Appendix 3
Environmental Reporting

360 environmental

Lots 284, 505, 550 and Reserve 51970, Exmouth

Biological Survey

Prepared for

Horizon Power

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people • planet • professional

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Disclaimer

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 Ac*t 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

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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

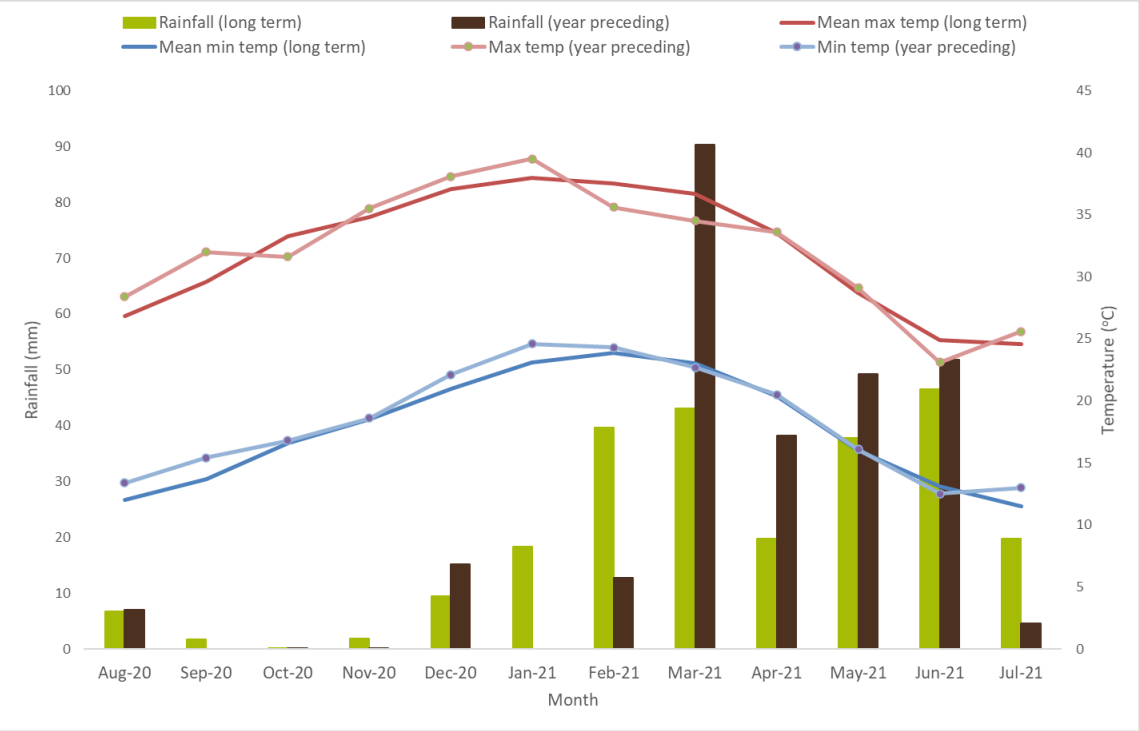
2.2.1 Climate

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 Acacia 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 Eucalypts.	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)			
DBCA 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)	• 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)	• There are existing records of the species from the locality (within 15 km for flora and 20km for fauna), however: ○ 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)	• 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 m^2 (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	The reconnaissance flora and vegetation survey was undertaken in accordance with EPA (Environmental Protection Authority, 2016) and was considered appropriate to support approvals applications. 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. 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.
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	Twelve relevés were sampled across the Survey Area. An additional 51 mapping notes were undertaken to aid vegetation mapping and delineation. 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. 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. 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. A total of 19 fauna habitat assessments were completed during the survey. A detailed or targeted survey may yield additional fauna species.

Variable	Degree of Limitation	Potential Constraints on Survey Outcomes
Experience	No	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. 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.
Timing, weather, season	Not a limitation for the flora and vegetation survey A partial limitation for the fauna survey	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). 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. 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.
Life Forms Sampled	No	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. 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. 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. 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. All vertebrate fauna species were readily identified in the field.

Variable	Degree of Limitation	Potential Constraints on Survey Outcomes
Mapping Reliability	Partial	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. 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. High resolution aerial mapping current at the time of the survey was used to differentiate vegetation at a scale of 1:5,000. Fauna habitat mapping was based largely on vegetation mapping and there were no further constraints on mapping reliability.
Disturbances (fire, flood etc.)	No	Areas of disturbance associated with access tracks, motorbike tracks and weeds were recorded but were not a constraint on the results of the survey.
Completeness	No	The survey was considered complete for a reconnaissance flora and vegetation survey, and all vegetation types were surveyed and delineated within the Survey Area. 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.

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					
Acanthocarpus rupestris	5	Opportunistically recorded in drainage lines		+	
Harnieria kempeana subsp. *rhadinophylla*	36	Drainage lines with brown-red clay loam sand soils (HER09 and opportunistically)		+	
Tinospora esiangkara	27	Opportunistically recorded in drainage lines and sandy plains	+	+	
Priority 3					
Acacia alexandri	542	Recorded in drainage lines growing on brown-red sandy clay loam (HER08, HER09 and opportunistically)		+	
Corchorus congener	2	Undulating plains with light brown and red clay loam sand over limestone (HER05) and red sandy plains with recemented limestone (HER11)	+		+
Eremophila forrestii subsp. *capensis*	462	Hilltops and rises with brown-red clay sandy loam soils (HER03, HER10 and opportunistically)		+	+
Grevillea calcicola	4	Drainage lines with brown-red clay loam sand soils (HER09) and opportunistically recorded in rocky limestone gorges		+	
Priority 4					
Brachychiton obtusilobus	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
**Aerva javanica*	Kapok Bush	Permitted – s11
**Asphodelus fistulosus*	Onion Weed	Permitted – s11
**Bidens bipinnata*	Bipinnate Beggartick	Permitted – s11
**Cenchrus ciliaris*	Buffel Grass	Permitted – s11
**Cenchrus setiger*	Birdwood Grass	Permitted – s11
**Chloris pumilio*	-	Permitted – s11
**Crotalaria incana* subsp. *incana*	Wooly Rattlepod	Declared Pest, Prohibited - s12 at the species level
**Datura leichhardtii* subsp. *leichhardtii*	Native Thornapple	Permitted – s11 at the species level
**Flaveria trinervia*	Speedy Weed	Unlisted - s14
**Malvastrum americanum*	Spiked Malvastrum	Permitted – s11

Species	Common Name	Status under BAM Act
**Rumex vesicarius*	Ruby Dock	Unlisted - s14
**Setaria verticillata*	Whorled Pigeon Grass	Permitted – s11
**Sigesbeckia orientalis*	Indian Weed	Permitted – s11
**Sonchus oleraceus*	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: *Corymbia hamersleyana* (and/or *Eucalyptus xerothermica*) low isolated trees to low open woodland over *Acacia alexandri, Acacia tetragonophylla* and *Acacia bivenosa* tall open shrubland to tall shrubland over *Senna artemisioides* subsp. *oligophylla, Tephrosia rosea* var. *clementii* and *Senna ferraria* low sparse shrubland over *Triodia epactia* sparse hummock grassland to open hummock grassland with *Dichanthium sericeum* subsp. *humilius* isolated tussock grasses	17.0 ha 3.2%	HER08 HER09	Good to Excellent	
Hills				
H1: *Corymbia hamersleyana* low open woodland over *Senna glutinosa* subsp. *pruinosa* and *Acacia bivenosa* mid open shrubland over *Ptilotus obovatus* and *Corchorus crozophorifolius* low open shrubland over *Triodia epactia* open hummock grassland with **Cenchrus ciliaris* 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
H2: *Acacia bivenosa* tall sparse shrubland over *Melaleuca cardiophylla* mid sparse shrubland over *Triodia glabra* (and/or *Triodia wiseana*) open hummock grassland to hummock grassland with *Goodenia tenuiloba*, *Haloragis gossei* var. *inflata* isolated herbs to sparse herbland	156.6 ha 29.2%	HER06 HER07 HER10	Very Good to Excellent	
H3: *Melaleuca cardiophylla, Acacia alexandri* and *Acacia arida* tall open shrubland over *Triodia epactia* (and/or *Triodia wiseana*) open hummock grassland	144.4 ha 26.9%	Mapping notes	Very Good to Excellent	

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

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

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

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

*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 *Acacia alexandri*^ (P3), *Acanthocarpus rupestris*^ (P2), *Brachychiton obtusilobus*^ (P4), *Cassytha filiformis*^ (RE), *Eremophila forrestii* subsp. *capensis*^ (P3), *Eriachne tenuiculmis*+ (RE), *Grevillea calcicola*^ (P3), *Harnieria kempeana* subsp. *rhadinophylla*^ (P2), *Paspalidium basicladum*+ (RE), *Phyllanthus exilis*+ (RE), *Polygala glaucifolia*^ (RE), *Santalum lanceolatum*+ (RE), *Stemodia viscosa*^ (RE), and *Tinospora esiangkara*^ (P2)
H1	Supports *Eremophila forrestii* subsp. *capensis*^ (P3) and *Eremophila latrobei* subsp. *latrobei*^ (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 *Acacia alexandri*^ (P3), *Brachychiton obtusilobus*^ (P4), *Dactyloctenium radulans*+ (RE), *Eremophila forrestii* subsp. *capensis*^ (P3), *Euphorbia boophthona*+ (RE), *Phyllanthus exilis*+ (RE), *Polygala glaucifolia*^ (RE), *Ptilotus auriculifolius*+ (RE), *Sida* sp. Nov^ (SOI) and *Tephrosia supina*^ (RE)

Vegetation Type	Reasoning for Significance
H3	Supports *Acacia alexandri*^ (P3), *Brachychiton obtusilobus*^ (P4), *Eremophila forrestii* subsp. *capensis*^ (P3), *Euphorbia australis* var. *subtomentosa*^ (RE), *Grevillea calcicola*^ (P3), *Harnieria kempeana* subsp. *rhadinophylla*^ (P2), *Sesbania cannabina*+ (RE), *Solanum horridum*+ (RE), *Stemodia viscosa*^ (RE), and *Tinospora esiangkara*^ (P2)
P1	Supports *Cullen cinereum*^ (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 *Euphorbia boophthona*+ (RE).
P3	Supports *Acacia colei* var. *colei*+ (RE), *Cullen cinereum*^ (RE), *Dysphania rhadinostachya* subsp. *rhadinostachya*+ (RE), *Eremophila forrestii* subsp. *capensis*^ (P3), *Heliotropium diversifolium*+ (RE), *Heliotropium inexplicitum*+ (RE), *Notoleptopus decaisnei*+ (RE) and *Polygala glaucifolia*^ (RE)
P4	Supports *Corchorus congener*^ (P3), *Dysphania rhadinostachya* subsp. *rhadinostachya*+ (RE), *Euphorbia boophthona*+ (RE) and *Hibiscus sturtii* var. *grandiflorus*+ (RE)
P5	Supports *Acacia sibilans*^ (RE), *Corchorus congener*^ (P3), *Dysphania rhadinostachya* subsp. *rhadinostachya*+ (RE), *Euphorbia boophthona*+ (RE), *Hakea chordophylla*+ (RE), *Heliotropium inexplicitum*+ (RE), *Lawrencia densiflora*^ (RE), *Polycarpaea corymbosa* var. *corymbosa*+ (RE), *Polygala glaucifolia*^ (RE), *Schizachyrium fragile*^ (RE), *Senna glutinosa* subsp. ×*luerssenii*+ (RE), *Solanum horridum*+ (RE), *Tephrosia supina*^ (RE), *Tinospora esiangkara*^ (P2) and *Yakirra australiensis* var. *australiensis*+ (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 *Lawrencia densiflora*^ (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						
Actitis hypoleucos (Common Sandpiper)	IA	MI, MA				+
Chlidonias leucopterus (White-winged Black Tern)	IA	MI, MA				+
Hydroprogne caspia (Caspian Tern)	IA	MI, MA				+
Pandion cristatus (Eastern Osprey)	IA	MI, MA	+			+
Petrogale lateralis lateralis (Black-footed Rock-wallaby)	EN	EN		+		
Phaethon rubricauda (Red-tailed Tropicbird)	P4, IA	MI, MA			+	
Thalasseus bergii (Crested Tern)	IA	MI, MA				+
Invertebrate and Aquatic Fauna						
Indohya damocles (Cameron's Cave Pseudoscorpion)	CR				+	+
Milyeringa veritas (Cave Gudgeon, Blind Gudgeon)	VU	VU		x	+	+
Stygiochiropus isolatus (stygiochiropus millipede (Cape Range))	VU			+		
Stygiochiropus peculiaris (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%	Calcrete and limestone slopes and gullies with thin soils, shallow bedrock and exposed rock faces. Vegetation consists of isolated *Corymbia hamersleyana* and/or *Eucalyptus xerothermica* trees over *Acacia* shrubland and *Triodia epactia* hummock grassland. Trees, shrubs and grasses provide shelter, refuge and nesting opportunities for birds, mammals, and reptiles. Microhabitats include *Triodia* hummocks and rock slopes with abundant crevices that provide shelter for a variety of species. Small rock faces containing shallow overhangs were occasionally observed.	
Hills (Open Woodland over Tussock Grassland)	3.4 ha 0.6%	Calcrete and limestone hills with *Corymbia hamersleyana* open woodland over *Acacia* and *Senna* shrubland, *Triodia epactia* hummock grassland and **Cenchrus ciliaris* tussock grassland. Trees, shrubs and grasses provide shelter, refuge and nesting opportunities for birds, mammals, and reptiles. Microhabitats include *Triodia* hummocks and rock crevices that provide shelter for a variety of species.	

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

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

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

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	*Cracticus nigrogularis*	Pied Butcherbird	Sighting
	Gymnorhina tibicen	Australian Magpie	Sighting
Oreoicidae	*Oreoica gutturalis*	Crested Bellbird	Call
Estrildidae	*Taeniopygia guttata*	Zebra Finch	Sighting
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater	Sighting
Phasianidae	*Coturnix ypsilophora*	Brown Quail	Sighting
Macropodidae	*Osphranter* sp.	N/A	Scat
Varanidae	*Varanus* 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	*Haliastur sphenurus*	Whistling Kite	Call, sighting
Cacatuidae	*Cacatua sanguinea*	Little Corella	Sighting
	Eolophus roseicapilla	Galah	Sighting
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater	Sighting

Family	Scientific Name	Common Name	Recording Method
Pomatostomidae	*Pomatostomus superciliosus*	White-browed Babbler	Call
Psittacidae	*Barnardius zonarius*	Australian Ringneck	Sighting
Macropodidae	*Osphranter robustus*	Euro	Sighting
	Osphranter sp.	N/A	Scat
Scincidae	*Ctenotus* 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	Eolophus roseicapilla	Galah	Sighting
Columbidae	*Ocyphaps lophotes*	Crested Pigeon	Sighting
Varanidae	*Varanus giganteus*	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	*Equus ferus caballus*	Horse (Domesticated)	Sighting
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater	Call
Monarchidae	*Grallina cyanoleuca*	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 occidens* (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 (*Rhinonicteris 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	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 (*Owenia acidula*, 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. 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. 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. 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 (*Thysanotus* ?*exfimbriatus*) has been tentatively identified to species level. One of the unconfirmed flora taxa, *Sida* 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.

Principle	Assessment
	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. 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). 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. The Survey Area comprises eleven vegetation types. No vegetation considered representative of any TECs or PECs was recorded within the Survey Area. Vegetation condition within the Survey Area ranged from Excellent to Degraded, with the majority considered to be in Very Good condition: • 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%). **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, *Sida* 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.

Principle	Assessment
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	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. The three taxa considered to have a high likelihood of occurrence were: • *Diplodactylus capensis* (Cape Range Stone Gecko) • *Glareola maldivarum* (Oriental Pratincole) • *Petrogale lateralis lateralis* (Black-footed Rock-wallaby). The five taxa considered to have a medium likelihood of occurrence were: • *Aprasia rostrata* (Ningaloo Worm Lizard) • *Charadrius veredus* (Oriental Plover) • *Falco peregrinus* (Peregrine Falcon) • *Lerista allochira* (Cape Range Slider) • *Rhinonicteris aurantia* (Pilbara Leaf-nosed Bat). 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. 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). **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.

Principle	Assessment
	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. 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. The proposed clearing may be at variance with this principle.
Principle (c) – Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora	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. **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.
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).	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. **Assessed Outcome:** No TECs have been recorded within the Survey Area. The proposed clearing is not considered to be at variance with this principle.
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	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. 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). The remnant vegetation is significant to the following threatened fauna taxa that were considered as having high likelihood of occurrence within the Survey Area: • *Diplodactylus capensis* (Cape Range Stone Gecko) • *Petrogale lateralis lateralis* (Black-footed Rock-wallaby).

Principle	Assessment
	The remnant vegetation is significant to the following threatened fauna taxa that were considered as having medium likelihood of occurrence within the Survey Area: • *Aprasia rostrata* (Ningaloo Worm Lizard) • *Lerista allochira* (Cape Range Slider). **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.
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	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. **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 *Energy Operators (Powers) Act 1979* (Minister for Energy, 1979) allows Horizon Power to make or alter, streams or watercourses drainage to establish, maintain, utilise, and operate, any supply system.
Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation	The Department of Water and Environmental Regulation (DWER) has defined land degradation as including the following (DER, 2014): • 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
	• Waterlogging/flooding. Vegetation condition within the Karratha Survey Area ranged from Poor to Very Good comprising (rounded to one decimal place): • Poor (0.4 ha / 0.3%) • Good (26.8 ha / 18.2%) • Very Good (119.7 ha / 81.5%). **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.
Principle (h) – Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area	The 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). 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. **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.
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	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).

Principle	Assessment
	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. The drainage lines were mapped as vegetation type D1, which was associated with a vadophyte or facultative phreatophyte, *Eucalyptus xerothermica*. Further investigation will determine whether vegetation type D1 is representative of a potential GDE. 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. **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.
Principle (j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding	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. The proposed clearing within the Survey Area could cause, or exacerbate, the incidence of flooding in the local area. **Assessed Outcome**: If appropriate management actions are implemented the proposed clearing is unlikely to be at variance with this principle.

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.

***Rhinonicteris 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.

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10 Report Disclaimer

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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.

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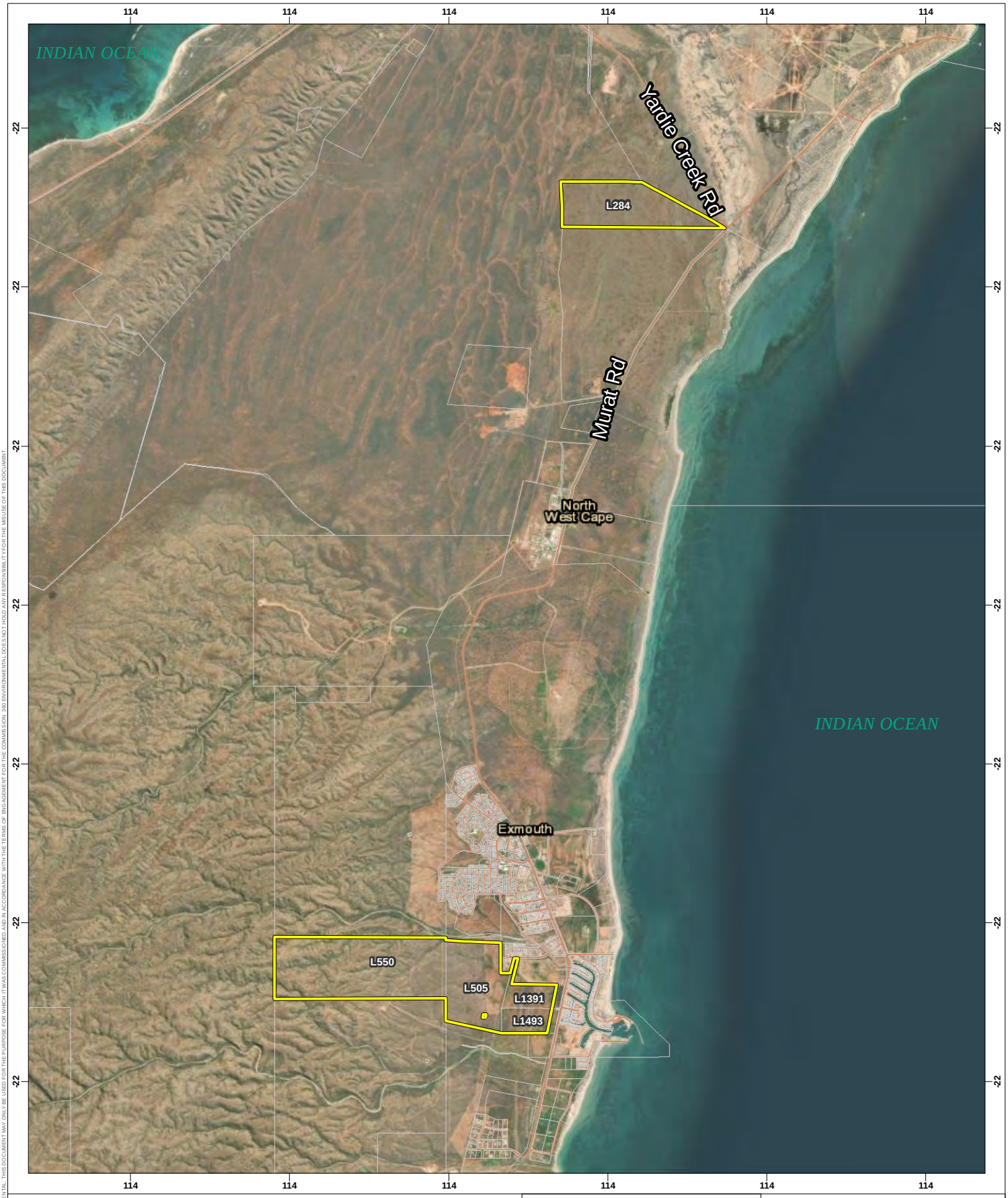
Figures



Legend

- Cadastral Lines
- Survey Boundary

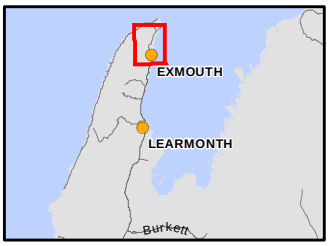
0 840 1,680 2,520 Meters

1:80,000 @ A4

N

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

LOCALITY MAP



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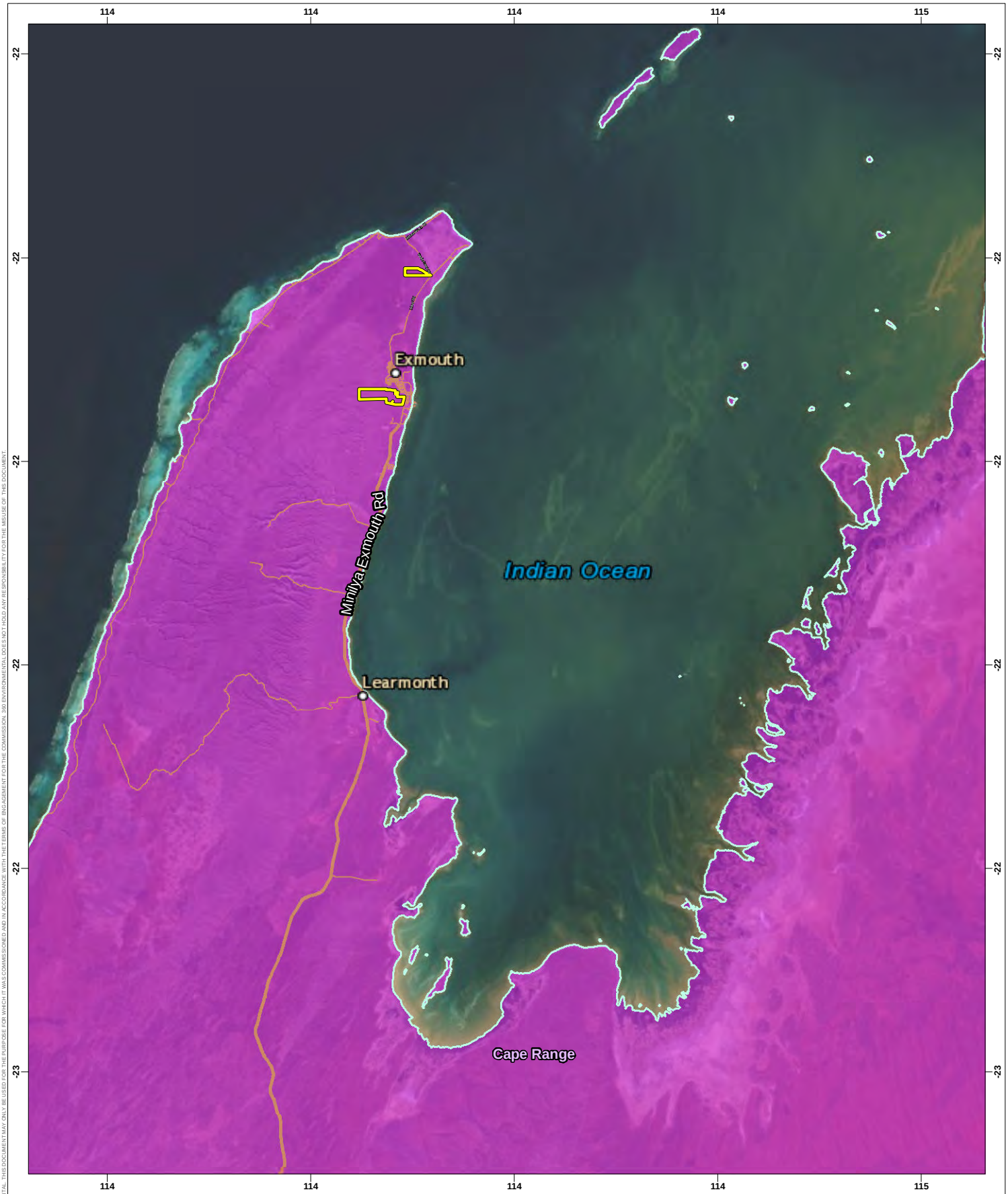
LF	BD	BD	0

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

Biological Survey

Figure 1
Site Location

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F01 Survey Area.mxd



Legend

- Survey Boundary
- IBRA Regions

IBRA Subregions

- Cape Range

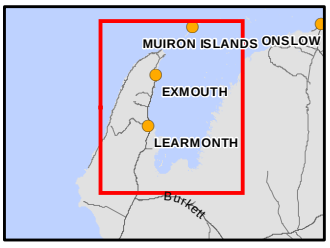
0 5,200 10,400 15,600 Meters

1:500,000 @ A4

N

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

LOCALITY MAP



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Horizon power

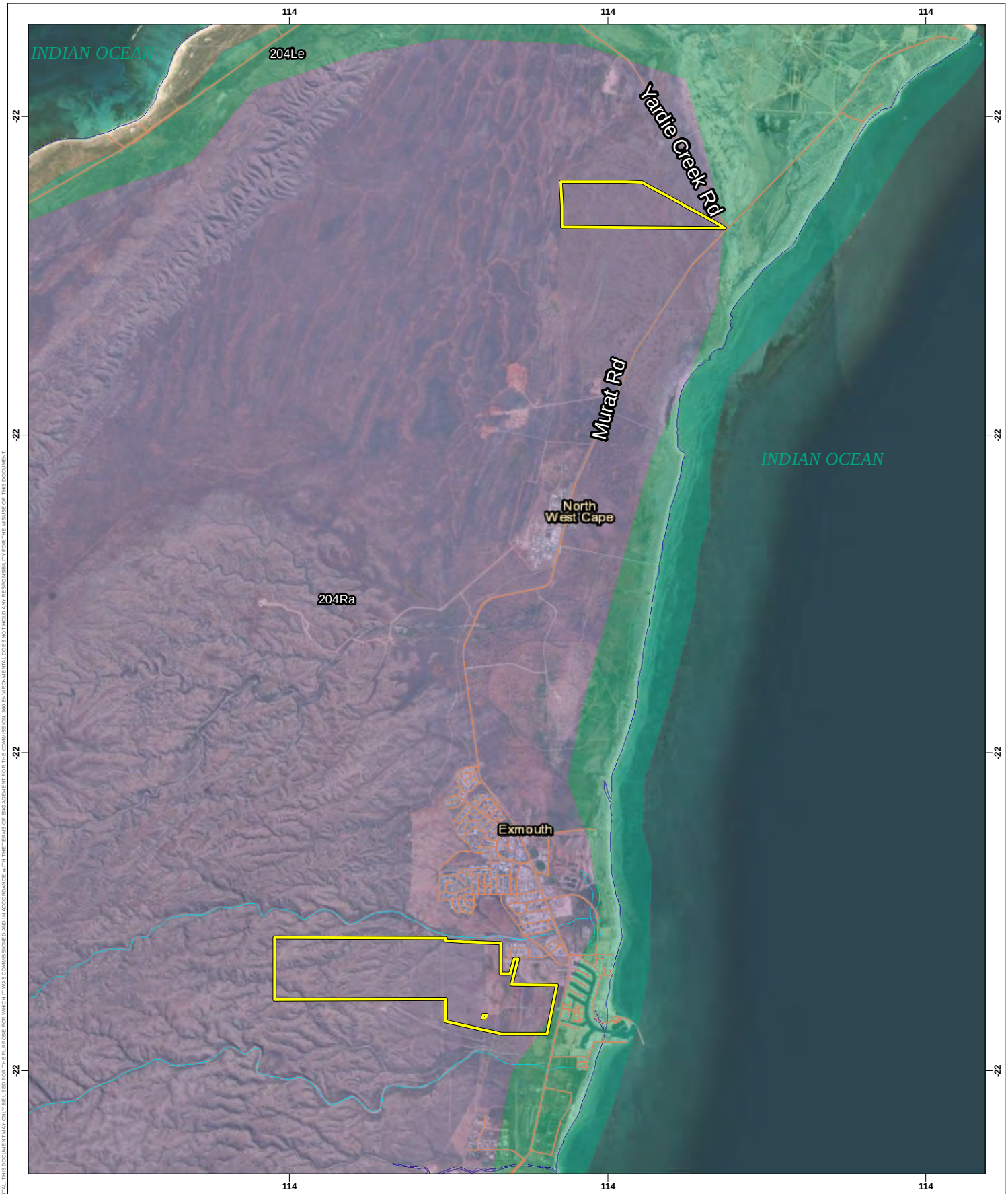
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 2

IBRA Subregions

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F02 IBRA Subregions.mxd



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.

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0 840 1,680 2,520 Meters

1:80,000 @ A4

N

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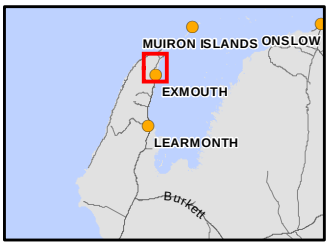
LOCALITY MAP



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Horizon power

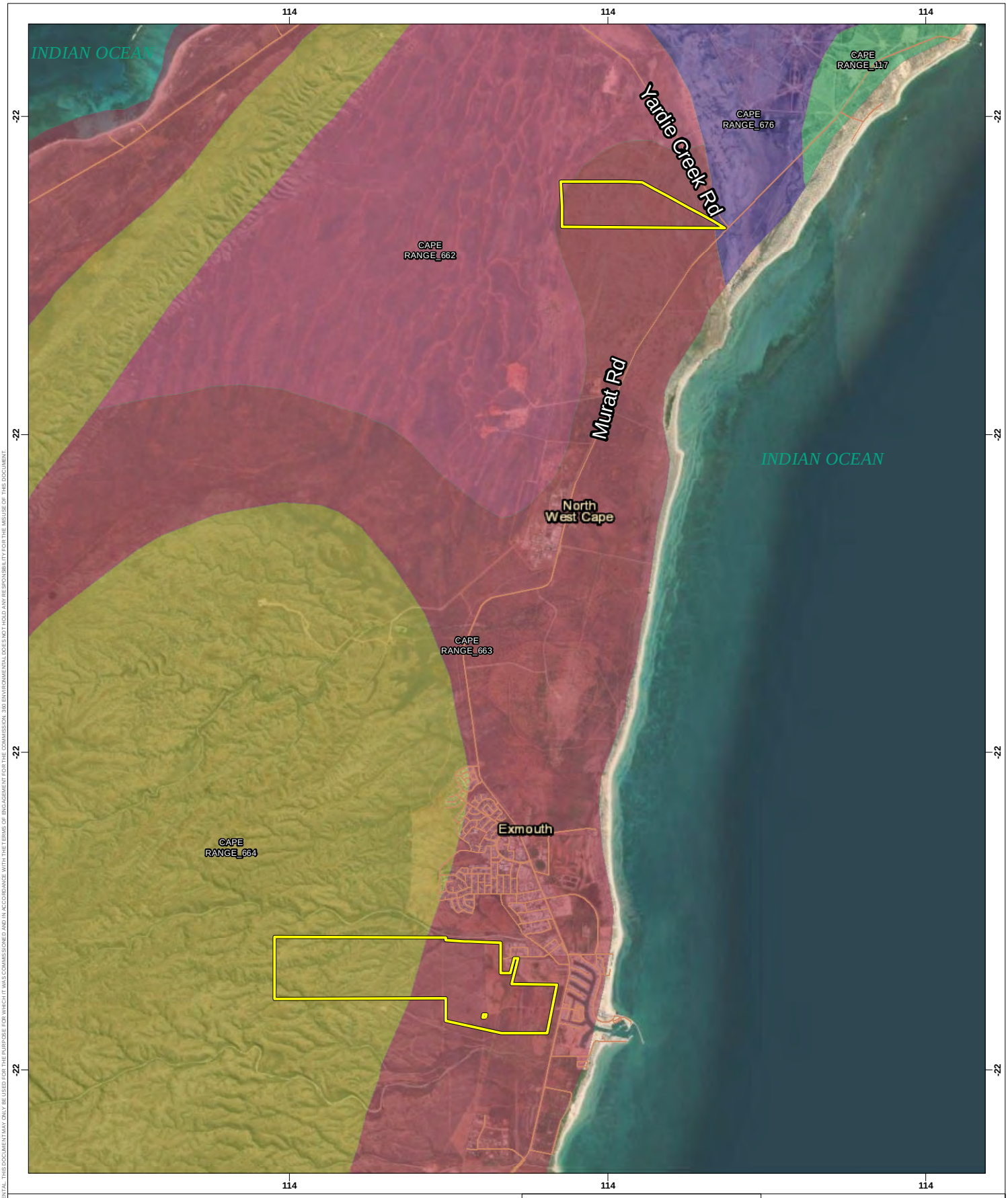
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 3

Soil Land Systems and Hydrography

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F03 Soil Land Systems and Hydrography.mxd



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

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1:80,000 @ A4

N

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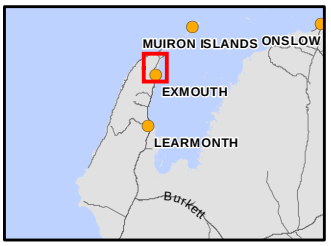
LOCALITY MAP



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Horizon power

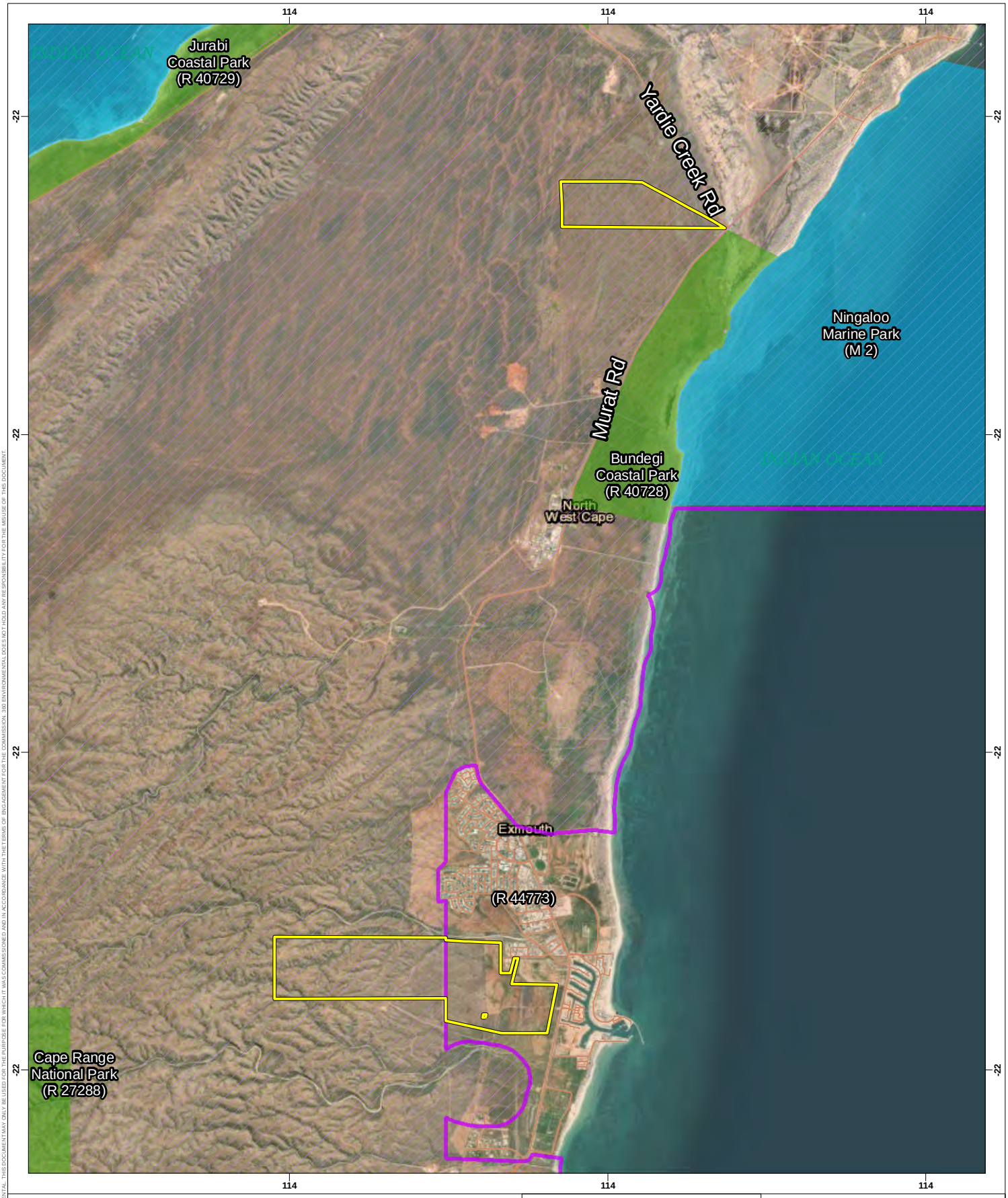
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 4

Broad Vegetation Types

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F04 Broad Vegetation Types.mxd



Legend

- Survey Boundary
- Environmentally Sensitive Areas

DBCA Managed Lands and Waters

- DBCA Managed Land
- DBCA Managed Marine

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0 840 1,680 2,520 Meters

1:80,000 @ A4

N

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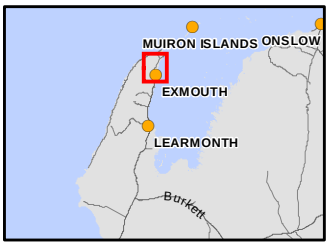
LOCALITY MAP



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Horizon power

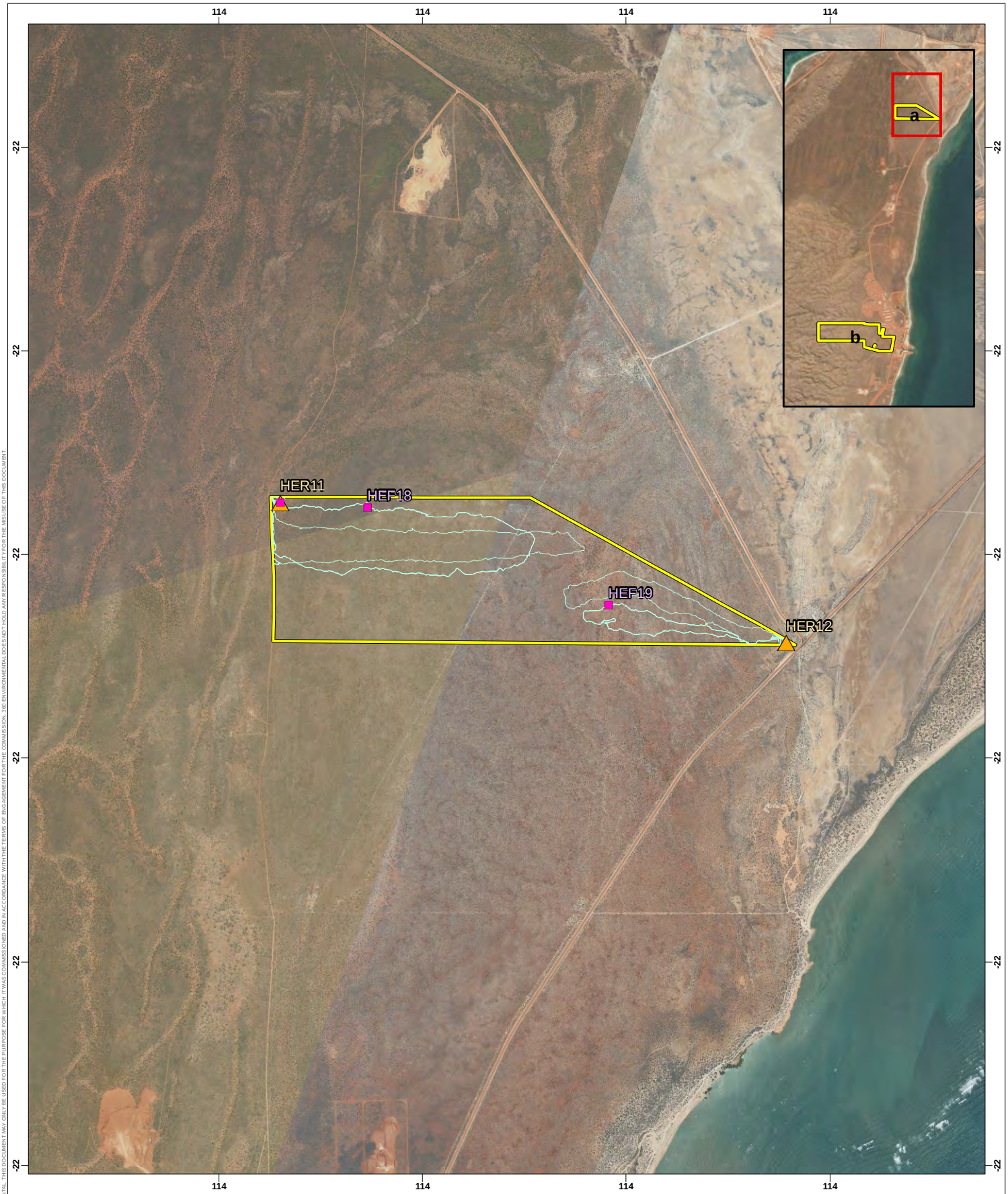
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 5

Conservation and Environmentally Sensitive Areas

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F05 Conservation and Environmentally Sensitive Area.mxd



Legend

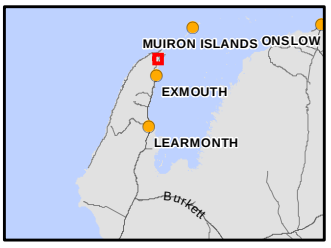
- Survey Boundary
- GPS Tracks
- Releves
- Fauna Habitat Assessment

0 260 520 780 Meters
1:25,000 @ A4

N

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

LOCALITY MAP



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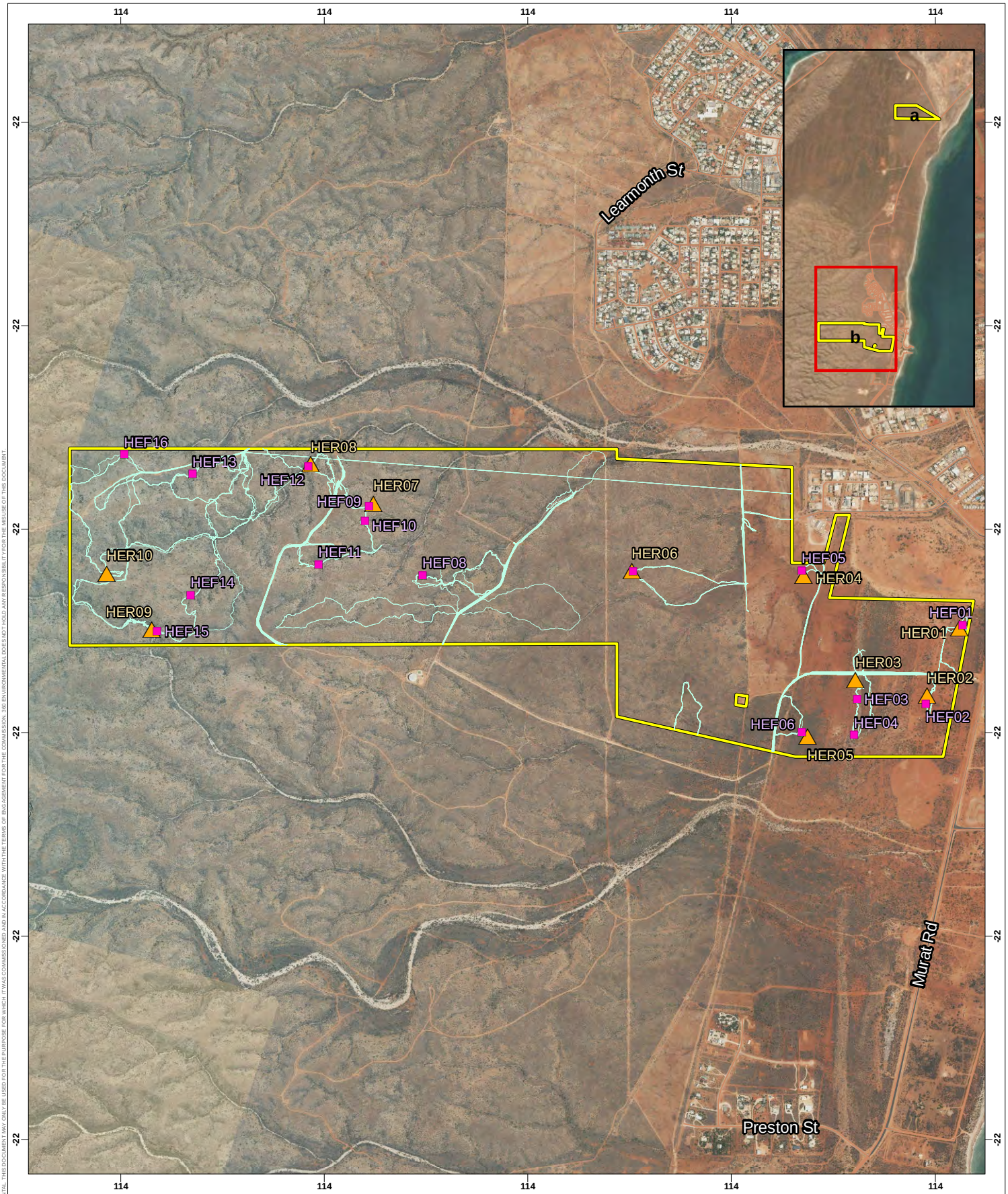
Horizon power

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

Biological Survey

Figure 6a
Survey Effort

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F06 Survey Effort.mxd



Legend

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

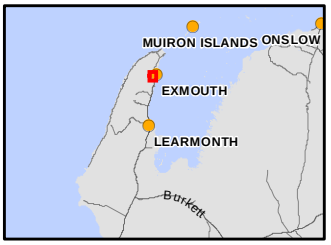
0 260 520 780 Meters

1:25,000 @ A4

N

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

LOCALITY MAP



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Horizon power

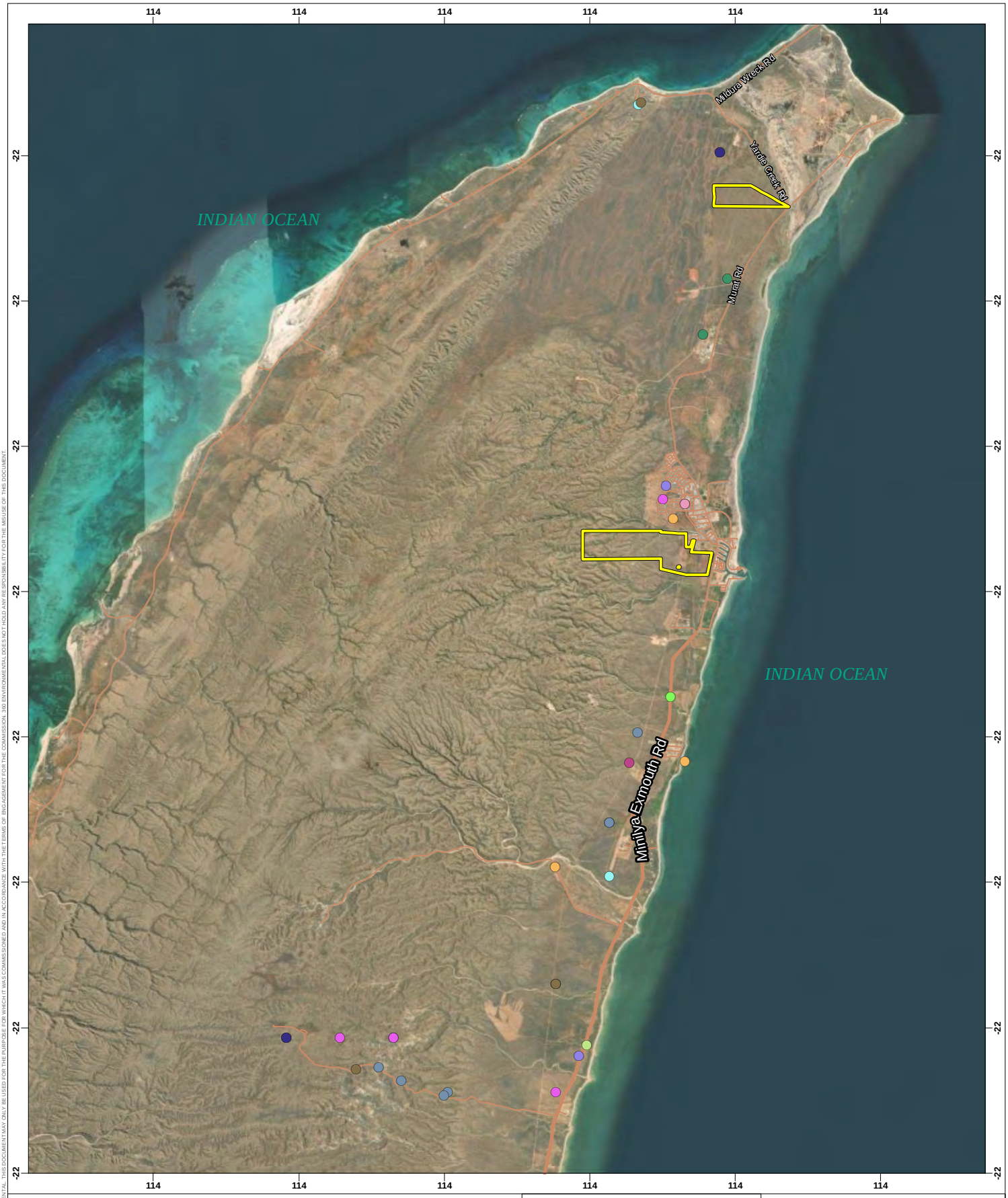
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 6b

Survey Effort

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F06 Survey Effort.mxd



Legend

Survey Boundary

DBCA 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)

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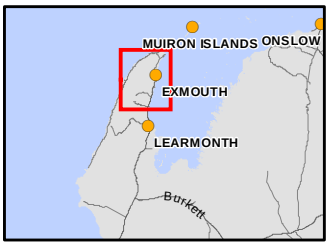
0 1,800 3,600 5,400 Meters

1:175,000 @ A4

N

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

LOCALITY MAP



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Horizon power

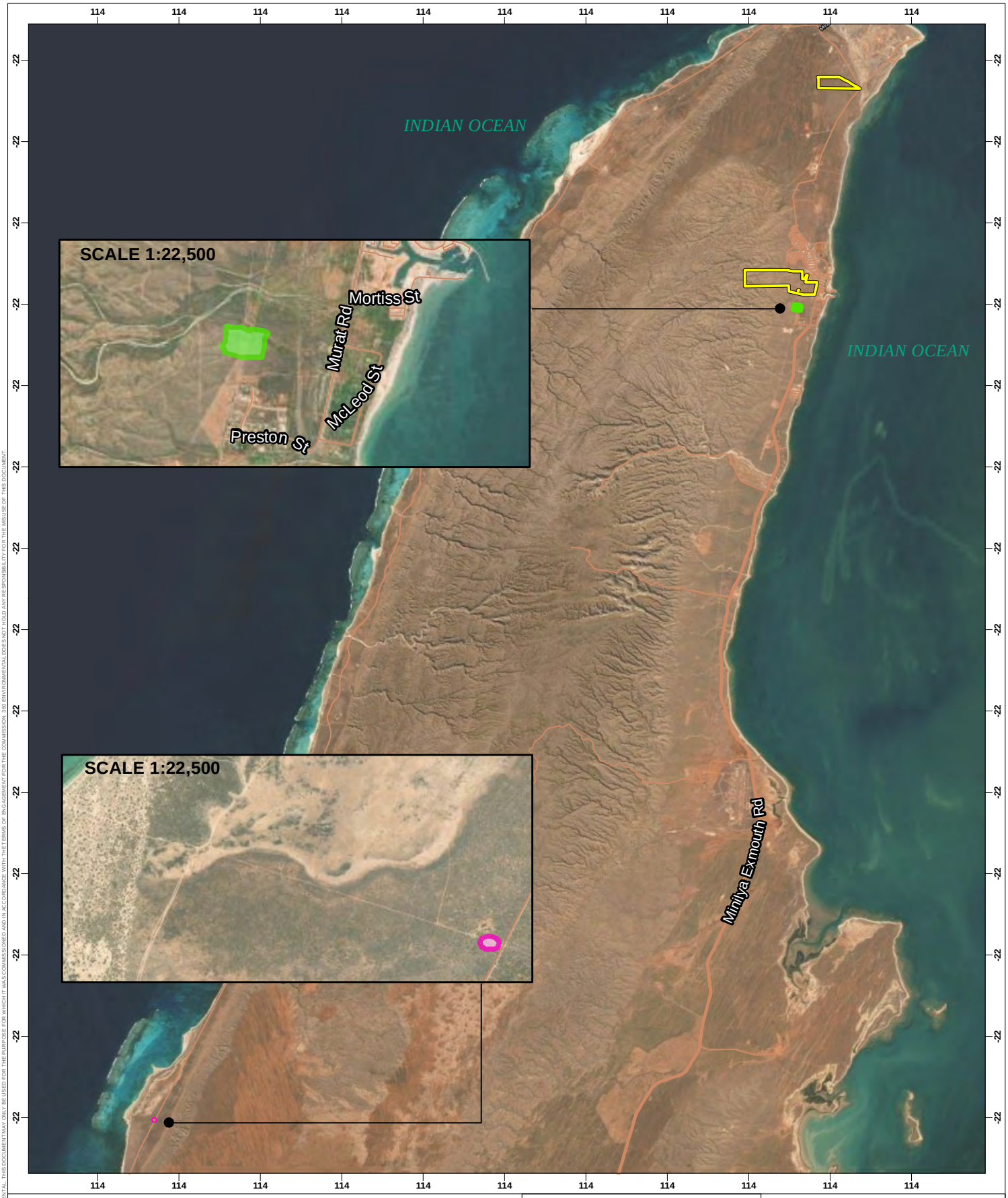
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 7

DBCA Threatened and Priority Flora Locations

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F07 DBCA Threatened and Priority Flora Locations.mxd



Legend

- Survey Boundary

Threatened and Priority Ecological Communities

- Camerons Cave Troglobitic Community
- Cape Range Remipede Community (Bundera Sinkhole)

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0 3,250 6,500 9,750 Meters

1:312,500 @ A4

N

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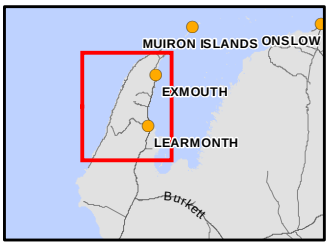
LOCALITY MAP



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Horizon power

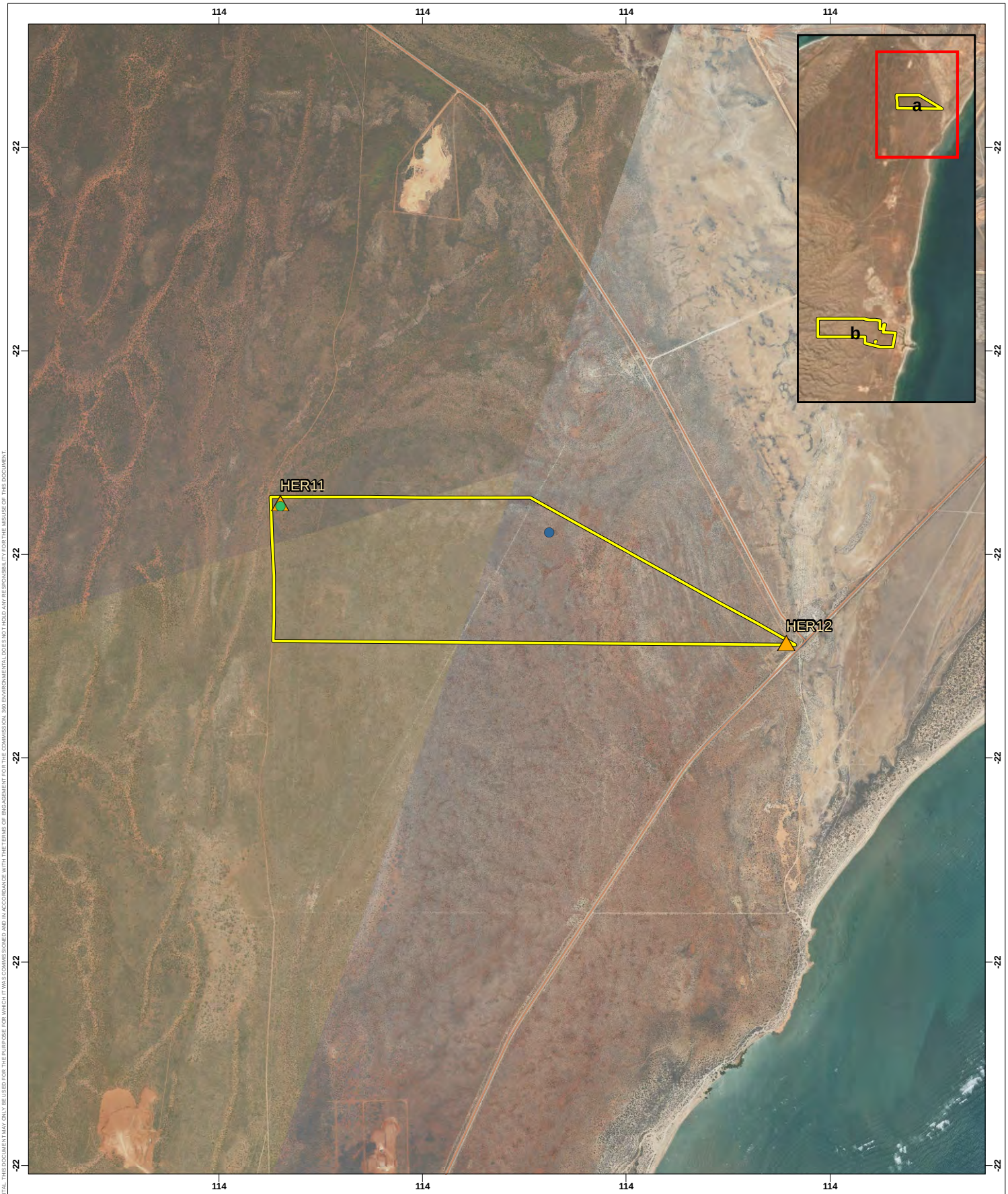
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 8

DBCA Threatened and Priority Ecological Communities

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F08 DBCA Threatened and Priority Ecological Communities.mxd



Legend

- Survey Boundary
- Releves

Flora of Conservation Significance

- *Corchorus congener* (P3)
- *Tinospora esiangkara* (P2)

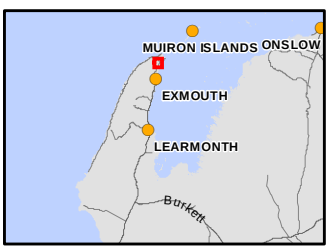
0 260 520 780 Meters

1:25,000 @ A4

N

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

LOCALITY MAP



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LF	BD	BD	0

Horizon power

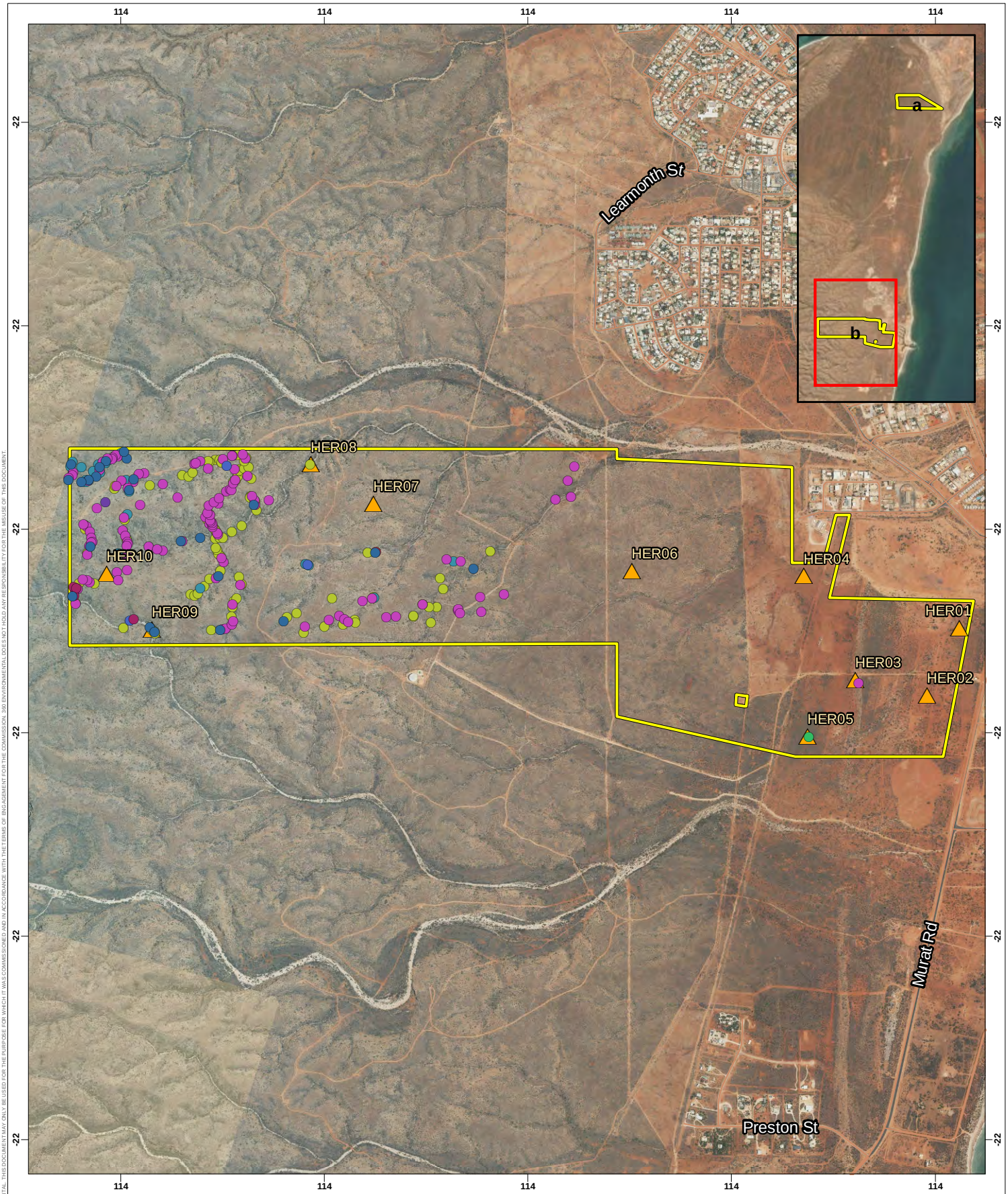
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 9a

Flora of Conservation Significance

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F09 Flora of Conservation Significance.mxd



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)
- *Harnieria kempeana* subsp. *rhadinophylla* (P2)
- *Sida* sp. (SOI)
- *Tinospora esiangkara* (P2)

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0 260 520 780 Meters

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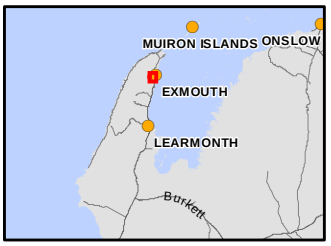
LOCALITY MAP



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Horizon power

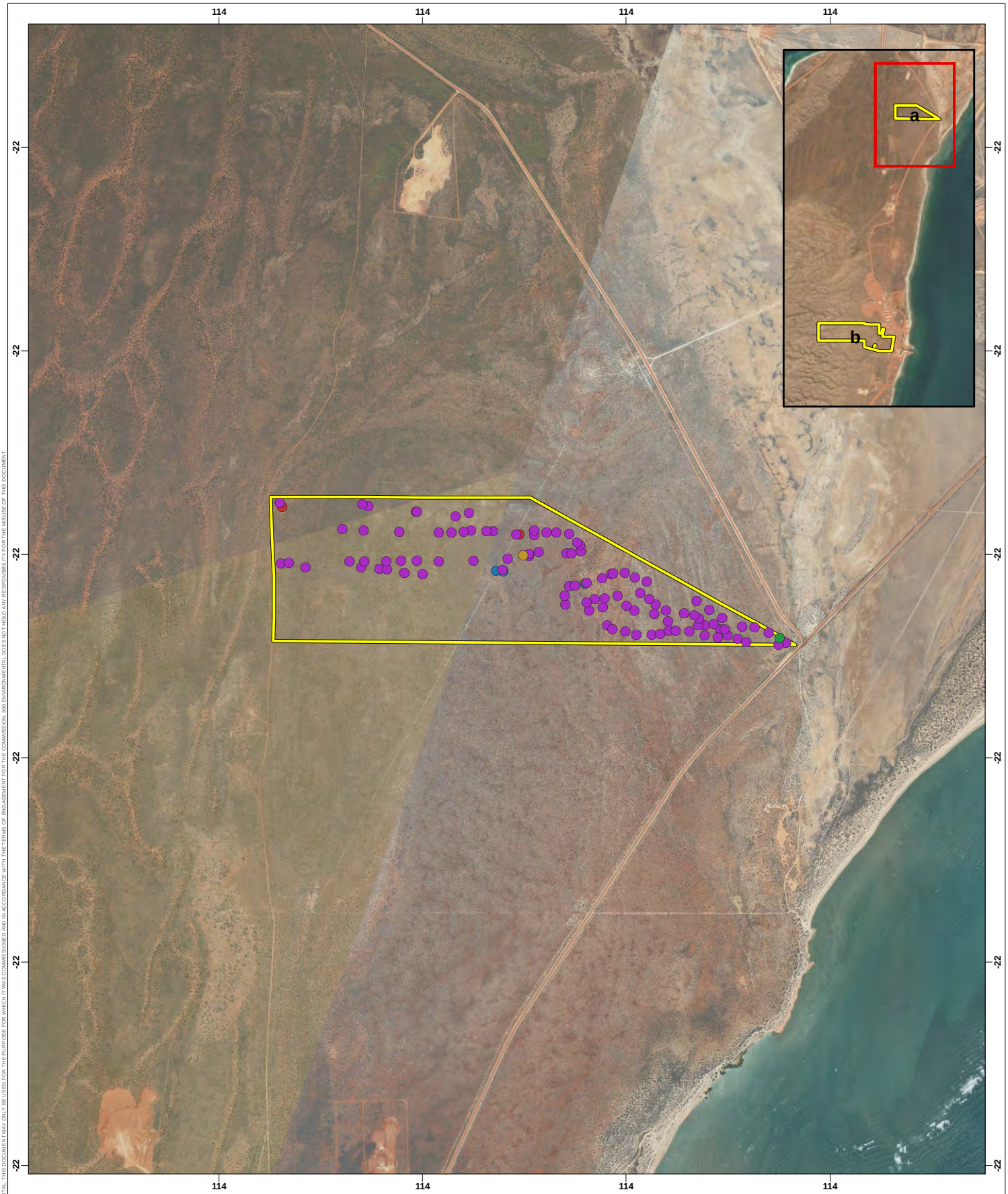
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 9b

Flora of Conservation Significance

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F09 Flora of Conservation Significance.mxd



Legend

Survey Boundary

Introduced Flora

- *Aerva javanica
- *Bidens bipinnata
- *Cenchrus ciliaris
- *Cenchrus setiger
- *Setaria verticillata

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0 260 520 780 Meters

1:25,000 @ A4

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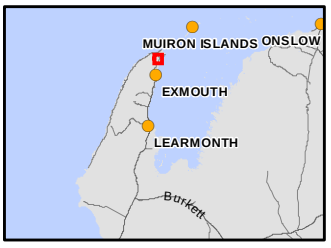
LOCALITY MAP



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Horizon power

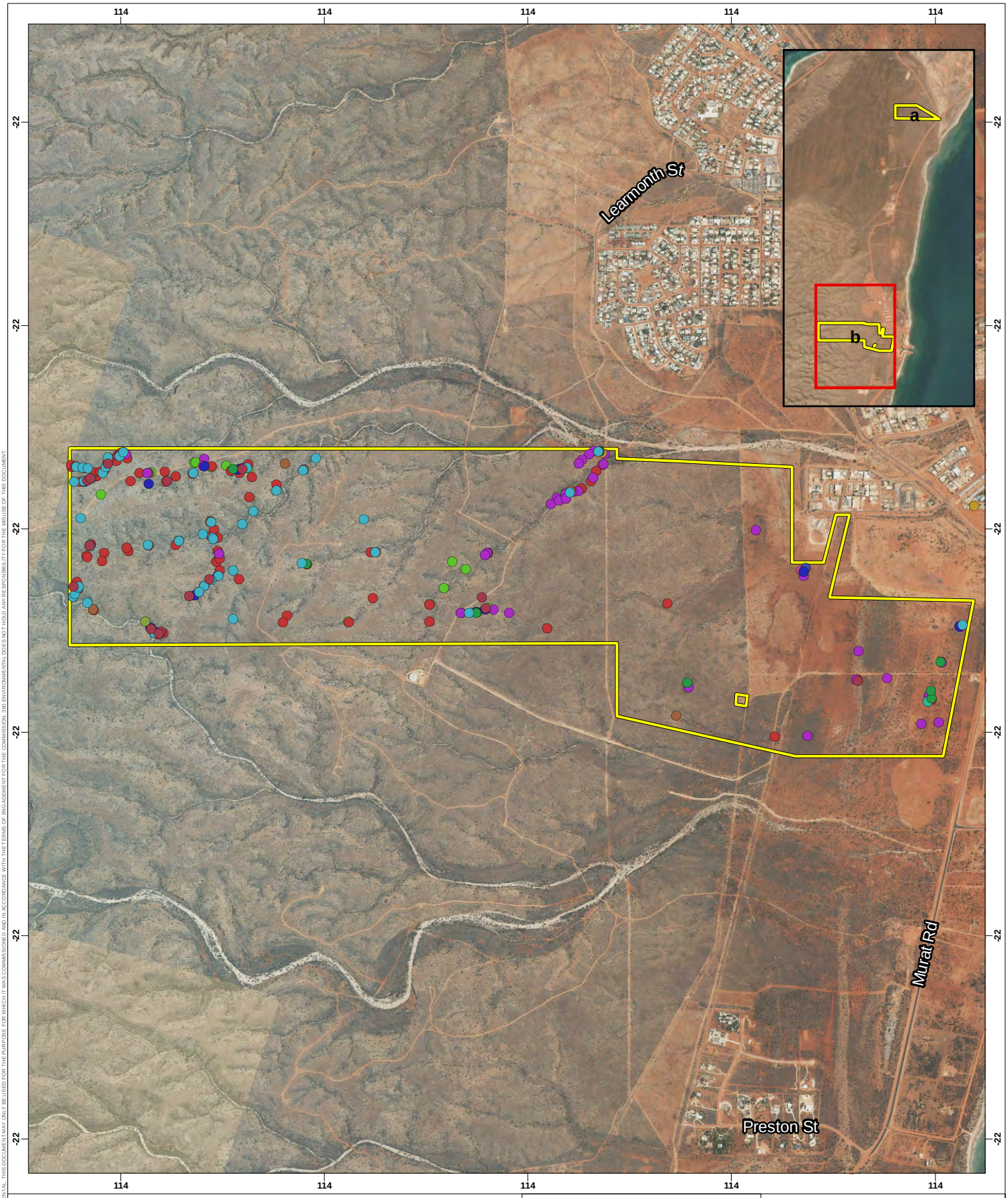
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 10a

Introduced Flora Recorded

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F10 Introduced Flora Recorded within the Survey Area.mxd



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

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0 260 520 780 Meters
1:25,000 @ A4

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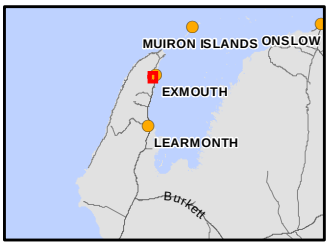
LOCALITY MAP



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GCS GDA 1994

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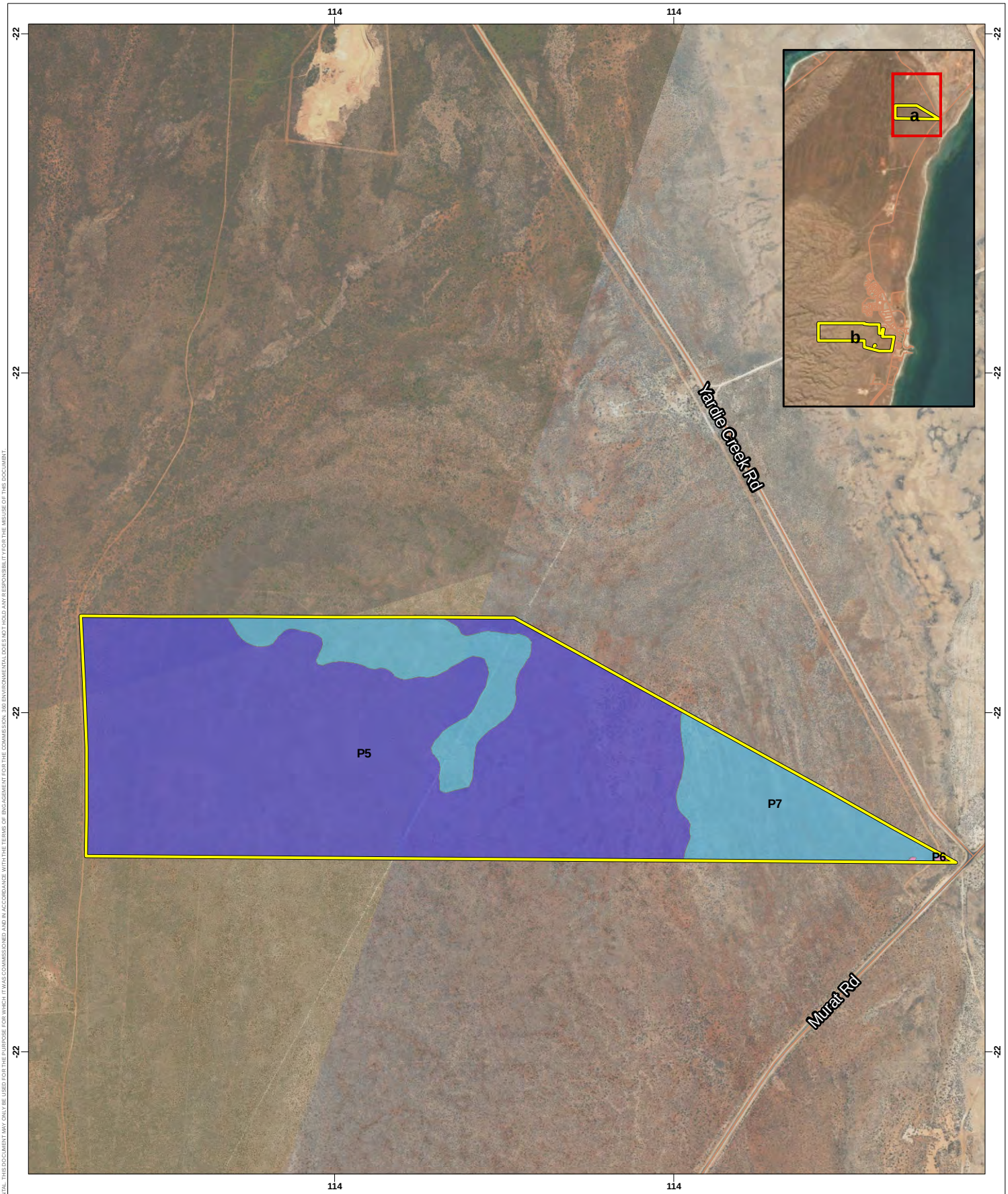
LF	BD	BD	0

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

Figure 10b
Introduced Flora Recorded

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F10 Introduced Flora Recorded within the Survey Area.mxd



Legend

- Survey Boundary

Vegetation Types

- P5
- P6
- P7

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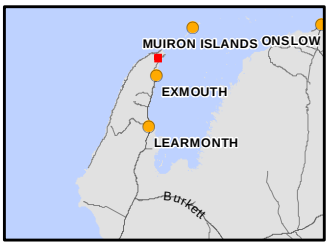
LOCALITY MAP



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LF	BD	BD	0

Horizon power

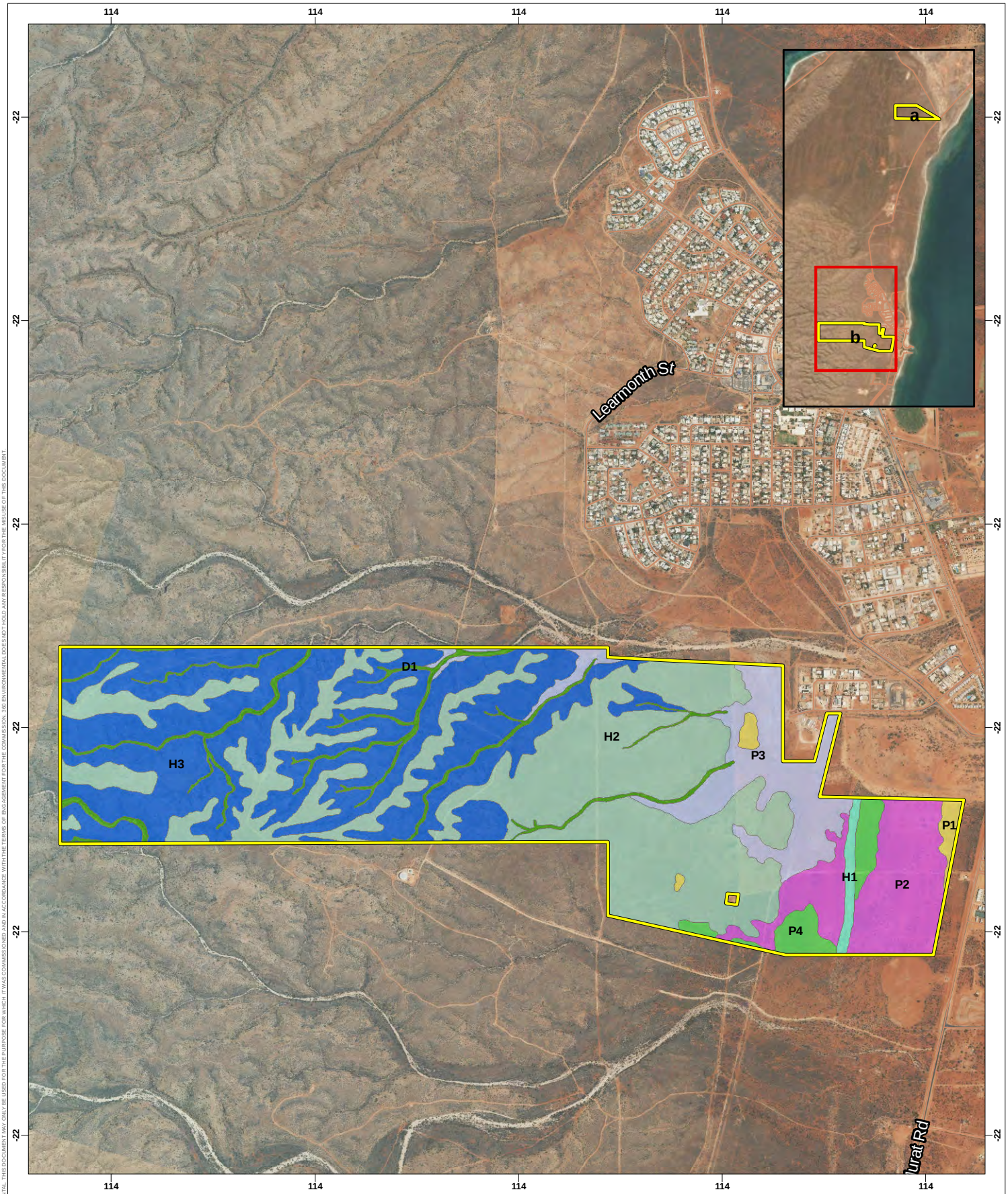
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 11a

Vegetation Types

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F11 Vegetation TYpes.mxd



Legend

- Survey Boundary

Vegetation Types

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

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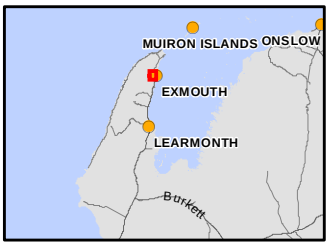
LOCALITY MAP



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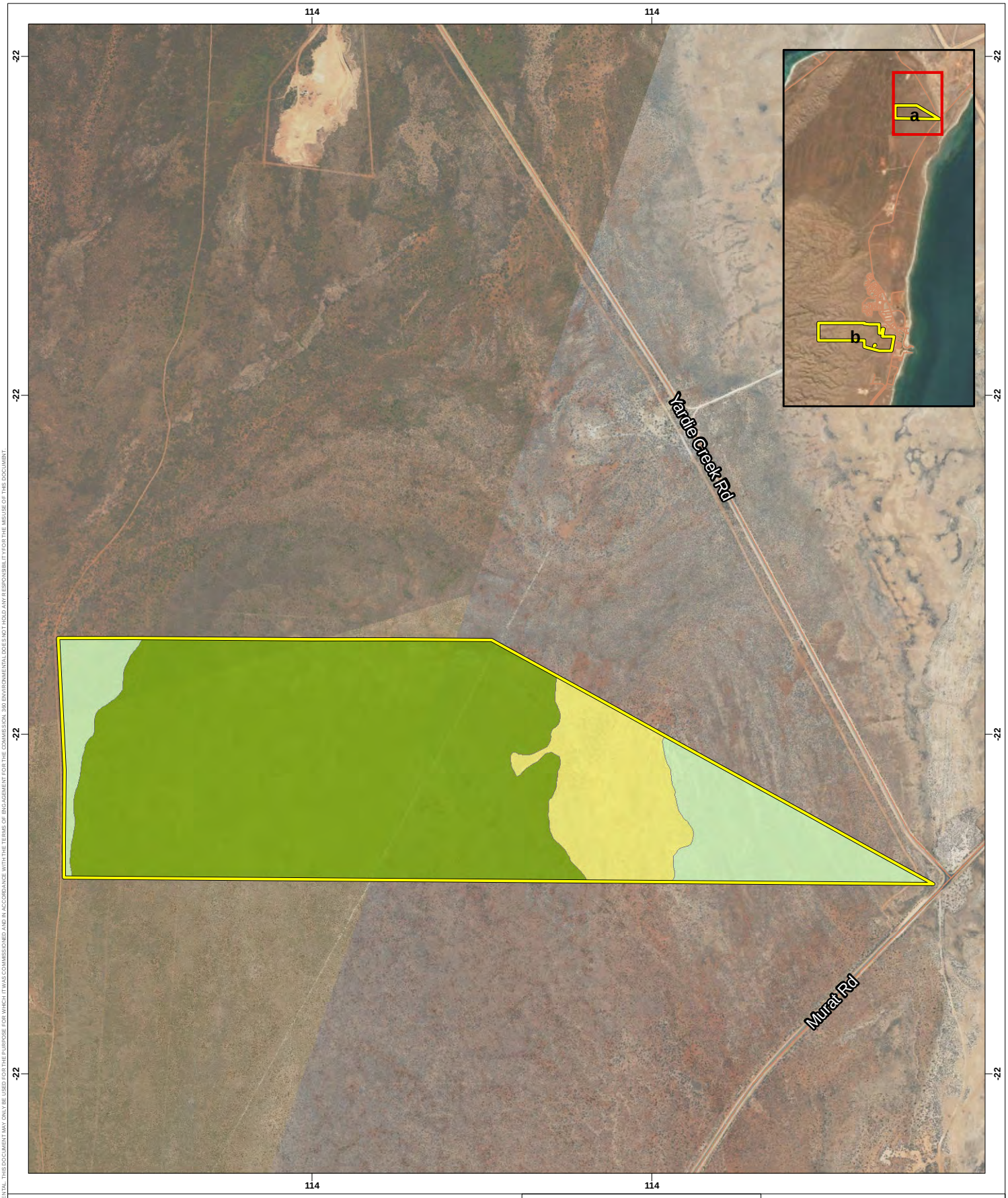
LF	BD	BD	0

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

Figure 11b
Vegetation Types

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F11 Vegetation TYpes.mxd



Legend

- Survey Boundary

Vegetation Condition

- Very Good
- Good
- Poor

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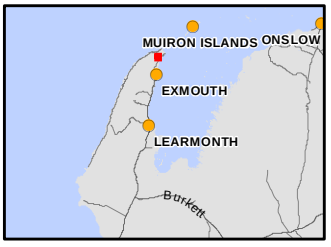
LOCALITY MAP



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LF	BD	BD	0

Horizon power

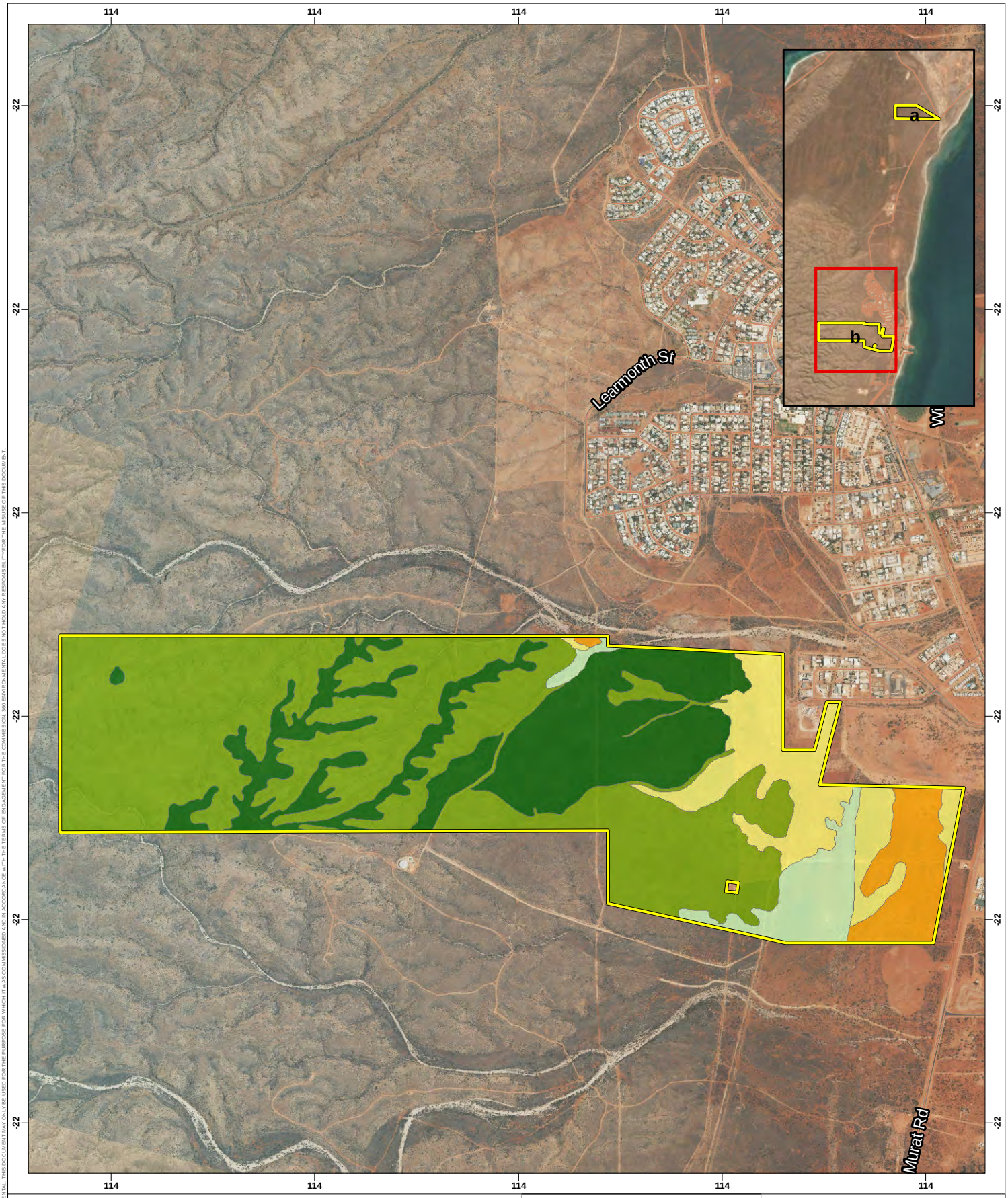
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 12a

Vegetation Condition

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F12 Vegetation Condition.mxd



Legend

- Survey Boundary

Vegetation Condition

- Excellent
- Very Good
- Good
- Poor
- Degraded

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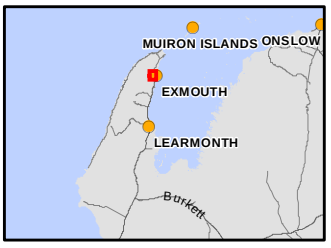
LOCALITY MAP



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LF	BD	BD	0

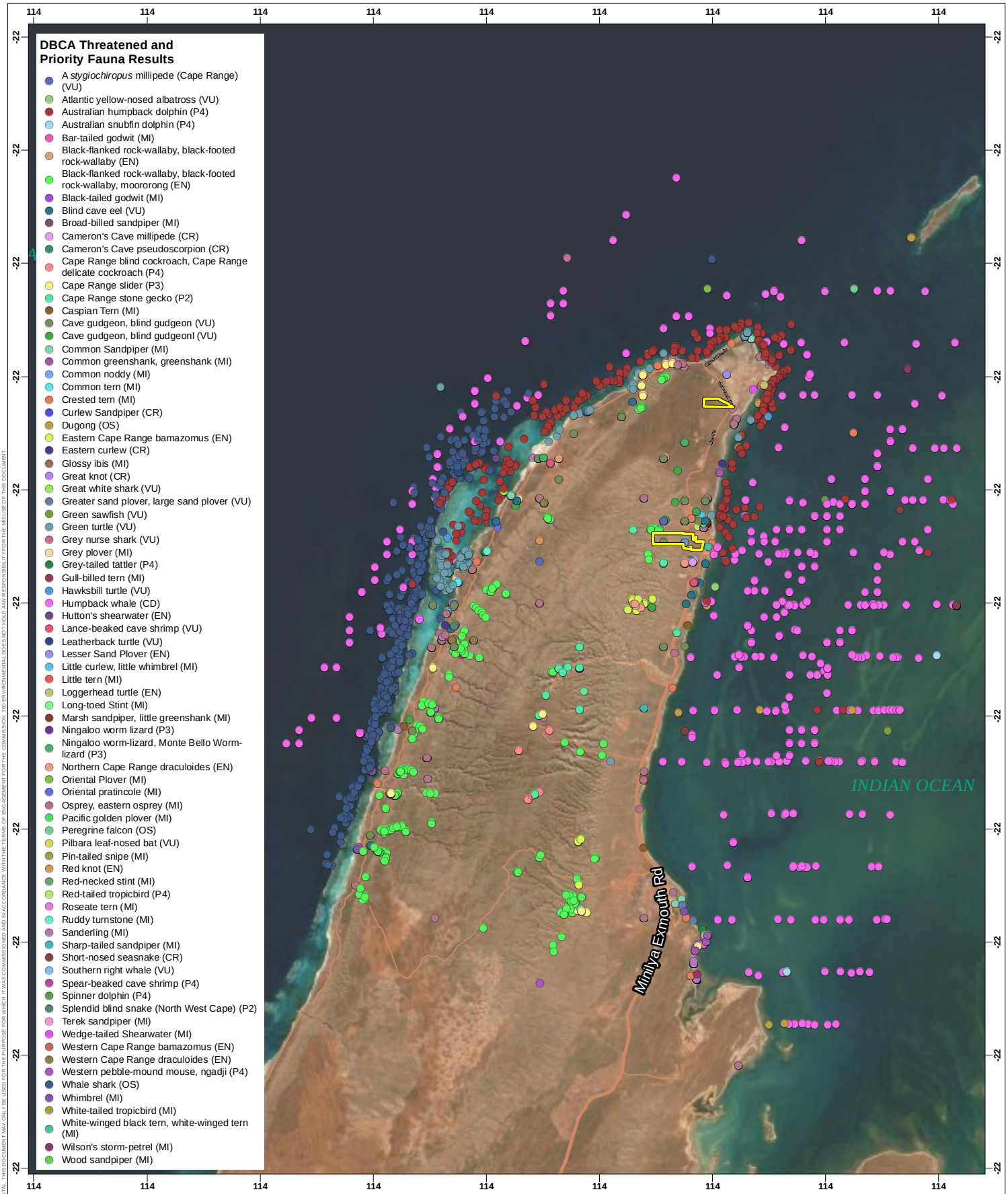
Horizon power

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

Biological Survey

Figure 12b
Vegetation Condition

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F12 Vegetation Condition.mxd



Legend

Survey Boundary

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

N

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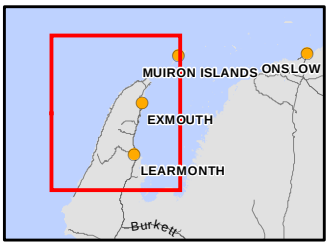
LOCALITY MAP



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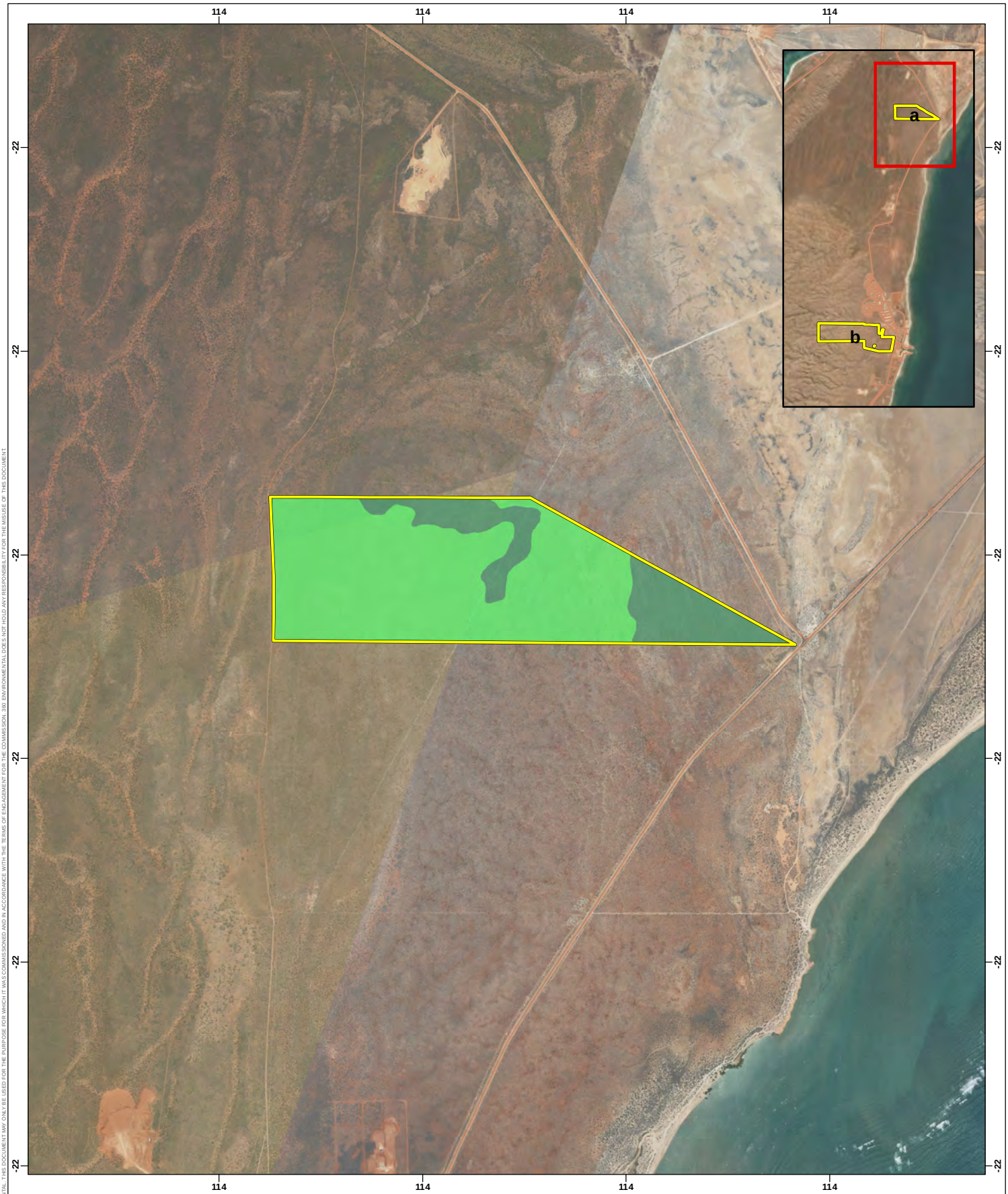
Horizon power
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth
Biological Survey

Figure 13
DBCA Threatened and Priority Flora Locations

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F13 DBCA Threatened and Priority Fauna Locations.mxd



Legend

- Survey Boundary

FaunaHab

- Plains (Shrubland over Tussock Grassland)
- Plains (Shrubland with Atriplex and Frankenia)

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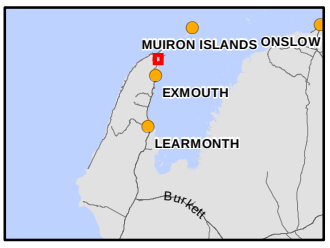
LOCALITY MAP



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LF	BD	BD	0

Horizon power

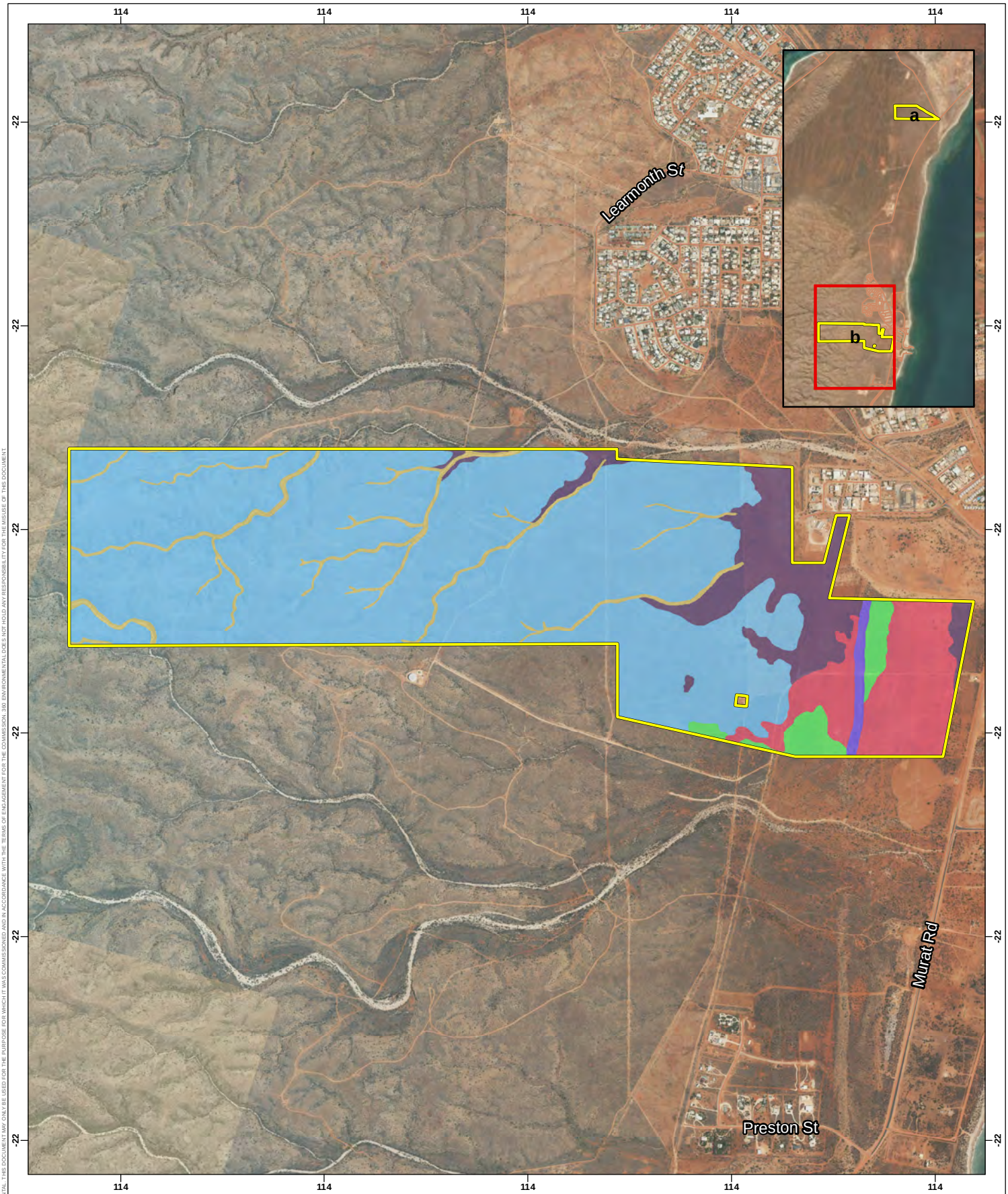
Lot 284, Lot 505, Lot 550, Reserve 51970, Exmouth

Biological Survey

Figure 14a

Fauna Habitat

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F14 Fauna Habitat.mxd



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)

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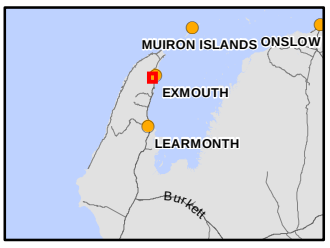
- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



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GCS GDA 1994

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LF	BD	BD	0

Horizon power

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

Biological Survey

Figure 14b

Fauna Habitat

K:\Projects\1.0 EBS\4766 Horizon Exmouth\4766 F14 Fauna Habitat.mxd

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: • Seven relevés	None recorded.	• *Daviesia pleurophylla* (P2) • *Brachychiton obtusilobus* (P4)	None recorded.
Learmonth (Exmouth) Line Rebuild Flora and Fauna Survey (GHD, 2019)	Partially overlapping with Lot 505 and Reserve 51970	May 2019	• Reconnaissance flora and vegetation survey (23 relevés) • Walking traverses	None recorded.	• *Tephrosia* sp. North West Cape (G. Marsh 81) (P2) • *Tinospora esiangkara* (P2) • *Corchorus congener* (P3) • *Eremophila forrestii* subsp. *capensis* (P3)	• **Cenchrus ciliaris* • **Chloris barbata*
Minilya-Exmouth Road Biological Survey, Main Roads WA (GHD, 2016)	2.0 km south of Reserve 51970	October 2015	Detailed flora and vegetation survey: • Twenty-nine quadrats	None recorded	• *Acacia alexandri* (P3) • *Corchorus congener* (P3) • *Owenia acidula* (P3)	• **Aerva javanica* • **Asphodelus fistulosus* • **Avena sativa* • **Bidens bipinnata* • **Cenchrus ciliaris* • **Chenopodium murale* • **Chloris barbata* • **Citrullus lanatus* • **Crotalaria incana* subsp. *incana* • **Cynodon dactylon* • **Flaveria trinervia* • **Lactuca serriola* • **Malvastrum americanum* • **Momordica balsamma* • **Passiflora foetida* • **Salvia verbenaca* • **Sigesbeckia orientalis* • **Solanum nigrum*

Report	Project Area	Survey Timing	Survey Effort	Conservation Significant Ecological Communities	Conservation Significant Flora	Introduced Flora
						• **Sonchus asper* • **Tamarix aphylla* (Declared Pest, WoNS) • **Vachellia farnesiana*
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	• Detailed flora and vegetation survey (46 quadrats) • Targeted flora survey	None recorded.	• *Corchorus congener* (P3)	• **Aerva javanica* • **Bidens subalternans* var. *simulans* • **Cenchrus ciliaris* • **Chenopodium murale* • **Solanum nigrum* • **Sonchus oleraceus* • **Sisymbrium orientale* • **Vachellia farnesiana*

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				
Calytrix sp. Learmonth (S. Fox EMopp 1)		★		✓
P2				
Acacia ryaniana		★		
Acanthocarpus rupestris	★	★		
Calandrinia sp. Cape Range (F. Obbens FO 10/18)	★	★		
Crinum flaccidum			★	
Daviesia pleurophylla	✓	★		
Eremophila occidens	★	★		
Harnieria kempeana subsp. *rhadinophylla*	★	★		
Tephrosia sp. North West Cape (G. Marsh 81)	★	✓		
Tinospora esiangkara	★	✓	★	
Verticordia serotina	★	★		
P3				
Acacia alexandri	★	★	✓	
Acacia startii	★	★		
Corchorus congener	★	✓	✓	✓

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
Eremophila forrestii subsp. *capensis*	★	✓		
Grevillea calcicola	★	★		
Gymnanthera cunninghamii		★		
Helminthostachys zeylanica		★		
Owenia acidula			✓	
Phyllanthus fuernrohrii	★	★		
Stackhousia umbellata	★	★		
P4				
Brachychiton obtusilobus	✓	★		
Eremophila youngii subsp. *lepidota*	★	★		
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	• *Falco peregrinus* (OS) • *Pandion haliaetus* (MI)	• 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	• *Pandion haliaetus* (MI) • *Merops ornatus* (MI)	• 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 *Acacia* 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
Acacia alexandri	3		1.000000	5.3 km west of Exmouth-Miniliya 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 Triodia.		SLOPE					*Acacia bivenosa*	*Acacia bivenosa*			
Acacia alexandri	3		3.000000	Charles Knife Road, 3.8 km west of T-junction with Miniliya 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 Ficus, Cassia, Exocarpus over spinifex.		SLOPE	LIMESTN			E	*Eucalyptus opaca,Acacia pyrifolia,Acacia arida,Acacia bivenosa*	*Eucalyptus opaca*	*Acacia pyrifolia*	*Acacia bivenosa*	*Acacia arida*
Acacia alexandri	3		4.000000	Charles Knife Road, 6.2 km west of T-junction with Miniliya 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. Leptosema sp. over spinifex.			LIMESTN	LOAM	PINK		*Eucalyptus foecunda,Melaleuca cardiophylla,Hibbertia spicata,Grevillea calcicola*	*Eucalyptus foecunda*	*Melaleuca cardiophylla*	*Grevillea calcicola*	*Hibbertia spicata*
Acacia alexandri	3		7.000000	About 8 km south of Exmouth, extending from [Cape Range] limestone Mine, ca 3 km west of Exmouth Miniliya Road, through to the coast (4.6 km).	EXMOUTH	NON	UCL		24/11/1997	N	Shrub-steppe with Acacia pyrifolia, Senna artemisioides ssp. oligophylla.	DRY		LIMESTN	SAND	RED		*Acacia bivenosa,Triodia basedowii,Triodia pungens,Melaleuca cardiophylla*	*Acacia bivenosa*	*Triodia basedowii*	*Melaleuca cardiophylla*	*Triodia pungens*
Acanthocarpus rupestris	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						
Daviesia pleurophylla	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		*Myoporum montanum,Acacia coriacea,Grevillea stenobotrya*	*Myoporum montanum*	*Acacia coriacea*	*Grevillea stenobotrya*	
Grevillea calcicola	3		1.000000	Cape Range National Park (Crown Reserve 27288; Expl. Lic. 081786 Pending, Bauxite Australia). 7 km from main road (Miniliya Exmouth Road), on Charles Knife Road.	EXMOUTH	CC	NPK		30/08/1964	N												
Grevillea calcicola	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 Triodia sp., Atriplex spp., Scaevola spp., amd Sarcostemma sp.		CREST	LIMESTN		RED		*Ficus platypoda*	*Ficus platypoda*			
Tinospora esiangkara	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	*Commicarpus australis,Enchylaena tomentosa,Evolvulus alsinoides*	*Commicarpus australis*	*Evolvulus alsinoides*	*Enchylaena tomentosa*	

Western Australian Herbarium Database Search Results

Taxon	Cons_Code	Plant_Desc	Site	Vegetation	Locality	Date
Acacia alexandri	3	Open bush to 1.5 m.			Shothole Canyon, Exmouth	28/10/1983
Acacia alexandri	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 Eucalyptus opaca (glossy leaves), over very open low scrub Acacia pyrifolia, Ficus, Cassia, Exocarpus spp. with Acacia arida, A. bivenosa 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
Acacia alexandri	3	Open bush to 1.5 m.			Shothole Canyon, Exmouth	9/09/1983
Acacia alexandri	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 Eucalyptus aff. opaca over scrub of Acacia bivenosa, A. pyrifolia, Hibiscus sp., Ipomaea costata and Exocarpus 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
Acacia alexandri	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.	Eucalyptus aff. foecunda OSM over low scrub with Melaleuca ? cardiophylla, Hibbertia spicata, Leptosema sp., Grevillea calcicola 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
Brachychiton obtusilobus	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
Brachychiton obtusilobus	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
Brachychiton obtusilobus	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
Brachychiton obtusilobus	4	Tree 5 m.	In rocky, limestone soil.		Charles Knife Road, Cape Range National Park,	3/05/1977
Corchorus congener	3				Hall Street, Exmouth townsite	26/07/2011
Corchorus congener	3				2 km E of Lighthouse, Exmouth, Cape Range	18/09/1964
Corchorus congener	3	Spreading shrub 35 cm; flowers yellow.	In red loam with limestone.		5-6 miles S of Exmouth	25/05/1965
Corchorus congener	3	Shrub.	Pleistocene deep red sandplains with an adjacent small limestone rise.	Sparse shrubland of Acacia bivenosa, Senna glutinosa subsp. pruinosa over low dense shrubland of A. gregorii and mid-dense hummock grassland of Triodia epactia and T. basedowii. 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
Corchorus congener	3	Shrub.	Coastal plain. Red-brown sandy loam.	Shrubland of Acacia bivenosa and A. sychronicia over hummock grassland of Triodia epactia.	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
Cucumis 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 Cenchrus ciliaris and a tall shrub overstorey of Acacia tetragonophylla.	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
Daviesia pleurophylla	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
Eremophila forrestii subsp. *capensis*	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
Eremophila forrestii subsp. *capensis*	3	Shrub.	Pleistocene deep red sandplains with an adjacent small limestone rise.	Sparse shrubland of Acacia bivenosa, Senna glutinosa subsp. pruinosa over low dense shrubland of A. gregorii and mid-dense hummock grassland of Triodia epactia and T. basedowii. 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
Eremophila youngii subsp. *lepidota*	4	Straggly shrub, 2-2.5 m. Flowers red-pink; leaves narrow, lanceolate, grey.	Red soil.		56 km on Exmouth Road	21/08/1986
Grevillea calcicola	3	Shrub 3-4 m high. Flowers cream.			Cape Range, N of Learmonth	30/08/1960
Grevillea calcicola	3	Shrub 3-4 m high with cream flowers.			Cape Range, N of Learmonth	30/08/1960
Gymnanthera cunninghamii	3	Perennial shrub, 2 m high x 1 m wide. White flowers.	Drainage line and nearby floodplain. Red-brown clay loam over limestone.	Corymbia hamersleyana over Triodia epactia, Triodia angusta and Cenchrus ciliaris.	Within 100 m of Minilya-Exmouth Road, Exmouth	31/10/2016
Stackhousia umbellata	3	Petals bright yellow.	Creek bed in canyon. Limestone rubble.		Shothole Canyon Road	/08/1978
Stackhousia umbellata	3	Shrub.		Shrubland of Hibbertia spicata subsp. spicata over hummock grassland of Triodia wiseana.	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
Tephrosia 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.	Acacia tetragonophylla and A. synchronicia tall shrubland over Triodia epactia and Cenchrus ciliaris grasslands.	Within 100 m of Minilya-Exmouth Road, Exmouth	31/10/2016
Tephrosia 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: Acacia bivenosa, A. gregorii, Triodia sp., Solanum lasiophyllum, S. diversiflorum, Indigofera monophylla, Melaleuca, Senna artemisioides subsp. oligophylla, Corymbia hamersleyana, Eremophila forrestii.	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	0.28440000000
Camerons Cave	Camerons Cave Troglobitic Community	Critically Endangered		500	11.18040000000

Conservation Significant Fauna DBCA Database Search Results

SCI_NAME	COM_NAME	CLASS	WA_LISTING	WA_status	EPBCstatus
Actitis hypoleucos	Common Sandpiper	BIRD	Specially Protected - migratory	MI	MI
Anous stolidus	common noddy	BIRD	Specially Protected - migratory	MI	MI
Ardenna pacifica	Wedge-tailed Shearwater	BIRD	Specially Protected - migratory	MI	MI
Arenaria interpres	Ruddy turnstone	BIRD	Specially Protected - migratory	MI	MI
Calidris acuminata	Sharp-tailed sandpiper	BIRD	Specially Protected - migratory	MI	MI
Calidris alba	Sanderling	BIRD	Specially Protected - migratory	MI	MI
Calidris canutus	Red knot	BIRD	Threatened - Endangered	EN	EN
Calidris ferruginea	Curlew Sandpiper	BIRD	Threatened - Critically endangered	CR	CR
Calidris ruficollis	Red-necked stint	BIRD	Specially Protected - migratory	MI	MI
Calidris subminuta	Long-toed Stint	BIRD	Specially Protected - migratory	MI	MI
Calidris tenuirostris	Great knot	BIRD	Threatened - Critically endangered	CR	CR
Charadrius leschenaultii	Greater sand plover, large sand plover	BIRD	Threatened - Vulnerable	VU	MI
Charadrius mongolus	Lesser Sand Plover	BIRD	Threatened - Endangered	EN	EN
Charadrius veredus	Oriental Plover	BIRD	Specially Protected - migratory	MI	MI
Chlidonias leucopterus	White-winged black tern, white-winged tern	BIRD	Specially Protected - migratory	MI	MI
Falco peregrinus	Peregrine falcon	BIRD	Specially Protected - other specially protected	OS	
Gallinago stenura	Pin-tailed snipe	BIRD	Specially Protected - migratory	MI	MI
Gelochelidon nilotica	Gull-billed tern	BIRD	Specially Protected - migratory	MI	MI
Glareola maldivarum	Oriental pratincole	BIRD	Specially Protected - migratory	MI	MI
Hydroprogne caspia	Caspian Tern	BIRD	Specially Protected - migratory	MI	MI
Limicola falcinellus	Broad-billed sandpiper	BIRD	Specially Protected - migratory	MI	MI
Limosa lapponica	Bar-tailed godwit	BIRD	Specially Protected - migratory	MI	MI
Limosa limosa	Black-tailed godwit	BIRD	Specially Protected - migratory	MI	MI
Numenius madagascariensis	Eastern curlew	BIRD	Threatened - Critically endangered	CR	CR
Numenius minutus	Little curlew, little whimbrel	BIRD	Specially Protected - migratory	MI	MI
Numenius phaeopus	Whimbrel	BIRD	Specially Protected - migratory	MI	MI
Oceanites oceanicus	Wilson's storm-petrel	BIRD	Specially Protected - migratory	MI	MI
Pandion cristatus	Osprey, eastern osprey	BIRD	Specially Protected - migratory	MI	MI
Phaethon lepturus	White-tailed tropicbird	BIRD	Specially Protected - migratory	MI	MI
Phaethon rubricauda	Red-tailed tropicbird	BIRD	Priority	P4	MI
Plegadis falcinellus	Glossy ibis	BIRD	Specially Protected - migratory	MI	MI
Pluvialis fulva	Pacific golden plover	BIRD	Specially Protected - migratory	MI	MI
Pluvialis squatarola	Grey plover	BIRD	Specially Protected - migratory	MI	MI
Puffinus huttoni	Hutton's shearwater	BIRD	Threatened - Endangered	EN	
Sterna dougallii	Roseate tern	BIRD	Specially Protected - migratory	MI	MI
Sterna hirundo	Common tern	BIRD	Specially Protected - migratory	MI	MI
Sternula albifrons	Little tern	BIRD	Specially Protected - migratory	MI	MI
Thalassarche chlororhynchos	Atlantic yellow-nosed albatross	BIRD	Threatened - Vulnerable	VU	MI
Thalasseus bergii	Crested tern	BIRD	Specially Protected - migratory	MI	MI
Tringa brevipes	Grey-tailed tattler	BIRD	Priority	P4	MI
Tringa glareola	Wood sandpiper	BIRD	Specially Protected - migratory	MI	MI
Tringa nebularia	Common greenshank, greenshank	BIRD	Specially Protected - migratory	MI	MI
Tringa stagnatilis	Marsh sandpiper, little greenshank	BIRD	Specially Protected - migratory	MI	MI
Xenus cinereus	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
Dugong dugon	Dugong	MAMMAL	Specially Protected - other specially protected	OS	
Eubalaena australis	Southern right whale	MAMMAL	Threatened - Vulnerable	VU	EN
Megaptera novaeangliae	Humpback whale	MAMMAL	Specially Protected - conservation dependent	CD	VU
Orcaella heinsohni	Australian snubfin dolphin	MAMMAL	Priority	P4	MI
Petrogale lateralis lateralis	black-flanked rock-wallaby, black-footed rock-wallaby, moororong	MAMMAL	Threatened - Endangered	EN	EN
Pseudomys chapmani	Western pebble-mound mouse, ngadji	MAMMAL	Priority	P4	
Rhinonicteris aurantia (Pilbara)	Pilbara leaf-nosed bat	MAMMAL	Threatened - Vulnerable	VU	VU
Sousa sahulensis	Australian humpback dolphin	MAMMAL	Priority	P4	MI
Stenella longirostris	Spinner dolphin	MAMMAL	Priority	P4	MI
Aipysurus apraefrontalis	Short-nosed seasnake	REPTILE	Threatened - Critically endangered	CR	CR
Anilios splendidus	splendid blind snake (North West Cape)	REPTILE	Priority	P2	
Aprasia rostrata	Ningaloo worm lizard	REPTILE	Priority	P3	
Caretta caretta	loggerhead turtle	REPTILE	Threatened - Endangered	EN	EN
Chelonia mydas	Green turtle	REPTILE	Threatened - Vulnerable	VU	VU
Dermochelys coriacea	leatherback turtle	REPTILE	Threatened - Vulnerable	VU	EN
Diplodactylus capensis	Cape Range stone gecko	REPTILE	Priority	P2	
Eretmochelys imbricata	Hawksbill turtle	REPTILE	Threatened - Vulnerable	VU	VU
Lerista allochira	Cape Range slider	REPTILE	Priority	P3	

NatureMap
Mapping Western Australia's biodiversity

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

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

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

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

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

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

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

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

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

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

NatureMap
Mapping Western Australia's biodiversity

NatureMap Species Report

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1147.	25526	*Varanus tristis (Racehorse Monitor)*			
1148.		*Velifer hypselopterus*			
1149.		*Velifer sp.*			
1150.	24205	*Vespadelus finlaysoni (Finlayson's Cave Bat)*			
1151.		*Wandella waldockae*			
1152.		*Wesmaldra learmonth*			
1153.		*Wydundra kennedy*			
1154.		*Xenojulis margaritaceous*			
1155.		*Xiphasia setifer*			
1156.		*Yardiella humphreysi*			Y
1157.		*Yongeichthys criniger*			Y
1158.		*Yongeichthys nebulosus*			
1159.		*Zabidius novemaculeatus*			
1160.		*Zebrasoma scopas*			
1161.		*Zebrias cancellatus*			
1162.		*Zebrias quagga*			
1163.		*Zephyrichthys barryi*			
1164.	25765	*Zosterops lateralis (Grey-breasted White-eye, Silvereye)*			
1165.	24857	*Zosterops luteus (Yellow White-eye)*			
1166.		*Zosterops luteus subsp. balstoni*			
1167.	24248	*Zyzomys argurus (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 wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

Australian Government

Department of Agriculture, Water and the Environment

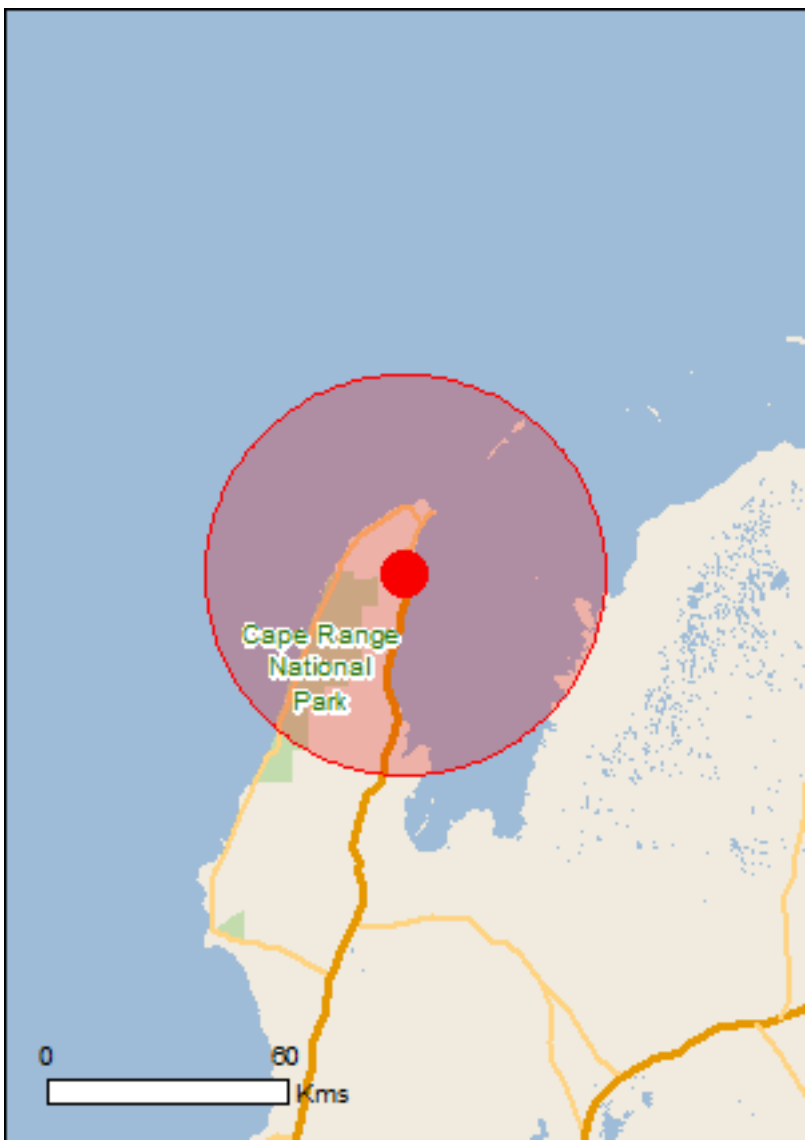
EPBC Act Protected Matters Report

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



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, Mororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area
Rhinonicteris 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
		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	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
		habitat likely to 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
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
		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	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]		habitat likely to occur within area
[Puffinus pacificus](#) Wedge-tailed Shearwater [1027]		Breeding known to 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 Albatross [64459]	Vulnerable	Species or species 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

Name	Threatened	Type of Presence
		area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus 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 Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
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 (Marine) [Resource Information]

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.

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

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

Species	Conservation Status		Source			Distance to Nearest Record (km)	Flowering Period	Prefered Habitat	Habitat occurs within the Survey Area	Pre-Survey Likelihood of Occurrence	Post-Survey Likelihood of Occurrence
	DBCA	EPBC	NatureMap	PMST	DBCA						
Grevillea calcicola	P3		X		X	3.7	Aug, Sep	Limestone hilltops.[2]	Yes	High	Recorded
Gymnanthera cunninghamii	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
Helminthostachys zeylanica	P3		X			18.4	May	Black peat. Shady sites in gallery forest, margins of creek.[2]	No	Low	Low
Lygodium flexuosum	P3		X			33.2	Mar or Jun - Aug	Sand. Damp, shaded sites near rocky cliffs and gorges.[2]	No	Low	Low
Phyllanthus fuernrohrii	P3		X			5.4	Feb and May - Sept	Sand over limestone, creek beds, limestone cliffs.[2]	Yes	High	High
Stackhousia umbellata	P3		X		X	3.7	May - Aug	Sandy soils on limestone.[2]	Yes	High	High
Brachychiton obtusilobus	P4		X		X	1.1	Aug - Sep	Skeletal soils. Rocky limestone ranges, gorges, occasionally sandplains.[2]	Yes	Medium	Recorded
Eremophila youngii subsp. lepidota	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

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

Appendix D
Inventory of Vascular Flora

Appendix: Inventory of Vascular Flora

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

Appendix: Inventory of Vascular Flora

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

Appendix: Inventory of Vascular Flora

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

Appendix: Inventory of Vascular Flora

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

Appendix: Inventory of Vascular Flora

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

Appendix: Inventory of Vascular Flora

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

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
Acacia coriacea subsp. coriacea	400	0.1	
Acacia tetragonophylla	300	9	
**Bidens bipinnata*	40	0.1	
**Cenchrus ciliaris*	75	35	
**Cenchrus setiger*	70	0.1	
Convolvulus clementii	40	0.1	
Corymbia hamersleyana	300	2	
Cucumis variabilis	30	0.1	
Cullen cinereum	150	11	
Eragrostis leptocarpa	30	0.1	
Erodium cygnorum	30	2	
Euphorbia biconvexa	35	0.1	
Glycine canescens	150	0.1	
Haloragis gossei var. inflata	30	0.1	
Ipomoea costata	300	2	
Ipomoea muelleri	10	0.1	
Lotus cruentus	20	0.1	
**Malvastrum americanum*	50	0.1	
Nicotiana occidentalis	30	0.1	
Ptilotus xerophilus	70	0.1	
Rhynchosia minima	160	5	
Roebuckiella oncocarpa	15	0.1	
Senna artemisioides subsp. oligophylla	120	0.1	
**Sigesbeckia orientalis*	120	0.1	
Solanum lasiophyllum	10	0.1	
Swainsona pterostylis	30	2	
Trichodesma zeylanicum var. zeylanicum	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
Acacia synchronicia	450	12	
**Aerva javanica*	20	0.1	
Calotis plumulifera	20	0.1	
**Cenchrus ciliaris*	30	80	
**Chloris pumilio*	60	0.1	
Erodium cygnorum	20	0.1	
Euphorbia biconvexa	10	0.1	
Euphorbia boophthona	60	0.1	
Goodenia tenuiloba	30	0.1	
Indigofera colutea	10	0.1	
Ptilotus helipteroides	40	0.1	
Ptilotus xerophilus	50	1	
Rhagodia baccata	60	0.1	
Salsola australis	40	0.5	
Setaria dielsii	40	0.1	
**Setaria verticillata*	30	0.1	
Solanum lasiophyllum	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
Abutilon lepidum	40	0.1	
Acacia bivenosa	150	0.5	
Acacia pyrifolia var. pyrifolia	10	0.1	
Afrohybanthus aurantiacus	10	0.1	
Alectryon oleifolius subsp. oleifolius	150	0.1	
Amyema preisii	100	0.1	
**Bidens bipinnata*	50	0.1	
Calandrinia ptychosperma	5	0.1	
**Cenchrus ciliaris*	30	15	
Corchorus crozophorifolius	100	1	
Corymbia hamersleyana	450	3	
Dipteracanthus australasicus subsp. australasicus	10	0.1	
Dysphania melanocarpa forma leucocarpa	10	0.1	
Enchylaena tomentosa var. tomentosa	20	0.1	
Enneapogon caerulescens	25	0.1	
Eremophila forrestii subsp. capensis	15	0.1	P3
Eremophila latrobei subsp. latrobei	20	0.1	
Erodium cygnorum	5	0.1	
Evolvulus alsinoides var. villosicalyx	15	0.1	
Goodenia microptera	30	0.1	
Gossypium robinsonii	250	0.1	
Hakea lorea subsp. lorea	150	0.1	
Indigofera colutea	10	0.1	
Indigofera monophylla	30	0.1	
Ipomoea costata	20	0.1	
Maireana tomentosa subsp. tomentosa	50	0.1	
Melhania oblongifolia	10	0.1	
Nicotiana occidentalis	20	0.1	
Paspalidium clementii	20	0.1	
Phyllanthus maderaspatensis	20	0.1	
Portulaca oleracea	5	0.1	
Ptilotus obovatus var. obovatus	80	5	
Senna glutinosa subsp. glutinosa	130	0.1	
Senna glutinosa subsp. pruinosa	180	3	
Solanum diversiflorum	20	0.1	
Solanum lasiophyllum	20	0.1	
**Sonchus oleraceus*	50	0.1	
Stenopetalum pedicellare	10	0.1	
Trichodesma zeylanicum var. zeylanicum	60	0.1	
Triodia epactia	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
Acacia bivenosa	100	0.1	
Acacia colei var. colei	160	0.1	
Calandrinia ptychosperma	5	0.1	
**Cenchrus ciliaris*	50	40	
Convolvulus clementii	10	0.1	
Corymbia hamersleyana	550	1	
**Crotalaria incana subsp. incana*	160	0.1	
Crotalaria medicaginea var. neglecta	40	0.1	
Cullen cinereum	60	0.1	
Cullen pogonocarpum	60	0.1	
**Datura leichhardtii subsp. leichhardtii*	50	0.1	
Dysphania rhadinostachya subsp. rhadinostachya	20	0.1	
Eragrostis dielsii	5	0.1	
Erodium cygnorum	10	0.1	
Glycine canescens	30	0.1	
Goodenia microptera	40	0.1	
Hakea lorea subsp. lorea	250	0.1	
Haloragis gossei var. inflata	30	0.1	
Heliotropium crispatum	30	0.1	
Heliotropium diversifolium	20	0.1	
Heliotropium inexplicitum	10	0.1	
Indigofera colutea	20	0.1	
Indigofera linifolia	20	0.1	
Ipomoea muelleri	10	0.1	
**Malvastrum americanum*	100	0.1	
Notoleptopus decaisnei	10	0.1	
Polygala glaucifolia	5	0.1	
Ptilotus exaltatus	100	0.1	
Ptilotus helipteroides	30	0.1	
Ptilotus polystachyus	40	0.1	
Ptilotus xerophilus	50	0.1	
Rhynchosia minima	10	0.1	
Salsola australis	50	0.1	
Sida fibulifera	10	0.1	
Sida kingii	50	0.1	
Solanum lasiophyllum	60	0.1	
Streptoglossa bubakii	70	0.1	
Swainsona pterostylis	50	15	
Tribulus hirsutus	5	0.1	
Trichodesma zeylanicum var. zeylanicum	100	0.1	
Triodia epactia	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
Abutilon lepidum	60	0.1	
Acacia bivenosa	200	6	
Acacia pyrifolia var. pyrifolia	200	0.1	
Acacia synchronicia	300	8	
**Cenchrus ciliaris*	20	9	
Chrysopogon fallax	90	0.1	
Convolvulus clementii	150	0.1	
Corchorus congener	15	0.1	P3
Eragrostis dielsii	5	0.1	
Eremophila longifolia	180	0.5	
Erodium cygnorum	10	0.1	
Euphorbia boophthona	30	0.1	
Euphorbia sharkoensis	5	0.1	
Evolvulus alsinoides var. villosicalyx	15	0.1	
Glycine canescens	20	0.1	
Goodenia microptera	20	0.1	
Haloragis gossei var. inflata	50	0.1	
Heliotropium crispatum	10	0.1	
Hibiscus sturtii var. grandiflorus	20	0.1	
Indigofera colutea	10	0.1	
Indigofera monophylla	20	0.1	
Ipomoea costata	180	0.1	
Nicotiana occidentalis	70	0.1	
Paspalidium clementii	20	0.1	
Phyllanthus maderaspatensis	20	0.1	
Pterocaulon sphacelatum	15	0.1	
Ptilotus helipteroides	30	0.1	
Ptilotus xerophilus	40	0.1	
Rhynchosia minima	10	0.1	
Roebuckiella oncocarpa	10	0.1	
Senna artemisioides subsp. oligophylla	110	0.1	
Solanum diversiflorum	10	0.1	
Solanum lasiophyllum	30	0.1	
Swainsona pterostylis	40	5	
Tribulus hirsutus	5	0.1	
Trichodesma zeylanicum var. zeylanicum	180	0.1	
Triodia epactia	40	20	
Triraphis mollis	50	0.1	
Waltheria indica	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
Dolichocarpa crouchiana	15	0.1	
Euphorbia biconvexa	10	0.1	
Goodenia microptera	40	0.1	
Haloragis gossei var. inflata	20	0.1	
Hibiscus sp. Gardneri (A.L. Payne PRP 1435)	15	0.1	
Leptosema macrocarpum	30	0.1	
Melaleuca cardiophylla	160	9	
Polygala glaucifolia	5	0.1	
Ptilotus xerophilus	20	0.1	
Roepera retivalvis	20	0.1	
Senna artemisioides subsp. oligophylla	50	0.1	
Solanum diversiflorum	10	0.1	
Triodia glabra	30	15	
Triodia wiseana	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 wisena low hummock grassland over Goodenia microptera low sparse herbland*

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

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Abutilon lepidum	15	0.1	
Acacia bivenosa	10	0.1	
Acacia tetragonophylla	30	0.1	
Dolichocarpa crouchiana	5	0.1	
Eremophila forrestii subsp. forrestii	70	0.1	
Goodenia microptera	30	1	
Haloragis gossei var. inflata	10	0.1	
Heliotropium crispatum	5	0.1	
Indigofera monophylla	15	0.1	
Leptosema macrocarpum	30	0.1	
Melaleuca cardiophylla	120	8	
Paspalidium clementii	5	0.1	
Phyllanthus exilis	10	0.1	
Polygala glaucifolia	5	0.1	
Roepera retivalvis	15	0.1	
Senna artemisioides subsp. oligophylla	5	0.1	
Solanum diversiflorum	10	0.1	
Stackhousia sp. Mid west coastal (D & B Bellairs 6561	20	0.1	
Triodia glabra	40	0.1	
Triodia wiseana	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
Acacia alexandri	350	0.1	P3
Acacia arida	300	35	
Acacia pyrifolia var. pyrifolia	250	0.1	
Acacia tetragonophylla	120	0.1	
Afrohybanthus aurantiacus	10	0.1	
Arivela viscosa	20	0.1	
**Bidens bipinnata*	40	0.1	
Corchorus crozophorifolius	70	0.1	
Corymbia hamersleyana	450	2	
Cymbopogon ambiguus	70	0.1	
Dicladanthera forrestii	20	0.1	
Dipteracanthus australasicus subsp. australasicus	10	0.1	
Dodonaea viscosa subsp. mucronata	200	0.5	
Dolichocarpa crouchiana	10	0.1	
Goodenia microptera	20	0.1	
Gossypium robinsonii	200	1	
Indigofera monophylla	10	0.1	
Jasminum didymum subsp. lineare	30	0.1	
Melaleuca cardiophylla	160	0.1	
Paspalidium tabulatum	30	0.1	
Phyllanthus exilis	10	0.1	
Senna artemisioides subsp. oligophylla	50	1	
**Sigesbeckia orientalis*	40	0.1	
Stackhousia sp. Mid west coastal (D & B Bellairs 6561	10	0.1	
Tephrosia rosea var. clementii	40	0.5	
Trichodesma zeylanicum var. zeylanicum	50	0.1	
Triodia epactia	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 xerothermica 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
Abutilon lepidum	10	0.1	
Acacia alexandri	350	2	P3
Acacia arida	240	4	
Acacia bivenosa	150	0.1	
Acacia pyrifolia var. pyrifolia	450	2	
Acacia sericophylla	250	0.1	
Acacia tetragonophylla	200	0.1	
Acanthocarpus preissii	130	0.1	
Afrohybanthus aurantiacus	10	0.1	
Aristida nitidula	40	0.1	
**Bidens bipinnata*	50	0.1	
Capparis mitchellii	20	0.1	
Cheilanthes austrotenuifolia	10	0.1	
Corchorus crozophorifolius	20	0.1	
Cucumis variabilis	10	0.1	
Cymbopogon ambiguus	70	0.1	
Dicladanthera forrestii	10	0.1	
Dodonaea viscosa subsp. mucronata	300	8	
Dolichocarpa crouchiana	20	0.1	
Duperreya commixta	220	0.1	
Eucalyptus xerothermica	400	12	
Euphorbia sharkoensis	5	0.1	
Euphorbia tannensis subsp. eremophila	10	0.1	
Glycine canescens	180	0.1	
Goodenia tenuiloba	40	0.1	
Gossypium robinsonii	10	0.1	
Grevillea calcicola	30	0.1	P3
Haloragis gossei var. inflata	20	0.1	
Harnieria kempeana subsp. rhadinophylla	10	0.1	P2
Hibbertia capensis	50	0.1	
Indigofera monophylla	20	0.1	
Ipomoea costata	250	0.1	
Jasminum didymum subsp. lineare	150	1	
**Malvastrum americanum*	20	0.1	
Melaleuca cardiophylla	150	0.1	
Melhania oblongifolia	30	0.1	
Nicotiana occidentalis	40	0.1	
Olearia sp. Kennedy Range (G.Byrne 66)	250	0.1	
Paspalidium basicladum	20	0.1	
Peripleura arida	40	0.1	
Phyllanthus maderaspatensis	30	0.1	
Pluchea dentex	10	0.1	
Polygala glaucifolia	5	0.1	
Rhynchosia minima	10	0.1	
**Rumex vesicarius*	30	0.1	
Senna ferraria	150	0.1	

Taxon	Height (cm)	Cover (%)	Notes
Sida rohlenae subsp. rohlenae	10	0.1	
**Sigesbeckia orientalis*	50	0.1	
Solanum lasiophyllum	40	0.1	
**Sonchus oleraceus*	30	0.1	
Stemodia viscosa	10	0.1	
Tinospora esiangkara	5	0.1	P2
Trichodesma zeylanicum var. zeylanicum	120	1	
Triodia epactia	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
Acacia arida	140	2	
Acacia bivenosa	190	0.1	
Acacia pyrifolia var. pyrifolia	180	1	
Acacia tetragonophylla	30	0.1	
Corymbia hamersleyana	200	0.1	
Dichanthium sericeum subsp. humilius	20	0.1	
Dolichocarpa crouchiana	15	0.1	
Eremophila forrestii subsp. capensis	70	0.1	P3
Euphorbia boophthona	10	0.1	
Euphorbia sharkoensis	5	0.1	
Goodenia tenuiloba	40	0.5	
Haloragis gossei var. inflata	20	0.1	
Herb sp.	10	0.1	
Indigofera monophylla	10	0.1	
Leptosema macrocarpum	40	0.1	
Melaleuca cardiophylla	140	3	
Paspalidium clementii	30	0.1	
Phyllanthus erwinii	5	0.1	
Podolepis aristata subsp. aristata	20	0.1	
Senna glutinosa subsp. glutinosa	50	0.1	
Solanum diversiflorum	20	0.1	
Solanum lasiophyllum	40	0.1	
Stackhousia sp. Mid west coastal (D & B Bellairs 6561	15	0.1	
Tribulus suberosus	20	0.1	
Triodia wiseana	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 viminale 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
Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)	40	0.1	
Acacia bivenosa	30	0.1	
Acacia sericophylla	200	0.1	
Acacia tetragonophylla	160	2	
Acanthocarpus verticillatus	60	0.1	
Afrohybanthus aurantiacus	30	0.1	
Aristida contorta	15	0.1	
Aristida holathera var. holathera	30	0.1	
Arivela viscosa	30	0.1	
**Bidens bipinnata*	40	0.1	
Bulbostylis barbata	15	0.1	
**Cenchrus ciliaris*	40	6	
Chrysopogon fallax	70	0.1	
Corchorus congener	20	0.1	P3
Cucumis variabilis	140	0.1	
Cynanchum viminale subsp. australe	90	1	
Dichanthium sericeum subsp. humilius	20	0.1	
Dolichocarpa crouchiana	10	0.1	
Duperreya commixta	100	0.1	
Dysphania rhadinostachya subsp. rhadinostachya	20	0.1	
Enchylaena tomentosa var. tomentosa	100	0.1	
Enneapogon caerulescens	15	0.1	
Eragrostis cumingii	8	0.1	
Eragrostis eriopoda	30	0.1	
Eremophila forrestii	120	0.1	
Eriachne aristidea	60	0.1	
Eriachne mucronata	40	1	
Erodium cygnorum	10	0.1	
Euphorbia boophthona	20	0.1	
Euphorbia sharkoensis	10	0.1	
Euphorbia trigonosperma	10	0.1	
Evolvulus alsinoides var. villosicalyx	10	0.1	
Exocarpos aphyllus	110	1	
Goodenia tenuiloba	30	2	
Grevillea variifolia var. variifolia	160	0.1	
Gyrostemon ramulosus	170	1	
Hakea chordophylla	230	0.1	
Haloragis gossei var. inflata	20	0.1	
Hannafordia quadrivalvis subsp. recurva	60	0.1	
Heliotropium crispatum	20	0.1	
Heliotropium glanduliferum	20	0.1	
Heliotropium inexplicitum	15	0.1	
Hibiscus sturtii var. platychlamys	30	0.1	
Indigofera colutea	10	0.1	
Indigofera linifolia	10	0.1	
Indigofera monophylla	20	0.1	

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

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

SPECIES LIST

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

Appendix F
Threaten and Priority Flora Report Forms

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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: Acacia alexandri **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.943408389999998 No. satellites: Map used:

WGS84 **Long / Easting:** 114.0939599 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive				2
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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	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** ☐

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Threatened and Priority Flora Report Form

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TAXON: Acacia alexandri **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.943652790000002 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09800769 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**	
Alive				4	Area of pop (m^2):
Dead					Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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

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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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	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,
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Version 1.3 August 2017

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TAXON: Acacia alexandri **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.947047600000001 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09824620000001 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				2
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
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HABITAT INFORMATION:

LANDFORM:	**ROCK TYPE:**	**LOOSE ROCK:**	**SOIL TYPE:**	**SOIL COLOUR:**	**DRAINAGE:**
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Ridge	Laterite	0-10%	Loam	Yellow	inundated
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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	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,
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Version 1.3 August 2017

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TAXON: Acacia alexandri **TPFL Pop. No:**

OBSERVATION DATE: 26/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.9510164 No. satellites: Map used:

WGS84 **Long / Easting:** 114.0942007 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive				3
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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	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.

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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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TAXON: Acacia alexandri **TPFL Pop. No:**

OBSERVATION DATE: 26/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.9492887 No. satellites: Map used:

WGS84 **Long / Easting:** 114.1083404 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive				7
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

Please return completed form to **Species And Communities Branch** DBCA,
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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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	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

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

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GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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TAXON: Acanthocarpus rupestris **TPFL Pop. No:**

OBSERVATION DATE: 22/8/2021 **CONSERVATION STATUS:** P2 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.94762514 No. satellites: Map used:

WGS84 **Long / Easting:** 114.10538529999999 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				5
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

Please return completed form to **Species And Communities Branch** DBCA,
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RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

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

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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	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: _____

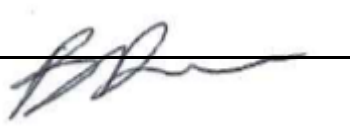
OTHER COMMENTS: (Please include recommended management actions and/or implemented actions – include date. Also include details of additional data available, and how to locate it.)

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

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TAXON: Brachychiton obstusilobus **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P4 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.9437672 No. satellites: Map used:

WGS84 **Long / Easting:** 114.0930879 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

HABITAT INFORMATION:

LANDFORM:	**ROCK TYPE:**	**LOOSE ROCK:**	**SOIL TYPE:**	**SOIL COLOUR:**	**DRAINAGE:**
Crest	Granite	(on soil surface; eg gravel, quartz fields)	Sand	Red	Well drained
Hill	Dolerite		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

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TAXON: Brachychiton obstusilobus **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P4 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.944466500000001 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09432080000001 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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	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,
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GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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TAXON: Brachychiton obstusilobus **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P4 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.947700900000001 No. satellites: Map used:

WGS84 **Long / Easting:** 114.0939623 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

Please return completed form to **Species And Communities Branch** DBCA,
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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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

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

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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TAXON: Brachychiton obstusilobus **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P4 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.94819167 No. satellites: Map used:

WGS84 **Long / Easting:** 114.10233762999999 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

Please return completed form to **Species And Communities Branch** DBCA,
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RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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

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GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

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TAXON: Brachychiton obstusilobus **TPFL Pop. No:**

OBSERVATION DATE: 22/8/2021 **CONSERVATION STATUS:** P4 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.949670309999998 No. satellites: Map used:

WGS84 **Long / Easting:** 114.10527007 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:

	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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GOVERNMENT OF WESTERN AUSTRALIA

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Version 1.3 August 2017

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	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 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

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TAXON: Brachychiton obstusilobus **TPFL Pop. No:**

OBSERVATION DATE: 26/8/2021 **CONSERVATION STATUS:** P4 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.948088590000001 No. satellites: Map used:

WGS84 **Long / Easting:** 114.10878669 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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

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

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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: Brachychiton obstusilobus **TPFL Pop. No:**

OBSERVATION DATE: 26/8/2021 **CONSERVATION STATUS:** P4 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.955808000000001 No. satellites: Map used:

WGS84 **Long / Easting:** 114.124487 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

Please return completed form to **Species And Communities Branch** DBCA,
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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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,
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GOVERNMENT OF WESTERN AUSTRALIA

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TAXON:	Corchorus congener		**TPFL Pop. No:**
OBSERVATION DATE:	21/8/2021	**CONSERVATION STATUS:** P3	New population: ☒
OBSERVER/S	Bridget Duncan, Ben Eckermann, Jason Webb	**PHONE:**	9388 8360
ROLE:	Botanist	**ORGANISATION:**	360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.836577999999999 No. satellites: Map used:

WGS84 **Long / Easting:** 114.124487 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size 50x50 Data attached ☒ Total area of quadrats (m^2): 2500

Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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. 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

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TAXON: Corchorus congener **TPFL Pop. No:**

OBSERVATION DATE: 25/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.943661209999998 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09329459 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size 50x50 Data attached ☒ Total area of quadrats (m^2): 2500

Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

Please return completed form to **Species And Communities Branch** DBCA,
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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

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Version 1.3 August 2017

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. 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

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TAXON: Eremophila forrestii subsp. capensis **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.94385832 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09303996 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**	
Alive				6	Area of pop (m^2):
Dead					Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

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Version 1.3 August 2017

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 ☒	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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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TAXON: Eremophila forrestii subsp. capensis **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.94380275 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09837443000001 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive				10
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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 ☒	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

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TAXON: Eremophila forrestii subsp. capensis **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.946906859999999 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09803087 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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 ☒	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,
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TAXON: Eremophila forrestii subsp. capensis **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.949204009999999 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09223316000001 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				2
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

Please return completed form to **Species And Communities Branch** DBCA,
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GOVERNMENT OF WESTERN AUSTRALIA

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Version 1.3 August 2017

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 ☒	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

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TAXON: Eremophila forrestii subsp. capensis **TPFL Pop. No:**

OBSERVATION DATE: 26/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.950277700000001 No. satellites: Map used:

WGS84 **Long / Easting:** 114.10426645 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				4
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
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HABITAT INFORMATION:

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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 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.)

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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

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Threatened and Priority Flora Report Form

Version 1.3 August 2017

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: Eremophila forrestii subsp. capensis **TPFL Pop. No:**

OBSERVATION DATE: 26/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.949595599999999 No. satellites: Map used:

WGS84 **Long / Easting:** 114.10872307 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive				10
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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 ☒	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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

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TAXON: Eremophila forrestii subsp. capensis **TPFL Pop. No:**

OBSERVATION DATE: 26/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.9445546 No. satellites: Map used:

WGS84 **Long / Easting:** 114.1138495 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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

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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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 ☒	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.

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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

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Version 1.3 August 2017

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TAXON: Eremophila forrestii subsp. capensis **TPFL Pop. No:**

OBSERVATION DATE: 21/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.953305 No. satellites: Map used:

WGS84 **Long / Easting:** 114.126633 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**	
Alive				1	Area of pop (m^2):
Dead					Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size 50x50 Data attached ☒ Total area of quadrats (m^2): 2500

Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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 ☒	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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

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Version 1.3 August 2017

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TAXON:	Grevillea calcicola		**TPFL Pop. No:**
OBSERVATION DATE:	24/8/2021	**CONSERVATION STATUS:** P3	New population: ☒
OBSERVER/S	Bridget Duncan, Ben Eckermann, Jason Webb	**PHONE:**	9388 8360
ROLE:	Botanist	**ORGANISATION:**	360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):
Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.9506525 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09449745000001 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve | Timber reserve | Private property | Rail reserve | Shire road reserve

National park | State forest | Pastoral lease | MRWA road reserve | Other Crown reserve

Conservation park | Water reserve | UCL ☒ | SLK/Pole to | Specify other:

AREA ASSESSMENT: Edge survey | Partial survey ☒ | Full survey | Area observed (m^2):

EFFORT: Time spent surveying (minutes): | No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ | Extrapolation | Estimate | Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ | Clumps | Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:

	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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** ☐

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GOVERNMENT OF WESTERN AUSTRALIA

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Version 1.3 August 2017

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 ☒	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,
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Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ☐

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TAXON: Grevillea calcicola **TPFL Pop. No:**

OBSERVATION DATE: 23/8/2021 **CONSERVATION STATUS:** P3 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.94389485 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09879017999999 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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 ☒	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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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TAXON:	Grevillea calcicola		**TPFL Pop. No:**
OBSERVATION DATE:	22/8/2021	**CONSERVATION STATUS:** P3	New population: ☒
OBSERVER/S	Bridget Duncan, Ben Eckermann, Jason Webb	**PHONE:**	9388 8360
ROLE:	Botanist	**ORGANISATION:**	360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):
Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.948183109999999 No. satellites: Map used:

WGS84 **Long / Easting:** 114.10233971 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				2
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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 ☒	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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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TAXON:	Harnieria kempeana subsp. rhadinophylla		**TPFL Pop. No:**
OBSERVATION DATE:	24/8/2021	**CONSERVATION STATUS:** P2	New population: ☒
OBSERVER/S	Bridget Duncan, Ben Eckermann, Jason Webb	**PHONE:**	9388 8360
ROLE:	Botanist	**ORGANISATION:**	360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):
Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.949788600000002 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09319449 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve | Timber reserve | Private property | Rail reserve | Shire road reserve

National park | State forest | Pastoral lease | MRWA road reserve | Other Crown reserve

Conservation park | Water reserve | UCL ☒ | SLK/Pole to | Specify other:

AREA ASSESSMENT: Edge survey | Partial survey ☒ | Full survey | Area observed (m^2):

EFFORT: Time spent surveying (minutes): | No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ | Extrapolation | Estimate | Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ | Clumps | Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				3
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:

	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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

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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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. 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

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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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TAXON: Tinospora esiangkara **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P2 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.944044850000001 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09311968 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

Please return completed form to **Species And Communities Branch** DBCA,
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RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

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

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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

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

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TAXON: Tinospora esiangkara **TPFL Pop. No:**

OBSERVATION DATE: 23/8/2021 **CONSERVATION STATUS:** P2 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.944702190000001 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09456613 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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 ☒	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.

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GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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TAXON: Tinospora esiangkara **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P2 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.947018929999999 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09759456 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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

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

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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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 ☒	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.

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Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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TAXON: Tinospora esiangkara **TPFL Pop. No:**

OBSERVATION DATE: 24/8/2021 **CONSERVATION STATUS:** P2 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.950313640000001 No. satellites: Map used:

WGS84 **Long / Easting:** 114.09396584 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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

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GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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 ☒	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

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Threatened and Priority Flora Report Form

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TAXON: Tinospora esiangkara **TPFL Pop. No:**

OBSERVATION DATE: 26/8/2021 **CONSERVATION STATUS:** P2 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.950690179999999 No. satellites: Map used:

WGS84 **Long / Easting:** 114.101282 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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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.

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GOVERNMENT OF WESTERN AUSTRALIA

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Version 1.3 August 2017

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 ☒	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

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TAXON: Tinospora esiangkara **TPFL Pop. No:**

OBSERVATION DATE: 22/8/2021 **CONSERVATION STATUS:** P2 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.947674469999999 No. satellites: Map used:

WGS84 **Long / Easting:** 114.10536423000001 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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** ☐

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.3 August 2017

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 ☒	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,
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TAXON: Tinospora esiangkara **TPFL Pop. No:**

OBSERVATION DATE: 22/8/2021 **CONSERVATION STATUS:** P2 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

GDA94 / MGA94 DecDegrees ☒ DegMinSec UTMs ☒ GPS ☒ Differential GPS Map

AGD84 / AMG84 **Lat / Northing:** -21.948374210000001 No. satellites: Map used:

WGS84 **Long / Easting:** 114.10970937 Boundary polygon captured Map Scale:

Unknown **ZONE:**

LAND TENURE:

Nature reserve Timber reserve Private property Rail reserve Shire road reserve

National park State forest Pastoral lease MRWA road reserve Other Crown reserve

Conservation park Water reserve UCL ☒ SLK/Pole to Specify other:

AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

POP'N COUNT ACCURACY: Actual ☒ Extrapolation Estimate Count Method: Actual count - individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive				1
Dead				

Area of pop (m^2):

Note: Pls record count as numbers (not percentages) for database.

QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m^2):

Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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	N	H	M
• Weed invasion - General	L	M	M
•			

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HABITAT INFORMATION:

LANDFORM:	**ROCK TYPE:**	**LOOSE ROCK:**	**SOIL TYPE:**	**SOIL COLOUR:**	**DRAINAGE:**
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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 ☒	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.)

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COPY SENT TO: Regional Office District Office Other:

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

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TAXON: Tinospora esiangkara **TPFL Pop. No:**

OBSERVATION DATE: 25/8/2021 **CONSERVATION STATUS:** P2 New population: ☒

OBSERVER/S Bridget Duncan, Ben Eckermann, Jason Webb **PHONE:** 9388 8360

ROLE: Botanist **ORGANISATION:** 360 Environmental

DESCRIPTION OF LOCATION (Provide at least nearest town/names locality, and the distance and direction to that place):

Exmouth

Reserve no:

DBCA DISTRICT: Western Pilbara **LGA:** Shire of Exmouth Land manager present:

DATUM: **COORDINATES:** (If UTM coords provided, **Zone** is also required) **METHOD USED:**

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AREA ASSESSMENT: Edge survey Partial survey ☒ Full survey Area observed (m^2):

EFFORT: Time spent surveying (minutes): No. of minutes spent / 100 m^2:

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WHAT COUNTED: Plants ☒ Clumps Clonal stems

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
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Dead				

Area of pop (m^2):

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QUADRATS PRESENT:	No.	Size	Data attached	Total area of quadrats (m^2):
Summary Quad. Totals: Alive				

REPRODUCTIVE STATE: 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)**
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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*:

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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:

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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	*Apus pacificus*	Pacific Swift (Fork-tailed Swift)	MI	MI, MA		x			Low	No nearby records. Uses airspace over varied habitat.
Charadriidae	*Charadrius leschenaultii*	Greater Sand Plover	VU	VU, MI, MA	x		x	4	Low	Recent nearby records. No suitable habitat (tidal falts).
	Charadrius mongolus	Lesser Sand Plover	EN	EN, MI, MA	x		x	3	Low	Recent nearby records. No suitable habitat (tidal falts).
	Charadrius veredus	Oriental Plover	MI	MI, MA		x	x	0	Medium	Nearby historical records. Suitable habitat present (grasslands, vegetated plains).
	Pluvialis fulva	Pacific Golden Plover	MI	MI, MA			x	0	Low	Nearby records. No suitable habitat (coastal areas, tidal flats).
	Pluvialis squatarola	Grey Plover	MI	MI, MA	x		x	9	Low	Recent nearby records. No suitable habitat (coastal areas, tidal flats).
Diomedeidae	*Thalassarche chlororhynchos*	Yellow-nosed Albatross	VU	MI, MA	x		x	0	Low	Nearby record. No suitable habitat (pelagic).
Falconidae	*Falco hypoleucos*	Grey Falcon	VU	VU		x			Low	No nearby records. Prefered nesting habitat absent. May use the Survey Area for hunting.
	Falco peregrinus	Peregrine Falcon	OS		x		x	1	Medium	Recent nearby records. May use the Survey Area for hunting.
Fregatidae	*Fregata ariel*	Lesser Frigatebird	MI	MI, MA		x			Low	No nearby records. No suitable habitat (pelagic).
Glareolidae	*Glareola maldivarum*	Oriental Pratincole	MI	MI, MA	x	x	x	5	High	Recent nearby records. Suitable habitat present (open plains).
Hirundinidae	*Hirundo rustica*	Barn Swallow	MI	MI, MA		x			Low	No nearby records. Suitable habitat present (near coastal, open country, wetands).
Laridae	*Anous stolidus*	Common Noddy (Brown Noddy)	MI	MI, MA		x	x	0	Low	Recent records > 10 km. No suitable habitat (colony islands, pelagic).
	Chlidonias leucopterus	White-winged Black Tern	MI	MI, MA	x		x	5	Low	Recent nearby records. No suitable habitat (fresh to saline coastal and subcoastal wetlands).
	Gelochelidon nilotica	Gull-billed Tern	MI	MI, MA	x		x	0	Low	Recent records > 10 km. No suitable habitat (coastal areas).
	Hydroprogne caspia	Caspian Tern	MI	MI, MA	x		x	4	Low	Recent nearby records. No suitable habitat (sheltered coastal waters, lakes, tempory wetlands).
	Onychoprion anaethetus	Bridled Tern	MI	MI, MA	x				Low	No nearby records. No suitable habitat (pelagic).
	Sterna dougallii	Roseate Tern	MI	MI, MA	x		x	0	Low	Nearby records. No suitable habitat (pelagic).
	Sterna hirundo	Common Tern	MI	MI, MA	x		x	3	Low	Recent nearby records. No suitable habitat (pelagic).
	Sternula albifrons	White-shafted Little Tern	MI	MI, MA	x		x	2	Low	Recent nearby records. No suitable habitat (coastal areas, beaches).
	Sternula nereis nereis		VU	VU		x			Low	No nearby records. No suitable habitat (coastal areas).
	Thalasseus bergii	Crested Tern (Greater Crested Tern)	MI	MI, MA	x		x	26	Low	Recent nearby records. No suitable habitat (coastal areas, beaches, salt lakes).
Motacillidae	*Motacilla cinerea*	Grey Wagtail	MI	MI, MA		x			Low	No nearby records. No suitable habitat (coastal, lakes, running water).
	Motacilla tschutschensis	Yellow Wagtail	MI	MI, MA		x			Low	No nearby records. No suitable habitat (open wet plains and meadows).
Oceanitidae	*Oceanites oceanicus*	Wilson's Storm Petrel	MI	MI, MA	x		x	0	Low	Records > 10 km. No suitable habitat (pelagic).
Pandionidae	*Pandion haliaetus*	Osprey		MI, MA		x			Low	No nearby records. No suitable habitat (coastal areas, beaches).
Pandionidae	*Pandion haliaetus cristatus*	Eastern Osprey	MI		x		x	36	Low	Recent nearby records. No suitable habitat (coastal areas, beaches, lakes).
Phaethontidae	*Phaethon lepturus*	White-tailed Tropicbird	MI	MI, MA	x		x	0	Low	Nearby records. No suitable habitat (pelagic).
	Phaethon rubricauda	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	PMST	DBCA	DBCA 15 yrs		
Phaethontidae	*Ardenna carneipes*	Flesh-footed Shearwater	VU	MI, MA		x			Low	No nearby records. No suitable habitat (pelagic).
	Ardenna pacifica	Wedge-tailed Shearwater	MI	MI, MA	x		x	4	Low	Recent nearby records. No suitable habitat (pelagic).
	Calonectris leucomelas	Streaked Shearwater	MI	MI, MA		x			Low	No nearby records. No suitable habitat (coastal areas).
	Macronectes giganteus	Southern Giant Petrel	MI	EN, MI, MA		x			Low	No nearby records. No suitable habitat (coastal areas).
Procellariidae	*Pterodroma mollis*	Soft-plumaged Petrel		VU, MA		x			Low	No nearby records. No suitable habitat (pelagic).
	Puffinus huttoni	Hutton's Shearwater	EN	MA	x		x	0	Low	Records > 10 km. No suitable habitat (pelagic).
Psittaculidae	*Pezoporus occidentalis*	Night Parrot	CR	EN		x			Low	No nearby records. No suitable habitat (spinifex and samphire margins of salt lakes).
Rostratulidae	*Rostratula australis*	Australian Painted Snipe	EN	EN, MA		x			Low	No nearby records. No suitable habitat (well vegetated wetlands).
Scolopacidae	*Actitis hypoleucos*	Common Sandpiper	MI	MI, MA	x	x	x	11	Low	Recent nearby records. No suitable habitat (coastal and interior wetlands).
	Arenaria interpres	Ruddy Turnstone	MI	MI, MA	x		x	8	Low	Recent nearby records. No suitable habitat (coastal areas, tidal flats, beaches).
	Calidris acuminata	Sharp-tailed Sandpiper	MI	MI, MA	x	x	x	7	Low	Recent nearby records. No suitable habitat (coastal and interior wetlands).
	Calidris alba	Sanderling	MI	MI, MA	x		x	3	Low	Recent nearby records. No suitable habitat (tidal flats, beaches).
	Calidris canutus	Red Knot	EN	EN, MI, MA		x	x	0	Low	Nearby historical records. No suitable habitat (coastal areas, tidal flats).
	Calidris falcinellus	Broad-billed Sandpiper	MI	MI, MA			x	0	Low	Recent records > 10 km. No suitable habitat (mudflats).
	Calidris ferruginea	Curlew Sandpiper	CR	CR, MI, MA		x	x	0	Low	Records > 10 km. No suitable habitat (inter-tidal mudflats).
	Calidris melanotos	Pectoral Sandpiper	MI	MI, MA		x			Low	No nearby records. No suitable habitat (coastal and interior wetlands).
	Calidris ruficollis	Red-necked Stint	MI	MI, MA	x		x	4	Low	Recent nearby records. No suitable habitat (tidal and inland mudflats, beaches).
	Calidris subminuta	Long-toed Stint	MI	MI, MA	x		x	5	Low	Recent nearby records. No suitable habitat (fresh wetlands).
	Gallinago stenura	Pin-tailed Snipe	MI	MI, MA	x		x	1	Low	Recent nearby records. No suitable habitat (wetlands, claypans).
	Limosa lapponica	Bar-tailed Godwit	MI	MI, MA	x	x	x	2	Low	Recent nearby records. No suitable habitat (coastal areas, tidal flats).
	Limosa lapponica menzbieri		CR, MI	CR		x			Low	No nearby records. No suitable habitat (coastal areas, tidal flats).
	Limosa limosa	Black-tailed Godwit	MI	MI, MA			x	0	Low	Recent records > 10 km. No suitable habitat (inland wetlands).
	Numenius madagascariensis	Far Eastern Curlew (Eastern Curlew)	CR	CE, MI, MA	x	x	x	1	Low	Recent nearby records. No suitable habitat (coastal areas, tidal flats).
	Numenius minutus	Little Curlew	MI	MI, MA	x		x	4	Low	Recent nearby records. No suitable habitat (wetlands, flooded areas).
	Numenius phaeopus	Whimbrel	MI	MI, MA	x		x	19	Low	Recent nearby records. No suitable habitat (coastal areas, tidal flats).
	Tringa brevipes	Grey-tailed Tattler	MI, P4	MI, MA	x		x	29	Low	Recent nearby records. No suitable habitat (coastal areas, tidal flats).
	Tringa glareola	Wood Sandpiper	MI	MI, MA	x		x	8	Low	Recent nearby records. No suitable habitat (freshwater wetlands).
	Tringa nebularia	Common Greenshank	MI	MI, MA	x	x	x	24	Low	Recent nearby records. No suitable habitat (coastal areas, permanent and temporary wetlands).
	Tringa stagnatilis	Marsh Sandpiper	MI	MI, MA	x		x	1	Low	Nearby records. No suitable habitat (fresh to saline inland wetlands).
	Xenus cinereus	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	NM	PMST	DBCA	DBCA 15 yrs		
Threskiornithidae	*Plegadis falcinellus*	Glossy Ibis	MI	MI, MA			x	0	Low	Nearby historical records. No suitable habitat (shallow freshwater, dry grasslands).
Mammalia										
Dasyuridae	*Dasyurus hallucatus*	Northern Quoll	EN	EN		x			Low	No nearby records. No suitable habitat (rocky escarpments, beaches).
Macropodidae	*Petrogale lateralis lateralis*	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	*Rhinonicteris aurantia (Pilbara form)*	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	*Diplodactylus capensis*	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	*Aprasia rostrata*	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 *Triodia*).
Scincidae	*Lerista allochira*	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	*Anilios splendidus*		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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Litter, Weeds		**Microhabitats**		
Introduced fauna	None observed				
Vegetation					
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Corymbia hamersleyana*		
Mid stratum	Absent				
Ground stratum	Low (>0.5 m)	Open tussock grassland (20-50%)	**Cenchrus ciliaris*		

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Weeds		**Microhabitats**		
Introduced fauna	None observed				
Vegetation					
Upper stratum	Absent				
Mid stratum	Tall (>2 m)	Open shrubland and/or heathland (20-50%)	*Acacia synchronicia*		
Ground stratum	Low (>0.5 m)	Closed tussock grassland (>80%)	**Cenchrus ciliaris*		

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Weeds		**Microhabitats**		
Introduced fauna	None observed				
Vegetation					
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Corymbia hamersleyana*		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Senna glutinosa pruinosa, Acacia bivenosa*		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*		

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Weeds		**Microhabitats**	Rock crevices	
Introduced fauna	None observed				
Vegetation					
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Corymbia hamersleyana*		
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia arida*		
Ground stratum	Low (>0.5 m)	Isolated hummock grasses (<0.25%)	*Triodia epactia*		

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Litter, Weeds		**Microhabitats**		
Introduced fauna	None observed				
Vegetation					
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Corymbia hamersleyana*		
Mid stratum	Absent				
Ground stratum	Low (>0.5 m)	Tussock grassland (50-80%)	**Cenchrus ciliaris*		

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Weeds		**Microhabitats**		
Introduced fauna	None observed				
Vegetation					
Upper stratum	Absent				
Mid stratum	Tall (>2 m)	Open shrubland and/or heathland (20-50%)	*Acacia synchronicia, Acacia bivenosa*		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*		

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	None observed		**Microhabitats**		
Introduced fauna	None observed				

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Melaleuca cardiophylla*
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia glabra*

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	None observed		**Microhabitats**	Hummocks	
Introduced fauna	None observed				

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Melaleuca cardiophylla*
Ground stratum	Mid (0.5-1 m)	Open hummock grassland (20-50%)	*Triodia wiseana*

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%)	*Melaleuca cardiophylla*		
Ground stratum	Low (>0.5 m)	Hummock grassland (50-80%)	*Triodia glabra, Triodia wiseana*		

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%)	*Corymbia hamersleyana*		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia arida, Melaleuca cardiophylla, Gossypium robinsonii*		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia wiseana*		

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Weeds		**Microhabitats**	Rock crevices	
Introduced fauna	None observed				
Vegetation					
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Corymbia hamersleyana*		
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Acacia arida*		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*		

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Weeds		**Microhabitats**		
Introduced fauna	None observed				
Vegetation					
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Corymbia hamersleyana*		
Mid stratum	Tall (>2 m)	Open shrubland and/or heathland (20-50%)	*Acacia arida*		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia*		

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%)	*Acacia arida, Gossypium robinsonii (drainage), Ficus brachypoda, Grev*		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*		

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%)	*Ficus brachypoda*		
Mid stratum	Tall (>2 m)	Shrubland and/or heathland (50-80%)	*Acacia alexandri, Senna artemisioides oligophylla, Grevillea pyramidali*		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*		

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Weeds		**Microhabitats**	Caves, Rock crevices	
Introduced fauna	None observed				
Vegetation					
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Corymbia hamersleyana*		
Mid stratum	Tall (>2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Grevillea pyramidalis, Dodonaea viscosa mucronata*		
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)	*Triodia epactia*		

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Weeds		**Microhabitats**	Rock crevices	
Introduced fauna	None observed				
Vegetation					
Upper stratum	Absent				
Mid stratum	Tall (>2 m)	Open shrubland and/or heathland (20-50%)	*Acacia sericophylla, Ficus brachypoda, Dodonaea viscosa mucronata,*		
Ground stratum	Low (>0.5 m)	Sparse fernland (0.25-20%)	**Bidens bipinnata*		

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Weeds		**Microhabitats**	Burrows, Hummocks	
Introduced fauna	None observed				
Vegetation					
Upper stratum	Absent				
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia sericophylla, Hibiscus sturtii var. platychlamys*		
Ground stratum	Low (>0.5 m)	Open hummock grassland (20-50%)	*Triodia epactia, Triodia glabra*		

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				
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Weeds		**Microhabitats**		
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%)	*Asynchro, Scaevola spinescens, Lawrencia densiflora, Atriplex semilunc*		
Ground stratum	Low (>0.5 m)	Sparse tussock grassland (0.25-20%)	**Cenchrus ciliaris*		

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		
Fire History	Little or no fire evidence (>5 years)	**Water Source**	Absent
Disturbance	Weeds	**Microhabitats**	
Introduced fauna	None observed		

Vegetation			
Upper stratum	Absent		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Acacia tetragonophylla, Acacia synchronicia*
Ground stratum	Low (>0.5 m)	Sparse tussock grassland (0.25-20%)	**Cenchrus ciliaris*

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										
Pelodryadidae	*Cyclorana maini*	Sheep Frog			x					
Limnodynastidae	*Neobatrachus aquilonius*	Northern Burrowing Frog			x					
Limnodynastidae	*Neobatrachus fulvus*	Tawny Trilling Frog			x					
Myobatrachidae	*Pseudophryne douglasi*	Gorge Toadlet			x					
Aves										
Acanthizidae	*Calamanthus campestris*	Rufous Fieldwren			x					x
Acanthizidae	*Gerygone fusca*	Western Gerygone			x					
Acanthizidae	*Gerygone tenebrosa*	Dusky Gerygone			x					
Acanthizidae	*Pyrrholaemus brunneus*	Redthroat			x					
Acanthizidae	*Smicrornis brevirostris*	Weebill			x					
Accipitridae	*Accipiter cirrocephalus*	Collared Sparrowhawk			x					
Accipitridae	*Accipiter fasciatus*	Brown Goshawk		MA	x					
Accipitridae	*Accipiter fasciatus fasciatus*				x					
Accipitridae	*Aquila audax*	Wedge-tailed Eagle			x					x
Accipitridae	*Circus approximans*	Swamp Harrier		MA	x					
Accipitridae	*Circus assimilis*	Spotted Harrier			x					
Accipitridae	*Elanus axillaris*	Black-shouldered Kite			x				x	x
Accipitridae	*Haliaeetus leucogaster*	White-bellied Sea-Eagle		MA	x					
Accipitridae	*Haliastur indus*	Brahminy Kite		MA	x					
Accipitridae	*Haliastur sphenurus*	Whistling Kite		MA	x			x	x	x
Accipitridae	*Hamirostra isura*	Square-tailed Kite							x	
Accipitridae	*Hamirostra melanosternon*	Black-breasted Buzzard			x					
Accipitridae	*Hieraaetus morphnoides*	Little Eagle			x					x
Accipitridae	*Milvus migrans*	Black Kite			x					x
Aegothelidae	*Aegotheles cristatus cristatus*				x					
Alaudidae	*Mirafra javanica*	Horsfield's Bush Lark			x					

Family	Scientific Name	Common Name	Conservation Status		Database				Literature	
			State	Federal	NM	PMST	DBCA	Field	A	B
Alcedinidae	*Dacelo leachii*	Blue-winged Kookaburra			x					
Alcedinidae	*Todiramphus pyrrhopygius*	Red-backed Kingfisher			x					
Alcedinidae	*Todiramphus sanctus*	Sacred Kingfisher		MA	x				x	x
Alcedinidae	*Todiramphus sordidus pilbara*	Pilbara Collared Kingfisher			x					
Anatidae	*Anas gracilis*	Grey Teal			x					
Anatidae	*Anas platyrhynchos*	Mallard			x					
Anatidae	*Anas superciliosa*	Pacific Black Duck			x					
Anatidae	*Aythya australis*	Hardhead			x					
Anatidae	*Chenonetta jubata*	Australian Wood Duck (Wood Duck, Maned Duck)			x					
Anatidae	*Cygnus atratus*	Black Swan			x					
Anatidae	*Dendrocygna arcuata*	Wandering Whistling Duck (Chestnut Whistling Duck)		MA	x					
Anhingidae	*Anhinga novaehollandiae*	Australasian Darter			x					
Apodidae	*Apus pacificus*	Pacific Swift (Fork-tailed Swift)	MI	MI, MA		x				
Ardeidae	*Ardea alba modesta*	Great Egret			x					
Ardeidae	*Ardea intermedia*	Intermediate Egret		MA	x					
Ardeidae	*Bubulcus coromandus*	Eastern Cattle Egret			x					
Ardeidae	*Butorides striata*	Striated Heron (Mangrove Heron)			x					
Ardeidae	*Egretta garzetta*	Little Egret		MA	x					
Ardeidae	*Egretta novaehollandiae*	White-faced Heron			x					
Ardeidae	*Egretta sacra sacra*				x					
Ardeidae	*Nycticorax caledonicus*	Nankeen Night Heron (Rufous Night Heron)		MA	x					
Artamidae	*Artamus cinereus*	Black-faced Woodswallow			x				x	
Artamidae	*Artamus cinereus melanops*				x					
Artamidae	*Artamus leucorynchus*	White-breasted Woodswallow			x					
Artamidae	*Artamus leucorynchus leucopygialis*				x					
Artamidae	*Artamus minor*	Little Woodswallow			x					
Artamidae	*Artamus personatus*	Masked Woodswallow			x					
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird			x			x	x	x
Artamidae	*Cracticus torquatus*	Grey Butcherbird			x					
Artamidae	*Gymnorhina tibicen*	Australian Magpie			x			x		

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			State	Federal	NM	PMST	DBCA	Field	A	B
Burhinidae	*Burhinus grallarius*	Bush Stone-curlew (Bush Thick-knee)			x					
Burhinidae	*Esacus magnirostris*	Beach Stone-curlew (Beach Thick-knee)		MA	x					
Cacatuidae	*Cacatua sanguinea*	Little Corella			x			x	x	x
Cacatuidae	*Cacatua sanguinea westralensis*	Western Little Corella			x					
Cacatuidae	*Eolophus roseicapilla*	Galah			x			x	x	x
Cacatuidae	*Nymphicus hollandicus*	Cockatiel			x					x
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike		MA	2				x	x
Campephagidae	*Lalage tricolor*	White-winged Triller			x					
Casuariidae	*Dromaius novaehollandiae*	Emu			x				x	x
Charadriidae	*Charadrius leschenaultii*	Greater Sand Plover	VU	VU, MI, MA	x		x			
Charadriidae	*Charadrius mongolus*	Lesser Sand Plover	EN	EN, MI, MA	x		x			
Charadriidae	*Charadrius ruficapillus*	Red-capped Plover		MA	x					
Charadriidae	*Charadrius veredus*	Oriental Plover	MI	MI, MA		x	x			
Charadriidae	*Elseyornis melanops*	Black-fronted Dotterel			x					
Charadriidae	*Erythrogonys cinctus*	Red-kneed Dotterel			x					
Charadriidae	*Pluvialis fulva*	Pacific Golden Plover	MI	MI, MA			x			
Charadriidae	*Pluvialis squatarola*	Grey Plover	MI	MI, MA	x		x			
Charadriidae	*Vanellus tricolor*	Banded Lapwing			x					
Ciconiidae	*Ephippiorhynchus asiaticus*	Black-necked Stork			x					
Columbidae	*Columba livia*	Domestic Pigeon (Rock Dove)			x	x				
Columbidae	*Geopelia cuneata*	Diamond Dove			x					x
Columbidae	*Geopelia humeralis*	Bar-shouldered Dove			x					
Columbidae	*Geopelia striata*	Zebra Dove			x					
Columbidae	*Geophaps plumifera*	Spinifex Pigeon			x					
Columbidae	*Ocyphaps lophotes*	Crested Pigeon			x			x	x	
Columbidae	*Phaps chalcoptera*	Common Bronzewing			x					
Corvidae	*Corvus bennetti*	Little Crow			x					x
Corvidae	*Corvus orru*	Torresian Crow			x				x	x
Cuculidae	*Centropus phasianinus*	Pheasant Coucal			x					
Cuculidae	*Chalcites basalis*	Horsfield's Bronze Cuckoo		MA	x				x	x

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Cuculidae	*Heteroscenes pallidus*	Pallid Cuckoo		MA	x					
Dicaeidae	*Dicaeum hirundinaceum*	Mistletoebird			x					
Dicaeidae	*Dicaeum hirundinaceum hirundinaceum*				x					
Diomedeidae	*Thalassarche chlororhynchos*	Yellow-nosed Albatross	VU	MI, MA	x		x			
Estrildidae	*Emblema pictum*	Painted Finch			x					
Estrildidae	*Neochmia ruficauda*	Star Finch			x					
Estrildidae	*Taeniopygia guttata*	Zebra Finch			x			x	x	x
Falconidae	*Falco berigora*	Brown Falcon			x				x	x
Falconidae	*Falco cenchroides*	Australian Kestrel (Nankeen Kestrel)		MA	x				x	x
Falconidae	*Falco hypoleucos*	Grey Falcon	VU	VU		x				
Falconidae	*Falco longipennis*	Australian Hobby			x					x
Falconidae	*Falco peregrinus*	Peregrine Falcon	OS		x		x		x	
Fregatidae	*Fregata ariel*	Lesser Frigatebird	MI	MI, MA		x				
Glareolidae	*Glareola maldivarum*	Oriental Pratincole	MI	MI, MA	x	x	x			
Haematopodidae	*Haematopus fuliginosus*	Sooty Oystercatcher			x					
Haematopodidae	*Haematopus longirostris*	Pied Oystercatcher			x					
Hirundinidae	*Cheramoeca leucosterna*	White-backed Swallow								x
Hirundinidae	*Hirundo neoxena*	Welcome Swallow		MA	x					
Hirundinidae	*Hirundo rustica*	Barn Swallow	MI	MI, MA		x				
Hirundinidae	*Petrochelidon ariel*	Fairy Martin			x					
Hirundinidae	*Petrochelidon nigricans*	Tree Martin		MA	x					x
Laridae	*Anous stolidus*	Common Noddy (Brown Noddy)	MI	MI, MA		x	x			
Laridae	*Chlidonias leucopterus*	White-winged Black Tern	MI	MI, MA	x		x			
Laridae	*Gelochelidon nilotica*	Gull-billed Tern	MI	MI, MA	x		x			
Laridae	*Hydroprogne caspia*	Caspian Tern	MI	MI, MA	x		x			
Laridae	*Larus novaehollandiae*	Silver Gull		MA	x					
Laridae	*Onychoprion anaethetus*	Bridled Tern	MI	MI, MA	x					
Laridae	*Sterna dougallii*	Roseate Tern	MI	MI, MA	x		x			
Laridae	*Sterna hirundo*	Common Tern	MI	MI, MA	x		x			
Laridae	*Sternula albifrons*	White-shafted Little Tern	MI	MI, MA	x		x			
Laridae	*Sternula nereis*	Fairy Tern		MA	x					
Laridae	*Sternula nereis nereis*		VU	VU		x				

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Laridae	*Thalasseus bengalensis*	Lesser Crested Tern		MA	x					
Laridae	*Thalasseus bergii*	Crested Tern (Greater Crested Tern)	MI	MI, MA	x		x			
Locustellidae	*Cincloramphus cruralis*	Brown Songlark								x
Locustellidae	*Cincloramphus mathewsi*	Rufous Songlark							x	
Locustellidae	*Poodytes carteri*	Spinifexbird			x				x	
Maluridae	*Amytornis whitei*	Rufous Grasswren								x
Maluridae	*Malurus assimilis*	Purple-backed Fairywren			x				x	x
Maluridae	*Malurus leucopterus*	White-winged Fairywren			x					x
Maluridae	*Stipiturus ruficeps*	Rufous-crowned Emu-wren			x					
Maluridae	*Stipiturus ruficeps ruficeps*				x					
Meliphagidae	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater			x					x
Meliphagidae	*Certhionyx variegatus*	Pied Honeyeater			x					
Meliphagidae	*Epthianura albifrons*	White-fronted Chat			x					
Meliphagidae	*Epthianura tricolor*	Crimson Chat			x					
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater			x			x	x	x
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater			x					
Meliphagidae	*Lichmera indistincta indistincta*				x					
Meliphagidae	*Manorina flavigula*	Yellow-throated Miner			x			x	x	x
Meliphagidae	*Ptilotula keartlandi*	Grey-headed Honeyeater			x				x	
Meliphagidae	*Ptilotula ornata*	Yellow-plumed Honeyeater							x	
Meliphagidae	*Ptilotula penicillata*	White-plumed Honeyeater								x
Meliphagidae	*Sugomel niger*	Black Honeyeater							x	
Meropidae	*Merops ornatus*	Rainbow Bee-eater		MA	x				x	x
Monarchidae	*Grallina cyanoleuca*	Magpie-lark		MA	x			x	x	x
Motacillidae	*Anthus australis*	Australian Pipit							x	
Motacillidae	*Anthus australis australis*			MA						x
Motacillidae	*Motacilla cinerea*	Grey Wagtail	MI	MI, MA		x				
Motacillidae	*Motacilla tschutschensis*	Yellow Wagtail	MI	MI, MA		x				
Oceanitidae	*Oceanites oceanicus*	Wilson's Storm Petrel	MI	MI, MA	x		x			
Oreoicidae	*Oreoica gutturalis*	Crested Bellbird			x			x	x	x
Otididae	*Ardeotis australis*	Australian Bustard			x				x	x
Pachycephalidae	*Colluricincla harmonica kolichisi*				x					
Pachycephalidae	*Pachycephala lanioides*	White-breasted Whistler			x					

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Pachycephalidae	*Pachycephala melanura melanura*				x					
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler			x					x
Pandionidae	*Pandion haliaetus*	Osprey		MI, MA		x				x
Pandionidae	*Pandion haliaetus cristatus*	Eastern Osprey	MI		x		x		x	
Pardalotidae	*Pardalotus rubricatus*	Red-browed Pardalote			x			x		
Pardalotidae	*Pardalotus striatus*	Striated Pardalote			x					
Pelecanidae	*Pelecanus conspicillatus*	Australian Pelican		MA	x					
Petroicidae	*Melanodryas cucullata*	Hooded Robin							x	
Petroicidae	*Peneothello pulverulenta*	Mangrove Robin			x					
Petroicidae	*Petroica goodenovii*	Red-capped Robin			x					
Phaethontidae	*Phaethon lepturus*	White-tailed Tropicbird	MI	MI, MA	x		x			
Phaethontidae	*Phaethon rubricauda*	Red-tailed Tropicbird	MI, P4	MI, MA	x		x			
Phalacrocoracidae	*Phalacrocorax sulcirostris*	Little Black Cormorant			x					
Phalacrocoracidae	*Phalacrocorax varius*	Pied Cormorant (Australian Pied Cormorant)			x					
Phasianidae	*Coturnix ypsilophora*	Brown Quail			x			x		
Podargidae	*Podargus strigoides*	Tawny Frogmouth			x					
Podicipedidae	*Poliocephalus poliocephalus*	Hoary-headed Grebe			x					
Podicipedidae	*Tachybaptus novaehollandiae*	Australasian Grebe (Black-throated Grebe)			x					
Pomatostomidae	*Pomatostomus superciliosus*	White-browed Babbler						x		
Pomatostomidae	*Pomatostomus temporalis*	Grey-crowned Babbler			x					
Procellariidae	*Ardenna carneipes*	Flesh-footed Shearwater	VU	MI, MA		x				
Procellariidae	*Ardenna pacifica*	Wedge-tailed Shearwater	MI	MI, MA	x		x			
Procellariidae	*Calonectris leucomelas*	Streaked Shearwater	MI	MI, MA		x				
Procellariidae	*Macronectes giganteus*	Southern Giant Petrel	MI	EN, MI, MA		x				
Procellariidae	*Pterodroma mollis*	Soft-plumaged Petrel		VU, MA		x				
Procellariidae	*Puffinus huttoni*	Hutton's Shearwater	EN	MA	x		x			
Psittaculidae	*Barnardius zonarius*	Australian Ringneck			x			x		x
Psittaculidae	*Barnardius zonarius zonarius*	Port Lincoln Parrot			x				x	
Psittaculidae	*Melopsittacus undulatus*	Budgerigar			x				x	x
Psittaculidae	*Pezoporus occidentalis*	Night Parrot	CR	EN		x				

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Psophodidae	*Psophodes occidentalis*	Western Wedgebill (Chiming Wedgebill)								x
Ptilonorhynchidae	*Chlamydera guttata*	Western Bowerbird			x					
Ptilonorhynchidae	*Chlamydera maculata*	Spotted Bowerbird			x					
Rallidae	*Fulica atra*	Eurasian Coot			x					
Rallidae	*Hypotaenidia philippensis*	Buff-banded Rail		MA	2					
Rallidae	*Porzana fluminea*	Australian Spotted Crake (Australian Crake)			x					
Rallidae	*Tribonyx ventralis*	Black-tailed Nativehen			x					
Recurvirostridae	*Himantopus himantopus*	Black-winged Stilt		MA	x					
Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail			x					
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail			x					
Rhipiduridae	*Rhipidura leucophrys leucophrys*				x					
Rhipiduridae	*Rhipidura phasiana*	Mangrove Grey Fantail (Mangrove Fantail)			x					
Rostratulidae	*Rostratula australis*	Australian Painted Snipe	EN	EN, MA		x				
Scolopacidae	*Actitis hypoleucos*	Common Sandpiper	MI	MI, MA	x	x	x			
Scolopacidae	*Arenaria interpres*	Ruddy Turnstone	MI	MI, MA	x		x			
Scolopacidae	*Calidris acuminata*	Sharp-tailed Sandpiper	MI	MI, MA	x	x	x			
Scolopacidae	*Calidris alba*	Sanderling	MI	MI, MA	x		x			
Scolopacidae	*Calidris canutus*	Red Knot	EN	EN, MI, MA		x	x			
Scolopacidae	*Calidris falcinellus*	Broad-billed Sandpiper	MI	MI, MA			x			
Scolopacidae	*Calidris ferruginea*	Curlew Sandpiper	CR	CE, MI, MA		x	x			
Scolopacidae	*Calidris melanotos*	Pectoral Sandpiper	MI	MI, MA		x				
Scolopacidae	*Calidris ruficollis*	Red-necked Stint	MI	MI, MA	x		x			
Scolopacidae	*Calidris subminuta*	Long-toed Stint	MI	MI, MA	x		x			
Scolopacidae	*Gallinago stenura*	Pin-tailed Snipe	MI	MI, MA	x		x			
Scolopacidae	*Limosa lapponica*	Bar-tailed Godwit	MI	MI, MA	x	x	x			
Scolopacidae	*Limosa lapponica menzbieri*		CR, MI	CE		x				
Scolopacidae	*Limosa limosa*	Black-tailed Godwit	MI	MI, MA			x			
Scolopacidae	*Numenius madagascariensis*	Far Eastern Curlew (Eastern Curlew)	CR	CE, MI, MA	x	x	x			

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Scolopacidae	*Numenius minutus*	Little Curlew	MI	MI, MA	x		x			
Scolopacidae	*Numenius phaeopus*	Whimbrel	MI	MI, MA	x		x			
Scolopacidae	*Tringa brevipes*	Grey-tailed Tattler	MI, P4	MI, MA	x		x			
Scolopacidae	*Tringa glareola*	Wood Sandpiper	MI	MI, MA	x		x			
Scolopacidae	*Tringa nebularia*	Common Greenshank	MI	MI, MA	x	x	x			
Scolopacidae	*Tringa stagnatilis*	Marsh Sandpiper	MI	MI, MA	x		x			
Scolopacidae	*Xenus cinereus*	Terek Sandpiper	MI	MI, MA	x		x			
Strigidae	*Ninox connivens*	Barking Owl			x					
Threskiornithidae	*Platalea regia*	Royal Spoonbill			x					
Threskiornithidae	*Plegadis falcinellus*	Glossy Ibis	MI	MI, MA			x			
Threskiornithidae	*Threskiornis spinicollis*	Straw-necked Ibis		MA	x					
Turnicidae	*Turnix velox*	Little Buttonquail			x					x
Zosteropidae	*Zosterops luteus*	Yellow White-eye (Canary White-eye)			x					
Mammalia										
Bovidae	*Bos primigenius taurus*	European Cattle								x
Bovidae	*Capra aegagrus hircus*	Goat				x				
Bovidae	*Ovis aries*	Sheep			x					x
Canidae	*Canis familiaris familiaris*	Dog				x				
Canidae	*Vulpes vulpes*	Red Fox				x				x
Dasyuridae	*Dasyurus hallucatus*	Northern Quoll	EN	EN		x				
Dasyuridae	*Pseudantechinus roryi*	Rory Cooper's false antechinus			x					
Dasyuridae	*Sminthopsis macroura*	Stripe-faced Dunnart			x					x
Emballonuridae	*Taphozous georgianus*	Common Sheath-tailed Bat			x					
Equidae	*Equus ferus caballus*	Horse				x		x		
Felidae	*Felis catus*	Cat			x	x				x
Leporidae	*Oryctolagus cuniculus*	Rabbit			x	x				x
Macropodidae	*Osphranter robustus*	Euro			x			x		x
Macropodidae	*Osphranter robustus erubescens*	Euro, Biggada			x					
Macropodidae	*Osphranter rufus*	Red Kangaroo, Marlu			x			x		x
Macropodidae	*Petrogale lateralis lateralis*	Black-footed Rock-wallaby	EN		x	x	x			
Muridae	*Mus musculus*	House Mouse			x	x				x
Muridae	*Notomys alexis alexis*	Spinifex Hopping-mouse			x					x
Muridae	*Pseudomys hermannsburgensis*	Sandy Inland Mouse			x					

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Muridae	*Rattus rattus*	Black Rat			x	x				
Rhinonycteridae	*Rhinonicteris aurantia*	Orange Leaf-nosed Bat	P4			x	x			
Tachyglossidae	*Tachyglossus aculeatus acanthion*	Short-beaked Echidna			x					x
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat			x					
Vespertilionidae	*Vespadelus finlaysoni*	Finlayson's Cave Bat			x					
Reptilia										
Agamidae	*Ctenophorus femoralis*	Dune Dragon			x					x
Agamidae	*Ctenophorus isolepis isolepis*	Central Military Dragon			x					x
Agamidae	*Ctenophorus nuchalis*	Central Netted Dragon			x					
Agamidae	*Ctenophorus parviceps*	Northern Heath Dragon			x					
Agamidae	*Ctenophorus reticulatus*	Western Netted Dragon			x					
Agamidae	*Diporiphora adductus*	Carnarvon Dragon			x					
Agamidae	*Gowidon longirostris*	Long-nosed Dragon			x					x
Agamidae	*Lophognathus gilberti*	Top End Ta-Ta Dragon			x					
Agamidae	*Pogona minor minor*	Western Bearded Dragon			x					x
Carphodactylidae	*Nephrurus levis*				x					
Carphodactylidae	*Nephrurus levis occidentalis*				x					x
Diplodactylidae	*Crenadactylus ocellatus*	South-western Clawless Gecko			x					
Diplodactylidae	*Diplodactylus capensis*	Cape Range Stone Gecko	P2		x		x			
Diplodactylidae	*Diplodactylus conspicillatus*	Variable Fat-tailed Gecko			x					
Diplodactylidae	*Diplodactylus ornatus*				x					
Diplodactylidae	*Lucasium stenodactylus*				x					x
Diplodactylidae	*Strophurus ciliaris aberrans*				x					
Diplodactylidae	*Strophurus jeanae*				x					
Diplodactylidae	*Strophurus rankini*				x					
Diplodactylidae	*Strophurus strophurus*				x					
Elapidae	*Acanthophis wellsi*	Pilbara Death Adder			x					
Elapidae	*Brachyurophis approximans*				x					
Elapidae	*Demansia calodera*	Black-necked Whipsnake			x					
Elapidae	*Demansia psammophis cupreiceps*				x					x
Elapidae	*Ephalophis greyae*			MA	x					
Elapidae	*Furina ornata*	Moon Snake			x					
Elapidae	*Pseudechis australis*	Mulga Snake			x					

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Elapidae	*Pseudonaja mengdeni*	Western Brown Snake			x					
Elapidae	*Pseudonaja modesta*	Ringed Brown Snake			x					
Elapidae	*Simoselaps bertholdi*	Jan's Banded Snake			x					
Elapidae	*Simoselaps littoralis*	West Coast Banded Snake			x					
Elapidae	*Suta fasciata*	Rosen's Snake			x					
Gekkonidae	*Gehyra australis*				x					
Gekkonidae	*Gehyra pilbara*				x					
Gekkonidae	*Gehyra variegata*	Variegated gehyra			x					
Gekkonidae	*Hemidactylus frenatus*	Asian House Gecko				x				
Gekkonidae	*Heteronotia binoei*	Bynoe's Gecko			x					x
Pygopodidae	*Aprasia rostrata*	Ningaloo Worm Lizard	P3		x		x			
Pygopodidae	*Delma nasuta*				x					
Pygopodidae	*Delma tealei*				x					
Pygopodidae	*Delma tincta*				x					
Pygopodidae	*Lialis burtonis*				x					
Pygopodidae	*Pygopus nigriceps*				x					
Pythonidae	*Antaresia childreni*	Children's Python			x					
Pythonidae	*Antaresia perthensis*	Pygmy Python			x					
Pythonidae	*Aspidites melanocephalus*	Black-headed Python			x					
Scincidae	*Carlia munda*				x					
Scincidae	*Cryptoblepharus plagiocephalus*				x					
Scincidae	*Ctenotus grandis titan*				x					
Scincidae	*Ctenotus hanloni*				x					
Scincidae	*Ctenotus iapetus*				x					
Scincidae	*Ctenotus inornatus*				x					
Scincidae	*Ctenotus pantherinus*				x					
Scincidae	*Ctenotus pantherinus ocellifer*				x					
Scincidae	*Ctenotus rufescens*				x					
Scincidae	*Ctenotus saxatilis*	Rock Ctenotus			x					x
Scincidae	*Ctenotus uber uber*									x
Scincidae	*Cyclodomorphus melanops*									x
Scincidae	*Cyclodomorphus melanops melanops*				x					
Scincidae	*Egernia depressa*	Southern Pygmy Spiny-tailed Skink								x

Family	Scientific Name	Common Name	Conservation Status		Database				Literature	
			State	Federal	NM	PMST	DBCA	Field	A	B
Scincidae	*Eremiascincus pallidus*	Western Narrow-banded Skink			x					
Scincidae	*Eremiascincus richardsonii*	Broad-banded Sand Swimmer			x					
Scincidae	*Lerista allochira*		P3		x		x			
Scincidae	*Lerista bipes*				x					x
Scincidae	*Lerista clara*				x					
Scincidae	*Lerista elegans*				x					
Scincidae	*Lerista lineopunctulata*				x					
Scincidae	*Lerista macropisthopus*				x					
Scincidae	*Lerista macropisthopus fusciceps*				x					
Scincidae	*Lerista miopus*				x					
Scincidae	*Lerista planiventralis*				x					
Scincidae	*Lerista planiventralis planiventralis*				x					x
Scincidae	*Menetia greyii*				x					
Scincidae	*Menetia surda*	Western Dwarf Skink			x					
Scincidae	*Morethia lineoocellata*				x					
Scincidae	*Morethia ruficauda*				x					
Scincidae	*Morethia ruficauda exquisita*				x					
Scincidae	*Notoscincus ornatus ornatus*				x					
Scincidae	*Tiliqua multifasciata*	Central Blue-tongue			x					
Scincidae	*Tiliqua rugosa rugosa*	Bobtail			x					
Typhlopidae	*Anilios splendidus*		P2				x			
Varanidae	*Varanus acanthurus*	Spiny-tailed Goanna			x					
Varanidae	*Varanus brevicauda*	Short-tailed Pygmy Goanna			x					
Varanidae	*Varanus eremius*	Pygmy Desert Goanna			x					
Varanidae	*Varanus giganteus*	Perentie			x			x		
Varanidae	*Varanus gouldii*	Bungarra or Sand Goanna			x					x
Varanidae	*Varanus sp.*							x		
Varanidae	*Varanus tristis*	Racehorse Goanna			x					

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