p> <p>The Western Pebble-mound Mouse (P4) was recorded within this habitat type via mounds both active and inactive. The Peregrine Falcon (<i>Falco peregrinus</i>) (OS) may utilise this area for hunting/foraging.</p> <p>Habitat significance:</p> <p>High – due to the presence of Western Pebble-mound Mouse (P4) which at this stage are only known in this area.</p>	<p>21.7 ha (18.4%)</p>	 <p>Limestone outcropping with small caves</p>

Habitat Type	Extent (ha) and proportion of survey are (%)	Representative photograph
<p>Creeklines and Minor drainage lines</p> <p>A number of small creeks and minor drainage lines dissect the survey area. <i>Corymbia hamersleyana</i> and dense mixed Acacia shrubs often lined the edges of the drainage lines. Mixed hummock and tussock grasses and small herbs dominate the groundcover along the banks of the creeks with very few scattered plants on the rocky river beds. The creeklines/drainage lines were all generally in good condition with minimal weed invasion (some buffel grass in Lot 505). Creeklines are considered to be important ecological corridors to other broader habitats within the local area and provide a source of water during periods of heavy rainfall. Trees and shrubs provide shelter and food resources to a number of native fauna species, in particular birds.</p> <p>This habitat type aligns with vegetation types VT03.</p> <p>Significant fauna:</p> <p>No significant fauna was recorded within this habitat type. This area may provide foraging habitat for Peregrine Falcon (OS) and may opportunistically utilise this habitat type. The Rock Wallaby (T) may also use this area when associated to Rocky gullies for foraging.</p> <p>Habitat significance:</p> <p>High: due to potential for Peregrine Falcon (OS) and Rock Wallaby (T) to utilise this habitat, as well as the main habitat to have water movement.</p>	<p>4.15 ha (3.5%)</p>	 <p>The top photograph shows a close-up view of a rocky creekbed with sparse vegetation on the banks. The bottom photograph shows a wider view of a similar creekbed winding through a hilly, vegetated landscape under a clear blue sky.</p>

Habitat Type	Extent (ha) and proportion of survey are (%)	Representative photograph
<p>Undulating Low hills</p> <p>Comprises of the eastern portion of the Cape Range with rocky limestone substrates dominant intermitted by rocky gullies and small clay sedimentary areas. <i>Corymbia hamersleyana</i> and scattered mixed shrubs over <i>Triodia</i> hummock grasses dominate this habitat area. Limestone outcropping is present forming extensive small caves and hollowing. This habitat although visually sparse provides excellent habitat for saxicoline species.</p> <p>This habitat type aligns with vegetation types VT02.</p> <p>Significant fauna:</p> <p>The Western Pebble-mound Mouse (P4) was recorded within this habitat type via mounds both active and inactive. The Peregrine Falcon (OS) may utilise this area for hunting/foraging. This is core habitat for the Cape Range Stone Gecko (P2).</p> <p>Habitat significance:</p> <p>High: due to potential for Peregrine Falcon (OS) to utilise this habitat, as well as the main habitat for Western Pebble-mound Mouse (P4) and Cape Range Stone Gecko (P2).</p>	<p>84.16 ha (71.6%)</p>	
<p>Rocky Gully</p> <p>Rocky Gully habitat is a sub-component within the broader Undulating Low Hills habitat which has been differentiated for the purpose of quantifying significant habitat for the Cape Range Slider (P3) and Black-footed Rock Wallaby (T).</p> <p>This habitat comprises smaller portions of the survey area but perhaps the most significant for significant fauna habitat. This habitat is characterised by greater topographic features including ridgelines or breakaways of limestone within or creating rocky gullies associated with creeklines or minor drainage line systems.</p> <p>This habitat supports an abundance of small caves and overhangs that provide growing habitat for <i>Ficus</i> sp. and other riparian species. Vegetation also consisted of mixed <i>Acacia</i>, <i>Corymbia hamersleyana</i>, mixed shrubs over <i>Triodia</i> hummock grasses. The environment had good litter, logs, loose rocks or debris. In some areas this environment was densely vegetated particularly where associated with minor drainage lines. There was no evidence of fire in this environment.</p> <p>This habitat is utilised by saxicoline species and included Rock Skink (<i>Ctenotus saxatalis</i>) and Spinifex Pigeon (<i>Geophaps plumifera</i>).</p> <p>Aligns with vegetation type VT05.</p>	<p>6.00 ha (5.1%)</p>	 <p>Remote camera in centre of image</p>

Habitat Type	Extent (ha) and proportion of survey are (%)	Representative photograph
<p>Significant fauna:</p> <p>The Cape Range Slider (P3) was recorded within this habitat type via thick litter matting under Ficus sp. The Peregrine Falcon (OS) was also recorded utilising this area for hunting/foraging. This is potential habitat for the Cape Range Stone Gecko (P2) and Black-footed Rock Wallaby (T). The Black-footed Rock Wallaby (T) use is likely opportunistic due to no water bodies present and no large rocky faces or walls present for animals to persist long term therefore use is likely opportunistic for disbursal or use during productive times.</p> <p>Habitat significance:</p> <p>High: due to habitat for significant fauna.</p>		
<p>Cleared Land</p> <p>Areas devoid of native vegetation. These areas primarily consisted vehicle tracks.</p> <p>Habitat significance: Negligible</p>	<p>1.60 ha (1.4%)</p>	<p>No photo</p>

4.3.2 Fauna Diversity

Ninety-nine fauna species, including 56 species of birds, 25 reptile, two amphibian and 16 mammals were recorded during the survey. Of these species, six species are considered introduced and include the Asian House Gecko, House Mouse, Black Rat, Dog, Rabbit and Cat. The species recorded during the survey are typical for the habitat they were found in and are generally (other than significant species identified below) well represented in the region in similar habitats.

A full list of fauna recorded during the survey is provided in Appendix E.

4.3.3 Significant Fauna

Three species of significant fauna were recorded during the field surveys. These species included;

- Peregrine Falcon (*Falco peregrinus*), Listed Other Specially Protected under the BC Act
- Western Pebble-mound Mouse (*Pseudomys chapmani*), Listed P4 by DBCA
- Cape Range Slider (*Lerista allochira*), Listed P3 by DBCA.

The locations of significant fauna recorded are given in Figure 7, Appendix A. These species and the results of the findings are presented below.

Peregrine Falcon (OS)

The Peregrine Falcon (OS) is uncommon but wide ranging across Australia and the world (Birdlife 2022). The species is listed due to its susceptibility to eggs deformity from prohibited chemical use. Found everywhere from woodlands to open grasslands and coastal cliffs – though less frequently in desert regions – it feeds almost entirely on other birds (IUCN 2022, Morcombe 2004). It also eats rabbits and other moderate sized mammals, bats and reptiles (IUCN 2022, Morcombe 2004). The Peregrine Falcon is very territorial during breeding season, the male courting the female with an impressive display of aerobatics (IUCN 2022, Morcombe 2004).

One adult male bird was seen late afternoon foraging along a rocky gully on the northern edge of Lot 550. This bird was moving fast and appeared to be scoping prey such as Spinifex Pigeon or Crested Pigeon that were also observed in the area. Numerous Honey eater were present and proceeded to alarm call on the bird's approach. The sighting of the bird is presented below in Table 14.

Table 14 Peregrine Falcon sighting location

Species	Type	Survey Area	Habitat Type	Location		Comment
				Easting	Northing	
<i>Falco peregrinus</i>	Active	Lot 550	Rocky Gully	200218	7570503.3	Adult male bird recorded hunting in Rocky Gully, observed via honeyeater alarm calls





Western Pebble-mound Mouse (P4)






The Western Pebble-mound Mouse (P4) was once found across the Pilbara, Gascoyne and into the northern Murchison (Start et al 2000). This species has disappeared from most of the coastal Pilbara regions, Gascoyne and Murchison (Start et al 2000). The strong hold of populations appears to be restricted to the central and eastern Pilbara region where it is recognised as an endemic species (Start et al 2000). Start et al (2000) state that the status of the Western Pebble-mound Mouse (P4) is unclear on Cape Range. Numerous reports have documented their presence, fossil records (Baynes and Jones 1993) and potentially active and old mounds (Muir Environmental 1995). GHD has previously identified old mounds in the Learmonth area (Lynch pers comm) but no mounds have been confirmed as currently active.






Habitat for the Western Pebble-mound Mouse (P4) can be found on stony hillsides with hummock grasslands and little or no soil. It constructs large mounds of pebbles on stony slopes which cover an area of 0.5-9.0 square metres. 'Active' mounds are characterized by volcano-like cones capped by 'craters' that mark occluded entrances to subterranean burrow systems in which the mice live, often gregariously (Van Dyck and Strahan 2008).

This survey identified active and non-active (old) mounds in both Lot 550 (1 active mound) and 505 (1 confirmed active, 2 possibly active and 10 inactive) (Table 15). Both confirmed active mounds had remote cameras deployed for ten days to capture active small mice. Both mounds recorded active small mice and combined with a mound with burrows and a “worked” mound confirms the species still persist in the region. It is highly likely that the two possible active mounds are active. It was noted that some of the mounds recorded were not the typical very large mounds observed in the central Pilbara region. Rather, some were very small and quite cryptic within the environment.'

Table 15 Location and images of Western Pebble-mound Mouse mounds

Species	Type	Survey Area	Habitat Type	Location		Comment	Image
				Easting	Northing		
<i>Pseudomys chapmani</i>	Mound (inactive)	Lot 505	Undulating Low Hills	202625.8	7569466.5	Long unused	
<i>Pseudomys chapmani</i>	Mound (inactive)	Lot 505	Undulating Low Hills	202370.5	7569559.3	Long unused	
<i>Pseudomys chapmani</i>	Mound (inactive)	Lot 505	Undulating Low Hills	202347.1	7569594.1	Recently inactive mound has profile	
<i>Pseudomys chapmani</i>	Mound (inactive)	Lot 505	Undulating Low Hills	202385.8	7569770.9	Long unused	

Species	Type	Survey Area	Habitat Type	Location		Comment	Image
				Easting	Northing		
<i>Pseudomys chapmani</i>	Mound (inactive)	Lot 505	Undulating Low Hills	202490.5	7569833.8	Long unused	
<i>Pseudomys chapmani</i>	Mound (inactive)	Lot 505	Undulating Low Hills	202332.4	7569959.1	Large mound, recently inactive mound has profile	
<i>Pseudomys chapmani</i>	Mound (inactive)	Lot 505	Undulating Low Hills	202262.6	7570240.46	Long unused	
<i>Pseudomys chapmani</i>	Mound (active)	Lot 505	Undulating Low Hills	202430.9	7570141.7	Possibly active, mound appears active but no burrow observed.	
<i>Pseudomys chapmani</i>	Mound (inactive)	Lot 505	Sandy/Stone Plain	202669.1	7569649.7	Long unused	

Species	Type	Survey Area	Habitat Type	Location		Comment	Image
				Easting	Northing		
<i>Pseudomys chapmani</i>	Mound (active)	Lot 505	Undulating Low Hills	202403.7	7570524.3	Active mound, burrow present. Remote camera deployed on mound. Active mice recorded	
<i>Pseudomys chapmani</i>	Mound (inactive)	Lot 505	Undulating Low Hills	202295.0	7570370.7	Long unused	
<i>Pseudomys chapmani</i>	Mound (active)	Lot 505	Undulating Low Hills	202386.4	7570335.5	Possibly active, mound appears active but no burrow observed.	
<i>Pseudomys chapmani</i>	Mound (inactive)	Lot 505	Undulating Low Hills	202503.9	7570273.5	Long unused	
<i>Pseudomys chapmani</i>	Mound (active)	Lot 550	Undulating Low Hills	200279.8	7569801.9	Active mound, burrow present. Remote camera deployed on mound. Active mice recorded	

Cape Range Slider (Priority 3)

The Cape Range Slider (P3) is a small fossorial skink restricted to dissected limestone gorges and plateau habitats on North West Cape (Kendrick 1989, Wilson and Swan 2017). The species appears to rely on thick litter mats under *Ficus* sp. growing along or in limestone gorges and gullies (Maryan pers comm.).

Eighteen slider active search locations were undertaken during the field survey in Lot 550. Search areas targeted *Ficus* sp. litter mats however dense litter was also raked under *Corymbia* and *Brachychiton* sp. in litter matting. One adult specimen was raked from a *Ficus* litter area but disappeared into a rock crevice (Table 16). The species is likely to persist in dense litter areas associated with rocky gully habitat. No habitat was present in Lot 505.

Table 16 Cape Range Slider location record

Species	Type	Survey Area	Habitat Type	Location		Comment
				Easting	Northing	
<i>Lerista allochira</i>	Active	Lot 550	Rocky Gully	200254.6	7570088.2	Adult specimen raked from within <i>Ficus</i> litter in a Rocky Gully. Specimen escaped via a small crevice.

Likelihood of occurrence assessment

An assessment of the likelihood of significant fauna identified in the desktop assessment occurring in the survey area was undertaken post survey. This assessment is based on species' biology, habitat requirements, the quality and availability of suitable habitat as determined during the field survey, and records of the species in the survey area and locality. Species specific searches of the DBCA *NatureMap* database were also conducted in order to gather information about the broader regional occurrence of species to further inform the likelihood of occurrence assessment. Some species identified in the DCCEE PMST or DBCA *Naturemap* search are not realistically considered to occur in the survey area or are not terrestrial vertebrate species, and have been excluded from the assessment (i.e. exclusively marine species).

Of the 58 significant fauna identified in the desktop searches, six species (two birds, two mammal and two reptile) are considered likely to occur or present within the survey area. A summary of these species is provided in Table 17. The complete assessment is provided in Appendix E.

Table 17 Significant fauna identified as present or likely to occur within the survey area

Common name	Status		Likelihood of occurrence
	BC Act/ DBCA	EPBC Act	
Black-footed Rock-wallaby (<i>Petrogale lateralis lateralis</i>)	Vulnerable		Likely Although no individuals were recorded during the field assessment, the survey area occurs within the known distribution of the species with previous records occurring to within 500 m of the survey area at Lot 550. Habitat use would be restricted to the rocky gullies and immediate surrounds for foraging. No water bodies are present and no large rocky faces or walls are present for animals to persist long term therefore use is likely opportunistic for dispersal or use during productive times. Lot 505 is not suitable for the species.
Western Pebble-mound Mound (<i>Pseudomys chapmani</i>)	Priority 4		Present Numerous active and non active mounds were recorded in Lot 550 and 505. Most mounds were restricted to Lot 505. Remote cameras were deployed for 10 days on an active mound in both Lot 505 and 550 and both mounds recorded small mice nocturnally active.
Oriental Plover (<i>Charadrius veredus</i>)	International Agreement	Migratory, Marine	Likely No individuals were recorded during the field assessment, however habitat is present on the Stony/Sandy Plain. This species is migratory therefore is not limited to foraging habitat within the survey area.
Peregrine Falcon (<i>Falco peregrinus</i>)	Other Specially Protected		Present One male adult bird was recorded foraging in Lot 550 within rocky gully on the northern boundary.
Cape Range Slider (<i>Lerista allochira</i>)	Priority 3		Present One animal was recorded in Lot 550 from within <i>Ficus</i> sp. Litter. The species disappeared into a rocky crevice.

Common name	Status		Likelihood of occurrence
	BC Act/ DBCA	EPBC Act	
Cape Range Stone Gecko (<i>Diplodactylus capensis</i>)	Priority 2		<p>Likely</p> <p>The survey area occurs within the known distribution of the species. No individuals were recorded during the field assessment, however there is some habitat present and they have been recorded at similar sites around Exmouth.</p>

5. Discussion and conclusion

5.1 Flora and Vegetation

Five vegetation types were described and mapped across four broad landforms (plains; limestone hills and ranges; drainage lines; and cracking clay depression) within the survey area. The vegetation within the survey area is not considered to be restricted to the survey area or considered to be significant vegetation as it is likely to have high representation in both the local and regional area based on observations of surrounding vegetation and previous surveys in the region.

The recorded vegetation types did not represent any EPBC Act or BC Act listed TECs or DBCA listed PECs. The condition of the vegetation within the survey area ranged from Excellent to Poor, with the majority (69%) considered to be in Excellent condition. The survey area covered a total of 117.53 ha of which only 1.60 ha (1.4%) is cleared (vehicle tracks). The vegetation structure is largely intact across the survey area with typical species diversity for the bioregion. Areas adjacent to vehicle tracks, within the sandy/clay floodplain and drainage areas had higher introduced species cover, in particular *Cenchrus ciliaris*.

No Threatened flora listed under the EPBC Act or BC Act were recorded from the survey area. Seven DBCA listed Priority taxa were recorded from the survey area; *Acanthocarpus rupestris* (Priority 2), *Tinospora esiangkara* (Priority 2), *Acacia alexandri* (Priority 3), *Corchorus congener* (Priority 3), *Eremophila forrestii* subsp. *capensis* (Priority 3), *Grevillea calcicola* (Priority 3) and *Brachychiton obtusilobus* (Priority 4). These Priority flora (excluding *Acanthocarpus rupestris* and *Corchorus congener*) have a restricted distribution confined to the Cape Range subregion on the Exmouth Peninsula (WA Herbarium 1998-). None of the flora recorded during the survey represented range extensions.

The likelihood of occurrence assessment post-field survey concluded that no additional significant flora are considered likely to occur within the survey area given that suitable search effort did not record these species and/or due to lack of suitable habitat present.

5.2 Fauna

Four broad fauna habitat types (excluding cleared land) were recorded across the survey area both Lots 505 and 550. The habitat types Rocky Gully, Undulating Low Hills, Creeklines and Minor Drainage Lines and Stony/Sandy Plain are all high value to significant species recorded or likely to occur in the survey area.

Three significant fauna species were recorded during the survey the Cape Range Slider (P3), Peregrine Falcon (OS) and Western Pebble-mound Mouse (P4). A likelihood of occurrence assessment for significant fauna concluded that three additional species (Black-footed Rock Wallaby (Endangered), Cape Range Stone Gecko (P2) and Oriental Plover (MI) are considered likely to occur within the survey area.

Western Pebble-mound Mouse (P4) was recorded in Lot 550 and Lot 505. One active mound was recorded in Lot 550, while 13 mounds were recorded from Lot 505. Of these 13 mounds, one was confirmed active, two possibly active and the remainder were non active mounds. It is noted that some of these non-active mounds were abandoned not long ago. All mounds were found in Undulating Low Hills or on Stony/Sandy plain. These records are significant for the Cape Range region as the species is only known from historical evidence and/or suspected of being present. This record confirms their presence in the region and becomes a significant record for the Cape Range area. This species was not identified by the previous consultant nor present in database searches.

Therefore the data provided in this report is based on a single field assessment. Without further assessment, due to the presence of active and non active mounds and the significance of these in the greater area, the habitat that the mounds are based should remain untouched.

There are multiple records of Peregrine Falcon (OS) surrounding the survey area, mostly in association with the Cape Range and surrounding plains. Peregrine Falcon (OS) was recorded foraging in Lot 550 within a rocky gully on the northern boundary. No suitable breeding habitat is present in the survey area therefore the survey area would be used for foraging only. It is potentially an occasional visitor to the area as part of a larger home range.

Cape Range Slider (P3) was recorded within Lot 550, the survey area is within the known distribution of the species and suitable habitat is present. Cape Range Slider (P3) is a very cryptic species and only found if trapped or searched for. With additional effort it is likely other specimens would be recorded in the immediate area.

Cape Range Stone Gecko (P2) is known from the area and core habitat for this species recorded within the survey area includes Undulating Low Hills and Stony/Sandy Plain but Rocky Gully is also likely to be used. None were recorded during the survey area, however few active geckos were recorded during the nocturnal surveys indicating that this species may not have been active at the time of the surveys.

Black Footed Rock Wallaby (Endangered) are known from the Cape Range particularly along the Yardie Creek Gorge and the surrounding range. The species is unlikely to utilise Lot 505 due to the lack of habitat present. Lot 550 has rocky gullies with exposed rocky walls and breakaways of limestone which provide suitable habitat for the species. There are scattered sighting records nearby (the closest 500 m away), however the rocky gullies present are quite small and unlikely to support individuals or a group long term. The habitats available may only be utilised opportunistically via animal dispersal or during seasonal favourable conditions.

The survey area is likely to provide suitable habitat for Oriental Plover (Migratory), which is known from region including from grassy plains or sparsely vegetated stony plains. The habitat type Stony/Sandy Plain may provide suitable habitat for this species, however being a migratory bird, use of the survey area would be irregular and opportunistic.

6. References

- 360 Environmental 2021, Lots 284, 505, 550 and reserve 51970, *Exmouth Biological Survey*, unpublished report prepared for Horizon Power, December 2021.
- Baynes, A. and Jones, B 1993, *The Mammals of Cape Range Peninsula, North Western Australia*, Records of the Western Australian Museum, Supplement 45, 207-225.
- Beard, JS 1976, *Vegetation Survey of Western Australia: the Vegetation of the Shark Bay and Edel Areas Western Australia*, map and explanatory memoir 1:250,000 series, Applecross, Vegmap Publications.
- Birdlife 2022, *Species Profile Peregrine Falcon*, Accessed June 2022, <https://www.birdlife.org.au/bird-profile/peregrine-falcon>
- Bureau of Meteorology (BoM) 2022, Climate Data Online. Retrieved 2022 <http://www.bom.gov.au/climate/data/index.shtml>
- Department of Biodiversity, Conservation and Attractions (DBCA) 2007-, *NatureMap: Mapping Western Australia's Biodiversity*, retrieved February 2022, from <http://naturemap.dpaw.wa.gov.au/default.aspx/>.
- Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2022a, *Environmental Protection and Biodiversity Conservation Act 1999 Protected Matters Search Tool Results*, retrieved 2022, from <http://www.environment.gov.au/epbc/pmst/index.html>.
- Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2022b, *Environment Protection and Biodiversity Act 1999 List of Threatened Flora*, retrieved 2022, from <http://www.environment.gov.au/cgibin/sprat/public/publicthreatenedlist.pl?wanted=flora>.
- Department of Environment and Conservation 2012, Camerons cave Troglotic Community, Camerons Cave millipede and camerons Cave Pseudoscorpion Interim Recovery Plan 2012-2017, Interim Recovery Plan Number 324, DEC, Western Australia.
- Department of the Environment and Energy (DEE) 2017 Australian Wetlands Database <http://www.environment.gov.au/node/33425>.
- Department of Parks and Wildlife 2017, *Interim guideline for preliminary surveys of night parrot (Pezoporus occidentalis) in Western Australia*, Accessed June 2022, <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals/night-parrot>
- Environmental Protection Authority (EPA) 2016, *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment*, Perth, Environmental Protection Authority
- Environmental Protection Authority (EPA) 2020, *Technical Guidance – Terrestrial Fauna Surveys for Environmental Impact Assessment*, Perth, Environmental Protection Authority.
- IUCN 2022, *Peregrine Falcon on The IUCN Red List site* - <https://www.iucnredlist.org/species/45354964/155500538>
- GHD. 2016. *Minilya-Exmouth Road Biological Survey*. Report prepared for Main Roads Western Australia.
- GHD. 2019. *Learmonth (Exmouth) Line Rebuild Flora and Fauna Survey*.
- Government of Western Australia (GoWA) 2019, *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full report)*, Current as of March 2019, Perth, Australia, Department of Biodiversity, Conservation and Attractions, retrieved June 2022, from <https://catalogue.data.wa.gov.au/dataset/dbca-statewidevegetation-statistics>
- Kendrick, P. G. 1989, *Two new species of Lerista (Lacertilia: Scincidae) from the Cape Range and Kennedy Range of Western Australia*, Journal of Herpetology 23: 350-355.
- Kendrick, PG and Mau, R 2002, *Carnarvon 1 CAR 1 Cape Range Subregion*. Retrieved July 2021 from: Microsoft Word - Carnarvon 1 p69-86.doc (dpaw.wa.gov.au)
- Morcombe M 2004, *Field Guide to Australian Birds*, Steve Parish Publishing Archer Field Queensland Australia

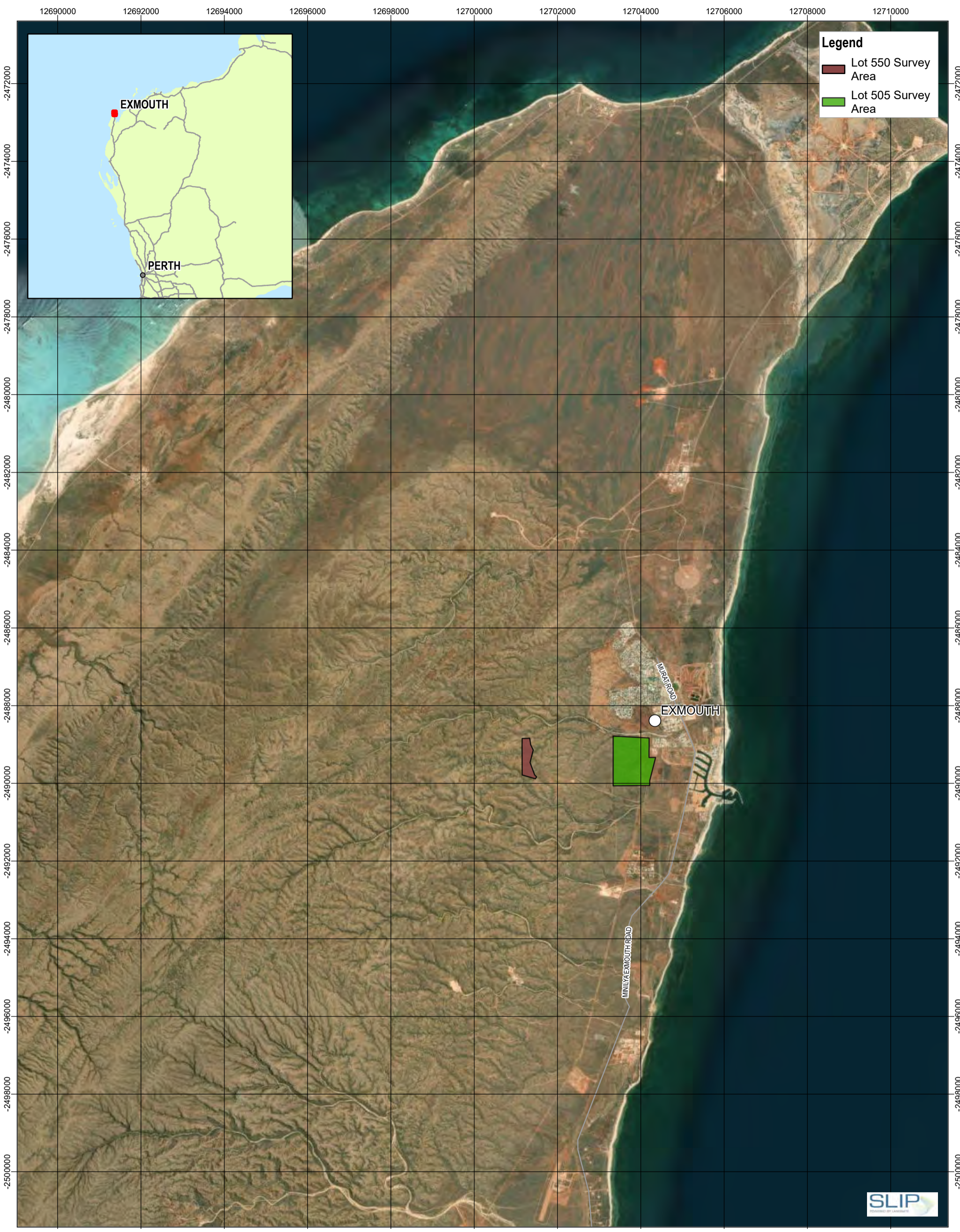
- Muir Environmental 1995, *Extensions to Exmouth Water Supply Borefield*. Consultative Environmental Review, Water Authority of Western Australia, Perth.
- Northcote, K.H. with Beckmann, G.G., Bettenay, E., Churchward, H.M., Van Dijk, D.C., Dimmock, G.M., Hubble, G.D., Isbell, R.F., McArthur, W.M., Murtha, G.G., Nicolls, K.D., Paton, T.R., Thompson, C.H., Webb, A.A. and Wright, M.J. 1960-1968, *Atlas of Australian Soils, Sheets 1 to 10. With explanatory data* (CSIRO Aust. and Melbourne University Press: Melbourne).
- NVIS Technical Working Group 2017, *Australian Vegetation Attribute Manual: National Vegetation Information System, Version 7.0*, Department of the Environment and Energy, Canberra.
- Shepherd, DP, Beeston, GR, and Hopkins, AJM 2002, *Native Vegetation in WA – Extent, Type and Status*, Resource Management Technical Report 249, Department of Agriculture, WA
- Start, A, N., Anstee, S,D, and Endersby, M 2000, *A Review of the biology and conservation status of the Ngadji, Pseudomys chapmani Kitchener 1980 (Rodentia: Muridae)*, *Calm Science* Vol. 3 (2) pp. 125-147.
- Tille, P 2006, *Soil-landscapes of Western Australia's Rangelands and Arid Interior*, Resource Management Technical Report 313, Perth, Department of Agriculture and Food
- Trudgen ME 1988, A report on the Flora and Vegetation of the Port Kennedy Area, unpublished report prepared for Bowman Bishaw and Associates, West Perth.
- Van Dyke S and Strahan R 2008, *The Mammals of Australia*, Third Edition, New Holland Publishing, Sydney Australia.
- Western Australian (WA) Herbarium 1998–, *FloraBase—the Western Australian Flora*, Biodiversity, Conservation and Attractions, retrieved 2022, from <http://florabase.dpaw.wa.gov.au/>.
- Wilson, S and Swan, G 2017, *A Complete Guide to Reptiles of Australia*, 2nd Edition, Sydney Australia, New Holland Press.

Appendices

Appendix A

Figures

- Figure 1* *Survey area location*
- Figure 2* *Environmental constraints*
- Figure 3* *Survey Effort*
- Figure 4* *Vegetation types*
- Figure 5* *Vegetation condition*
- Figure 6* *Significant flora*
- Figure 7* *Significant fauna and habitat*



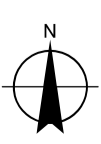
Legend

- Lot 550 Survey Area
- Lot 505 Survey Area

Paper Size ISO A3

Kilometres

Horizontal Datum: WGS 1984
Grid: GCS WGS 1984

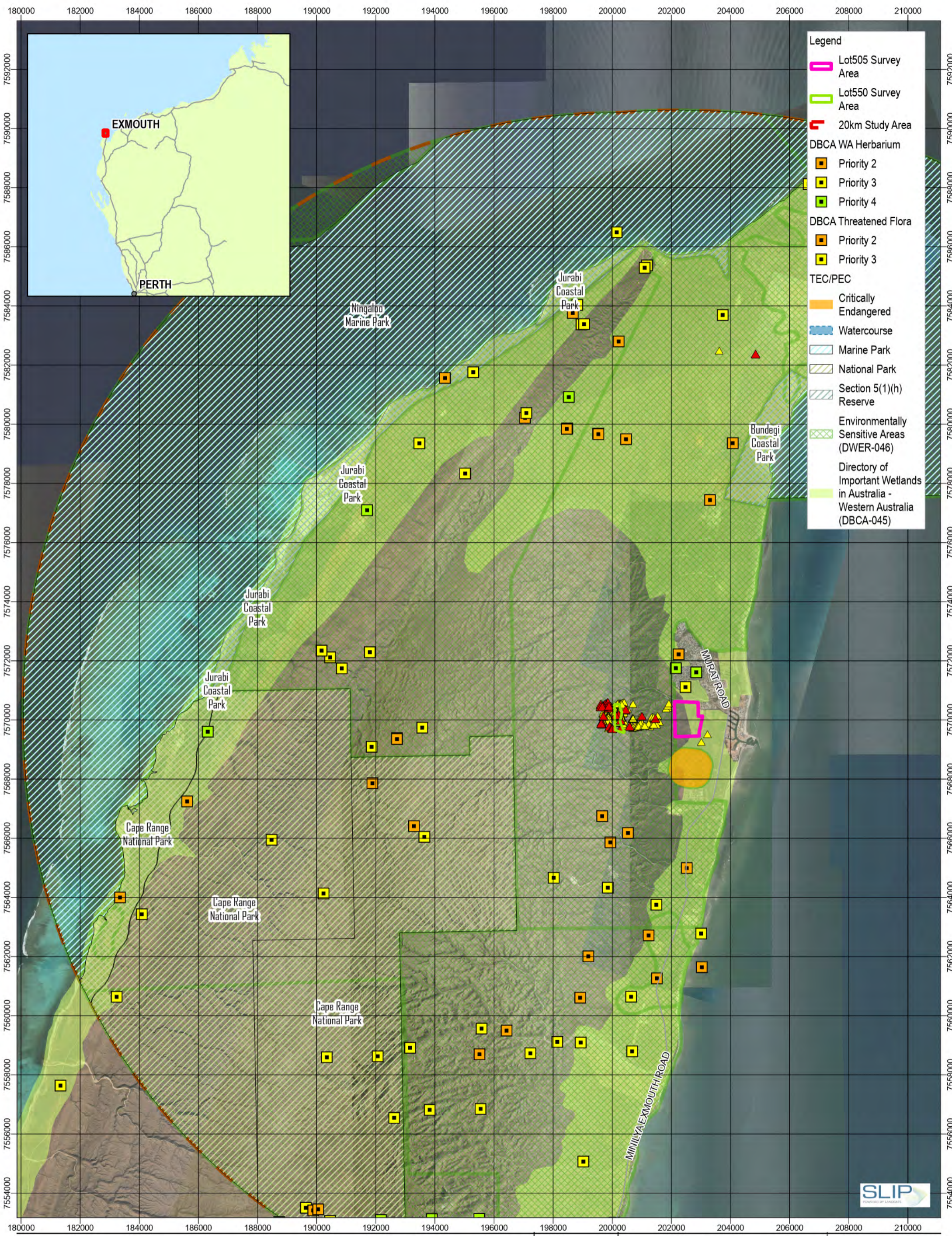


Horizon Power
Exmouth Renewables Project

Project No. 61-12579699
Revision No. 0
Date 07/11/2022

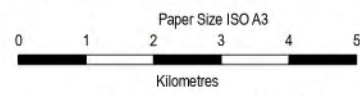
Survey Area Locations

FIGURE 1



Legend

- Lot505 Survey Area
- Lot505 Survey Area
- 20km Study Area
- DBCWA WA Herbarium**
- Priority 2
- Priority 3
- Priority 4
- DBCWA Threatened Flora**
- Priority 2
- Priority 3
- TEC/PEC**
- Critically Endangered
- Watercourse
- Marine Park
- National Park
- Section 5(1)(h) Reserve
- Environmentally Sensitive Areas (DWER-046)
- Directory of Important Wetlands in Australia - Western Australia (DBCWA-045)

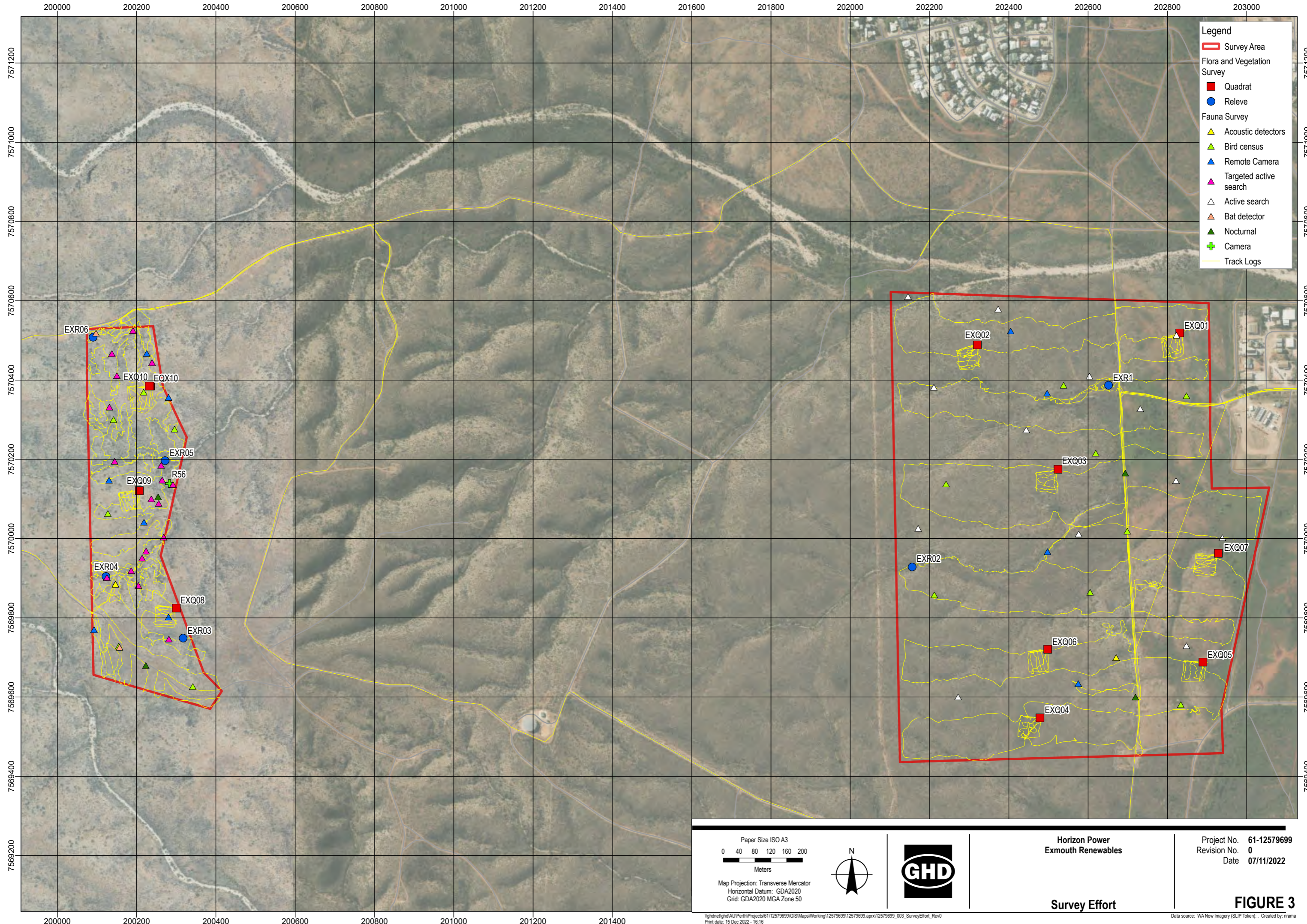


Horizon Power
Exmouth Renewables Project

Project No. 61-12579699
Revision No. 0
Date 12/15/2022

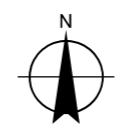
Environmental Constraints

FIGURE 2a



- Legend**
- Survey Area
 - Flora and Vegetation Survey
 - Quadrat
 - Releve
 - Fauna Survey
 - Acoustic detectors
 - Bird census
 - Remote Camera
 - Targeted active search
 - Active search
 - Bat detector
 - Nocturnal
 - Camera
 - Track Logs

Paper Size ISO A3
 0 40 80 120 160 200
 Meters
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA2020
 Grid: GDA2020 MGA Zone 50

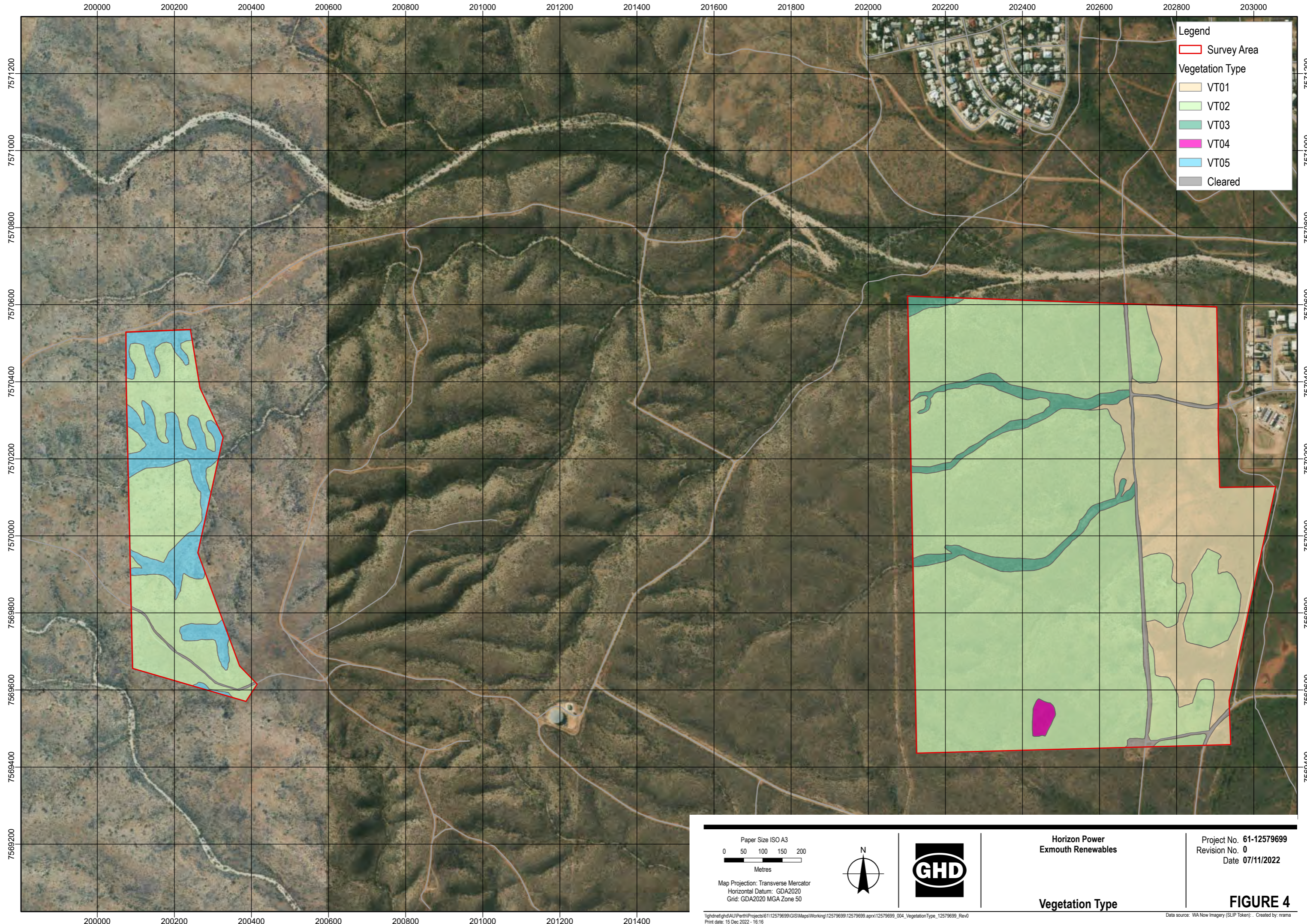


**Horizon Power
 Exmouth Renewables**

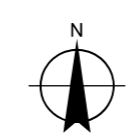
Project No. **61-12579699**
 Revision No. **0**
 Date **07/11/2022**

Survey Effort

FIGURE 3



Paper Size ISO A3
 0 50 100 150 200
 Metres
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA2020
 Grid: GDA2020 MGA Zone 50

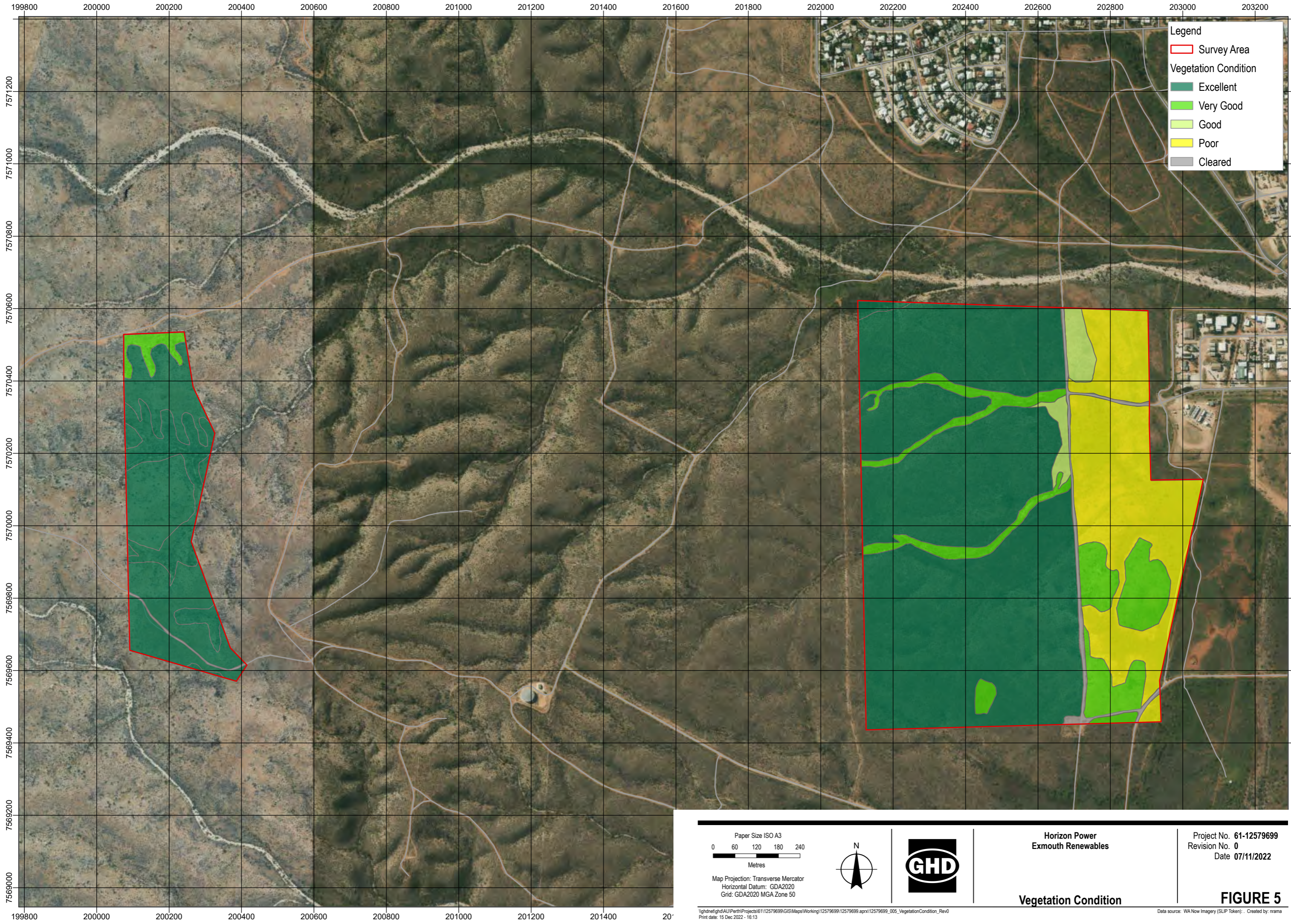


Horizon Power
 Exmouth Renewables

Vegetation Type

Project No. 61-12579699
 Revision No. 0
 Date 07/11/2022

FIGURE 4



Legend

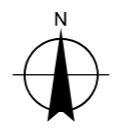
- Survey Area
- Vegetation Condition**
- Excellent
- Very Good
- Good
- Poor
- Cleared

Paper Size ISO A3

0 60 120 180 240

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50



**Horizon Power
Exmouth Renewables**

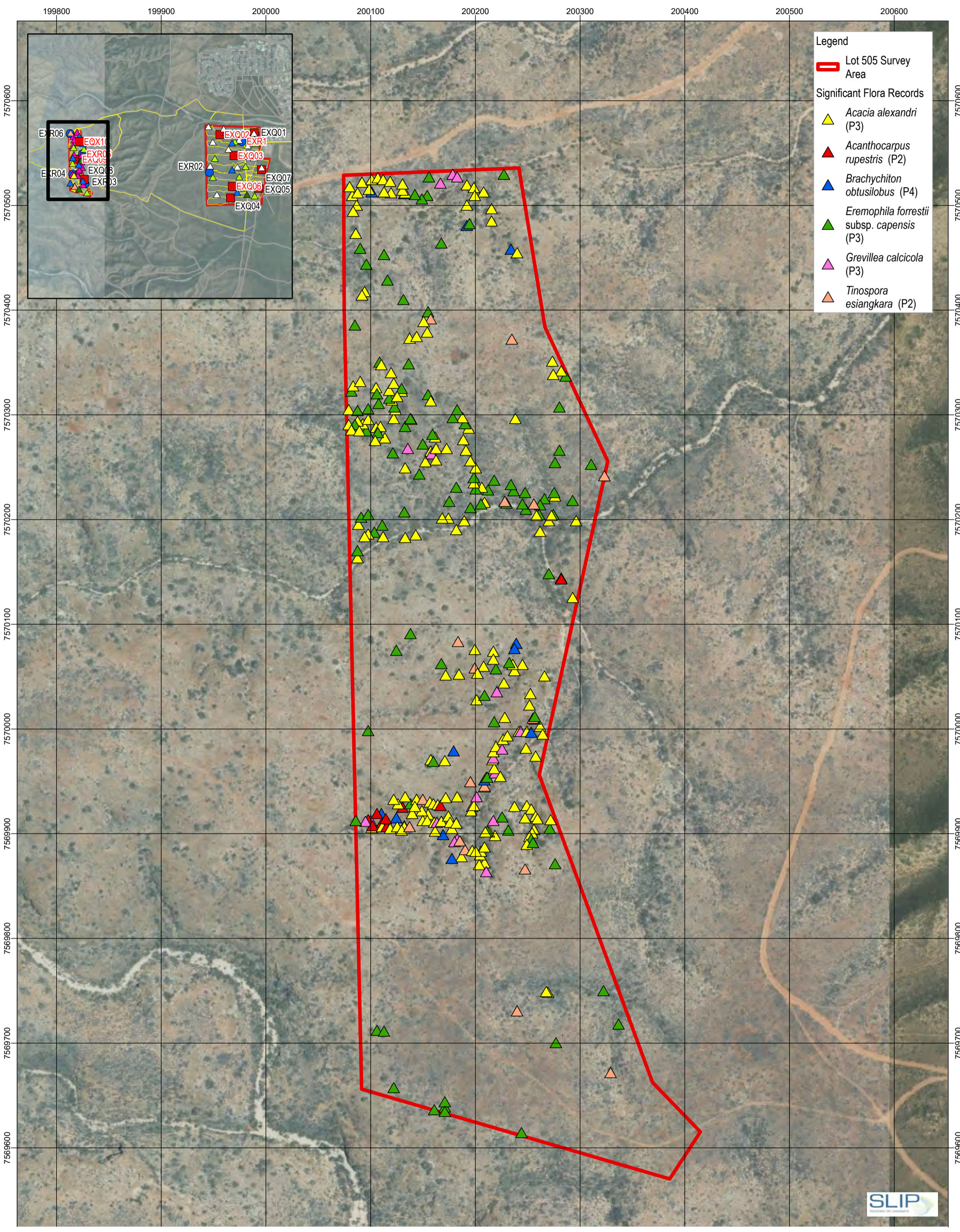
Project No. **61-12579699**
Revision No. **0**
Date **07/11/2022**

Vegetation Condition

FIGURE 5

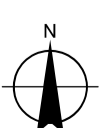
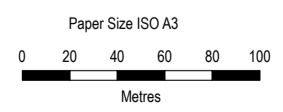
\\ghdnet\ghd\AU\Perth\Projects\6112579699\GIS\Maps\Working\12579699\12579699_aprx\12579699_005_VegetationCondition_Rev0
Print date: 15 Dec 2022 - 16:13

Data source: WA Now Imagery (SLIP Token): . Created by: rrama



Legend

- Lot 505 Survey Area
- Significant Flora Records**
- Acacia alexandri* (P3)
- Acanthocarpus rupestris* (P2)
- Brachychiton obtusilobus* (P4)
- Eremophila forrestii* subsp. *capensis* (P3)
- Grevillea calcicola* (P3)
- Tinospora esiangkara* (P2)



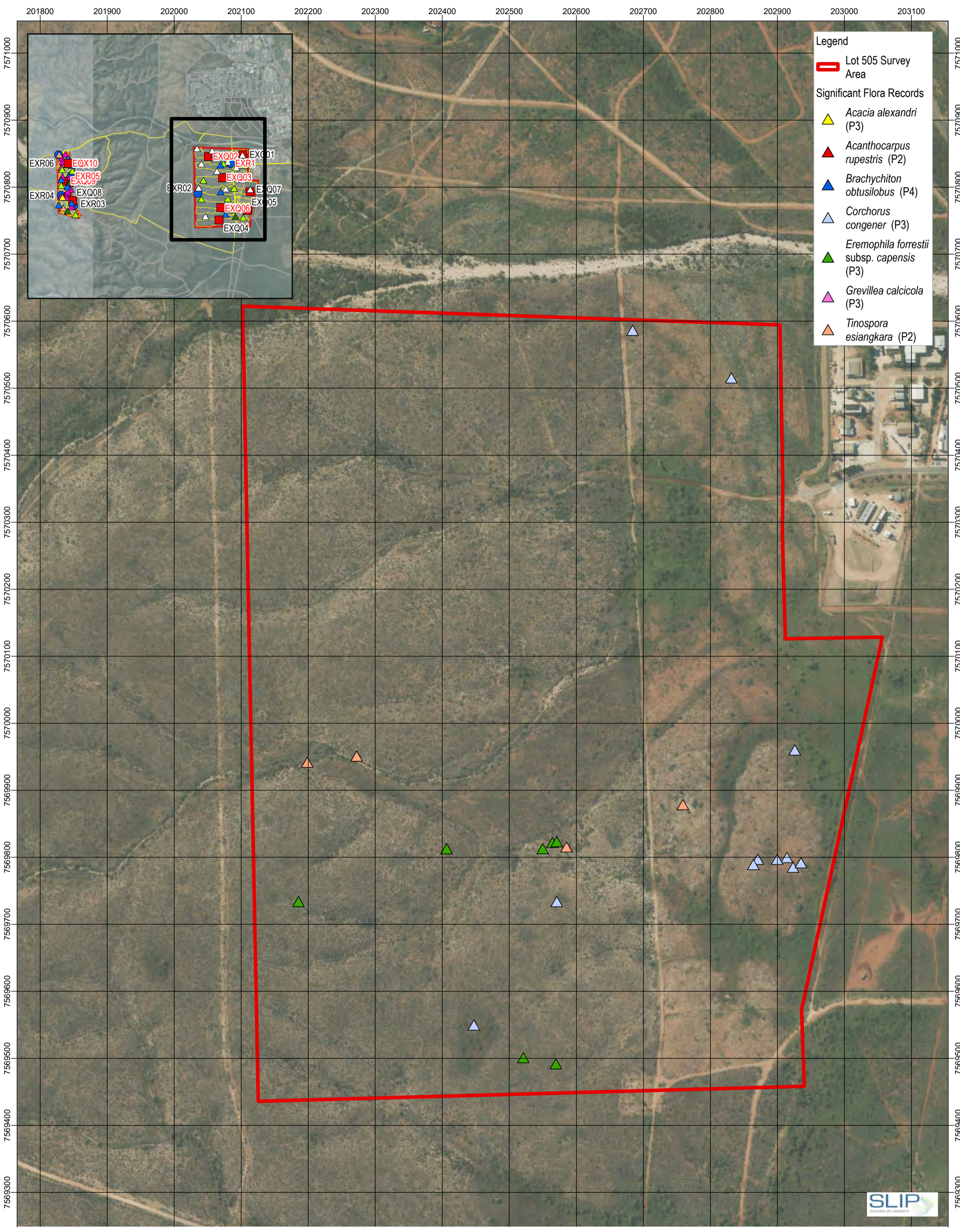
Horizon Power
Exmouth Renewables Project

Project No. 61-12579699
Revision No. 0
Date 07/11/2022

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

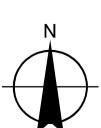
Significant Flora

FIGURE 6a



- Legend**
- Lot 505 Survey Area
 - Significant Flora Records**
 - Acacia alexandri* (P3)
 - Acanthocarpus rupestris* (P2)
 - Brachychiton obtusilobus* (P4)
 - Corchorus congener* (P3)
 - Eremophila forrestii* subsp. *capensis* (P3)
 - Grevillea calcicola* (P3)
 - Tinospora esiangkara* (P2)

Paper Size ISO A3
 0 20 40 60 80 100
 Metres



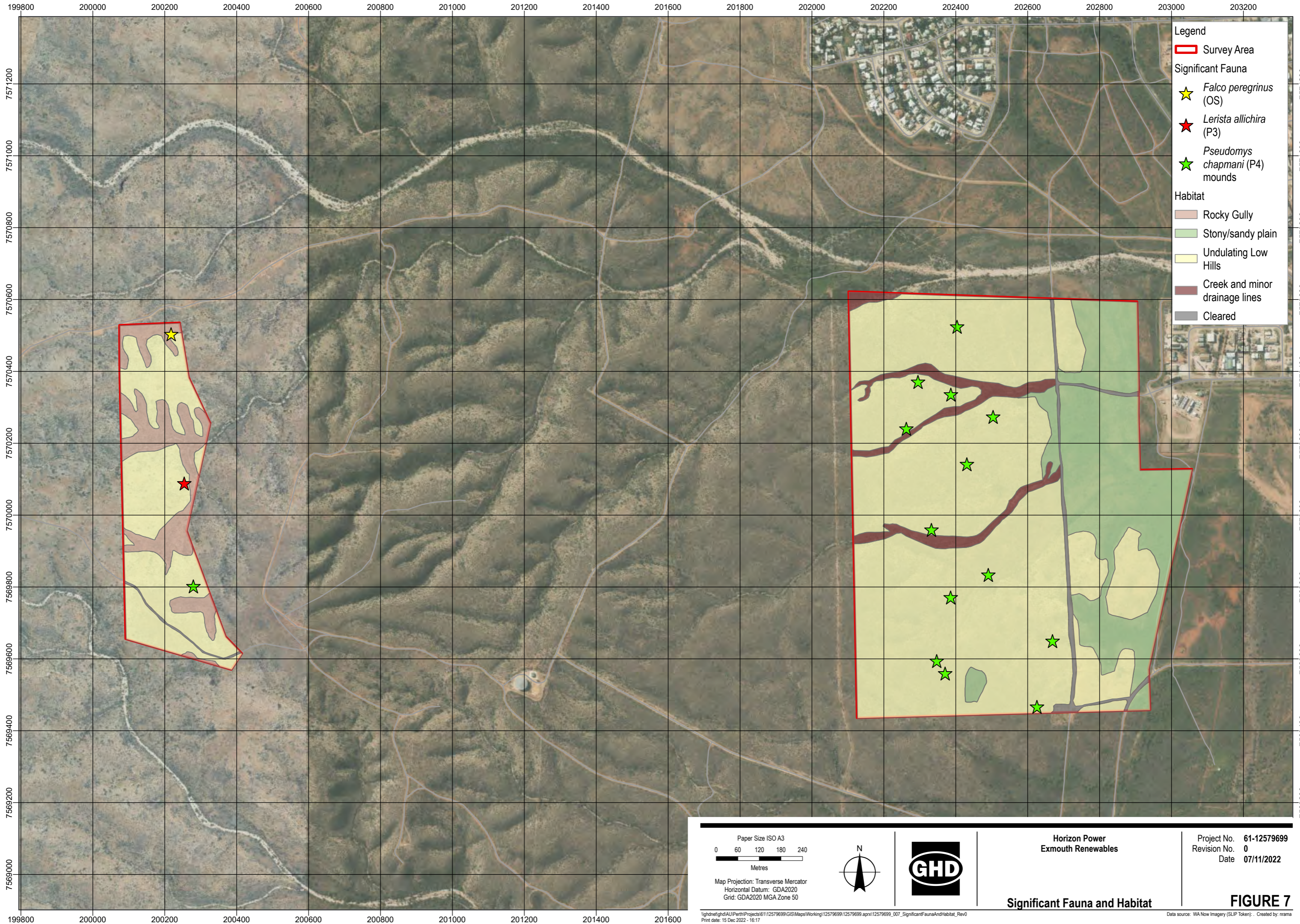
Map Projection: Transverse Mercator
 Horizontal Datum: GDA2020
 Grid: GDA2020 MGA Zone 50

Horizon Power
 Exmouth Renewables Project

Project No. 61-12579699
 Revision No. 0
 Date 07/11/2022

Significant Flora

FIGURE 6b



Legend

- Survey Area

Significant Fauna

- ★ *Falco peregrinus* (OS)
- ★ *Lerista allichira* (P3)
- ★ *Pseudomys chapmani* (P4) mounds

Habitat

- Rocky Gully
- Stony/sandy plain
- Undulating Low Hills
- Creek and minor drainage lines
- Cleared

<p>Paper Size ISO A3</p> <p>0 60 120 180 240</p> <p style="text-align: center;">Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA2020 Grid: GDA2020 MGA Zone 50</p>			<p>Horizon Power Exmouth Renewables</p>	<p>Project No. 61-12579699 Revision No. 0 Date 07/11/2022</p>
<p>Significant Fauna and Habitat</p>				<p>FIGURE 7</p>

\ghdnet\ghd\AU\Perth\Projects\6112579699\GIS\Maps\Working\12579699\12579699.aprx\12579699_007_SignificantFaunaAndHabitat_Rev0
Data source: WA Now Imagery (SLIP Token): . Created by: nrama

Appendix B

**Relevant legislation, background
information and conservation codes**

Relevant legislation

Federal *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Federal Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora and ecological communities and heritage places, which are defined in the EPBC Act as Matters of National Environmental Significance (MNES).

The biological aspects listed as MNES include:

- Nationally threatened flora species and ecological communities
- Migratory species

A person must not undertake an action that has, will have, or is likely to have a significant impact (direct or indirect) on MNES, without approval from the Federal Minister for the Environment.

The EPBC Act is administered by the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

State *Environmental Protection Act 1986*

The *Environmental Protection Act 1986* (EP Act) is the primary legislative Act dealing with the protection of the environment in Western Australia. The Act allows the Environmental Protection Authority (EPA), to prevent, control and abate pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing. Part IV of the EP Act is administered by the EPA and makes provisions for the EPA to undertake environmental impact assessment of significant proposals, strategic proposals and land use planning schemes.

The Department of Water and Environment Regulation (DWER) is responsible for administering the clearing provisions of the EP Act (Part V). Clearing of native vegetation in Western Australia requires a permit from the DWER, unless exemptions apply. Applications for clearing permits are assessed by the Department and decisions are made to grant or refuse the application in accordance with the Act. When making a decision the assessment considers clearing against the ten clearing principles as specified in Schedule 5 of the EP Act:

1. Native vegetation should not be cleared if it comprises a high level of biodiversity.
2. Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significance habitat for fauna indigenous to Western Australia.
3. Native vegetation should not be cleared if it includes, or is necessary, for the continued existence of rare flora.
4. Native vegetation should not be cleared if it comprises the whole or part of native vegetation in an area that has been extensively cleared.
5. Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.
6. Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
7. 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.
8. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
9. 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.

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

Exemptions for clearing include clearing that is a requirement of a written law or authorised under certain statutory processes (listed in Schedule 6 of the EP Act) and exemptions for prescribed low impact day-to-day activities (prescribed in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004); these exemptions do not apply in environmentally sensitive areas (ESAs).

State *Biodiversity and Conservation Act 2016*

The *Biodiversity Conservation Act 2016* (BC Act) provides for the conservation and protection of biodiversity and biodiversity components, as well as the promotion of the ecologically sustainable use of biodiversity components in Western Australia. The BC Act replaces both the repealed *Wildlife Conservation Act 1950* (WC Act) and the *Sandalwood Act 1929* (Sandalwood Act), as well as their associated regulations. To attain the objectives of the BC Act, principles of ecological sustainable development have been established:

- Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- The conservation of biodiversity and ecological integrity should be a fundamental consideration in decision-making
- Improved valuation, pricing and incentive mechanisms should be promoted.

The BC Act is administered by the Department of Biodiversity Conservation and Attractions (DBCA).

State *Biosecurity and Agriculture Management Act 2007*

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) and associated regulations are administered by the Department of Primary Industries and Regional Development (DPIRD) and replace the repealed *Agriculture and Related Resources Protection Act 1976*. The main purposes of the BAM Act and its regulations are to:

- Prevent new animal and plant pests (vermin and weeds) and diseases from entering WA
- Manage the impact and spread of those pests already present in the state
- Safely manage the use of agricultural and veterinary chemicals
- Increased control over the sale of agricultural products that contain violative chemical residues.

The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the BAM Act. A Declared Pest is a prohibited organism or an organism for which a declaration under Section 22(2) of the Act is in force. Declared Pests may be assigned a control category including: C1 (exclusion), C2 (eradication) and C3 (management). The category may apply to the whole of the State, LGAs, districts, individual properties or even paddocks, and all landholders are obliged to comply with the specific category of control. Categories of control are defined below.

DPIRD Categories for Declared Pests under the BAM Act

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

Background information

Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are declared by the Minister for Environment under Section 51B of the EP Act. The Table below outlines the aspects of areas declared as ESA in the Environmental Protection (Environmentally Sensitive Areas) Notice 2005.

Aspects of ESAs

Aspects of Environmentally Sensitive Areas
A declared World Heritage property as defined in Section 12 of the EPBC Act.
An area that is included on the Register of the National Estate (RNE), because of its natural values, under the <i>Australian Heritage Commission Act 1975</i> of the Commonwealth (the RNE was closed in 2007 and is no longer a statutory list – all references to the RNE were removed from the EPBC Act on 19 February 2012).
A defined wetland and the area within 50 m of the wetland. Defined wetlands include Ramsar wetlands, conservation category wetlands and nationally important wetlands.
The area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located.
The area covered by a Threatened Ecological Community.
A Bush Forever Site listed in “Bush Forever” Volumes 1 and 2 (2000), published by the Western Australia Planning Commission, except to the extent to which the site is approved to be developed by the Western Australia Planning Commission.
The areas covered by the Environmental Protection (Gnangara Mound Crown Land) Policy 1992.
The areas covered by the Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002.
The areas covered by the lakes to which the <i>Environmental Protection (Swan Coastal Plain Lakes) Policy 1992</i> (EPP Lakes) applies.
Protected wetlands as defined in the Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998.

Reserves and conservation areas

Department of Biodiversity, Conservation and Attractions managed lands and waters

DBCA manages lands and waters throughout Western Australia to conserve ecosystems and species, and to provide for recreation and appreciation of the natural environment. DBCA managed lands and waters include national parks, conservation parks and reserves, marine parks and reserves, regional parks, nature reserves, State forest and timber reserves. Access to, or through, some areas of DBCA managed lands may require a permit or could be restricted due to management activities. Proposed land use changes and development proposals that abut DBCA managed lands will generally be referred to DBCA throughout the assessment process.

Wetlands

Wetlands include not only lakes with open water, but areas of seasonally, intermittently or permanently waterlogged soil.

Ramsar Wetlands (Wetlands of International Importance)

The Convention of Wetlands of International Importance was signed in 1971 at the Iranian town of Ramsar. The Convention has since been referred to as the Ramsar Convention. Ramsar Listed wetlands are “sites containing

representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity ... because of their ecological, botanical, zoological, limnological or hydrological importance” (DCCEEW 2021b). Once a Ramsar Listed Wetland is designated, the country agrees to manage its conservation and ensure its wise use. Under the Convention, wise use is broadly defined as “maintaining the ecological character of a wetland” (DCCEEW 2021b).

Nationally important wetlands

Wetlands of national significance are listed under the Directory of Important Wetlands in Australia. Nationally important wetlands are wetlands which meet at least one of the following criteria (DCCEEW 2021a):

- It is a good example of a wetland type occurring within a biogeographic region in Australia
- It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex
- It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail
- The wetland supports one percent or more of the national populations of any native plant or animal taxa
- The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level
- The wetland is of outstanding historical or cultural significance.

Vegetation extent and status

The National Objectives and Targets for Biodiversity Conservation 2001–2005 (Commonwealth of Australia 2001) recognise that the retention of 30 percent or more of the pre-clearing extent of each ecological community is necessary if Australia’s biological diversity is to be protected. This is the threshold level below which species loss appears to accelerate exponentially and loss below this level should not be permitted. This level of recognition is in keeping with the targets recommended in the review of the National Strategy for the Conservation of Australia’s Biological Diversity (ANZECC 2000).

The extent of remnant native vegetation in WA has been assessed by Shepherd et al. (2002) and the GoWA (2019), based on broadscale vegetation association mapping by Beard (various publications). The GoWA produces Statewide Vegetation Statistics Reports that are used for a number of purposes including conservation planning, land use planning and when assessing development applications. The reports are updated every 2-3 years.

Vegetation condition

The vegetation condition can be assessed in accordance with the vegetation condition rating scale for the Eremaean and Northern Botanical Provinces (EPA 2016a). The scale recognises the intactness of vegetation and consists of six rating levels as outlined below.

Vegetation condition rating scale for the Eremaean and Northern Botanical Provinces

Condition	Eremaean and Northern Botanical Provinces description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very Good	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	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as at caused by low levels of grazing or slightly aggressive weed.
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	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	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.

Conservation codes

Species of significant flora and communities are protected under both Federal and State Acts. The Federal EPBC Act provides a legal framework to protect and manage nationally important flora and communities. The State BC Act is the primary wildlife conservation legislation in Western Australia. Information on the conservation codes is summarised in the following sections.

Ecological communities

Significant communities

Ecological communities are defined as naturally occurring biological assemblages that occur in a particular type of habitat (English and Blyth 1997). Federally listed Threatened Ecological Communities (TECs) are protected under the EPBC Act. The BC Act provides for the Minister to list an ecological community as a TEC (section 27), or as a collapsed ecological community (section 31) statutory listing of State TECs by the Minister. The legislation also describes statutory processes for preparing recovery plans for TECs, the registration of their critical habitat, and penalties for unauthorised modification of TECs.

Possible TECs that do not meet survey criteria are added to the DBCA Priority Ecological Community (PEC) List under Priorities 1, 2 and 3. These are ecological communities that are adequately known; are rare but not threatened, or meet criteria for Near Threatened. PECs 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. PECs are not listed under any formal Federal or State legislation, however, may be listed as TECs under the EPBC Act.

Codes and definitions for TECs listed under the EPBC Act and/or BC Act

Categories	Definition
Federal Government Conservation Categories (EPBC Act)	
Critically Endangered (CR)	An ecological community if, at that time, is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Endangered (EN)	An ecological community if, at that time: <ul style="list-style-type: none"> – is not critically endangered; and – is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Vulnerable (VU)	An ecological community if, at that time: <ul style="list-style-type: none"> – is not critically endangered or endangered; and – is facing a high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Western Australia Conservation Categories (BC Act)	
<u>Threatened Ecological Communities</u>	
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.
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.

Categories	Definition
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.
<u>Collapsed ecological communities</u>	
<p>An ecological community is eligible for listing as a collapsed ecological community at a particular time if, at that time –</p> <ul style="list-style-type: none"> – there is no reasonable doubt that the last occurrence of the ecological community has collapsed); or – the ecological community has been so extensively modified throughout its range that no occurrence of it is likely to recover – <ul style="list-style-type: none"> • its species composition or structure; or • its species composition and structure. <p>Section 33 of the BC Act provides for a collapsed ecological community to be regarded as a threatened ecological community if it is discovered in a state that no longer makes it eligible for listing as a collapsed ecological community.</p>	

Categories and definitions for PECs as listed by the DBCA

Category	Descriptions
Priority 1	<p>Poorly known ecological communities.</p> <p>Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤ 5 occurrences or a total area of ≤ 100 ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.</p>
Priority 2	<p>Poorly known ecological communities.</p> <p>Communities that are known from few occurrences with a restricted distribution (generally ≤ 10 occurrences or a total area of ≤ 200 ha). At least some occurrences are not believed to be under immediate 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.</p>
Priority 3	<p>Poorly known ecological communities.</p> <ul style="list-style-type: none"> – 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: – Communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; – Communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes. <p>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.</p>
Priority 4	<p>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.</p> <ul style="list-style-type: none"> – 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. – 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.

Category	Descriptions
	– Ecological communities that have been removed from the list of threatened communities during the past five years.
Priority 5	Conservation Dependent ecological communities. Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Other significant vegetation

Vegetation may be significant for a range of reasons other than a statutory listing. The EPA (2016a, b) states that significant vegetation may include vegetation that includes the following:

- Restricted distribution
- Degree of historical impact from threatening processes
- A role as a refuge
- Providing an important function required to maintain ecological integrity of a significant ecosystem
- Local endemism in restricted habitats
- Novel combinations of taxa
- A role as a key habitat for Threatened species or large population representing a significant proportion of the local to regional total population of a species
- Being representative of a vegetation unit in 'pristine' condition in a highly cleared landscape, recently discovered range extensions, or isolated outliers of the main range.

This may apply at a number of levels, so the unit may be significant when considered at the fine-scale (intra-locality), intermediate-scale (locality or inter-locality) or broad-scale (local to region).

Flora

Significant flora

Species of significant flora are protected under both Federal and State legislation. Any activities that are deemed to have a significant impact on species that are recognised by the EPBC Act, and/or the BC Act can warrant referral to DCCEEW and/or the EPA.

The Federal conservation level of flora species and their significance status is assessed under the EPBC Act. The significance levels for flora used in the EPBC Act align with the International Union for Conservation of Nature (IUCN) Red List criteria, which are internationally recognised as providing best practice for assigning the conservation status of species.

The State conservation level of flora species and their significance status also follows the IUCN Red List criteria. Under the BC Act flora can be listed as Threatened, Extinct and as Specially Protected species.

Threatened species are those species which have been adequately searched for and are deemed to be, in the wild, either rare, under identifiable threat of extinction, or otherwise in need of special protection, and have been gazetted as such. The assessment of the conservation status of Threatened species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria. Specially protected species meet one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as Threatened or Extinct species under the BC Act cannot also be listed as Specially Protected species.

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the 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.

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, 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.

For the purposes of this assessment, all species listed under the EPBC Act, BC Act and DBCA Priority species are considered significant.

Categories and definitions for EPBC Act and BC Act listed flora species

Conservation category	Definition
Threatened species	
Critically Endangered (CR)	Threatened species considered to be “facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines”. Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines.
Endangered (EN)	Threatened species considered to be “facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines”. Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines.
Vulnerable (VU)	Threatened species considered to be “facing a high risk of extinction in the wild in the medium term future, as determined in accordance with criteria set out in the ministerial guidelines”. Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.
Extinct species	
Extinct (EX)	Species where “there is no reasonable doubt that the last member of the species has died”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).
Extinct in the Wild (EW)	Species that “is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Codes for DBCA listed Priority flora

Priority category	Definition
Priority 1	Poorly-known taxa Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
Priority 2	Poorly-known taxa Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
Priority 3	Poorly-known taxa Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
Priority 4	Rare, Near Threatened and other taxa in need of monitoring

Priority category	Definition
	<ul style="list-style-type: none"> <li>— Rare: Taxa 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 taxa are usually represented on conservation lands. <li>— Near Threatened. Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. <li>— Taxa that have been removed from the list of threatened taxa during the past five years for reasons other than taxonomy.

Other significant flora

Flora species, subspecies, varieties, hybrids and ecotypes may be significant for a range of reasons, other than a statutory listing. The EPA (2016a, b) states that significant flora may include taxa that have/are:

- A keystone role in a particular habitat for Threatened or Priority flora species, or large populations representing a considerable proportion of the local or regional total population of a species
- Relictual status, being representation of taxonomic or physiognomic groups that no longer occur widely in the broader landscape
- New species or anomalous features that indicate a potential new species
- Being representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)
- Unusual species, including restricted subspecies, varieties, or naturally occurring hybrids
- Local endemism (a restricted distribution) or association with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems).

Introduced plants (weeds)

Declared Pests

Information on species considered to be Declared Pests is provided under *State Biosecurity and Agriculture Management Act 2007*.

Weeds of National Significance

The spread of weeds across a range of land uses or ecosystems is important in the context of socio-economic and environmental values. The assessment of Weeds of National Significance (WoNS) is based on four major criteria:

- Invasiveness
- Impacts
- Potential for spread
- Socio-economic and environmental values.

Australian state and territory governments have identified thirty-two Weeds of National Significance (WoNS); a list of 20 WoNS was endorsed in 1999 and a further 12 were added in 2012.

Fauna Conservation codes

Conservation significant fauna

The Federal conservation level of fauna species and their significance status is assessed under the EPBC Act. The significance levels for fauna used in the EPBC Act align with the International Union for Conservation of Nature (IUCN) Red List criteria, which are internationally recognised as providing best practice for assigning the conservation status of species. The EPBC Act also protects land and migratory species that are listed under International Agreements. The list of migratory species established under section 209 of the EPBC Act comprises:

- Migratory species which are native to Australia and are included in the appendices to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals Appendices I and II)
- Migratory species included in annexes established under the Japan-Australia Migratory Bird Agreement (JAMBA) and the China–Australia Migratory Bird Agreement (CAMBA)
- Native, migratory species identified in a list established under, or an instrument made under, an international agreement approved by the Minister, such as the republic of Korea–Australia Migratory Bird Agreement (ROKAMBA)

The State conservation level of fauna species and their significance status also follows the IUCN Red List criteria. Under the BC Act fauna can be listed as Threatened, Extinct and as Specially Protected species.

Threatened species are those are species which have been adequately searched for and are deemed to be, in the wild, either rare, under identifiable threat of extinction, or otherwise in need of special protection, and have been gazetted as such. The assessment of the conservation status of Threatened species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria. Specially protected species meet one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as Threatened or Extinct species under the BC Act cannot also be listed as Specially Protected species.

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna List 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.

For the purposes of this assessment, all species listed under the EPBC Act, BC Act and DBCA Priority species are considered conservation significant.

Conservation categories and definitions for EPBC Act and BC Act listed fauna species

Conservation category	Definition
Threatened species	
Critically Endangered (CR)	Threatened species considered to be “facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines”. Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with criteria set out in section 20 and the ministerial guidelines.
Endangered (EN)	Threatened species considered to be “facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines”. Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines.
Vulnerable (VU)	Threatened species considered to be “facing a high risk of extinction in the wild in the medium term future as determined in accordance with criteria set out in the ministerial guidelines”. Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.
Extinct species	
Extinct (EX)	Species where “there is no reasonable doubt that the last member of the species has died”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).
Extinct in the Wild (EW)	Species that “is known only to survive in cultivation, in captivity or as a naturalized population well outside its past range, and it has not been recorded in its known habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its lifecycle and form”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).
Specially protected species	

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

Conservation codes for DBCA listed Priority fauna

Priority category	Definition
Priority 1	<p>Poorly-known taxa</p> <p>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.</p>
Priority 2	<p>Poorly-known taxa</p> <p>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.</p>
Priority 3	<p>Poorly-known taxa</p> <p>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.</p>
Priority 4	<p>Rare, Near Threatened and other taxa in need of monitoring</p> <ul style="list-style-type: none"> – Rare: Taxa 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 taxa are usually represented on conservation lands. – Near Threatened. Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. – Taxa that have been removed from the list of threatened taxa during the past five years for reasons other than taxonomy.

Other significant fauna

Fauna species may be significant for a range of reasons other than those protected by international agreement or treaty, Specially Protected or Priority Fauna. Significant fauna may include short-range endemic species, species that have declining populations or declining distributions, species at the extremes of their range, or isolated outlying populations, or species which may be undescribed (EPA2020).

References

- ANZECC 2000, Core Environmental Indicators for Reporting on the State of Environment, ANZECC State of the Environment Reporting Task Force.
- Commonwealth of Australia 2001, National Targets and Objectives for Biodiversity Conservation 2001–2005, Canberra, AGPS.
- DCCEEW 2021a, *Criteria for determining nationally important wetlands*, retrieved 2022, from <https://www.dcceew.gov.au/water/wetlands/australian-wetlands-database/directory-important-wetlands>.
- DCCEEW 2021a, *The Ramsar Convention on Wetlands*, retrieved 2022, from <https://www.dcceew.gov.au/water/wetlands/ramsar>.
- English, V and Blyth, J 1997, Identifying and Conserving Threatened Ecological Communities in the South West Botanical Province, Perth, Department of Conservation and Land Management.
- EPA 2016a, Technical Guide – Flora and Vegetation Surveys for Environmental Impact Assessment, EPA, Perth, WA.
- EPA 2016b, Environmental Factor Guideline - Flora and Vegetation, EPA, Perth, WA.
- EPA 2020, Technical Guide – Terrestrial Fauna Surveys, EPA, Perth, WA
- GoWA 2019, *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full report)*, Current as of March 2019, Perth Western Australia, Department of Environment and Conservation, from <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>.
- Shepherd, DP, Beeston, GR & Hopkins, AJM 2002, Native Vegetation in Western Australia – Extent, Type and Status, Resource Management Technical Report 249, Perth, Department of Agriculture

Appendix C

Desktop searches

EPBC Act PMST (20 km)

Naturemap Reports (20 km)



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: 17/03/21 12:30:41

[Summary](#)

[Details](#)

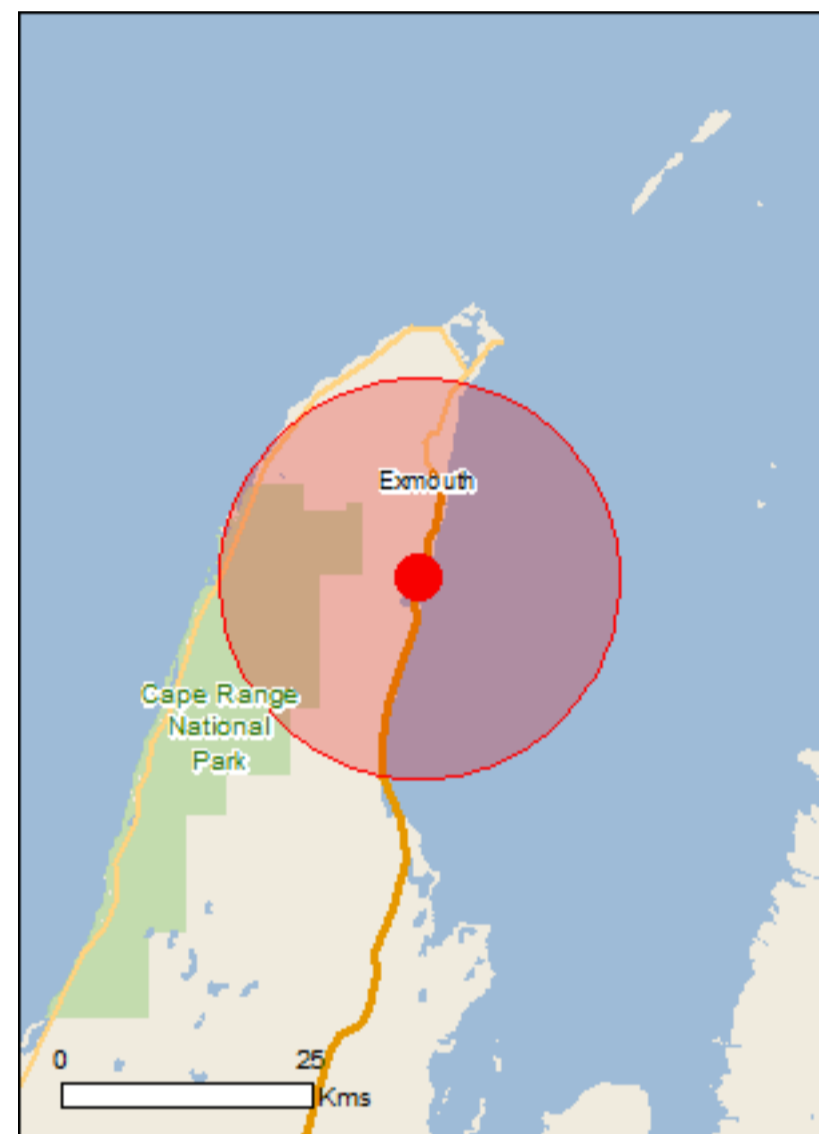
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

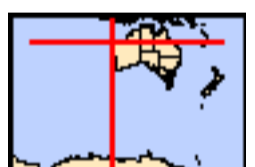
[Acknowledgements](#)



This map may contain data which are
©Commonwealth of Australia
(Geoscience Australia), ©PSMA 2015

[Coordinates](#)

Buffer: 20.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	29
Listed Migratory Species:	42

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:	4
Commonwealth Heritage Places:	None
Listed Marine Species:	77
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	3
Regional Forest Agreements:	None
Invasive Species:	11
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Status
The Ningaloo Coast	WA	Declared property

National Heritage Properties		[Resource Information]
Name	State	Status
Natural		
The Ningaloo Coast	WA	Listed place

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely 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
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Fish		
Milyeringa veritas Blind Gudgeon [66676]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Ophisternon candidum Blind Cave Eel [66678]	Vulnerable	Species or species habitat known to occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur within area
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area
Rhinonictes aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
Reptiles		
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat 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
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat may occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area

Name	Threatened	Type of Presence
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat known to 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 known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding 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 zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Species or species habitat 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		
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely 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 may occur within area

Name	Threatened	Type of Presence
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		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
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely 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 - EXMOUTH ADMIN & HF TRANSMITTING Defence - EXMOUTH VLF TRANSMITTER STATION Defence - LEARMONTH RADAR SITE - TWIN TANKS EXMOUTH

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
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
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 may occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed	Vulnerable	Species or species

Name	Threatened	Type of Presence
Albatross [64459]		habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Fish		
Acentronura larsonae		
Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bulbonaricus brauni		
Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
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 latispinosus		
Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus		
Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus		
Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus janssi		
Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus		
Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis		
Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris		
Ladder Pipefish [66216]		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		Species or species

Name	Threatened	Type of Presence
[66226]		habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		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 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
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammals		
Dugong dugon Dugong [28]		Breeding 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 known to occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species

Name	Threatened	Type of Presence
Aipysurus eydouxii Spine-tailed Seasnake [1117]		habitat may occur within area Species or species habitat may occur within area
Aipysurus laevis Olive Seasnake [1120]		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	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [1111]		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 acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur

Name	Status	Type of Presence within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding 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]		Species or species habitat known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Bundegi Coastal Park	WA
Cape Range	WA
Jurabi Coastal Park	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 Resources 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
Mammals		

Name	Status	Type of Presence
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		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
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area

Plants	Status	Type of Presence
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat likely to occur within area

Reptiles	Status	Type of Presence
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Nationally Important Wetlands	[Resource Information]
Name	State
Cape Range Subterranean Waterways	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

-22.01464 114.11341

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.

© Commonwealth of Australia

Department of Agriculture Water and the Environment

GPO Box 858

Canberra City ACT 2601 Australia

+61 2 6274 1111

NatureMap Species Report_Flora 20 km buffer

Created By Guest user on 17/03/2021

Kingdom Plantae
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 114° 06' 43" E, 22° 01' 05" S
Buffer 20km
Group By Family

Family	Species	Records
Acanthaceae	5	19
Aizoaceae	2	2
Amaranthaceae	13	25
Anadyomenaceae	2	4
Apiaceae	1	3
Apocynaceae	7	11
Asparagaceae	5	20
Asphodelaceae	1	1
Asteraceae	33	81
Bignoniaceae	1	2
Bonnemaisoniaceae	1	1
Boraginaceae	6	13
Brassicaceae	5	8
Callitricaceae	1	1
Campanulaceae	2	2
Capparaceae	5	9
Caulerpaceae	10	14
Celastraceae	3	14
Ceramiaceae	2	2
Champiaceae	2	2
Chenopodiaceae	22	37
Cladophoraceae	1	1
Cleomaceae	1	2
Colchicaceae	1	5
Commelinaceae	1	3
Convolvulaceae	9	28
Coralliaceae	1	1
Crassulaceae	2	3
Cymodoceaceae	5	22
Cyperaceae	2	3
Dichotomosiphonaceae	1	1
Dilleniaceae	2	10
Euphorbiaceae	10	26
Fabaceae	54	189
Frankeniaceae	1	2
Galaxauraceae	2	2
Gentianaceae	1	1
Geraniaceae	2	4
Goodeniaceae	12	41
Gracilariaceae	2	4
Gyrostemonaceae	1	2
Halimedeaceae	4	11
Haloragaceae	2	2
Hemerocallidaceae	3	3
Hydrocharitaceae	2	6
Isoetaceae	2	2
Lamiaceae	8	12
Lauraceae	3	8
Liagoraceae	2	4
Loganiaceae	1	5
Loranthaceae	6	24
Malvaceae	36	91
Marsileaceae	1	1
Menispermaceae	1	7
Montiaceae	2	3
Moraceae	2	5
Myrtaceae	15	113
Nyctaginaceae	2	2
Oleaceae	2	8
Ophioglossaceae	3	4
Orchidaceae	1	1
Orobanchaceae	1	1
Phrymaceae	1	5
Phyllanthaceae	4	6
Pittosporaceae	2	5
Plantaginaceae	3	7
Plumbaginaceae	2	10
Poaceae	33	67
Polygonaceae	1	1
Polyphysaceae	1	1
Pottiaceae	1	1
Primulaceae	2	2

Proteaceae	8	34
Pteridaceae	3	3
Rhizophoraceae	1	1
Rhizophyllidaceae	1	2
Rhodomelaceae	2	2
Ricciaceae	3	3
Rubiaceae	3	6
Ruppiaceae	1	1
Rutaceae	1	2
Santalaceae	3	12
Sapindaceae	4	10
Scrophulariaceae	8	21
Siphonocladaceae	1	1
Solanaceae	8	18
Solieriaceae	1	2
Thymelaeaceae	2	4
Udoteaceae	1	1
Urticaceae	1	2
Valoniaceae	1	1
Verbenaceae	1	1
Violaceae	2	4
Zygophyllaceae	7	15
TOTAL	452	1185

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Acanthaceae				
1.	6828 <i>Avicennia marina</i> (White Mangrove)			
2.	7164 <i>Dicladanthera forrestii</i>			
3.	11320 <i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>			
4.	11746 <i>Dipteracanthus australasicus</i> subsp. <i>corynothecus</i>			
5.	17327 <i>Harnieria kempeana</i> subsp. <i>rhadinophylla</i>		P2	
Aizoaceae				
6.	2818 <i>Sesuvium portulacastrum</i>			
7.	44305 <i>Trianthena pilosum</i>			
Amaranthaceae				
8.	2645 <i>Achyranthes aspera</i> (Chaff Flower)			
9.	2653 <i>Alternanthera pungens</i> (Khaki Weed)	Y		
10.	2657 <i>Amaranthus clementii</i>			
11.	2677 <i>Gomphrena celosioides</i> (Gomphrena Weed)	Y		
12.	2699 <i>Ptilotus axillaris</i> (Mat Mulla Mulla)			
13.	2711 <i>Ptilotus clementii</i> (Tassel Top)			
14.	2717 <i>Ptilotus divaricatus</i> (Climbing Mulla Mulla)			
15.	2721 <i>Ptilotus exaltatus</i> (Tall Mulla Mulla)			
16.	2731 <i>Ptilotus helipteroides</i> (Hairy Mulla Mulla)			
17.	2747 <i>Ptilotus obovatus</i> (Cotton Bush)			
18.	2751 <i>Ptilotus polystachyus</i> (Prince of Wales Feather)			
19.	2766 <i>Ptilotus villosiflorus</i>			
20.	43203 <i>Surreya diandra</i>			
Anadyomenaceae				
21.	35872 <i>Anadyomene plicata</i>			
22.	35858 <i>Anadyomene wrightii</i>			
Apiaceae				
23.	6218 <i>Daucus glochidiatus</i> (Australian Carrot)			
Apocynaceae				
24.	6569 <i>Catharanthus roseus</i> (Pink Periwinkle)	Y		
25.	6584 <i>Cynanchum floribundum</i> (Dumara Bush, Tjipa)			
26.	48280 <i>Cynanchum viminalis</i> subsp. <i>australe</i>			
27.	12832 <i>Gymnanthera cunninghamii</i>		P3	
28.	12949 <i>Marsdenia australis</i>			
29.	48987 <i>Vincetoxicum flexuosum</i>			
30.	48986 <i>Vincetoxicum lineare</i>			
Asparagaceae				
31.	1208 <i>Acanthocarpus preissii</i>			
32.	1209 <i>Acanthocarpus robustus</i>			
33.	1210 <i>Acanthocarpus rupestris</i>		P2	
34.	1211 <i>Acanthocarpus verticillatus</i>			
35.	46756 <i>Thysanotus exfimbriatus</i>			
Asphodelaceae				
36.	1364 <i>Asphodelus fistulosus</i> (Onion Weed)	Y		
Asteraceae				
37.	7822 <i>Angianthus acrohyalinus</i> (Hook-leaf Angianthus)			
38.	7838 <i>Arctotheca calendula</i> (Cape Weed, African Marigold)	Y		
39.	7854 <i>Bidens bipinnata</i> (Bipinnate Beggartick)	Y		
40.	46338 <i>Bidens subalternans</i> var. <i>simulans</i>	Y		
41.	7871 <i>Brachyscome ciliaris</i>			
42.	7958 <i>Decazesia hecatocephala</i>			
43.	35558 <i>Flaveria trinervia</i> (Speedy Weed)	Y		
44.	8086 <i>Hypochoeris glabra</i> (Smooth Catsear)	Y		
45.	8098 <i>Launaea sarmentosa</i>			
46.	8107 <i>Minuria cunninghamii</i> (Bush Minuria)			
47.	8110 <i>Minuria leptophylla</i> (Minnie Daisy)			
48.	42024 <i>Olearia</i> sp. Kennedy Range (G. Byrne 66)			
49.	20611 <i>Pembertonia latisquamea</i>			
50.	34997 <i>Peripleura arida</i>			
51.	35003 <i>Peripleura hispidula</i> var. <i>setosa</i>			
52.	8167 <i>Pluchea dentex</i>			
53.	43944 <i>Pluchea longiseta</i>			
54.	8168 <i>Pluchea rubelliflora</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
55.	45237 <i>Podolepis aristata</i> subsp. <i>aristata</i>			
56.	45242 <i>Podolepis remota</i>			
57.	8189 <i>Pseudognaphalium luteoalbum</i> (Jersey Cudweed)			
58.	8192 <i>Pterocaulon sphacelatum</i> (Apple Bush, Fruit Salad Plant)			
59.	8193 <i>Pterocaulon sphaeranthoides</i>			
60.	13301 <i>Rhodanthe floribunda</i>			
61.	13297 <i>Rhodanthe psammophila</i>			
62.	13254 <i>Rhodanthe stricta</i>			
63.	45146 <i>Roebuckiella oncocarpa</i>			
64.	25880 <i>Senecio hamersleyensis</i>			
65.	8213 <i>Senecio magnificus</i> (Showy Groundsel)			
66.	25883 <i>Senecio pinnatifolius</i> var. <i>pinnatifolius</i>			
67.	8223 <i>Sigesbeckia orientalis</i> (Indian Weed)	Y		
68.	8231 <i>Sonchus oleraceus</i> (Common Sowthistle)	Y		
69.	8237 <i>Streptoglossa decurrens</i>			
Bignoniaceae				
70.	36447 <i>Tecoma stans</i> var. <i>stans</i>	Y		
Bonnemaisoniaceae				
71.	26486 <i>Asparagopsis taxiformis</i>			
Boraginaceae				
72.	6680 <i>Cynoglossum australe</i> (Australian Hound's-tongue)			
73.	29840 <i>Halgania cyanea</i> var. <i>Allambi Stn</i> (B.W. Strong 676)			
74.	6705 <i>Heliotropium crispatum</i>			
75.	17305 <i>Heliotropium glanduliferum</i>			
76.	6713 <i>Heliotropium ovalifolium</i>			
77.	6727 <i>Trichodesma zeylanicum</i> (Camel Bush, Kumbalin)			
Brassicaceae				
78.	3032 <i>Lepidium muelleri-ferdinandii</i>			
79.	3035 <i>Lepidium pedicellosum</i>			
80.	3039 <i>Lepidium platypetalum</i> (Slender Peppergrass)			
81.	3061 <i>Raphanus raphanistrum</i> (Wild Radish)	Y		
82.	3072 <i>Sisymbrium orientale</i> (Indian Hedge Mustard)	Y		
Callithamniaceae				
83.	27204 <i>Ptilocladia vestita</i>			
Campanulaceae				
84.	7403 <i>Lobelia heterophylla</i> (Wing-seeded Lobelia)			
85.	48829 <i>Wahlenbergia capillaris</i>			
Capparaceae				
86.	2976 <i>Capparis lasiantha</i> (Split Jack, Balqarda)			
87.	2978 <i>Capparis mitchellii</i> (Wild Orange)			
88.	<i>Capparis</i> sp.			
89.	2981 <i>Capparis spinosa</i>			
90.	48291 <i>Capparis spinosa</i> subsp. <i>nummularia</i>			
Caulerpaceae				
91.	26554 <i>Caulerpa brachypus</i>			
92.	42620 <i>Caulerpa chemnitzia</i>			
93.	35158 <i>Caulerpa corynephora</i>			
94.	26559 <i>Caulerpa cupressoides</i>			
95.	27378 <i>Caulerpa cupressoides</i> var. <i>lycopodium</i>			
96.	44547 <i>Caulerpa lamourouxii</i>			
97.	26568 <i>Caulerpa lentillifera</i>			
98.	44551 <i>Caulerpa macrodisca</i>			
99.	26576 <i>Caulerpa serrulata</i>			
100.	26577 <i>Caulerpa sertularioides</i>			
Celastraceae				
101.	4734 <i>Stackhousia muricata</i>			
102.	43601 <i>Stackhousia</i> sp. <i>Mid west coastal</i> (D. & B. Bellairs 6561)			
103.	4736 <i>Stackhousia umbellata</i>		P3	
Ceramiaceae				
104.	26469 <i>Anotrichium tenue</i>			
105.	27310 <i>Spyridia filamentosa</i>			
Champiaceae				
106.	26618 <i>Champia parvula</i>			
107.	26619 <i>Champia stipitata</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Chenopodiaceae				
108.	2453 <i>Atriplex codonocarpa</i> (Flat-topped Saltbush)			
109.	2476 <i>Atriplex semilunaris</i> (Annual Saltbush)			
110.	2489 <i>Chenopodium gaudichaudianum</i> (Cottony Saltbush)			
111.	2499 <i>Dissocarpus paradoxus</i> (Curious Saltbush)			
112.	33501 <i>Dysphania cristata</i> (Crested Goosefoot)			
113.	2511 <i>Enchylaena tomentosa</i> (Barrier Saltbush)			
114.	2546 <i>Maireana integra</i>			
115.	2556 <i>Maireana planifolia</i> (Low Bluebush)			
116.	2558 <i>Maireana polypterygia</i> (Gascoyne Bluebush)			
117.	11662 <i>Maireana tomentosa</i> subsp. <i>tomentosa</i>			
118.	2573 <i>Neobassia astrocarpa</i>			
119.	2582 <i>Rhagodia eremaea</i> (Thorny Saltbush)			
120.	2584 <i>Rhagodia preissii</i>			
121.	11240 <i>Rhagodia preissii</i> subsp. <i>obovata</i>			
122.	2609 <i>Sclerolaena diacantha</i> (Grey Copperburr)			
123.	8877 <i>Sclerolaena gardneri</i>			
124.	33236 <i>Tecticornia halocnemoides</i> (Shrubby Samphire)			
125.	33238 <i>Tecticornia halocnemoides</i> subsp. <i>tenuis</i>			
126.	33318 <i>Tecticornia indica</i> subsp. <i>leiostachya</i> (Samphire)			
127.	31618 <i>Tecticornia pruinosa</i>			
128.	33220 <i>Tecticornia pterygosperma</i> subsp. <i>denticulata</i>			
129.	2644 <i>Threlkeldia diffusa</i> (Coast Bonefruit)			
Cladophoraceae				
130.	26658 <i>Cladophora vagabunda</i>			
Cleomaceae				
131.	2988 <i>Cleome viscosa</i> (Tickweed, Tjinduwadhu)			
Colchicaceae				
132.	1400 <i>Wurmbea odorata</i>			
Commelinaceae				
133.	1165 <i>Commelina ensifolia</i> (Wandering Jew, Buargu)			
Convolvulaceae				
134.	31274 <i>Duperreya commixta</i>			
135.	11416 <i>Evolvulus alsinoides</i> var. <i>decumbens</i>			
136.	11200 <i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>			
137.	6624 <i>Ipomoea costata</i> (Rock Morning Glory, Kanti)			
138.	6633 <i>Ipomoea muelleri</i> (Poison Morning Glory, Yumbu)			
139.	11312 <i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i>			
140.	6637 <i>Ipomoea polymorpha</i>			
141.	6641 <i>Ipomoea yardiensis</i> (Yardie Morning Glory)			
142.	6653 <i>Polymeria ambigua</i> (Morning Glory)			
Corallinaceae				
143.	26983 <i>Jania adhaerens</i>			
Crassulaceae				
144.	3137 <i>Crassula colorata</i> (Dense Stonecrop)			
145.	11563 <i>Crassula colorata</i> var. <i>colorata</i>			
Cymodoceaceae				
146.	128 <i>Cymodocea angustata</i>			
147.	129 <i>Cymodocea serrulata</i>			
148.	131 <i>Halodule uninervis</i>			
149.	132 <i>Syringodium isoetifolium</i>			
150.	133 <i>Thalassodendron ciliatum</i>			
Cyperaceae				
151.	750 <i>Bulbostylis barbata</i>			
152.	814 <i>Cyperus squarrosus</i>			
Dichotomosiphonaceae				
153.	26498 <i>Avrainvillea obscura</i>			
Dilleniaceae				
154.	5171 <i>Hibbertia spicata</i>			
155.	11481 <i>Hibbertia spicata</i> subsp. <i>spicata</i>			
Euphorbiaceae				
156.	17422 <i>Adriana tomentosa</i> var. <i>tomentosa</i>			
157.	35307 <i>Euphorbia australis</i> var. <i>australis</i>			
158.	4619 <i>Euphorbia biconvexa</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
159.	4626 <i>Euphorbia drummondii</i> (Caustic Weed, Piwi)			
160.	4635 <i>Euphorbia myrtoides</i>			
161.	4644 <i>Euphorbia sharkoensis</i>			
162.	4647 <i>Euphorbia tannensis</i>			
163.	12097 <i>Euphorbia tannensis</i> subsp. <i>eremophila</i> (Desert Spurge)			
164.	42879 <i>Euphorbia trigonosperma</i>			
165.	4658 <i>Mallotus nesophilus</i>			
Fabaceae				
166.	13074 <i>Acacia alexandri</i>		P3	
167.	3223 <i>Acacia arida</i>			
168.	3241 <i>Acacia bivenosa</i>			
169.	3270 <i>Acacia coriacea</i> (Wirewood)			
170.	13500 <i>Acacia coriacea</i> subsp. <i>coriacea</i>			
171.	3356 <i>Acacia gregorii</i> (Gregory's Wattle)			
172.	29015 <i>Acacia pyrifolia</i> var. <i>pyrifolia</i>			
173.	13071 <i>Acacia ryaniana</i>		P2	
174.	13078 <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i>			
175.	29135 <i>Acacia sericophylla</i>			
176.	3549 <i>Acacia spathulifolia</i>			
177.	13076 <i>Acacia startii</i>		P3	
178.	13070 <i>Acacia synchronicia</i>			
179.	3577 <i>Acacia tetragonophylla</i> (Kurara, Wakalpuka)			
180.	3749 <i>Canavalia rosea</i> (Wild Jack Bean)			
181.	13114 <i>Chorizema racemosum</i>			
182.	3774 <i>Crotalaria cunninghamii</i> (Green Birdflower, Bilbun)			
183.	18147 <i>Crotalaria incana</i> subsp. <i>incana</i>	Y		
184.	20179 <i>Crotalaria medicaginea</i> var. <i>neglecta</i>			
185.	17439 <i>Cullen lachnostachys</i>			
186.	17118 <i>Cullen leucanthum</i>			
187.	17120 <i>Cullen pogonocarpum</i>			
188.	14375 <i>Daviesia pleurophylla</i>		P2	
189.	3871 <i>Erythrina vespertilio</i> (Yulbah)			
190.	3938 <i>Glycine canescens</i> (Silky Glycine)			
191.	45436 <i>Indigofera chamaeclada</i> subsp. <i>pubens</i>			
192.	3973 <i>Indigofera colutea</i> (Sticky Indigo)			
193.	3981 <i>Indigofera linnaei</i> (Birdsville Indigo)			
194.	3982 <i>Indigofera monophylla</i>			
195.	3987 <i>Indigofera trita</i>			
196.	3989 <i>Isotropis atropurpurea</i> (Poison Sage)			
197.	16489 <i>Leptosema macrocarpum</i>			
198.	18351 <i>Leucaena leucocephala</i> subsp. <i>leucocephala</i>	Y		
199.	4060 <i>Lotus australis</i> (Austral Trefoil)			
200.	4097 <i>Mirbelia ramulosa</i>			
201.	4105 <i>Mirbelia viminalis</i>			
202.	3673 <i>Parkinsonia aculeata</i> (Parkinsonia)	Y		
203.	3674 <i>Petalostylis cassioides</i>			
204.	4191 <i>Rhynchosia minima</i> (Rhynchosia)			
205.	12280 <i>Senna artemisioides</i> subsp. <i>oligophylla</i>			
206.	18443 <i>Senna ferraria</i>			
207.	12307 <i>Senna glutinosa</i> subsp. <i>glutinosa</i>			
208.	12309 <i>Senna glutinosa</i> subsp. <i>pruinosa</i>			
209.	12312 <i>Senna notabilis</i>			
210.	12353 <i>Stylosanthes hamata</i> (Verano Stylo)	Y		
211.	13596 <i>Swainsona complanata</i>			
212.	12356 <i>Swainsona formosa</i>			
213.	4231 <i>Swainsona kingii</i>			
214.	4242 <i>Swainsona pterostylis</i>			
215.	19531 <i>Tephrosia rosea</i> var. <i>clementii</i>			
216.	46053 <i>Tephrosia</i> sp. North West Cape (G. Marsh 81)		P2	
217.	30716 <i>Vachellia farnesiana</i> (Mimosa Bush)	Y		
218.	4323 <i>Vigna lanceolata</i> (Maloga Vigna, Wega)			
219.	31391 <i>Vigna</i> sp. Hamersley Clay (A.A. Mitchell PRP 113)			
Frankeniaceae				
220.	5209 <i>Frankenia pauciflora</i> (Seaheath)			
Galaxauraceae				
221.	29616 <i>Dichotomaria marginata</i>			
222.	26835 <i>Galaxaura rugosa</i>			
Gentianaceae				

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
223.	41660 <i>Schenkia australis</i>			
Geraniaceae				
224.	4332 <i>Erodium botrys</i> (Long Storksbill)	Y		
225.	4335 <i>Erodium cygnorum</i> (Blue Heronsbill)			
Goodeniaceae				
226.	7448 <i>Dampiera incana</i> (Hoary Dampiera)			
227.	11723 <i>Dampiera incana</i> var. <i>incana</i>			
228.	7509 <i>Goodenia forrestii</i>			
229.	7526 <i>Goodenia microptera</i>			
230.	12574 <i>Goodenia prostrata</i>			
231.	7556 <i>Goodenia tenuiloba</i>			
232.	7588 <i>Lechenaultia subcymosa</i> (Wide-branching Leschenaultia)			
233.	7606 <i>Scaevola crassifolia</i> (Thick-leaved Fan-flower)			
234.	7608 <i>Scaevola cunninghamii</i>			
235.	12584 <i>Scaevola pulchella</i>			
236.	7644 <i>Scaevola spinescens</i> (Currant Bush, Maroon)			
237.	7648 <i>Scaevola tomentosa</i> (Raggedleaf Fanflower)			
Gracilariaceae				
238.	35899 <i>Gracilaria canaliculata</i>			
239.	35905 <i>Hydropuntia eucheumatoides</i>			
Gyrostemonaceae				
240.	2784 <i>Gyrostemon ramulosus</i> (Corkybark)			
Halimedaceae				
241.	26892 <i>Halimeda discoidea</i>			
242.	26894 <i>Halimeda macroloba</i>			
243.	26898 <i>Halimeda velasquezii</i>			
244.	47213 <i>Halimeda versatilis</i>			
Haloragaceae				
245.	6174 <i>Haloragis gossei</i>			
246.	6180 <i>Haloragis trigonocarpa</i>			
Hemerocallidaceae				
247.	1284 <i>Corynotheca flexuosissima</i>			
248.	1360 <i>Tricoryne corynothecoides</i>			
249.	29477 <i>Tricoryne</i> sp. Mullewa (G.J. Keighery 12080)			
Hydrocharitaceae				
250.	164 <i>Halophila ovalis</i> (Sea Wrack)			
251.	169 <i>Thalassia hemprichii</i>			
Isoetaceae				
252.	11 <i>Isoetes drummondii</i> (Quillwort)			
253.	12 <i>Isoetes inflata</i>			
Lamiaceae				
254.	13689 <i>Clerodendrum tomentosum</i> var. <i>lanceolatum</i>			
255.	13690 <i>Clerodendrum tomentosum</i> var. <i>tomentosum</i>			
256.	6754 <i>Dicrastylis cordifolia</i>			
257.	6910 <i>Plectranthus intraterraneus</i>			
258.	35276 <i>Plectranthus scutellarioides</i>			
259.	41063 <i>Quoya loxocarpa</i>			
260.	41061 <i>Quoya paniculata</i>			
261.	48603 <i>Teucrium teucriiflorum</i>			
Lauraceae				
262.	12073 <i>Cassytha aurea</i> var. <i>aurea</i>			
263.	2949 <i>Cassytha capillaris</i>			
264.	11242 <i>Cassytha racemosa</i> forma <i>pilosa</i>			
Liagoraceae				
265.	26837 <i>Ganonema farinosum</i>			
266.	26912 <i>Helminthocladia australis</i>			
Loganiaceae				
267.	16798 <i>Logania littoralis</i>			
Loranthaceae				
268.	2369 <i>Amyema benthamii</i>			
269.	2372 <i>Amyema fitzgeraldii</i> (Pincushion Mistletoe)			
270.	2380 <i>Amyema miquelii</i> (Stalked Mistletoe)			
271.	13266 <i>Amyema miraculosa</i> subsp. <i>miraculosa</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
272.	2383 <i>Amyema preissii</i> (Wireleaf Mistletoe)			
273.	11874 <i>Amyema sanguinea</i> var. <i>sanguinea</i>			
Malvaceae				
274.	9080 <i>Abutilon cunninghamii</i>			
275.	4891 <i>Abutilon fraseri</i> (Lantern Bush)			
276.	11325 <i>Abutilon indicum</i> var. <i>australiense</i>			
277.	4895 <i>Abutilon lepidum</i>			
278.	4901 <i>Abutilon otocarpum</i> (Desert Chinese Lantern)			
279.	<i>Abutilon</i> sp.			
280.	14115 <i>Abutilon</i> sp. Cape Range (A.S. George 1312)			
281.	42920 <i>Abutilon</i> sp. <i>Dioicum</i> (A.A. Mitchell PRP 1618)			
282.	4904 <i>Alyogyne cuneiformis</i> (Coastal Hibiscus)			
283.	4907 <i>Alyogyne pinoniana</i> (Sand Hibiscus)			
284.	40910 <i>Androcalva luteiflora</i> (Yellow-flowered Rulingia)			
285.	12714 <i>Brachychiton obtusilobus</i>		P4	
286.	18410 <i>Corchorus carmarvonensis</i>			
287.	18411 <i>Corchorus congener</i>		P3	
288.	13560 <i>Corchorus crozophorifolius</i>			
289.	<i>Corchorus</i> sp.			
290.	4918 <i>Gossypium robinsonii</i> (Wild Cotton)			
291.	11559 <i>Gossypium sturtianum</i> var. <i>sturtianum</i>			
292.	17782 <i>Hannafordia quadrivalvis</i> subsp. <i>recurva</i>			
293.	4925 <i>Hibiscus coatesii</i>			
294.	4930 <i>Hibiscus goldsworthii</i>			
295.	4933 <i>Hibiscus leptocladus</i>			
296.	4942 <i>Hibiscus sturtii</i> (Sturt's Hibiscus)			
297.	4960 <i>Lawrenzia viridigrisea</i>			
298.	4962 <i>Malvastrum americanum</i> (Spiked Malvastrum)	Y		
299.	5051 <i>Melhania oblongifolia</i>			
300.	4966 <i>Sida arenicola</i>			
301.	4970 <i>Sida calyxhymenia</i> (Tall Sida)			
302.	4977 <i>Sida fibulifera</i> (Silver Sida)			
303.	4982 <i>Sida kingii</i>			
304.	18149 <i>Sida rohlenae</i> subsp. <i>rohlenae</i>			
305.	4989 <i>Sida spinosa</i> (Spiny Sida)			
306.	14694 <i>Triumfetta clementii</i>			
307.	13481 <i>Triumfetta ramosa</i>			
308.	17529 <i>Triumfetta tenuiseta</i>			
309.	5106 <i>Waltheria indica</i>			
Marsileaceae				
310.	<i>Marsilea</i> sp.			
Menispermaceae				
311.	17345 <i>Tinospora esiangkara</i>		P2	
Montiaceae				
312.	2864 <i>Calandrinia Ptychosperma</i>			
313.	49022 <i>Calandrinia</i> sp. Cape Range (F. Obbens FO 10/18)		P2	
Moraceae				
314.	19648 <i>Ficus brachypoda</i>			
315.	12096 <i>Ficus virens</i> var. <i>virens</i>			
Myrtaceae				
316.	5484 <i>Calytrix truncatifolia</i>			
317.	17093 <i>Corymbia hamersleyana</i>			
318.	17092 <i>Corymbia opaca</i>			
319.	17084 <i>Corymbia zygophylla</i>			
320.	35345 <i>Eucalyptus camaldulensis</i> subsp. <i>obtusa</i> (Blunt-budded River Red Gum)			
321.	5752 <i>Eucalyptus prominens</i>			
322.	15597 <i>Eucalyptus ultima</i>			
323.	14548 <i>Eucalyptus victrix</i>			
324.	15592 <i>Eucalyptus xerothermica</i>			
325.	5879 <i>Melaleuca bracteata</i> (River Teatree)			
326.	5887 <i>Melaleuca cardiophylla</i> (Tangling Melaleuca)			
327.	6010 <i>Pileanthus limacis</i> (Coastal Coppercups)			
328.	44710 <i>Thryptomene dampieri</i>			
329.	6081 <i>Verticordia forrestii</i> (Forrest's Featherflower)			
330.	12457 <i>Verticordia serotina</i>		P2	
Nyctaginaceae				
331.	2770 <i>Boerhavia coccinea</i> (Tar Vine, Wituka)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
332.	2776 <i>Commicarpus australis</i> (Perennial Tar Vine)			
Oleaceae				
333.	12059 <i>Jasminum didymum</i> subsp. <i>lineare</i> (Desert Jasmine)			
334.	29056 <i>Jasminum</i> sp. <i>Exmouth</i> (G. Marsh 77)			
Ophioglossaceae				
335.	16 <i>Helminthostachys zeylanica</i>		P3	
336.	12782 <i>Ophioglossum gramineum</i>			
337.	17 <i>Ophioglossum lusitanicum</i> (Adders Tongue)			
Orchidaceae				
338.	15426 <i>Pterostylis aspera</i>			
Orobanchaceae				
339.	12492 <i>Striga squamigera</i>			
Phrymaceae				
340.	7082 <i>Mimulus gracilis</i>			
Phyllanthaceae				
341.	17626 <i>Phyllanthus erwinii</i>			
342.	4677 <i>Phyllanthus fuernrohrii</i> (Sand Sponge)			
343.	45696 <i>Phyllanthus hamelinii</i> (Shark Bay Phyllanthus)		P3	
344.	4680 <i>Phyllanthus maderaspatensis</i>			
Pittosporaceae				
345.	19744 <i>Pittosporum angustifolium</i>			
346.	41300 <i>Pittosporum phillyreoides</i> (Weeping Pittosporum, Yaliti)			
Plantaginaceae				
347.	7098 <i>Stemodia grossa</i> (Marsh Stemodia, Mindjaara)			
348.	48755 <i>Stemodia</i> sp. <i>Carnarvon</i> (W.R. Barker 2154)			
349.	17295 <i>Stemodia</i> sp. <i>Onslow</i> (A.A. Mitchell 76/148)			
Plumbaginaceae				
350.	6490 <i>Muellerolimon salicorniaceum</i>			
351.	6491 <i>Plumbago zeylanica</i> (Native Plumbago)			
Poaceae				
352.	207 <i>Aristida contorta</i> (Bunched Kerosene Grass)			
353.	12063 <i>Aristida holathera</i> var. <i>holathera</i>			
354.	217 <i>Aristida nitidula</i> (Flat-awned Threawn)			
355.	235 <i>Avena sativa</i> (Common Oat)	Y		
356.	240 <i>Bothriochloa ewartiana</i> (Desert Bluegrass)			
357.	258 <i>Cenchrus ciliaris</i> (Buffel Grass)	Y		
358.	266 <i>Chloris barbata</i> (Purpletop Chloris)	Y		
359.	273 <i>Chrysopogon fallax</i> (Golden Beard Grass)			
360.	279 <i>Cymbopogon ambiguus</i> (Scentgrass)			
361.	13741 <i>Dichanthium sericeum</i> subsp. <i>humilius</i>			
362.	313 <i>Digitaria ctenantha</i> (Comb Finger Grass)			
363.	328 <i>Echinochloa colona</i> (Awnless Barnyard Grass)	Y		
364.	357 <i>Enneapogon caeruleus</i> (Limestone Grass)			
365.	360 <i>Enneapogon lindleyanus</i> (Wiry Nineawn, Purple-head Nineawn)			
366.	375 <i>Eragrostis cumingii</i> (Cuming's Love Grass)			
367.	380 <i>Eragrostis eriopoda</i> (Woollybutt Grass, Wangurnu)			
368.	411 <i>Eriachne helmsii</i> (Buck Wanderrie Grass)			
369.	413 <i>Eriachne mucronata</i> (Mountain Wanderrie Grass)			
370.	414 <i>Eriachne obtusa</i> (Northern Wandarrie Grass)			
371.	11011 <i>Eulalia aurea</i>			
372.	458 <i>Iseilema dolichotrichum</i>			
373.	503 <i>Panicum decompositum</i> (Native Millet, Kaltu-kaltu)			
374.	518 <i>Paspalidium clementii</i> (Clements Paspalidium)			
375.	525 <i>Paspalidium tabulatum</i>			
376.	606 <i>Setaria dielsii</i> (Diels' Pigeon Grass)			
377.	619 <i>Sorghum plumosum</i> (Plume Canegrass)			
378.	625 <i>Spinifex longifolius</i> (Beach Spinifex)			
379.	635 <i>Sporobolus virginicus</i> (Marine Couch)			
380.	679 <i>Triodia angusta</i>			
381.	13131 <i>Triodia epactia</i>			
382.	48467 <i>Triodia glabra</i>			
383.	17873 <i>Triodia schinzii</i>			
384.	704 <i>Triodia wiseana</i> (Limestone Spinifex)			
Polygonaceae				
385.	46434 <i>Rumex hypogaeus</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Y				
Polyphysaceae				
386.	48409 <i>Acetabularia caliculus</i>			
Pottiaceae				
387.	32415 <i>Pottia scabrifolia</i>			
Primulaceae				
388.	6484 <i>Samolus repens</i> (Creeping Brookweed)			
389.	14026 <i>Samolus</i> sp. Shark Bay (M.E. Trudgen 7410)			
Proteaceae				
390.	1972 <i>Grevillea calcicola</i>		P3	
391.	2001 <i>Grevillea eriostachya</i> (Flame Grevillea, Kaliny-kalinyppa)			
392.	2096 <i>Grevillea stenobotrya</i>			
393.	2117 <i>Grevillea variifolia</i> (Cape Range Grevillea)			
394.	15686 <i>Grevillea variifolia</i> subsp. <i>bundera</i>			
395.	15685 <i>Grevillea variifolia</i> subsp. <i>variifolia</i>			
396.	2207 <i>Hakea stenophylla</i>			
397.	16897 <i>Hakea stenophylla</i> subsp. <i>stenophylla</i>			
Pteridaceae				
398.	12796 <i>Cheilanthes adiantoides</i>			
399.	31 <i>Cheilanthes austrotenuifolia</i>			
400.	37 <i>Cheilanthes lasiophylla</i> (Woolly Cloak Fern)			
Rhizophoraceae				
401.	5295 <i>Rhizophora stylosa</i> (Spotted-leaved Red Mangrove)			
Rhizophyllidaceae				
402.	27186 <i>Portieria hornemannii</i>			
Rhodomelaceae				
403.	26453 <i>Amansia rhodantha</i>			
404.	27171 <i>Polysiphonia blandii</i>			
Ricciaceae				
405.	<i>Riccia bifurca</i>			
406.	<i>Riccia limbata</i>			
407.	<i>Riccia vesiculosa</i>			
Rubiaceae				
408.	7338 <i>Oldenlandia crouchiana</i>			
409.	18256 <i>Opercularia spermacocea</i>			
410.	13339 <i>Synaptantha tillaeacea</i> var. <i>tillaeacea</i>			
Ruppiaceae				
411.	114 <i>Ruppia maritima</i> (Sea Tassel)			
Rutaceae				
412.	4456 <i>Diplolaena grandiflora</i> (Wild Rose)			
Santalaceae				
413.	10977 <i>Exocarpos aphyllus</i> (Leafless Ballart)			
414.	10765 <i>Exocarpos sparteus</i> (Broom Ballart, Djuk)			
415.	2357 <i>Santalum lanceolatum</i> (Northern Sandalwood, Yarnguli)			
Sapindaceae				
416.	11487 <i>Alectryon oleifolius</i> subsp. <i>oleifolius</i>			
417.	4745 <i>Diplopeltis eriocarpa</i> (Hairy Pepperflower)			
418.	4747 <i>Diplopeltis intermedia</i>			
419.	11669 <i>Diplopeltis intermedia</i> var. <i>intermedia</i>			
Scrophulariaceae				
420.	7198 <i>Eremophila deserti</i>			
421.	29715 <i>Eremophila forrestii</i> subsp. <i>capensis</i>		P3	
422.	15052 <i>Eremophila forrestii</i> subsp. <i>forrestii</i>			
423.	7234 <i>Eremophila longifolia</i> (Berrigan, Tulypurpa)			
424.	16363 <i>Eremophila maculata</i> subsp. <i>brevifolia</i> (Native Fuchsia)			
425.	15032 <i>Eremophila occidentalis</i>		P2	
426.	23997 <i>Eremophila tietkensis</i>			
427.	16040 <i>Eremophila youngii</i> subsp. <i>lepidota</i>		P4	
Siphonocladaceae				
428.	26507 <i>Boergesenia forbesii</i>			
Solanaceae				
429.	47241 <i>Datura leichhardtii</i> subsp. <i>leichhardtii</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
		Y		
430.	6966 <i>Duboisia hopwoodii</i> (Pituri, Kundugu)			
431.	6974 <i>Nicotiana glauca</i> (Tree Tobacco)	Y		
432.	6976 <i>Nicotiana occidentalis</i> (Native Tobacco)			
433.	11856 <i>Nicotiana occidentalis</i> subsp. <i>occidentalis</i>			
434.	7002 <i>Solanum diversiflorum</i>			
435.	7018 <i>Solanum lasiophyllum</i> (Flannel Bush, Mindjulu)			
436.	47173 <i>Solanum lycopersicum</i> (Tomato)	Y		
Solieriaceae				
437.	26827 <i>Eucheuma denticulatum</i>			
Thymelaeaceae				
438.	5230 <i>Pimelea ammocharis</i>			
439.	11185 <i>Pimelea microcephala</i> subsp. <i>microcephala</i>			
Udoteaceae				
440.	27121 <i>Penicillus nodulosus</i>			
Urticaceae				
441.	12670 <i>Parietaria cardiostegia</i>			
Valoniaceae				
442.	36143 <i>Valonia fastigiata</i>			
Verbenaceae				
443.	6733 <i>Lantana camara</i> (Common Lantana)	Y		
Violaceae				
444.	5215 <i>Hybanthus aurantiacus</i>			
445.	5219 <i>Hybanthus enneaspermus</i>			
Zygophyllaceae				
446.	48891 <i>Roepera fruticulosa</i>			
447.	48900 <i>Roepera retivalvis</i>			
448.	4375 <i>Tribulus cistoides</i>			
449.	4377 <i>Tribulus hirsutus</i>			
450.	4379 <i>Tribulus macrocarpus</i>			
451.	4380 <i>Tribulus occidentalis</i> (Perennial Caltrop)			
452.	18072 <i>Tribulus suberosus</i>			

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 wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap Species Report_Fauna 20 km buffer

Created By Guest user on 17/03/2021

Kingdom Animalia
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 114° 06' 43" E, 22° 01' 05" S
Buffer 20km
Group By Species Group

Species Group	Species	Records
Amphibian	4	56
Bird	194	2949
Fish	315	836
Invertebrate	69	847
Mammal	26	721
Reptile	82	623
TOTAL	690	6032

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Amphibian				
1.	25375 <i>Cyclorana maini</i> (Sheep Frog)			
2.	25424 <i>Neobatrachus fulvus</i> (Tawny Trilling Frog)			
3.	25427 <i>Neobatrachus sutor</i> (Shoemaker Frog)			
4.	25432 <i>Pseudophryne douglasi</i> (Gorge Toadlet)			
Bird				
5.	24559 <i>Acanthagenys rufogularis</i> (Spiny-cheeked Honeyeater)			
6.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
7.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
8.	24282 <i>Accipiter fasciatus</i> subsp. <i>fasciatus</i> (Brown Goshawk)			
9.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
10.	25544 <i>Aegotheles cristatus</i> (Australian Owlet-nightjar)			
11.	24301 <i>Aegotheles cristatus</i> subsp. <i>cristatus</i> (Australian Owlet-nightjar)			
12.	24312 <i>Anas gracilis</i> (Grey Teal)			
13.	<i>Anas platyrhynchos</i> subsp. <i>domesticus</i>			
14.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
15.	47414 <i>Anhinga novaehollandiae</i> (Australasian Darter)			
16.	25634 <i>Anous stolidus</i> (Common Noddy)		IA	
17.	24599 <i>Anthus australis</i> subsp. <i>australis</i> (Australian Pipit)			
18.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
19.	25558 <i>Ardea ibis</i> (Cattle Egret)			
20.	25559 <i>Ardea intermedia</i> (Intermediate Egret)			
21.	41324 <i>Ardea modesta</i> (great egret, white egret)			
22.	24341 <i>Ardea pacifica</i> (White-necked Heron)			
23.	24343 <i>Ardea sacra</i> subsp. <i>sacra</i> (Eastern Reef Egret, Eastern Reef Heron)			
24.	48573 <i>Ardenna pacifica</i> (Wedge-tailed Shearwater)		IA	
25.	24610 <i>Ardeotis australis</i> (Australian Bustard)			
26.	25736 <i>Arenaria interpres</i> (Ruddy Turnstone)		IA	
27.	25566 <i>Artamus cinereus</i> (Black-faced Woodswallow)			
28.	24352 <i>Artamus cinereus</i> subsp. <i>melanops</i> (Black-faced Woodswallow)			
29.	25567 <i>Artamus leucorhynchus</i> (White-breasted Woodswallow)			
30.	24354 <i>Artamus leucorhynchus</i> subsp. <i>leucopygialis</i> (White-breasted Woodswallow)			
31.	24355 <i>Artamus minor</i> (Little Woodswallow)			
32.	24356 <i>Artamus personatus</i> (Masked Woodswallow)			
33.	24318 <i>Aythya australis</i> (Hardhead)			
34.	<i>Barnardius zonarius</i>			
35.	24359 <i>Burhinus grallarius</i> (Bush Stone-curlew)			
36.	47897 <i>Butorides striata</i> (Striated Heron, Mangrove Heron)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
37.	25716 <i>Cacatua sanguinea</i> (Little Corella)			
38.	24727 <i>Cacatua sanguinea</i> subsp. <i>westralensis</i> (Little Corella)			
39.	42307 <i>Cacomantis pallidus</i> (Pallid Cuckoo)			
40.	24269 <i>Calamanthus campestris</i> (Rufous Fieldwren)			
41.	24779 <i>Calidris acuminata</i> (Sharp-tailed Sandpiper)		IA	
42.	24780 <i>Calidris alba</i> (Sanderling)		IA	
43.	24784 <i>Calidris ferruginea</i> (Curlew Sandpiper)		T	
44.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
45.	24789 <i>Calidris subminuta</i> (Long-toed Stint)		IA	
46.	25600 <i>Centropus phasianinus</i> (Pheasant Coucal)			
47.	24564 <i>Certhionyx variegatus</i> (Pied Honeyeater)			
48.	25575 <i>Charadrius leschenaultii</i> (Greater Sand Plover)		T	
49.	25576 <i>Charadrius mongolus</i> (Lesser Sand Plover)		T	
50.	24377 <i>Charadrius ruficapillus</i> (Red-capped Plover)			
51.	24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck)			
52.	41332 <i>Chlidonias leucopterus</i> (White-winged Black Tern, white-winged tern)		IA	
53.	<i>Chroicocephalus novaehollandiae</i>			
54.	24288 <i>Circus approximans</i> (Swamp Harrier)			
55.	24289 <i>Circus assimilis</i> (Spotted Harrier)			
56.	24612 <i>Colluricincla harmonica</i> subsp. <i>kolichisi</i> (Grey Shrike-thrush)			
57.	24399 <i>Columba livia</i> (Domestic Pigeon)	Y		
58.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
59.	24362 <i>Coracina novaehollandiae</i> subsp. <i>novaehollandiae</i> (Black-faced Cuckoo-shrike)			
60.	24416 <i>Corvus bennetti</i> (Little Crow)			
61.	25593 <i>Corvus orru</i> (Torresian Crow)			
62.	24671 <i>Coturnix pectoralis</i> (Stubble Quail)			
63.	25701 <i>Coturnix ypsilophora</i> (Brown Quail)			
64.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
65.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
66.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
67.	24322 <i>Cygnus atratus</i> (Black Swan)			
68.	25547 <i>Dacelo leachii</i> (Blue-winged Kookaburra)			
69.	24324 <i>Dendrocygna arcuata</i> (Wandering Whistling Duck, Chestnut Whistling Duck)			
70.	25607 <i>Dicaeum hirundinaceum</i> (Mistletoebird)			
71.	24441 <i>Dicaeum hirundinaceum</i> subsp. <i>hirundinaceum</i> (Mistletoebird)			
72.	24470 <i>Dromaius novaehollandiae</i> (Emu)			
73.	<i>Egretta garzetta</i>			
74.	<i>Egretta novaehollandiae</i>			
75.	<i>Elanus axillaris</i>			
76.	47937 <i>Euseyornis melanops</i> (Black-fronted Dotterel)			
77.	24631 <i>Emblema pictum</i> (Painted Finch)			
78.	<i>Eolophus roseicapillus</i>			
79.	24653 <i>Eopsaltria pulverulenta</i> (Mangrove Robin)			
80.	25578 <i>Ephippiorhynchus asiaticus</i> (Black-necked Stork)			
81.	24567 <i>Epthianura albifrons</i> (White-fronted Chat)			
82.	24568 <i>Epthianura aurifrons</i> (Orange Chat)			
83.	24570 <i>Epthianura tricolor</i> (Crimson Chat)			
84.	24837 <i>Eremionis carteri</i> (Spinifex-bird)			
85.	24379 <i>Erythronys cinctus</i> (Red-kneed Dotterel)			
86.	47938 <i>Esacus magnirostris</i> (Beach Stone-curlew, Beach Thick-knee)			
87.	25621 <i>Falco berigora</i> (Brown Falcon)			
88.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
89.	25623 <i>Falco longipennis</i> (Australian Hobby)			
90.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
91.	25727 <i>Fulica atra</i> (Eurasian Coot)			
92.	24793 <i>Gallinago stenura</i> (Pin-tailed Snipe)		IA	
93.	25730 <i>Gallirallus philippensis</i> (Buff-banded Rail)			
94.	24765 <i>Gallirallus philippensis</i> subsp. <i>mellori</i> (Buff-banded Rail)			
95.	42314 <i>Gavialis virescens</i> (Singing Honeyeater)			
96.	47954 <i>Gelochelidon nilotica</i> (Gull-billed Tern)		IA	
97.	24401 <i>Geopelia cuneata</i> (Diamond Dove)			
98.	24402 <i>Geopelia humeralis</i> (Bar-shouldered Dove)			
99.	25585 <i>Geopelia striata</i> (Zebra Dove)			
100.	24404 <i>Geophaps plumifera</i> (Spinifex Pigeon)			
101.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
102.	24276 <i>Gerygone tenebrosa</i> (Dusky Gerygone)			
103.	24481 <i>Glareola maldivarum</i> (Oriental Pratincole)		IA	
104.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
105.	25627 <i>Haematopus fuliginosus</i> (Sooty Oystercatcher)			
106.	24487 <i>Haematopus longirostris</i> (Pied Oystercatcher)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
107.	24293 <i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)			
108.	25541 <i>Haliastur indus</i> (Brahminy Kite)			
109.	24295 <i>Haliastur sphenurus</i> (Whistling Kite)			
110.	24297 <i>Hamirostra melanosternon</i> (Black-breasted Buzzard)			
111.	47965 <i>Hieraaetus morphnoides</i> (Little Eagle)			
112.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
113.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
114.	48587 <i>Hydroprogne caspia</i> (Caspian Tern)		IA	
115.	25638 <i>Larus pacificus</i> (Pacific Gull)			
116.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
117.	24582 <i>Lichmera indistincta</i> subsp. <i>indistincta</i> (Brown Honeyeater)			
118.	25739 <i>Limicola falcinellus</i> (Broad-billed Sandpiper)		IA	
119.	30932 <i>Limosa lapponica</i> (Bar-tailed Godwit)		IA	
120.	25741 <i>Limosa limosa</i> (Black-tailed Godwit)		IA	
121.	25651 <i>Malurus lamberti</i> (Variegated Fairy-wren)			
122.	25652 <i>Malurus leucopterus</i> (White-winged Fairy-wren)			
123.	24583 <i>Manorina flavigula</i> (Yellow-throated Miner)			
124.	47997 <i>Melanodryas cucullata</i> (Hooded Robin)			
125.	24736 <i>Melopsittacus undulatus</i> (Budgerigar)			
126.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)			
127.	<i>Microcarbo melanoleucos</i>			
128.	25542 <i>Milvus migrans</i> (Black Kite)			
129.	25545 <i>Mirafra javanica</i> (Horsfield's Bushlark, Singing Bushlark)			
130.	25685 <i>Neochmia ruficauda</i> (Star Finch)			
131.	25747 <i>Ninox connivens</i> (Barking Owl)			
132.	24798 <i>Numenius madagascariensis</i> (Eastern Curlew)		T	
133.	24799 <i>Numenius minutus</i> (Little Curlew, Little Whimbrel)		IA	
134.	25742 <i>Numenius phaeopus</i> (Whimbrel)		IA	
135.	25564 <i>Nycticorax caledonicus</i> (Rufous Night Heron)			
136.	24742 <i>Nymphicus hollandicus</i> (Cockatiel)			
137.	24407 <i>Ocyphaps lophotes</i> (Crested Pigeon)			
138.	24618 <i>Oreoica gutturalis</i> (Crested Bellbird)			
139.	24620 <i>Pachycephala lanioides</i> (White-breasted Whistler)			
140.	24621 <i>Pachycephala melanura</i> subsp. <i>melanura</i> (Mangrove Golden Whistler)			
141.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
142.	48591 <i>Pandion cristatus</i> (Osprey, Eastern Osprey)		IA	
143.	24627 <i>Pardalotus rubricatus</i> (Red-browed Pardalote)			
144.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
145.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)			
146.	48060 <i>Petrochelidon ariel</i> (Fairy Martin)			
147.	48061 <i>Petrochelidon nigricans</i> (Tree Martin)			
148.	24659 <i>Petroica goodenovii</i> (Red-capped Robin)			
149.	24662 <i>Phaethon lepturus</i> (White-tailed Tropicbird)		IA	
150.	24663 <i>Phaethon rubricauda</i> (Red-tailed Tropicbird)		P4	
151.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
152.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
153.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
154.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
155.	24842 <i>Platalea regia</i> (Royal Spoonbill)			
156.	24382 <i>Pluvialis fulva</i> (Pacific Golden Plover)		IA	
157.	24383 <i>Pluvialis squatarola</i> (Grey Plover)		IA	
158.	25703 <i>Podargus strigoides</i> (Tawny Frogmouth)			
159.	24681 <i>Poliiocephalus poliocephalus</i> (Hoary-headed Grebe)			
160.	25706 <i>Pomatostomus temporalis</i> (Grey-crowned Babbler)			
161.	24769 <i>Porzana fluminea</i> (Australian Spotted Crane)			
162.	24390 <i>Psophodes occidentalis</i> (Western Wedgebill, Chiming Wedgebill)			
163.	<i>Ptilonorhynchus guttatus</i>			
164.	24757 <i>Ptilonorhynchus maculatus</i> subsp. <i>guttatus</i> (Western Bowerbird)			
165.	42323 <i>Ptilotula keartlandi</i> (Grey-headed Honeyeater)			
166.	24278 <i>Pyrrholaemus brunneus</i> (Redthroat)			
167.	48096 <i>Rhipidura albiscapa</i> (Grey Fantail)			
168.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
169.	24454 <i>Rhipidura leucophrys</i> subsp. <i>leucophrys</i> (Willie Wagtail)			
170.	24457 <i>Rhipidura phasiana</i> (Mangrove Grey Fantail)			
171.	30948 <i>Smicromis brevirostris</i> (Weebill)			
172.	24521 <i>Sterna bengalensis</i> (Lesser Crested Tern)			
173.	25640 <i>Sterna dougallii</i> (Roseate Tern)		IA	
174.	25642 <i>Sterna hirundo</i> (Common Tern)		IA	
175.	48593 <i>Sternula albifrons</i> (Little Tern)		IA	
176.	48594 <i>Sternula nereis</i> (Fairy Tern)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
177.	25656 <i>Stipiturus ruficeps</i> (Rufous-crowned Emu-wren)			
178.	25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove)	Y		
179.	25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
180.	30870 <i>Taeniopygia guttata</i> (Zebra Finch)			
181.	34007 <i>Thalassarche chlororhynchos</i> (Atlantic Yellow-nosed Albatross)		T	
182.	<i>Thalasseus bengalensis</i>			
183.	48597 <i>Thalasseus bergii</i> (Crested Tern)		IA	
184.	24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
185.	24306 <i>Todiramphus chloris</i> subsp. <i>pilbara</i> (Pilbara Collared Kingfisher)			
186.	42351 <i>Todiramphus pyrrhopygius</i> (Red-backed Kingfisher)			
187.	25549 <i>Todiramphus sanctus</i> (Sacred Kingfisher)			
188.	48141 <i>Tribonyx ventralis</i> (Black-tailed Native-hen)			
189.	24803 <i>Tringa brevipes</i> (Grey-tailed Tattler)		P4	
190.	24806 <i>Tringa glareola</i> (Wood Sandpiper)		IA	
191.	24808 <i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
192.	24809 <i>Tringa stagnatilis</i> (Marsh Sandpiper, little greenshank)		IA	
193.	24851 <i>Turnix velox</i> (Little Button-quail)			
194.	24386 <i>Vanellus tricolor</i> (Banded Lapwing)			
195.	41351 <i>Xenus cinereus</i> (Terek Sandpiper)		IA	
196.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silvereye)			
197.	24857 <i>Zosterops luteus</i> (Yellow White-eye)			
198.	<i>Zosterops luteus</i> subsp. <i>balstoni</i>			

Fish

199.	??			
200.	<i>Abudefduf bengalensis</i>			
201.	<i>Acanthocephala abbreviata</i>			
202.	<i>Acanthopagrus latus</i>			
203.	<i>Adventor elongatus</i>			
204.	<i>Albula forsteri</i>			
205.	<i>Alectis ciliaris</i>			
206.	<i>Alectis indica</i>			
207.	<i>Alepes apercna</i>			
208.	<i>Ambassis vachellii</i>			
209.	<i>Amblyeleotris wheeleri</i>			
210.	<i>Amblygobius phalaena</i>			
211.	<i>Anacanthus barbatus</i>			
212.	<i>Apistus carinatus</i>			
213.	<i>Apogon argyrogaster</i>			
214.	<i>Apogon breviceaudatus</i>			
215.	<i>Apogon fasciatus</i>			
216.	<i>Apogon nigripinnis</i>			
217.	<i>Apogon pallidofasciatus</i>			
218.	<i>Apogon poecilopterus</i>			
219.	<i>Apogon rueppellii</i>			
220.	<i>Apogon septemstriatus</i>			
221.	<i>Apogon sp.</i>			
222.	<i>Argyrosomus japonicus</i>			
223.	<i>Arius thalassinus</i>			
224.	<i>Arothron stellatus</i>			
225.	<i>Aseraggodes sp.</i>			
226.	<i>Aseraggodes whiteyi</i>			
227.	<i>Assiculus punctatus</i>			
228.	<i>Asterropteryx semipunctatus</i>			
229.	<i>Atelomycterus fasciatus</i>			
230.	<i>Atherinomorus vaigiensis</i>			
231.	<i>Bathygobius fuscus</i>			
232.	<i>Batrachomoeus sp.</i>			
233.	<i>Belone sp.</i>			
234.	<i>Bodianus bilunulatus</i>			
235.	<i>Brachysomophis cirrocheilos</i>			
236.	<i>Callionymus grossi</i>			
237.	<i>Callionymus sublaevis</i>			
238.	<i>Cantherhines pardalis</i>			
239.	<i>Canthigaster coronata</i>			
240.	<i>Carangoides caeruleopinnatus</i>			
241.	<i>Carangoides chrysophrys</i>			
242.	<i>Carangoides coeruleopinnatus</i>			
243.	<i>Carangoides hedlandensis</i>			
244.	<i>Carangoides humerosus</i>			
245.	<i>Carangoides malabaricus</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
246.	<i>Carangoides talamparoides</i>			
247.	<i>Caranx bucculentus</i>			
248.	<i>Caranx sexfasciatus</i>			
249.	<i>Carcharhinus cautus</i>			
250.	<i>Carcharhinus</i> sp.			
251.	34031 <i>Carcharodon carcharias</i> (Great White Shark)		T	
252.	<i>Centriscus cristatus</i>			
253.	<i>Centriscus scutatus</i>			
254.	<i>Centrogenys vaigiensis</i>			
255.	<i>Centrolophus niger</i>			
256.	<i>Centropyge eibii</i>			
257.	<i>Cephalopholis boenak</i>			
258.	<i>Cephalopholis sonnerati</i>			
259.	<i>Chaetodermis penicilligera</i>			
260.	<i>Chaetodon adiergastos</i>			
261.	<i>Chaetodon assarius</i>			
262.	<i>Chaetodon punctatofasciatus</i>			
263.	<i>Chaetodon trifascialis</i>			
264.	<i>Chaetodontoplus duboulayi</i>			
265.	<i>Cheilinus chlorourus</i>			
266.	<i>Chelmon marginalis</i>			
267.	<i>Chelonodon patoca</i>			
268.	<i>Chirocentrus dorab</i>			
269.	<i>Choerodon cauteroma</i>			
270.	<i>Choerodon cephalotes</i>			
271.	<i>Choerodon</i> sp.			
272.	<i>Choerodon vitta</i>			
273.	<i>Cirrhitus pinnulatus</i>			
274.	<i>Conger cinereus</i>			
275.	<i>Congrogadus malayanus</i>			
276.	<i>Congrogadus spinifer</i>			
277.	<i>Coradion chrysozonus</i>			
278.	<i>Coryphaena hippurus</i>			
279.	<i>Craterocephalus mugiloides</i>			
280.	<i>Craterocephalus pauciradiatus</i>			
281.	<i>Ctenochaetus strigosus</i>			
282.	<i>Cymbacephalus nematophthalmus</i>			
283.	<i>Cynoglossus</i> sp.			
284.	<i>Dactyloptena orientalis</i>			
285.	<i>Dactyloptena papilio</i>			
286.	<i>Dactylopus dactylopus</i>			
287.	<i>Dasyatis kuhlii</i>			
288.	<i>Decapterus macrosoma</i>			
289.	<i>Decapterus russelli</i>			
290.	<i>Dendrochirus brachypterus</i>			
291.	<i>Dexillus muelleri</i>			
292.	<i>Diodon</i> sp.			
293.	<i>Echeneis naucrates</i>			
294.	<i>Elops hawaiiensis</i>			
295.	<i>Engyprosopon</i> sp.			
296.	<i>Enneapterygius gracilis</i>			
297.	<i>Epinephelus bilobatus</i>			
298.	<i>Epinephelus coioides</i>			
299.	<i>Epinephelus rivulatus</i>			
300.	<i>Epinephelus sexfasciatus</i>			
301.	<i>Epinephelus</i> sp.			
302.	<i>Equulites moretoniensis</i>			
303.	<i>Eubalichthys caeruleoguttatus</i>			
304.	<i>Euristhmus nudiceps</i>			
305.	<i>Eviota</i> sp.			
306.	<i>Fistularia petimba</i>			
307.	<i>Foa</i> sp.			Y
308.	<i>Gambusia holbrooki</i>			
309.	<i>Gazza minuta</i>			
310.	<i>Gerres oblongus?</i>			Y
311.	<i>Gerres</i> sp.			
312.	<i>Gerres subfasciatus</i>			
313.	<i>Glaucosoma magnificum</i>			
314.	<i>Gnathanodon speciosus</i>			
315.	<i>Gobiodon axillaris</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
316.	<i>Grammatobothus polyophthalmus</i>			
317.	<i>Gymnocranius griseus</i>			
318.	<i>Gymnothorax pseudothyrsoides</i>			
319.	<i>Gymnothorax undulatus</i>			
320.	<i>Gymnura australis</i>			
321.	<i>Halicampus spirostris</i>			Y
322.	<i>Halichoeres melanochir</i>			
323.	<i>Halophryne diemensis</i>			
324.	<i>Halophryne ocellatus</i>			
325.	<i>Hemigaleus sp.</i>			
326.	<i>Heniochus acuminatus</i>			
327.	<i>Herklotsichthys blackburni</i>			
328.	<i>Herklotsichthys koningsbergeri</i>			
329.	<i>Hologymnosus annulatus</i>			
330.	<i>Hypoatherina temminckii</i>			
331.	<i>Ichthyscopus insperatus</i>			
332.	<i>Inegocia japonica</i>			
333.	<i>Inimicus sinensis</i>			
334.	<i>Istiblennius edentulus</i>			
335.	<i>Istiblennius meleagris</i>			
336.	<i>Istiophorus platypterus</i>			
337.	<i>Lactoria cornuta</i>			
338.	<i>Lactoria fornasini</i>			
339.	<i>Lagocephalus sceleratus</i>			
340.	<i>Leiognathus bindus</i>			
341.	<i>Leiognathus leuciscus</i>			
342.	<i>Leiognathus sp.</i>			
343.	<i>Lepidotrigla sp.</i>			
344.	<i>Leptoscarus vaigiensis</i>			
345.	<i>Lethrinus genivittatus</i>			
346.	<i>Lethrinus laticaudis</i>			
347.	<i>Lethrinus miniatus</i>			
348.	<i>Lethrinus nebulosus</i>			
349.	<i>Lethrinus punctulatus</i>			
350.	<i>Lethrinus rubrioperculatus</i>			
351.	<i>Liachirus whiteyi</i>			Y
352.	<i>Liocranium praepositum</i>			
353.	<i>Liza alata</i>			
354.	<i>Liza sp.</i>			
355.	<i>Lophiocharon trisignatus</i>			
356.	<i>Lutjanus carponotatus</i>			
357.	<i>Lutjanus fulviflamma</i>			
358.	<i>Lutjanus malabaricus</i>			
359.	<i>Lutjanus vitta</i>			
360.	<i>Megalaspis cordyla</i>			
361.	<i>Mene maculata</i>			
362.	<i>Metavelifer multiradiatus</i>			
363.	<i>Microcanthus strigatus</i>			
364.	34025 <i>Milyeringa veritas</i> (Cave Gudgeon, Blind Gudgeon)		T	
365.	<i>Minous sp.</i>			
366.	<i>Minous versicolor</i>			
367.	<i>Monacanthus chinensis</i>			
368.	<i>Monocentris japonicus</i>			
369.	<i>Mugil cephalus</i>			
370.	<i>Narcine westraliensis</i>			
371.	<i>Nectamia savayensis</i>			
372.	<i>Nemipterus peronii</i>			
373.	<i>Notograptus guttatus</i>			
374.	<i>Omobranchus germaini</i>			
375.	<i>Omobranchus rotundiceps</i>			
376.	<i>Ophichthys celebicus?</i>			
377.	34038 <i>Ophisternon candidum</i> (Blind Cave Eel)		T	
378.	<i>Opistognathus darwiniensis</i>			
379.	<i>Opistognathus inornatus</i>			
380.	<i>Oplopomus sp.</i>			Y
381.	<i>Paracentropogon vespa</i>			
382.	<i>Parachaetodon ocellatus</i>			
383.	<i>Parachaeturichthys polynema</i>			
384.	<i>Paramonacanthus choirocephalus</i>			
385.	<i>Parapercis diplospilus</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
386.	<i>Parapercis nebulosa</i>			
387.	<i>Paraplagusia bilineata</i>			
388.	<i>Paraplotosus albilabris</i>			
389.	<i>Parascloopsis</i> sp.			
390.	<i>Parascorpaena picta</i>			
391.	<i>Parastromateus niger</i>			
392.	<i>Parupeneus</i> sp.			
393.	<i>Parupeneus spilurus</i>			
394.	<i>Pataecus</i> sp.			
395.	<i>Pegasus volitans</i>			
396.	<i>Pelates quadrilineatus</i>			
397.	<i>Pellona ditchela</i>			
398.	<i>Pempheris ypsilychnus</i>			
399.	<i>Pentapodus emeryii</i>			
400.	<i>Pentapodus porosus</i>			
401.	<i>Pentapodus</i> sp.			
402.	<i>Pentapodus vitta</i>			
403.	<i>Periophthalmus argenteolineatus</i>			
404.	<i>Peristrominous dolosus</i>			
405.	<i>Petroscirtes breviceps</i>			
406.	<i>Petroscirtes mitratus</i>			
407.	<i>Platax</i> sp.			
408.	<i>Platycephalus arenarius</i>			
409.	<i>Platycephalus endrachtensis</i>			
410.	<i>Plectorhinchus pictus</i>			
411.	<i>Plectorhinchus unicolor</i>			
412.	<i>Plectropomus maculatus</i>			
413.	<i>Plotosus lineatus</i>			
414.	<i>Poecilia reticulata</i>			
415.	<i>Polydactylus multiradiatus</i>			
416.	<i>Polydactylus plebius</i>			
417.	<i>Pomacentrus milleri</i>			
418.	<i>Pomacentrus moluccensis</i>			
419.	<i>Pomacentrus</i> sp.			
420.	<i>Pomacentrus vaiuli</i>			
421.	<i>Pomadasys argenteus</i>			
422.	<i>Pomadasys maculatus</i>			
423.	<i>Priacanthus hamrur</i>			
424.	<i>Priacanthus tayenus</i>			
425.	<i>Priolepis nuchifasciata</i>			
426.	34037 <i>Pristis zijsron</i> (Green Sawfish)		T	
427.	<i>Pristotis obtusirostris</i>			
428.	<i>Psammodytes ocellatus</i>			
429.	<i>Psammoperca waigiensis</i>			
430.	<i>Psettodes erumei</i>			
431.	<i>Pseudocalliurichthys goodladi</i>			
432.	<i>Pseudocaranx dentex</i>			
433.	<i>Pseudochromis fuscus</i>			
434.	<i>Pseudomonacanthus peroni</i>			
435.	<i>Pseudorhombus arsius</i>			
436.	<i>Pseudorhombus jenynsii</i>			
437.	<i>Pseudorhombus</i> sp.			
438.	<i>Pteragogus enneacanthus</i>			
439.	<i>Pterapogon mirifica</i>			
440.	<i>Ptereleotris evides</i>			
441.	<i>Pterois antennata</i>			
442.	<i>Pterois russelli</i>			
443.	<i>Pterois volitans</i>			
444.	<i>Rachycentron canadum</i>			
445.	<i>Ranzania laevis</i>			
446.	<i>Rastrelliger kanagurta</i>			
447.	42358 <i>Rhincodon typus</i> (Whale Shark)		S	
448.	<i>Rhynchobatus djiddensis</i>			
449.	<i>Rhynchostracion nasus</i>			
450.	<i>Salarias fasciatus</i>			
451.	<i>Salarias sexfilum</i>			
452.	<i>Saurida argentea</i>			
453.	<i>Saurida nebulosa</i>			
454.	<i>Saurida undosquamis</i>			
455.	<i>Scaevius milii</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
456.	<i>Scolopsis</i> sp.			
457.	<i>Scolopsis taenioptera</i>			
458.	<i>Scomberoides lysan</i>			
459.	<i>Scomberomorus queenslandicus</i>			
460.	<i>Secutor insidiator</i>			
461.	<i>Secutor interruptus</i>			
462.	<i>Selar</i> sp.			
463.	<i>Selaroides leptolepis</i>			
464.	<i>Selenotoca multifasciata</i>			
465.	<i>Seriolina nigrofasciata</i>			
466.	<i>Siganus fuscescens</i>			
467.	<i>Siganus</i> sp.			
468.	<i>Siganus spinus</i>			
469.	<i>Sillago analis</i>			
470.	<i>Sillago burrus</i>			
471.	<i>Sillago lutea</i>			
472.	<i>Sillago maculata</i>			
473.	<i>Sillago</i> sp.			
474.	<i>Sphyaena barracuda</i>			
475.	<i>Sphyaena obtusata</i>			
476.	<i>Stethojulis bandanensis</i>			
477.	<i>Stethojulis strigiventer</i>			
478.	<i>Suggrundus</i> sp.			
479.	<i>Synodus hoshinonis?</i>			Y
480.	<i>Synodus</i> sp.			
481.	<i>Synodus variegatus</i>			
482.	<i>Taeniooides buchanani</i>			Y
483.	<i>Terapon jarbua</i>			
484.	<i>Terapon puta</i>			
485.	<i>Terapon theraps</i>			
486.	<i>Thyssa hamiltonii</i>			
487.	<i>Thyssa mystax?</i>			
488.	<i>Thyssa setirostris</i>			
489.	<i>Torquigener pallimaculatus</i>			
490.	<i>Torquigener tuberculiferus</i>			
491.	<i>Torquigener whitleyi</i>			
492.	<i>Trachinocephalus myops</i>			
493.	<i>Trachinotus blochii</i>			
494.	<i>Trachurus novaezelandiae</i>			
495.	<i>Tragulichthys jaculiferus</i>			
496.	<i>Tragulichthys</i> sp.			Y
497.	<i>Triacanthus biaculeatus</i>			
498.	<i>Triacanthus</i> sp.			
499.	<i>Trichiurus</i> sp.			
500.	<i>Upeneus</i> sp.			
501.	<i>Upeneus tragula</i>			
502.	<i>Upeneus vittatus</i>			
503.	<i>Uraspis secunda</i>			Y
504.	<i>Valamugil buchanani</i>			
505.	<i>Valenciennea muralis</i>			
506.	<i>Velifer hypselopterus</i>			
507.	<i>Xenojulis margaritaceus</i>			
508.	<i>Xiphasia setifer</i>			
509.	<i>Yongeichthys criniger</i>			
510.	<i>Yongeichthys nebulosus</i>			
511.	<i>Zabidius novemaculeatus</i>			
512.	<i>Zebrias cancellatus</i>			
513.	<i>Zebrias quagga</i>			

Invertebrate

514.	<i>Amblyomma triguttatum</i>			
515.	<i>Anapistula troglobia</i>			
516.	<i>Antichiropus</i> sp.			
517.	<i>Argiope trifasciata</i>			
518.	<i>Asadipus cape</i>			
519.	<i>Australoschendyla capensis</i>			
520.	<i>Austrochthonius easti</i>			
521.	<i>Backobourkia collina</i>			
522.	33905 <i>Bamazomus subsolanus</i> (Eastern Cape Range <i>Bamazomus</i>)		T	
523.	33906 <i>Bamazomus vespertinus</i> (Western Cape Range <i>Bamazomus</i>)		T	Y
524.	<i>Bengalla bertmaini</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
525.	<i>Boreoheperus capensis</i>			
526.	<i>Chthiononetes tenuis</i>			
527.	<i>Cormocephalus aurantiipes</i>			
528.	<i>Cormocephalus strigosus</i>			
529.	<i>Cosmophasis baehrae</i>			
530.	<i>Crossopriza lyoni</i>			
531.	<i>Cryptoerithus harveyi</i>			
532.	<i>Dampetrus isolatus</i>			Y
533.	33907 <i>Draculooides brooksi</i> (Northern Cape Range <i>Draculooides</i>)		T	Y
534.	33909 <i>Draculooides julianneae</i> (Western Cape Range <i>Draculooides</i>)		T	Y
535.	33915 <i>Draculooides vinei</i> (Cape Range <i>Draculooides</i>)			
536.	<i>Dunedinia occidentalis</i>			Y
537.	<i>Ethmostigmus rubripes</i>			
538.	<i>Euasteron ursulae</i>			
539.	<i>Glennhuntia glennhunti</i>			Y
540.	<i>Heteropoda hermitis</i>			
541.	<i>Heurodes turritus</i>			
542.	<i>Hoggicosa snelli</i>			
543.	<i>Ideoblothrus woodi</i>			Y
544.	34145 <i>Indohya damocles</i> (Cameron's Cave <i>Pseudoscorpion</i>)		T	Y
545.	<i>Indohya humphreysi</i>			
546.	<i>Indolpium</i> sp.			
547.	<i>Isopedella tindalei</i>			
548.	<i>Jalmenus clementi</i>			Y
549.	<i>Lampona quinqueplagiata</i>			
550.	<i>Lamponina scutata</i>			
551.	<i>Latrodectus hasseltii</i>			
552.	<i>Leptasteron platyconductor</i>			
553.	<i>Masasteron sampeyae</i>			
554.	<i>Missulena occatoria</i>			
555.	<i>Nephila edulis</i>			
556.	33985 <i>Nocticola flabella</i> (Cape Range delicate cockroach, Cape Range Blind Cockroach)		P4	Y
557.	<i>Nomindra leuweni</i>			
558.	<i>Notsodipus bidgemia</i>			
559.	<i>Notsodipus capensis</i>			
560.	<i>Oreo capensis</i>			
561.	<i>Ornithodoros gurneyi</i>			
562.	<i>Prethopalpus alexanderi</i>			Y
563.	<i>Pseudolampona marun</i>			
564.	<i>Rhagada capensis</i>			
565.	<i>Scolopendra morsitans</i>			
566.	<i>Storena sinuosa</i>			
567.	33963 <i>Stygiocaris lancifera</i> (Lance-beaked Cave Shrimp)		T	
568.	33964 <i>Stygiocaris stylifera</i> (Spear-beaked Cave Shrimp)		P4	
569.	<i>Stygiochiropus communis</i>			
570.	33967 <i>Stygiochiropus isolatus</i> (a <i>stygiochiropus</i> millipede (Cape Range), millipede)		T	Y
571.	33968 <i>Stygiochiropus peculiaris</i> (Cameron's Cave Millipede)		T	Y
572.	33969 <i>Stygiochiropus sympatricus</i> (a <i>stygiochiropus</i> millipede (Cape Range), millipede)		T	Y
573.	<i>Thereuopoda lesueurii</i>			
574.	<i>Trachyspina capensis</i>			
575.	<i>Trichocyclus nigropunctatus</i>			
576.	<i>Trichocyclus septentrionalis</i>			
577.	<i>Tyrannochthonius brooksi</i>			
578.	<i>Tyrannochthonius butleri</i>			
579.	<i>Wandella waldockae</i>			
580.	<i>Wesmaldra learnmonth</i>			
581.	<i>Wyndura kennedy</i>			
582.	<i>Yardiella humphreysi</i>			
Mammal				
583.	24091 <i>Dasykaluta rosamondae</i> (Little Red Kaluta)			
584.	24084 <i>Dugong dugon</i> (Dugong)		S	
585.	24043 <i>Eubalaena australis</i> (Southern Right Whale)		T	
586.	24218 <i>Leporillus apicalis</i> (Lesser Stick-nest Rat)		X	
587.	24135 <i>Macropus robustus</i> subsp. <i>erubescens</i> (Euro, Biggada)			
588.	24136 <i>Macropus rufus</i> (Red Kangaroo, Marlu)			
589.	24051 <i>Megaptera novaeangliae</i> (Humpback Whale)		S	
590.	24222 <i>Mesembriomys macrurus</i> (Golden-backed Tree-rat)		P4	
591.	24213 <i>Mirounga leonina</i> (Southern Elephant Seal)			
592.	24223 <i>Mus musculus</i> (House Mouse)	Y		
593.	24095 <i>Ningau timealeyi</i> (Pilbara Ningau)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
594.	24224 <i>Notomys alexis</i> (Spinifex Hopping-mouse)			
595.	24142 <i>Petrogale lateralis</i> subsp. <i>lateralis</i> (Black-flanked Rock-wallaby, Black-footed Rock-wallaby)		T	
596.	24098 <i>Phascogale calura</i> (Red-tailed Phascogale, Kenngoor)		S	
597.	24105 <i>Pseudantechinus roryi</i> (Rory's Pseudantechinus)			
598.	24236 <i>Pseudomys fieldi</i> (Shark Bay Mouse, Djoongari)		T	
599.	24237 <i>Pseudomys hermannsburgensis</i> (Sandy Inland Mouse)			
600.	24245 <i>Rattus rattus</i> (Black Rat)	Y		
601.	43368 <i>Rhinonicteris aurantia</i> (Orange Leaf-nosed bat)		P4	
602.	24115 <i>Sminthopsis longicaudata</i> (Long-tailed Dunnart)		P4	
603.	24116 <i>Sminthopsis macroura</i> (Stripe-faced Dunnart)			
604.	48107 <i>Sousa sahalensis</i> (Australian humpback dolphin)		P4	
605.	24175 <i>Taphozous georgianus</i> (Common Sheath-tailed Bat)			
606.	30954 <i>Tursiops aduncus</i> (Indo-Pacific Bottlenose Dolphin)			
607.	24205 <i>Vespadelus finlaysoni</i> (Finlayson's Cave Bat)			
608.	24249 <i>Zyomys pedunculatus</i> (Central Rock-rat, Antina)		T	
Reptile				
609.	25332 <i>Acanthophis wellsi</i> (Pilbara Death Adder)			
610.	25350 <i>Aipysurus apraefrontalis</i> (Short-nosed Seasnake)		T	
611.	25351 <i>Aipysurus duboisii</i> (Dubois' Seasnake)			
612.	25355 <i>Aipysurus laevis</i> (Olive Seasnake)			
613.	30831 <i>Amphibolurus gilberti</i> (Ta-ta, Gilbert's Dragon)			
614.	30833 <i>Amphibolurus longirostris</i> (Long-nosed Dragon)			
615.	44647 <i>Anilios splendidus</i> (splendid blind snake (North West Cape), blind snake (Milyering Well))		P2	Y
616.	25318 <i>Antaresia perthensis</i> (Pygmy Python)			
617.	25241 <i>Antaresia stimsoni</i> subsp. <i>stimsoni</i> (Stimson's Python)			
618.	24992 <i>Aprasia rostrata</i> (Ningaloo worm-lizard, Monte Bello Worm-lizard)		P3	
619.	25320 <i>Aspidites melanocephalus</i> (Black-headed Python)			
620.	25015 <i>Carlia munda</i> (Shaded-litter Rainbow Skink)			
621.	25336 <i>Chelonia mydas</i> (Green Turtle)		T	
622.	24919 <i>Crenadactylus ocellatus</i> subsp. <i>horni</i> (Clawless Gecko)			
623.	25020 <i>Cryptoblepharus plagiocephalus</i>			
624.	24872 <i>Ctenophorus femoralis</i> (Dune Dragon)			
625.	24876 <i>Ctenophorus isolepis</i> subsp. <i>isolepis</i> (Crested Dragon, Military Dragon)			
626.	24882 <i>Ctenophorus nuchalis</i> (Central Netted Dragon)			
627.	30897 <i>Ctenophorus parviceps</i> (Western Heath Dragon, Northern Heath Dragon)			
628.	24886 <i>Ctenophorus reticulatus</i> (Western Netted Dragon)			
629.	25043 <i>Ctenotus grandis</i> subsp. <i>titan</i>			
630.	25044 <i>Ctenotus hanloni</i>			
631.	25046 <i>Ctenotus iapetus</i>			
632.	25048 <i>Ctenotus inornatus</i>			
633.	25463 <i>Ctenotus pantherinus</i> (Leopard Ctenotus)			
634.	25064 <i>Ctenotus pantherinus</i> subsp. <i>ocellifer</i> (Leopard Ctenotus)			
635.	25069 <i>Ctenotus rufescens</i>			
636.	25073 <i>Ctenotus saxatilis</i> (Rock Ctenotus)			
637.	25090 <i>Cyclodomorphus melanops</i> subsp. <i>melanops</i> (Slender Blue-tongue)			
638.	<i>Cyclodomorphus</i> sp.			
639.	24995 <i>Delma australis</i>			
640.	25001 <i>Delma nasuta</i>			
641.	30829 <i>Delma tealei</i>			
642.	25004 <i>Delma tincta</i>			
643.	25292 <i>Demansia calodera</i> (Black-necked Whipsnake)			
644.	25295 <i>Demansia psammophis</i> subsp. <i>cupreiceps</i> (Yellow-faced Whipsnake)			
645.	34146 <i>Diplodactylus capensis</i> (Cape Range Stone Gecko)		P2	
646.	24926 <i>Diplodactylus conspicillatus</i> (Fat-tailed Gecko)			
647.	24938 <i>Diplodactylus ornatus</i>			
648.	25362 <i>Ephalophis greyae</i>			
649.	43381 <i>Eremiascincus pallidus</i> (Western Narrow-banded Skink, Narrow-banded Sand Swimmer)			
650.	25109 <i>Eremiascincus richardsonii</i> (Broad-banded Sand Swimmer)			
651.	25301 <i>Furina ornata</i> (Moon Snake)			
652.	24956 <i>Gehyra pilbara</i>			
653.	24959 <i>Gehyra variegata</i>			
654.	24961 <i>Heteronotia binoei</i> (Bynoe's Gecko)			
655.	44656 <i>Hydrophis major</i> (Olive-headed seasnake, greater seasnake)			
656.	42410 <i>Hydrophis ornatus</i> (Ornate Reef Seasnake, Sea Snake)			
657.	43385 <i>Hydrophis stokesii</i> (Stoke's Seasnake, Sea Snake)			
658.	25120 <i>Lerista allochira</i> (Cape Range Slider)			
659.	25125 <i>Lerista bipes</i>		P3	

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
660.	30928 <i>Lerista clara</i>			
661.	25133 <i>Lerista elegans</i>			
662.	25148 <i>Lerista lineopunctulata</i>			
663.	25482 <i>Lerista macropisthopus</i>			
664.	25151 <i>Lerista macropisthopus subsp. fusciceps</i>			
665.	25163 <i>Lerista planiventralis subsp. planiventralis</i>			
666.	25005 <i>Lialis burtonis</i>			
667.	30933 <i>Lucasium stenodactylum</i>			
668.	25184 <i>Menetia greyii</i>			
669.	25491 <i>Menetia surda</i>			
670.	25191 <i>Morethia lineocellata</i>			
671.	25193 <i>Morethia ruficauda subsp. exquisita</i>			
672.	24968 <i>Nephrurus levis subsp. occidentalis</i>			
673.	24907 <i>Pogona minor subsp. minor (Dwarf Bearded Dragon)</i>			
674.	25261 <i>Pseudechis australis (Mulga Snake)</i>			
675.	42416 <i>Pseudonaja mengdeni (Western Brown Snake)</i>			
676.	25263 <i>Pseudonaja modesta (Ringed Brown Snake)</i>			
677.	25009 <i>Pygopus nigriceps</i>			
678.	25266 <i>Simoselaps bertholdi (Jan's Banded Snake)</i>			
679.	25267 <i>Simoselaps littoralis (West Coast Banded Snake)</i>			
680.	24924 <i>Strophurus ciliaris subsp. aberrans</i>			
681.	24927 <i>Strophurus elderi</i>			
682.	24941 <i>Strophurus rankini</i>			
683.	24946 <i>Strophurus strophurus</i>			
684.	25269 <i>Suta fasciata (Rosen's Snake)</i>			
685.	25202 <i>Tiliqua multifasciata (Central Blue-tongue)</i>			
686.	25207 <i>Tiliqua rugosa subsp. rugosa</i>			
687.	25209 <i>Varanus acanthurus (Spiny-tailed Monitor)</i>			
688.	25210 <i>Varanus brevicauda (Short-tailed Pygmy Monitor)</i>			
689.	25216 <i>Varanus giganteus (Perentie)</i>			
690.	25526 <i>Varanus tristis (Racehorse Monitor)</i>			

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 wholly 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.

Appendix D

Flora survey data

Flora inventory list

Quadrat and relevé data

Species matrix

Flora likelihood of occurrence

Threatened and Priority flora report forms

Flora species list recorded within the survey area

Family	Taxon	Status
Acanthaceae	<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>	
Amaranthaceae	<i>Aerva javanica</i>	*
Amaranthaceae	<i>Ptilotus exaltatus</i>	
Amaranthaceae	<i>Ptilotus obovatus</i>	
Amaranthaceae	<i>Ptilotus polystachyus</i>	
Amaranthaceae	<i>Ptilotus</i> sp.	
Apocynaceae	<i>Cynanchum viminale</i> subsp. <i>australe</i>	
Asparagaceae	<i>Acanthocarpus rupestris</i>	P2
Asparagaceae	<i>Acanthocarpus verticillatus</i>	
Asteraceae	<i>Bidens bipinnata</i>	*
Asteraceae	<i>Pluchea</i> sp.	
Asteraceae	<i>Pterocaulon sphacelatum</i>	
Asteraceae	<i>Streptoglossa decurrens</i>	
Boraginaceae	<i>Euploca inexplicita</i>	
Boraginaceae	<i>Heliotropium crispatum</i>	
Boraginaceae	<i>Trichodesma zeylanicum</i>	
Capparaceae	<i>Capparis lasiantha</i>	
Chenopodiaceae	<i>Chenopodium gaudichaudianum</i>	
Chenopodiaceae	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	
Chenopodiaceae	<i>Rhagodia eremaea</i>	
Chenopodiaceae	<i>Salsola australis</i>	
Cleomaceae	<i>Arivela viscosa</i>	
Commelinaceae	<i>Commelina ensifolia</i>	
Convolvulaceae	<i>Duperreya commixta</i>	
Convolvulaceae	<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	
Convolvulaceae	<i>Ipomoea costata</i>	
Convolvulaceae	<i>Polymeria ambigua</i>	
Cucurbitaceae	<i>Cucumis variabilis</i>	
Cyperaceae	<i>Cyperus squarrosus</i>	
Cyperaceae	<i>Cyperus vaginatus</i>	
Cyperaceae	<i>Fimbristylis dichotoma</i>	RE
Euphorbiaceae	<i>Adriana tomentosa</i> subsp. <i>tomentosa</i>	
Euphorbiaceae	<i>Euphorbia australis</i> var. <i>australis</i>	
Euphorbiaceae	<i>Euphorbia biconvexa</i>	
Euphorbiaceae	<i>Euphorbia myrtoides</i>	
Euphorbiaceae	<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>	
Euphorbiaceae	<i>Mallotus nesophilus</i>	
Fabaceae	<i>Acacia alexandri</i>	P3
Fabaceae	<i>Acacia arida</i>	
Fabaceae	<i>Acacia bivenosa</i>	

Family	Taxon	Status
Fabaceae	<i>Acacia coriacea</i> subsp. <i>coriacea</i>	
Fabaceae	<i>Acacia gregorii</i>	
Fabaceae	<i>Acacia pyrifolia</i>	
Fabaceae	<i>Acacia synchronicia</i>	
Fabaceae	<i>Acacia tetragonophylla</i>	
Fabaceae	<i>Erythrina vespertilio</i>	
Fabaceae	<i>Glycine canescens</i>	
Fabaceae	<i>Indigofera linnaei</i>	
Fabaceae	<i>Indigofera monophylla</i>	
Fabaceae	<i>Isotropis atropurpurea</i>	
Fabaceae	<i>Leptosema macrocarpum</i>	
Fabaceae	<i>Rhynchosia minima</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	
Fabaceae	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	
Fabaceae	<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>	
Fabaceae	<i>Senna notabilis</i>	
Fabaceae	<i>Tephrosia supina</i>	
Fabaceae	<i>Vachellia farnesiana</i>	*
Fabaceae	<i>Vigna</i> sp. Hamersley Clay (A.A. Mitchell PRP 113)	
Gentianaceae	<i>Schenkia australis</i>	
Goodeniaceae	<i>Dampiera incana</i> var. <i>incana</i>	
Goodeniaceae	<i>Goodenia ?tenuiloba</i>	
Goodeniaceae	<i>Leschenaultia subcymosa</i>	
Goodeniaceae	<i>Scaevola spinescens</i>	
Goodeniaceae	<i>Scaevola tomentosa</i>	
Gyrostemonaceae	<i>Codonocarpus cotinifolius</i>	
Lamiaceae	<i>Clerodendrum tomentosum</i> var. <i>lanceolatum</i>	
Lauraceae	<i>Cassytha aurea</i> var. <i>aurea</i>	
Loranthaceae	<i>Amyema preissii</i>	
Malvaceae	<i>Abutilon cunninghamii</i>	
Malvaceae	<i>Abutilon fraseri</i>	
Malvaceae	<i>Abutilon lepidum</i>	
Malvaceae	<i>Abutilon</i> sp.	
Malvaceae	<i>Alyogyne pinoniana</i>	
Malvaceae	<i>Brachychiton obtusilobus</i>	P4
Malvaceae	<i>Corchorus ?congener</i>	P3 (sterile)
Malvaceae	<i>Corchorus congener</i>	P3
Malvaceae	<i>Corchorus crozophorifolius</i>	
Malvaceae	<i>Gossypium robinsonii</i>	
Malvaceae	<i>Hannafordia quadrivalvis</i> subsp. <i>recurva</i>	

Family	Taxon	Status
Malvaceae	<i>Hibiscus</i> sp.	
Malvaceae	<i>Hibiscus</i> sp. Gardneri (A.L. Payne PRP 1435)	
Malvaceae	<i>Hibiscus sturtii</i> var. <i>platychlams</i>	
Malvaceae	<i>Melhania oblongifolia</i>	
Malvaceae	<i>Sida arenicola</i>	
Malvaceae	<i>Sida fibulifera</i>	
Malvaceae	<i>Triumfetta clementii</i>	
Malvaceae	<i>Waltheria indica</i>	
Menispermaceae	<i>Tinospora esiangkara</i>	P2
Moraceae	<i>Ficus brachypoda</i>	
Myrtaceae	<i>Corymbia hamersleyana</i>	
Myrtaceae	<i>Eucalyptus xerothermica</i>	
Myrtaceae	<i>Melaleuca cardiophylla</i>	
Nyctaginaceae	<i>Boerhavia coccinea</i>	
Oleaceae	<i>Jasminum didymum</i>	
Passifloraceae	<i>Passiflora foetida</i>	*
Phyllanthaceae	<i>Lysiandra hamelinii</i>	
Phyllanthaceae	<i>Nellica maderaspatensis</i>	
Phyllanthaceae	<i>Phyllanthus tannensis</i> subsp. <i>eremophila</i>	
Pittosporaceae	<i>Pittosporum phillyreoides</i>	
Plantaginaceae	<i>Stemodia grossa</i>	
Poaceae	<i>Cenchrus ciliaris</i>	*
Poaceae	<i>Chrysopogon fallax</i>	
Poaceae	<i>Cymbopogon ambiguus</i>	
Poaceae	<i>Enneapogon caeruleus</i>	
Poaceae	<i>Eriachne helmsii</i>	
Poaceae	<i>Eriachne mucronata</i>	
Poaceae	<i>Eriachne obtusa</i>	
Poaceae	<i>Eulalia aurea</i>	
Poaceae	<i>Panicum decompositum</i>	
Poaceae	<i>Paspalidium clementii</i>	
Poaceae	<i>Themeda triandra</i>	
Poaceae	<i>Triodia basedowii</i>	
Poaceae	<i>Triodia epactia</i>	
Poaceae	<i>Triodia wiseana</i>	
Proteaceae	<i>Grevillea calcicola</i>	P3
Proteaceae	<i>Hakea lorea</i> subsp. <i>lorea</i>	
Pteridaceae	<i>Cheilanthes austrotenuifolia</i>	
Rubiaceae	<i>Dolichocarpa crouchiana</i>	
Santalaceae	<i>Exocarpos aphyllus</i>	
Santalaceae	<i>Santalum lanceolatum</i>	

Family	Taxon	Status
Sapindaceae	<i>Alectryon oleifolius</i> subsp. <i>oleifolius</i>	
Sapindaceae	<i>Diplopeltis eriocarpa</i>	
Sapindaceae	<i>Dodonaea viscosa</i> subsp. <i>mucronata</i>	
Scrophulariaceae	<i>Eremophila forrestii</i> ?subsp. <i>capensis</i>	P3
Scrophulariaceae	<i>Eremophila forrestii</i> subsp. <i>capensis</i>	P3
Scrophulariaceae	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	
Scrophulariaceae	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	
Scrophulariaceae	<i>Eremophila longifolia</i>	
Scrophulariaceae	<i>Eremophila obovatus</i>	
Solanaceae	<i>Solanum cleistogamum</i>	
Solanaceae	<i>Solanum diversiflorum</i>	
Solanaceae	<i>Solanum horridum</i>	RE
Solanaceae	<i>Solanum lasiophyllum</i>	
Surianaceae	<i>Stylobasium spathulatum</i>	
Thymelaeaceae	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	
Violaceae	<i>Afrohybanthus aurantiacus</i>	
Zygophyllaceae	<i>Tribulus hirsutus</i>	
Zygophyllaceae	<i>Tribulus suberosus</i>	

Site ID	EXQ01	VT: 01
Type:	Quadrat	
Date:	10/05/22	
Co-ordinates:	E: 202831	N: 7570518
Landform and slope:	Rocky sandy plain	
Drainage:	Good	
Aspect:	Negligible	
Soil colour & type:	Orange/brown sandy/loam	
Vegetation condition:	Good	
Fire age & intensity:	2-5 yr	
Disturbances:	Weeds, fire	
Leaf litter (%):	<2%	
Bare ground (%):	30-70%	



Site	Taxon	Height (m)	Cover (%)
EXQ01	<i>Triodia basedowii</i>	0.8	35
EXQ01	<i>Scaevola spinescens</i>	1	5
EXQ01	<i>Senna glutinosa subsp. x luerssenii</i>	1.7	<2
EXQ01	<i>Senna artemidioides subsp. oligophylla</i>	0.6	3

Site	Taxon	Height (m)	Cover (%)
EXQ01	<i>Eremophila longifolia</i>	1.4	<2
EXQ01	<i>Acacia bivenosa</i>	1.3	2-10
EXQ01	* <i>Cenchrus ciliaris</i>	0.4	10
EXQ01	<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	0.01	<2
EXQ01	<i>Corchorus congener</i>	0.6	<2
EXQ01	<i>Tephrosia supina</i>	0.01	<2
EXQ01	<i>Triodia epactia</i>	1.1	2
EXQ01	<i>Ptilotus obovatus</i>	0.5	<2
EXQ01	<i>Ptilotus exaltatus</i>	0.5	<2
EXQ01	<i>Sida fibulifera</i>	0.1	<2
EXQ01	<i>Euphorbia australis</i> var. <i>australis</i>	-	<2
EXQ01	<i>Gossypium robinsonii</i>	1.6	<2
EXQ01	<i>Indigofera monophylla</i>	0.2	<2
EXQ01	<i>Solanum lasiophyllum</i>	0.4	<2
EXQ01	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	0.4	<2
EXQ01	<i>Stylobasium spathulatum</i>	1.5	<2
EXQ01	<i>Solanum diversiflorum</i>	0.2	<2
EXQ01	<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	0.4	<2
EXQ01	<i>Salsola australis</i>	0.4	<2
EXQ01	<i>Acacia synchronicia</i>	1.3	<2
EXQ01	<i>Scaevola tomentosa</i>	0.6	<2
EXQ01	<i>Hakea lorea</i> subsp. <i>lorea</i>	2.3	<2
EXQ01	<i>Chrysopogon fallax</i>	1.3	<2
EXQ01	<i>Euphorbia biconvexa</i>	0.05	<2
EXQ01	<i>Chenopodium gaudichaudianum</i>	1	<2
EXQ01	<i>Polymeria ambigua</i>	0.05	<2
EXQ01	<i>Melhania oblongifolia</i>	0.2	<2
EXQ01	<i>Abutilon fraseri</i>	0.2	<2
EXQ01	<i>Indigofera linnaei</i>	0.3	<2
EXQ01	<i>Sida arenicola</i>	0.3	<2

Quadrat data

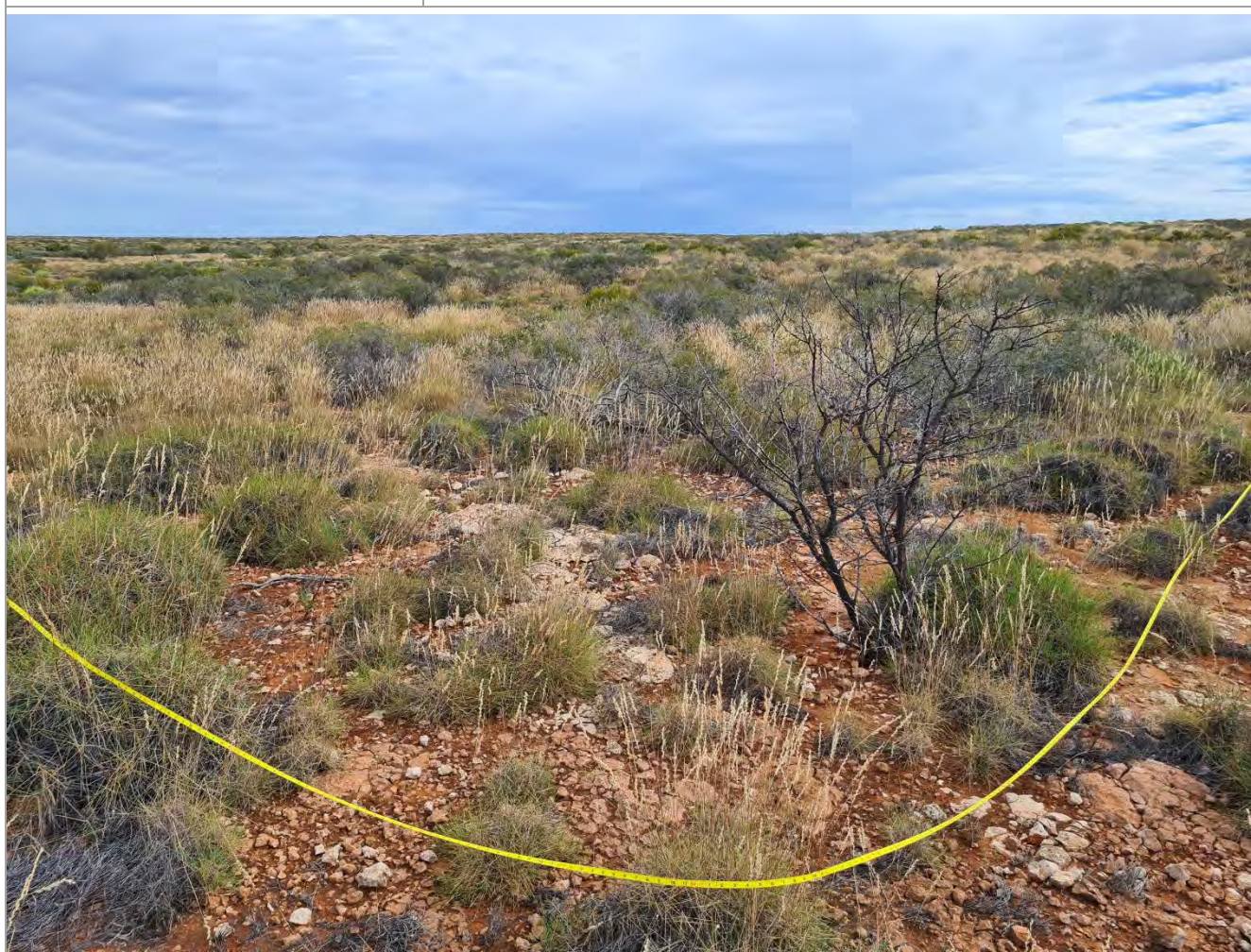
Site ID	EXQ02	VT: 02
Type:	Quadrat	
Date:	10/05/22	
Co-ordinates:	E: 202320	N: 7570489
Landform and slope:	Rocky low undulating hills, gentle	
Drainage:	Good	
Aspect:	East	
Soil colour & type:	Orange brown clay/loam, rocky outcropping	
Vegetation condition:	Excellent	
Fire age & intensity:	Old	
Disturbances:	Minimal	
Leaf litter (%):	<2%	
Bare ground (%):	10-30%	



Site	Taxon	Height (m)	Cover (%)
EXQ02	<i>Melaleuca cardiophylla</i>	1.6	10
EXQ02	<i>Triodia basedowii</i>	1.1	15
EXQ02	<i>Solanum diversiflorum</i>	0.2	<2

Site	Taxon	Height (m)	Cover (%)
EXQ02	<i>Indigofera monophylla</i>	0.2	<2
EXQ02	<i>Afrohybanthus aurantiacus</i>	0.3	<2
EXQ02	<i>Streptoglossa decurrens</i>	0.4	<2
EXQ02	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.8	<2
EXQ02	<i>Triumfetta clementii</i>	0.2	<2
EXQ02	<i>Leptosema macrocarpum</i>	0.4	2-10
EXQ02	<i>Acacia bivenosa</i>	1.7	<2
EXQ02	<i>Eremophila longifolia</i>	0.6	<2
EXQ02	<i>Senna glutinosa</i> subsp. <i>X luerssenii</i>	1.1	<2
EXQ02	<i>Ptilotus polystachyus</i>	0.2	<2
EXQ02	<i>Goodenia ?tenuiloba</i>	0.4	<2
EXQ02	<i>Solanum</i> sp.	0.1	<2
EXQ02	<i>Triodia wiseana</i>	1.4	25
EXQ02	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	1.6	<2
EXQ02	<i>Acacia tetragonophylla</i>	1.1	<2
EXQ02	<i>Exocarpos aphyllus</i>	1.7	<2
EXQ02	<i>Solanum lasiophyllum</i>	0.4	<2
EXQ02	<i>Pittosporum phillyreoides</i>	1.8	<2
EXQ02	<i>Jasminum didymum</i>	-	<2
EXQ02	<i>Euphorbia myrtoides</i>	0.1	<2
EXQ02	<i>Hibiscus</i> sp. <i>Gardneri</i> (A.L. Payne PRP 1435)	0.2	<2

Site ID	EXQ03	VT: 02
Type:	Quadrat	
Date:	10/05/22	
Co-ordinates:	E: 202523	N: 7570175
Landform and slope:	Low undulating rocky hills	
Drainage:	Good	
Aspect:	NW	
Soil colour & type:	Orange brown clay/loam, >90% rock outcropping	
Vegetation condition:	Excellent	
Fire age & intensity:	>5 yr	
Disturbances:	Minimal	
Leaf litter (%):	<2%	
Bare ground (%):	30-70%	



Site	Taxon	Height (m)	Cover (%)
EXQ03	<i>Melaleuca cardiophylla</i>	1.8	10-30
EXQ03	<i>Triodia basedowii</i>	1.2	20
EXQ03	<i>Triodia wiseana</i>	1.1	15
EXQ03	<i>Solanum diversiflorum</i>	0.3	<2

Site	Taxon	Height (m)	Cover (%)
EXQ03	<i>Ptilotus polystachyus</i>	0.3	<2
EXQ03	<i>Acacia arida</i>	1.6	5
EXQ03	<i>Triodia epactia</i>	1.3	10
EXQ03	<i>Indigofera monophylla</i>	0.3	<2
EXQ03	<i>Solanum lasiophyllum</i>	0.4	<2
EXQ03	<i>Lysiandra hamelinii</i>	0.4	<2
EXQ03	<i>Hibiscus</i> sp. Gardneri (A.L. Payne PRP 1435)	0.3	<2
EXQ03	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.5	<2
EXQ03	<i>Leptosema macrocarpum</i>	0.5	<2
EXQ03	<i>Afrohybanthus aurantiacus</i>	0.3	<2
EXQ03	<i>Streptoglossa decurrens</i>	0.3	<2
EXQ03	<i>Eremophila longifolia</i>	1.5	<2
EXQ03	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	1.4	<2
EXQ03	<i>Acacia bivenosa</i>	1.4	<2
EXQ03	<i>Cynanchum viminalis</i> subsp. <i>australe</i>	1.4	<2
EXQ03	<i>Panicum decompositum</i>	0.3	<2
EXQ03	<i>Acacia tetragonophylla</i>	1.8	<2
EXQ03	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	1.6	<2
EXQ03	<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	0.4	<2
EXQ03	<i>Euploca inexplicita</i>	0.2	<2
EXQ03	<i>Euphorbia myrtilloides</i>	0.05	<2

Site ID	EXQ04	VT: 04
Type:	Quadrat	
Date:	11/05/11	
Co-ordinates:	E: 202479	N: 7569548
Landform and slope:	Claypan/depression	
Drainage:	Poor	
Aspect:	Flat	
Soil colour & type:	Cracking clay, orange/brown	
Vegetation condition:	Good	
Fire age & intensity:	Old (>5 yr)	
Disturbances:	Weeds	
Leaf litter (%):	2-10%	
Bare ground (%):	30-70%	



Site	Taxon	Height (m)	Cover (%)
EXQ04	<i>Acacia tetragonophylla</i>	2	2-10
EXQ04	<i>Gossypium robinsonii</i>	1.9	<2
EXQ04	<i>Acacia pyrifolia</i>	2	<2

Site	Taxon	Height (m)	Cover (%)
EXQ04	<i>Acacia bivenosa</i>	1.6	<2
EXQ04	<i>Triodia epactia</i>	1	25
EXQ04	<i>Isotropis atropurpurea</i>	0.4	<2
EXQ04	<i>Afrohybanthus aurantiacus</i>	0.4	<2
EXQ04	<i>Triumfetta clementii</i>	0.3	<2
EXQ04	<i>Pluchea sp.</i>	0.3	<2
EXQ04	<i>Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)</i>	0.3	2-10
EXQ04	<i>Streptoglossa decurrens</i>	1.2	15
EXQ04	<i>Solanum diversiflorum</i>	0.4	<2
EXQ04	<i>Sida fibulifera</i>	0.2	10-30
EXQ04	<i>Solanum lasiophyllum</i>	0.3	<2
EXQ04	<i>Evolvulus alsinoides var. villosicalyx</i>	0.2	<2
EXQ04	* <i>Cenchrus ciliaris</i>	1	2-10
EXQ04	<i>Cucumis variabilis</i>	-	<2
EXQ04	<i>Waltheria indica</i>	0.6	<2
EXQ04	<i>Senna artemidioides subsp. oligophylla</i>	0.5	<2
EXQ04	<i>Corchorus ?congener</i>	0.4	<2
EXQ04	<i>Trichodesma zeylanicum</i>	1.8	<2
EXQ04	<i>Lysiandra hamelinii</i>	0.3	<2
EXQ04	<i>Acacia arida</i>	1.9	<2
EXQ04	<i>Goodenia ?tenuiloba</i>	0.5	<2
EXQ04	<i>Euphorbia myrtoides</i>	0.1	<2
EXQ04	<i>Acacia synchronicea</i>	1.4	<2
EXQ04	<i>Ptilotus obovatus</i>	1	<2
EXQ04	<i>Eremophila forrestii subsp. forrestii</i>	1	<2
EXQ04	<i>Ptilotus polystachyus</i>	0.6	<2
EXQ04	<i>Triodia wiseana</i>	1.2	<2
EXQ04	<i>Melaleuca cardiophylla</i>	1.2	<2
EXQ04	<i>Leptosema macrocarpum</i>	0.5	<2
EXQ04	<i>Melhania oblongifolia</i>	0.4	<2
EXQ04	<i>Panicum decompositum</i>	0.6	<2
EXQ04	<i>Enchylaena tomentosa var. tomentosa</i>	1	<2
EXQ04	<i>Scaevola spinescens</i>	1.8	<2
EXQ04	<i>Hibiscus sturtii var. platyklamys</i>	0.3	<2
EXQ04	<i>Polymeria ambigua</i>	0.3	<2
EXQ04	<i>Tephrosia supina</i>	0.3	<2

Site ID	EXQ05	VT: 01
Type:	Quadrat	
Date:	11/05/22	
Co-ordinates:	E: 202890	N: 7569687
Landform and slope:	Plain / floodplain	
Drainage:	Good-poor	
Aspect:	Flat	
Soil colour & type:	Clay/sand/loam, orange/brown	
Vegetation condition:	Poor	
Fire age & intensity:	2-5 yr	
Disturbances:	Weed invasion, fire	
Leaf litter (%):	2-10%	
Bare ground (%):	10-30%	



Site	Taxon	Height (m)	Cover (%)
EXQ05	<i>Corymbia hamersleyana</i>	3	2-10
EXQ05	<i>Acacia bivenosa</i>	1.5	2-10
EXQ05	<i>Senna artemidioides</i> subsp. <i>oligophylla</i>	1.2	<2
EXQ05	<i>Solanum lasiophyllum</i>	0.7	<2

Site	Taxon	Height (m)	Cover (%)
EXQ05	* <i>Cenchrus ciliaris</i>	1	30-70
EXQ05	<i>Ptilotus polystachyus</i>	0.5	<2
EXQ05	<i>Ptilotus obovatus</i>	1	<2
EXQ05	<i>Triodia epactia</i>	1.1	2-10
EXQ05	<i>Indigofera linnaei</i>	0.1	<2
EXQ05	<i>Melhanian oblongifolia</i>	0.4	<2
EXQ05	<i>Euphorbia biconvexa</i>	0.1	<2
EXQ05	<i>Vigna</i> sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.3	<2
EXQ05	<i>Acacia synchronicea</i>	0.7	<2
EXQ05	<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	0.5	<2
EXQ05	<i>Trichodesma zeylanicum</i>	1.8	<2
EXQ05	<i>Rhagodia eremaea</i>	1.6	<2
EXQ05	<i>Rhynchosia minima</i>	-	<2
EXQ05	<i>Glycine canescens</i>	-	<2
EXQ05	<i>Eremophila longifolia</i>	1.6	<2
EXQ05	<i>Acacia tetragonophylla</i>	1.2	<2
EXQ05	<i>Acacia coriacea</i> subsp. <i>coriacea</i>	1.9	<2
EXQ05	<i>Lysiandra hamelinii</i>	0.6	<2
EXQ05	<i>Isotropis atropurpurea</i>	0.7	<2
EXQ05	<i>Acacia pyrifolia</i>	1.6	<2
EXQ05	<i>Abutilon fraseri</i>	0.5	<2
EXQ05	<i>Triodia wiseana</i>	0.9	<2
EXQ05	<i>Afrohybanthus aurantiacus</i>	0.4	<2
EXQ05	<i>Chrysopogon fallax</i>	1.3	<2
EXQ05	<i>Waltheria indica</i>	1.2	<2
EXQ05	<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	0.2	<2
EXQ05	<i>Indigofera monophylla</i>	0.2	<2
EXQ05	<i>Fimbristylis dichotoma</i>	0.1	<2
EXQ05	<i>Arivela viscosa</i>	0.1	<2
EXQ05	<i>Cyperus squarrosus</i>	0.2	<2
EXQ05	<i>Adriana tomentosa</i> subsp. <i>tomentosa</i>	1.1	<2
EXQ05	<i>Acanthocarpus verticillatus</i>	1	<2

Site ID	EXQ06	VT: 02
Type:	Quadrat	
Date:	11/05/22	
Co-ordinates:	E: 202498	N: 7569720
Landform and slope:	Low rocky undulating hills	
Drainage:	Good	
Aspect:	East	
Soil colour & type:	Orange/brown, 80% rocky, outcropping	
Vegetation condition:	Excellent	
Fire age & intensity:	Old >5 yr	
Disturbances:	Minimal	
Leaf litter (%):	<2%	
Bare ground (%):	30-70%	



Site	Taxon	Height (m)	Cover (%)
EXQ06	<i>Melaleuca cardiophylla</i>	1.6	2-10
EXQ06	<i>Triodia epactia</i>	0.9	<2
EXQ06	<i>Solanum diversiflorum</i>	0.4	<2
EXQ06	<i>Indigofera monophylla</i>	0.1	<2

Site	Taxon	Height (m)	Cover (%)
EXQ06	<i>Abutilon</i> sp.	0.2	<2
EXQ06	<i>Ptilotus polystachyus</i>	0.6	<2
EXQ06	<i>Streptoglossa decurrens</i>	0.9	<2
EXQ06	<i>Eremophila longifolia</i>	0.3	<2
EXQ06	<i>Triodia wiseana</i>	1	30
EXQ06	<i>Acacia bivenosa</i>	1.5	<2
EXQ06	<i>Leptosema macrocarpum</i>	0.6	<2
EXQ06	<i>Exocarpos aphyllus</i>	1.2	<2
EXQ06	<i>Goodenia ?tenuiloba</i>	0.9	<2
EXQ06	<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>	1	<2
EXQ06	<i>Afrohybanthus aurantiacus</i>	0.2	<2
EXQ06	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	1.4	<2
EXQ06	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.2	<2
EXQ06	<i>Senna artemidioides</i> subsp. <i>oligophylla</i>	0.4	<2
EXQ06	<i>Abutilon lepidum</i>	0.4	<2
EXQ06	<i>Solanum lasiophyllum</i>	0.2	<2
EXQ06	<i>Leschenaultia subcymosa</i>	0.2	<2
EXQ06	<i>Hibiscus</i> sp. <i>Gardneri</i> (A.L. Payne PRP 1435)	0.1	<2
EXQ06	<i>Phyllanthus tannensis</i> subsp. <i>eremophila</i>	0.5	<2

Site ID	EXQ07	VT: 01
Type:	Quadrat	
Date:	11/05/22	
Co-ordinates:	E: 202928	N: 7569961
Landform and slope:	Rocky plain, some calcrete outcropping	
Drainage:	Good	
Aspect:	Flat	
Soil colour & type:	Orange/brown, Sandy clay/loam	
Vegetation condition:	Good	
Fire age & intensity:	2-5yr	
Disturbances:	Weeds, fire	
Leaf litter (%):	2-10%	
Bare ground (%):	30-70%	



Site	Taxon	Hight (m)	Cover (%)
EXQ07	<i>Hakea lorea</i> subsp. <i>lorea</i>	3	<2
EXQ07	<i>Acacia bivenosa</i>	1.6	2-10
EXQ07	<i>Triodia epactia</i>	1.1	30
EXQ07	<i>Indigofera monophylla</i>	0.4	10-30

Site	Taxon	Hight (m)	Cover (%)
EXQ07	<i>Salsola australis</i>	0.6	5
EXQ07	* <i>Cenchrus ciliaris</i>	0.6	10
EXQ07	<i>Ptilotus</i> sp.	0.6	2-10
EXQ07	<i>Corchorus</i> ?congener	0.3	2
EXQ07	* <i>Aerva javanica</i>	0.8	<2
EXQ07	<i>Lysiandra hamelinii</i>	0.8	<2
EXQ07	<i>Acacia tetragonophylla</i>	1	<2
EXQ07	<i>Solanum diversiflorum</i>	0.3	<2
EXQ07	<i>Afrohybanthus aurantiacus</i>	0.3	<2
EXQ07	<i>Acacia pyrifolia</i>	1.8	<2
EXQ07	<i>Diplopeltis eriocarpa</i>	0.4	<2
EXQ07	<i>Solanum lasiophyllum</i>	0.6	<2
EXQ07	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	1.4	<2
EXQ07	<i>Ptilotus obovatus</i>	0.8	2-10
EXQ07	<i>Acanthocarpus verticillatus</i>	0.8	<2
EXQ07	<i>Hibiscus</i> sp. <i>Gardneri</i> (A.L. Payne PRP 1435)	0.6	<2
EXQ07	<i>Leptosema macrocarpum</i>	0.5	<2
EXQ07	<i>Ptilotus exaltatus</i>	1	<2
EXQ07	<i>Melhania oblongifolia</i>	0.4	<2
EXQ07	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.5	<2
EXQ07	<i>Solanum diversiflorum</i>	0.6	<2
EXQ07	<i>Acacia coriacea</i> subsp. <i>coriacea</i>	1.3	<2
EXQ07	<i>Trichodesma zeylanicum</i>	1.8	<2
EXQ07	<i>Alyogyne pinoniana</i>	0.5	<2
EXQ07	<i>Corymbia hamersleyana</i>	2.1	3
EXQ07	<i>Adriana tomentosa</i> subsp. <i>tomentosa</i>	0.6	<2
EXQ07	<i>Tinospora esiangkara</i>	-	<2
EXQ07	<i>Eremophila longifolia</i>	1.9	<2
EXQ07	<i>Leschenaultia subcymosa</i>	0.4	<2
EXQ07	<i>Scaevola tomentosa</i>	0.4	<2
EXQ07	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.6	<2
EXQ07	<i>Rhagodia eremaea</i>	1.5	<2

Site ID	EXQ08	VT: 02
Type:	Quadrat	
Date:	12/05/22	
Co-ordinates:	E: 200299	N: 7569824
Landform and slope:	Rocky hill top / rocky slopes	
Drainage:	Good	
Aspect:	Flat	
Soil colour & type:	Orange	
Vegetation condition:	Excellent	
Fire age & intensity:	Old >5 yr	
Disturbances:	Minimal	
Leaf litter (%):	<2%	
Bare ground (%):	30-70%	



Site	Taxon	Height (m)	Cover (%)
EXQ08	<i>Melaleuca cardiophylla</i>	1.2	2-10

Site	Taxon	Height (m)	Cover (%)
EXQ08	<i>Triodia wiseana</i>	1.1	30-70
EXQ08	<i>Dampiera incana</i> var. <i>incana</i>	0.6	<2
EXQ08	<i>Acacia gregorii</i>	0.3	<2
EXQ08	<i>Solanum diversiflorum</i>	0.2	<2
EXQ08	<i>Acacia bivenosa</i>	1.4	<2
EXQ08	<i>Leptosema macrocarpum</i>	0.3	<2
EXQ08	<i>Goodenia ?tenuiloba</i>	0.3	<2
EXQ08	<i>Acacia arida</i>	1.3	<2
EXQ08	<i>Triodia epactia</i>	1	<2
EXQ08	<i>Indigofera monophylla</i>	0.1	<2

Site ID	EXQ09	VT: 02
Type:	Quadrat	
Date:	12/05/22	
Co-ordinates:	E: 200206	N: 7570121
Landform and slope:	Rocky hillslope, moderate	
Drainage:	Good	
Aspect:	East	
Soil colour & type:	Skeletal orange/brown sand/loam	
Vegetation condition:	Excellent	
Fire age & intensity:	Old >5 yr	
Disturbances:	Minimal	
Leaf litter (%):	<2%	
Bare ground (%):	30-70%	



Site	Taxon	Height (m)	Cover (%)
EXQ09	<i>Corymbia hamersleyana</i>	2.6	2-10
EXQ09	<i>Triodia epactia</i>	1	10-30
EXQ09	<i>Ipomoea costata</i>	1.1	<2
EXQ09	<i>Acacia tetragonophylla</i>	1.2	<2

Site	Taxon	Height (m)	Cover (%)
EXQ09	<i>Indigofera monophylla</i>	0.4	<2
EXQ09	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.4	<2
EXQ09	<i>Goodenia ?tenuiloba</i>	0.5	<2
EXQ09	<i>Jasminum didymum</i>	-	<2
EXQ09	<i>Acacia arida</i>	1.5	2-10
EXQ09	<i>Senna artemidioides</i> subsp. <i>oligophylla</i>	1.5	<2
EXQ09	<i>Solanum lasiophyllum</i>	0.6	<2
EXQ09	<i>Melaleuca cardiophylla</i>	1.5	<2
EXQ09	<i>Leptosema macrocarpum</i>	0.4	<2
EXQ09	<i>Afrohybanthus aurantiacus</i>	0.2	<2
EXQ09	<i>Brachychiton obtusilobus</i>	0.4	<2
EXQ09	<i>Cymbopogon ambiguus</i>	1	<2
EXQ09	* <i>Bidens bipinnata</i>	0.05	<2
EXQ09	<i>Tinospora esiangkara</i>	-	<2
EXQ09	<i>Corchorus crozophorifolius</i>	0.4	<2
EXQ09	<i>Acacia alexandri</i>	1.7	<2
EXQ09	<i>Gossypium robinsonii</i>	2	<2
EXQ09	<i>Eremophila longifolia</i>	0.6	<2

Site ID	EXQ010	VT: 02
Type:	Quadrat	
Date:	12/05/22	
Co-ordinates:	E: 200234	N: 7570385
Landform and slope:	Rocky limestone hilltop	
Drainage:	Good	
Aspect:	-	
Soil colour & type:	Skeletal, orange/brown, rock >70%	
Vegetation condition:	Excellent	
Fire age & intensity:	Old >5 yr	
Disturbances:	Minimal	
Leaf litter (%):	2-10%	
Bare ground (%):	30-70%	
No photo		

Site	Taxon	Height (m)	Cover (%)
EXQ10	<i>Acacia arida</i>	1.3	10-30
EXQ10	<i>Triodia wiseana</i>	1.1	10-30
EXQ10	<i>Indigofera monophylla</i>	0.3	<2
EXQ10	<i>Triodia epactia</i>	1.1	2-10
EXQ10	<i>Goodenia ?tenuiloba</i>	0.6	2-10
EXQ10	<i>Solanum lasiophyllum</i>	0.5	<2
EXQ10	<i>Tribulus suberosus</i>	1.1	<2
EXQ10	<i>Corymbia hamersleyana</i>	1.8	<2
EXQ10	<i>Solanum diversiflorum</i>	0.2	<2
EXQ10	<i>Streptoglossa decurrens</i>	0.3	<2

Site	Taxon	Height (m)	Cover (%)
EXQ10	<i>Melaleuca cardiophylla</i>	1.3	2-10
EXQ10	<i>Acacia bivenosa</i>	2	<2
EXQ10	<i>Acacia tetragonophylla</i>	1.4	<2
EXQ10	<i>Leptosema macrocarpum</i>	0.5	<2
EXQ10	<i>Senna artemidioides</i> subsp. <i>oligophylla</i>	1.6	<2
EXQ10	<i>Cucumis variabilis</i>	-	<2
EXQ10	<i>Eremophila forrestii</i> subsp. <i>capensis</i>	1.8	<2
EXQ10	<i>Trichodesma zeylanicum</i>	0.5	<2
EXQ10	<i>Eremophila longifolia</i>	0.6	<2
EXQ10	<i>Jasminum didymum</i>	-	<2
EXQ10	<i>Afrohybanthus aurantiacus</i>	0.2	<2
EXQ10	* <i>Bidens bipinnata</i>	0.05	<2
EXQ10	<i>Nellica maderaspatensis</i>	0.2	<2
EXQ10	<i>Acacia pyrifolia</i>	1.2	<2
EXQ10	<i>Ipomoea costata</i>	-	<2
EXQ10	<i>Tinospora esiangkara</i>	-	<2
EXQ10	<i>Hibiscus</i> sp. Gardneri (A.L. Payne PRP 1435)	0.1	<2

Site ID	EXR01	VT: 03
Type:	Releve	
Date:	10/05/22	
Co-ordinates:	E: 202651	N: 7570386
Landform and slope:	Drainage line	
Drainage:	Good	
Aspect:	East	
Soil colour & type:	Skeletal, sandy/clay/loam	
Vegetation condition:	Very Good	
Fire age & intensity:	Old >5 yr	
Disturbances:	Weeds	
Leaf litter (%):	2-10%	
Bare ground (%):	30-70%	



Site	Taxon	Height (m)	Cover (%)
EXR01	<i>Corymbia hamersleyana</i>	4	<2

Site	Taxon	Height (m)	Cover (%)
EXR01	<i>Acacia arida</i>	1.8	10-30
EXR01	<i>Trichodesma zeylanicum</i>	1.7	<2
EXR01	<i>Triodia epactia</i>	1.2	10-30
EXR01	<i>Heliotropium crispatum</i>	0.2	<2
EXR01	* <i>Cenchrus ciliaris</i>	0.7	30
EXR01	<i>Vigna</i> sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.2	<2
EXR01	<i>Indigofera monophylla</i>	0.8	<2
EXR01	<i>Cynanchum viminale</i> subsp. <i>australe</i>	1.8	<2
EXR01	<i>Gossypium robinsonii</i>	1.8	<2
EXR01	<i>Senna notabilis</i>	0.4	<2
EXR01	<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	0.1	<2
EXR01	<i>Solanum diversiflorum</i>	0.5	<2
EXR01	<i>Ptilotus</i> sp.	1	<2
EXR01	* <i>Bidens bipinnata</i>	0.05	<2
EXR01	<i>Acacia tetragonophylla</i>	2	<2
EXR01	<i>Corchorus congener</i>	0.3	<2
EXR01	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.4	<2
EXR01	<i>Jasminum didymum</i>	-	<2
EXR01	<i>Acacia bivenosa</i>	1.9	<2
EXR01	<i>Solanum lasiophyllum</i>	0.4	<2
EXR01	<i>Sida fibulifera</i>	0.4	2-10
EXR01	<i>Streptoglossa decurrens</i>	1	<2
EXR01	<i>Ptilotus polystachyus</i>	0.6	<2
EXR01	<i>Eremophila longifolia</i>	1.8	<2
EXR01	<i>Senna artemidioides</i> subsp. <i>oligophylla</i>	1.9	<2
EXR01	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	1.5	<2
EXR01	<i>Waltheria indica</i>	1	<2
EXR01	<i>Ptilotus exaltatus</i>	1	<2
EXR01	<i>Abutilon cunninghamii</i>	1.7	<2
EXR01	<i>Glycine canescens</i>	-	<2
EXR01	<i>Melaleuca cardiophylla</i>	1.8	2-10
EXR01	<i>Chrysopogon fallax</i>	1.6	<2
EXR01	<i>Cymbopogon ambiguus</i>	1	<2
EXR01	<i>Melhania oblongifolia</i>	0.4	<2
EXR01	<i>Afrohybanthus aurantiacus</i>	0.3	<2
EXR01	<i>Nellica maderaspatensis</i>	0.3	<2
EXR01	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.4	<2
EXR01	<i>Cassutha aurea</i> var. <i>aurea</i>	-	<2
EXR01	<i>Acanthocarpus verticillatus</i>	1.3	<2
EXR01	<i>Eulalia aurea</i>	1.3	<2
EXR01	<i>Eriachne mucronata</i>	0.7	<2

Site ID	EXR02	VT: 03
Type:	Releve	
Date:	10/05/22	
Co-ordinates:	E: 202155	N: 7569929
Landform and slope:	Drainage line	
Drainage:	Good	
Aspect:	East	
Soil colour & type:	Rocky sandy/clay/loam	
Vegetation condition:	Very Good	
Fire age & intensity:	Old >5 yr	
Disturbances:	Weeds	
Leaf litter (%):	10-30%	
Bare ground (%):	30-70%	



Site	Taxon	Height (m)	Cover (%)
EXR02	<i>Corymbia hamersleyana</i>	4	10-30
EXR02	<i>Acacia arida</i>	1.6	10-30
EXR02	<i>Triodia epactia</i>	1.1	10-30

Site	Taxon	Height (m)	Cover (%)
EXR02	<i>Acacia coriacea</i> subsp. <i>coriacea</i>	1.8	<2
EXR02	<i>Acacia pyrifolia</i>	2.3	<2
EXR02	<i>Acacia tetragonophylla</i>	1.9	<2
EXR02	* <i>Bidens bipinnata</i>	0.1	<2
EXR02	<i>Glycine canescens</i>	-	<2
EXR02	<i>Indigofera monophylla</i>	0.4	2-10
EXR02	<i>Eulalia aurea</i>	1	<2
EXR02	* <i>Cenchrus ciliaris</i>	0.5	2-10
EXR02	<i>Tinospora esiangkara</i>	-	<2
EXR02	<i>Corchorus crozophorifolius</i>	1.5	<2
EXR02	<i>Cymbopogon ambiguus</i>	1.3	<2
EXR02	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	1.5	<2
EXR02	<i>Eremophila longifolia</i>	2	<2
EXR02	<i>Duperreya commixta</i>	-	<2
EXR02	<i>Melaleuca cardiophylla</i>	1.7	<2
EXR02	<i>Senna artemidioides</i> subsp. <i>oligophylla</i>	1.5	2-10
EXR02	<i>Themeda triandra</i>	1.6	2-10
EXR02	<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>	0.3	<2
EXR02	<i>Afrohybanthus aurantiacus</i>	0.3	<2
EXR02	<i>Acacia gregorii</i>	0.5	<2
EXR02	<i>Solanum diversiflorum</i>	0.3	<2
EXR02	<i>Streptoglossa decurrens</i>	0.4	<2
EXR02	<i>Gossypium robinsonii</i>	1.7	<2
EXR02	<i>Enneapogon caeruleus</i>	0.5	<2
EXR02	<i>Triodia wiseana</i>	1	2-10
EXR02	<i>Ptilotus polystachyus</i>	0.5	<2
EXR02	<i>Corchorus crozophorifolius</i>	1	<2
EXR02	<i>Chrysopogon fallax</i>	1.3	<2
EXR02	<i>Acanthocarpus verticillatus</i>	1	<2
EXR02	<i>Acacia bivenosa</i>	2	<2
EXR02	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.6	<2
EXR02	<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	0.1	<2
EXR02	<i>Triumfetta clementii</i>	0.3	<2
EXR02	<i>Goodenia ?tenuiloba</i>	0.6	<2
EXR02	<i>Solanum lasiophyllum</i>	0.1	<2
EXR02	<i>Hibiscus</i> sp.	0.3	<2
EXR02	<i>Corchorus congener</i>	0.3	<2
EXR02	<i>Eriachne obtusa</i>	0.4	<2

Site ID	EXR03	VT: 03
Type:	Releve	
Date:	12/05/22	
Co-ordinates:	E: 200316	N: 7569747
Landform and slope:	Gully / Drainage	
Drainage:	Good	
Aspect:	NE	
Soil colour & type:	Skeletal, orange/brown sandy loam	
Vegetation condition:	Excellent	
Fire age & intensity:	Old >5 yr	
Disturbances:	Minimal	
Leaf litter (%):	10-30%	
Bare ground (%):	10-30%	



Site	Taxon	Height (m)	Cover (%)
EXR03	<i>Corymbia hamersleyana</i>	4	2-10
EXR03	<i>Acacia tetragonophylla</i>	1.7	<2
EXR03	<i>Senna artemidioides</i> subsp. <i>oligophylla</i>	1	2-10
EXR03	<i>Eremophila forrestii</i> subsp. <i>capensis</i>	1	<2

Site	Taxon	Height (m)	Cover (%)
EXR03	<i>Acacia bivenosa</i>	1	<2
EXR03	<i>Solanum lasiophyllum</i>	0.5	<2
EXR03	<i>Jasminum didymum</i>	-	<2
EXR03	<i>Acacia gregorii</i>	0.4	<2
EXR03	<i>Afrohybanthus aurantiacus</i>	0.4	<2
EXR03	<i>Exocarpos aphyllus</i>	2.3	<2
EXR03	<i>Gossypium robinsonii</i>	1.4	<2
EXR03	<i>Melaleuca cardiophylla</i>	1.5	2-10
EXR03	<i>Triodia wiseana</i>	1	<2
EXR03	<i>Tribulus suberosus</i>	0.6	<2
EXR03	<i>Indigofera monophylla</i>	0.4	<2
EXR03	<i>Goodenia ?tenuiloba</i>	0.4	<2
EXR03	<i>Trichodesma zeylanicum</i>	1	<2
EXR03	<i>Solanum diversiflorum</i>	0.5	<2
EXR03	<i>Acacia arida</i>	1.9	2-10
EXR03	<i>Corchorus crozophorifolius</i>	1.4	<2
EXR03	<i>Amyema preissii</i>	-	<2
EXR03	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	0.4	<2
EXR03	<i>Acacia pyrifolia</i>	1.1	<2
EXR03	<i>Tinospora esiangkara</i>	-	<2

Site ID	EXR04	VT: 03
Type:	Releve	
Date:	12/05/22	
Co-ordinates:	E: 200123	N: 7569904
Landform and slope:	Rocky Gully / Drainage	
Drainage:	Good	
Aspect:	East	
Soil colour & type:	Skeletal orange/brown sandy loam	
Vegetation condition:	Excellent	
Fire age & intensity:	Old >5 yr	
Disturbances:	Weeds	
Leaf litter (%):	10-30%	
Bare ground (%):	30-70%	



Site	Taxon	Height (m)	Cover (%)
EXR04	<i>Ficus brachypoda</i>	3	<2
EXR04	<i>Dodonaea viscosa</i> subsp. <i>mucronata</i>	2	2-10
EXR04	<i>Acacia arida</i>	1.8	10-30

Site	Taxon	Height (m)	Cover (%)
EXR04	<i>Triodia epactia</i>	1.1	2-10
EXR04	<i>Solanum lasiophyllum</i>	0.5	<2
EXR04	<i>Indigofera monophylla</i>	0.4	<2
EXR04	<i>Rhynchosia minima</i>	-	<2
EXR04	<i>Acacia alexandri</i>	2	2-10
EXR04	<i>Acanthocarpus verticillatus</i>	0.8	<2
EXR04	<i>Acacia tetragonophylla</i>	2	<2
EXR04	<i>Gossypium robinsonii</i>	1.9	<2
EXR04	<i>Trichodesma zeylanicum</i>	1.5	<2
EXR04	* <i>Bidens bipinnata</i>	0.05	<2
EXR04	<i>Senna artemidioides</i> subsp. <i>oligophylla</i>	2.1	2-10
EXR04	<i>Jasminum didymum</i>	-	<2
EXR04	<i>Acacia coriacea</i> subsp. <i>coriacea</i>	2	2-10
EXR04	<i>Enneapogon caeruleus</i>	0.1	<2
EXR04	<i>Corymbia hamersleyana</i>	2.8	<2
EXR04	<i>Ipomoea costata</i>	1.8	<2
EXR04	<i>Melaleuca cardiophylla</i>	1	<2
EXR04	<i>Eremophila forrestii</i> subsp. <i>capensis</i>	0.4	<2
EXR04	<i>Acacia bivenosa</i>	2	<2
EXR04	<i>Afrohybanthus aurantiacus</i>	0.3	<2
EXR04	<i>Triodia wiseana</i>	1.1	<2
EXR04	<i>Paspalidium clementii</i>	0.6	<2
EXR04	<i>Corchorus crozophorifolius</i>	0.6	<2
EXR04	<i>Goodenia ?tenuiloba</i>	0.5	<2
EXR04	<i>Grevillea calcicola</i>	3	<2
EXR04	<i>Waltheria indica</i>	0.4	<2
EXR04	<i>Eremophila longifolia</i>	1.8	<2
EXR04	<i>Abutilon cunninghamii</i>	0.4	<2
EXR04	<i>Melhania oblongifolia</i>	0.4	<2
EXR04	<i>Cucumis variabilis</i>	-	<2
EXR04	<i>Tribulus suberosus</i>	1.6	<2
EXR04	<i>Brachychiton obtusilobus</i>	4	<2
EXR04	<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>	0.1	<2
EXR04	<i>Cymbopogon ambiguus</i>	1.2	<2
EXR04	<i>Ptilotus obovatus</i>	1	<2
EXR04	<i>Themeda triandra</i>	1	<2
EXR04	<i>Exocarpos aphyllus</i>	2.5	<2
EXR04	<i>Solanum horridum</i>	0.3	<2

Site ID	EXR05	VT: 03
Type:	Releve	
Date:	12/05/22	
Co-ordinates:	E: 200271	N: 7570197
Landform and slope:	Rocky drainage line	
Drainage:	Good	
Aspect:	East	
Soil colour & type:	Skeletal, orange/brown sand	
Vegetation condition:	Very Good	
Fire age & intensity:	Old >5 yr	
Disturbances:	Weeds	
Leaf litter (%):	10-30%	
Bare ground (%):	30-70%	



Site	Taxon	Height (m)	Cover (%)
EXR05	<i>Corymbia hamersleyana</i>	4	2-10
EXR05	<i>Acacia bivenosa</i>	2	<2
EXR05	<i>Acacia pyrifolia</i>	1.8	<2
EXR05	<i>Acacia alexandri</i>	2.8	<2

Site	Taxon	Height (m)	Cover (%)
EXR05	<i>Cymbopogon ambiguus</i>	1.2	<2
EXR05	<i>Cassythia aurea</i> var. <i>aurea</i>	-	<2
EXR05	<i>Sida fibulifera</i>	0.4	<2
EXR05	<i>Indigofera monophylla</i>	0.5	<2
EXR05	<i>Jasminum didymum</i>	-	<2
EXR05	<i>Corchorus crozophorifolius</i>	0.5	<2
EXR05	<i>Gossypium robinsonii</i>	2.5	<2
EXR05	<i>Triodia epactia</i>	1.2	10-30
EXR05	<i>Dodonaea viscosa</i> subsp. <i>mucronata</i>	3	2-10
EXR05	<i>Senna artemidioides</i> subsp. <i>oligophylla</i>	2	2-10
EXR05	<i>Acacia tetragonophylla</i>	1.8	<2
EXR05	<i>Acanthocarpus verticillatus</i>	1	<2
EXR05	<i>Acacia arida</i>	2	10-30
EXR05	* <i>Bidens bipinnata</i>	0.05	<2
EXR05	<i>Afrohybanthus aurantiacus</i>	0.3	<2
EXR05	<i>Melhania oblongifolia</i>	0.3	<2
EXR05	<i>Melaleuca cardiophylla</i>	1.5	<2
EXR05	<i>Eremophila forrestii</i> subsp. <i>capensis</i>	1.8	<2
EXR05	<i>Eucalyptus xerothermica</i>	5	2-10
EXR05	<i>Ipomoea costata</i>	1.3	<2
EXR05	<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>	0.2	<2
EXR05	<i>Tribulus suberosus</i>	1.2	<2
EXR05	<i>Eremophila longifolia</i>	0.8	<2
EXR05	<i>Goodenia ?tenuiloba</i>	0.6	<2
EXR05	<i>Solanum lasiophyllum</i>	0.5	<2
EXR05	<i>Ptilotus obovatus</i>	1	<2

Site ID	EXR06	VT: 03
Type:	Releve	
Date:	13/05/22	
Co-ordinates:	E: 200089	N: 7570507
Landform and slope:	Rocky drainage line	
Drainage:	Good	
Aspect:	East	
Soil colour & type:	Skeletal orange/brown sand	
Vegetation condition:	Very Good	
Fire age & intensity:	Old >5 yr	
Disturbances:	Weeds	
Leaf litter (%):	2-10%	
Bare ground (%):	30-70%	



Site	Taxon	Height (m)	Cover (%)
EXR06	<i>Ficus brachypoda</i>	2.6	<2
EXR06	<i>Senna artemidioides</i> subsp. <i>oligophylla</i>	2	2-10
EXR06	<i>Gossypium robinsonii</i>	1.6	<2

Site	Taxon	Height (m)	Cover (%)
EXR06	<i>Melhania oblongifolia</i>	0.4	2-10
EXR06	<i>Cymbopogon ambiguus</i>	1.4	<2
EXR06	<i>Triodia epactia</i>	1	2-10
EXR06	* <i>Bidens bipinnata</i>	0.05	2-10
EXR06	<i>Acacia pyrifolia</i>	2.2	<2
EXR06	<i>Capparis lasiantha</i>	3	<2
EXR06	<i>Acacia coriacea</i> subsp. <i>coriacea</i>	2	2-10
EXR06	<i>Rhynchosia minima</i>	2	2-10
EXR06	<i>Dodonaea viscosa</i> subsp. <i>mucronata</i>	1.9	<2
EXR06	<i>Indigofera monophylla</i>	0.3	<2
EXR06	<i>Eremophila longifolia</i>	2.2	<2
EXR06	<i>Arivela viscosa</i>	0.2	<2
EXR06	<i>Acacia pyrifolia</i>	2.1	<2
EXR06	<i>Trichodesma zeylanicum</i>	1.3	<2
EXR06	<i>Ipomoea costata</i>	-	<2
EXR06	<i>Grevillea calcicola</i>	2	<2
EXR06	<i>Cucumis variabilis</i>	-	<2
EXR06	<i>Eremophila obovatus</i>	1	<2
EXR06	<i>Tribulus suberosus</i>	1.7	<2
EXR06	<i>Acacia arida</i>	1.5	<2
EXR06	<i>Waltheria indica</i>	0.4	<2
EXR06	<i>Jasminum didymum</i>	-	<2
EXR06	<i>Nellica maderaspatensis</i>	0.2	<2
EXR06	<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>	0.1	<2
EXR06	<i>Corchorus crozophorifolius</i>	0.6	<2
EXR06	<i>Acacia tetragonophylla</i>	1.9	<2
EXR06	<i>Acacia alexandri</i>	2.6	<2

Flora species matrix

Taxon	EXQ 01	EXQ 02	EXQ 03	EXQ 04	EXQ0 5	EXQ0 6	EXQ0 7	EXQ0 8	EXQ0 9	EXQ1 0	EXR0 1	EXR0 2	EXR0 3	EXR0 4	EXR0 5	EXR0 6
<i>*Aerva javanica</i>							1									
<i>*Bidens bipinnata</i>									1	1	1	1		1	1	1
<i>*Cenchrus ciliaris</i>	1			1	1		1				1	1				
<i>Abutilon cunninghamii</i>											1			1		
<i>Abutilon fraseri</i>	1				1											
<i>Abutilon lepidum</i>						1										
<i>Abutilon sp.</i>						1										
<i>Acacia alexandri</i>									1					1	1	1
<i>Acacia arida</i>			1	1				1	1	1	1	1	1	1	1	1
<i>Acacia bivenosa</i>	1	1	1	1	1	1	1	1		1	1	1	1	1	1	
<i>Acacia coriacea subsp. coriacea</i>					1		1					1		1		1
<i>Acacia gregorii</i>								1				1	1			
<i>Acacia pyrifolia</i>				1	1		1			1		1	1		1	1
<i>Acacia synchronicia</i>	1			1	1											
<i>Acacia tetragonophylla</i>		1	1	1	1		1		1	1	1	1	1	1	1	1
<i>Acanthocarpus verticillatus</i>					1		1				1	1		1	1	
<i>Adriana tomentosa subsp. tomentosa</i>					1		1									
<i>Afrohybanthus aurantiacus</i>		1	1	1	1	1	1		1	1	1	1	1	1	1	
<i>Alyogyne pinoniana</i>							1									
<i>Amyema preissii</i>													1			
<i>Arivela viscosa</i>					1											1
<i>Brachychiton obtusilobus</i>									1					1		
<i>Capparis lasiantha</i>																1
<i>Cassytha aurea var. aurea</i>											1				1	

Taxon	EXQ 01	EXQ 02	EXQ 03	EXQ 04	EXQ0 5	EXQ0 6	EXQ0 7	EXQ0 8	EXQ0 9	EXQ1 0	EXR0 1	EXR0 2	EXR0 3	EXR0 4	EXR0 5	EXR0 6
<i>Chenopodium gaudichaudianum</i>	1															
<i>Chrysopogon fallax</i>	1				1						1	1				
<i>Corchorus ?congener</i>				1			1									
<i>Corchorus congener</i>	1										1	1				
<i>Corchorus crozophorifolius</i>									1			1	1	1	1	1
<i>Corymbia hamersleyana</i>					1		1		1	1	1	1	1	1	1	
<i>Cucumis variabilis</i>				1						1				1		1
<i>Cymbopogon ambiguus</i>									1		1	1		1	1	1
<i>Cynanchum viminale</i> subsp. <i>australe</i>			1								1					
<i>Cyperus squarrosus</i>					1											
<i>Dampiera incana</i> var. <i>incana</i>								1								
<i>Diplopeltis eriocarpa</i>							1									
<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>												1		1	1	1
<i>Dodonaea viscosa</i> subsp. <i>mucronata</i>														1	1	1
<i>Duperreya commixta</i>												1				
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>				1			1				1					
<i>Enneapogon caeruleascens</i>												1		1		
<i>Eremophila forrestii</i> subsp. <i>capensis</i>										1			1	1	1	
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>		1	1	1		1			1		1	1				
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>							1									
<i>Eremophila longifolia</i>	1	1	1		1	1	1		1	1	1	1		1	1	1
<i>Eremophila obovatus</i>																1

Taxon	EXQ 01	EXQ 02	EXQ 03	EXQ 04	EXQ0 5	EXQ0 6	EXQ0 7	EXQ0 8	EXQ0 9	EXQ1 0	EXR0 1	EXR0 2	EXR0 3	EXR0 4	EXR0 5	EXR0 6
<i>Eriachne mucronata</i>											1					
<i>Eriachne obtusa</i>												1				
<i>Eucalyptus xerothermica</i>															1	
<i>Eulalia aurea</i>											1	1				
<i>Euphorbia australis</i> var. <i>australis</i>	1															
<i>Euphorbia biconvexa</i>	1				1											
<i>Euphorbia myrtilloides</i>		1	1	1												
<i>Euploca inexplicita</i>			1													
<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	1			1	1						1	1				
<i>Exocarpos aphyllus</i>		1				1							1	1		
<i>Ficus brachypoda</i>														1		1
<i>Fimbristylis dichotoma</i>					1											
<i>Glycine canescens</i>					1						1	1				
<i>Goodenia ?tenuiloba</i>		1		1		1		1	1	1		1	1	1	1	
<i>Gossypium robinsonii</i>	1			1						1		1	1	1	1	1
<i>Grevillea calcicola</i>														1		1
<i>Hakea lorea</i> subsp. <i>lorea</i>	1						1									
<i>Heliotropium crispatum</i>											1					
<i>Hibiscus</i> sp.												1				
<i>Hibiscus</i> sp. Gardneri (A.L. Payne PRP 1435)		1	1			1	1			1						
<i>Hibiscus sturtii</i> var. <i>platyklamys</i>	1		1	1	1											
<i>Indigofera linnaei</i>	1				1											
<i>Indigofera monophylla</i>	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
<i>Ipomoea costata</i>									1	1				1	1	1
<i>Isotropis atropurpurea</i>				1	1											

Taxon	EXQ 01	EXQ 02	EXQ 03	EXQ 04	EXQ0 5	EXQ0 6	EXQ0 7	EXQ0 8	EXQ0 9	EXQ1 0	EXR0 1	EXR0 2	EXR0 3	EXR0 4	EXR0 5	EXR0 6
<i>Jasminum didymum</i>		1							1	1	1		1	1	1	1
<i>Leptosema macrocarpum</i>		1	1	1		1	1	1	1	1						
<i>Leschenaultia subcymosa</i>						1	1									
<i>Lysiandra hamelinii</i>			1	1	1		1									
<i>Melaleuca cardiophylla</i>		1	1	1		1		1	1	1	1	1	1	1	1	
<i>Melhania oblongifolia</i>	1			1	1		1				1			1	1	1
<i>Nellica maderaspatensis</i>										1	1					1
<i>Panicum decompositum</i>			1	1												
<i>Paspalidium clementii</i>														1		
<i>Phyllanthus tannensis</i> subsp. <i>eremophila</i>						1										
<i>Pimelea microcephala</i> subsp. <i>microcephala</i>			1									1				
<i>Pittosporum phillyreoides</i>		1														
<i>Pluchea</i> sp.				1												
<i>Polymeria ambigua</i>	1			1												
<i>Ptilotus exaltatus</i>	1						1				1					
<i>Ptilotus obovatus</i>	1			1	1		1							1	1	
<i>Ptilotus polystachyus</i>		1	1	1	1	1					1	1				
<i>Ptilotus</i> sp.							1				1					
<i>Rhagodia eremaea</i>					1		1									
<i>Rhynchosia minima</i>					1											1
<i>Rhynchosia minima</i>														1		
<i>Salsola australis</i>	1						1									
<i>Scaevola spinescens</i>	1			1												
<i>Scaevola tomentosa</i>	1						1									
<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	1			1	1	1			1	1	1	1	1	1	1	1

Taxon	EXQ 01	EXQ 02	EXQ 03	EXQ 04	EXQ0 5	EXQ0 6	EXQ0 7	EXQ0 8	EXQ0 9	EXQ1 0	EXR0 1	EXR0 2	EXR0 3	EXR0 4	EXR0 5	EXR0 6
<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	1	1	1			1	1				1		1			
<i>Senna glutinosa</i> subsp. x <i>luerssenii</i>	1	1				1										
<i>Senna notabilis</i>											1					
<i>Sida arenicola</i>	1															
<i>Sida fibulifera</i>	1			1							1				1	
<i>Solanum diversiflorum</i>	1	1	1	1		1	1	1		1	1	1	1			
<i>Solanum horridum</i>														1		
<i>Solanum lasiophyllum</i>	1	1	1	1	1	1	1		1	1	1	1	1	1	1	
<i>Solanum</i> sp.		1														
<i>Streptoglossa decurrens</i>		1	1	1		1				1	1	1				
<i>Stylobasium spathulatum</i>	1															
<i>Tephrosia supina</i>	1			1												
<i>Themeda triandra</i>												1		1		
<i>Tinospora esiangkara</i>							1		1	1		1	1			
<i>Tribulus suberosus</i>										1			1	1	1	1
<i>Trichodesma zeylanicum</i>				1	1		1			1	1		1	1		1
<i>Triodia basedowii</i>	1	1	1													
<i>Triodia epactia</i>	1		1	1	1	1	1	1	1	1	1	1		1	1	1
<i>Triodia wiseana</i>		1	1	1	1	1		1		1			1	1		
<i>Triumfetta clementii</i>		1		1								1				
<i>Vigna</i> sp. Hamersley Clay (A.A. Mitchell PRP 113)				1	1						1					
<i>Waltheria indica</i>				1	1						1			1		1
Total	34	24	25	39	36	23	36	11	22	27	42	41	24	41	30	30

Flora likelihood of occurrence assessment guidelines

Likelihood of occurrence	Guideline
Likely	Species previously recorded within the study area and large areas of suitable habitat occur in the survey area.
Possible	Species previously recorded within the study area and areas of suitable habitat occur/may occur in the survey area.
Unlikely	Species previously recorded within the study area, but suitable habitat does not occur in the survey area, however, suitable search effort did not record the species.
Highly unlikely	Species not previously recorded within the study area, suitable habitat does not occur in the survey area and/or the survey area is outside the natural distribution of the species.
Other considerations	Intensity of survey, availability of access, growth form type, recorded flowering times, cryptic nature of species

Source information - desktop searches

PMST – DCCEEW Protected Matters Search Tool (PMST) to identify flora listed under the EPBC Act potentially occurring within the study area

TPFL and WAHERB – records of threatened flora from TPFL and WAHERB database searches within the study area

NM – DBCA *NatureMap* (accessed August 2021)

Flora likelihood of occurrence assessment of conservation significant flora identified in the desktop assessment as potentially occurring within the study area

Family	Taxon	Status		Description (if available) (WA Herbarium 1998–)	Likelihood of occurrence
		EPBC Act	BC Act /DBCA		
Acanthaceae	<i>Harnieria kempeana</i> subsp. <i>rhadinophylla</i>	-	P2	Erect or sprawling, spreading, straggly shrub, to 1 m high. Flowers pink/red-purple, May to September. Calcareous loam. Amongst limestone rocks, creek banks.	Unlikely Potential suitable habitat occurs in the survey area however suitable search effort did not record the species. This species should have been flowering at the time of survey.
Apocynaceae	<i>Gymnanthera cunninghamii</i>	-	P3	Erect shrub, 1-2 m high. Flowers cream yellow-green, January to December. Sandy soils.	Unlikely Limited suitable habitat available within the survey area. Suitable search effort did not record the species.
Asparagaceae	<i>Acanthocarpus rupestris</i>	-	P2	Rhizomatous, tufted perennial, herb, to 0.5 m high. Flowers white, May to June. Red sand, limestone.	Present Recorded during the current survey.

Family	Taxon	Status		Description (if available) (WA Herbarium 1998–)	Likelihood of occurrence
		EPBC Act	BC Act /DBCA		
Celastraceae	<i>Stackhousia umbellata</i>	-	P3	Spreading perennial, herb, to 0.7 m high. Flowers yellow, May to August. Sandy soils on limestone and red sandy loam.	Unlikely Potential suitable habitat occurs in the survey area however suitable search effort did not record the species.
Cucurbitaceae	<i>Cucumis</i> sp. Barrow Island (D.W. Goodall 1264)	-	P2	Herbaceous perennial vine, growing up to 2 m tall. Hummock grassland of <i>Triodia pungens</i> and a tall shrub overstorey of <i>Acacia sclerosperma</i> .	Unlikely Potential suitable habitat occurs in the survey area however suitable search effort did not record the species.
Fabaceae	<i>Acacia alexandri</i>	-	P3	Open or moderately dense, sometimes wispy shrub, 1.5-3 m high. Flowers cream, June or August to September. Limestone. Stony creeks, steep rocky slopes.	Present Recorded during the current survey.
Fabaceae	<i>Acacia ryaniana</i>	-	P2	Prostrate, straggly or domed, spinescent shrub, 0.1-0.4 m high. Flowers yellow, June to November. White or red sand. Coastal sand dunes.	Unlikely. No suitable habitat within the survey area.
Fabaceae	<i>Acacia startii</i>	-	P3	Dense, rounded, much-branched shrub, 1-2 m high, to 3 m wide. Flowers green-yellow, July to August. Calcareous loam with limestone pebbles. Stony hills & watercourses.	Unlikely Potential suitable habitat occurs in the survey area however suitable search effort did not record the species.
Fabaceae	<i>Tephrosia</i> sp. North West Cape (G. Marsh 81)	-	P2	Low perennial shrub growing to approximately 0.3 m high. It has previously been recorded from red brown / orange soils over limestone on plains.	Unlikely Potential suitable habitat occurs in the survey area however suitable search effort did not record the species.
Malvaceae	<i>Brachychiton obtusilobus</i>	-	P4	Tree, 3.5-6 m high. Flowers cream, August to September. Skeletal soils. Rocky limestone ranges, gorges, occasionally sandplains.	Recorded during the current survey
Menispermaceae	<i>Tinospora esiangkara</i>	-	P2	Climber, to 2 m high, large stems with brown, flaky bark. Flowers green, July. Pebbly orange-brown calcareous loam. Limestone outcrops or ridges, near creek bank.	Recorded during the current survey
Montiaceae	<i>Calandrinia</i> sp. Cape Range (F. Obbens FO 10/18)	-	P2	A scrambling perennial herb, up to 0.4 cm high. Occurs on lower slopes of ranges on skeletal limestone soil	Unlikely

Family	Taxon	Status		Description (if available) (WA Herbarium 1998–)	Likelihood of occurrence
		EPBC Act	BC Act /DBCA		
				and creeklines. Red brown sandy clay loam in cracks between rock over limestone.	Potential suitable habitat occurs in the survey area however suitable search effort did not record the species.
Myrtaceae	<i>Verticordia serotina</i>	-	P2	Shrub, 0.5-1.5 m high. Fl. pink, Aug to Sep. Red sand. Sand dunes.	Unlikely. No suitable habitat occurs in the survey area.
Ophioglossaceae	<i>Helminthostachys zeylanica</i>	-	P3	Rhizomatous, perennial, herb or (fern), 0.4-0.6 m high, sterile frond palmately divided; fertile blade spikelike; vernation not circinnate. Flowers May. Black peat. Shady sites in gallery forest, margins of creeks.	Unlikely No suitable habitat present. Suitable search effort did not record the species.
Phyllanthaceae	<i>Phyllanthus fuernrohrii</i>	P3		Shrub to 60 cm. Red soil over limestone.	Unlikely Potential suitable habitat occurs in the survey area however suitable search effort did not record the species.
Proteaceae	<i>Grevillea calcicola</i>	P3		Small straggly tree or shrub (several stemmed), to 4 m high. Fl. Cream white, May or Jul to Aug. Limestone hilltops.	Recorded during the current survey.
Scrophulariaceae	<i>Eremophila forrestii</i> subsp. <i>capensis</i>	P3		Sparsely to much-branched shrub, to 1.4 m high. Brown rocky soils, limestone. Ridges. 12 km west	Present Recorded during the current survey.
Scrophulariaceae	<i>Eremophila occidentis</i>	P2		Shrub, to 1.5 m high. Flowers purple-violet, August to September. Orange/brown sand. Limestone ranges, dunes.	Unlikely Potential suitable habitat occurs in the survey area however suitable search effort did not record the species.
Scrophulariaceae	<i>Eremophila youngii</i> subsp. <i>lepidota</i>	P4		Dense, spreading shrub, (0.2-) 1-3 m high. Flowers purple-red-pink, January or March or June or August to September. Stony red sandy loam. Flats plains, floodplains, sometimes semi-saline, clay flats.	Unlikely Potential suitable habitat occurs in the survey area however suitable search effort did not record the species.

Appendix E

Fauna survey data

Fauna species recorded

Fauna likelihood of occurrence

Fauna Species recorded from desktop, previous surveys and the current survey.

Family	Scientific Name	Common name	Listing	NM	PMST	DBCA	GHD 2016	GHD 2019	360 2021	This survey
Mammals										
Bovidae	<i>Bos primigenius taurus</i>	European Cattle	Intro.				X			
Bovidae	<i>Capra aegagrus hircus</i>	Goat	Intro.		X					
Bovidae	<i>Ovis aries</i>	Sheep	Intro.	X			X			
Canidae	<i>Canis familiaris familiaris</i>	Dog	Intro.		X					prints
Canidae	<i>Vulpes vulpes</i>	Red Fox	Intro.		X		X			
Dasyuridae	<i>Dasyurus hallucatus</i>	Northern Quoll	En, En		X					
Dasyuridae	<i>Dasykaluta rosamondae</i>	Kaluta								camera
Dasyuridae	<i>Pseudantechinus roryi</i>	Rory Cooper's false antechinus		X						
Dasyuridae	<i>Sminthopsis longicaudata</i>	Long-tailed Dunnart	P4	X						
Dasyuridae	<i>Sminthopsis macroura</i>	Stripe-faced Dunnart		X			X			1, camera
Emballonuridae	<i>Taphozous georgianus</i>	Common Sheath-tailed Bat		X						detector
Equidae	<i>Equus ferus caballus</i>	Horse	Intro.		X				X	
Felidae	<i>Felis catus</i>	Cat	Intro.	X	X		X			prints
Leporidae	<i>Oryctolagus cuniculus</i>	Rabbit	Intro.	X	X		X			5, camera
Macropodidae	<i>Osphranter robustus</i>	Euro		X			X		X	12, camera
Macropodidae	<i>Osphranter rufus</i>	Red Kangaroo		X			X		X	
Macropodidae	<i>Petrogale lateralis lateralis</i>	Black-footed Rock-wallaby	Vu	X	X	X				
Mollossidae	<i>Austronomus australis</i>	White-striped Freetail-Bat								1
Muridae	<i>Mus musculus</i>	House Mouse	Intro.	X	X		X			1
Muridae	<i>Notomys alexis</i>	Spinifex Hopping-mouse		X			X			burrow, camera
Muridae	<i>Pseudomys chapmani</i>	Western Pebble-mound Mouse	P4							mounds, camera
Muridae	<i>Pseudomys fieldi (gouldi)</i>	Shark Bay Mouse	Vu, Vu	X						
Muridae	<i>Pseudomys hermannsburgensis</i>	Sandy Inland Mouse		X						1
Muridae	<i>Rattus rattus</i>	Black Rat	Intro.	X	X					camera
Muridae	<i>Zyzomys pedunculatus</i>	Central Rock Rat	Cr, Ce	X						
Rhinyoncteridae	<i>Rhinyoncteris aurantia</i>	Orange Leaf-nosed Bat	Vu, Vu		X	X				
Tachyglossidae	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna		X			X			1

Family	Scientific Name	Common name	Listing	NM	PMST	DBCA	GHD 2016	GHD 2019	360 2021	This survey
Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat		X						detector
Vespertilionidae	<i>Vespadelus finlaysoni</i>	Finlayson's Cave Bat		X						detector
Reptiles										
Agamidae	<i>Ctenophorus femoralis</i>	Dune Dragon		X			X			
Agamidae	<i>Ctenophorus isolepis isolepis</i>	Central Military Dragon		X			X			
Agamidae	<i>Ctenophorus nuchalis</i>	Central Netted Dragon		X						2
Agamidae	<i>Ctenophorus parviceps</i>	Northern Heath Dragon		X						
Agamidae	<i>Ctenophorus reticulatus</i>	Western Netted Dragon		X						5
Agamidae	<i>Diporiphora adductus</i>	Carnarvon Dragon		X						
Agamidae	<i>Gowidon longirostris</i>	Long-nosed Dragon		X			X			3
Agamidae	<i>Pogona minor minor</i>	Western Bearded Dragon		X			X			7
Carphodactylidae	<i>Nephurus levis occidentalis</i>	Smooth Knob-tailed Gecko		X			X			
Diplodactylidae	<i>Crenadactylus tuberculatus</i>	Cape Range Clawless Gecko		X						3
Diplodactylidae	<i>Diplodactylus capensis</i>	Cape Range Stone Gecko	P2	X						
Diplodactylidae	<i>Diplodactylus bilybara</i>	Western Fat-tailed Gecko		X						
Diplodactylidae	<i>Diplodactylus ornatus</i>	Ornate Gecko		X						
Diplodactylidae	<i>Lucasium woodwardi</i>	Pilbara ground gecko		X			X			
Diplodactylidae	<i>Strophurus ciliaris aberrans</i>	Northern Spiny-tailed Gecko		X						
Diplodactylidae	<i>Strophurus jeanae</i>	South Phasmid Gecko		X						
Diplodactylidae	<i>Strophurus rankini</i>	Exmouth Spiny-tailed Gecko		X						
Diplodactylidae	<i>Strophurus strophurus</i>	Western Spiny-tailed Gecko		X						1
Elapidae	<i>Acanthophis wellsii</i>	Pilbara Death Adder		X						
Elapidae	<i>Brachyuropsis approximans</i>	Northern Shovel-nosed Snake		X						
Elapidae	<i>Demansia calodera</i>	Little Whipsnake		X						
Elapidae	<i>Demansia psammophis cupreiceps</i>	Yellow-faced Whipsnake		X			X			1
Elapidae	<i>Ephalopsis greyae</i>	Mangrove Sea Snake	Ma	X						
Elapidae	<i>Furina ornata</i>	Moon Snake		X						
Elapidae	<i>Pseudechis australis</i>	Mulga Snake		X						
Elapidae	<i>Pseudonaja mengdeni</i>	Western Brown Snake		X						1

Family	Scientific Name	Common name	Listing	NM	PMST	DBCA	GHD 2016	GHD 2019	360 2021	This survey
Elapidae	<i>Pseudonaja modesta</i>	Ringed Brown Snake		X						
Elapidae	<i>Suta fasciata</i>	Rosen's Snake		X						
Elapidae	<i>Simoselaps bertholdi</i>	Jan's Banded Snake		X						
Elapidae	<i>Simoselaps littoralis</i>	West Coast Banded Snake		X						
Gekkonidae	<i>Gehyra australis</i>	Northern Dtella	Intro. (Nat.)	X						
Gekkonidae	<i>Gehyra capensis</i>	Northwest Cape Gehyra								11
Gekkonidae	<i>Gehyra pilbara</i>	Pilbara Dtella		X						
Gekkonidae	<i>Gehyra variegata</i>	Variiegated Dtella		X						9
Gekkonidae	<i>Hemidactylus frenatus</i>	Asian House Gecko	Intro.		X					calling
Gekkonidae	<i>Heteronotia binoei</i>	Bynoe's Gecko		X			X			1
Pygopodidae	<i>Aprasia rostrata</i>	Ningaloo Worm Lizard	P3	X		X				
Pygopodidae	<i>Delma butleri</i>	Butler's legless lizard		X						
Pygopodidae	<i>Delma nasuta</i>	Sharp-snouted Delma		X						1
Pygopodidae	<i>Delma tealei</i>	North West Cape Delma		X						
Pygopodidae	<i>Delma tincta</i>	Black-necked Delma		X						
Pygopodidae	<i>Lialis burtonis</i>	Burton's Legless Lizard		X						
Pygopodidae	<i>Pygopus nigriceps</i>	Hooded Scalyfoot		X						
Pythonidae	<i>Antaresia childreni</i>	Children's python		X						
Pythonidae	<i>Antaresia perthensis</i>	Pygmy Python		X						
Pythonidae	<i>Aspidites melanocephalus</i>	Black headed Python		X						
Scincidae	<i>Carlia munda</i>	Striped Rainbow Skink		X						4
Scincidae	<i>Cryptoblepharus plagioccephalus</i>	Peron's Snake-eyed skink		X						
Scincidae	<i>Ctenotus grandis titan</i>	Giant Desert Ctenotus		X						
Scincidae	<i>Ctenotus hanloni</i>	Nimble Ctenotus		X						
Scincidae	<i>Ctenotus iapetus</i>	North West Cape Ctenotus		X						1
Scincidae	<i>Ctenotus inornatus</i>	Plain Ctenotus		X						
Scincidae	<i>Ctenotus pantherinus ocellifer</i>	Leopard Skink		X						2
Scincidae	<i>Ctenotus rufescens</i>	Rufous Fine-snout Ctenotus		X						
Scincidae	<i>Ctenotus saxatilis</i>	Rock Ctenotus		X			X			6, camera

Family	Scientific Name	Common name	Listing	NM	PMST	DBCA	GHD 2016	GHD 2019	360 2021	This survey
Scincidae	<i>Ctenotus uber uber</i>	Western Spotted Ctenotus					X			
Scincidae	<i>Cyclodomorphus melanops</i>	Slender Blue-tongue		X			X			3
Scincidae	<i>Egernia depressa</i>	Pygmy Spiny-tailed Skink		X			X			
Scincidae	<i>Eremiascincus pallidus</i>	Western Narrow-banded Skink		X						
Scincidae	<i>Eremiascincus richardsonii</i>	Broad-banded Sand Swimmer		X						
Scincidae	<i>Lerista allochira</i>	Cape Range Slider	P3	X		X				
Scincidae	<i>Lerista bipes</i>	Western Two-toed Slider		X			X			1
Scincidae	<i>Lerista clara</i>	Sharp-blazed three-toed slider		X						
Scincidae	<i>Lerista elegans</i>	Elegant Slider		X						
Scincidae	<i>Lerista macropisthopus fusciceps</i>	Unpatterned Robust Slider		X						7
Scincidae	<i>Lerista miopus</i>	Northern Spotted Slider		X						1
Scincidae	<i>Lerista planiventralis planiventralis</i>	Keeled Slider		X			X			
Scincidae	<i>Menetia greyii</i>	Common Dwarf Skink		X						2
Scincidae	<i>Menetia surda</i>	Western Dwarf Skink		X						
Scincidae	<i>Morethia lineoocellata</i>	Pale-flecked Snake-eyed Skink		X						
Scincidae	<i>Morethia ruficauda exquisita</i>	Fire-tailed Skink		X						2
Scincidae	<i>Notoscincus ornatus ornatus</i>	Ornate Snake-eyed Skink		X						
Scincidae	<i>Tiliqua multifasciata</i>	Central Blue-tongue		X						
Scincidae	<i>Tiliqua rugosa rugosa</i>	Bobtail		X						
Typhlopidae	<i>Anilius splendidus</i>	Splendid Blindsnake	P2			X				
Varanidae	<i>Varanus acanthurus</i>	Spiny-tailed Goanna		X						
Varanidae	<i>Varanus brevicauda</i>	Short-tailed Pygmy Goanna		X						
Varanidae	<i>Varanus eremius</i>	Desert Pygmy Monitor		X						
Varanidae	<i>Varanus giganteus</i>	Perentie		X					X	1
Varanidae	<i>Varanus gouldii</i>	Goulds Monitor		X			X			burrows
Varanidae	<i>Varanus tristis</i>	Racehorse Goanna		X						
Amphibian										
Pelodyridae	<i>Cyclorana maini</i>	Giant Frog		X						1
Limnodynastidae	<i>Neobatrachus aquilonius</i>	Northern Burrowing Frog		X						

Family	Scientific Name	Common name	Listing	NM	PMST	DBCA	GHD 2016	GHD 2019	360 2021	This survey
Limnodynastidae	<i>Neobatrachus fulvus</i>	Tawny Trilling Frog		X						3
Myobatrachidae	<i>Pseudophryne douglasi</i>	Gorge Toadlet		X						
Birds										
Acanthizidae	<i>Calamanthus campestris</i>	Rufous fieldwren		X			X			
Acanthizidae	<i>Gerygone tenebrosa</i>	Dusky Gerygone		X						
Acanthizidae	<i>Gerygone fusca</i>	Western Gerygone		X						
Acanthizidae	<i>Pyrrholaemus brunneus</i>	Redthroat		X						
Acanthizidae	<i>Smicrornis brevirostris</i>	Weebill		X						
Accipitridae	<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk		X						1
Accipitridae	<i>Accipiter fasciatus</i>	Brown Goshawk	Ma	X						
Accipitridae	<i>Aquila audax</i>	Wedge tailed Eagle		X			X			
Accipitridae	<i>Circus approximans</i>	Swamp Harrier	Ma	X						
Accipitridae	<i>Circus assimilis</i>	Spotted Harrier		X						1
Accipitridae	<i>Elanus axillaris</i>	Black-shouldered Kite		X			X	X		2
Accipitridae	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Ma	X						
Accipitridae	<i>Haliastur indus</i>	Brahminy Kite	Ma	X						
Accipitridae	<i>Haliastur sphenurus</i>	Whistling Kite	Ma	X			X	X	X	1
Accipitridae	<i>Hamirostra isura</i>	Square-tailed Kite						X		
Accipitridae	<i>Hamirostra melanosternon</i>	Black-breasted Buzzard		X						
Accipitridae	<i>Hieraaetus morphnoides</i>	Little Eagle		X			X			
Accipitridae	<i>Milvus migrans</i>	Black Kite		X			X			1
Accipitridae	<i>Pandion haliaetus cristatus</i>	Osprey	Mi, IA	X	X	X	X	X		
Aegothelidae	<i>Aegotheles cristatus</i>	Owlet Nightjar		X						2, camera
Alaudidae	<i>Mirafrja javanica</i>	Horsfield's Bushlark		X						
Alcedinidae	<i>Dacelo leachii</i>	Blue-winged Kookaburra		X						
Alcedinidae	<i>Todiramphus pyrrhopygius</i>	Red-backed Kingfisher		X						
Alcedinidae	<i>Todiramphus sanctus</i>	Sacred Kingfisher		X			X	X		1
Alcedinidae	<i>Todiramphus sordidus pilbara</i>	Pilbara Collared Kingfisher		X						
Apodidae	<i>Apus pacificus</i>	Fork-tailed Swift	Ma, Mi, IA		X					

Family	Scientific Name	Common name	Listing	NM	PMST	DBCA	GHD 2016	GHD 2019	360 2021	This survey
Anatidae	<i>Anas gracilis</i>	Grey Teal		X						
Anatidae	<i>Anas platyrhynchos</i>	Mallard	Intro.	X						
Anatidae	<i>Anas superciliosa</i>	Pacific Black Duck		X						2
Anatidae	<i>Aythya australis</i>	Hardhead		X						
Anatidae	<i>Chenonetta jubata</i>	Australian Wood Duck		X						
Anatidae	<i>Cygnus atratus</i>	Black Swan		X						
Anatidae	<i>Dendrocygna arcuata</i>	Wandering Whistling Duck		X						
Anhingidae	<i>Anhinga novaehollandiae</i>	Australasian Darter		X						
Ardeidae	<i>Ardea modesta</i>	Great Egret		X						
Ardeidae	<i>Ardea intermedia</i>	Intermediate Egret	Ma	X						
Ardeidae	<i>Bubulcus coromandus</i>	Cattle Egret		X						
Ardeidae	<i>Butorides striata</i>	Striated Heron		X						
Ardeidae	<i>Egretta garzetta</i>	Little Egret	Ma	X						
Ardeidae	<i>Egretta novaehollandiae</i>	White-faced Heron		X						
Ardeidae	<i>Egretta sacra</i>	Reef Heron		X						
Ardeidae	<i>Nycticorax caledonicus</i>	Nankeen Night Heron	Ma	X						
Artamidae	<i>Artamus cinereus</i>	Black faced Wood Swallow		X				X		7
Artamidae	<i>Artamus leucorhynchus</i>	White-breasted Woodswallow		X						
Artamidae	<i>Artamus minor</i>	Little Woodswallow		X						
Artamidae	<i>Artamus personatus</i>	Masked Woodswallow		X						
Artamidae	<i>Cracticus nigrogularis</i>	Pied Butcherbird		X			X	X	X	3
Artamidae	<i>Cracticus torquatus</i>	Grey Butcherbird		X						
Artamidae	<i>Cracticus tibicen</i>	Australian Magpie		X					X	2
Burhinidae	<i>Burhinus grallarius</i>	Bush Stone-curlew		X						
Burhinidae	<i>Esacus magnirostris</i>	Beach Stone-curlew	Ma	X						
Cacatuidae	<i>Cacatua sanguinea</i>	Little Corella		X			X	X	X	100
Cacatuidae	<i>Eolophus roseicapilla</i>	Galah		X			X	X	X	32
Cacatuidae	<i>Nymphicus hollandicus</i>	Cockatiel		X			X			5
Cuculidae	<i>Cacomantis pallidus</i>	Pallid Cuckoo		X						1

Family	Scientific Name	Common name	Listing	NM	PMST	DBCA	GHD 2016	GHD 2019	360 2021	This survey
Cuculidae	<i>Chrysococcyx basalis</i>	Horsfield's Bronze Cuckoo		X			X		X	3
Campephagidae	<i>Coracina novaehollandiae</i>	Black faced Cuckoo shrike	Ma	X			X	X		4
Campephagidae	<i>Lalage tricolor</i>	White-winged Triller		X						3
Campephagidae	<i>Oreoica gutturalis</i>	Crested Bellbird		X			X	X	X	2, camera
Caprimulgidae	<i>Eurostopodus argus</i>	Spotted Nightjar								2
Casuariidae	<i>Dromaius novaehollandiae</i>	Emu		X			X	X		1
Charadriidae	<i>Charadrius leschenaultii</i>	Greater Sand Plover	Vu, Vu, IA	X		X				
Charadriidae	<i>Charadrius mongolus</i>	Lesser Sand Plover	En, En, IA	X		X				
Charadriidae	<i>Charadrius ruficapillus</i>	Red-capped Plover		X						
Charadriidae	<i>Charadrius veredus</i>	Oriental Plover	Ma, Mi, IA		X	X				
Charadriidae	<i>Elseyornis melanops</i>	Black-fronted Dotterel		X						
Charadriidae	<i>Erythronyx cinctus</i>	Red-kneed Dotterel		X						
Charadriidae	<i>Pluvialis fulva</i>	Pacific Golden Plover	Ma, Mi, IA			X				
Charadriidae	<i>Pluvialis squatarola</i>	Grey Plover	Ma, Mi, IA	X		X				
Charadriidae	<i>Vanellus tricolor</i>	Banded Lapwing		X						
Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork		X						
Columbidae	<i>Columba livia</i>	Domestic Pigeon	Intro.	X	X					
Columbidae	<i>Geopelia cuneata</i>	Diamond Dove		X			X			
Columbidae	<i>Geopelia humeralis</i>	Bar-shouldered Dove		X						
Columbidae	<i>Geopelia striata</i>	Peaceful Dove		X						3
Columbidae	<i>Geophaps plumifera</i>	Spinifex Pigeon		X						19, camera
Columbidae	<i>Ocyphaps lophotes</i>	Crested Pigeon		X				X	X	18, camera
Columbidae	<i>Phaps chalcoptera</i>	Common Bronzewing		X						
Corvidae	<i>Corvus bennetti</i>	Little Crow		X			X			
Corvidae	<i>Corvus orru</i>	Toriesian Crow		X			X	X		2, camera
Cuculidae	<i>Centropus phasianinus</i>	Pheasant Coucal		X						
Cuculidae	<i>Chalcites basalis</i>	Horsfield's Bronze Cuckoo		X						2
Cuculidae	<i>Chrysococcyx osculans</i>	Black eared Cuckoo	Ma	X			X	X		
Cuculidae	<i>Heteroscenus pallidus</i>	Pallid Cuckoo	Ma	X						1

Family	Scientific Name	Common name	Listing	NM	PMST	DBCA	GHD 2016	GHD 2019	360 2021	This survey
Dicaeidae	<i>Dicaeum hirundinaceum</i>	Mistletoebird		X						1
Diomedeidae	<i>Thalassarche chlororhynchos</i>	Yellow-nosed Albatross	Vu, Vu, IA	X		X				
Estrildidae	<i>Emblema pictum</i>	Painted Finch		X						12
Estrildidae	<i>Neochmia ruficauda</i>	Star Finch		X						
Estrildidae	<i>Taeniopygia guttata</i>	Zebra Finch		X			X	X	X	12
Falconidae	<i>Falco berigora</i>	Brown Falcon		X			X	X		1
Falconidae	<i>Falco cenchroides</i>	Nankeen Kestrel	Ma	X			X	X		5
Falconidae	<i>Falco hypoleucos</i>	Grey Falcon	Vu, Vu		X					
Falconidae	<i>Falco longipennis</i>	Hobby Falcon		X			X			1
Falconidae	<i>Falco peregrinus</i>	Peregrine Falcon	OS	X		X		X		1
Fregatidae	<i>Fregata ariel</i>	Lesser Frigatebird	Ma, Mi, IA		X					
Glareolidae	<i>Glareola maldivarum</i>	Oriental Pratincole	Ma, Mi, IA	X	X	X				
Haematopodidae	<i>Haematopus fuliginosus</i>	Sooty Oystercatcher		X						
Haematopodidae	<i>Haematopus longirostris</i>	Pied Oystercatcher		X						
Hirundinidae	<i>Cheramoeca leucosterna</i>	White-backed Swallow					X			
Hirundinidae	<i>Hirundo neoxena</i>	Welcome Swallow	Ma	X						18
Hirundinidae	<i>Hirundo rustica</i>	Barn Swallow	Ma, Mi, IA		X					
Hirundinidae	<i>Petrochelidon ariel</i>	Fairy Martin		X						
Hirundinidae	<i>Petrochelidon nigricans</i>	Tree Martin		X			X			14
Laridae	<i>Anous stolidus</i>	Common Noddy	Ma, Mi, IA		X	X				
Laridae	<i>Chlidonias leucopterus</i>	White-winged Black Tern	Ma, Mi, IA	X		X				
Laridae	<i>Gelochelidon nilotica</i>	Gull-billed Tern	Ma, Mi, IA	X		X				
Laridae	<i>Hydroprogne caspia</i>	Caspian Tern	Ma, Mi, IA	X		X				
Laridae	<i>Larus novaehollandiae</i>	Silver Gull	Ma	X						
Laridae	<i>Onychoprion anaethetus</i>	Bridled Tern	Ma, Mi, IA	X						
Laridae	<i>Sterna dougallii</i>	Roseate Tern	Ma, Mi, IA	X		X				
Laridae	<i>Sterna hirundo</i>	Common Tern	Ma, Mi, IA	X		X				
Laridae	<i>Sternula albifrons</i>	White-shafted Little Tern	Ma, Mi, IA	X		X				
Laridae	<i>Sternula nereis nereis</i>	Fairy Tern	Vu, Vu, IA	X	X					

Family	Scientific Name	Common name	Listing	NM	PMST	DBCA	GHD 2016	GHD 2019	360 2021	This survey
Laridae	<i>Thalasseus bengalensis</i>	Lesser Crested Tern	Ma	X						
Laridae	<i>Thalasseus bergii</i>	Crested Tern	Ma, Mi, IA	X		X				
Locustellidae	<i>Megalurus cruralis</i>	Brown Songlark					X			
Locustellidae	<i>Cincloramphus mathewsi</i>	Rufous Songlark						X		
Locustellidae	<i>Poodytes carteri</i>	Spinifexbird		X				X		5
Maluridae	<i>Amytornis whitei</i>	Rufous Grasswren					X			
Maluridae	<i>Malurus lamberti</i>	Variegated Fairy Wren		X						9
Maluridae	<i>Malurus leucopterus</i>	White winged Fairy Wren		X			X			6
Maluridae	<i>Stipiturus ruficeps</i>	Rufous-crowned Emu-wren		X						
Meliphagidae	<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater		X			X			
Meliphagidae	<i>Certhionyx variegatus</i>	Pied Honeyeater		X						
Meliphagidae	<i>Epthianura albifrons</i>	White-fronted Chat		X						
Meliphagidae	<i>Lichenostomus virescens</i>	Singing Honeyeater		X			X	X	X	12
Meliphagidae	<i>Lichmera indistincta</i>	Brown Honeyeater		X						5
Meliphagidae	<i>Manorina flavigula</i>	Yellow throated Miner		X			X	X	X	26
Meliphagidae	<i>Ptilotula keartlandi</i>	Grey-headed Honeyeater		X				X		34, camera
Meliphagidae	<i>Ptilotula ornata</i>	Yellow-plumed Honeyeater						X		
Meliphagidae	<i>Ptilotula penicillata</i>	White-plumed Honeyeater					X			4
Meliphagidae	<i>Sugomel niger</i>	Black Honeyeater						X		
Meropidae	<i>Merops ornatus</i>	Rainbow Bee eater	Ma	X			X	X		4
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie Lark	Ma	X			X	X	X	3
Motacillidae	<i>Anthus australis</i>	Australian Pipit	Ma					X		1
Motacillidae	<i>Motacilla cinerea</i>	Grey Wagtail	Ma, Mi, IA		X					
Motacillidae	<i>Motacilla tschutschensis</i>	Yellow Wagtail	Ma, Mi, IA		X					
Oceanitidae	<i>Oceanites oceanicus</i>	Wilson's Storm Petrel	Ma, Mi, IA	X		X				
Otididae	<i>Ardeotis australis</i>	Australian Bustard		X			X	X		
Pachycephalidae	<i>Colluricincla harmonica</i>	Grey Shrike Thrush		X						4
Pachycephalidae	<i>Pachycephala lanioides</i>	White-breasted Whistler		X						
Pachycephalidae	<i>Pachycephala melanura</i>	Mangrove Golden Whistler		X						

Family	Scientific Name	Common name	Listing	NM	PMST	DBCA	GHD 2016	GHD 2019	360 2021	This survey
Pachycephalidae	<i>Pachycephala rufiventris</i>	Rufous Whistler		X			X			
Pardalotidae	<i>Pardalotus rubricatus</i>	Red-browed Pardalote		X					X	1
Pardalotidae	<i>Pardalotus striatus</i>	Striated Pardalote		X						
Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian Pelican	Ma	X						
Petroicidae	<i>Melanodryas cucullata</i>	Hooded Robin						X		
Petroicidae	<i>Peneothello pulverulenta</i>	Mangrove Robin		X						
Petroicidae	<i>Petroica goodenovii</i>	Red-capped Robin		X						
Phaethontidae	<i>Phaethon lepturus</i>	White-tailed Tropicbird	Ma, Mi, IA	X		X				
Phaethontidae	<i>Phaethon rubricauda</i>	Red-tailed Tropicbird	P4, Ma, Mi, IA	X		X				
Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant		X						
Phalacrocoracidae	<i>Phalacrocorax varius</i>	Pied Cormorant		X						
Phasianidae	<i>Coturnix ypsilophora</i>	Brown Quail		X					X	6
Podargidae	<i>Podargus strigoides</i>	Tawny Frogmouth		X						
Podicipedidae	<i>Poliocephalus poliocephalus</i>	Hoary-headed Grebe		X						
Podicipedidae	<i>Tachybaptus novaehollandiae</i>	Australasian Grebe		X						
Pomatostomidae	<i>Pomatostomus superciliosus</i>	White-browed Babbler							X	
Pomatostomidae	<i>Pomatostomus temporalis</i>	Grey-crowned Babbler		X						
Procellariidae	<i>Ardenna carneipes</i>	Flesh-footed Shearwater	Vu, Mi, Ma, IA		X					
Procellariidae	<i>Ardenna pacifica</i>	Wedge-tailed Shearwater	Mi, Ma, IA	X		X				
Procellariidae	<i>Calonectris leucomelas</i>	Streaked Shearwater	Mi, Ma, IA	X						
Procellariidae	<i>Macronectes giganteus</i>	Southern Giant Petrel	En, Mi, Ma, IA	X						
Procellariidae	<i>Pterodroma mollis</i>	Soft-plumaged Petrel	Vu, Mi, Ma, IA	X						
Procellariidae	<i>Puffinus huttoni</i>	Hutton's Shearwater	En, Mi, Ma, IA	X		X				
Psittacidae	<i>Barnardius zonarius zonarius</i>	Port Lincoln Parrot		X			X		X	2
Psittacidae	<i>Melopsittacus undulatus</i>	Budgerigar		X			X	X		35
Psittacidae	<i>Pezoporus occidentalis</i>	Night Parrot	Cr, En		X					
Psophodidae	<i>Psophodes occidentalis</i>	Chiming Wedgebill					X			
Ptilonorhynchidae	<i>Chlamydera guttata</i>	Western Bowerbird		X						3
Rallidae	<i>Fulica atra</i>	Eurasian Coot		X						

Family	Scientific Name	Common name	Listing	NM	PMST	DBCA	GHD 2016	GHD 2019	360 2021	This survey
Rallidae	<i>Hypotaenidia philippensis</i>	Buff-banded Rail	Ma	X						
Rallidae	<i>Porzana fluminea</i>	Australian Spotted Crake		X						
Rallidae	<i>Tribonyx ventralis</i>	Black-tailed Native-hen		X						
Recurvirostridae	<i>Himantopus himantopus</i>	Black-winged Stilt	Ma	X						
Rhipiduridae	<i>Rhipidura albiscapa</i>	Grey Fantail		X						
Rhipiduridae	<i>Rhipidura leucophrys</i>	Willie Wagtail		X						3
Rhipiduridae	<i>Rhipidura phasiana</i>	Mangrove Grey Fantail		X						
Rostratulidae	<i>Rostratula australis</i>	Australian Painted Snipe	En, En, Ma		X					
Scolopacidae	<i>Actitis hypoleucos</i>	Common Sandpiper	Mi, Ma, IA	X	X	X				
Scolopacidae	<i>Arenaria interpres</i>	Ruddy Turnstone	Mi, Ma, IA	X		X				
Scolopacidae	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Mi, Ma, IA	X	X	X				
Scolopacidae	<i>Calidris alba</i>	Sanderling	Mi, Ma, IA	X		X				
Scolopacidae	<i>Calidris canutus</i>	Red Knot	En, En, IA		X	X				
Scolopacidae	<i>Calidris falcinellus</i>	Broad-billed Sandpiper	Mi, Ma, IA			X				
Scolopacidae	<i>Calidris ferruginea</i>	Curllew Sandpiper	Cr, Ce, IA		X	X				
Scolopacidae	<i>Calidris melanotos</i>	Pectoral Sandpiper	Mi, Ma, IA		X					
Scolopacidae	<i>Calidris ruficollis</i>	Red-necked Stint	Mi, Ma, IA	X		X				
Scolopacidae	<i>Calidris subminuta</i>	Long-toed Stint	Mi, Ma, IA	X		X				
Scolopacidae	<i>Calidris tenuirostris</i>	Great Knot	Cr, Ce, IA	X						
Scolopacidae	<i>Gallinago stenura</i>	Pin-tailed Snipe	Mi, Ma, IA	X	X	X				
Scolopacidae	<i>Limosa lapponica</i>	Bar-tailed Godwit	Mi, Ma, IA	X	X					
Scolopacidae	<i>Limosa limosa</i>	Black-tailed Godwit	Cr, Ce, IA			X				
Scolopacidae	<i>Numenius madagascariensis</i>	Eastern Curlew	Cr, Ce, IA	X	X	X				
Scolopacidae	<i>Numenius minutus</i>	Little Curlew	Mi, Ma, IA	X		X				
Scolopacidae	<i>Numenius phaeopus</i>	Whimbrel	Mi, Ma, IA	X		X				
Scolopacidae	<i>Tringa brevipes</i>	Grey-tailed Tattler	P4, Mi, Ma, IA	X		X				
Scolopacidae	<i>Tringa glareola</i>	Wood Sandpiper	Mi, Ma, IA	X		X				
Scolopacidae	<i>Tringa nebularia</i>	Common Greenshank	Mi, Ma, IA	X	X	X				
Scolopacidae	<i>Tringa stagnatilis</i>	Marsh Sandpiper	Mi, Ma, IA	X		X				

Family	Scientific Name	Common name	Listing	NM	PMST	DBCA	GHD 2016	GHD 2019	360 2021	This survey
Scolopacidae	<i>Xenus cinereus</i>	Terek Sandpiper	Mi, Ma, IA	X		X				
Strigidae	<i>Ninox connivens</i>	Barking Owl		X						
Strigidae	<i>Tyto javanica</i>	Barn Owl								1
Threskiornithidae	<i>Platalea regia</i>	Royal Spoonbill		X						
Threskiornithidae	<i>Plegadis falcinellus</i>	Glossy Ibis	Ma			X				
Threskiornithidae	<i>Threskiornis spinicollis</i>	Straw-necked Ibis	Ma	X						
Turnicidae	<i>Turnix velox</i>	Little Button Quail		X			X			6, camera
Zosteropidae	<i>Zosterops luteus</i>	Yellow White-eye		X						

Into (Nat). Refers to an Australian species that has extended its range due to human activities.

Fauna likelihood of occurrence assessment guidelines

Assessment outcome	Description
Present	Species recorded during the field survey or from recent, reliable records from within or close proximity to the survey area.
Likely	Species are likely to occur in the survey area where there is suitable habitat within the survey area and there are recent records of occurrence of the species in close proximity to the survey area. OR Species known distribution overlaps with the survey area and there is suitable habitat within the survey area.
Unlikely	Species assessed as unlikely include those species previously recorded within 10 km of the survey area however: There is limited (i.e. the type, quality and quantity of the habitat is generally poor or restricted) habitat in the survey area. The suitable habitat within the survey area is isolated from other areas of suitable habitat and the species has no capacity to migrate into the survey area. OR Those species that have a known distribution overlapping with the survey area however: There is limited habitat in the survey area (i.e. the type, quality and quantity of the habitat is generally poor or restricted). The suitable habitat within the survey area is isolated from other areas of suitable habitat and the species has no capacity to migrate into the survey area.
Highly unlikely	Species that are considered highly unlikely to occur in the survey area include: Those species that have no suitable habitat within the survey area. Those species that have become locally extinct, or are not known to have ever been present in the region of the survey area.

Definitions

Term	Description
study area	a 20 km buffer around the survey area
survey area	the area subject to the current survey
locality	the area within an approximate 20 km radius of the survey area

Likelihood of occurrence table

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Mammals						
Brush-tailed mulgara (<i>Dasyercus blythi</i>)	P4		The Brush-tailed Mulgara is primarily nocturnal, shelters in burrows and feeds on insects, other arthropods, and small vertebrates. This species inhabits spinifex grasslands and, in central Australia, lives in burrows that it digs on the flats between low sand dunes (Van Dyck and Strahan 2008). The Mulgara is a solitary species exhibiting high site fidelity and a low propensity for dispersal once a home range has been established (Masters and Crowther 2003). Males and females maintain home ranges of 1.4 to 14 hectares (Masters and Crowther 2003) which on average, overlap by less than 20% (Masters and Crowther 2003).	Unlikely	Highly unlikely No suitable habitat for this species	
Northern quoll (<i>Dasyurus hallucatus</i>)	EN	EN	The Northern Quoll once occurred across the majority of northern Australia, but its range has significantly contracted. It occurs in the Pilbara region but in disjunct populations. The Northern Quoll inhabits a range of vegetation associations but is especially abundant on dissected rocky escarpment and eucalypt woodland within 200 km of the coast. It is known to den in rock crevices and rock piles and favors rocky areas. They are predominantly nocturnal but are occasionally active during the day, particularly during the mating season and are known to have a large home range (Van Dyck and Strahan 2008).	Unlikely. This species is presumed locally extinct in Cape Range.	Unlikely. This species is presumed locally extinct in Cape Range.	Presumed locally extinct
Black-footed Rock-wallaby (<i>Petrogale lateralis lateralis</i>)	EN	EN	The habitat of Black-flanked Rock-wallaby varies between colonies but always involves grassland feeding habitat for feeding in close proximity to cliff, rock-pile, talus or escarpment refuge habitat. Rock cliffs or other steep substrates with adequate shelter and refuge are essential for breeding. Examples of habitat include limestone outcrops and coastal cliffs on Barrow Island, the gorge of the Murchison River in Kalbarri National Park, granite outcrops in the wheatbelt, and granite outcrops, sandstone cliffs and gabbro rock piles on Depuch Island (Maxwell et al. 1996; Pearson & Kinnear 1997).	Likely. Although the survey area possesses rocky habitat comprised of small rocky gullies, it is considered these habitats are not large enough to accommodate a permanent population. It is speculated these areas may be used by the species on an opportunistic basis.	Likely. Although the survey area possesses rocky habitat comprised of small rocky gully's, it is considered these habitats are not large enough to accommodate a permanent population. It is speculated these areas may be used by the species on an opportunistic basis.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Shark Bay Mouse (<i>Pseudomys fieldi</i>)	Vu	Vu	This species is extinct on the mainland and now restricted to Bernier Island, in Shark Bay.	Highly unlikely The survey area is outside of the known distribution for this species.	Highly unlikely The survey area is outside of the known distribution for this species.	Extinct in the mainland
Long-tailed Dunnart (<i>Sminthopsis longicaudata</i>)	P4		The Long-tailed Dunnart occurs throughout the Gibson Desert, Murchison, southern Carnarvon Basin and the Pilbara regions of Western Australia. Its habitat includes rugged, rocky areas with hummock grasses, shrubs and tall open shrublands and woodlands. In the Young Range in the Gibson Desert, the Long-tailed Dunnart has been found to be associated with plateaus, composed of boulders and stones, with some fine red soils, and sparsely vegetated Mulga (<i>Acacia aneura</i>) and Minniritchi (<i>A. grasbyi</i>) shrubs over spinifex (Van Dyck and Strahan 2008).	Highly unlikely Species not known from the region.	Highly unlikely Species not known from the region.	Habitat present but no records in the region
Central Rock-rat (<i>Zyomys pedunculatus</i>)	Cr	Ce	The central rock-rat was rediscovered in 1996, the central rock-rat is restricted to the West MacDonnell Ranges of central Australia.	Highly unlikely The survey area is outside the current known distribution for this species.	Highly unlikely The survey area is outside the current known distribution for this species.	Extinct in Cape Range
Western pebble-mound mouse (<i>Pseudomys chapmani</i>)	P4		The Western Pebble-mound Mouse is restricted to the Pilbara region where it is recognized as an endemic species. Habitat for the Western Pebble-mound Mouse can be found on stony hillsides with hummocky grasslands and little or no soil. It constructs large mounds of pebbles on stony slopes which cover an area of 0.5-9.0 square metres. 'Active' mounds are characterized by volcano-like cones capped by 'craters' that mark occluded entrances to subterranean burrow systems in which the mice live, often gregariously (Van Dyck and Strahan 2008).	Unlikely. Prior to GHD'S recent survey within the study area, this species was presumed locally extinct.	Present. During recent efforts in the survey area, active pebble mounds were identified which confirms the species presence.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Pilbara Leaf-nosed Bat (<i>Rhinonictis aurantia</i>) (Pilbara form)	VU	VU	The Pilbara Leaf-nosed Bat roosts in deep caves or mines in the wet season and forages nearby. This species occurs in the Pilbara region where its populations are scattered and localized. There are a few known populations of this species in the western Pilbara, roosting in caves formed in gorges that dissect massive siliceous sedimentary geology. It is most often observed in flight over waterholes in gorges (Van Dyck and Strahan 2008). Optimal roosts are thought to occur in caves that form between ascending rock layers, where humidity is maintained from seeping groundwater (Van Dyck and Strahan 2008). Roosts are commonly located over pools of water, or areas deep within the mine or cave structure which provides elevated temperature and humidity. Foraging habitat includes: Triodia hummock grasslands covering low rolling hills and shallow gullies, with <i>Eucalyptus camaldulensis</i> along the creeks; over small watercourses throughout granite boulder terrain; over pools and low shrubs in ironstone gorges; and in and around vegetated gravelly watercourses.	Unlikely. There are no known records of the species utilizing caves for roosting or areas within the Cape Range.	Highly Unlikely. There are no known records of the species utilizing caves for roosting or areas within the Cape Range and no caves we found in the survey area.	
Reptiles						
Cape Range Stone Gecko (<i>Diplodactylus capensis</i>)	P2		The Cape Range Stone gecko is restricted to the rocky northern end of Northwest Cape (Wilson and Swan 2017).	Likely. Areas of stony habitat within the survey area provide suitable habitat, making the species presence highly likely.	Likely. Areas of stony habitat within the survey area provide suitable habitat, also specimens located in surrounding area.	
Ningaloo Worm Lizard (<i>Aprasia rostrata</i>)	P3		The Ningaloo worm-lizard occupies a variety of sandy habitats including white coastal dunes and red dunes vegetated with Triodia from Northwest Cape to Yardie Creek and Learmonth and inland to Bullara Station (Wilson and Swan 2017).	Unlikely. A small portion of sandplain is present but has been historically disturbed.	Unlikely. A small portion of sandplain is present but has been historically disturbed.	
Cape Range Slider (<i>Lerista allochura</i>)	P3		The Cape Range Slider is restricted to dissected limestone gorges and plateaus on Northwest Cape (Wilson and Swan 2017).	Likely. Habitat present in gullies in Lot 550.	Present. One animal recorded from beneath a <i>Ficus</i> sp. in thick litter.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Splendid Blindsnake (<i>Anilius splendidus</i>)	P2		This fossorial species occurs only at the Northwest Cape in the Gascoyne region of Western Australia. The type locality is Milyering Well in the Cape Range National Park (Aplin, 1998). This species is only known from two specimens and is considered one of the largest in the Blindsnake group.	Unlikely. This species is known from two records from the western side of the Cape Range. It was recorded in shrubland on coral limestone with a thin veneer of sand. This habitat is not present within the survey area.	Unlikely. This species is known from two records from the western side of the Cape Range. It was recorded in shrubland on coral limestone with a thin veneer of sand. This habitat is not present within the survey area.	
Birds						
Common Sandpiper (<i>Actitis hypoleucos</i>)	IA	MI, Ma	The species utilizes a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilized by the species are often narrow and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags (Geering et al. 2007; Higgins & Davies 1996). Generally the species forages in shallow water and on bare soft mud at the edges of wetlands; often where obstacles project from substrate, e.g. rocks or mangrove roots. Birds sometimes venture into grassy areas adjoining wetlands (Higgins & Davies 1996).	Unlikely. Suitable foraging habitat was not identified within the survey area.	Unlikely. Suitable foraging habitat was not identified within the survey area.	
Common Noddy (<i>Anous stolidus</i>)	IA	MI, MA	In Australia, the Common Noddy occurs mainly in ocean off the Queensland coast, but the species also occurs off the north-west and central Western Australia coast. During the breeding season, the Common Noddy usually occurs on or near islands, on rocky islets and stacks with precipitous cliffs, or on shoals or cays of coral or sand. During the non-breeding period, the species occurs in groups throughout the pelagic zone (open ocean) (Higgins & Davies 1996).	Unlikely. Suitable foraging habitat was not identified within the survey area.	Unlikely. Suitable foraging habitat was not identified within the survey area.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
White-winged Black Tern (<i>Chlidonias leucopterus</i>)	IA	MI, MA	A small marsh tern. Habitat includes marine and freshwater coastal wetland, including river pools, billabongs and inundated floodplains. Tidal habitats are typically estuaries, lagoons and harbours. They do not breed in Australia (Morcombe 2011).	Unlikely. No habitat is present for this species	Unlikely. No habitat is present for this species	
Gull-billed Tern (<i>Gelochelidon nilotica</i>)	IA	MI, MA	Occurs across every continent as an inland species, only rarely over the ocean. Unusual in nesting on inland waters, fresh or saline. Often uses temporal water on mudflats or claypans, saltpans, salt marsh, open floodplains in arid regions where heavy rain have caused extensive shallow flooding. Out of the breeding season seems to prefer lagoons and salt marshes near the coast. Breeds in colonies on small islands of shallow inland waters (Morcombe 2011).	Unlikely. No habitat is present for this species	Unlikely. No habitat is present for this species	
Caspian Tern (<i>Hydroprogne caspia</i>)	IA	MI, MA	The Caspian Tern is mostly found in sheltered coastal embayment's (harbours, lagoons, inlets, bays, estuaries, and river deltas) and those with sandy or muddy margins are preferred. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs, rivers, and creeks. They also use artificial wetlands, including reservoirs, sewage ponds and saltworks. In offshore areas the species prefers sheltered situations, particularly near islands, and is rarely seen beyond reefs (Higgins & Davis 1996). Large numbers may shelter along the coast, behind coastal sand-dunes or coastal lakes during rough weather and have been recorded inland after storms (Higgins & Davies 1996).	Unlikely. Suitable foraging habitat was not identified within the survey area.	Unlikely. Suitable foraging habitat was not identified within the survey area.	
Bridled Tern (<i>Onychoprion anaethetus</i>)	IA	MI, MA	This bird is migratory and dispersive, wintering more widely through the tropical oceans. It has markedly marine habits compared to most terns. The Atlantic subspecies melanopterus breeds in Mexico, the Caribbean and west Africa; other races occur around the Arabian Peninsula and in Southeast Asia and Australasia	Highly unlikely. No habitat available	Highly unlikely. No habitat available	
Roseate Tern (<i>Sterna dougallii</i>)	IA	MI, MA	As with other Sterna terns, roseate tern feeds by plunging-diving for fish, almost invariably from the sea. The long-billed and short-winged <i>S. d. gracilis</i> breeds in Australia and New Caledonia (Gochfeld, 1996).	Unlikely. The species occurs at scattered sites in the north-west, sporadic visitors in the Pilbara and Kimberley regions.	Unlikely. The species occurs at scattered sites in the north-west, sporadic visitors in the Pilbara and Kimberley regions.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Common Tern (<i>Sterna hirundo</i>)	IA	MI, MA	This bird has a circumpolar distribution, its four subspecies breeding in temperate and subarctic regions of Europe, Asia, and North America. As long-distance migrants, common terns sometimes occur well outside their normal range. Stray birds have been found inland in Africa (Zambia and Malawi), and on the Maldives and Comoros islands and Australia (Darby, 2011).	Highly unlikely. In Western Australia, the species is rarely recorded south of approximately 30° S, with only scattered records north of there to the Kimberley Division.	Highly unlikely. In Western Australia, the species is rarely recorded south of approximately 30° S, with only scattered records north of there to the Kimberley Division.	
White-shafted Little Tern (<i>Sternula albifrons</i>)	IA	MI, MA	This bird breeds on the coasts and inland waterways of temperate and tropical Europe and Asia. It is strongly migratory, wintering in the subtropical and tropical oceans as far south as South Africa and Australia (Higgins 1996).	Unlikely. In Western Australia, the species is only seen on a sporadic basis outside of the Kimberley region.	Unlikely. In Western Australia, the species is only seen on a sporadic basis outside of the Kimberley region.	
Australian Fairy Tern (<i>Sternula nereis nereis</i>)	VU	VU	The Australian fairy tern mainly feeds on fish which it catches by hovering over the sea before plunging beak first into the water to grab its prey. It seldom goes far out to sea but is often to be seen where predatory fish are feeding on shoals of small fish. It also consumes crustaceans, molluscs and some plant material. Australian fairy tern, <i>Sternula nereis nereis</i> is only known to breed in Australia (Tasmania PWS, 2013).	Unlikely. Sporadically seen in Exmouth region but no habitat present for this species	Unlikely. Sporadically seen in Exmouth region but no habitat present for this species	
Crested Tern (<i>Thalasseus bergii</i>)	IA	MI, MA	Habitat includes exposed ocean beaches, offshore islands, and out over deeper pelagic waters, inshore on estuaries, bays, harbors, coastal lagoons, inland on major rivers, occasionally on saline lakes, salt ponds near coast. Often roosts on boats and jetties. Breeds on islands on sand or shingle among low vegetation behind the beaches (Morcombe 2011).	Unlikely. This species will use inland waters but no habitat present in the survey area	Unlikely. This species will use inland waters but no habitat present in the survey area	
Grey Falcon (<i>Falco hypoleucos</i>)	VU		The Grey Falcon inhabits lightly timbered country, especially stony plains and lightly timbered Acacia scrub. This species is considered scarce to rare and is usually found singularly or sometimes in pairs (Morcombe, 2004).	Likely. The survey area, and immediate adjacent areas of Cape Range provide good habitat for the species.	Likely. The survey area, and immediate adjacent areas of Cape Range provide good habitat for the species.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Peregrine Falcon (<i>Falco peregrinus</i>)	OS		The Peregrine Falcon is uncommon but wide-ranging across Australia. Habitat is extremely diverse, from rainforest to arid scrub, from coastal heath to alpine. The Peregrine Falcon nests primarily on ledges of cliffs, shallow tree hollows, and ledges of building in cities (Morcombe, 2004).	Likely. No breeding habitat present but species could use area for foraging	Present. One adult male recorded in the survey area, foraging only.	
Night parrot (<i>Pezoporus occidentalis</i>)	CR	EN	The Night Parrot inhabits arid and semi-arid areas that are characterized by having dense, low vegetation. Based on accepted records, the habitat of the Night Parrot consists of <i>Triodia</i> grasslands in stony or sandy environments and of samphire and chenopod shrublands, including genera such as <i>Atriplex</i> , <i>Bassia</i> and <i>Maireana</i> , on floodplains and claypans, and on the margins of saltlakes, creeks or other sources of water (Parker, 1980). It has also been observed to enter dense <i>Muehlenbeckia</i> growth when flushed from a more typical habitat (Boles et al. 1994).	Highly unlikely. Some patches of habitat throughout the survey area but no animals recorded.	Highly unlikely. Some patches of habitat throughout the survey area but no animals recorded.	Outside of DBCA modelled distribution for the species
Eastern Curlew (<i>Numenius madagascariensis</i>)	CR	CR	The Eastern Curlew is a large non-breeding migratory shorebird, found commonly along the north coast of Western Australia, but rarely south of Shark Bay. The species is found along the coastline from Barrow Island and Dampier Archipelago, through the Kimberley in WA to the NT. It is found in estuaries, bays, harbors, inlets, and coastal lagoons, saltworks and sewerage farms, areas (e.g., intertidal mudflats or sandflats fringed by mangroves) often with beds of seagrass and occasionally on ocean beaches, coral reefs, rock platforms and rocky islets. The Eastern Curlew forages on soft, sheltered, intertidal sand or mudflats, often near mangroves, on saltflats, saltmarshes, rockpools, coastal reefs and ocean beaches near the tideline. (Morcombe 2004).	Unlikely. Suitable foraging habitat was not identified within the survey area.	Unlikely. Suitable foraging habitat was not identified within the survey area.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Wood Sandpiper (<i>Tringa glareola</i>)	IA	MI, MA	The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes or reeds, shrubs, or dead or live trees, especially Melaleuca and River Red Gums (<i>Eucalyptus camaldulensis</i>) and often with fallen timber. They also frequent inundated grasslands, short herbage or wooded floodplains, where floodwaters are temporary or receding, and irrigated crops. They are rarely found using brackish wetlands, or dry stunted saltmarsh. Typically, they do not use coastal flats, but are occasionally recorded in stony wetlands. This species uses artificial wetlands, including open sewage ponds, reservoirs, large farm dams, and bore drains (Higgins & Davies 1996).	Unlikely. Suitable foraging habitat was not identified within the survey area.	Unlikely. Suitable foraging habitat was not identified within the survey area.	
Common Greenshank (<i>Tringa nebularia</i>)	IA	MI, MA	This is a subarctic bird, breeding from northern Scotland eastwards across northern Europe and east across the Palearctic. It is a migratory species, wintering in Africa, the Indian subcontinent, and Australasia, usually on fresh water. It breeds on dry ground near marshy areas, laying about four eggs in a ground scrape. The Common Greenshank does not breed in Australia; however, the species occurs in all types of wetlands and has the widest distribution of any shorebird in Australia (Higgins & Davies 1996).	Unlikely. Suitable foraging habitat was not identified within the survey area.	Unlikely. Suitable foraging habitat was not identified within the survey area.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Marsh Sandpiper (<i>Tringa stagnatilis</i>)	IA	MI, MA	The Marsh Sandpiper breeds in the Palearctic. It is a migratory species, with a majority of birds wintering in Africa and India, and some migrating to Southeast Asia and Australia. They prefer to winter on freshwater wetlands such as swamps and lakes and are usually seen singly or in small groups. The Marsh Sandpiper is found on coastal and inland wetlands throughout Australia. The species is widespread in coastal Queensland, but few records exist north of Cooktown. It is recorded in all regions of NSW but especially the central and south coasts and (inland) on the western slopes of Great Divide and western plains. In Victoria, most are found in Port Phillip Bay, but also Gippsland, Westernport Bay and the Western Districts. There are scattered records in Western Australia and the Northern Territory. In Western Australia they are mainly found around the coast. (Higgins & Davies 1996).	Highly unlikely. In Western Australia, the species is mainly confined to coastal waters of the northern Pilbara and Broome regions,	Highly unlikely. In Western Australia, the species is mainly confined to coastal waters of the northern Pilbara and Broome regions,	
Sharp-tailed Sandpiper (<i>Calidris acuminata</i>)	IA	MI, MA	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. They tend to occupy coastal mudflats mainly after ephemeral terrestrial wetlands have dried out, moving back during the wet season. They may be attracted to mats of algae and water weed either floating or washed up around terrestrial wetlands, and coastal areas with much beachcast seaweed. Sometimes they occur on rocky shores and rarely on exposed reefs (Higgins & Davies 1996).	Unlikely. Suitable foraging habitat was not identified within the survey area.	Unlikely. Suitable foraging habitat was not identified within the survey area.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Long-toed Stint (<i>Calidris subminuta</i>)	IA	MI, MA	The Long-toed Stint is a regular summer visitor to Australia, but uncommon in the east. The species was first recorded in 1886 near Lukins Crossing on the lower Fitzroy River. In Western Australia the species is found mainly along the coast, with a few scattered inland records. On the south coast the Long-toed Stint is found from Esperance to Albany and inland lakes. The species has occasionally been recorded in the Gascoyne Region, around Lake Wooleen, Meeberrie Station and McNeill Claypan. It is widespread around the Pilbara region and the Kimberley Division between Karratha and Wyndham-Kununurra. Inland records include Lake Brown, Hannan Lake, Lake Biolet, Newman Sewage Farm and Lake Gregory. In the Northern Territory the species has been recorded at Harrison Dam, Daly Waters, Alice Springs Sewage Farm, Lake Sylvester and around Darwin (Higgins & Davies 1996).	Highly unlikely. A widespread species when migrated to Australia however no habitat is present for the species within the survey area	Highly unlikely. A widespread species when migrated to Australia however no habitat is present for the species within the survey area	
Pin-tailed Snipe (<i>Gallinago stenura</i>)	IA	MI, MA	The species distribution within Australia is not well understood. There are confirmed records from NSW, south-west Western Australia, Pilbara, and the Top End. In NSW, a single banded bird was reported near West Wyalong. In Western Australia, the species was reported at Pilbara, Port Headland, Myaree Pool, Maitland River and near Karratha. In Pilbara the distribution is believed to be bound by Pardoo (Banningarra Spring) and the lower Maitland River and Shay Gap. The Pin-tailed Snipe has also been reported on the Cocos-Keeling Islands as well as Christmas Island (Higgins & Davies 1996).	Highly unlikely. A rare vagrant, no habitat present	Highly unlikely. A rare vagrant no habitat present	The closest records are from Pilbara, Port Headland, Myaree Pool, Maitland River and near Karratha.

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Bar-tailed Godwit (<i>Limosa lapponica</i>)	CR, IA	CR, MI, MA	The Bar-tailed Godwit has been recorded in the coastal areas of all Australian states. It is widespread in the Torres Strait and along the east and south-east coasts of Queensland, NSW, and Victoria, including the offshore islands. It is found south from Cooktown to Port Phillip Bay but is less common west of the Bellarine Peninsula. There are a few inland records from NSW and Victoria. The species is occasionally recorded at King Island and the Furneaux Group, with scattered records on the north and east coasts of Tasmania. The Bar-tailed Godwit is most abundant in south-east Tasmania between Orford and Southport Lagoon. There are a few records from the west coast of Tasmania and inland at Oatlands. In South Australia it is rarely recorded in the south-east and mostly recorded around coasts from Lake Alexandrina to Denial Bay. In Western Australia it is widespread around the coast, from Eyre to Derby, with a few scattered records elsewhere in the Kimberley Division (Higgins & Davies 1996).	Unlikely The species is known from the Northwest Cape region however there is no habitat present in the survey area	Unlikely. The species is known from the Northwest Cape region however there is no habitat present in the survey area	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Curlew Sandpiper (<i>Calidris ferruginea</i>)	CR	CR	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters (Higgins & Davies 1996). Curlew Sandpipers forage on mudflats and nearby shallow water. In non-tidal wetlands, they usually wade, mostly in water 15–30 mm, but up to 60 mm, deep. They forage at the edges of shallow pools and drains of intertidal mudflats and sandy shores. At high tide, they forage among low sparse emergent vegetation, such as saltmarsh, and sometimes forage in flooded paddocks or inundated saltflats. Occasionally they forage on wet mats of algae or waterweed, or on banks of beachcast seagrass or seaweed. They rarely forage on exposed reefs (Higgins & Davies 1996). Curlew Sandpipers generally roost on bare dry shingle, shell or sand beaches, sandspits and islets in or around coastal or near-coastal lagoons and other wetlands, occasionally roosting in dunes during very high tides and sometimes in saltmarsh (Higgins & Davies 1996).	Unlikely. The species is known from the Northwest Cape region however there is no habitat present in the survey area	Unlikely. The species is known from the Northwest Cape region however there is no habitat present in the survey area	
Little Curlew (<i>Numenius minutus</i>)	IA	MI,MA	In Australia, the Little Curlew is a bird of the coastal and inland plains of the north, where it often occurs around wetlands and flooded ground, as well as in open grassy areas, including farmland, playing fields and airstrips. They often form large flocks, occasionally comprising thousands of birds, and sometimes associate with other insectivorous migratory shorebirds, such as Oriental Pratincoles and Oriental Plovers. When foraging, they walk in small groups, picking insects from the surface of the ground or probing their bills into the soil along the way (Geering et al. 2007).	Highly unlikely. Little Curlews generally spend the non-breeding season in northern Australia from Port Hedland in WA to the Queensland coast. No habitat present for the species	Highly unlikely. Little Curlews generally spend the non-breeding season in northern Australia from Port Hedland in WA to the Queensland coast. No habitat present for the species	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Grey-tailed Tattler (<i>Tringa brevipes</i>)	P4	MI,MA	The Grey-tailed Tattler is often found on sheltered coasts with reefs and rock platforms or with intertidal mudflats. It can also be found at intertidal rocky, coral or stony reefs as well as platforms and islets that are exposed at low tide. It has been found around shores of rock, shingle, gravel or shells and also on intertidal mudflats in embayment's, estuaries and coastal lagoons, especially fringed with mangroves. It is less often on open flat sandy beaches or sandbanks, especially around seaweed or isolated clumps of dead coral. It is occasionally found around near-coastal wetlands, such as lagoons and lakes and ponds in sewage farms and saltworks. Inland records are rare with sightings on river banks and the edges of rock pools (Higgins & Davies 1996).	Unlikely. Suitable foraging habitat was not identified within the survey area.	Unlikely. Suitable foraging habitat was not identified within the survey area.	
Whimbrel (<i>Numenius phaeopus</i>)	IA	MI,MA	The Whimbrel is a regular migrant to Australia and New Zealand, with a primarily coastal distribution. There are also scattered inland records of Whimbrels in all regions. It is found in all states but is more common in the north (Bamford et al. 2008).	Unlikely. Although common around the Shark Bay archipelago, the Whimbrel is typically absent from the Exmouth Peninsula.	Unlikely. Although common around the Shark Bay archipelago, the Whimbrel is typically absent from the Exmouth Peninsula.	
Terek Sandpiper (<i>Xenus cinereus</i>)	IA	MI, MA	In Australia, the Terek Sandpiper has a primarily coastal distribution, with occasional records inland. It is more widespread and common in northern and eastern Australia than southern Australia. In Western Australia (WA), the Terek Sandpiper is rarely seen on the south coast: occasionally around Eyre and several records around Albany. On the Swan River plain, it has been recorded between Bunbury and the mouth of the Moore River. The species is widespread in the Pilbara region and Kimberley Division, from Dampier to Wyndham, with occasional records around Shark Bay (Marchant & Higgins 1993).	Highly Unlikely. Although occasionally seen in the Shark Bay archipelago and south-west, the Terek Sandpiper is typically absent from the Exmouth Peninsula.	Highly Unlikely. Although occasionally seen in the Shark Bay archipelago and south-west, the Terek Sandpiper is typically absent from the Exmouth Peninsula.	
Australian Painted Snipe (<i>Rostratula australis</i>)	EN	EN	The Australian Painted Snipe is rarely seen as it is extremely secretive, keeping to dense vegetation of swamps, emerging only in subdued light of dawn and dusk. The preferred habitat of this species includes surrounds and shallows of wetlands that are well vegetated with dense low cover (Morcombe 2004).	Unlikely. Suitable foraging habitat was not identified within the survey area.	Unlikely. Suitable foraging habitat was not identified within the survey area.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Ruddy Turnstone (<i>Arenaria interpres</i>)	IA	MI, MA	The Ruddy Turnstone is widespread within Australia during its non-breeding period of the year (Bamford et al. 2008), including from Tasmania in the south to Darwin in the north and many coastal areas in between. It is found in most coastal regions, with occasional records of inland populations (Higgins & Davies 1996). It strongly prefers rocky shores or beaches where there are large deposits of rotting seaweed (C.D.T. Minton, 2002).	Highly Unlikely. Although occasionally seen in the Shark Bay archipelago and south-west, the Ruddy Turnstone is typically absent from the Exmouth Peninsula.	Highly Unlikely. Although occasionally seen in the Shark Bay archipelago and south-west, the Ruddy Turnstone is typically absent from the Exmouth Peninsula	
Fork-tailed Swift (<i>Apus pacificus</i>)	IA	MI, MA	Fork-tailed Swift are widespread in coastal and sub-coastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. This species is almost exclusively aerial, flying 1 to 300 m above ground. This species is considered rare and a vagrant (DSEWPaC 2013).	Unlikely. Suitable foraging habitat was not identified within the survey area.	Unlikely. Suitable foraging habitat was not identified within the survey area.	
Grey Wagtail (<i>Motacilla cinerea</i>)	Mi	MI	The migratory species is widely distributed across the Palearctic region with several well marked populations. The nominate form is from western Europe including the Scandinavia, Mediterranean and British Isles regions. Another race breeds in eastern Europe and central Asia mainly along the mountain chains of the Urals, Tien Shan and along the Himalayas. They winter in Africa and Asia and sometimes end up in Australia as a vagrant. The third race breeds along the northeastern parts of Asia in Siberia extending to Korea and Japan. These winter in Southeast Asia and also can be a vagrant in Australia (Voelker, 2002).	Highly unlikely. This species is usually confined to Europe, their presence in Australia is considered vagrant.	Highly unlikely. This species is usually confined to Europe, their presence in Australia is considered vagrant.	
Yellow Wagtail (<i>Motacilla flava</i>)	MI	MI	The Yellow Wagtail (<i>Motacilla flava</i>) is a small passerine in the wagtail family Motacillidae, which also includes the pipits and longclaws. This species breeds in much of temperate Europe and Asia. It is resident in the milder parts of its range, such as western Europe, but northern and eastern populations migrate to Africa and south Asia. The species is a rare vagrant to Australia.	Highly unlikely. This species is usually confined to Europe, Africa and Asia and is a rare vagrant in Australia.	Highly unlikely. This species is usually confined to Europe, Africa and Asia and is a rare vagrant in Australia.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Barn Swallow (<i>Hirundo rustica</i>)	IA	MI, MA	In Australia, the Barn Swallow is recorded in open country in coastal lowlands, often near water, towns, and cities. Birds are often sighted perched on overhead wires, and also in or over freshwater wetlands, paperbark Melaleuca woodland, mesophyll shrub thickets and tussock grassland.	Unlikely. The Barn Swallow occurs only patchily along the north coast of the mainland Pilbara, WA. It is unlikely to occur within the survey area.	Unlikely. The Barn Swallow occurs only patchily along the north coast of the mainland Pilbara, WA. It is unlikely to occur within the survey area.	
Pectoral Sandpiper (<i>Calidris melanotos</i>)	IA	MI, MA	In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains, and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent, or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands (Higgins & Davies 1996).	Unlikely. Suitable foraging habitat was not identified within the survey area.	Unlikely. Suitable foraging habitat was not identified within the survey area.	
Red Knot (<i>Calidris canutus</i>)	EN	EN	In Australasia, the Red Knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbors; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs. They are occasionally seen on terrestrial saline wetlands near the coast, such as lakes, lagoons, pools and pans, and recorded on sewage ponds and saltworks, but rarely use freshwater swamps. They rarely use inland lakes or swamps (DotE 2017).	Unlikely. Suitable foraging habitat was not identified within the survey area.	Unlikely. Suitable foraging habitat was not identified within the survey area.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Great knot (<i>Calidris tenuirostris</i>)	IA	MI, MA	The Great Knot has been recorded around the entirety of the Australian coast, with a few scattered records inland. It is now absent from some sites along the south coast where it used to be a regular visitor (Garnett et al. 2011). The greatest numbers are found in northern Australia; where the species is common on the coasts of the Pilbara and Kimberley, from the Dampier Archipelago to the Northern Territory border, and in the Northern Territory from Darwin and Melville Island, through Arnhem Land to the south-east Gulf of Carpentaria. Other important sites include the Broad Sound-Shoalwater Bay area, the Mackay region and Moreton Bay in Queensland. The species is much less common in south-west Australia, South Australia, Victoria, and Tasmania (Higgins & Davies 1996).	Highly unlikely. In Western Australia, the species is more commonly observed on the coasts of the northern Pilbara and Kimberley, from the Dampier Archipelago to the Northern Territory border.	Highly unlikely. In Western Australia, the species is more commonly observed on the coasts of the northern Pilbara and Kimberley, from the Dampier Archipelago to the Northern Territory border.	
Broad-billed Sandpiper (<i>Limicola falcinellus</i>)	IA	MI, MA	In Australia, the Broad-billed Sandpiper is most common on the north and north-west coasts and occur regularly at scattered localities in southern Australia, where they are usually seen singly. In Western Australia, few records occur in the south-west, but the Broad-billed Sandpiper may be regular in small numbers at scattered locations. They mostly occur on the coasts of the Pilbara and Kimberley between Onslow and Broome but are also recorded north to the mouth of Lawley River, and inland at Lake Daley. In the Northern Territory, they are an irregular and uncommon visitor near Darwin, though previously considered common at times. They are also recorded on Melville Island (Higgins & Davies 1996).	Highly unlikely. In Western Australia, the Broad-billed Sandpiper largely occurs on the coasts of the Pilbara and Kimberley between Onslow and Broome.	Highly unlikely. In Western Australia, the Broad-billed Sandpiper largely occurs on the coasts of the Pilbara and Kimberley between Onslow and Broome.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Red-necked Stint (<i>Calidris ruficollis</i>)	MI	MI	In Australasia, the Red-necked Stint is mostly found in coastal areas, including in sheltered inlets, bays, lagoons, and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores. Occasionally they have been recorded on exposed or ocean beaches, and sometimes on stony or rocky shores, reefs, or shoals. They also occur in saltworks and sewage farms; saltmarsh; ephemeral or permanent shallow wetlands near the coast or inland, including lagoons, lakes, swamps, riverbanks, waterholes, bore drains, dams, soaks, and pools in saltflats. They sometimes use flooded paddocks or damp grasslands. They have occasionally been recorded on dry gibber plains, with little or no perennial vegetation (Higgins & Davies 1996).	Highly unlikely. The species is known from the Northwest Cape region however there is no habitat present in the survey area	Highly unlikely. The species is known from the Northwest Cape region however there is no habitat present in the survey area	
Sanderling (<i>Calidris alba</i>)	IA	MI, MA	The Sanderling occurs in coastal areas around Australia. Inland records have occurred in most states of singles or small groups, birds probably on migration in Western Australia the species occur on most of the coast from Eyre to Derby, and also around Wyndham. They are more often recorded on the south and southwest coasts, north to around southern Shark Bay, with more sparsely scattered records further north in Gascoyne and Pilbara Regions and the Kimberley Division (Higgins & Davis 1996).	Highly unlikely. Species not known from the region and no habitat present	Highly unlikely. Species not known from the region and no habitat present	
Greater Sand Plover (<i>Charadrius leschenaultia</i>)	VU	VU	In Australia, the Greater Sand Plover occurs in coastal areas in all states, though the greatest numbers occur in northern Australia, especially the north-west (Marchant & Higgins 1993; Minton et al. 2006). In northern Australia, the species is especially widespread between Northwest Cape and Roebuck Bay in Western Australia (Barrett et al. 2003).	Unlikely. The species is known from the Northwest Cape region however there is no habitat present in the survey area	Unlikely. The species is known from the Northwest Cape region however there is no habitat present in the survey area	
Oriental Plover, Oriental Dotterel (<i>Charadrius veredus</i>)	MI	MI	Immediately after arriving in non-breeding grounds in northern Australia, Oriental Plovers spend a few weeks in coastal habitats such as estuarine mudflats and sandbanks, on sandy or rocky ocean beaches or nearby reefs, or in near-coastal grasslands, before dispersing further inland. Thereafter they usually inhabit flat, open, semi-arid or arid grasslands, where the grass is short and sparse, and interspersed with hard, bare ground, such as claypans, dry paddocks, playing fields, lawns cattle camps or open areas that have been recently burnt (Storr, 1980).	Likely. Suitable foraging habitat may occur within the survey area.	Likely. Suitable foraging habitat was identified within the survey area. On the sandy plain	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Lesser Sand Plover (<i>Charadrius mongolus</i>)	EN	EN	Within Australia, the Lesser Sand-Plover is widespread in coastal regions and has been recorded in all states. It mainly occurs in northern and eastern Australia, in south-eastern parts of the Gulf of Carpentaria, western Cape York Peninsula and islands in Torres Strait, and along the entire east coast, though it occasionally also occurs inland. It is most numerous in Queensland and NSW (Barrett et al. 2003; Blakers et al. 1984; Marchant & Higgins 1993; Milton & Driscoll 2006; Minton et al. 2006; Watkins 1993). The species has also been recorded on Lord Howe Island, Norfolk Island and Christmas Island, Indian Ocean (Marchant & Higgins 1993; McAllan et al. 2004; Moore 1981; van Tets 1983).	Highly unlikely. The nearest records of this species to the survey site are Port Headland, Eighty Mile Beach, and Roebuck Bay,	Highly unlikely. The nearest records of this species to the survey site are Port Headland, Eighty Mile Beach, and Roebuck Bay,	
Pacific Golden Plover (<i>Pluvialis fulva</i>)	IA	MI, MA	Within Australia, the Pacific Golden Plover is widespread in coastal regions, though there are also a number of inland records (in all states), sometimes far inland and usually along major river systems, especially the Murray and Darling Rivers and their tributaries. Most Pacific Golden Plovers occur along the east coast and are especially widespread along the Queensland and NSW coastlines. In Western Australia, the species is seldom recorded along the southern or south-western coasts but is more widespread along the Pilbara and Kimberley coasts between North-West Cape and the Northern Territory border (Marchant & Higgins 1993).	Unlikely. In WA, the species is widespread along the Pilbara and Kimberley coasts between North-West Cape and the Northern Territory border.	Unlikely. In WA, the species is widespread along the Pilbara and Kimberley coasts between North-West Cape and the Northern Territory border.	
Grey Plover (<i>Pluvialis squatarola</i>)	IA	MI, MA	In Australia, the Grey Plover has been recorded in all states, where it is found along the coasts, and it especially abundant on the western and southern coastlines, mainly between The Corong and western beaches of the Eyre Peninsula in South Australia, and the coast of Western Australia between Albany and the northern Kimberley coast (Barrett et al. 2003; Blakers et al. 1984; Lane 1987). In the Northern Territory, small numbers of Grey Plovers are regularly recorded in the Top End, and in Queensland, large numbers have been recorded in the south-eastern Gulf of Carpentaria, but records elsewhere are at sparsely scattered sites along the east coast (Marchant & Higgins 1993).	Highly unlikely. The Grey Plover is found intermittently along the Western Australia coast between Albany and the northern Kimberley. The species is rarely seen in on the Exmouth gulf.	Highly unlikely. The Grey Plover is found intermittently along the Western Australia coast between Albany and the northern Kimberley. The species is rarely seen in on the Exmouth gulf.	

Common Name	Status BC Act/ DBCA	Status EPBC Act	Description and habitat requirements	LOO within survey area (pre-survey)	LOO within survey area (post-survey)	Comment
Oriental Pratincole (<i>Glareola maldivarum</i>)	IA	MI, MA	The Oriental Pratincole is native to the warmer parts of South and Southeast Asia, breeding from North Pakistan and the Kashmir region across into China and southwest. It is migratory and winters in both India and Pakistan, Indonesia and Australasia. In 2004, 2.5 million oriental pratincoles were recorded on Eighty Mile Beach on Western Australia's north-west by the Australasian Wader Studies Group. There had previously been no records of this magnitude and it is supposed that weather conditions caused much of the world's population of this species to congregate in one area (Burns, 1993).	Highly unlikely. In Western Australia, the species is restricted to the coasts of the Pilbara Region and the Kimberley Division in Western Australia.	Highly unlikely. In Western Australia, the species is restricted to the coasts of the Pilbara Region and the Kimberley Division in Western Australia.	
Osprey (<i>Pandion haliaetus</i>)	MI	MI	Eastern Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging (Marchant & Higgins 1993). They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes. They exhibit a preference for coastal cliffs and elevated islands in some parts of their range, but may also occur on low sandy, muddy or rocky shores and over coral cays (Marchant & Higgins 1993).	Unlikely. Marine adjacent areas of the survey area provide favorable habitat for the species, use maybe opportunistic.	Unlikely. Marine adjacent areas of the survey area provide favorable habitat for the species, use maybe opportunistic.	



ghd.com

→ **The Power of Commitment**