



Water Corporation
Broome North WWTP
Flora and Fauna Survey - Area 3

May 2020

Executive summary

The Water Corporation is examining options for Broome North Waste Water Treatment Plant (WWTP) in the town of Broome, Western Australia.

GHD Pty Ltd (GHD) was commissioned by the Water Corporation to undertake a detailed and targeted flora and vegetation assessment and a Level 1 fauna assessment over Lot 2548, which is a rectangular parcel of land (the survey area) located to the adjacent south of the existing Broome WWTP irrigation pivots; and an assessment against the *Environmental Protection Act 1986* (EP Act) ten clearing principles.

This report is subject to, and must be read in conjunction with, the limitations and the assumptions and qualifications contained throughout the Report.

Key findings

- One vegetation type was identified and described in the survey area (VT01) associated with the Pindan plain
- The vegetation condition within the survey area was rated as Excellent. The vegetation structure was intact with limited signs of cattle activity and a low number of introduced flora were recorded
- Vegetation type 1 (VT01) does not represent any *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or *Biodiversity Conservation Act 2016* (BC Act) listed Threatened Ecological Communities or Department of Biodiversity Conservation and Attractions (DBCA) listed Priority Ecological Communities
- Ninety two flora taxa (including subspecies and varieties) representing 38 families and 79 genera were recorded from the survey area during the field survey. Ten introduced flora taxa recorded
- No EPBC Act, BC Act listed flora, nor Priority flora listed by the DBCA were recorded within the survey area
- *Jacquemontia* sp. Broome (A.A. Mitchell 3028) (P1) and *Polymeria* sp. Broome (Priority 3) are considered likely to occur. Both taxa have been previously recorded immediately north and north east of the survey area (GHD 2018, GHD 2019b)
- The likelihood of occurrence assessment post-field survey conducted that no Threatened flora is likely to occur in the survey area
- One broad fauna habitat type was identified during the field survey. The fauna habitat is described as red sandy loam pindan plain supporting tall mixed Acacia shrubland
- A total of 50 fauna species were recorded within the survey area, including 43 birds, 2 mammals and 5 reptiles
- No evidence of Greater Bilby activity (footprints, foraging holes, burrows or scat) was recorded within the survey area. Although not recorded within the survey area the Greater Bilby is considered likely to occur given the close proximity of local occurrence, high mobility of the species and its ability to utilise the habitat of the survey area
- The proposed development is considered not to have a significant impact on the flora, vegetation and fauna habitat values at a local and regional scale due to the high representation and continuation of vegetation in the region outside of the survey area

- Based on the assessment against the ten clearing principles, clearing of native vegetation within the survey areas is unlikely to be at variance to any principle.

Table of contents

1.	Introduction.....	1
1.1	Background.....	1
1.2	Purpose of this report.....	1
1.3	Project area.....	1
1.4	Scope of works	1
1.5	Relevant legislation, conservation codes and background information.....	2
2.	Methodology.....	4
2.1	Desktop assessment.....	4
2.2	Field survey.....	4
2.3	Survey limitations.....	7
3.	Desktop assessment.....	10
3.1	Climate.....	10
3.2	Landforms and soil.....	10
3.3	Hydrology.....	11
3.4	Regional biogeography	11
3.5	Vegetation and flora.....	12
3.6	Fauna diversity.....	13
4.	Survey results	14
4.1	Flora and vegetation	14
4.2	Fauna.....	19
5.	Assessment against the ten clearing principals.....	23
6.	Conclusion and recommendations.....	29
7.	References.....	30

Table index

Table 1	Key environmental legislation relevant to the project.....	3
Table 2	Data collected during the flora and vegetation survey	5
Table 3	Fauna references	7
Table 4	Field survey limitations	8
Table 5	Land systems mapped within the survey area	11
Table 6	Extent of pre-European vegetation association.....	12
Table 7:	Vegetation type recorded within the survey area	15
Table 8	Fauna habitat types	20
Table 9	Conservation significant fauna likely to occur in the survey area	21
Table 10	Assessment against the 10 clearing principals	24

Appendices

Appendix A – Figures

Appendix B – Relevant legislation, background information and conservation codes

Appendix C – Desktop searches

Appendix D – Flora data

Appendix E – Fauna data

1. Introduction

1.1 Background

The Water Corporation is examining options for Broome North Waste Water Treatment Plant (WWTP) in the town of Broome, Western Australia.

GHD Pty Ltd (GHD) was commissioned by the Water Corporation to undertake a detailed and targeted flora and vegetation assessment and a Level 1 fauna assessment over Lot 2548, which is a rectangular parcel of land (the survey area) located to the adjacent north of the existing Broome WWTP irrigation pivots; and an assessment against the *Environmental Protection Act 1986* (EP Act) ten clearing principles.

1.2 Purpose of this report

Water Corporation commissioned GHD to undertake a flora and fauna survey. The purpose of the assessment was to identify key flora and fauna constraints within the survey area. This report details the flora and fauna results, which will be used to identify and assess key constraints and inform the environmental assessment and approvals process and to support a native vegetation clearing permit.

1.3 Project area

1.3.1 Survey area

The survey area is located along Crab Creek Road, approximately 6 kilometers (km) north east of Broome. The survey area is approximately 148 hectares (ha) and is shown in Figure 1, Appendix A.

1.3.2 Study area

The study area includes the survey area and an additional 10 km radius buffer area. The study area defines the limits of the desktop assessment as described in section 2.1 and 3.

1.4 Scope of works

The scope of works for the flora and fauna assessment included:

- A desktop assessment including department of Biodiversity Conservation and Attractions (DBCAs) database searches for flora and fauna
- A detailed and targeted flora and vegetation assessment to identify:
 - Vegetation types present, including presence of any Threatened or Priority Ecological Communities (TECs or PECs) or other significant vegetation
 - Vegetation condition, including the location of any Weeds of National Significance (WONS) or Declared Weeds
 - Flora species present including introduced species
 - The presence or likelihood of any Threatened, Priority or other significant flora
- A reconnaissance (Level 1) and targeted fauna assessment to identify:
 - Broad fauna habitat types
 - Fauna species present including introduced species

- The presence or likelihood of any Threatened or Priority fauna, with a focus on the Greater Bilby
- Preparation of a technical report that documents the results of the desktop assessment and field survey, including mapping and assessment against the ten clearing principals (this report).

1.4.1 Limitations and assumptions

This report: has been prepared by GHD for Water Corporation and may only be used and relied on by Water Corporation for the purpose agreed between GHD and the Water Corporation as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Water Corporation arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Water Corporation and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

1.5 Relevant legislation, conservation codes and background information

Key Commonwealth and State (WA) environmental legislation that may be relevant to the project is outlined in Table 1.

An overview of key legislation and guidelines, conservation codes and background information relevant to this biological survey is provided in Appendix B.

Table 1 Key environmental legislation relevant to the project

Legislation	Responsible agency	Aspect
Commonwealth legislation		
<i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)	Department of Environment and Energy (DEE)	Matters of National Environmental Significance including threatened flora and fauna
State legislation		
<i>Biodiversity Conservation Act 2016</i> (BC Act)	DBCA	Conservation and protection of biodiversity and biodiversity components
EP Act	Environmental Protection Authority (EPA) (Part IV) Department of Water and Energy Resources (Part V) (DWER)	Environmental impact assessment and management
Environmental Protection (Clearing of Native Vegetation) Regulations 2004	DWER	Clearing of native vegetation

2. Methodology

2.1 Desktop assessment

Prior to the commencement of the flora and fauna survey, a desktop assessment was undertaken to identify environmental information relevant to the survey area and to assist in survey design. Marine fauna species have been omitted from the results, as the survey area does not intersect suitable habitat for these species. The desktop assessment included a review of the following:

- DEE Protected Matters Search Tool (PMST) to identify species and communities listed under the EPBC Act potentially occurring within the study area (DEE 2019a) (Appendix C)
- DBCA TECs and PECs database to determine the potential for TECs or PECs to be present within the study area (DBCA 2019a)
- DBCA Threatened and Priority Flora and Fauna, and WA Herbarium (WAHERB) databases for Threatened species listed under the BC Act and listed as Priority by the DBCA, previously recorded within the study area (DBCA 2019b and DBCA 2019c)
- The DBCA and WA Museum (WAM) *NatureMap* database for flora and fauna species previously recorded within the study area (DBCA 2007–2019) (Appendix C)
- Reports for previous GHD biological survey undertaken in the Broome area (GHD 2010, GHD 2014, GHD 2015, GHD 2016a, GHD 2016b, GHD 2018, GHD 2019a (in prep), GHD 2019b (in prep)).

The locations of conservation significant flora, fauna, TECs and PECs that have been previously recorded within proximity of survey area are presented in Figure 2, Appendix A.

2.2 Field survey

2.2.1 Flora and vegetation

GHD Senior Botanist Joel Collins (SL012542 and DRF 82-1819) completed a detailed and targeted flora and vegetation survey of the survey area from 29 April to 5 May 2019. The field survey was undertaken to identify and describe the dominant vegetation types, assess vegetation condition, and identify and record vascular flora taxa present at the time of survey. Opportunistic searches for conservation significant or other significant ecological communities and flora taxa were also undertaken during the field survey.

The survey methodology employed was undertaken with reference to the EPA Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016a).

Data collection

Field survey methods involved quadrat sampling and traversing the survey area by foot. Photo reference sites were conducted along the survey area to describe the vegetation and physical features. Three quadrats and one relevé were conducted within the survey area with the locations of each sampling site presented in Figure 3, Appendix A. Field data at each site was recorded on a pro-forma data sheet and included the parameters detailed in Table 2.

A flora inventory was compiled from taxa listed in each quadrat and from opportunistic floristic records throughout the survey area. Survey and quadrat data are provided in Appendix D

Table 2 Data collected during the flora and vegetation survey

Aspect	Measurement
Collection attributes	Site code, personnel/recorder, date, photograph of the site.
Physical features	Landform, slope, aspect, soil attributes, ground surface cover, leaf and wood litter.
Location	Coordinates recorded in GDA94 datum using a hand-held Global Positioning System (GPS) tool to accuracy approximately ± 5 m.
Vegetation condition	Vegetation condition using the condition rating scale adapted by EPA (2016a) for the Northern Botanical Provinces.
Disturbance	Level and nature of disturbances (e.g. weed presence, fire and time since last fire, impacts from grazing, previous clearing).
Flora	List of dominant flora from each structural layer, list of all species at each quadrat including stratum, average height and cover using National Vegetation Information System (NVIS).

Vegetation types

Vegetation types were identified and boundaries delineated using a combination of aerial photography, topographical features and field data/observations.

Vegetation types were described based on structure, dominant taxa and cover characteristics as defined by field observations. Vegetation type descriptions are consistent with NVIS Level V (Association). At Level V up to three taxa per stratum are used to describe the association (ESCAVI 2017).

Statistical analysis

The similarity between the survey quadrats were examined using PRIMER with all species recorded (presence/absence) in the quadrats analysed. Cluster analysis was undertaken and dendrograms produced showing similarity between quadrats sampled.

Vegetation condition

The vegetation condition was assessed and mapped in accordance with the vegetation condition rating scale for the Northern Botanical Provinces (devised by Trudgen (1988) and adapted by EPA (2016a)). The scale recognises the intactness of vegetation and consists of six rating levels.

Flora identification and nomenclature

Species well known to the survey botanist were identified in the field; all other species were collected and assigned a unique collection number to facilitate tracking. All specimens collected were identified using taxonomic literature, local and regional flora keys and by comparison with the named species held at the WA Herbarium.

The conservation status of all recorded flora was compared against the current lists available on FloraBase (WA Herbarium 1998–2019). Nomenclature used in this report follows that used by the WA Herbarium as reported on FloraBase (WA Herbarium 1998–2019).

Conservation significant flora

Prior to the field survey, information obtained from the desktop assessments (e.g. EPBC Act PMST, *NatureMap* and DBCA database search results) was reviewed to determine conservation significant flora taxa potentially present within the survey area. Systematic transects for conservation significant flora were undertaken throughout the survey area. If individuals were identified, the location and number of plants present were recorded using handheld GPS units and Samsung S2 tablets.

2.2.2 Fauna

GHD senior zoologist Robert Browne-Cooper undertook a Level 1 fauna (reconnaissance) and targeted survey from 4 - 8 May 2019. The survey area was traversed by foot over the course of the field survey to identify and describe the dominant fauna habitat types present and their condition and identify and record fauna species within the survey area. An assessment of the likelihood of conservation significant fauna and their habitats occurring within the survey area was also undertaken.

The survey methodology employed was undertaken with reference to:

- EPA Technical Guidance – Sampling methods for Terrestrial Vertebrate Fauna Surveys, Perth, Environmental Protection Authority (EPA 2016b).
- EPA Technical Guidance –Terrestrial Fauna Surveys, Perth, Environmental Protection Authority (EPA 2016c)
- Survey Guidelines for Australia's threatened Mammals. Guidelines for detection mammals listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (DSEWPaC 2011)
- Verifying Greater Bilby presence and the systematic sampling of wild populations using sign-based protocols – with notes on aerial and ground based techniques and asserting absence (Southgate et.al 2018)
- Guidelines for surveys to detect the presence of bilbies, and assess the importance of habitat in Western Australia. V1 August 2017 (DBCA 2017).

Targeted survey including for Greater Bilby

The Greater Bilby is recognised as a locally and regionally significant species that requires targeted survey in the Broome area. GHD has previously undertaken several Greater Bilby surveys in the Broome area (GHD 2010, GHD 2016a, GHD 2016b, GHD 2019a (in prep), GHD 2019b (in prep)). The sampling technique endorsed by the DEE references Southgate's methods of Greater Bilby Plot Assessments (Southgate et al. 2005) and by the DBCA guidelines (DBCA 2017), which involves an assessment of 2 hectare plots as a method of sampling a proportion of a given survey area. The approach for the current survey was to extend the plot assessment method throughout the survey area to detect Greater Bilby activity and specifically to detect burrows of resident animals if present. By extending the plot assessment method to cover the entire survey area, the target survey provided complete coverage.

The survey area was traversed on foot for evidence of Greater Bilby activity indicating recent presence. Searching was carried out by three personnel including senior zoologist Robert Browne-Cooper, with assistance from Wayuru Traditional Owners. Personnel walked in a line spaced approximately 20 - 30 metres apart providing adequate on-ground coverage to target Greater Bilby. During the traverses, where present, evidence of the species was recorded including burrows, foot prints, foraging signs, and scats.

Habitat assessment

The survey area was assessed for habitat characteristics based on soil topography, and vegetation structural complexity, connectivity, disturbance, type and extent of resource availability and value for fauna, particularly Greater Bilby. Specifically, the assessment included:

- Habitat structure (e.g. vegetation type, presence/absence of over-storey, mid-storey, understorey, and ground cover)
- Presence/absence of refuge including: fallen timber (coarse woody debris), hollow-bearing trees and stags and rocks/breakaways, and the type and extent of each refuge

- Location of the habitat within the survey area in comparison to the habitat within the surrounding landscape
- Habitat connectivity and identification of wildlife corridors within and immediately adjacent to the survey area
- Identification and evaluation of key habitat features and types identified during the desktop assessment relevant to fauna of conservation significance
- Evaluation of the likelihood of occurrence of conservation significant fauna within the habitat based on presence of suitable habitat.

Opportunistic fauna observations

Opportunistic fauna searches were conducted throughout the survey area and focussed on the following:

- Searching the survey area for tracks, scats, pellets, skeletal remains, diggings, feathers, nests and feeding areas indicating the current or recent presence of native and feral fauna
- Searching through microhabitats within the survey area
- Opportunistic observations of species in the survey area, including visual and aural sightings
- Observed fauna were recorded and where conservation significant fauna were identified, photographs, GPS points and habitat data were recorded.
- Setting of a remote camera opportunistically within the survey area to capture images of fauna.

Fauna identification and nomenclature

Identification of fauna species was made in the field using available field guides and electronic guides (e.g. Morcombe 2014).

Nomenclature used in this report follows WAM as reported on *NatureMap* (DPaW 2007–2019). This nomenclature is considered the most up-to-date species information for WA groups: reptiles, amphibians, invertebrates and mammals (including bats). All bird nomenclature follows Christidis and Boles (2008). Other reference materials used are presented in Table 3.

Table 3 Fauna references

Fauna Group	Field Guide
Mammals	Menkhorst and Knight (2010), Van Dyck and Strahan (2013)
Birds	Morcombe (2004)
Reptiles	Wilson and Swan (2017)
Amphibians	Tyler and Doughty (2009)

2.3 Survey limitations

2.3.1 Desktop limitations

The EPBC Act PMST is based on bioclimatic modelling for the potential presence of species. As such, this does not represent actual records of the species within the area. The records from the DBCA searches of Threatened fauna provide more accurate information for the general area and local occurrence. However, some records of collections, sightings or trappings cannot be dated or have plain language locality descriptions and may misrepresent the current range of a species.

2.3.2 Field survey limitations

The EPA (2016a and 2016b) technical guidance recommend flora and fauna survey reports for environmental impact assessment in WA should contain a section describing the limitations of the survey methods used. The limitations and constraints associated with this field survey are discussed in Table 4. Based on this assessment, the present survey effort has not been subject to any constraints that affect the thoroughness of the assessment and the conclusions which have been formed.

Table 4 Field survey limitations

Aspect	Constraint	Comment
Sources of information and availability of contextual information.	Nil	Adequate information is available for the survey area, this includes broadscale (1:1,000,000) mapping by Beard (1977) and digitised by Shepherd et al. (2002) and database searches (DBCA and <i>NatureMap</i>).
Scope (what life forms were sampled etc.)	Nil	Vascular flora and terrestrial vertebrate fauna were sampled during the survey. Non-vascular flora, invertebrate and aquatic fauna were not surveyed.
Proportion of flora collected and identified (based on sampling, timing and intensity) Proportion of fauna identified, recorded and/or collected	Minor	<p>The detailed and targeted vegetation and flora survey was undertaken in early May, which is slightly later than the recommended timing for flora surveys in the Northern Botanical Province region. The recommended timing is during the wet season (January-March) (EPA 2016a); however, the survey timing is regarded as acceptable as it is regarded as still within the wet season. The flora recorded from the field survey is detailed in section 4.1.3 and a full flora list is presented in Appendix D. The timing is considered appropriated due to the high proportion of species able to be identified at the time of the survey. The survey timing was also within the flowering time of the Threatened species <i>Seringia exastia</i>, which begins flowering in late April (WA Herbarium 1998-2019).</p> <p>The reconnaissance fauna survey was also undertaken in May 2019. The fauna assessment sampled those species that can be easily seen, heard or have distinctive signs, such as tracks, scats, diggings, etc. Many cryptic species would not have been identified during a reconnaissance survey and seasonal variation within species often requires targeted surveys at a particular time of the year. Of the fauna species recorded during the survey, all were identified to species level.</p> <p>The fauna assessment was aimed at identifying habitat types and terrestrial vertebrate fauna utilising the survey area. No sampling for invertebrates or aquatic species occurred. The information available on the identification, distribution and conservation status of invertebrates is generally less extensive than vertebrate species.</p>
Flora determination	Minor	<p>Flora determination was undertaken by the survey botanist in the field. Species that could not be identified in the field were collected and identified at the WA Herbarium by the experienced taxonomic botanist Frank Obbens.</p> <p>One taxa were uncertain at a species level due to lack of fruiting material. This collection is not similar to known conservation significant flora (as identified in the desktop searches).</p>
Completeness and further work which might be needed (e.g. was the relevant area fully surveyed)	Minor	Due to the size (approximately 148 ha) and good access, all areas of the survey area were adequately surveyed with transects through-out. Adequate number of floristic sampling was done for a detailed flora survey.

Aspect	Constraint	Comment
Mapping reliability	Minor	<p>High-resolution ESRI aerial imagery obtained from Landgate, topographical features, previous broad scale mapping (Beard 1977) and field data were used for mapping.</p> <p>Data were recorded in the field using hand-held GPS tools (e.g. Samsung tablet and Garmin GPS). Certain atmospheric factors and other sources of error can affect the accuracy of GPS receivers. The Garmin GPS units used for this survey are accurate to within ± 5 metres on average. Therefore the data points consisting of coordinates recorded from the GPS may contain minor inaccuracies.</p>
Timing/weather/season/cycle	Minor	<p>The field surveys were conducted during autumn (29 April to 5 May 2019 for flora and vegetation survey and 4-8 May 2019 for the fauna survey).</p> <p>In the three months prior to the survey (February-April), the Broome airport weather recording station (No. 003003, Bureau of Meteorology (BoM) 2019) recorded a total of 135.2 mm of rainfall. This is well below the recorded long-term average for the same period (February-April; 305.3 mm) (BoM 2019).</p> <p>The weather conditions recorded during the survey were generally dry, warm/hot and high humidity with light winds. A summary of the climatic conditions are provided:</p> <ul style="list-style-type: none"> • Daily maximum temperature 37.6 °C • Daily minimum temperature 18.7 °C • Daily rainfall 0 mm. <p>The weather conditions recorded during the survey periods are considered unlikely to have impacted upon the flora survey, however, may have reduced some fauna species activity and breeding during the time of the survey. This potential reduction in fauna activity is considered to be minor, given that 135.2 mm was received within the three months prior to the survey. The survey timing was considered appropriate for the flora and fauna field survey.</p>
Disturbances (e.g. fire, flood, accidental human intervention)	Nil	<p>Due to the high quality condition of the vegetation community, no significant sources of disturbance were present during the survey. There was no recent evidence of fire or flood throughout the survey area.</p>
Intensity (in retrospect, was the intensity adequate)	Nil	<p>The vascular flora of the survey areas were sampled in accordance with EPA (2016a) and terrestrial fauna sampled in accordance to EPA (2016b).</p> <p>The survey area was sufficiently covered by the survey team during the survey.</p>
Resources	Nil	<p>Adequate resources were employed during the field survey. Four person days were spent undertaking the survey using two experienced personnel: senior botanist and senior zoologist.</p>
Access restrictions	Nil	<p>No access problems were encountered during the survey.</p>
Experience levels	Nil	<p>The botanist/zoologists who executed the survey are practitioners suitably qualified and experienced in their respective fields. Senior Botanist Joel Collins has over 16 years' experience in undertaking flora and vegetation surveys within the northern bioregions of WA. Senior Zoologist Robert Browne-Cooper has over 16 years' experience undertaking fauna surveys within the northern bioregions of WA.</p>

3. Desktop assessment

3.1 Climate

The Broome area has a tropical climate and is characterised by hot wet summer (December to March) and a dry season (April to November). Rainfall is generally received during the summer as a result of unpredictable tropical downpours and cyclonic low pressure systems. The closest BoM weather station with sufficient historical data is Broome Airport (site number 003003), located approximately 13 km south of the survey area (Plate 1). Climate data from this station indicates the mean maximum temperature ranges from 34.3 °C in April to 28.9 °C in July. The mean minimum temperature ranges from 26.5 °C in December to 13.7 °C in July. The mean annual rainfall is 615.5 mm, with approximately 77 rain days a year (BoM 2019).

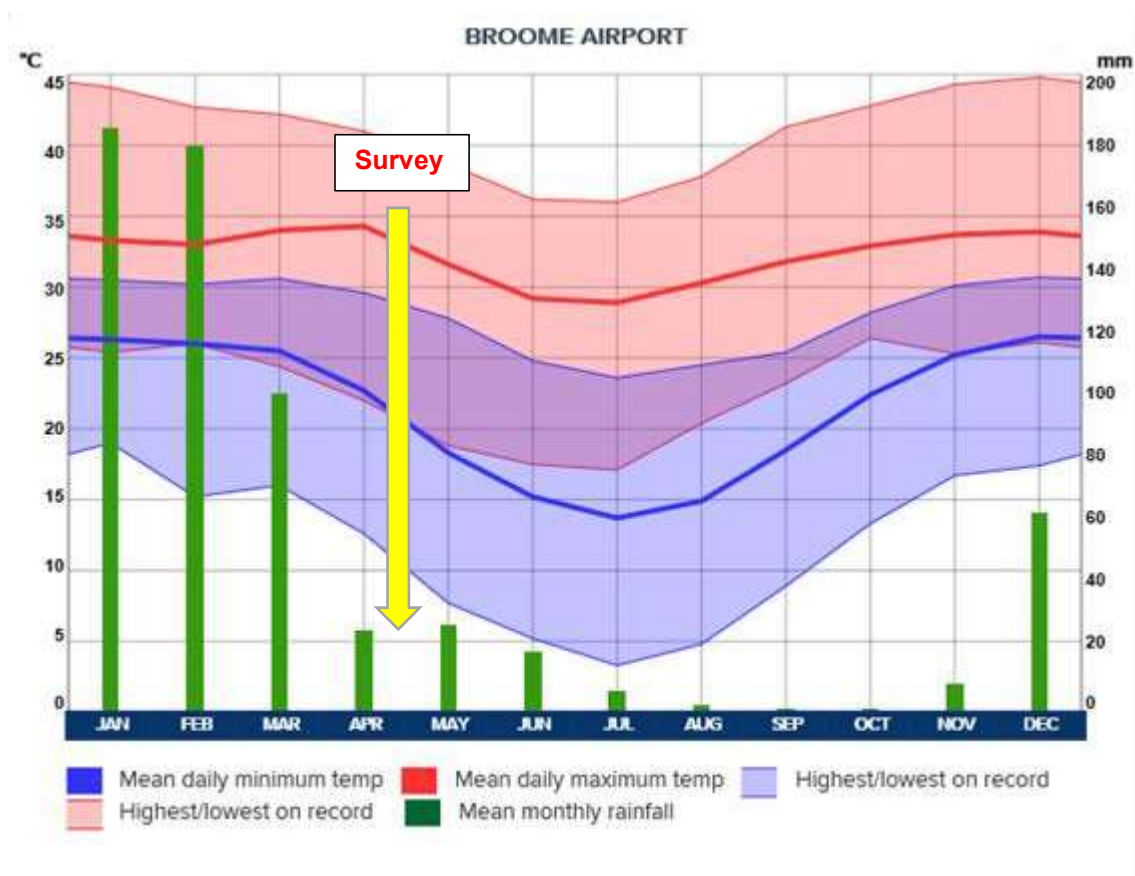


Plate 1 Broome Airport Climate Data (1939-2019) (source BoM 2019)

3.2 Landforms and soil

3.2.1 Land systems and Soil

The Kimberley region has been surveyed by the Department of Agriculture and Food, Western Australia (DAFWA) and others for the purposes of land classification, mapping and resource evaluation. One hundred and eleven land systems have been described for the region, which are distinguished on the basis of topography, geology, soils and vegetation (Payne and Schoknecht 2011). Three land systems are relevant within the Broome region and the survey area (Table 5).

Table 5 Land systems mapped within the survey area

Land system	Description	Geology	Geomorphology
Wanganut	Low-lying sandplain and dunefields with through-going drainage, pindan	Quaternary aeolian soils	Sandplain and dunefields with through-going drainage: sandplain, mainly in the upper parts, with stable dunefields, low lying sandplain, and scattered pans and depressions; sparse to moderately dense branching drainage pattern; relief up to 9 m.
Yeeda	Sandplain, deep red and yellow sands, pindan and tall woodlands	Quaternary aeolian sands	Sandplain and dunefields with little organised drainage; sandplain up to 16 km in extent, with shallow valleys, plains with thin sand cover, and scattered pans; limited surface drainage in zones of sheet-flow up to 3.2 km wide and extending up to 8 km downslope from adjacent uplands.
Carpentaria	Coastal plains, cliffs, dunes, mudflats and beaches; various vegetation types	Quaternary estuarine and littoral calcareous mud and silty sand; aeolian sand	Saline coastal flats: saline estuarine and littoral flats with extensive bare mud surfaces and slightly higher samphire flats; mangrove fringes occur along the seaward margin, and short sandy slopes, with outlying low sandy rises, occur at the landward margin; minor fixed dunes; dense, intricately branching pattern of shallow tidal inlets; slopes mainly less than 0.3%.

3.3 Hydrology

3.3.1 Surface water and drainage

There are no natural drainage lines or water bodies occurring within the survey area, however, there is artificial water treatment dams associated with the WWTP. For the majority of the survey area surface water and drainage is good generally due to the flat level topography and permeable sandy pindan soil. Surface water is likely to be infrequent and highly temporary during heavy and extended rainfall.

3.3.2 Wetlands

No Wetlands of International Importance (Ramsar) or nationally important wetlands intersect the survey area. The closest wetlands of the nationally importance include Willie Creek Wetlands located approximately 14 km northwest, and Dampier Creek located approximately 4 km southwest of the survey area. One Ramsar wetland (and nationally important wetland), Roebuck Bay is located approximately 7 km south of the survey area.

3.4 Regional biogeography

The survey area is situated in the Northern Botanical Province of WA (Beard 1990), within the Dampierland bioregion and Pindanland sub-region as described by the Interim Biogeographic Regionalisation of Australia (IBRA).

The Pindanland sub-region is located in the western part of the Dampierland bioregion and is the coastal, north-western margin of the Canning Basin. The sub-region comprises the sandplains of the Dampier Peninsula and the western part of Dampier land including the

hinterland of Eighty Mile Beach. The sub-region supports vegetation primarily described as Pindan (Graham 2001). Graham (2001) describes four basic components to the Pindanland sub-region:

- Quaternary sandplain overlying Jurassic and Mesozoic sandstones with Pindan, hummock grasslands on hills
- Quaternary marine deposits on coastal plains, with mangal, samphire – *Sporobolus* spp. grasslands, *Melaleuca alsophila* low forests, and *Spinifex* spp. – *Crotalaria* spp. strand communities
- Quaternary alluvia plains associated with the Permian and Mesozoic sediments of Fitzroy Trough support tree savannahs of ribbon grass (*Chrysopogon* spp.) – bluegrass (*Dichanthium* spp.) grasses with scattered coolibah (*Eucalyptus microtheca*) – *Bauhinia cunninghamii*
- Riparian forests of river red gum (*Eucalyptus camaldulensis*) and Cadjeput (*Melaleuca* spp.) fringe drainages.

3.5 Vegetation and flora

Broad scale (1:1,000,000) pre-European vegetation mapping of the Broome area was completed by Beard (1977) at an association level. The mapping indicates there is one vegetation association present within the survey area:

- Shrublands, pindan; *Acacia tumida* shrubland with grey box [*Eucalyptus tectifica*] and cabbage gum [*Corymbia flavescens*] medium woodland over ribbon grass [*Chrysopogon* spp.] and curly spinifex (association 750)

The pre-European mapping has been adapted and digitised by Shepherd *et al.* (2002). The extent of the vegetation association has been determined by the State-wide vegetation remaining extent calculations maintained by DBCA (latest update March 2019 – Government of WA (GoWA) 2019). As shown in Table 6, the current extent remaining of the vegetation association is greater than 99 per cent of its pre-European extent at all scales (state, IBRA bioregion, IBRA sub-region and Local Government Area (LGA)).

Table 6 Extent of pre-European vegetation association.

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed land (proportion of current extent)
750 Pindan Shrublands	State: WA	1,231,155.50	1,255,687.52	99.56	2.78
	IBRA bioregion: Dampierland	1,229,182.16	1,225,280.52	99.68	2.78
	IBRA sub-region: Pindanland	1,221,734.45	1,217,843.72	99.68	2.80
	LGA: Shire of Broome	1,115,559.36	1,110,131.18	99.51	3.07

3.5.1 Conservation significant ecological communities

The DBCA TEC and PEC database identified the survey area is within the buffer of the TEC Roebuck Bay mudflats - Species-rich faunal community of the intertidal mudflats of Roebuck Bay (DBCA 2019a) (Figure 2, Appendix A). The EPBC Act PMST identified one EPBC Act listed TEC occurring within 10 km of the survey area; the Endangered Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula (TEE 2019).

3.5.2 Flora diversity

The *NatureMap* database identified 527 flora taxa previously recorded within the study area (DBCA 2007-2019) (Appendix C). Dominant families included:

- Fabaceae (332 taxa)
- Poaceae (179 taxa)
- Malvaceae (130 taxa).

3.5.3 Conservation significant flora

Desktop searches of the EPBC Act PMST, *NatureMap*, DBCA Threatened (Declared Rare) and Priority Flora (TPFL) and WAHERB databases identified the presence/potential presence of 14 conservation significant flora taxa within the study area (Figure 2, Appendix A). The desktop searches recorded:

- One taxa listed as Critically Endangered under the EPBC Act and Threatened under the BC Act
- Three Priority 1 (P1) flora taxa
- Two Priority 2 (P2) flora taxa
- Eight Priority 3 (P3) flora taxa.

3.6 Fauna diversity

The database searched identified 301 vertebrate fauna species previously recorded within the study area (DBCA 2007-2019) (Appendix C). This total includes 10 amphibians, 213 birds, 20 mammals and 58 reptiles. Of these, 289 are native species and 12 are introduced species.

3.6.1 Conservation significant fauna

The EPBC Act PMST, *NatureMap* and DBCA databases identified the presence/potential presence of 70 conservation significance fauna species occurring within or in proximity of the study area (Figure 2, Appendix C). The desktop searches recorded the following:

- Thirteen species listed as Threatened under the EPBC Act and/or as Schedule 1-4 (Threatened) under the BC Act
- One species listed as Schedule 7 (Other specially protected fauna) under the BC Act
- 47 species listed as migratory (Terrestrial and Wetland) under the EPBC Act and/or as Schedule 5 (Migratory birds protected under an international agreement) under the BC Act
- Nine species listed as Priority by DBCA.

The majority of the species listed as Threatened or Migratory are either marine or wetland dependant shorebirds that are highly unlikely to occur within the survey area due to lack or suitable habitat.

4. Survey results

4.1 Flora and vegetation


4.1.1 Vegetation types

One vegetation type was identified and described in the survey area (VT01) associated with the Pindan plain (Table 7 and Figure 4, Appendix A).

4.1.2 Statistical analysis

The similarity between the quadrats were examined using PRIMER with all species recorded in the quadrats analysed based on presence/absence. The cluster analysis and resulting dendrogram showed all quadrats had high similarity with each other. WWTP_10 and WTP_12 clustered together at 73% similarity, with WWTP_11 joining the clade at 64% similarity. The statistical analysis supports the sampling and mapping of one vegetation type within the survey area (VT01). The outputs from the statistical analysis are presented in Appendix D.

Table 7: Vegetation type recorded within the survey area

Vegetation type	Description	Landform and sample locations	Representative photograph
VT01	<p><i>Acacia plectocarpa</i> subsp. <i>Acacia plectocarpa</i> subsp. <i>plectocarpa</i>, <i>Acacia tumida</i> var. <i>kulparn</i> and <i>Hakea macrocarpa</i> shrubland with scattered <i>Corymbia confertiflora</i>, <i>Corymbia zygophylla</i> and <i>Corymbia greeniana</i> trees over <i>Dolichandrone occidentalis</i> and <i>Bauhinia cunninghamii</i> sparse shrubland over <i>Acacia adoxa</i> var. <i>subglabra</i>, <i>Corchorus sidioides</i> subsp. <i>sidioides</i> and <i>Dodonaea hispidula</i> var. <i>arida</i> sparse shrubland over <i>Aristida latifolia</i>, <i>Chrysopogon pallidus</i> and <i>Whiteochloa cymbiformisa</i> tussock grassland over <i>Triodia caelestialis</i> sparse hummock grassland on Pindan red sand loam</p>	<p>Landform: Pindan plain Sample locations: WWTP_10, WWTP_11, WWTP_12, WWTP_17 (Releve)</p>	

4.1.1 Vegetation condition

The majority of the survey area was rated as Excellent for vegetation condition. The vegetation structure was intact with limited signs of cattle activity and a low number of introduced flora were recorded. There were areas of previous disturbance through clearing and soil movement, most likely as a result of the development of the irrigation pivots in the adjoining land. These areas were rated as Completely Degraded as the vegetation structure was mostly destroyed and there were high covers of introduced species (Plate 2). In the south west corner of the survey area the vegetation has been recently cleared and rated as Completely Degraded (Plate 3). Areas surrounding the WWTP dams and associated infrastructure (sheds) have been rated as Degraded, due to high weed cover and vegetation structure being highly modified. There are internal tracks throughout the survey area that have been previously cleared with some signs of edge effects along these tracks, such as weed invasion in some areas. The survey area is fenced and has limited signs of vehicle access. The vegetation has not been previously disturbed through clearing and the time since last fire event is approximately 15 years. The vegetation condition mapping is shown in Figure 4, Appendix A.



Plate 2 Areas of soil movement rated as Completely Degraded



Plate 3 Area previously cleared rated as Completely Degraded

4.1.2 Conservation significant ecological communities

Vegetation type 1 (VT01) does not represent any EPBC Act or BC Act listed TECs or DBCA listed PECs.

4.1.3 Flora diversity

Ninety two flora taxa (including subspecies and varieties) representing 38 families and 79 genera were recorded from the survey area during the field survey. Ten introduced flora taxa recorded.

Dominant families recorded from the survey area included:

- Fabaceae (17 taxa)
- Poaceae (19 taxa)
- Malvaceae (7 taxa).

Based on described quadrats, species diversity ranged from 33 to 36 (average 34) taxa per 2,500 m².

4.1.4 Introduced flora

Ten introduced species were recorded within the survey area with the high numbers as a result of the previous clearing and soil movement. The ten introduced species recorded within the survey area are:

- **Azadirachta indica*
- **Bothriochloa pertusa*
- **Calotropis gigantea*
- **Cenchrus biflorus*
- **Cenchrus ciliaris*
- **Distimake dissectus*
- **Sida acuta* subsp *acuta*
- **Stylosanthes scabra*
- **Ocimum basilicum*
- **Passiflora foetida* var. *hispida*

**Azadirachta indica*, **Bothriochloa pertusa*, **Cenchrus ciliaris*, **Ocimum basilicum*, **Sida acuta* subsp *acuta* and **Stylosanthes scabra* were the most common introduced species recorded across the survey area. **Ocimum basilicum* (Plate 4) was recorded at less than 10% cover at WWTP_11 and occurs in areas rated as Completely Degraded to Good. **Passiflora foetida* var. *hispida* (Plate 5) and **Cenchrus biflorus* were recorded opportunistically within the survey area at low numbers and covers. **Azadirachta indica* (Plate 6) was recorded at WWTP_10 and WWTP_11 and opportunistically in disturbed areas. All other introduced species occurs in areas rated as Completely Degraded to Good. None of the recorded introduced species are listed as Declared pest plants under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) and/or a Weeds of National Significance (WoNS). All of the introduced flora have been previously recorded from the Dampierland bioregion and Pindarland sub-region.



Plate 4 * *Ocimum basilicum* flower



Plate 5 * *Passiflora foetida* var. *hispida* flower



Plate 6 * *Azadirachta indica* neem tree

4.1.5 Conservation significant flora

No EPBC Act or BC Act listed flora were recorded within the survey area. No Priority flora listed by the DBCA were recorded within the survey area.

Likelihood of occurrence assessment

A likelihood of occurrence assessment was conducted post-field survey for all conservation significant flora taxa identified in the desktop assessment (Appendix D). This assessment took into account previous records, habitat requirements, efficacy of the survey, intensity of the survey, flowering times and the cryptic nature of species.

The likelihood of occurrence assessment post-field survey concluded two taxa are likely to occur and the remaining twelve taxa are unlikely to occur. The taxa that are likely to occur, *Jacquemontia* sp. Broome (A.A. Mitchell 3028) (P1) and *Polymeria* sp. Broome (Priority 3) have been previously recorded immediately north and north east of the survey area (GHD 2018, GHD 2019b).

4.1.6 Flora of interest

No taxa recorded are considered flora of interest and/or represent range extensions.

4.2 Fauna

4.2.1 Fauna habitat

Based on habitat assessment, one broad fauna habitat type was identified during the field survey. The fauna habitat is described as red sandy loam pindan plain supporting tall mixed *Acacia* shrubland dominating the upper strata, with occasional emergent *Corymbia*, over a mid-storey strata of mixed *Acacia* and other low shrubs over a lower strata of mixed tussock grasses and low forbs, and with occasional patches of soft-spined *Triodia* hummocks (Table 8). The fauna habitat type aligns with the vegetation community type (VT01) described on Table 7 and shown in Figure 4.

This habitat has generally consistent vegetation structure and composition that is largely homogeneous with minor variation in vegetation density across strata. The vegetation condition is considered to be excellent having negligible disturbance of weeds or ground disturbance. As well as this habitat type, there are areas of disturbance including clearings, and track associated with the WWTP infrastructure, including a recently cleared area in the southwest portion. These cleared areas are considered as completely degraded as they lack native vegetation structure and composition, have been subject to ground disturbance and have numerous weed species present. There is no evidence of recent or historical vegetation clearing and based on the site assessment there is no evidence of recent fire. Examining Google earth imagery indicates the survey area has remained un-burned for at least 15 years.

Within areas of habitat, there is a low proportion, approximately 5-10 percent of bare ground over most of the survey area due to a high density of ground cover vegetation leaf litter and other fallen dead vegetation. Leaf litter and other ground debris provides habitat and shelter for a range of small terrestrial vertebrates, especially fossorial reptiles. The tall shrubland provides suitable foraging and nesting habitat for a range of shrubland and woodland birds particularly insectivorous and nectar-feeding birds, terrestrial and arboreal reptiles, and large grazing mammals such as Agile Wallaby.

Sparse emergent trees provide some limited tree hollows for nesting and shelter, and there are very few moderate to large fallen logs suitable as shelter or den sites due to the low tree density. Most shelter habitat is in the form of dense shrub foliage and ground leaf litter. There are occasional large termite mounds that provide shelter, breeding sites and food source for a range of reptiles and mammals.

The WWTP ponds are artificial water bodies that provide foraging habitat for a range of wetland specialist birds such as ducks and shorebirds. Wastewater treatment facilities are well documented as being used by a range of migratory shorebird species (Morcombe 2004). Whilst these birds may visit the WWTP ponds on an occasional basis, the shrubland habitat surrounding the ponds that is the focus of the proposed WWTP pond upgrade construction is not suitable habitat for these wetland birds.

The study area is part of a larger continuous area of tall shrubland plain habitat throughout the surrounding area as it has a high degree of habitat connectivity with surrounding vegetation on the east, west and north sides having similar excellent condition vegetation.

Table 8 Fauna habitat types

Fauna habitat type description	Representative photographs
<p>Red sandy loam pindan plain supporting tall mixed <i>Acacia</i> shrubland dominating the upper strata, with occasional emergent <i>Corymbia</i>, over a mid-storey strata of mixed <i>Acacia</i> and other low shrubs over a lower strata of mixed tussock grasses and low forbs, and with occasional patches of soft <i>Triodia</i> hummocks.</p>	 <p>Habitat within the survey area</p>
<p>Completely degraded areas subject to vegetation clearing, ground disturbance and weed invasion</p>	



4.2.1 Fauna recorded

Fifty fauna species were recorded within the survey area, including 43 birds, 2 mammals and 5 reptiles. Most species recorded were opportunistic observations of active fauna or bird calls identified while traversing the study area during targeted fauna searches. The relatively high number of bird species recorded is due to the presence of numerous species associated with the WWTP ponds. All fauna species recorded are generally widespread and abundant within habitat of the local area and wider region. One introduced fauna species, Dog (*Canus domesticus*) was recorded. A list of fauna species identified in the desktop review for previous relevant surveys, and during the field survey is provided in Appendix E.

4.2.2 Conservation significant fauna

Targeted survey for Greater Bilby (Macrotis lagotis)

No evidence of Greater Bilby activity (footprints, foraging holes, burrows or scat) was recorded within the survey area. A motion camera installed for four nights along a firebreak did not record fauna.

Likelihood of occurrence assessment

A likelihood of occurrence assessment was conducted post field survey for conservation significant fauna identified in the desktop assessment. This assessment is based on species biology, habitat requirements, the quality and availability of suitable habitat as determined during the field survey, and local occurrence (Appendix E). The likelihood of occurrence assessment concluded six species of conservation significance are likely to occur (Table 9), and the remaining 64 species are unlikely or highly unlikely to occur within the survey area.

Table 9 Conservation significant fauna likely to occur in the survey area

Species	EPBC Act	BC Act/ DBCA	Likelihood of occurrence
Greater Bilby (<i>Macrotis lagotis</i>)	VU	VU	Likely – This species is known to occur locally based on previous records: active burrows have been recorded approximately 400 m north of the survey area and foraging sign recorded immediately adjacent to the east of the survey area along Crab Creek Road (GHD, 2015). No evidence of Greater Bilby activity was recorded within the survey area, however based on close proximity of records, habitat

Species	EPBC Act	BC Act/ DBCA	Likelihood of occurrence
			characteristics, this species is likely forage or move through the survey area, and the survey area habitat is potential burrowing habitat.
Peregrine Falcon (<i>Falco peregrinus</i>)		OS	Likely – Known to occur locally, and the pindan shrubland habitat within the study area represents suitably foraging habitat, although lacks suitable breeding habitat. Therefore likely to occur at least on an occasional basis.
Grey Falcon (<i>Falco hypoleucos</i>)		VU	Likely – Known to occur locally, although not listed within database searches. The Pindan shrubland habitat within the study area represents suitably foraging habitat. Therefore likely to occur at least on an occasional basis.
Gouldian Finch (<i>Erythrura gouldiae</i>)	EN	P4	Likely – Known to occur locally, may forage on seed of grasses when seasonally suitable within the survey area. The shrubland habitat throughout the survey has a paucity of suitable nesting breeding, and lacks nearby water sources, therefore it is unlikely to breed within the survey area.
Barn Swallow (<i>Hirundo rustica</i>)	MI	IA	Likely – This species is known to occur locally. The shrubland plains within the survey area represent suitable foraging habitat and likely to occur on an occasional or seasonal basis. Although the site lacks nesting habitat.
Dampierland Burrowing Snake (<i>Simoselaps minimus</i>)		P2	Likely. Known to occur locally Closest known record is approximately 4 km north of the survey area on Broome-Cape Leveque Road (GHD 2016b).

The likelihood of occurrence assessment identified other fauna species of conservation significance could occasionally occur within the habitats of the survey area (e.g. species deemed unlikely). However, it is considered unlikely the survey area provides important habitat (e.g. breeding habitat or key foraging habitat) for any of these species and that these other species may occasional use the habitats of the survey area for temporary refuge and dispersal between other areas of habitat.

A range of migratory shorebirds known to occur in the wider Broome area potentially forage within the existing WWTP water treatment ponds. Whilst these birds may visit the WWTP ponds on an occasional basis, these birds are unlikely to use the shrubland habitat surrounding the ponds that is the focus of the proposed WWTP pond upgrade construction, as this bushland is not suitable habitat for these wetland birds.

5. Assessment against the ten clearing principals

The clearing of vegetation in WA requires a permit under Part V of the EP Act, unless the proposal is formally assessed by the EPA or an exemption applies.

The Water Corporation has two State-wide Clearing Permits for new works and maintenance. CPS185/8 allows clearing for new water services infrastructure, new supporting infrastructure, new temporary works, new camps project surveys for the purposes of upgrading any of the above activities where such activities are not exempt from requiring a clearing permit.

Purpose Permit for maintenance, removal and decommissioning of existing water services infrastructure, including within ESAs; and prevention of imminent danger to human health including within ESAs. The Water Corporation Purpose Permit does not authorise the permit holder to clear native vegetation for the purpose of maintaining the efficacy of the existing water services infrastructure where:

- It does not have the power to clear native vegetation for those Project activities under the *Water Corporation Act 1995* or any other written law
- The clearing may be seriously at variance with the ten clearing principles
- The maintenance of existing water services infrastructure is incorporated in any proposal that is referred to and assessed under Part IV of the EP Act by the EPA
- The clearing may have a significant impact on a MNES under the EPBC Act.

Based on the assessment against the ten clearing principles provided in Table 10, clearing of native vegetation within the survey area is unlikely to be at variance to any principle.

Table 10 Assessment against the 10 clearing principals

Clearing Principle	Justification of Variance	Variance	References
(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	<p>The survey area is situated in the Northern Botanical Province of WA (Beard 1990), within the Dampierland bioregion and Pindarland sub-region.</p> <p>One vegetation type was identified within the survey area.</p> <p>Broad scale (1:1,000,000) pre-European vegetation mapping of the Broome area was completed by Beard (1977) at an association level. The mapping indicates there is one vegetation association present within the survey area:</p> <ul style="list-style-type: none"> Shrublands, pindar; <i>Acacia tumida</i> shrubland with grey box [<i>Eucalyptus tectifica</i>] and cabbage gum [<i>Corymbia flavesces</i>] medium woodland over ribbon grass [<i>Chrysopogon</i> spp.] and curly spinifex (association 750) <p>The survey area was rated as Excellent to Completely Degraded. There were areas of previous disturbance through clearing and soil movement, most likely as a result of the development of the irrigation pivots in the adjoining land. These areas were rated as Completely Degraded as the vegetation structure was mostly destroyed and there were high covers of introduced species</p> <p>The survey areas do not contain areas of native vegetation that are in better condition, or offer a higher floristic value than the surrounding environment.</p> <p>The field survey did not identify any TECs or PECs within the survey area. Similarly no other significant vegetation or vegetation that grows in, or in association with watercourses or wetlands was identified within the survey area during the field survey.</p> <p>Five hundred and twenty seven native flora taxa have been previously recorded within 10 km of the survey area. Eight five flora taxa (including subspecies and varieties) were recorded in the survey area during the field survey. Of these 3 were introduced.</p> <p>Desktop searches identified the presence/potential presence of 14 conservation significant flora taxa within the study area. No EPBC Act, BC Act or DBCA Priority-listed flora were recorded within the survey area during the field survey. A likelihood of occurrence assessment</p>	Not at variance with this principle.	<p>Beard (1990)</p> <p>DEE (2019a)</p> <p>DBCA (2007–2019)</p> <p>DBCA TEC and PEC databases</p> <p>DBCA TPFL and WAHERB databases</p> <p>WA Herbarium (1998–2019)</p>

Clearing Principle	Justification of Variance	Variance	References
	<p>conducted post-field survey concluded that one DBCA Priority-listed flora taxa may possibly occur within the survey area.</p> <p>One broad fauna habitat type was recorded from the survey area. Overall, native vegetation remains it is mostly intact and provides habitat for fauna.</p> <p>Three hundred and one fauna species have been previously recorded within 10 km of the survey area. The field survey recorded 29 native fauna species within the survey area.</p> <p>During the field survey no conservation significant fauna species were recorded.</p> <p>The survey areas contains one vegetation type and one fauna habitat type, and supports a range of flora and fauna species. The survey area is considered to have moderate to high level of biodiversity in areas rated as Excellent, and is likely to have a similar level of biodiversity compared with the surrounding area. The proposed upgrade of the WWTP is considered not to have a significant impact on the flora and vegetation values at a local and regional scale due to the high representation and continuation of vegetation in the region outside of the survey area.</p>		
<p>(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 WA.</p>	<p>One broad fauna habitat types was recorded from the survey area - red sandy loam pindan plain supporting tall mixed <i>Acacia</i> shrubland.</p> <p>Overall, this habitat has generally consistent vegetation structure and composition that is largely homogeneous throughout the survey area with minor variation in vegetation density across strata. The vegetation condition ranges from Excellent to Completely Degraded. There are tracks and areas of previous clearing.</p> <p>Three hundred and one fauna species have been previously recorded within 10 km of the survey area. The field survey recorded 29 native fauna species within the survey area.</p> <p>During the field survey no conservation significant fauna species were recorded.</p> <p>Given the availability of similar habitat in the surrounding area and that no species of conservation significance would solely rely on the habitats within the survey area, the project is unlikely to be at variance to this Principle.</p>	<p>Unlikely to be at variance with this principle.</p>	<p>DEE (2019a)</p> <p>DBCA (2007–2019)</p> <p>DBCA fauna database</p>

Clearing Principle	Justification of Variance	Variance	References
(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	Desktop searches identified the presence/potential presence of 14 EPBC Act and/or BC Act listed flora within a 10 km buffer of the survey area. A likelihood of occurrence assessment was completed for the Threatened flora identified in desktop searches. The assessment determined that no Threatened flora are considered likely or may possibly occur within the survey area. Given the survey effort and appropriate season if populations of Threatened flora taxa were present it is expected they would have been identified in the field.	Not at variance with this principle.	DEE (2019a) DBCA (2007–) GHD (2017)
(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.	Searches of the EPBC Act PMST and DBCA TEC database did not identify any TECs occurring within the survey area. The DBCA database identified the survey area is within the buffer of the TEC Roebuck Bay mudflats - Species-rich faunal community of the intertidal mudflats of Roebuck Bay. The vegetation type identified within the survey area during the field survey does not align with any known Commonwealth or State listed TECs.	Not at variance with this principle.	DEE (2019a) DBCA TEC database
(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	<p>The survey area is situated in the Northern Botanical Province of WA (Beard 1990), within the Dampierland bioregion and Pindarland sub-region.</p> <p>Broad scale (1:1,000,000) pre-European vegetation mapping of the Broome area was completed by Beard (1977) at an association level. The mapping indicates there is one vegetation association present within the survey area:</p> <ul style="list-style-type: none"> Shrublands, pindan; <i>Acacia tumida</i> shrubland with grey box [<i>Eucalyptus tectifica</i>] and cabbage gum [<i>Corymbia flavescentes</i>] medium woodland over ribbon grass [<i>Chrysopogon</i> spp.] and curly spinifex (association 750) <p>The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of the vegetation associations have been determined by the State-wide vegetation remaining extent calculations maintained by DBCA (latest update March 2019 – Government of WA (GoWA) 2019). The current extent remaining of the vegetation association 750 is greater than 99 per cent of its pre-European extent at all scales (State, IBRA bioregion, IBRA sub-region and Local Government Area (LGA)).</p>	Not at variance with this principle.	Beard (1990, 1977) GoWA (2019b) Shepherd et al. (2002)

Clearing Principle	Justification of Variance	Variance	References
(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	There are no regionally significant wetlands or watercourses with permanent water within the survey area. The vegetation type is not associated with natural watercourses or wetlands. There is an artificial water treatment dams associated with the WWTP, however, as it is not natural it is not considered significant natural wetland.	Not at variance with this principle.	GoWA (2019b)
(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	<p>The survey area is flat and comprises areas of Pindan sand, sandy loam soils. Any clearing of native vegetation within the survey area has the potential to cause water and wind erosion in areas with lighter-texture soils (e.g. sandy soils). The moderate sand content of the soils and ease with which these materials can be transported by the wind means there is a moderate risk of wind erosion in this area. However, given these soils are porous and well-drained, the risk of water erosion is low.</p> <p>The survey area has a low salinity risk.</p> <p>Overall, clearing for the project is unlikely to cause substantial land degradation with appropriate soil management during clearing and post-clearing.</p>	Unlikely to be at variance with this principle.	GoWA (2019b)
(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of	There are no conservation areas near the survey area. The closest conservation area (R 51380) is 2.5 km west of the survey area. Clearing of native vegetation is unlikely to impact on the environmental values of any nearby conservation areas.	Not at variance with this principle.	GoWA (2019b)

Clearing Principle	Justification of Variance	Variance	References
any adjacent or nearby conservation area.			
(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	<p>There are no natural drainage lines or water bodies occurring within the survey area generally due to the flat level topography and permeable sandy pindan soil. Surface water is likely to be infrequent and highly temporary during heavy and extended rainfall.</p> <p>No Wetlands of International Importance (Ramsar) or nationally important wetlands intersect the survey area. The closest wetlands of the nationally importance include Willie Creek Wetlands located approximately 14 km northwest, and Dampier Creek located approximately 4 km southwest of the survey area. One Ramsar wetland (and nationally important wetland), Roebuck Bay is located approximately 7 km south of the survey area.</p> <p>The Broome area has a tropical climate and is characterised by hot wet summer (December to March) and a dry season (April to November). Rainfall is generally received during the summer as a result of unpredictable tropical downpours and cyclonic low pressure systems.</p> <p>Clearing within the survey areas are unlikely to cause deterioration in the quality of surface or underground water.</p>	Unlikely to be at variance with this principle.	GoWA (2019b)
(j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	<p>The Broome area has a tropical climate and is characterised by hot wet summer (December to March) and a dry season (April to November). Rainfall is generally received during the summer as a result of unpredictable tropical downpours and cyclonic low pressure systems.</p> <p>The survey area is largely surrounded by remnant native vegetation and it is likely that a large proportion of runoff is will be absorbed by the natural environment.</p> <p>Flooding risk is considered to be minimal given the position in the landscape.</p> <p>Given the likelihood of limited surface flow, the proposed clearing within the survey area is unlikely to cause or exacerbate the incidence of flooding or localised waterlogging.</p>	Unlikely to be at variance with this principle.	BoM (2019) GoWA (2019b)

6. Conclusion

The proposed upgrade of the WWTP is considered not to have a significant impact on the flora and vegetation values at a local and regional scale due to the high representation and continuation of vegetation in the region outside of the survey area. The vegetation type VT01 does not represent any EPBC Act or BC Act listed TECs or DBCA listed PECs and therefore is not considered significant. No EPBC Act or BC Act listed flora were recorded within the survey area. No Priority flora listed by the DBCA were recorded within the survey area.

Fifty fauna species were recorded within the survey area, via opportunistic observations of active fauna or bird calls during targeted fauna searches. The relatively high number of bird species recorded is due to the presence of numerous species associated with the WWTP ponds. All fauna species recorded are generally widespread and abundant within habitat of the local area and wider region. Based on the likelihood of occurrence assessment of fauna, six species of conservation significance are likely to occur, including the Greater Bilby. Although not recorded within the survey area the Greater Bilby is considered likely to occur given the close proximity of local occurrence, high mobility of the species and its ability to utilise the habitat of the survey area. Migratory shorebirds that may occasionally visit the WWTP ponds within the survey area are unlikely to utilise the surrounding shrubland habitat that is the subject of this assessment.

Based on the assessment against the ten clearing principles provided in Table 10, clearing of native vegetation within the survey area is unlikely to be at variance to any principle.

7. References

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Appendices

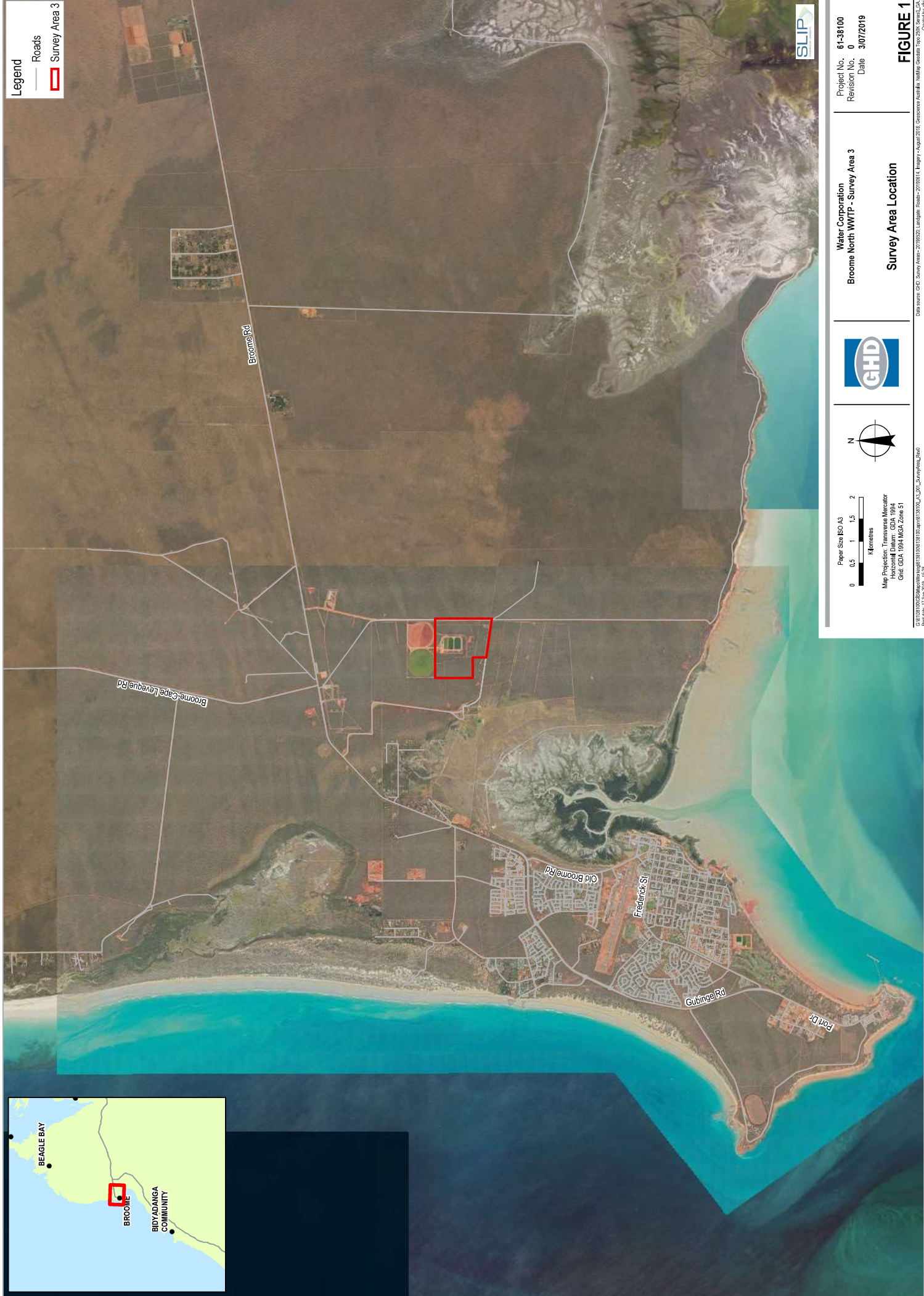
Appendix A – Figures

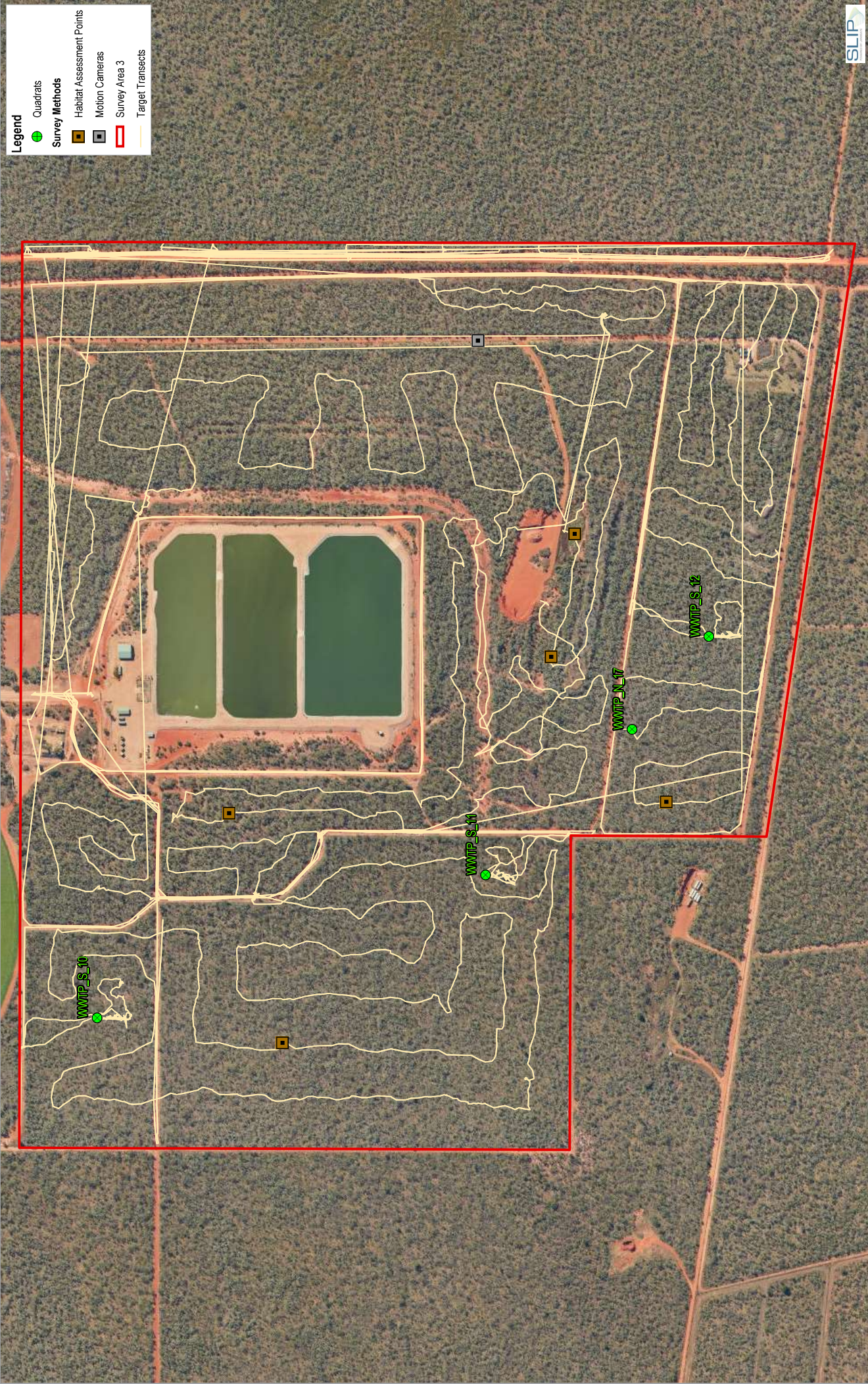
Figure 1 Locality

Figure 2 Conservation Significant flora and fauna

Figure 3 Survey methods

Figure 4 Flora and vegetation survey results



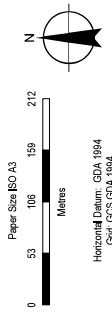


Project No. 61-38100
Revision No. 0
Date 5/07/2019

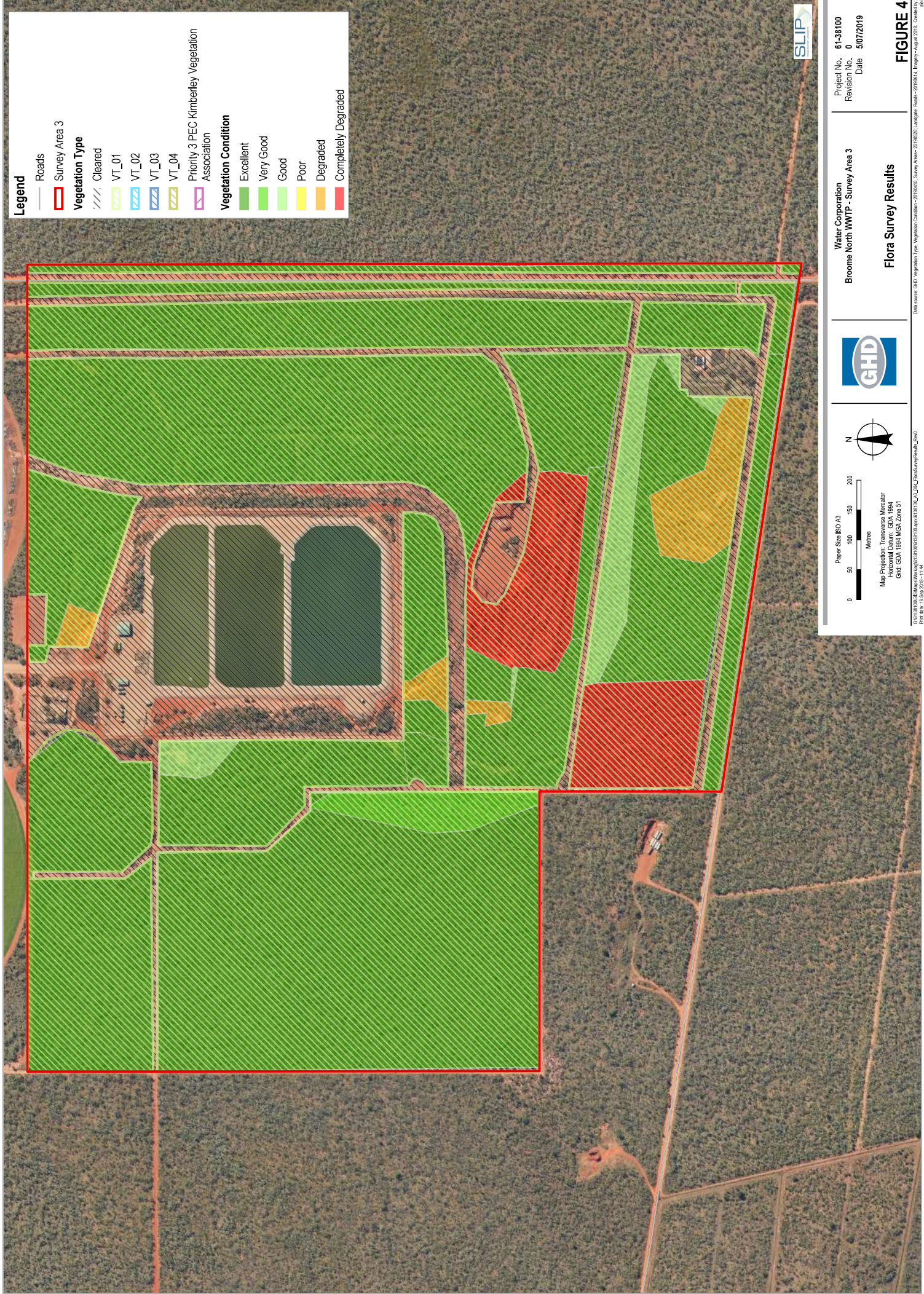
Water Corporation
Broome North WWTP - Survey Area 3



Survey Methods



Horizontal Datum: GDA 1984
Grid: GCS GDA 1984



Legend

—

Roads

▭

Survey Area 3

Vegetation Type

///

Cleared

▨

VT_01

▨

VT_02

▨

VT_03

▨

VT_04

▭

Priority 3 PEC Kimberley Vegetation Association

Vegetation Condition

■

Excellent

■

Very Good

■

Good

■

Poor

■

Degraded

■

Completely Degraded

Project No. 61-38100
Revision No. 0
Date 5/07/2019

Water Corporation
Broome North WWTP - Survey Area 3



Flora Survey Results



Scale: 0 50 100 150 200 Metres
Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 51

Appendix B – Relevant legislation, background information and conservation codes

Relevant legislation

Federal *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Federal Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as Matters of National Environmental Significance (MNES).

The biological aspects listed as MNES include:

- Nationally threatened flora and fauna species and ecological communities
- Migratory species

A person must not undertake an action that has, will have, or is likely to have a significant impact (direct or indirect) on MNES, without approval from the Federal Minister for the Environment.

The EPBC Act is administered by the Department of the Environment and Energy (DEE).

State *Environmental Protection Act 1986*

The *Environmental Protection Act 1986* (EP Act) is the primary legislative Act dealing with the protection of the environment in Western Australia. The Act allows the Environmental Protection Authority (EPA), to prevent, control and abate pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing. Part IV of the EP Act is administered by the EPA and makes provisions for the EPA to undertake environmental impact assessment of significant proposals, strategic proposals and land use planning schemes.

The Department of Water and Environment Regulation (DWER) is responsible for administering the clearing provisions of the EP Act (Part V). Clearing of native vegetation in Western Australia requires a permit from the DWER, unless exemptions apply. Applications for clearing permits are assessed by the Department and decisions are made to grant or refuse the application in accordance with the Act. When making a decision the assessment considers clearing against the ten clearing principles as specified in Schedule 5 of the EP Act:

- a) Native vegetation should not be cleared if it comprises a high level of biodiversity.
- b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significance habitat for fauna indigenous to Western Australia.
- c) Native vegetation should not be cleared if it includes, or is necessary, for the continued existence of rare flora.
- d) Native vegetation should not be cleared if it comprises the whole or part of native vegetation in an area that has been extensively cleared.
- e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.
- f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- g) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.
- h) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

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

Exemptions for clearing include clearing that is a requirement of a written law or authorised under certain statutory processes (listed in Schedule 6 of the EP Act) and exemptions for prescribed low impact day-to-day activities (prescribed in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004); these exemptions do not apply in environmentally sensitive areas (ESAs).

State Biodiversity and Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) provides for the conservation and protection of biodiversity and biodiversity components, as well as the promotion of the ecologically sustainable use of biodiversity components in Western Australia. The BC Act replaces both the repealed *Wildlife Conservation Act 1950* (WC Act) and the *Sandalwood Act 1929* (Sandalwood Act), as well as their associated regulations. To attain the objectives of the BC Act, principles of ecological sustainable development have been established:

- Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- The conservation of biodiversity and ecological integrity should be a fundamental consideration in decision-making
- Improved valuation, pricing and incentive mechanisms should be promoted.

The BC Act is administered by the Department of Biodiversity Conservation and Attractions (DBCA).

State Biosecurity and Agriculture Management Act 2007

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) and associated regulations are administered by the Department of Primary Industries and Regional Development (DPIRD) and replace the repealed *Agriculture and Related Resources Protection Act 1976*. The main purposes of the BAM Act and its regulations are to:

- Prevent new animal and plant pests (vermin and weeds) and diseases from entering WA
- Manage the impact and spread of those pests already present in the state
- Safely manage the use of agricultural and veterinary chemicals
- Increased control over the sale of agricultural products that contain violative chemical residues.

The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the BAM Act. A Declared Pest is a prohibited organism or an organism for which a declaration under Section 22(2) of the Act is in force. Declared Pests may be assigned a control category including: C1 (exclusion), C2 (eradication) and C3 (management). The category may apply to the whole of the State, LGAs, districts, individual properties or even paddocks, and all landholders are obliged to comply with the specific category of control. Categories of control are defined below.

DPIRD Categories for Declared Pests under the BAM Act

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

Background information

Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are declared by the Minister for Environment under Section 51B of the EP Act. The Table below outlines the aspects of areas declared as ESA in the Environmental Protection (Environmentally Sensitive Areas) Notice 2005.

Aspects of ESAs

Aspects of Environmentally Sensitive Areas
A declared World Heritage property as defined in Section 13 of the EPBC Act.
An area that is included on the Register of the National Estate (RNE), because of its natural values, under the <i>Australian Heritage Commission Act 1975</i> of the Commonwealth (the RNE was closed in 2007 and is no longer a statutory list – all references to the RNE were removed from the EPBC Act on 19 February 2012).
A defined wetland and the area within 50 m of the wetland. Defined wetlands include Ramsar wetlands, conservation category wetlands and nationally important wetlands.
The area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located.
The area covered by a Threatened Ecological Community.
A Bush Forever Site listed in “Bush Forever” Volumes 1 and 2 (2000), published by the Western Australia Planning Commission, except to the extent to which the site is approved to be developed by the Western Australia Planning Commission.
The areas covered by the <i>Environmental Protection (Gnangara Mound Crown Land) Policy 1992</i> .
The areas covered by the <i>Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002</i> .
The areas covered by the lakes to which the <i>Environmental Protection (Swan Coastal Plain Lakes) Policy 1992</i> (EPP Lakes) applies.
Protected wetlands as defined in the <i>Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998</i> .

Reserves and conservation areas

Department of Biodiversity, Conservation and Attractions managed lands and waters

DBCA manages lands and waters throughout Western Australia to conserve ecosystems and species, and to provide for recreation and appreciation of the natural environment. DBCA managed lands and waters include national parks, conservation parks and reserves, marine parks and reserves, regional parks, nature reserves, State forest and timber reserves. DBCA managed conservation estate, is vested with the Conservation Commission of Western Australia. Access to, or through, some areas of DBCA managed lands may require a permit or could be restricted due to management activities. Proposed land use changes and development proposals that abut DBCA managed lands will generally be referred to DBCA throughout the assessment process.

Wetlands

Wetlands include not only lakes with open water, but areas of seasonally, intermittently or permanently waterlogged soil.

Ramsar Listed Wetlands

The Convention of Wetlands of International Importance was signed in 1971 at the Iranian town of Ramsar. The Convention has since been referred to as the Ramsar Convention. Ramsar Listed wetlands are “sites containing representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity ... because of their ecological, botanical, zoological, limnological or hydrological importance” (DEE 2019b). Once a Ramsar Listed Wetland is designated, the country agrees to manage its conservation and ensure its wise use. Under the Convention, wise use is broadly defined as “maintaining the ecological character of a wetland” (DEE 2019b).

Nationally important wetlands

Wetlands of national significance are listed under the Directory of Important Wetlands in Australia. Nationally important wetlands are wetlands which meet at least one of the following criteria (DEE 2019a):

- It is a good example of a wetland type occurring within a biogeographic region in Australia
- It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex
- It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail
- The wetland supports one percent or more of the national populations of any native plant or animal taxa
- The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level
- The wetland is of outstanding historical or cultural significance

Vegetation extent and status

The National Objectives and Targets for Biodiversity Conservation 2001–2005 (Commonwealth of Australia 2001) recognise that the retention of 30 percent or more of the pre-clearing extent of each ecological community is necessary if Australia’s biological diversity is to be protected. This is the threshold level below which species loss appears to accelerate exponentially and loss below this level should not be permitted. This level of recognition is in keeping with the targets recommended in the review of the National Strategy for the Conservation of Australia’s Biological Diversity (ANZECC 2000).

The extent of remnant native vegetation in WA has been assessed by Shepherd et al. (2002) and the GoWA (2018), based on broadscale vegetation association mapping by Beard (various publications). The GoWA produces Statewide Vegetation Statistics Reports that are used for a number of purposes including conservation planning, land use planning and when assessing development applications. The reports are updated at least every two years.

Vegetation condition

The vegetation condition can be assessed in accordance with the vegetation condition rating scale for the Northern Botanical Provinces (EPA 2016a). The scale recognises the intactness of vegetation and consists of six rating levels as outlined below.

Vegetation condition rating scale for the Eremaean and Northern Botanical Provinces

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

Conservation codes

Species of significant flora, fauna and communities are protected under both Federal and State Acts. The Federal EPBC Act provides a legal framework to protect and manage nationally important flora and communities. The State BC Act is the primary wildlife conservation legislation in Western Australia. Information on the conservation codes is summarised in the following sections.

Ecological communities

Conservation significant communities

Ecological communities are defined as naturally occurring biological assemblages that occur in a particular type of habitat (English and Blyth 1997). Federally listed Threatened Ecological Communities (TECs) are protected under the EPBC Act. The BC Act provides for the Minister to list an ecological community as a TEC (section 27), or as a collapsed ecological community (section 31) statutory listing of State TECs by the Minister. The legislation also describes statutory processes for preparing recovery plans for TECs, the registration of their critical habitat, and penalties for unauthorised modification of TECs.

Possible TECs that do not meet survey criteria are added to the DBCA Priority Ecological Community (PEC) List under Priorities 1, 2 and 3. These are ecological communities that are adequately known; are rare but not threatened, or meet criteria for Near Threatened. PECs that have been recently removed from the threatened list are placed in Priority 4. These ecological communities require regular monitoring. Conservation dependent ecological communities are placed in Priority 5. PECs are not listed under any formal Federal or State legislation, however, may be listed as TECs under the EPBC Act.

Conservation codes and definitions for TECs listed under the EPBC Act and/ or BC Act

Categories	Definition
Federal Government Conservation Categories (EPBC Act)	
Critically Endangered (CR)	An ecological community if, at that time, is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000)
Endangered (EN)	An ecological community if, at that time: A) is not critically endangered; and B) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000)
Vulnerable (VU)	An ecological community if, at that time: A) is not critically endangered or endangered; and B) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000)
Western Australia Conservation Categories (BC Act)	
<u>Threatened Ecological Communities</u>	

Categories	Definition
Critically Endangered (CR)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.
Endangered (EN)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.
Vulnerable (VU)	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.
<u>Collapsed ecological communities</u>	
<p>An ecological community is eligible for listing as a collapsed ecological community at a particular time if, at that time –</p> <p>(a) there is no reasonable doubt that the last occurrence of the ecological community has collapsed); or</p> <p>(b) the ecological community has been so extensively modified throughout its range that no occurrence of it is likely to recover –</p> <p style="padding-left: 40px;">(i) its species composition or structure; or</p> <p style="padding-left: 40px;">(ii) its species composition and structure.</p> <p>Section 33 of the BC Act provides for a collapsed ecological community to be regarded as a threatened ecological community if it is discovered in a state that no longer makes it eligible for listing as a collapsed ecological community.</p>	

Conservation categories and definitions for PECS as listed by the DBCA

Category	Description
Priority 1	<p>Poorly known ecological communities.</p> <p>Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤ 5 occurrences or a total area of ≤ 100 ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.</p>
Priority 2	<p>Poorly known ecological communities.</p> <p>Communities that are known from few occurrences with a restricted distribution (generally ≤ 10 occurrences or a total area of ≤ 200 ha). At least some occurrences are not believed to be under immediate threat of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.</p>

Category	Description
Priority 3	<p>Poorly known ecological communities.</p> <ul style="list-style-type: none"> (i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or: (ii) communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; (iii) communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes. <p>Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.</p>
Priority 4	<p>Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.</p> <ul style="list-style-type: none"> (i) Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands. (ii) Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. (iii) Ecological communities that have been removed from the list of threatened communities during the past five years.
Priority 5	<p>Conservation Dependent ecological communities.</p> <p>Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.</p>

Other significant vegetation

Vegetation may be significant for a range of reasons other than a statutory listing. The EPA (2016b) states that significant vegetation may include vegetation that includes the following:

- Restricted distribution
- Degree of historical impact from threatening processes
- Local endemism in restricted habitats
- Novel combinations of taxa
- A role as a refuge
- A role as a key habitat for Threatened species or large population representing a significant proportion of the local to regional total population of a species
- Being representative of a vegetation unit in 'pristine' condition in a highly cleared landscape, recently discovered range extensions, or isolated outliers of the main range)
- Being poorly reserved.

This may apply at a number of levels, so the unit may be significant when considered at the fine-scale (intra-locality), intermediate-scale (locality or inter-locality) or broad-scale (local to region).

Flora and fauna

Conservation significant flora and fauna

Species of significant flora are protected under both Federal and State legislation. Any activities that are deemed to have a significant impact on species that are recognised by the EPBC Act, and/or the BC Act can warrant referral to the DEE and/or the EPA.

The Federal conservation level of flora and fauna species and their significance status is assessed under the EPBC Act. The significance levels for flora and fauna used in the EPBC Act align with the International Union for Conservation of Nature (IUCN) Red List criteria, which are internationally recognised as providing best practice for assigning the conservation status of species. The EPBC Act also protects land and migratory species that are listed under International Agreements. The list of migratory species established under section 209 of the EPBC Act comprises:

- Migratory species which are native to Australia and are included in the appendices to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals Appendices I and II)
- Migratory species included in annexes established under the Japan-Australia Migratory Bird Agreement (JAMBA) and the China–Australia Migratory Bird Agreement (CAMBA)
- Native, migratory species identified in a list established under, or an instrument made under, an international agreement approved by the Minister, such as the Republic of Korea–Australia Migratory Bird Agreement (ROKAMBA)

The State conservation level of flora and fauna species and their significance status also follows the IUCN Red List criteria. Under the BC Act flora and fauna can be listed as Threatened, Extinct and as Specially Protected species.

Threatened species are those species which have been adequately searched for and are deemed to be, in the wild, either rare, under identifiable threat of extinction, or otherwise in need of special protection, and have been gazetted as such. The assessment of the conservation status of Threatened species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria. Specially protected species meet one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as Threatened or Extinct species under the BC Act cannot also be listed as Specially Protected species.

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

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

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

For the purposes of this assessment, all species listed under the EPBC Act, BC Act and DBCA Priority species are considered conservation significant.

Conservation categories and definitions for EPBC Act and BC Act listed flora and fauna species

Conservation category	Definition
Threatened species	
Critically Endangered (CR)	<p>Threatened species considered to be “facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines”.</p> <p>Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines.</p>
Endangered (EN)	<p>Threatened species considered to be “facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines”.</p> <p>Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines</p>
Vulnerable (VU)	<p>Threatened species considered to be “facing a high risk of extinction in the wild in the medium term future, as determined in accordance with criteria set out in the ministerial guidelines”.</p> <p>Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.</p>
Extinct species	
Extinct (EX)	Species where “there is no reasonable doubt that the last member of the species has died”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).
Extinct in the Wild (EW)	Species that “is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).
Specially protected species	
Migratory (MI)	<p>Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).</p> <p>Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species</p>

Conservation category	Definition
Species of special conservation interest (conservation dependent fauna) (CD)	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened.
Other specially protected fauna (OS)	Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Conservation codes for DBCA listed Priority flora and fauna

Priority category	Definition
Priority 1	<p>Poorly-known taxa</p> <p>Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.</p>
Priority 2	<p>Poorly-known taxa</p> <p>Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.</p>
Priority 3	<p>Poorly-known taxa</p> <p>Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.</p>
Priority 4	<p>Rare, Near Threatened and other taxa in need of monitoring</p> <p>A. Rare: Taxa that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.</p> <p>B. Near Threatened. Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.</p> <p>C. Taxa that have been removed from the list of threatened taxa during the past five years for reasons other than taxonomy.</p>

Other significant flora

Flora species, subspecies, varieties, hybrids and ecotypes may be significant for a range of reasons, other than a statutory listing. The EPA (2016b) states that significant flora may include taxa that have:

- A keystone role in a particular habitat for threatened or Priority flora or fauna species, or large populations representing a considerable proportion of the local or regional total population of a species
- Relictual status, being representation of taxonomic or physiognomic groups that no longer occur widely in the broader landscape
- Anomalous features that indicate a potential new discovery
- Being representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)
- The presence of restricted subspecies, varieties, or naturally occurring hybrids
- Local endemism (a restricted distribution) or association with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems)
- Being poorly reserved

Other significant fauna

Fauna species may be significant for a range of reasons other than those protected by international agreement or treaty, Specially Protected or Priority Fauna. Significant fauna may include short-range endemic species, species that have declining populations or declining distributions, species at the extremes of their range, or isolated outlying populations, or species which may be undescribed (EPA 2010).

Introduced plants (weeds)

Declared Pests

Information on species considered to be Declared Pests is provided under *State Biosecurity and Agriculture Management Act 2007*.

Weeds of National Significance

The spread of weeds across a range of land uses or ecosystems is important in the context of socio-economic and environmental values. The assessment of Weeds of National Significance (WoNS) is based on four major criteria:

- Invasiveness
- Impacts
- Potential for spread
- Socio-economic and environmental values

Australian state and territory governments have identified thirty-two Weeds of National Significance (WoNS); a list of 20 WoNS was endorsed in 1999 and a further 12 were added in 2012.

References

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- DEE 2019a, *Criteria for determining nationally important wetlands*, retrieved 2019, from <http://www.environment.gov.au/topics/water/water-our-environment/wetlands/australian-wetlands-database/directory-important>.
- DEE 2019b, *The Ramsar Convention on Wetlands*, retrieved 2019, from <http://www.environment.gov.au/topics/water/water-our-environment/wetlands/ramsar-convention-wetlands>.
- English, V and Blyth, J 1997, *Identifying and Conserving Threatened Ecological Communities in the South West Botanical Province*, Perth, Department of Conservation and Land Management.
- EPA 2010, *Technical Guide – Terrestrial Fauna Surveys*, EPA, Perth, WA.
- EPA 2016a, *Technical Guide – Flora and Vegetation Surveys for Environmental Impact Assessment*, EPA, Perth, WA.
- EPA 2016b, *Environmental Factor Guideline - Flora and Vegetation*, EPA, Perth, WA.
- GoWA 2019, *Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full report)*, Current as of March 2019, Perth Western Australia, Department of Environment and Conservation, from <https://www2.landgate.wa.gov.au/web/guest/downloader>.
- Shepherd, DP, Beeston, GR & Hopkins, AJM 2002, *Native Vegetation in Western Australia – Extent, Type and Status*, Resource Management Technical Report 249, Perth, Department of Agriculture.

Appendix C – Desktop searches

EPBC Act Protected Matters Search Tool (PMST) (10 km)

DBCA Naturemap flora (10 km)

DBCA Naturemap fauna (10 km)



EPBC Act Protected Matters Report

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

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

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 07/03/19 20:09:55

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are
©Commonwealth of Australia
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[Coordinates](#)

Buffer: 10.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	31
Listed Migratory Species:	65

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	104
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	7
Regional Forest Agreements:	None
Invasive Species:	12
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

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

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

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

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

Listed Threatened Species		[Resource Information]
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Name	Status	Type of Presence
Birds		
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat may occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae_kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat may occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Saccolaimus saccolaimus_nudicluniatu Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
Plants		
Keraudrenia exastia Fringed Keraudrenia [66301]	Critically Endangered	Species or species habitat known to occur within area
Reptiles		
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Ctenotus angusticeps Northwestern Coastal Ctenotus, Airlie Island Ctenotus [25937]	Vulnerable	Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Sharks		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Foraging, feeding or

Name	Threatened	Type of Presence
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	related behaviour known to occur within area Breeding likely to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat known to occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area
Migratory Wetlands Species		

Name	Threatened	Type of Presence
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area

Name	Threatened	Type of Presence
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

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

Name
Commonwealth Land - Defence - BROOME TRAINING DEPOT

Listed Marine Species [\[Resource Information \]](#)

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

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within

Name	Threatened	Type of Presence area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting known to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Heteroscelus brevipes Grey-tailed Tattler [59311]		Roosting known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area
Hirundo daurica Red-rumped Swallow [59480]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Sterna albifrons Little Tern [813]		Breeding known to occur within area

Name	Threatened	Type of Presence
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area
Fish		
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribbioned Pipehorse, Ribbioned 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

Name	Threatened	Type of Presence
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammals		
Dugong dugon Dugong [28]		Foraging, feeding or related behaviour known to occur within area
Reptiles		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within

Name	Threatened	Type of Presence area
Aipysurus tenuis Brown-lined Seasnake [1121]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnston's River Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrelaps darwiniensis Black-ringed Seasnake [1100]		Species or species habitat may occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis mcdowelli null [25926]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [1111]		Species or species habitat may occur within area
Lapemis hardwickii Spine-bellied Seasnake [1113]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

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

Extra Information

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

Invasive Species

[Resource Information]

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

Name	Status	Type of Presence
Birds		

Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]	Species or species habitat likely to occur within area
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Sturnus vulgaris Common Starling [389]	Species or species habitat likely to occur within area
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Frogs

Rhinella marina Cane Toad [83218]	Species or species habitat may occur within area
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Mammals

Canis lupus familiaris Domestic Dog [82654]	Species or species habitat likely to occur within area
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Felis catus Cat, House Cat, Domestic Cat [19]	Species or species habitat likely to occur within area
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Mus musculus House Mouse [120]	Species or species habitat likely to occur within area
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Rattus rattus Black Rat, Ship Rat [84]	Species or species habitat likely to occur within area
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Plants

Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]	Species or species habitat likely to occur within area
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Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]	Species or species habitat likely to occur within area
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Jatropha gossypifolia Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507]	Species or species habitat likely to occur within area
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Reptiles

Hemidactylus frenatus Asian House Gecko [1708]	Species or species habitat likely to occur within area
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Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]	Species or species habitat known to occur within area
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Nationally Important Wetlands

[Resource Information]

Name	State
Roebuck Bay	WA

Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-17.93111 122.26167

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.

NatureMap Species Report

Created By Guest user on 07/03/2019

Kingdom Animalia
Current Names Only Yes
Core Datasets Only Yes
Species Group All Animals
Method 'By Circle'
Centre 122° 15' 42" E, 17° 55' 52" S
Buffer 10km

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
1.	? ?			
2.	<i>Abudefduf bengalensis</i>			
3.	<i>Abudefduf</i> sp.			
4.	24559 <i>Acanthagenys rufogularis</i> (Spiny-cheeked Honeyeater)			
5.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
6.	<i>Acanthopagrus latus</i>			
7.	<i>Acanthopagrus palmaris</i>			
8.	<i>Acanthurus dussumieri</i>			
9.	<i>Acanthurus grammoptilus</i>			
10.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
11.	24281 <i>Accipiter cirrocephalus</i> subsp. <i>cirrocephalus</i> (Collared Sparrowhawk)			
12.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
13.	24283 <i>Accipiter fasciatus</i> subsp. <i>didimus</i> (Brown Goshawk)			
14.	25537 <i>Accipiter novaehollandiae</i> (Grey Goshawk)			
15.	<i>Acentrogobius viridipunctatus</i>			
16.	25755 <i>Acrocephalus australis</i> (Australian Reed Warbler)			
17.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
18.	25544 <i>Aegotheles cristatus</i> (Australian Owlet-nightjar)			
19.	25350 <i>Aipysurus apraefrontalis</i> (Short-nosed Seasnake)		T	
20.	25355 <i>Aipysurus laevis</i> (Olive Seasnake)			
21.	42369 <i>Aipysurus mosaicus</i> (Mosaic Seasnake)			
22.	25357 <i>Aipysurus tenuis</i> (Brown-lined Seasnake)			
23.	<i>Alectis indica</i>			
24.	42372 <i>Amalosia rhombifer</i> (Zigzag velvet gecko)			
25.	<i>Amblyomma moreliae</i>			
26.	<i>Amniataba caudavittata</i>			
27.	30831 <i>Amphibolurus gilberti</i> (Ta-ta, Gilbert's Dragon)			
28.	<i>Amphiprion rubrocinctus</i>			
29.	24310 <i>Anas castanea</i> (Chestnut Teal)			
30.	24312 <i>Anas gracilis</i> (Grey Teal)			
31.	<i>Anas platyrhynchos</i> subsp. <i>domesticus</i>			
32.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
33.	<i>Anguilla bicolor</i>			
34.	47414 <i>Anhinga novaehollandiae</i> (Australasian Darter)			
35.	44632 <i>Anilius diversus</i>			Y
36.	44635 <i>Anilius grypus</i>			
37.	25634 <i>Anous stolidus</i> (Common Noddy)		IA	
38.	24505 <i>Anous stolidus</i> subsp. <i>pileatus</i> (Common Noddy)		IA	
39.	24317 <i>Anseranas semipalmata</i> (Magpie Goose, Pied Goose)			
40.	25448 <i>Antaresia stimsoni</i> (Stimson's Python)			
41.	25241 <i>Antaresia stimsoni</i> subsp. <i>stimsoni</i> (Stimson's Python)			
42.	24600 <i>Anthus cervinus</i> (Red-throated Pipit)			
43.	<i>Apogon cookii</i>			
44.	<i>Apogon pallidofasciatus</i>			
45.	<i>Apogon rueppellii</i>			
46.	<i>Apogon</i> sp.			
47.	24719 <i>Aprosmictus erythropterus</i> (Red-winged Parrot)			
48.	25554 <i>Apus pacificus</i> (Fork-tailed Swift, Pacific Swift)		IA	
49.	24334 <i>Apus pacificus</i> subsp. <i>pacificus</i> (Fork-tailed Swift, Pacific Swift)		IA	
50.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
51.	24337 <i>Ardea garzetta</i> subsp. <i>nigripes</i> (Little Egret)			

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
52.	25558	<i>Ardea ibis</i> (Cattle Egret)			
53.	25559	<i>Ardea intermedia</i> (Intermediate Egret)			
54.	41324	<i>Ardea modesta</i> (great egret, white egret)			
55.	24340	<i>Ardea novaehollandiae</i> (White-faced Heron)			
56.	24341	<i>Ardea pacifica</i> (White-necked Heron)			
57.	25560	<i>Ardea sacra</i> (Eastern Reef Egret, Eastern Reef Heron)			
58.	24343	<i>Ardea sacra</i> subsp. <i>sacra</i> (Eastern Reef Egret, Eastern Reef Heron)			
59.		<i>Ardea</i> sp.			Y
60.	41328	<i>Ardenna tenuirostris</i> (Short-tailed Shearwater)		IA	
61.	24610	<i>Ardeotis australis</i> (Australian Bustard)			
62.	25736	<i>Arenaria interpres</i> (Ruddy Turnstone)		IA	
63.	24778	<i>Arenaria interpres</i> subsp. <i>interpres</i> (Ruddy Turnstone)		IA	
64.		<i>Arius</i> sp.			
65.		<i>Arothron hispidus</i>			
66.		<i>Arothron manilensis</i>			
67.		<i>Arrhamphus sclerolepis</i>			
68.	25566	<i>Artamus cinereus</i> (Black-faced Woodswallow)			
69.	25567	<i>Artamus leucorhynchus</i> (White-breasted Woodswallow)			
70.	24355	<i>Artamus minor</i> (Little Woodswallow)			
71.	24356	<i>Artamus personatus</i> (Masked Woodswallow)			
72.	24357	<i>Artamus superciliosus</i> (White-browed Woodswallow)			
73.		<i>Arthrorhabdus paucispinus</i>			
74.	25320	<i>Aspidites melanocephalus</i> (Black-headed Python)			
75.		<i>Atherinomorus endrachtensis</i>			
76.		<i>Austracantha minax</i>			
77.	24318	<i>Aythya australis</i> (Hardhead)			
78.		<i>Backobourkia collina</i>			
79.		<i>Bathygobius fuscus</i>			
80.		<i>Batrachomoeus dahli</i>			
81.		<i>Batrachomoeus occidentalis</i>			
82.		<i>Blennodesmus scapularis</i>			
83.		<i>Brachysomophis cirrocheilos</i>			
84.	25334	<i>Brachyuropis roperi</i> (Northern Shovel-nosed Snake)			
85.	24685	<i>Bulweria bulwerii</i> (Bulwer's Petrel)		IA	
86.	24359	<i>Burhinus grallarius</i> (Bush Stone-curlew)			
87.	47897	<i>Butorides striata</i> (Striated Heron, Mangrove Heron)			
88.	25713	<i>Cacatua galerita</i> (Sulphur-crested Cockatoo)			
89.	24726	<i>Cacatua roseicapilla</i> subsp. <i>roseicapilla</i> (Galah)			
90.	25716	<i>Cacatua sanguinea</i> (Little Corella)			
91.	24728	<i>Cacatua sanguinea</i> subsp. <i>sanguinea</i> (Little Corella)			
92.	42307	<i>Cacomantis pallidus</i> (Pallid Cuckoo)			
93.	25599	<i>Cacomantis variolosus</i> (Brush Cuckoo)			
94.	24779	<i>Calidris acuminata</i> (Sharp-tailed Sandpiper)		IA	
95.	24780	<i>Calidris alba</i> (Sanderling)		IA	
96.	25738	<i>Calidris canutus</i> (Red Knot, knot)		IA	
97.	24783	<i>Calidris canutus</i> subsp. <i>rogersi</i> (Red Knot (north-eastern Siberia))		T	
98.	24784	<i>Calidris ferruginea</i> (Curlew Sandpiper)		T	
99.	24786	<i>Calidris melanotos</i> (Pectoral Sandpiper)		IA	
100.	24787	<i>Calidris minuta</i> (Little Stint)			
101.	24788	<i>Calidris ruficollis</i> (Red-necked Stint)		IA	
102.	24789	<i>Calidris subminuta</i> (Long-toed Stint)		IA	
103.	24790	<i>Calidris tenuirostris</i> (Great Knot)		T	
104.	24686	<i>Calonectris leucomelas</i> (Streaked Shearwater)		IA	
105.	25717	<i>Calyptorhynchus banksii</i> (Red-tailed Black-Cockatoo)			
106.	24254	<i>Camelus dromedarius</i> (Dromedary, Camel)	Y		
107.		<i>Caranx bucculentus</i>			
108.		<i>Caranx ignobilis</i>			
109.		<i>Caranx sexfasciatus</i>			
110.		<i>Caranx</i> sp.			
111.	25012	<i>Carlia amax</i> (Two-spined Rainbow Skink)			
112.	25015	<i>Carlia munda</i> (Shaded-litter Rainbow Skink)			
113.	25016	<i>Carlia rufilatus</i> (Red-sided Rainbow Skink)			
114.	25017	<i>Carlia triacantha</i> (Desert Rainbow Skink)			
115.	47902	<i>Cecropis daurica</i> (Red-rumped Swallow)		IA	
116.		<i>Centruscus scutatus</i>			
117.		<i>Centrogenys vaigiensis</i>			
118.	25600	<i>Centropus phasianinus</i> (Pheasant Coucal)			
119.	30884	<i>Centropus phasianinus</i> subsp. <i>phasianinus</i> (Pheasant Coucal)			
120.		<i>Cephalopholis boenak</i>			
121.	24564	<i>Certhionyx variegatus</i> (Pied Honeyeater)			

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
122.	24181	<i>Chaerephon jobensis</i> (Greater Northern Freetail-bat, Northern Mastiff Bat)			
123.	24186	<i>Chalinolobus gouldii</i> (Gould's Wattled Bat)			
124.	24188	<i>Chalinolobus nigrogriseus</i> (Hoary Wattled Bat)			
125.		<i>Chanos chanos</i>			
126.	25574	<i>Charadrius dubius</i> (Little Ringed Plover)		IA	
127.	25575	<i>Charadrius leschenaultii</i> (Greater Sand Plover)		T	
128.	24372	<i>Charadrius leschenaultii</i> subsp. <i>leschenaultii</i> (Greater Sand Plover (Mongolian))		T	
129.	25576	<i>Charadrius mongolus</i> (Lesser Sand Plover)		T	
130.	24375	<i>Charadrius mongolus</i> subsp. <i>mongolus</i> (Lesser Sand Plover)		T	
131.	24377	<i>Charadrius ruficapillus</i> (Red-capped Plover)			
132.	24378	<i>Charadrius veredus</i> (Oriental Plover)		IA	
133.		<i>Chelmon marginalis</i>			
134.		<i>Chelmon muelleri</i>			
135.	42382	<i>Chelodina burrungandjii</i> (Northern Long-necked Turtle)			
136.	25336	<i>Chelonia mydas</i> (Green Turtle)		T	
137.		<i>Chelonodon patoca</i>			
138.		<i>Chiloscyllium punctatum</i>			
139.		<i>Chirocentrus dorab</i>			
140.	24863	<i>Chlamydosaurus kingii</i> (Frill-necked Lizard)			
141.	41332	<i>Chlidonias leucopterus</i> (White-winged Black Tern, white-winged tern)		IA	
142.		<i>Choerodon cyanodus</i>			
143.		<i>Choerodon</i> sp.			
144.		<i>Chroicocephalus novaehollandiae</i>			
145.		<i>Chromileptes altivelis</i>			
146.	24431	<i>Chrysococcyx basalis</i> (Horsfield's Bronze Cuckoo)			
147.	24433	<i>Chrysococcyx minutillus</i> subsp. <i>minutillus</i> (Little Bronze Cuckoo)			
148.	24434	<i>Chrysococcyx osculans</i> (Black-eared Cuckoo)			
149.	24288	<i>Circus approximans</i> (Swamp Harrier)			
150.	24289	<i>Circus assimilis</i> (Spotted Harrier)			
151.	24565	<i>Cissomela pectoralis</i> (Banded Honeyeater)			
152.	25756	<i>Cisticola exilis</i> (Golden-headed Cisticola)			
153.	24835	<i>Cisticola exilis</i> subsp. <i>exilis</i> (Golden-headed Cisticola)			
154.	24774	<i>Cladorhynchus leucocephalus</i> (Banded Stilt)			
155.	25675	<i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
156.	24399	<i>Columba livia</i> (Domestic Pigeon)	Y		
157.		<i>Conger cinereus</i>			
158.		<i>Congrogadus subducens</i>			
159.	24566	<i>Conopophila rufogularis</i> (Rufous-throated Honeyeater)			
160.	25568	<i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
161.	25569	<i>Coracina papuensis</i> (White-bellied Cuckoo-shrike, Little Cuckoo-shrike)			
162.	24416	<i>Corvus bennetti</i> (Little Crow)			
163.	25593	<i>Corvus orru</i> (Torresian Crow)			
164.	24418	<i>Corvus orru</i> subsp. <i>cecilae</i> (Western Crow)			
165.		<i>Cosmophasis baehrae</i>			
166.	24671	<i>Coturnix pectoralis</i> (Stubble Quail)			
167.	25701	<i>Coturnix ypsilophora</i> (Brown Quail)			
168.	24672	<i>Coturnix ypsilophora</i> subsp. <i>cervina</i> (Brown Quail)			
169.	24420	<i>Cracticus nigrogularis</i> (Pied Butcherbird)			
170.	25595	<i>Cracticus tibicen</i> (Australian Magpie)			
171.	25596	<i>Cracticus torquatus</i> (Grey Butcherbird)			
172.	24921	<i>Crenadactylus ocellatus</i> subsp. <i>rostralis</i> (Clawless Gecko)			
173.	42383	<i>Cryptoblepharus metallicus</i>			
174.	30890	<i>Cryptoblepharus ruber</i>			
175.	30891	<i>Cryptoblepharus tythos</i>			
176.	24865	<i>Ctenophorus caudicinctus</i> subsp. <i>caudicinctus</i> (Ring-tailed Dragon)			
177.	24876	<i>Ctenophorus isolepis</i> subsp. <i>isolepis</i> (Crested Dragon, Military Dragon)			
178.	24882	<i>Ctenophorus nuchalis</i> (Central Netted Dragon)			
179.	25024	<i>Ctenotus angusticeps</i> (Airlie Island Ctenotus, Northwestern coastal Ctenotus)		P3	
180.	25048	<i>Ctenotus inornatus</i>			
181.	25463	<i>Ctenotus pantherinus</i> (Leopard Ctenotus)			
182.	25061	<i>Ctenotus pantherinus</i> subsp. <i>calx</i> (Leopard Ctenotus)			
183.	25070	<i>Ctenotus robustus</i>			
184.	25073	<i>Ctenotus saxatilis</i> (Rock Ctenotus)			
185.	25077	<i>Ctenotus serventyi</i>			
186.	47919	<i>Cuculus optatus</i> (Oriental Cuckoo)		IA	
187.	25371	<i>Cyclorana australis</i> (Giant Frog)			
188.	25374	<i>Cyclorana longipes</i> (Long-footed Frog)			
189.		<i>Cyclosa camelodes</i>			
190.	24322	<i>Cygnus atratus</i> (Black Swan)			
191.		<i>Cymbacephalus nematophthalmus</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
192.	<i>Cynoglossus</i> sp.			
193.	<i>Cypselurus</i> sp.			
194.	25547 <i>Dacelo leachii</i> (Blue-winged Kookaburra)			
195.	24304 <i>Dacelo leachii</i> subsp. <i>leachii</i> (Blue-winged Kookaburra)			
196.	<i>Dampierosa daruma</i>			
197.	25673 <i>Daphoenositta chrysoptera</i> (Varied Sittella)			
198.	24093 <i>Dasyurus hallucatus</i> (Northern Quoll)		T	
199.	30830 <i>Delma desmosa</i>			
200.	25004 <i>Delma tincta</i>			
201.	42390 <i>Demansia angusticeps</i>			
202.	24324 <i>Dendrocygna arcuata</i> (Wandering Whistling Duck, Chestnut Whistling Duck)			
203.	24325 <i>Dendrocygna eytoni</i> (Plumed Whistling Duck)			
204.	25607 <i>Dicaeum hirundinaceum</i> (Mistletoebird)			
205.	24926 <i>Diplodactylus conspicillatus</i> (Fat-tailed Gecko)			
206.	24896 <i>Diporiphora pindan</i> (Pindan Dragon)			
207.	<i>Drepane punctata</i>			
208.	24470 <i>Dromaius novaehollandiae</i> (Emu)			
209.	<i>Drombus</i> sp.			
210.	<i>Drombus triangularis</i>			
211.	25584 <i>Ducula bicolor</i> (Pied Imperial Pigeon)			
212.	24084 <i>Dugong dugon</i> (Dugong)		S	
213.	<i>Echeneis naucrates</i>			
214.	<i>Egretta garzetta</i>			
215.	<i>Egretta novaehollandiae</i>			
216.	<i>Elanus axillaris</i>			
217.	25540 <i>Elanus caeruleus</i> (Black-shouldered Kite)			
218.	24290 <i>Elanus caeruleus</i> subsp. <i>axillaris</i> (Australian Black-shouldered Kite)			
219.	24291 <i>Elanus scriptus</i> (Letter-winged Kite)		P4	
220.	<i>Elates ransonnetii</i>			
221.	<i>Eleutheronema tetradactylum</i>			
222.	<i>Elops hawaiiensis</i>			
223.	47937 <i>Elseymornis melanops</i> (Black-fronted Dotterel)			
224.	24631 <i>Emblema pictum</i> (Painted Finch)			
225.	<i>Enneapterygius gracilis</i>			
226.	<i>Enneapterygius larsonae</i>			
227.	<i>Eolophus roseicapillus</i>			
228.	25362 <i>Ephalophis greyae</i>			
229.	25578 <i>Ephippiorhynchus asiaticus</i> (Black-necked Stork)			
230.	<i>Epinephelus areolatus</i>			
231.	<i>Epinephelus coioides</i>			
232.	<i>Epinephelus corallicola</i>			
233.	<i>Epinephelus fasciatus</i>			
234.	<i>Epinephelus homosinensis</i> (invalid)			
235.	<i>Epinephelus malabaricus</i>			
236.	<i>Epinephelus ongus</i> ?			Y
237.	<i>Epinephelus quoyanus</i>			
238.	<i>Epinephelus</i> sp.			
239.	24569 <i>Epthianura crocea</i> (Yellow Chat)			
240.	24570 <i>Epthianura tricolor</i> (Crimson Chat)			
241.	24258 <i>Equus caballus</i> (Horse)	Y		
242.	42404 <i>Eremiascincus isolepis</i>			
243.	25342 <i>Eretmochelys imbricata</i> subsp. <i>bissa</i> (Hawksbill Turtle)		T	
244.	<i>Eriophora biapicata</i>			
245.	24379 <i>Erythronys cinctus</i> (Red-kneed Dotterel)			
246.	24632 <i>Erythrura gouldiae</i> (Gouldian Finch)		P4	
247.	47938 <i>Esacus magnirostris</i> (Beach Stone-curlew, Beach Thick-knee)			
248.	24368 <i>Eurostopodus argus</i> (Spotted Nightjar)			
249.	25591 <i>Eurystomus orientalis</i> (Dollarbird)			
250.	24415 <i>Eurystomus orientalis</i> subsp. <i>pacificus</i> (Dollarbird)			
251.	<i>Eviota queenslandica</i>			
252.	25621 <i>Falco berigora</i> (Brown Falcon)			
253.	24471 <i>Falco berigora</i> subsp. <i>berigora</i> (Brown Falcon)			
254.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
255.	24472 <i>Falco cenchroides</i> subsp. <i>cenchrus</i> (Australian Kestrel, Nankeen Kestrel)			
256.	24473 <i>Falco hypoleucos</i> (Grey Falcon)		T	
257.	25623 <i>Falco longipennis</i> (Australian Hobby)			
258.	24474 <i>Falco longipennis</i> subsp. <i>longipennis</i> (Australian Hobby)			
259.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
260.	24476 <i>Falco subniger</i> (Black Falcon)			
261.	24041 <i>Felis catus</i> (Cat)	Y		

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262.	<i>Fistularia petimba</i>			
263.	25327 <i>Fordonia leucobalia</i> (White-bellied Mangrove Snake)			
264.	24478 <i>Fregata ariel</i> (Lesser Frigatebird)		IA	
265.	24479 <i>Fregata minor</i> (great frigatebird, Greater Frigatebird)		IA	
266.	25727 <i>Fulica atra</i> (Eurasian Coot)			
267.	25301 <i>Furina ornata</i> (Moon Snake)			
268.	24792 <i>Gallinago megala</i> (Swinhoe's Snipe)		IA	
269.	24793 <i>Gallinago stenura</i> (Pin-tailed Snipe)		IA	
270.	25730 <i>Gallirallus philippensis</i> (Buff-banded Rail)			
271.	24765 <i>Gallirallus philippensis</i> subsp. <i>mellori</i> (Buff-banded Rail)			
272.	42314 <i>Gavialis virescens</i> (Singing Honeyeater)			
273.	24952 <i>Gehyra australis</i>			
274.	<i>Gehyra kimberleyi</i>			
275.	24956 <i>Gehyra pilbara</i>			
276.	24959 <i>Gehyra variegata</i>			
277.	47954 <i>Gelochelidon nilotica</i> (Gull-billed Tern)		IA	
278.	24401 <i>Geopelia cuneata</i> (Diamond Dove)			
279.	24402 <i>Geopelia humeralis</i> (Bar-shouldered Dove)			
280.	25585 <i>Geopelia striata</i> (Zebra Dove)			
281.	24403 <i>Geopelia striata</i> subsp. <i>placida</i> (Peaceful Dove)			
282.	24404 <i>Geophaps plumifera</i> (Spinifex Pigeon)			
283.	<i>Gerres</i> sp.			
284.	<i>Gerres subfasciatus</i>			
285.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
286.	25531 <i>Gerygone levigaster</i> (Mangrove Gerygone)			
287.	24273 <i>Gerygone levigaster</i> subsp. <i>levigaster</i> (Mangrove Gerygone)			
288.	25533 <i>Gerygone olivacea</i> (White-throated Gerygone)			
289.	24276 <i>Gerygone tenebrosa</i> (Dusky Gerygone)			
290.	24481 <i>Glareola maldivarum</i> (Oriental Pratincole)		IA	
291.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
292.	24484 <i>Grus rubicunda</i> (Brolga)			
293.	<i>Gymnothorax favagineus</i>			
294.	<i>Gymnothorax pseudothyrsoides</i>			
295.	<i>Gymnothorax undulatus</i>			
296.	25627 <i>Haematopus fuliginosus</i> (Sooty Oystercatcher)			
297.	24487 <i>Haematopus longirostris</i> (Pied Oystercatcher)			
298.	24293 <i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)			
299.	25541 <i>Haliastur indus</i> (Brahminy Kite)			
300.	24294 <i>Haliastur indus</i> subsp. <i>girrenera</i> (Brahminy Kite)			
301.	24295 <i>Haliastur spheonurus</i> (Whistling Kite)			
302.	<i>Halichoeres nigrescens</i>			
303.	<i>Halophryne diemensis</i>			
304.	<i>Halophryne ocellatus</i>			
305.	24296 <i>Hamirostra isura</i> (Square-tailed Kite)			
306.	24297 <i>Hamirostra melanosternon</i> (Black-breasted Buzzard)			
307.	<i>Haplogenyx kishinouyei</i>			
308.	25232 <i>Hemidactylus frenatus</i> (Asian House Gecko)	Y		
309.	<i>Hemiscyllium trispeculare</i>			
310.	<i>Herklotsichthys blackburni</i>			
311.	24961 <i>Heteronotia binoei</i> (Bynoe's Gecko)			
312.	<i>Heteropoda renibulbis</i>			
313.	47965 <i>Hieraaetus morphnoides</i> (Little Eagle)			
314.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
315.	24775 <i>Himantopus himantopus</i> subsp. <i>leucocephalus</i> (Black-winged Stilt)			
316.	<i>Himantura uarnak</i>			
317.	<i>Hippichthys gazella</i> (invalid)			Y
318.	<i>Hippichthys penicillus</i>			
319.	<i>Hippocampus angustus</i>			
320.	<i>Hippocampus</i> sp.			
321.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
322.	25630 <i>Hirundo rustica</i> (Barn Swallow)		IA	
323.	<i>Hogna crispipes</i>			
324.	25363 <i>Hydrelaps darwiniensis</i>			
325.	24215 <i>Hydromys chrysogaster</i> (Water-rat, Rakali)		P4	
326.	44656 <i>Hydrophis major</i> (Olive-headed seasnake, greater seasnake)			
327.	43369 <i>Hydrophis peronii</i> (Spiny-headed Seasnake)			
328.	43385 <i>Hydrophis stokesii</i> (Stoke's Seasnake, Sea Snake)			
329.	48587 <i>Hydroprogne caspia</i> (Caspian Tern)		IA	
330.	<i>Ichthyoscopus spinosus</i>			
331.	<i>Isometrus maculatus</i>			Y

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
332.	<i>Istigobius diadema</i>			
333.	<i>Istigobius ornatus</i>			
334.	<i>Istigobius? sp.</i>			
335.	<i>Johnius amblycephalus</i>			
336.	<i>Labracinus lineatus</i>			
337.	<i>Lactoria cornuta</i>			
338.	24367 <i>Lalage tricolor</i> (White-winged Triller)			
339.	30851 <i>Larus fuscus</i> (Lesser Black-backed Gull, Baltic Gull)			Y
340.	25637 <i>Larus novaehollandiae</i> (Silver Gull)			
341.	24511 <i>Larus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Silver Gull)			
342.	<i>Latrodectus geometricus</i>			
343.	<i>Latrodectus hasseltii</i>			
344.	<i>Leiognathus equulus</i>			
345.	25343 <i>Lepidochelys olivacea</i> (Olive Ridley Turtle, Pacific Ridley Turtle)		T	
346.	<i>Leptobrama muelleri</i>			
347.	25121 <i>Lerista apoda</i>			
348.	25125 <i>Lerista bipes</i>			
349.	25138 <i>Lerista griffini</i>			
350.	25146 <i>Lerista labialis</i>			
351.	25170 <i>Lerista separanda</i> (Dampierland plain slider, skink)		P2	
352.	<i>Lethrinus laticaudis</i>			
353.	<i>Lethrinus sp.</i>			
354.	25005 <i>Lialis burtonis</i>			
355.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
356.	24582 <i>Lichmera indistincta</i> subsp. <i>indistincta</i> (Brown Honeyeater)			
357.	25739 <i>Limicola falcinellus</i> (Broad-billed Sandpiper)		IA	
358.	24794 <i>Limicola falcinellus</i> subsp. <i>sibiricus</i> (Broad-billed Sandpiper)		IA	
359.	24795 <i>Limnodromus semipalmatus</i> (Asian Dowitcher)		IA	
360.	30932 <i>Limosa lapponica</i> (Bar-tailed Godwit)		IA	
361.	24796 <i>Limosa lapponica</i> subsp. <i>menzbieri</i> (Bar-tailed Godwit (northern Siberian))		T	
362.	25741 <i>Limosa limosa</i> (Black-tailed Godwit)		IA	
363.	24797 <i>Limosa limosa</i> subsp. <i>melanuroides</i> (Black-tailed Godwit)		IA	
364.	25380 <i>Litoria caerulea</i> (Green Tree Frog)			
365.	25391 <i>Litoria rothii</i> (Northern Laughing Tree Frog)			
366.	25392 <i>Litoria rubella</i> (Little Red Tree Frog)			
367.	<i>Liza alata</i>			
368.	<i>Liza subviridis</i>			
369.	<i>Liza vaigiensis</i>			
370.	25683 <i>Lonchura castaneothorax</i> (Chestnut-breasted Mannikin)			
371.	<i>Lophiocharon trisignatus</i>			
372.	<i>Lophoictinia isura</i>			
373.	30933 <i>Lucasium stenodactylum</i>			
374.	<i>Lutjanus carponotatus</i>			
375.	<i>Lutjanus erythropterus</i>			
376.	<i>Lutjanus lemniscatus</i>			
377.	<i>Lutjanus russellii</i>			
378.	<i>Lutjanus sp.</i>			
379.	24129 <i>Macropus agilis</i> (Agile Wallaby)			
380.	24168 <i>Macrotis lagotis</i> (Bilby, Dalgyte, Ninu)		T	
381.	24326 <i>Malacorhynchus membranaceus</i> (Pink-eared Duck)			
382.	25651 <i>Malurus lamberti</i> (Variegated Fairy-wren)			
383.	24544 <i>Malurus lamberti</i> subsp. <i>assimilis</i> (Variegated Fairy-wren)			
384.	25653 <i>Malurus melanocephalus</i> (Red-backed Fairy-wren)			
385.	24550 <i>Malurus melanocephalus</i> subsp. <i>cruentatus</i> (Red-backed Fairy-wren)			
386.	24583 <i>Manorina flavigula</i> (Yellow-throated Miner)			
387.	<i>Megalops cyprinoides</i>			
388.	25759 <i>Megalurus timoriensis</i> (Tawny Grassbird)			
389.	<i>Melanotaenia sp.</i>			
390.	24585 <i>Melithreptus albogularis</i> (White-throated Honeyeater)			
391.	25665 <i>Melithreptus gularis</i> (Black-chinned Honeyeater)			
392.	24736 <i>Melopsittacus undulatus</i> (Budgerigar)			
393.	25184 <i>Menetia greyii</i>			
394.	25185 <i>Menetia maini</i>			
395.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)			
396.	<i>Microcarbo melanoleucos</i>			
397.	25693 <i>Microeca fascians</i> (Jacky Winter)			
398.	25694 <i>Microeca flavigaster</i> (Lemon-breasted Flycatcher)			
399.	24657 <i>Microeca flavigaster</i> subsp. <i>tormenti</i> (Kimberley Flycatcher)			
400.	<i>Micrognathus micronotopterus</i>			
401.	25542 <i>Milvus migrans</i> (Black Kite)			

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402.	24298	<i>Milvus migrans subsp. affinis</i> (Black Kite)			
403.	25545	<i>Mirafra javanica</i> (Horsfield's Bushlark, Singing Bushlark)			
404.	24302	<i>Mirafra javanica subsp. horsfieldii</i> (Horsfield's Bushlark, Singing Bushlark)			
405.		<i>Missulena occatoria</i>			
406.		<i>Mopsus mormon</i>			
407.	25194	<i>Morethia ruficauda subsp. ruficauda</i>			
408.	25195	<i>Morethia storri</i>			
409.	25671	<i>Motacilla alba</i> (White Wagtail)			
410.	25672	<i>Motacilla flava</i> (Yellow Wagtail)		IA	
411.		<i>Mugil cephalus</i>			
412.		<i>Mugil</i> sp.			
413.	24223	<i>Mus musculus</i> (House Mouse)	Y		
414.	25610	<i>Myiagra inquieta</i> (Restless Flycatcher)			
415.	24448	<i>Myiagra inquieta subsp. nana</i> (Restless Flycatcher)			
416.	25611	<i>Myiagra rubecula</i> (Leaden Flycatcher)			
417.	25612	<i>Myiagra ruficollis</i> (Broad-billed Flycatcher)			
418.	24450	<i>Myiagra ruficollis subsp. mimikae</i> (Broad-billed Flycatcher)			
419.	25666	<i>Myzomela erythrocephala</i> (Red-headed Honeyeater)			
420.	24590	<i>Myzomela erythrocephala subsp. erythrocephala</i> (Red-headed Honeyeater)			
421.		<i>Naso</i> sp.			
422.	25344	<i>Natator depressus</i> (Flatback Turtle)		T	
423.		<i>Nematalosa come</i>			
424.		<i>Nematalosa</i> sp.			
425.		<i>Nematalosa vlaminghi</i>			
426.	25684	<i>Neochmia phaeton</i> (Crimson Finch)			
427.		<i>Neoscona theisii</i>			
428.		<i>Neosilurus hyrtlii</i>			
429.		<i>Nephila edulis</i>			
430.	24327	<i>Nettapus pulchellus</i> (Green Pygmy-goose)			
431.		<i>Netuma proxima</i>			
432.		<i>Nibea microgenys</i>			Y
433.	25747	<i>Ninox connivens</i> (Barking Owl)			
434.	24819	<i>Ninox connivens subsp. connivens</i> (Barking owl (southwest subpop.))		P3	
435.	25430	<i>Notaden nicholli</i> (Desert Spadefoot)			
436.		<i>Notograptes guttatus</i>			
437.	24798	<i>Numenius madagascariensis</i> (Eastern Curlew)		T	
438.		<i>Numenius minatus</i>			Y
439.	24799	<i>Numenius minutus</i> (Little Curlew, Little Whimbrel)		IA	
440.	25742	<i>Numenius phaeopus</i> (Whimbrel)		IA	
441.	25564	<i>Nycticorax caledonicus</i> (Rufous Night Heron)			
442.	24192	<i>Nyctophilus arnhemensis</i> (Arnhem Land Long-eared Bat)			
443.	24194	<i>Nyctophilus geoffroyi</i> (Lesser Long-eared Bat)			
444.	24742	<i>Nymphicus hollandicus</i> (Cockatiel)			
445.	24497	<i>Oceanites oceanicus</i> (Wilson's Storm-petrel)		IA	
446.	24407	<i>Ocyphaps lophotes</i> (Crested Pigeon)			
447.		<i>Oecobius marathaus</i>			
448.		<i>Omobranchus ferox</i>			
449.		<i>Omobranchus lineolatus</i>			
450.		<i>Omobranchus rotundiceps</i>			
451.		<i>Onuxodon margaritiferae</i>			
452.	24138	<i>Onychogalea unguifera</i> (Northern Nailtail Wallaby, Karrabul)			
453.	41347	<i>Onychoprion anaethetus</i> (Bridled Tern)		IA	
454.		<i>Ophichthus rutidoderma</i>			
455.		<i>Ophieleotris aporos</i>			
456.		<i>Opistognathus darwiniensis</i>			
457.		<i>Opistognathus inornatus</i>			
458.		<i>Opistognathus reticulatus</i>			
459.		<i>Orcaella brevirostris</i>			
460.	24060	<i>Orcaella heinsohni</i> (Australian Snubfin Dolphin)		P4	
461.		<i>Orectolobus wardi</i>			
462.	24608	<i>Oriolus sagittatus</i> (Olive-backed Oriole)			
463.		<i>Oxyeleotris</i> sp.			
464.	24620	<i>Pachycephala lanioides</i> (White-breasted Whistler)			
465.	25678	<i>Pachycephala melanura</i> (Mangrove Golden Whistler)			
466.	24621	<i>Pachycephala melanura subsp. melanura</i> (Mangrove Golden Whistler)			
467.	25680	<i>Pachycephala rufiventris</i> (Rufous Whistler)			
468.	48591	<i>Pandion cristatus</i> (Osprey, Eastern Osprey)		IA	
469.		<i>Pantolabus radiatus</i>			
470.		<i>Parablennius tasmanianus</i>			
471.		<i>Paradiplogrammus enneactis</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
472.	<i>Paraplagusia sinerama</i>			
473.	<i>Paraplotosus albilabris</i>			
474.	<i>Paraplotosus butleri</i>			
475.	<i>Parasclopsis</i> sp.			
476.	<i>Parascorpaena picta</i>			
477.	<i>Pardachirus pavoninus</i>			
478.	24627 <i>Pardalotus rubricatus</i> (Red-browed Pardalote)			
479.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
480.	24642 <i>Passer montanus</i> (Eurasian Tree Sparrow)	Y		
481.	24674 <i>Pavo cristatus</i> (Common Peafowl, Indian Peafowl)	Y		
482.	24649 <i>Pelecanoides urinatrix</i> subsp. <i>exsul</i> (Common Diving Petrel)			
483.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)			
484.	<i>Pentapodus emeryii</i>			
485.	<i>Pentapodus porosus</i>			
486.	<i>Periophthalmus argentilineatus</i>			
487.	<i>Periophthalmus koelreuteri</i>			
488.	48060 <i>Petrochelidon ariel</i> (Fairy Martin)			
489.	48061 <i>Petrochelidon nigricans</i> (Tree Martin)			
490.	24659 <i>Petroica goodenovii</i> (Red-capped Robin)			
491.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
492.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
493.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
494.	24411 <i>Phaps histrionica</i> (Flock Bronzewing, Flock Pigeon)			
495.	25668 <i>Philemon citreogularis</i> (Little Friarbird)			
496.	24592 <i>Philemon citreogularis</i> subsp. <i>citreogularis</i> (Little Friarbird)			
497.	<i>Philemon</i> sp.			Y
498.	24802 <i>Philomachus pugnax</i> (Ruff, reeve)		IA	
499.	<i>Pisodonophis cancrivorus</i>			
500.	24677 <i>Pitta moluccensis</i> (Blue-winged Pitta)			
501.	24101 <i>Planigale ingrami</i> (Long-tailed Planigale)			
502.	24102 <i>Planigale maculata</i> (Common Planigale)			
503.	24841 <i>Platalea flavipes</i> (Yellow-billed Spoonbill)			
504.	24842 <i>Platalea regia</i> (Royal Spoonbill)			
505.	<i>Platybelone argalus</i>			
506.	<i>Platycephalus</i> sp.			
507.	42305 <i>Platyplectrum ornatum</i> (Ornate Burrowing Frog)			
508.	24843 <i>Plegadis falcinellus</i> (Glossy Ibis)		IA	
509.	<i>Plotosus lineatus</i>			
510.	24382 <i>Pluvialis fulva</i> (Pacific Golden Plover)		IA	
511.	24383 <i>Pluvialis squatarola</i> (Grey Plover)		IA	
512.	25703 <i>Podargus strigoides</i> (Tawny Frogmouth)			
513.	24678 <i>Podargus strigoides</i> subsp. <i>phalaenoides</i> (Tawny Frogmouth)			
514.	25704 <i>Podiceps cristatus</i> (Great Crested Grebe)			
515.	24643 <i>Poephila acuticauda</i> (Long-tailed Finch)			
516.	25510 <i>Pogona minor</i> (Dwarf Bearded Dragon)			
517.	24908 <i>Pogona minor</i> subsp. <i>mittelli</i> (Dwarf Bearded Dragon)			
518.	24681 <i>Poliocephalus poliocephalus</i> (Hoary-headed Grebe)			
519.	<i>Polydactylus macrochir</i>			Y
520.	<i>Polydactylus multiradiatus</i>			
521.	24752 <i>Polytelis alexandrae</i> (Princess Parrot)		P4	
522.	<i>Pomacentrus milleri</i>			
523.	<i>Pomadasys argenteus</i>			
524.	25706 <i>Pomatostomus temporalis</i> (Grey-crowned Babbler)			
525.	24684 <i>Pomatostomus temporalis</i> subsp. <i>rubeculus</i> (Grey-crowned Babbler)			
526.	25731 <i>Porphyrio porphyrio</i> (Purple Swamphen)			
527.	24766 <i>Porphyrio porphyrio</i> subsp. <i>melanotus</i> (Purple Swamphen)			
528.	<i>Priolepis nuchifasciata</i>			
529.	34037 <i>Pristis zijsron</i> (Green Sawfish)		T	
530.	25200 <i>Proablepharus tenuis</i>			
531.	<i>Psammoperca waigiensis</i>			
532.	25261 <i>Pseudechis australis</i> (Mulga Snake)			
533.	<i>Pseudochromis fuscus</i>			
534.	<i>Pseudochromis wilsoni</i>			
535.	<i>Pseudogobius</i> sp.			
536.	24234 <i>Pseudomys delicatulus</i> (Delicate Mouse)			
537.	24239 <i>Pseudomys nanus</i> (Western Chestnut Mouse)			
538.	42416 <i>Pseudonaja mengdeni</i> (Western Brown Snake)			
539.	24063 <i>Pseudorca crassidens</i> (False Killer Whale)			
540.	<i>Pseudorhombus</i> sp.			
541.	<i>Psittuteutes versicolor</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
542.	<i>Pterois antennata</i>			
543.	<i>Pterois</i> sp.			
544.	24172 <i>Pteropus alecto</i> (Black Flying-fox)			
545.	24173 <i>Pteropus scapulatus</i> (Little Red Flying-fox)			
546.	30946 <i>Ptilinopus regina</i> subsp. <i>ewingii</i> (Rose-crowned Fruit-dove)			
547.	25725 <i>Ptilonorhynchus nuchalis</i> (Great Bowerbird)			
548.	24758 <i>Ptilonorhynchus nuchalis</i> subsp. <i>nuchalis</i> (Great Bowerbird)			
549.	24715 <i>Puffinus huttoni</i> (Hutton's Shearwater)		T	
550.	24716 <i>Puffinus pacificus</i> (Wedge-tailed Shearwater)		IA	
551.	42344 <i>Purnella albifrons</i> (White-fronted Honeyeater)			
552.	25009 <i>Pygopus nigriceps</i>			
553.	24772 <i>Rallina fasciata</i> (Red-legged Crane)			Y
554.	<i>Rallina fasciata</i>			Y
555.	24245 <i>Rattus rattus</i> (Black Rat)	Y		
556.	24776 <i>Recurvirostra novaehollandiae</i> (Red-necked Avocet)			
557.	<i>Remora remora</i>			
558.	<i>Rhina ancylostoma</i>			Y
559.	<i>Rhinobatos</i> sp.			
560.	48096 <i>Rhipidura albiscapa</i> (Grey Fantail)			
561.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
562.	24457 <i>Rhipidura phasiana</i> (Mangrove Grey Fantail)			
563.	25616 <i>Rhipidura rufiventris</i> (Northern Fantail)			
564.	24982 <i>Rhynchoedura ornata</i> (Western Beaked Gecko)			
565.	24174 <i>Saccolaimus flaviventris</i> (Yellow-bellied Sheath-tailed Bat)			
566.	<i>Salarias sexfilum</i>			
567.	<i>Salarias sexfilum</i> ?			Y
568.	<i>Sargocentron rubrum</i>			
569.	<i>Scaevius milii</i>			
570.	<i>Scartelaos histophorus</i>			
571.	<i>Scolecenchelys macroptera</i>			
572.	<i>Scolopendra morsitans</i>			
573.	<i>Scolopsis</i> sp.			
574.	<i>Scomberoides commersonnianus</i>			
575.	<i>Scomberoides lysan</i>			
576.	<i>Scomberoides</i> sp.			Y
577.	<i>Scomberomorus semifasciatus</i>			
578.	<i>Scomberomorus</i> sp.			
579.	24200 <i>Scotorepens greyii</i> (Little Broad-nosed Bat)			
580.	24201 <i>Scotorepens sanborni</i> (Northern Broad-nosed Bat)			
581.	25605 <i>Scythrops novaehollandiae</i> (Channel-billed Cuckoo)			
582.	<i>Selaroides leptolepis</i>			
583.	<i>Sillago analis</i>			
584.	<i>Sillago burrus</i>			
585.	<i>Sillago sihama</i>			
586.	<i>Sillago sihama</i> ?			Y
587.	25268 <i>Simoselaps minimus</i> (Dampierland Burrowing Snake)		P2	
588.	30948 <i>Smicromis brevirostris</i> (Weebill)			
589.	<i>Sphyræna putnamae</i>			Y
590.	24517 <i>Stercorarius parasiticus</i> (Arctic jaeger, Arctic Skua)		IA	
591.	24521 <i>Sterna bengalensis</i> (Lesser Crested Tern)			
592.	24522 <i>Sterna bergii</i> (Crested Tern)			
593.	25640 <i>Sterna dougallii</i> (Roseate Tern)		IA	
594.	24524 <i>Sterna dougallii</i> subsp. <i>gracilis</i> (Roseate Tern)		IA	
595.	24525 <i>Sterna fuscata</i> subsp. <i>nubilosa</i> (Sooty Tern)			
596.	25642 <i>Sterna hirundo</i> (Common Tern)		IA	
597.	24527 <i>Sterna hirundo</i> subsp. <i>longipennis</i> (Common Tern)		IA	
598.	25643 <i>Sterna hybrida</i> (Whiskered Tern)			
599.	24528 <i>Sterna hybrida</i> subsp. <i>javanica</i> (Whiskered Tern)			
600.	48593 <i>Sternula albifrons</i> (Little Tern)		IA	
601.	24329 <i>Stictonetta naevosa</i> (Freckled Duck)			
602.	24482 <i>Stiltia isabella</i> (Australian Pratincole)			
603.	42348 <i>Stomiopera unicolor</i> subsp. <i>unicolor</i> (White-gaped Honeyeater)			
604.	<i>Strongylura</i> sp.			Y
605.	<i>Strongylura strongylura</i>			
606.	25517 <i>Strophurus ciliaris</i>			
607.	24924 <i>Strophurus ciliaris</i> subsp. <i>aberrans</i>			
608.	24925 <i>Strophurus ciliaris</i> subsp. <i>ciliaris</i>			
609.	25752 <i>Sturnus vulgaris</i> (Common Starling)	Y		
610.	25754 <i>Sula leucogaster</i> (Brown Booby)		IA	
611.	24828 <i>Sula leucogaster</i> subsp. <i>plotus</i> (Brown Booby)		IA	

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
612.	25307	<i>Suta punctata</i> (Spotted Snake)			
613.		<i>Synanceia horrida</i>			
614.	25705	<i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
615.	24682	<i>Tachybaptus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
616.	48123	<i>Tachybaptus ruficollis</i> (Little Grebe, Red-throated Little Grebe)			
617.	24207	<i>Tachyglossus aculeatus</i> (Short-beaked Echidna)			
618.	25552	<i>Tadorna radjah</i> (Radjah Shelduck)			
619.	30872	<i>Taeniopygia bichenovii</i> (Double-barred Finch)			
620.	30873	<i>Taeniopygia bichenovii</i> subsp. <i>annulosa</i> (Double-barred Finch)			
621.	30870	<i>Taeniopygia guttata</i> (Zebra Finch)			
622.	30871	<i>Taeniopygia guttata</i> subsp. <i>castanotis</i> (Zebra Finch)			
623.		<i>Taeniura lymma</i>			
624.		<i>Terapon jarbua</i>			
625.		<i>Terapon puta</i>			
626.		<i>Terapon sp.</i>			
627.		<i>Terapon theraps</i>			
628.		<i>Thalasseus bengalensis</i>			
629.	48597	<i>Thalasseus bergii</i> (Crested Tern)		IA	
630.		<i>Thereuopoda lesueurii</i>			
631.	24845	<i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
632.	25202	<i>Tiliqua multifasciata</i> (Central Blue-tongue)			
633.	25520	<i>Tiliqua scincoides</i> (Eastern Blue-tongue)			
634.	25208	<i>Tiliqua scincoides</i> subsp. <i>intermedia</i>			
635.	25548	<i>Todiramphus chloris</i> (Collared Kingfisher)			
636.	42351	<i>Todiramphus pyrrhopygius</i> (Red-backed Kingfisher)			
637.	25549	<i>Todiramphus sanctus</i> (Sacred Kingfisher)			
638.	24309	<i>Todiramphus sanctus</i> subsp. <i>sanctus</i> (Sacred Kingfisher)			
639.		<i>Toxotes chatareus</i>			
640.		<i>Trachinocephalus myops</i>			
641.		<i>Tragulichthys jaculiferus</i>			
642.	48141	<i>Tribonyx ventralis</i> (Black-tailed Native-hen)			
643.		<i>Trichiurus lepturus</i>			
644.	25723	<i>Trichoglossus haematodus</i> (Rainbow Lorikeet)			
645.	24754	<i>Trichoglossus haematodus</i> subsp. <i>rubitorquis</i> (Red-collared Lorikeet)			
646.		<i>Trichonotus setiger</i>			
647.	24157	<i>Trichosurus vulpecula</i> subsp. <i>arnhemensis</i> (northern brushtail possum (Kimberley))		T	
648.	24803	<i>Tringa brevipes</i> (Grey-tailed Tattler)		P4	
649.	24806	<i>Tringa glareola</i> (Wood Sandpiper)		IA	
650.	24808	<i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
651.	24809	<i>Tringa stagnatilis</i> (Marsh Sandpiper, little greenshank)		IA	
652.	24810	<i>Tringa totanus</i> (Common Redshank, redshank)		IA	
653.	48145	<i>Turnix maculosus</i> (Red-backed Button-quail)			
654.	24848	<i>Turnix pyrrhoxanthus</i> (Red-chested Button-quail)			
655.	24851	<i>Turnix velox</i> (Little Button-quail)			
656.	30954	<i>Tursiops aduncus</i> (Indo-Pacific Bottlenose Dolphin)			
657.	24069	<i>Tursiops truncatus</i> (Bottlenose Dolphin)			
658.	24852	<i>Tyto alba</i> subsp. <i>delicatula</i> (Barn Owl)			
659.	34015	<i>Tyto longimembris</i> (Eastern Grass Owl)			
660.	24855	<i>Tyto novaehollandiae</i> subsp. <i>novaehollandiae</i> (Masked Owl (southwest))		P3	
661.	25436	<i>Uperoleia aspera</i> (Derby Toadlet)			
662.	25446	<i>Uperoleia talpa</i> (Ratcheting Toadlet)			
663.		<i>Urodacus hoplurus</i>			
664.		<i>Urodacus koolanensis</i>			
665.		<i>Urodacus yaschenkoi</i>			
666.		<i>Urogymnus asperrimus</i>			Y
667.		<i>Valamugil cunnesius</i>			
668.		<i>Valamugil sp.</i>			Y
669.	25577	<i>Vanellus miles</i> (Masked Lapwing)			
670.	24384	<i>Vanellus miles</i> subsp. <i>miles</i> (Masked Lapwing)			
671.	24386	<i>Vanellus tricolor</i> (Banded Lapwing)			
672.	25209	<i>Varanus acanthurus</i> (Spiny-tailed Monitor)			
673.	25218	<i>Varanus gouldii</i> (Bungarra or Sand Monitor)			
674.	25222	<i>Varanus panoptes</i> subsp. <i>panoptes</i>			
675.	25526	<i>Varanus tristis</i> (Racehorse Monitor)			
676.	25227	<i>Varanus tristis</i> subsp. <i>tristis</i> (Racehorse Monitor)			
677.	24159	<i>Wyulda squamicaudata</i> (Scaly-tailed Possum)		P4	
678.	41351	<i>Xenus cinereus</i> (Terek Sandpiper)		IA	
679.	25765	<i>Zosterops lateralis</i> (Grey-breasted White-eye, Silveryeye)			
680.	24857	<i>Zosterops luteus</i> (Yellow White-eye)			

Name ID Species Name

Naturalised

Conservation Code

¹Endemic To Query
Area

Conservation Codes

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

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

NatureMap Species Report_Flora 10km

Created By Guest user on 13/03/2019

Kingdom Plantae
Current Names Only Yes
Core Datasets Only Yes
Method 'By Line'
Vertices 17° 58' 05" S, 122° 14' 12" E 17° 57' 08" S, 122° 14' 26" E 17° 56' 31" S, 122° 14' 13" E 17° 55' 56" S, 122° 14' 20" E 17° 54' 53" S, 122° 14' 50" E 17° 54' 40" S, 122° 15' 14" E 17° 54' 39" S, 122° 15' 25" E 17° 54' 49" S, 122° 15' 38" E 17° 54' 49" S, 122° 16' 41" E 17° 53' 52" S, 122° 16' 41" E 17° 53' 53" S, 122° 18' 15" E 17° 55' 28" S, 122° 18' 18" E 17° 55' 18" S, 122° 16' 41" E 17° 54' 50" S, 122° 16' 40" E
Group By Family

Family	Species	Records
Acanthaceae	4	9
Aizoaceae	5	16
Amaranthaceae	16	42
Anadyomenaceae	1	2
Annonaceae	1	1
Apocynaceae	14	34
Araceae	2	2
Areschougaceae	1	5
Asteraceae	29	45
Bataceae	1	2
Bignoniaceae	1	3
Boraginaceae	7	23
Brassicaceae	2	2
Byblidaceae	2	7
Campanulaceae	2	2
Capparaceae	1	2
Caryophyllaceae	2	7
Caulerpaceae	9	17
Celastraceae	1	3
Ceramiaceae	2	2
Ceratophyllaceae	1	1
Champiaceae	2	2
Chenopodiaceae	9	24
Cleomaceae	2	5
Codiaceae	2	8
Combretaceae	6	26
Commelinaceae	2	5
Convolvulaceae	22	59
Corallinaceae	2	6
Cucurbitaceae	4	7
Cymodoceaceae	2	8
Cyperaceae	12	25
Cystocloniaceae	1	1
Dasyaceae	1	3
Droseraceae	1	1
Elatinaceae	1	1
Euphorbiaceae	14	36
Fabaceae	81	332
Goodeniaceae	7	33
Gracilariaceae	2	9
Gyrostemonaceae	2	14
Halimedeaceae	2	4
Halymeniaceae	2	7
Hemerocallidaceae	2	2
Hernandiaceae	2	10
Hydrocharitaceae	4	9
Lamiaceae	10	33
Lauraceae	2	8
Liagoraceae	2	2
Loganiaceae	2	2
Loranthaceae	6	19
Lythraceae	1	1
Malvaceae	38	130
Meliaceae	1	2
Menispermaceae	1	7
Montiaceae	3	3
Moraceae	1	2
Myrtaceae	10	77
Nyctaginaceae	5	23
Oleaceae	1	7
Opiliaceae	1	2
Orchidaceae	1	1
Orobanchaceae	2	2
Pandanaceae	1	1
Passifloraceae	1	1
Peyssonneliaceae	1	1
Phyllanthaceae	8	18
Piperaceae	1	2
Plantaginaceae	3	6
Plumbaginaceae	1	1

Poaceae	66	179
Polygalaceae	1	2
Polygonaceae	1	1
Portulacaceae	4	8
Proteaceae	6	21
Pteridaceae	1	1
Rhamnaceae	2	5
Rhizophoraceae	3	5
Rhodomelaceae	10	23
Rhodymeniaceae	2	13
Rubiaceae	12	43
Rutaceae	1	1
Santalaceae	3	11
Sapindaceae	3	5
Sapotaceae	1	6
Scrophulariaceae	1	3
Sebdeniaceae	1	5
Solanaceae	7	27
Solieriaceae	1	3
Udoteaceae	1	1
Urticaceae	1	1
Valoniaceae	1	1
Violaceae	1	2
Zygophyllaceae	3	21
TOTAL	527	1603

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Acanthaceae				
1.	41725 <i>Asystasia gangetica</i> subsp. <i>gangetica</i>	Y		
2.	6828 <i>Avicennia marina</i> (White Mangrove)			
3.	13959 <i>Hypoestes floribunda</i> var. <i>varia</i>			
4.	17890 <i>Ruellia tuberosa</i>	Y		
Aizoaceae				
5.	2818 <i>Sesuvium portulacastrum</i>			
6.	16690 <i>Tetragonia coronata</i>		P3	
7.	44305 <i>Trianthema pilosum</i>			
8.	2830 <i>Trianthema portulacastrum</i> (Giant Pigweed)	Y		
9.	44362 <i>Trianthema triquetrum</i>			
Amaranthaceae				
10.	2645 <i>Achyranthes aspera</i> (Chaff Flower)			
11.	2646 <i>Aerva javanica</i> (Kapok Bush)	Y		
12.	20028 <i>Alternanthera brasiliana</i>	Y		
13.	2653 <i>Alternanthera pungens</i> (Khaki Weed)	Y		
14.	20018 <i>Amaranthus undulatus</i>			
15.	2677 <i>Gomphrena celosioides</i> (Gomphrena Weed)	Y		
16.	2682 <i>Gomphrena flaccida</i> (Gomphrena Weed)			
17.	2686 <i>Gomphrena pusilla</i>		P2	
18.	2687 <i>Gomphrena tenella</i>			
19.	18374 <i>Guilleminea densa</i>	Y		
20.	2704 <i>Ptilotus calostachyus</i> (Weeping Mulla Mulla)			
21.	2721 <i>Ptilotus exaltatus</i> (Tall Mulla Mulla)			
22.	2725 <i>Ptilotus fusiformis</i>			
23.	2737 <i>Ptilotus lanatus</i>			
24.	2751 <i>Ptilotus polystachyus</i> (Prince of Wales Feather)			
25.	43203 <i>Surreya diandra</i>			
Anadyomenaceae				
26.	35872 <i>Anadyomene plicata</i>			
Annonaceae				
27.	2944 <i>Miliusa brahei</i>			
Apocynaceae				
28.	6563 <i>Alstonia linearis</i> (Bitter Bark)			
29.	14925 <i>Calotropis gigantea</i>	Y		
30.	6567 <i>Carissa lanceolata</i> (Conkerberry, Marnuwiji)			
31.	12683 <i>Cryptostegia madagascariensis</i>	Y		
32.	6585 <i>Cynanchum pedunculatum</i>			
33.	48280 <i>Cynanchum viminalis</i> subsp. <i>australe</i>			
34.	13228 <i>Gynnanthera oblonga</i>			
35.	6572 <i>Ichnocarpus frutescens</i>			
36.	16537 <i>Marsdenia angustata</i>			
37.	6598 <i>Marsdenia viridiflora</i>			
38.	16535 <i>Marsdenia viridiflora</i> subsp. <i>tropica</i>			
39.	48985 <i>Vincetoxicum carnosum</i>			
40.	48983 <i>Vincetoxicum cinerascens</i>			
41.	6578 <i>Wrightia saligna</i>			
Araceae				
42.	28342 <i>Landoltia punctata</i> (Thin Duckweed)			
43.	1045 <i>Pistia stratiotes</i> (Water Lettuce)	Y		
Areschougiaceae				
44.	27281 <i>Solieria robusta</i>			
Asteraceae				
45.	7811 <i>Acanthospermum hispidum</i> (Starburr)	Y		
46.	13230 <i>Ageratum conyzoides</i>	Y		
47.	7860 <i>Blumea integrifolia</i>			
48.	7866 <i>Blumea tenella</i>			
49.	<i>Centratherum punctatum</i>			
50.	7939 <i>Conyza bonariensis</i> (Flaxleaf Fleabane)	Y		
51.	19063 <i>Cyanthillium cinereum</i>	Y		
52.	42146 <i>Eclipta platyglossa</i> subsp. <i>borealis</i>			
53.	8450 <i>Eclipta prostrata</i>	Y		
54.	<i>Eleutheranthera ruderalis</i>			

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
55.	35558	<i>Flaveria trinervia</i> (Speedy Weed)	Y		
56.	19195	<i>Gamochaeta pensylvanica</i>	Y		
57.	7985	<i>Gnaphalium polycaulon</i> (Indian Cudweed)	Y		
58.	17816	<i>Pluchea ferdinandi-muelleri</i>			
59.	43944	<i>Pluchea longiseta</i>			
60.	8168	<i>Pluchea rubelliflora</i>			
61.	8170	<i>Pluchea tetranthera</i>			
62.		<i>Praxelis clematidea</i>			
63.	41224	<i>Pterocaulon intermedium</i>			
64.	41223	<i>Pterocaulon paradoxum</i>			
65.	41221	<i>Pterocaulon serrulatum</i> var. <i>velutinum</i>			
66.	10920	<i>Soliva sessilis</i> (Jo-jo, Onehunga Weed)	Y		
67.	8231	<i>Sonchus oleraceus</i> (Common Sowthistle)	Y		
68.	8239	<i>Streptoglossa macrocephala</i>			
69.	8240	<i>Streptoglossa odora</i>			
70.	8246	<i>Thespidium basiflorum</i>		P1	
71.	8252	<i>Tridax procumbens</i> (Tridax, Tridax Daisy)	Y		
72.	15725	<i>Verbesina encelioides</i>	Y		
73.	46275	<i>Verbesina encelioides</i> var. <i>encelioides</i> (Crownbeard, Wild Sunflower, Goldweed, South African Daisy)	Y		

Bataceae

74. 1743 *Batis argillicola*

Bignoniaceae

75. 48390 *Dolichandrone occidentalis*

Boraginaceae

76. 6682 *Ehretia saligna* (False Cedar)
 77. 14301 *Ehretia saligna* var. *saligna*
 78. 10882 *Heliotropium foliatum*
 79. 13126 *Heliotropium leptaleum*
 80. 6713 *Heliotropium ovalifolium*
 81. 6727 *Trichodesma zeylanicum* (Camel Bush, Kumbalin)
 82. 47242 *Trichodesma zeylanicum* var. *latispaleum*

Brassicaceae

83. 3013 *Eruca sativa* (Purplevein Rocket)
 84. 3061 *Raphanus raphanistrum* (Wild Radish)

Byblidaceae

85. 18073 *Byblis filifolia*
 86. 17854 *Byblis rorida*

Campanulaceae

87. 37480 *Lobelia arnhemiaca*
 88. *Wahlenbergia* sp.

Capparaceae

89. 2976 *Capparis lasiantha* (Split Jack, Balqarda)

Caryophyllaceae

90. 2898 *Polycarpaea corymbosa*
 91. 2903 *Polycarpaea longiflora*

Caulerpaceae

92. 42620 *Caulerpa chemnitzia*
 93. 35158 *Caulerpa corynephora*
 94. 44547 *Caulerpa lamourouxii*
 95. 26568 *Caulerpa lentillifera*
 96. 44551 *Caulerpa macrodisca*
 97. 26576 *Caulerpa serrulata*
 98. 26577 *Caulerpa sertularioides*
 99. 26579 *Caulerpa taxifolia*
 100. 35124 *Caulerpa taxifolia* var. *taxifolia*

Celastraceae

101. 41200 *Denhamia cunninghamii* (Koonkara)

Ceramiaceae

102. 26587 *Centroceras clavulatum*
 103. 26595 *Ceramium isogonum*

Ceratophyllaceae

104. 2925 *Ceratophyllum demersum* (Hornwort)

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Champiaceae				
105.	26618 <i>Champia parvula</i>			
106.	26619 <i>Champia stipitata</i>			
Chenopodiaceae				
107.	2504 <i>Dysphania plantaginella</i>			
108.	2573 <i>Neobassia astrocarpa</i>			
109.	30434 <i>Salsola australis</i>			
110.	2638 <i>Suaeda arbusculoides</i>			
111.	33236 <i>Tecticornia halocnemoides</i> (Shrubby Samphire)			
112.	33238 <i>Tecticornia halocnemoides</i> subsp. <i>tenuis</i>			
113.	33356 <i>Tecticornia indica</i> subsp. <i>indica</i>			
114.	33357 <i>Tecticornia indica</i> subsp. <i>julacea</i>			
115.	33318 <i>Tecticornia indica</i> subsp. <i>leiostachya</i> (Samphire)			
Cleomaceae				
116.	11886 <i>Cleome tetrandra</i> var. <i>tetrandra</i>			
117.	2988 <i>Cleome viscosa</i> (Tickweed, Tjinduwadhu)			
Codiaceae				
118.	35917 <i>Codium arabicum</i>			
119.	35857 <i>Codium dwarkense</i>			
Combretaceae				
120.	5296 <i>Lumnitzera racemosa</i> (White-flowered Black Mangrove)			
121.	5303 <i>Terminalia ferdinandiana</i> (Mador)			
122.	5306 <i>Terminalia hadleyana</i>			
123.	45697 <i>Terminalia kumpaja</i>		P3	
124.	5307 <i>Terminalia latipes</i>			
125.	5309 <i>Terminalia petiolaris</i> (Masroorl)			
Commelinaceae				
126.	44923 <i>Callisia repens</i>	Y		
127.	1167 <i>Murdannia graminea</i> (Baniyu)			
Convolvulaceae				
128.	6606 <i>Bonamia media</i>			
129.	13732 <i>Cuscuta campestris</i> (Golden dodder)	Y		
130.	31213 <i>Cuscuta chinensis</i>			
131.	13733 <i>Cuscuta victoriana</i>			
132.	48735 <i>Distimake aegyptius</i>	Y		
133.	48738 <i>Distimake dissectus</i> var. <i>dissectus</i>	Y		
134.	11416 <i>Evolvulus alsinoides</i> var. <i>decumbens</i>			
135.	14363 <i>Ipomoea batatas</i>	Y		
136.	6620 <i>Ipomoea cairica</i> (Coast Morning Glory)	Y		
137.	6623 <i>Ipomoea coptica</i>			
138.	6633 <i>Ipomoea muelleri</i> (Poison Morning Glory, Yumbu)			
139.	6635 <i>Ipomoea pes-caprae</i>			
140.	11312 <i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i>			
141.	<i>Ipomoea pes-caprae</i> subsp. <i>pes-caprae</i>			Y
142.	18295 <i>Ipomoea pes-tigridis</i>	Y		
143.	6637 <i>Ipomoea polymorpha</i>			
144.	20003 <i>Ipomoea triloba</i>	Y		
145.	6643 <i>Jacquemontia paniculata</i>			
146.	34797 <i>Jacquemontia</i> sp. <i>Broome</i> (A.A. Mitchell 3028)		P1	
147.	6651 <i>Operculina aequisejala</i>			
148.	6653 <i>Polymeria ambigua</i> (Morning Glory)			
149.	41644 <i>Polymeria</i> sp. <i>Broome</i> (K.F. Kenneally 9759)		P3	
Corallinaceae				
150.	26462 <i>Amphiroa fragilissima</i>			
151.	26983 <i>Jania adhaerens</i>			
Cucurbitaceae				
152.	48838 <i>Citrullus amarus</i>	Y		
153.	15036 <i>Coccinia grandis</i>	Y		
154.	7371 <i>Cucumis melo</i> (Ulcardo Melon)			
155.	7378 <i>Momordica balsamina</i> (Balsam Apple)	Y		
Cymodoceaceae				
156.	128 <i>Cymodocea angustata</i>			
157.	131 <i>Halodule uninervis</i>			
Cyperaceae				
158.	750 <i>Bulbostylis barbata</i>			

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
159.	777	<i>Cyperus bulbosus</i> (Bush Onion, Tjanmata)			
160.	781	<i>Cyperus compressus</i>	Y		
161.	784	<i>Cyperus conicus</i>			
162.	810	<i>Cyperus rotundus</i> (Nut Grass)	Y		
163.	812	<i>Cyperus scariosus</i>			
164.	814	<i>Cyperus squarrosus</i>			
165.	839	<i>Fimbristylis ammobia</i>			
166.	841	<i>Fimbristylis caespitosa</i>			
167.	847	<i>Fimbristylis cymosa</i>			
168.	870	<i>Fimbristylis oxystachya</i>			
169.	1027	<i>Scleria brownii</i>			

Cystocloniaceae

170. 26970 *Hypnea pannosa*

Dasyaceae

171. 26930 *Heterosiphonia crassipes*

Droseraceae

172. 17213 *Drosera broomensis*

Elatinaceae

173. 5183 *Bergia ammannioides*

Euphorbiaceae

174. 17422 *Adriana tomentosa* var. *tomentosa*
 175. 35303 *Euphorbia australis* var. *subtomentosa*
 176. 4623 *Euphorbia coghlanii* (Namana)
 177. 17342 *Euphorbia cyathophora*
 178. 42849 *Euphorbia hassallii*
 179. 11157 *Euphorbia heterophylla*
 180. 4629 *Euphorbia hirta* (Asthma Plant)
 181. 4635 *Euphorbia myrtilloides*
 182. 4642 *Euphorbia schultzei*
 183. 42878 *Euphorbia thymifolia*
 184. 42879 *Euphorbia trigonosperma*
 185. 4656 *Jatropha gossypifolia* (Bellyache Bush)
 186. 4658 *Mallotus nesophilus*
 187. 31374 *Microstachys chamaelea*

Fabaceae

188. 16979 *Abrus precatorius* subsp. *precatorius*
 189. 16160 *Acacia adoxa* var. *subglabra*
 190. 3209 *Acacia ampliceps*
 191. 44580 *Acacia ampliceps* x *bivenosa*
 192. 3241 *Acacia bivenosa*
 193. 13403 *Acacia colei*
 194. 17013 *Acacia colei* var. *colei*
 195. 3326 *Acacia eriopoda* (Broome Pindan Wattle)
 196. 42200 *Acacia eriopoda* x *tumida* var. *tumida*
 197. 3447 *Acacia monticola* (Gawar, Lilwardi)
 198. 42183 *Acacia monticola* x *tumida* var. *kulpam*
 199. 14977 *Acacia plectocarpa* subsp. *plectocarpa*
 200. *Acacia* sp.
 201. 3579 *Acacia trachycarpa* (Minni Ritchi, Balgali)
 202. 3580 *Acacia translucens* (Poverty Bush, Banmung)
 203. 20321 *Acacia tumida* var. *kulpam*
 204. 19641 *Acacia tumida* var. *tumida*
 205. 3680 *Aeschynomene indica* (Budda Pea)
 206. 3609 *Albizia lebbbeck*
 207. 17574 *Alysicarpus ovalifolius*
 208. 14487 *Aphyllodium glossocarpum*
 209. 12757 *Bauhinia cunninghamii*
 210. *Butea monosperma*
 211. 3624 *Caesalpinia major*
 212. 10972 *Cajanus marmoratus*
 213. 3749 *Canavalia rosea* (Wild Jack Bean)
 214. *Centrosema molle*
 215. 13680 *Centrosema pascuorum*
 216. 18358 *Chamaecrista absus* var. *absus*
 217. 3769 *Clitoria ternatea*
 218. 13466 *Crotalaria brevis*
 219. 3774 *Crotalaria cunninghamii* (Green Birdflower, Bilbun)

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
220.	20176	<i>Crotalaria cunninghamii</i> subsp. <i>cunninghamii</i>			
221.	20179	<i>Crotalaria medicaginea</i> var. <i>neglecta</i>			
222.	19398	<i>Crotalaria ramosissima</i>			
223.		<i>Crotalaria</i> sp.			
224.	17432	<i>Cullen corallum</i>			
225.	17116	<i>Cullen martinii</i>			
226.	17447	<i>Cullen pustulatum</i>			
227.	3853	<i>Desmodium filiforme</i>			
228.	3857	<i>Desmodium tortuosum</i> (Florida Beggarweed)	Y		
229.	3612	<i>Dichrostachys spicata</i> (Pied Piper Bush)			
230.	3871	<i>Erythrina vespertilio</i> (Yulbah)			
231.	3662	<i>Erythrophleum chlorostachys</i> (Ironwood, Dyundydu)			
232.	3886	<i>Galactia tenuiflora</i>			
233.	13829	<i>Glycine pindanica</i>		P3	
234.	3942	<i>Glycine tomentella</i> (Woolly Glycine)			
235.	3973	<i>Indigofera colutea</i> (Sticky Indigo)			
236.	3978	<i>Indigofera hirsuta</i> (Hairy Indigo)			
237.	3980	<i>Indigofera linifolia</i>			
238.	3981	<i>Indigofera linnaei</i> (Birdsville Indigo)			
239.	3989	<i>Isotropis atropurpurea</i> (Poison Sage)			
240.	4054	<i>Leptosema anomalum</i>			
241.	18351	<i>Leucaena leucocephala</i> subsp. <i>leucocephala</i>	Y		
242.	4070	<i>Macroptilium atropurpureum</i> (Purple Bean)	Y		
243.	4079	<i>Medicago polymorpha</i> (Burr Medic)	Y		
244.		<i>Pachyrhizus erosus</i>			Y
245.	33482	<i>Peltophorum pterocarpum</i>	Y		
246.	4190	<i>Rhynchosia australis</i> (Rhynchosia)			
247.	4191	<i>Rhynchosia minima</i> (Rhynchosia)			
248.	12303	<i>Senna costata</i>			
249.	12307	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>			
250.	12312	<i>Senna notabilis</i>			
251.	12313	<i>Senna oligoclada</i>			
252.	4196	<i>Sesbania cannabina</i> (Sesbania Pea)			
253.	11235	<i>Sesbania simpliciuscula</i> var. <i>fitzroyensis</i>			
254.		<i>Sesbania</i> sp.			
255.	12353	<i>Stylosanthes hamata</i> (Verano Stylo)	Y		
256.	12354	<i>Stylosanthes scabra</i>	Y		
257.	3677	<i>Tamarindus indica</i> (Tamarind)	Y		
258.	4266	<i>Tephrosia crocea</i> (Baynjood)			
259.	4272	<i>Tephrosia leptoclada</i>			
260.	4279	<i>Tephrosia remotiflora</i>			
261.	4280	<i>Tephrosia rosea</i> (Flinders River Poison, Bungoo'dah)			
262.	19529	<i>Tephrosia rosea</i> var. <i>rosea</i>			
263.	4281	<i>Tephrosia simplicifolia</i>			
264.	4293	<i>Trifolium cernuum</i> (Drooping Flower Clover)	Y		
265.	34937	<i>Uria lagopodioides</i>			
266.	4327	<i>Zornia chaetophora</i>			
267.	12679	<i>Zornia muelleriana</i> subsp. <i>congesta</i>			
268.	12680	<i>Zornia prostrata</i> var. <i>prostrata</i>			

Goodeniaceae

269.	7490	<i>Goodenia armitiana</i>			
270.	12514	<i>Goodenia byrnesii</i>		P3	
271.	7521	<i>Goodenia lamprosperma</i>			
272.	7545	<i>Goodenia scaevolina</i> (Ngurubi)			
273.	13163	<i>Goodenia sepalosa</i> var. <i>sepalosa</i>			
274.	13173	<i>Scaevola parvifolia</i> subsp. <i>parvifolia</i>			
275.	7663	<i>Velleia panduriformis</i> (Cabbage Poison)			

Gracilariaceae

276.	26873	<i>Gracilaria salicornia</i>			
277.	35871	<i>Hydropuntia urvillei</i>			

Gyrostemonaceae

278.	2778	<i>Codonocarpus cotinifolius</i> (Native Poplar, Kundurangu)			
279.	2789	<i>Gyrostemon tepperi</i>			

Halimedaaceae

280.	26894	<i>Halimeda macroloba</i>			
281.	35906	<i>Halimeda opuntia</i>			

Halymeniaceae

282.	37642	<i>Halymenia durvillei</i>			
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283.	38100 <i>Halymenia maculata</i>			
Hemerocallidaceae				
284.	1285 <i>Corynotheca micrantha</i> (Sand Lily)			
285.	11624 <i>Corynotheca micrantha</i> var. <i>gracilis</i>			
Hernandiaceae				
286.	2960 <i>Gyrocarpus americanus</i> (Helicopter Tree, Bilangkamar)			
287.	13748 <i>Gyrocarpus americanus</i> subsp. <i>pachyphyllus</i>			
Hydrocharitaceae				
288.	163 <i>Halophila minor</i>			
289.	164 <i>Halophila ovalis</i> (Sea Wrack)			
290.	165 <i>Halophila spinulosa</i>			
291.	166 <i>Hydrilla verticillata</i> (Water Thyme)			
Lamiaceae				
292.	6729 <i>Clerodendrum floribundum</i> (Lollybush)			
293.	13693 <i>Clerodendrum floribundum</i> var. <i>coriaceum</i>			
294.	13691 <i>Clerodendrum floribundum</i> var. <i>ovatum</i>			
295.	13688 <i>Clerodendrum tomentosum</i> var. <i>mollissima</i>			
296.	13690 <i>Clerodendrum tomentosum</i> var. <i>tomentosum</i>			
297.	6749 <i>Cyanostegia cyanocalyx</i>			
298.	48283 <i>Mesosphaerum suaveolens</i>	Y		
299.	44784 <i>Ocimum americanum</i>	Y		
300.	6907 <i>Ocimum basilicum</i> (Basil)	Y		
301.	6735 <i>Premna acuminata</i> (Ngalinkinkal)			
Lauraceae				
302.	2949 <i>Cassytha capillaris</i>			
303.	2950 <i>Cassytha filiformis</i> (Love Vine, Jirawan)			
Liagoraceae				
304.	26836 <i>Ganonema borowitzkae</i>			
305.	26837 <i>Ganonema farinosum</i>			
Loganiaceae				
306.	6522 <i>Mitrasacme exserta</i>			
307.	6525 <i>Mitrasacme hispida</i>			
Loranthaceae				
308.	2369 <i>Amyema benthamii</i>			
309.	13700 <i>Amyema bifurcata</i>			
310.	11874 <i>Amyema sanguinea</i> var. <i>sanguinea</i>			
311.	2386 <i>Amyema thalassia</i>			
312.	2399 <i>Lysiana spathulata</i>			
313.	11809 <i>Lysiana spathulata</i> subsp. <i>spathulata</i>			
Lythraceae				
314.	<i>Lawsonia inermis</i>			
Malvaceae				
315.	16919 <i>Abutilon hannii</i>			
316.	11325 <i>Abutilon indicum</i> var. <i>australiense</i>			
317.	4901 <i>Abutilon otocarpum</i> (Desert Chinese Lantern)			
318.	4995 <i>Adansonia gregorii</i> (Boab, Djungeri)			
319.	4907 <i>Alyogyne pinoniana</i> (Sand Hibiscus)			
320.	40917 <i>Androcalva loxophylla</i>			
321.	13010 <i>Brachychiton diversifolius</i> subsp. <i>diversifolius</i>			
322.	4997 <i>Camptostemon schultzei</i> (Kapok Mangrove)			
323.	12767 <i>Corchorus aestuans</i>			
324.	25847 <i>Corchorus incanus</i> subsp. <i>incanus</i>			
325.	4861 <i>Corchorus olitorius</i> (Jute)	Y		
326.	18415 <i>Corchorus sidoides</i> subsp. <i>sidoides</i>			
327.	18414 <i>Corchorus sidoides</i> subsp. <i>vermicularis</i>			
328.	4910 <i>Gossypium australe</i> (Native Cotton)			
329.	4913 <i>Gossypium hirsutum</i> (Upland Cotton)	Y		
330.	4916 <i>Gossypium populifolium</i>			
331.	13043 <i>Gossypium rotundifolium</i>			
332.	4868 <i>Grewia breviflora</i>			
333.	4872 <i>Grewia retusifolia</i> (Dog's Balls)			
334.	4920 <i>Herissantia crispa</i>			
335.	29358 <i>Hibiscus apodus</i>			
336.	29316 <i>Hibiscus austrinus</i>			
337.	29317 <i>Hibiscus austrinus</i> var. <i>austrinus</i>			

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
338.	4929	<i>Hibiscus geranioides</i>			
339.	4933	<i>Hibiscus leptocladus</i>			
340.	5051	<i>Melhanie oblongifolia</i>			
341.	46817	<i>Seringia exastia</i> (Fringed fire-bush)		T	
342.	46820	<i>Seringia katatona</i> (Red dune fire-bush)		P3	
343.	46821	<i>Seringia nephrosperma</i> (Free carpel fire-bush)			
344.	4973	<i>Sida cordifolia</i>	Y		
345.	4977	<i>Sida fibulifera</i> (Silver Sida)			
346.	4979	<i>Sida hackettiana</i>			
347.	18150	<i>Sida rohlenae</i> subsp. <i>occidentalis</i>			
348.	45274	<i>Sida</i> sp. <i>Pindan</i> (B.G. Thomson 3398)			
349.	4989	<i>Sida spinosa</i> (Spiny Sida)			
350.	4992	<i>Thespesia populneoides</i> (Laba)			
351.	13468	<i>Triumfetta pentandra</i>	Y		
352.	5106	<i>Waltheria indica</i>			
Meliaceae					
353.	17660	<i>Azadirachta indica</i>	Y		
Menispermaceae					
354.	2942	<i>Tinospora smilacina</i> (Snakevine, Oondala)			
Montiaceae					
355.	2866	<i>Calandrinia quadrivalvis</i>			
356.	2871	<i>Calandrinia strophiolata</i>			
357.	2872	<i>Calandrinia tepperiana</i>			
Moraceae					
358.	31578	<i>Ficus aculeata</i> var. <i>indecora</i> (Ranji)			
Myrtaceae					
359.	5457	<i>Calytrix exstipulata</i> (Kimberley Heather)			
360.	16788	<i>Corymbia bella</i>			
361.	16784	<i>Corymbia dendromerinx</i>			
362.	14650	<i>Corymbia flavescens</i>			
363.	17089	<i>Corymbia greeniana</i>			
364.	16789	<i>Corymbia paractia</i>		P1	
365.	17100	<i>Corymbia polycarpa</i>			
366.	17084	<i>Corymbia zygophylla</i>			
367.	5785	<i>Eucalyptus tectifica</i> (Darwin Box)			
368.	5901	<i>Melaleuca dealbata</i> (Karnbor)			
Nyctaginaceae					
369.	2770	<i>Boerhavia coccinea</i> (Tar Vine, Wituka)			
370.	2771	<i>Boerhavia dominii</i>			
371.	2772	<i>Boerhavia gardneri</i>			
372.	2773	<i>Boerhavia paludosa</i>			
373.		<i>Boerhavia</i> sp.			
Oleaceae					
374.	12059	<i>Jasminum didymum</i> subsp. <i>lineare</i> (Desert Jasmine)			
Opiliaceae					
375.	2362	<i>Opilia amentacea</i>			
Orchidaceae					
376.	1628	<i>Cymbidium canaliculatum</i>			
Orobanchaceae					
377.	13682	<i>Buchnera asperata</i>			
378.	7103	<i>Striga curviflora</i>			
Pandanaceae					
379.	104	<i>Pandanus spiralis</i> (Screwpine, Wakirri)			
Passifloraceae					
380.	5226	<i>Passiflora foetida</i> (Stinking Passion Flower)	Y		
Peyssonneliaceae					
381.	44731	<i>Sonderophycus capensis</i>			
Phyllanthaceae					
382.	4603	<i>Bridelia tomentosa</i>			
383.	4654	<i>Flueggea virosa</i>			
384.	12013	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i> (Dogwood, Guwal)			
385.	38421	<i>Notoleptopus decaisnei</i>			
386.	4673	<i>Phyllanthus amarus</i>	Y		

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
387.	45695	<i>Phyllanthus eremicus</i> (Desert Phyllanthus)			
388.	17794	<i>Phyllanthus tenellus</i>	Y		
389.	13927	<i>Phyllanthus urinaria</i>			
Piperaceae					
390.	17320	<i>Peperomia pellucida</i>	Y		
Plantaginaceae					
391.		<i>Mecardonia procumbens</i>			Y
392.	12487	<i>Stemodia florulenta</i>			
393.	12489	<i>Stemodia lathraia</i>			
Plumbaginaceae					
394.	6490	<i>Muellerolimon salicorniaceum</i>			
Poaceae					
395.	11193	<i>Aristida holathera</i> var. <i>latifolia</i>			
396.	211	<i>Aristida hygrometrica</i> (Northern Kerosene Grass)			
397.	212	<i>Aristida inaequiglumis</i> (Feathertop Threawn)			
398.	239	<i>Bothriochloa bladhii</i> (Forest Bluegrass)			
399.	13361	<i>Bothriochloa pertusa</i>	Y		
400.	41565	<i>Cenchrus americanus</i> (Pearl Millet)	Y		
401.	257	<i>Cenchrus biflorus</i> (Gallon's Curse)	Y		
402.	258	<i>Cenchrus ciliaris</i> (Buffel Grass)	Y		
403.	259	<i>Cenchrus echinatus</i> (Burrgrass)	Y		
404.		<i>Cenchrus purpurascens</i>			Y
405.	29721	<i>Cenchrus setiger</i> (Birdwood Grass)	Y		
406.	266	<i>Chloris barbata</i> (Purpletop Chloris)	Y		
407.	270	<i>Chloris pumilio</i>			
408.	272	<i>Chloris virgata</i> (Feathertop Rhodes Grass)	Y		
409.	28291	<i>Chrysopogon aciculatus</i>	Y		
410.	275	<i>Chrysopogon pallidus</i> (Ribbongrass)			
411.	46558	<i>Cynodon convergens</i>			
412.	283	<i>Cynodon dactylon</i> (Couch)	Y		
413.	288	<i>Dactyloctenium aegyptium</i> (Coast Button Grass)	Y		
414.	290	<i>Dactyloctenium radulans</i> (Button Grass)			
415.	309	<i>Digitaria bicornis</i> (Finger Grass)			
416.	311	<i>Digitaria ciliaris</i> (Summer Grass)	Y		
417.	35178	<i>Digitaria radicata</i>	Y		
418.	353	<i>Eleusine indica</i> (Crowsfoot Grass)	Y		
419.	363	<i>Enneapogon pallidus</i> (Conetop Nineawn)			
420.	374	<i>Eragrostis cilianensis</i> (Stinkgrass)	Y		
421.	375	<i>Eragrostis cumingii</i> (Cuming's Love Grass)			
422.	380	<i>Eragrostis eriopoda</i> (Woollybutt Grass, Wangumu)			
423.	381	<i>Eragrostis falcata</i> (Sickle Lovegrass)			
424.	389	<i>Eragrostis minor</i> (Smaller Stinkgrass)	Y		
425.	17610	<i>Eragrostis tenuifolia</i>	Y		
426.	412	<i>Eriachne melicacea</i>			
427.	414	<i>Eriachne obtusa</i> (Northern Wandarrie Grass)			
428.	48185	<i>Eriachne pindanica</i> (Pindan Wiregrass)			
429.	443	<i>Heteropogon contortus</i> (Bunch Speargrass)			
430.	476	<i>Lolium perenne</i> (Perennial Ryegrass)	Y		
431.	503	<i>Panicum decompositum</i> (Native Millet, Kaltu-kaltu)			
432.	504	<i>Panicum effusum</i> (Hairy Panic Grass)			
433.	523	<i>Paspalidium rarum</i> (Rare Paspalidium)			
434.	533	<i>Paspalum vaginatum</i> (Salt Water Couch)			
435.	546	<i>Perotis rara</i> (Comet Grass)			
436.	599	<i>Schizachyrium fragile</i> (Senale Redgrass)			
437.	613	<i>Setaria verticillata</i> (Whorled Pigeon Grass)	Y		
438.	12920	<i>Sorghum interjectum</i>			
439.	620	<i>Sorghum stipoideum</i> (Annual Sorghum)			
440.	622	<i>Sorghum timorense</i>			
441.	625	<i>Spinifex longifolius</i> (Beach Spinifex)			
442.	629	<i>Sporobolus australasicus</i> (Fairy Grass)			
443.	633	<i>Sporobolus mitchellii</i> (Ratstail Couch)			
444.	635	<i>Sporobolus virginicus</i> (Marine Couch)			
445.	669	<i>Thaumastochloa pubescens</i>			
446.	34357	<i>Triodia caelestialis</i>			
447.	13131	<i>Triodia epactia</i>			
448.	691	<i>Triodia microstachya</i>			
449.	17873	<i>Triodia schinzii</i>			
450.	715	<i>Urochloa mosambicensis</i> (Sabi Grass)	Y		

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
451.	717	<i>Urochloa piligera</i>			
452.	13902	<i>Urochloa praetervisa</i>			
453.	718	<i>Urochloa pubigera</i>			
454.	10865	<i>Urochloa subquadrifera</i>			
455.	725	<i>Whiteochloa airoides</i>			
456.	728	<i>Whiteochloa cymbiformis</i>			
457.	729	<i>Xerochloa barbata</i> (Rice Grass)			
458.	730	<i>Xerochloa imberbis</i> (Rice Grass)			
459.	732	<i>Yakirra australiensis</i>			
460.	735	<i>Yakirra pauciflora</i>			
Polygalaceae					
461.	4577	<i>Polygala tepperi</i>			
Polygonaceae					
462.	11020	<i>Persicaria hydropiper</i>			
Portulacaceae					
463.	2881	<i>Portulaca filifolia</i>			
464.	2883	<i>Portulaca napiformis</i>			
465.	2884	<i>Portulaca oleracea</i> (Purslane, Wakati)			
466.	2886	<i>Portulaca pilosa</i> (Djanggara)	Y		
Proteaceae					
467.	15975	<i>Grevillea pyramidalis</i> subsp. <i>pyramidalis</i>			
468.	16476	<i>Grevillea refracta</i> subsp. <i>refracta</i>			
469.	13440	<i>Grevillea wickhamii</i> subsp. <i>aprica</i>			
470.	2129	<i>Hakea arborescens</i> (Common Hakea)			
471.	2178	<i>Hakea macrocarpa</i> (Dyaridany, Jaradinty)			
472.	2263	<i>Persoonia falcata</i> (Wild Pear, Gandala)			
Pteridaceae					
473.	30	<i>Ceratopteris thalictroides</i>			
Rhamnaceae					
474.	4846	<i>Ventilago viminalis</i> (Supplejack, Barndaragu)			
475.	4847	<i>Ziziphus mauritiana</i> (Zornia)	Y		
Rhizophoraceae					
476.	5291	<i>Bruguiera exaristata</i> (Ribbed Mangrove)			
477.	39680	<i>Ceriops australis</i>			
478.	5295	<i>Rhizophora stylosa</i> (Spotted-leaved Red Mangrove)			
Rhodomelaceae					
479.	35923	<i>Acanthophora muscoides</i>			
480.	26441	<i>Acanthophora spicifera</i>			
481.	35868	<i>Acrocystis nana</i>			
482.	26515	<i>Bostrychia tenella</i>			Y
483.	26628	<i>Chondria armata</i>			
484.	26782	<i>Digenea simplex</i>			
485.	36142	<i>Endosiphonia spinuligera</i>			
486.	46834	<i>Osmundaria melvillii</i>			
487.	27335	<i>Tolypocladia calodictyon</i>			
488.	27336	<i>Tolypocladia glomerulata</i>			
Rhodymeniaceae					
489.	26516	<i>Botryocladia leptopoda</i>			
490.	26686	<i>Coelarthrum opuntia</i>			
Rubiaceae					
491.	7319	<i>Dentella misera</i>			
492.	7328	<i>Gardenia pyriformis</i> (Malara)			
493.	15234	<i>Gardenia pyriformis</i> subsp. <i>keartlandii</i>			
494.		<i>Gardenia</i> sp.			
495.	7337	<i>Nauclea orientalis</i> (Leichardt Pine)			
496.	13340	<i>Oldenlandia corymbosa</i> var. <i>corymbosa</i>	Y		
497.	13343	<i>Oldenlandia mitrasacmoides</i> subsp. <i>mitrasacmoides</i>			
498.	13570	<i>Pavetta kimberleyana</i>			
499.	18207	<i>Psydrax attenuata</i> var. <i>tenella</i>			
500.	28345	<i>Spermacoce dolichosperma</i>			
501.	28347	<i>Spermacoce occidentalis</i>			
502.		<i>Spermacoce</i> sp.			
Rutaceae					
503.	12361	<i>Melicope elleryana</i>			

	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Santalaceae					
504.	11169	<i>Exocarpos latifolius</i> (Broad-leaved Cherry)			
505.		<i>Santalum album</i>			
506.	2357	<i>Santalum lanceolatum</i> (Northern Sandalwood, Yamguli)			
Sapindaceae					
507.	4740	<i>Atalaya hemiglaucula</i> (Whitewood)			
508.	38461	<i>Dodonaea hispidula</i> var. <i>arida</i>			
509.	38462	<i>Dodonaea hispidula</i> var. <i>phylloptera</i>			
Sapotaceae					
510.	31172	<i>Sersalisia sericea</i> (Nangi)			
Scrophulariaceae					
511.	17158	<i>Myoporum montanum</i> (Native Myrtle)			
Sebdeniaceae					
512.	27274	<i>Sebdenia flabellata</i>			
Solanaceae					
513.	14817	<i>Nicotiana heterantha</i>		P3	
514.	6988	<i>Solanum americanum</i> (Glossy Nightshade)	Y		
515.	6991	<i>Solanum beaugleholei</i>			
516.	7000	<i>Solanum cunninghamii</i>			
517.	7001	<i>Solanum dioicum</i> (Gilu)			
518.	7007	<i>Solanum esuriale</i> (Quena)			
519.		<i>Solanum torvum</i>			
Solieriaceae					
520.	26827	<i>Eucheuma denticulatum</i>			
Udoteaceae					
521.	27349	<i>Udotea flabellum</i>			
Urticaceae					
522.		<i>Pilea microphylla</i>			
Valoniaceae					
523.	36278	<i>Valonia aegagropila</i>			
Violaceae					
524.	5215	<i>Hybanthus aurantiacus</i>			
Zygophyllaceae					
525.	4368	<i>Tribulopsis angustifolia</i>			
526.	4380	<i>Tribulus occidentalis</i> (Perennial Caltrop)			
527.	4383	<i>Tribulus terrestris</i> (Caltrop)	Y		

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

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

Appendix D – Flora data

Statistical outputs

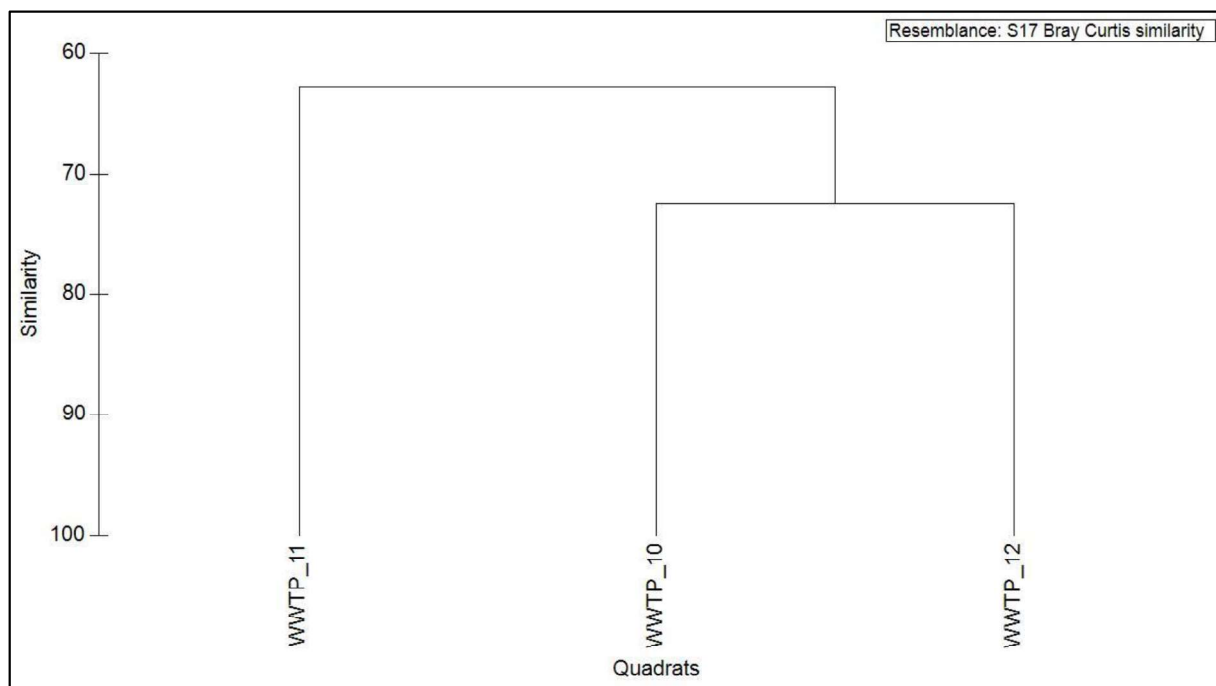
Flora species list

Species matrix

Flora site data

Flora likelihood of occurrence assessment guidelines

Flora likelihood of occurrence assessment



Dendrogram – GHD quadrats

Flora Species List

Family	Confirmed name	Status
Aizoaceae	<i>Trianthema pilosa</i>	
Amaranthaceae	<i>Achyranthes aspera</i>	
	<i>Ptilotus lanatus</i>	
	<i>Ptilotus polystachyus</i>	
Apocynaceae	<i>Calotropis gigantea</i>	*
	<i>Gymnanthera oblonga</i>	
	<i>Wrightia saligna</i>	
Asteraceae	<i>Pterocaulon intermedium</i>	
Bignoniaceae	<i>Dolichandrone occidentalis</i>	
Boraginaceae	<i>Ehretia saligna</i> var. <i>saligna</i>	
	<i>Heliotropium leptaleum</i>	
	<i>Trichodesma zeylanicum</i> var. <i>latisepaleum</i>	
Combretaceae	<i>Terminalia grandifolia</i>	
Commelinaceae	<i>Murdannia graminea</i>	
Convolvulaceae	<i>Distimake dissectus</i>	*
	<i>Jacquemontia paniculata</i>	
	<i>Polymeria calycina</i>	
Cucurbitaceae	<i>Cucumis variabilis</i>	
Euphorbiaceae	<i>Euphorbia australis</i> var. <i>subtomentosa</i>	
Fabaceae	<i>Stylosanthes scabra</i>	*
	<i>Acacia adoxa</i> var. <i>subglabra</i>	
	<i>Acacia colei</i> var. <i>colei</i>	
	<i>Acacia plectocarpa</i> subsp. <i>plectocarpa</i>	
	<i>Acacia tumida</i> var. <i>kulparn</i>	
	<i>Bauhinia cunninghamii</i>	
	<i>Chamaecrista moorei</i>	
	<i>Corchorus</i> sp	
	<i>Crotalaria medicaginea</i> var. <i>neglecta</i>	
	<i>Desmodium</i> sp	
	<i>Indigofera</i> ? <i>trita</i>	
	<i>Rhynchosia minima</i>	
	<i>Sesbania cannabina</i>	
	<i>Tephrosia</i> aff. <i>crocea</i>	
	<i>Tephrosia remotiflora</i>	
	<i>Vigna radiata</i>	
	<i>Zornia albiflora</i>	
Goodeniaceae	<i>Velleia panduriformis</i>	
Hemerocallidaceae	<i>Corynotheca micrantha</i>	
Hernandiaceae	<i>Gyrocarpus americanus</i>	
Lamiaceae	<i>Ocimum basilicum</i>	*
	<i>Premna acuminata</i>	
Lauraceae	<i>Cassytha filiformis</i>	
Loranthaceae	<i>Decaisnina angustata</i>	

Family	Confirmed name	Status
Malvaceae	<i>Sida acuta</i> subsp. <i>acuta</i>	*
	<i>Abutilon otocarpum</i>	
	<i>Brachychiton diversifolius</i>	
	<i>Corchorus sidoides</i> subsp. <i>sidoides</i>	
	<i>Grewia retusifolia</i>	
	<i>Sida rohlenae</i> subsp. <i>occidentalis</i>	
	<i>Waltheria indica</i>	
Meliaceae	<i>Azadirachta indica</i>	*
Menispermaceae	<i>Tinospora smilacina</i>	
Moraceae	<i>Ficus aculeata</i> var. <i>indecora</i>	
Myrtaceae	<i>Corymbia confertiflora</i>	
	<i>Corymbia greeniana</i>	
	<i>Corymbia zygophylla</i>	
Nyctaginaceae	<i>Boerhavia coccinea</i>	
Oleaceae	<i>Jasminum didymum</i> subsp. <i>lineare</i>	
Orchidaceae	<i>Cymbidium canaliculatum</i>	
Passifloraaceae	<i>Passiflora foetida</i> var. <i>hispida</i>	*
Phyllanthaceae	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>	
Poaceae	<i>Bothriochloa pertusa</i>	*
	<i>Cenchrus biflorus</i>	*
	<i>Cenchrus ciliaris</i>	*
	<i>Aristida holathera</i>	
	<i>Aristida inaequiglumis</i>	
	<i>Aristida latifolia</i>	
	<i>Chrysopogon pallidus</i>	
	<i>Digitaria bicornis</i>	
	<i>Ectrosia</i> ? <i>scabrida</i>	
	<i>Eriachne obtusa</i>	
	<i>Eriachne pindanica</i>	
	<i>Heteropogon contortus</i>	
	<i>Sehima nervosum</i>	
	<i>Setaria dielsii</i>	
	<i>Sorghum</i> ? <i>stepoideum</i>	
	<i>Triodia caelestialis</i>	
	<i>Triodia</i> sp	
	<i>Whiteochloa cymbiformis</i>	
	<i>Yakirra australiensis</i>	
Proteaceae	<i>Hakea arborescens</i>	
	<i>Hakea macrocarpa</i>	
Rubiaceae	<i>Gardenia pyriformis</i> subsp. <i>keartlandii</i>	
	<i>Spermacoce occidentalis</i>	
Santalaceae	<i>Santalum lanceolatum</i>	
Sapindaceae	<i>Atalaya hemiglauca</i>	
	<i>Dodonaea hispidula</i> var. <i>arida</i>	

Family	Confirmed name	Status
Sapotaceae	<i>Sersalisia sericea</i>	
Scrophulariaceae	<i>Myoporum montanum</i>	
Solanaceae	<i>Solanum cunninghamii</i>	
Violaceae	<i>Hybanthus aurantiacus</i>	
Zygophyllaceae	<i>Tribulopsis angustifolia</i>	

* Denotes introduced species

Flora species by site matrix

Taxon	WWTP_10	WWTP_11	WWTP_12
<i>*Azadirachta indica</i>	1	1	
<i>*Bothriochloa pertusa</i>		1	
<i>*Cenchrus ciliaris</i>		1	
<i>*Ocimum basilicum</i>		1	
<i>*Sida acuta</i> subsp. <i>acuta</i>		1	
<i>*Stylosanthes scabra</i>	1	1	1
<i>Abutilon otocarpum</i>	1	1	1
<i>Acacia adoxa</i> var. <i>subglabra</i>	1	1	1
<i>Acacia colei</i> var. <i>colei</i>	1	1	1
<i>Acacia plectocarpa</i> subsp. <i>plectocarpa</i>	1	1	1
<i>Acacia tumida</i> var. <i>kulparn</i>	1		1
<i>Achyranthes aspera</i>		1	
<i>Aristida holathera</i>	1		1
<i>Atalaya hemiglauc</i>	1	1	1
<i>Bauhinia cunninghamii</i>	1	1	1
<i>Brachychiton diversifolius</i>		1	1
<i>Cassytha filiformis</i>			1
<i>Chrysopogon pallidus</i>		1	1
<i>Corchorus sidoides</i> subsp. <i>sidoides</i>	1	1	1
<i>Corymbia confertiflora</i>	1	1	1
<i>Corymbia greeniana</i>	1	1	1
<i>Corymbia zygophylla</i>	1	1	
<i>Cucumis variabilis</i>	1	1	1
<i>Dodonaea hispidula</i> var. <i>arida</i>	1		1
<i>Dolichandrone occidentalis</i>		1	
<i>Ectrosia ?scabrida</i>	1		
<i>Eriachne obtusa</i>		1	1
<i>Eriachne pindanica</i>	1		
<i>Euphorbia australis</i> var. <i>subtomentosa</i>			1
<i>Ficus aculeata</i> var. <i>indecora</i>	1		1
<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>			1
<i>Grewia retusifolia</i>	1	1	1
<i>Gymnanthera oblonga</i>		1	
<i>Hakea arborescens</i>	1	1	
<i>Hakea macrocarpa</i>	1	1	1
<i>Heteropogon contortus</i>	1		
<i>Hybanthus aurantiacus</i>			1
<i>Indigofera ?trita</i>	1		1
<i>Jacquemontia paniculata</i>	1	1	1
<i>Myoporum montanum</i>		1	
<i>Passiflora foetida</i> var. <i>hispida</i>		1	1
<i>Polymeria calycina</i>			1
<i>Premna acuminata</i>	1		

Taxon	WWTP_10	WWTP_11	WWTP_12
<i>Pterocaulon intermedium</i>	1	1	1
<i>Rhynchosia minima</i>	1	1	1
<i>Sehima nervosum</i>	1		1
<i>Sersalisia sericea</i>			1
<i>Solanum cunninghamii</i>	1		1
<i>Trianthema pilosa</i>		1	
<i>Trichodesma zeylanicum</i> var. <i>latisepaleum</i>	1	1	
<i>Triodia caelestialis</i>		1	1
<i>Waltheria indica</i>	1		1
<i>Whiteochloa cymbiformis</i>	1	1	1

Flora site raw data

Site number	Taxon	Cover (%)	Height (m)	Form/stratum
WWTP_10	<i>*Azadirachta indica</i>	<2% Few than 10	2	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>*Stylosanthes scabra</i>	<2% Few than 10	1.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Abutilon otocarpum</i>	<2% Few than 10	0.1	Forb (G)
WWTP_10	<i>Acacia adoxa</i> var. <i>subglabra</i>	<2% Few than 10	0.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Acacia colei</i> var. <i>colei</i>	<2% Numerous	4	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Acacia plectocarpa</i> subsp. <i>plectocarpa</i>	30-10%	6	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Acacia tumida</i> var. <i>kulparn</i>	<2% Few than 10	1.75	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Aristida holathera</i>	<2% Numerous	0.5	Tussock grass (G)
WWTP_10	<i>Atalaya hemiglauca</i>	<2% Numerous	1.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Bauhinia cunninghamii</i>	<2% Numerous	5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Corchorus sidioides</i> subsp. <i>sidioides</i>	<2% Numerous	0.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Corymbia confertiflora</i>	<2% Few than 10	5	Tree, palm (U)
WWTP_10	<i>Corymbia greeniana</i>	<10%	5	Tree, palm (U)
WWTP_10	<i>Corymbia zygophylla</i>	<2% Few than 10	5	Tree, palm (U)
WWTP_10	<i>Cucumis variabilis</i>	<2% Few than 10	0.25	Forb (G)
WWTP_10	<i>Dodonaea hispidula</i> var. <i>arida</i>	<2% Numerous	1.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Ectrosia ?scabrida</i>	<2% Few than 10	0.1	Other grass (G)

Site number	Taxon	Cover (%)	Height (m)	Form/stratum
WWTP_10	<i>Eriachne pindanica</i>	<2% Few than 10	0.1	Other grass (G)
WWTP_10	<i>Ficus aculeata</i> var. <i>indecora</i>	<2% Few than 10	1.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Grewia retusifolia</i>	<10%	1.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Hakea arborescens</i>	<2% Few than 10	1.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Hakea macrocarpa</i>	<2% Few than 10	1.75	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Heteropogon contortus</i>	<2% Few than 10	1	Tussock grass (G)
WWTP_10	<i>Indigofera ?trita</i>	<2% Few than 10	0.25	Forb (G)
WWTP_10	<i>Jacquemontia paniculata</i>	<2% Numerous	0.25	Forb (G)
WWTP_10	<i>Premna acuminata</i>	<2% Few than 10	1.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Pterocaulon intermedium</i>	<2% Numerous	0.1	Forb (G)
WWTP_10	<i>Rhynchosia minima</i>	<2% Numerous	0.25	Forb (G)
WWTP_10	<i>Sehima nervosum</i>	70-30%	1.25	Tussock grass (G)
WWTP_10	<i>Solanum cunninghamii</i>	<2% Few than 10	0.25	Forb (G)
WWTP_10	<i>Trichodesma zeylanicum</i> var. <i>latispaleum</i>	<2% Numerous	0.75	Forb (G)
WWTP_10	<i>Waltheria indica</i>	<2% Few than 10	0.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_10	<i>Whiteochloa cymbiformis</i>	70-30%	1.5	Tussock grass (G)
WWTP_11	* <i>Azadirachta indica</i>	<2% Few than 10	3	Tree, palm (U)
WWTP_11	* <i>Bothriochloa pertusa</i>	<2% Numerous	0.25	Tussock grass (G)
WWTP_11	* <i>Cenchrus ciliaris</i>	<2% Few than 10	0.25	Other grass (G)

Site number	Taxon	Cover (%)	Height (m)	Form/stratum
WWTP_11	<i>*Sida acuta</i> subsp <i>acuta</i>	<2% Numerous	0.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>*Stylosanthes scabra</i>	<2% Few than 10	0.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>*Stylosanthes scabra</i>	<2% Few than 10	0.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Abutilon otocarpum</i>	<2% Numerous	0.25	Forb (G)
WWTP_11	<i>Abutilon otocarpum</i>	<2% Few than 10	0.25	Forb (G)
WWTP_11	<i>Acacia adoxa</i> var. <i>subglabra</i>	<2% Numerous	0.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Acacia colei</i> var. <i>colei</i>	<2% Numerous	3	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Acacia plectocarpa</i> subsp. <i>plectocarpa</i>	<2% Numerous	7	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Achyranthes aspera</i>	<2% Few than 10	0.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Atalaya hemiglauc</i>	<2% Few than 10	1	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Bauhinia cunninghamii</i>	30-10%	5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Brachychiton diversifolius</i>	<2% Few than 10	0.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Chrysopogon pallidus</i>	<2% Few than 10	1	Tussock grass (G)
WWTP_11	<i>Corchorus sidioides</i> subsp. <i>sidioides</i>	<2% Numerous	0.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Corchorus sidioides</i> subsp. <i>sidioides</i>	<2% Numerous	0.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Corymbia confertiflora</i>	<10%	10	Tree, palm (U)
WWTP_11	<i>Corymbia greeniana</i>	<10%	8	Tree, palm (U)
WWTP_11	<i>Corymbia zygophylla</i>	<2% Numerous	6	Tree, palm (U)
WWTP_11	<i>Cucumis variabilis</i>	<2% Numerous	0.25	Forb (G)

Site number	Taxon	Cover (%)	Height (m)	Form/stratum
WWTP_11	<i>Dolichandrone occidentalis</i>	<2% Few than 10	0.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Eriachne obtusa</i>	<2% Few than 10	0.25	Tussock grass (G)
WWTP_11	<i>Grewia retusifolia</i>	<10%	1	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Gymnanthera oblonga</i>	<2% Few than 10	2	Vine (G)
WWTP_11	<i>Hakea arborescens</i>	<2% Few than 10	1.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>Hakea macrocarpa</i>	<2% Numerous	5	Tree, palm (U)
WWTP_11	<i>Jacquemontia paniculata</i>	<2% Numerous	0.25	Forb (G)
WWTP_11	<i>Jacquemontia paniculata</i>	<2% Numerous	0.25	Forb (G)
WWTP_11	<i>Myoporum montanum</i>	<2% Few than 10	2.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_11	<i>*Ocimum basilicum</i>	<10%	0.25	Forb (G)
WWTP_11	<i>Passiflora foetida</i> var. <i>hispid</i> a	<2% Few than 10	0.5	Vine (G)
WWTP_11	<i>Pterocaulon intermedium</i>	<2% Numerous	0.25	Forb (G)
WWTP_11	<i>Rhynchosia minima</i>	<2% Few than 10	0.25	Forb (G)
WWTP_11	<i>Trichodesma zeylanicum</i> var. <i>latispaleum</i>	<2% Numerous	0.75	Forb (G)
WWTP_11	<i>Triodia caelestialis</i>	<2% Numerous	0.25	Hummock grass (G)
WWTP_11	<i>Whiteochloa cymbiformis</i>	70-30%	1.25	Tussock grass (G)
WWTP_12	<i>*Stylosanthes scabra</i>	<2% Few than 10	0.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_12	<i>Abutilon otocarpum</i>	<2% Few than 10	0.1	Forb (G)
WWTP_12	<i>Acacia adoxa</i> var. <i>subglabra</i>	<10%	0.25	Shrub, cycad, grass-tree, tree-fern (M)

Site number	Taxon	Cover (%)	Height (m)	Form/stratum
WWTP_12	<i>Acacia colei</i> var. <i>colei</i>	<2% Numerous	5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_12	<i>Acacia plectocarpa</i> subsp. <i>plectocarpa</i>	30-10%	6	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_12	<i>Acacia tumida</i> var. <i>kulparn</i>	<2% Few than 10	0.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_12	<i>Aristida holathera</i>	<2% Numerous	0.5	Tussock grass (G)
WWTP_12	<i>Atalaya hemiglauca</i>	<2% Numerous	1.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_12	<i>Bauhinia cunninghamii</i>	<10%	5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_12	<i>Brachychiton diversifolius</i>	<2% Few than 10	0.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_12	<i>Cassytha filiformis</i>	<2% Few than 10	0.1	Forb (G)
WWTP_12	<i>Chrysopogon pallidus</i>	<2% Few than 10	1	Tussock grass (G)
WWTP_12	<i>Corchorus sidioides</i> subsp. <i>sidioides</i>	<2% Numerous	0.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_12	<i>Corymbia confertiflora</i>	<10%	10	Tree, palm (U)
WWTP_12	<i>Corymbia greeniana</i>	<2% Few than 10	5.5	Tree, palm (U)
WWTP_12	<i>Cucumis variabilis</i>	<2% Numerous	0.25	Forb (G)
WWTP_12	<i>Dodonaea hispidula</i> var. <i>arida</i>	<2% Numerous	1.25	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_12	<i>Eriachne obtusa</i>	<10%	0.5	Tussock grass (G)
WWTP_12	<i>Euphorbia australis</i> var. <i>subtomentosa</i>	<2% Few than 10	0.1	Forb (G)
WWTP_12	<i>Ficus aculeata</i> var. <i>indecora</i>	<2% Few than 10	0.5	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_12	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>	<2% Few than 10	1	Shrub, cycad, grass-tree, tree-fern (M)
WWTP_12	<i>Grewia retusifolia</i>	<2% Few than 10	1	Shrub, cycad, grass-tree, tree-fern (M)

Site number	Taxon	Cover (%)	Height (m)	Form/stratum
WWTP_12	<i>Hakea macrocarpa</i>	<2% Few than 10	1.5	Shrub, cycad, grass-tree, tree-fem (M)
WWTP_12	<i>Hybanthus aurantiacus</i>	<2% Few than 10	0.5	Shrub, cycad, grass-tree, tree-fem (M)
WWTP_12	<i>Indigofera ?trita</i>	<2% Few than 10	0.25	Shrub, cycad, grass-tree, tree-fem (M)
WWTP_12	<i>Jacquemontia paniculata</i>	<2% Numerous	0.25	Forb (G)
WWTP_12	<i>Passiflora foetida</i> var. <i>hispid</i>	<2% Few than 10	0.5	Vine (G)
WWTP_12	<i>Polymeria calycina</i>	<2% Few than 10	0.1	Forb (G)
WWTP_12	<i>Pterocaulon intermedium</i>	<2% Numerous	0.25	Forb (G)
WWTP_12	<i>Rhynchosia minima</i>	<2% Few than 10	0.25	Forb (G)
WWTP_12	<i>Sehima nervosum</i>	<2% Numerous	0.75	Tussock grass (G)
WWTP_12	<i>Sersalisia sericea</i>	<2% Few than 10	1.25	Shrub, cycad, grass-tree, tree-fem (M)
WWTP_12	<i>Solanum cunninghamii</i>	<2% Few than 10	0.5	Forb (G)
WWTP_12	<i>Triodia caelestialis</i>	<2% Numerous	0.75	Hummock grass (G)
WWTP_12	<i>Waltheria indica</i>	<2% Few than 10	0.25	Forb (G)
WWTP_12	<i>Whiteochloa cymbiformis</i>	70-30%	1.25	Tussock grass (G)
WWTP_17	<i>Corymbia confertiflora</i>	<2% Numerous	8	Tree, palm (U)
WWTP_17	<i>Corymbia greeniana</i>	<2% Numerous	8	Tree, palm (U)
WWTP_17	<i>Trianthema pilosa</i>	<2% Numerous	0.25	Forb (G)
WWTP_17	<i>Trichodesma zeylanicum</i> var. <i>latiseipaleum</i>	<10%	0.75	Forb (G)
WWTP_17	<i>Whiteochloa cymbiformis</i>	<2% Numerous	1	Tussock grass (G)

Flora site photographs

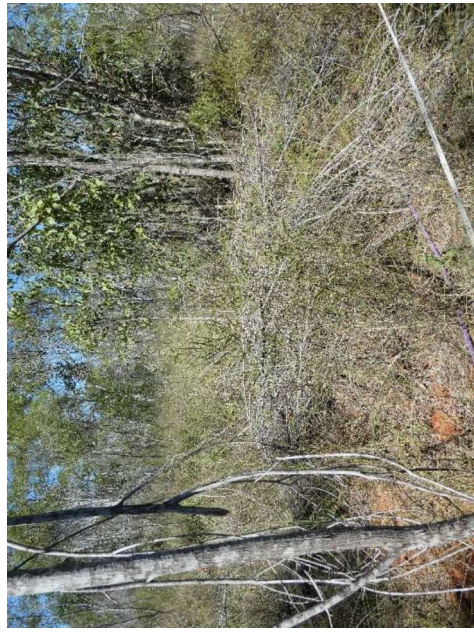
WWTP_10



WWTP_11



WWTP_12



WWTP_17



Flora likelihood of occurrence assessment guidelines

Likelihood of occurrence	Guideline
Known	Species recorded within the survey area from field survey results.
Likely	Species previously recorded within the study area (< 2 km) and large areas of suitable habitat occur in the survey area.
Possible	Species previously recorded within the study area and areas of suitable habitat occur/may occur in the survey area.
Unlikely	Species previously recorded within the study area, but suitable habitat does not occur in the survey area and/or sufficient survey effort within the recommended survey timing for the bioregion did not record the species.
Highly unlikely	Species not previously recorded within the study area, suitable habitat does not occur in the survey area and/or the survey area is outside the natural distribution of the species.
Other considerations	Intensity of survey, availability of access, growth form type, recorded flowering times, cryptic nature of species

Flora likelihood of occurrence assessment of conservation significant flora identified in the desktop assessment as potentially occurring within the survey area.

Taxa	Common Name	Status			Source			Description and habitat requirements	Likelihood of occurrence within the survey area
		EPBC Act	BC Act	DBCA	PMST	NM	WA herb/TPFL		
<i>Seringia exastia</i>	Fringed Keraudrenia	CR	T		x	x		An erect, compact, multi-stemmed shrub that can grow to 0.9 m high. The leaves are grey-green and oblong. Flowers are purple, flowering from April to December. Is known from seven subpopulations within the Port of Broome. Grows in pindan heathland.	Unlikely Suitable habitat may be present; however, appropriate survey effort did not record the species. Previous records are located around Broome town and port.

Taxa	Common Name	Status			Source			Description and habitat requirements	Likelihood of occurrence within the survey area
		EPBC Act	BC Act	DBCA	PMST	NM	WA herb/TPFL		
									Records more than 5 km from the survey area.
<i>Tetragonia coronata</i>				P3		x		Decumbent annual, herb. Flowers yellow in July. Occurs on red clay loam, calcareate outcrops.	Unlikely Suitable habitat does not occur. One record located more than 5 km north-east of the survey area.
<i>Gomphrena pusilla</i>				P2		x		Slender branching annual, herb, to 0.2 m high. Flowers white from March to April or June. Occurs on fine beach sand. Behind foredune, on limestone.	Unlikely No suitable habitat present within the survey area. Previous records are restricted to the coastline west of the survey area.
<i>Thespidium basiflorum</i>				P1		x		Densely tufted, multi-stemmed perennial, herb, to 0.2 m high. Flowers green, May to August. Occurs on sandy soil in creeks.	Unlikely No suitable habitat present within the survey area. Closest known records are more than 5 km north-west of the survey area.
<i>Terminalia kumpaja</i>				P3		x		Tall shrub/tree with cream flowers. Known to occur in red aeolian sand plains and dunes and sandy loam soils.	Unlikely Suitable habitat may be present; however, suitable survey effort did not record the species. Closest known records are

Taxa	Common Name	Status			Source			Description and habitat requirements	Likelihood of occurrence within the survey area
		EPBC Act	BC Act	DBCA	PMST	NM	WA herb/TPFL		
									approximately 5 km north and 7 km south-west of the survey area.
<i>Jacquemontia</i> sp. Broome (A.A. Mitchell 3028)				P1		x		Creeping herb to 0.3 m. Light mauve flowers. Occurs on brown orange sand on sand plains.	Likely. Suitable habitat is present. Closest known record immediately north of the survey area (GHD 2016b).
<i>Polymeria</i> sp. Broome (K.F. Kenneally 9759)				P3		x		Prostrate sprawling herb. Flowers mauve. Occurs on dune swales, red pindan sand plains, and coastal plains.	Likely. Suitable habitat is present. Closest known record immediately north of the survey area (GHD 2016b).
<i>Acacia monticola</i> x <i>tumida</i> var. <i>kulpam</i>				P3		x		Low sprawling to erect tree to 2 m high. Yellow flowers. Known to occur in gullies, red sand/loam/rocky soils, and coastal cliffs.	Unlikely. Suitable habitat may be present; however, suitable survey effort did not record the species. Closest known records are more than 5 km south-west of the survey area, located in Broome Town.
<i>Aphyllodium glossocarpum</i>				P3		x		Spreading or erect shrub, to 1.2 m high. Flowers pink/purple, April to October. Pindan.	Unlikely. Suitable habitat may be present; however, suitable survey effort

Taxa	Common Name	Status			Source			Description and habitat requirements	Likelihood of occurrence within the survey area
		EPBC Act	BC Act	DBCA	PMST	NM	WA herb/TPFL		
									did not record the species. Closest record approximately 6 km west of the survey area.
<i>Glycine pindanica</i>				P3		x		Prostrate or scrambling perennial, herb or climber. Flowers pink/blue-purple, February to March or June. Pindan soils.	Unlikely Suitable habitat may be present; however, suitable survey effort did not record the species. Closest known record is less than 2 km north of the survey area.
<i>Goodenia byrniesii</i>				P2		x		Prostrate to decumbent herb, stems to 30 cm. Flowers yellow, January to February. Sand. Edge of creek.	Unlikely No suitable habitat present within the survey area.
<i>Seringia katanona</i>	Red dune fire-bush			P3		x		Annual shrub, 30-50 cm high. Purple flowers. Dune system in rangeland, red sandy soil.	Unlikely Suitable habitat may be present; however, suitable survey effort did not record the species. Three records within 1 km of the road reserve survey area.
<i>Corymbia paractia</i>				P1		x		Tree (often several-stemmed), 4-6(-12) m high, bark smooth, white, shedding in thin scales. Flowers white, April to May or	Unlikely

Taxa	Common Name	Status			Source			Description and habitat requirements	Likelihood of occurrence within the survey area
		EPBC Act	BC Act	DBCA	PMST	NM	WA herb/TPFL		
								October to December. Occurs in skeletal soils, in transition zone between coastal beach dunes and red pindan soils.	Suitable habitat does not occur. There are a number of records in the Broome area.
<i>Nicotiana heterantha</i>				P3		x		Decumbent, short-lived annual or perennial, herb, to 0.5 m high, forming low, spreading colonies. Flowers white-cream, march to June or September. Occurs on black clay in seasonally wet flats.	Unlikely No suitable habitat within the survey area.

Appendix E – Fauna data

Fauna likelihood of occurrence assessment guidelines

Fauna likelihood of occurrence assessment

Fauna likelihood of occurrence assessment guidelines

Assessment outcome	Description
Present	Species recorded during the field survey or from recent, reliable records from within or close proximity to the survey area.
Likely	Species are likely to occur in the survey area where there is suitable habitat within the survey area and there are recent records of occurrence of the species in close proximity to the survey area. OR Species known distribution overlaps with the survey area and there is suitable habitat within the survey area.
Unlikely	Species assessed as unlikely include those species previously recorded within 20 km of the survey area however: There is limited (i.e. the type, quality and quantity of the habitat is generally poor or restricted) habitat in the survey area. The suitable habitat within the survey area is isolated from other areas of suitable habitat and the species has no capacity to migrate into the survey area. OR Those species that have a known distribution overlapping with the survey area however: There is limited habitat in the survey area (i.e. the type, quality and quantity of the habitat is generally poor or restricted). The suitable habitat within the survey area is isolated from other areas of suitable habitat and the species has no capacity to migrate into the survey area.
Highly unlikely	Species that are considered highly unlikely to occur in the survey area include: Those species that have no suitable habitat within the survey area. Those species that have become locally extinct, or are not known to have ever been present in the region of the survey area.

Source information - desktop searches

NM – DBCA *NatureMap* (accessed May 2019)

PMST – DEE Protected Matters Search Tool (PMST) to identify fauna listed under the EPBC Act potentially occurring within the study area (accessed May 2019)

Fauna likelihood of occurrence assessment of conservation significant fauna identified in the desktop assessment as potentially occurring within the survey area.

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
<i>Actitis hypoleucos</i>	Common Sandpiper	IA	MI	Y	Y	The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow, and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags (DEE 2019)	Unlikely – This species is known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Anas querquedula</i>	Garganey	IA	MI	Y	N	The Garganey breeds in Europe and Asia. It migrates south to Africa and Asia in winter and is an uncommon but regular summer visitor to Australia. The species inhabits well vegetated freshwater wetlands, sewage ponds, grassland, marshes and freshwater lakes (Pizzey and Knight 2012).	Unlikely – This species is uncommon locally and prefers freshwater habitats, however the study area lacks suitable wetland habitat.
<i>Anous stolidus</i>	Common Noddy	IA	MI	Y	Y	The Common Noddy is found in tropical and sub-tropical seas off the west, north and east coasts of Australia, from the Abrolhos Islands in WA to the islands of the Great Barrier Reef in Qld, as well as Norfolk and Lord Howe Islands. Some are seen almost annually in NSW as far south as Sydney. It also ranges across tropical parts of the Pacific, Indian and Atlantic Oceans (DEE 2019).	Highly unlikely – This species is primarily oceanic, when occurring in coastal areas it prefers to form colonies on islands. The study area lacks suitable coastal habitat.
<i>Apus pacificus</i>	Fork-tailed Swift, Pacific Swift	IA	MI	Y	Y	The Fork-tailed Swift is common in coastal and sub coastal areas between Carnarvon and Augusta including near and offshore islands. There are scattered records along south coast from Denmark east to Cocklebiddy on the Great Australian Bight, and sparsely scattered	Unlikely – Although this species may periodically occur in the region, the species is exclusively areal in nature and does

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
						records inland. They are found across a range of habitats, from inland open plains to wooded areas. They are most often observed over inland plains in Australia, but sometimes recorded over coastal cliffs and beaches as well as urban areas. They have been recorded well out to sea as well as from offshore islands especially when on passage from Indonesia. This species is almost exclusively aerial (DEE 2019).	not utilise terrestrial habitats.
<i>Ardeenna tenuirostris</i>	Short tailed Shearwater	IA	MI	Y	N	In summer months, the Short-tailed Shearwater is the most common shearwater along the south and south-east coasts of Australia. Enormous flocks of birds head south to breeding grounds off these coasts as they return from wintering grounds in the North Pacific. Found in coastal waters (DEE 2018).	Highly unlikely – This species is not known to occur locally. The study area lacks suitable coastal habitat.
<i>Arenaria interpres</i>	Ruddy Turnstone	IA	MI	Y	Y	In Australia, Ruddy Turnstones are widespread around the coast of the mainland and off-shore islands. They breed on the northern coasts of Europe, Asia and North America. They are found on coastlines around the world, when not breeding or on passage. They are found singly or in small groups along the coastline and only occasionally inland. They are mainly found on exposed rocks or reefs, often with shallow pools, and on beaches. In the north, they are found in a wider range of habitats, including mudflats (DEE 2019).	Unlikely – Although this species occurs locally, it prefers coastal shorelines. The study area lacks suitable coastal habitat.
<i>Bulweria bulwerii</i>	Bulwer's Petrel	IA	MI	Y	N	Bulwer's petrel is a widely-distributed pan-tropical species outside its mid-year breeding season, with vagrants occurring both north and south of its normal off-season range, including in north-west Australia, the Tasman Sea off Victoria, and one specimen from New Zealand (DEE 2019).	Highly unlikely – This species is primarily pelagic preferring off-shore ocean habitats.
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	IA	MI	Y	Y	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes,	Unlikely – This species is known to occur locally within tidal coastline areas, however the study area lacks suitable

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		State	Federal	NM	PMST		
<i>Calidris alba</i>	Sanderling	IA	MI	Y	Y	soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgeland and other ephemeral wetlands, but leave when they dry (DEE 2019). In Australia, the species is almost always found on the coast, mostly on open sandy beaches exposed to open sea-swell, and also on exposed sandbars and spits, and shingle banks, where they forage in the wave-wash zone and amongst rotting seaweed. Sanderlings also occur on beaches that may contain wave-washed rocky outcrops. Less often the species occurs on more sheltered sandy shorelines of estuaries, inlets and harbours (DEE 2019).	habitat (wetlands, dams, shorelines). Unlikely – This species is known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Calidris canutus</i>	Red Knot	EN	EN	Y	Y	In Australasia the Red Knot mainly inhabits intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs. They are occasionally seen on terrestrial saline wetlands near the coast, such as lakes, lagoons, pools and pans, and recorded on sewage ponds and saltworks, but rarely use freshwater swamps. They rarely use inland lakes or swamps (DEE 2018). They are found near mudflats and estuaries from Murchison to Bunbury but are then uncommon from Wilson Inlet to Esperance. In the Perth region they are mainly found in Alfred Cove and Peel Inlet (Nevill 2013).	Unlikely – This species is known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Calidris ferruginea</i>	Curlew Sandpiper	CR	CR	Y	Y	Curlew Sandpipers mainly occur in areas with soft mud conditions, including intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are found inland less often, including around ephemeral and permanent lakes,	Unlikely – This species is known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
						dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. In WA, they are widespread around coastal and subcoastal plains from Cape Arid to south-west Kimberley Division, but are more sparsely distributed between Carnarvon and Dampier Archipelago (DEE 2019). They are common on the Swan Coastal Plain, particularly near large drying lakes like Thompson and Forrestdale, and Peel Inlet. They are less common along the southern coast to Esperance (Nevill 2013).	
<i>Calidris melanotos</i>	Pectoral Sandpiper	IA	MI	Y	Y	In Australia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum (DEE 2018). The bird can be seen on the Swan Coastal Plain but is rare to scarce on Lake Thompson, and as well on any freshwater wetland in the southwest with shallow, well-grassed margins. They are seen at Lake Warden, Esperance, and at Lake Mclarty (Nevill 2013).	Unlikely – This species is known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Calidris ruficollis</i>	Red necked stint	IA	MI	Y	Y	The Red-necked Stint breeds in north-eastern Siberia and northern and western Alaska. It follows the East Asian-Australasian Flyway to spend the southern summer months in Australia. It is found widely in Australia, except in the arid inland. In Australia, Red-necked Stints are found on the coast, in sheltered inlets, bays, lagoons, estuaries, intertidal mudflats and protected sandy or coralline shores (Pizzey and Knight 2012).	Unlikely – This species is known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).

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		State	Federal	NM	PMST		
<i>Calidris subminuta</i>	Long toed Stint	IA	MI	Y		In Western Australia the species is found mainly along the coast, with a few scattered inland records. On the south coast the Long-toed Stint is found from Esperance to Albany and inland to Lake Cassencary and Dumbleyung. On the south-west coast the species is known from the Vasse River estuary, Guraga Lake and the Nanning Nature Reserve. The species has occasionally been recorded in the Gascoyne Region, around Lake Wooleen, Meeberrie Station and McNeill Claypan. It is widespread around the Pilbara region and the Kimberley Division between Karratha and Wyndham-Kununurra (DEE 2019). It occurs in a variety of terrestrial wetlands. They prefer shallow freshwater or brackish wetlands including lakes, swamps, river floodplains, streams, lagoons and sewage ponds.	Unlikely – This species is known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Calidris tenuirostris</i>	Great Knot	CR	CR	Y	Y	The Great Knot has been recorded around the entirety of the Australian coast, with a few scattered records inland. It is now absent from some sites along the south coast where it used to be a regular visitor (Garrett and Crowley 2000). The greatest numbers are found in northern Australia; where the species is common on the coasts of the Pilbara and Kimberley, from the Dampier Archipelago to the Northern Territory border, and in the Northern Territory from Darwin and Melville Island, through Arnhem Land to the south-east Gulf of Carpentaria. In Australasia, the species typically prefers sheltered coastal habitats, with large intertidal mudflats or sandflats. This includes inlets, bays, harbors, estuaries and lagoons (DEE 2019).	Highly Unlikely – This species is known to occur locally within tidal coastline areas, however the study area lacks suitable habitat such as wetlands or shorelines.
<i>Calonectris leucomelas</i>	Streaked Shearwater	IA	MI		Y	The Streaked Shearwater is usually found in open ocean and inshore waters. It nests in Japan and Korea, and migrates south to feed. In Australia is abundant off north coasts and is a regular summer visitor to west and east coasts (Pizzey and Knight 2012).	Highly unlikely – This species is primarily pelagic preferring off-shore ocean habitats.

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		State	Federal	NM	PMST		
<i>Cecropis daurica</i>	Red-rumped Swallow	IA	MI		Y	The Red-rumped Swallow breeds in Europe and Asia and tropical Africa. In Australia the bird is a vagrant to Christmas Island and northern Australia during the non-breeding season. It occurs in open country, overhead wires, swamps, grasslands and along the coast (Pizzey and Knight 2012).	Unlikely – A rare vagrant of the Kimberley region.
<i>Charadrius bicinctus</i>	Double-banded Plover	IA	MI		Y	The Double-banded Plover breeds only in New Zealand, where it is widespread. In the non-breeding season, part of the population remains in New Zealand, while the remainder migrates to Australia. The Double-banded Plover is found on littoral, estuarine and fresh or saline terrestrial wetlands and also saltmarsh, grasslands and pasture. It occurs on muddy, sandy, shingled or sometimes rocky beaches, bays and inlets, harbours and margins of fresh or saline terrestrial wetlands such as lakes, lagoons and swamps, shallow estuaries and rivers. The species is sometimes associated with coastal lagoons, inland saltlakes and saltworks. It is also found on seagrass beds, which, when exposed at low tide, remain heavily saturated or have numerous water-filled depressions (DEE 2018).	Unlikely – Not known to occur locally.
<i>Charadrius dubius</i>	Little Ringed Plover	IA	MI		Y	The Little Ringed Plover breeds across Eurasia and is a rare but regular summer migrant to Australia, including WA. This species is found on muddy or sandy shores of lakes, swamps tidal areas, sewage ponds and farm dams (Pizzey and Knight 2012).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).

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<i>Charadrius leschenaultii</i>	Greater Sand Plover	VU	VU	Y	Y	In Australia, the Greater Sand Plover occurs in coastal areas in all states, though the greatest numbers occur in northern Australia, especially the north-west (Marchant & Higgins 1993). In northern Australia, the species is especially widespread between North West Cape and Roebuck Bay in Western Australia; there are sparsely scattered records from the largely inaccessible area between Roebuck Bay and Darwin, but it often occurs in the Top End of the Northern Territory, including on Groote Eylandt (DEE 2019).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Charadrius monogolus</i>	Lesser Sand Plover	EN	EN	Y	Y	Within Australia, the Lesser Sand-Plover is widespread in coastal regions, and has been recorded in all states. It mainly occurs in northern and eastern Australia, in south-eastern parts of the Gulf of Carpentaria, western Cape York Peninsula and islands in Torres Strait, and along the entire east coast, though it occasionally also occurs inland. It is most numerous in Queensland and NSW. The species has also been recorded on Lord Howe Island, Norfolk Island and Christmas Island, Indian Ocean. In non-breeding grounds in Australia, this species usually occurs in coastal littoral and estuarine environments. It inhabits large intertidal sandflats or mudflats in sheltered bays, harbors and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops. It also sometime occurs in short saltmarsh or among mangroves. The species also inhabits saltworks and near-coastal saltpans, brackish swamps and sandy or silt islands in river beds (Marchant & Higgins 1993). In north-western Australia, the species appears to use the Port Hedland saltworks in preference to nearby beaches.	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Charadrius veredus</i>	Oriental Plover	IA	MI	Y	Y	The Oriental Plover is a non-breeding visitor to Australia, where the species occurs in both coastal and inland areas, mostly in northern Australia. Most records are along the north-western coast, between Exmouth Gulf and Derby in Western Australia, and there are records at	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
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						a few scattered sites elsewhere, mainly along the northern coast, such as in the Top End, the Gulf of Carpentaria and on Cape York Peninsula. The species also often occurs further inland on the 'blacksoil' plains of northern Western Australia, the Northern Territory and north-western Queensland. Immediately after arriving in non-breeding grounds in northern Australia, Oriental Plovers spend a few weeks in coastal habitats such as estuarine mudflats and sandbanks, on sandy or rocky ocean beaches or nearby reefs, or in near-coastal grasslands, before dispersing further inland (DEE 2019).	habitat (wetlands, dams, shorelines).
<i>Chidonias leucopterus</i>	White-winged Black Tern	IA	MI	Y	N	The White-winged Black Tern is a non-breeding migrant to Australia. The species is widespread and common along south-western, northern and central-eastern coasts, with only scattered records of small numbers along the coasts elsewhere in southern Australia. In Western Australia, the species is widespread on the southern west coast to the coasts of the Pilbara region and Kimberley. Few records are from inland regions, mainly along major river systems, such as the Ord drainage (DEE 2019).	Highly unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, shorelines).
<i>Erythrorhynchus radiatus</i>	Red Goshawk	VU	VU	Y	Y	The Red Goshawk occurs in coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia (Marchant & Higgins 1993). Riverine forests are also used frequently. Such habitats typically support high bird numbers and biodiversity, especially medium to large species which the goshawk requires for prey. The Red Goshawk nests in large trees, frequently the tallest and most massive in a tall stand, and nest trees are invariably within one km of permanent water (DEE 2019).	Unlikely – Uncommon in the Dampierland. Local occurrence would be as vagrant

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<i>Erythrura gouldiae</i>	Gouldian Finch	P4	EN		Y	The Gouldian Finch inhabits open woodlands that are dominated by Eucalyptus trees and support a ground cover of Sorghum and other grasses (Boekel 1980). The critical components of suitable core habitat for the Gouldian Finch appear to be the presence of favoured annual and perennial grasses (especially Sorghum), a nearby source of surface water and, in the breeding season, unburnt hollow-bearing Eucalyptus trees (especially E. tininnans, E. brevifolia and E. leucophloia) (Higgins et al. 2006).	Likely – Known to occur locally, may forage on seed of grasses when seasonally suitable within the survey area. The shrubland habitat throughout the survey has a paucity of suitable nesting breeding, and lacks nearby water sources, therefore it is unlikely to breed within the survey area.
<i>Falco hypoleucos</i>	Grey Falcon	VU				The Grey Falcon inhabits lightly timbered country, especially stony plains and lightly timbered acacia scrub. This species is considered scarce to rare and is usually found singularly or sometimes in pairs (Morcombe 2004). In Pilbara WA, the grey falcon is very rare. The distribution of the Grey Falcon is centred on inland drainage systems, where it frequents timbered lowland plains, particularly acacia shrublands cross by tree-lined watercourses. It also hunts in treeless areas and frequents tussock grassland and open woodland, especially in winter, but it generally avoids deserts.	Likely – Known to occur locally, although not listed within database searches. The Pindan shrubland habitat within the study area represents suitably foraging habitat. Therefore likely to occur at least on an occasional basis.
<i>Falco peregrinus</i>	Peregrine Falcon	OS		Y		The Peregrine Falcon is uncommon but wide ranging across Australia. Found everywhere from woodlands to open grasslands and coastal cliffs – though less frequently in desert regions – it feeds almost entirely on other birds. It also eats rabbits and other moderate sized mammals, bats and reptiles. The Peregrine Falcon is very territorial during breeding season, the male courting the female with an impressive display of aerobatics (DEE 2019, Morcombe 2004).	Likely – Known to occur locally, and the pindan shrubland habitat within the study area represents suitably foraging habitat, although lacks suitable breeding habitat. Therefore likely to occur at least on an occasional basis.

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
<i>Fregata ariel</i>	Lesser Frigatebird	IA	MI	Y	Y	The Lesser Frigatebird is said to be the most common and widespread frigatebird in Australian seas (DEE 2018). It is common in tropical seas, breeding on remote islands, including Christmas Island in the Indian Ocean in recent years. These birds are most likely to be seen from the mainland prior to the onset of a tropical cyclone, and once this abates they disappear again.	Highly unlikely – This species is considered to be mainly pelagic and near-coastal. The survey area lacks suitable habitat.
<i>Gallinago megala</i>	Swinhoe's Snipe	IA	MI	Y		In Western Australia the species has been recorded in Pilbara, the Kimberley region, Mount Goldsworthy, Mount Blaize and in the north-west regions around the Mitchell Plateau. Habitat specific to Australia includes the dense clumps of grass and rushes round the edges of fresh and brackish wetlands. This includes swamps, billabongs, river pools, small streams and sewage ponds, and claypans.	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Gallinago stenura</i>	Pin-tailed Snipe	IA	MI	Y		In Western Australia the species was reported at Pilbara, Port Headland, Myaree Pool, Maitland River and near Karratha. During non-breeding period the Pin-tailed Snipe occurs most often in or at the edges of shallow freshwater swamps, ponds and lakes with emergent, sparse to dense cover of grass/sedge or other vegetation (DEE 2019).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Gelochelidon nilotica</i>	Gull-billed Tern	IA	MI	Y		The Gull-billed Tern is nomadic or migratory species in Australia. Gull-billed Terns are found in freshwater swamps, brackish and salt lakes, beaches and estuarine mudflats, floodwaters, sewage farms, irrigated croplands and grasslands, where resources are favourable. They are only rarely found over the ocean. The Gull-billed Tern. Although essentially an inland species, outside breeding season it shows a distinct preference for saltmarshes and lagoons near the coast. Movements are not fully understood but it is common and widespread in Australia (Morcombe 2004).	Unlikely – This species is not known to occur locally. The study area lacks suitable coastal habitat.

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<i>Glareola maldivarum</i>	Oriental Pratincole	IA	MI	Y	Y	In non-breeding grounds in Australia, the Oriental Pratincole usually inhabits open plains, floodplains or short grassland (including farmland or airstrips), often with extensive bare areas. They often occur near terrestrial wetlands, such as billabongs, lakes or creeks, and artificial wetlands such as reservoirs, salt works and sewage farms, especially around the margins. The species also occurs along the coast, inhabiting beaches, mudflats and islands, or around coastal lagoons (Lloyd and Lloyd 1991).	Unlikely – This species is known to occur locally, however the survey area lacks suitable habitat such as open plains or clearings, wetlands of coastal shorelines
<i>Hirundo rustica</i>	Barn Swallow	IA	MI	Y		In Australia, the Barn Swallow is recorded in open country in coastal lowlands, often near water, towns and cities. Birds are often sighted perched on overhead wires, and also in or over freshwater wetlands, paperbark <i>Melaleuca</i> woodland, mesophyll shrub thickets and tussock grassland (DEE 2019).	Likely – This species is known to occur locally. The shrubland plains within the survey area represent suitable foraging habitat and likely to occur on an occasional or seasonal basis. Although the site lacks nesting habitat.
<i>Hydroprogne caspia</i>	Caspian Tern	IA	MI	Y		The Caspian Tern is mostly found in sheltered coastal embayments (harbours, lagoons, inlets, bays, estuaries and river deltas) and those with sandy or muddy margins are preferred. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs, rivers and creeks. They also use artificial wetlands, including reservoirs, sewage ponds and saltworks. In offshore areas the species prefers sheltered situations, particularly near islands, and is rarely seen beyond reefs (DEE 2019).	Unlikely – This species is not known to occur locally. The study area lacks suitable coastal habitat.

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		State	Federal	NM	PMST		
<i>Ixobrychus dubius</i>	Australian Little Bittern	P4		Y		The Australasian Bittern is found in coastal and sub-coastal areas of south-eastern and south-western mainland Australia, and the eastern marshes of Tasmania. The Australasian Bittern frequents reed-beds, and other vegetation in water such as cumbungi, lignum and sedges (Bird life Australia 2019)	Highly unlikely – The species is considered scarce or vagrant locally, and the study area lacks wetland habitat.
<i>Limicola falcinellus</i>	Broad-billed Sandpiper	IA	MI	Y	Y	In Western Australia, few records occur in the south-west, but the Broad-billed Sandpiper may be regular in small numbers at scattered locations, from Warden Lake Nature Reserve and Coramup Creek to Guraga Lake Nature Reserve and Hurstview Lake. They mostly occur on the coasts of the Pilbara and Kimberley between Onslow and Broome, but are also recorded north to the mouth of Lawley River, and inland at Lake Daley. In the Northern Territory, they are an irregular and uncommon visitor near Darwin, though previously considered common at times.	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Limnodromus semipalmatus</i>	Asian Dowitcher	IA	MI		Y	In Western Australia the species has been recorded at Albany, Lake McLarty, Lake McLeod, north-east Pilbara and the south-west Kimberley division. It has also been recorded at the Port Hedland Saltworks, Roebuck Bay, Ashmore Reed and Eighty Mile Beach (Higgins & Davies 1996).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Limosa lapponica</i>	Bar-tailed Godwit	VU, IA	VU, MI	Y	Y	Bar-tailed Godwits arrive in Australia each year in August from breeding grounds in the northern hemisphere. Birds are more numerous in northern Australia Bar-tailed Godwits inhabit estuarine mudflats, beaches and mangroves. They are common in coastal areas around Australia. They are social birds and are often seen in large flocks and in the company of other waders (Birdlife Australia 2019).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).

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		State	Federal	NM	PMST		
<i>Limosa limosa</i>	Black-tailed Godwit	IA	MI	Y	Y	In Australia the Black-tailed Godwit has a primarily coastal habitat environment. The species is commonly found in sheltered bays, estuaries and lagoons with large intertidal mudflats or sandflats, or spits and banks of mud, sand or shell-grit; occasionally recorded on rocky coasts or coral islets. The use of habitat often depends on the stage of the tide. It is also found in shallow and sparsely vegetated, near-coastal, wetlands; such as saltmarsh, saltflats, river pools, swamps, lagoons and floodplains. There are a few inland records, around shallow, freshwater and saline lakes, swamps, dams and bore-overflows. They also use lagoons in sewage farms and saltworks (Higgins & Davies 1996).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Macronectes halli</i>	Northern Giant Petrel	IA	MI	Y		The Northern Giant Petrel breeds in the sub-Antarctic, and visits areas off the Australian mainland mainly during the winter months (May–October). Immature and some adult birds are commonly seen during this period in offshore and inshore waters from around Fremantle (WA) to around Sydney (NSW) (Pizzey & Knight 1999). Banded Northern Giant-Petrels from Macquarie Island are frequently observed in Australian waters (particularly along the southern coast) throughout the colder months, the majority of which (94%) are pre-breeding birds.	Highly unlikely – This species is primarily pelagic preferring off-shore ocean habitats.
<i>Ninox connivens connivens</i>	Barking Owl (southwest subpop)	P3		Y		Coastal and subcoastal districts almost right around Australia but distribution is very uneven and broken. Barking Owls are generally more common in northern Australia. Ideal habitat is open country with a choice of large trees for roosting and nesting. In southern districts, Barking Owls choose creeks and rivers, particularly with River Red Gums, isolated stands of trees and open woodland. In northern Australia they favour paperbark swamps as well as previous habitats. Although they are generally wary at their nest, they may become very accustomed to humans, nesting close to farm buildings and even in streets in towns. They have a distinct preference to be close to water (DEE 2019).	Highly unlikely – This subspecies of Barking Owl is not known to occur the Dampierland Region.

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		State	Federal	NM	PMST		
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	CR	CR	Y	Y	The Eastern Curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, sometimes within the mangroves, and in coastal saltworks and sewage farms. In the south west, Eastern Curlews are recorded from Eyre, and there are scattered records from Stokes Inlet to Peel Inlet (Marchant & Higgins 1993). They are uncommon further south of Geraldton, but can be spotted in Alfred Cove, Peel Inlet and the Albany region (Nevill 2013).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Numenius minutus</i>	Little Curlew	IA	MI	Y	Y	Little Curlews generally spend the non-breeding season in northern Australia from Port Hedland in Western Australia to the Queensland coast (Minton 2002 pers. comm.). There are records of the species from inland Australia, and widespread but scattered records on the east coast. The Little Curlew is most often found feeding in short, dry grassland and sedgeland, including dry floodplains and blacksoil plains, which have scattered, shallow freshwater pools or areas seasonally inundated. Open woodlands with a grassy or burnt understory, dry saltmarshes, coastal swamps, mudflats or sandflats of estuaries or beaches on sheltered coasts, mown lawns, gardens, recreational areas, ovals, racecourses and verges of roads and airstrips are also used (Higgins & Davies 1996).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Numenius phaeopus</i>	Whimbrel	IA	MI	Y	Y	The Whimbrel is often found on the intertidal mudflats of sheltered coasts. It is also found in harbours, lagoons, estuaries and river deltas, often those with mangroves, but also open, un-vegetated mudflats. It is occasionally found on sandy or rocky beaches, on coral or rocky islets, or on intertidal reefs and platforms. It has been	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
						infrequently recorded using saline or brackish lakes near coastal areas. It also used saltflats with saltmarsh, or saline grasslands with standing water left after high spring-tides, and in similar habitats in sewage farms and saltfields (Higgins & Davies 1996). There are a small number of inland records from saline lakes and canegrass swamps. It has also been recorded in coastal dunes and a football field.	habitat (wetlands, dams, shorelines).
<i>Pandion cristatus</i>	Osprey, Eastern Osprey	IA	MI	Y	Y	The breeding range of the Eastern Osprey extends around the northern coast of Australia (including many offshore islands) from Albany in Western Australia to Lake Macquarie in NSW; with a second isolated breeding population on the coast of South Australia, extending from Head of Bight east to Cape Spencer and Kangaroo Island. Eastern Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands (DEE 2019).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Pluvialis fulva</i>	Pacific Golden Plover	IA	MI	Y	Y	The Pacific Golden Plover breeds on the Arctic tundra in western Alaska. It winters in South America and islands of the Pacific Ocean to India, Indonesia and Australia. In Australia it is widespread along the coastline. Pacific Golden Plovers usually occur on beaches, mudflats and sandflats (sometimes in vegetation such as mangroves, low saltmarsh such as Sarcocornia, or beds of seagrass) in sheltered areas including harbours, estuaries and lagoons, and also in evaporation ponds in saltworks. The species is also sometimes recorded on islands, sand and coral cays and exposed reefs and rocks (DEE 2019)	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
<i>Pluvialis squatarola</i>	Grey Plover	IA	MI	Y	Y	The Grey Plover breeds around the Arctic regions and migrates to the southern hemisphere, being a regular summer migrant to Australia, mostly to the west and south coasts. It is generally sparse but not uncommon in some areas. It is occasionally found inland. It is almost entirely coastal, being found mainly on marine shores, inlets, estuaries and lagoons with large tidal mudflats or sandflats for feeding, sandy beaches for roosting, and also on rocky coasts (Birdlife Australia 2019).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Polytelis alexandrae</i>	Princess Parrot	P4	V		Y	The Princess Parrot is confined to arid regions of Western Australia, the Northern Territory, and South Australia. The Princess Parrot inhabits sand dunes and sand flats in the arid zone of western and central Australia. It occurs in open savannah woodlands and shrublands that usually consist of scattered stands of Eucalyptus (including E. gongylocarpa, E. chippendalei and mallee species), Casuarina or Allocasuarina trees; an understorey of shrubs such as Acacia (especially A. aneura), Cassia, Eremophila, Grevillea, Hakea and Senna; and a ground cover dominated by Triodia species. It also frequents Eucalyptus or Allocasuarina trees in riverine or littoral areas (DEE 2019).	Unlikely – The study area is located beyond the known distribution of this species although it may occur as a vagrant occasionally.
<i>Puffinus huttoni</i>	Hutton's Shearwater	EN	MA	Y		Hutton's Shearwater breed in New Zealand with young birds migrating to Australia, including north west WA. They generally form large flocks travelling in open formations or coursing in wide circles. They dive from low flights, swimming under water to feed (Pizzey and Knight 2012).	Highly unlikely – The study area lacks suitable habitat.
<i>Rostratula australis</i>	Australian Painted Snipe	EN	EN	Y	Y	The Australian Painted Snipe is restricted to Australia with historical records from around the Perth region in Western Australia. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. The nest consists of a scrape in the ground, lined	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
						with grasses and leaves. Breeding is often in response to local conditions; generally occurs from September to December. Incubation and care of young is all undertaken by the male only. Forages nocturnally on mud-flats and in shallow water. Feeds on worms, molluscs, insects and some plant-matter (DEE 2019).	
<i>Stercorarius parasiticus</i>	Arctic jaeger	IA	MI	Y		The Arctic jaeger breeds throughout the Arctic and migrates to coasts of south continents including Australia. The species occurs in offshore waters, harbours, bays, follows ships and is seldom ashore (Pizzey and Knight 2012)	Highly unlikely – The study area lacks suitable habitat.
<i>Sterna dougallii</i>	Roseate Tern	IA	MI	Y		The Roseate Tern occurs in coastal and marine areas in subtropical and tropical seas. The species inhabits rocky and sandy beaches, coral reefs, sand cays and offshore islands. Birds rarely occur in inshore waters or near the mainland, usually venturing into these areas only accidentally, when nesting islands are nearby (Higgins & Davies 1996). The usually roosts or loaf in the intertidal zone on islands, including on the upper sections of beaches, above the high-water mark (but still in the wash-zone) on banks, spits and bars, usually of coral or sand. Birds occasionally roost on exposed rubble banks or on rocky features, such as cliffs, headlands, plateaux, stacks and ledges, among rocks or in crags (DEE 2019).	Highly unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Sterna hirundo</i>	Common Tern	IA	MI	Y		In northern Australia there are scattered records in the Kimberley Division of Western Australia, but the species has recently been found to be one of the most abundant species recorded in ground surveys of waterbirds of the Top End of the Northern Territory. In Australia, they are recorded in all marine zones, but are commonly observed in near-coastal waters, both on ocean beaches, platforms and headlands and in sheltered waters, such as bays, harbours and estuaries with muddy, sandy or rocky shores (DEE 2019).	Highly unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
<i>Sternula albifrons</i>	Little Tern	IA	MI	Y	Y	In Australia, Little Terns inhabit sheltered coastal environments, including lagoons, estuaries, river mouths and deltas, lakes, bays, harbours and inlets, especially those with exposed sandbanks or sand-spits, and also on exposed ocean beaches (DEE 2019).	Highly unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Sula leucogaster</i>	Brown booby	IA	MI	Y		In Australia, the Brown Booby is found from Bedout Island in Western Australia, around the coast of the Northern Territory to the Bunker Group of islands in Queensland with occasional reports further south in New South Wales and Victoria. The species is reported further south to Tweed Heads, NSW, and to near Onslow, Western Australia and may be becoming more common in these areas. The Brown Booby uses both marine and terrestrial habitat. The species occurs in, but is not restricted to, tropical waters of all major oceans, often staying close to breeding islands (DEE 2019).	Highly unlikely – The study area lacks suitable deep water habitat.
<i>Thalasseus bergii</i>	Crested Tern	IA	MI	Y		Crested Terns occur singularly or in flocks in coastal areas, estuaries, inlets, islands and occasionally on large inland lakes or rivers. They are often seen perching with gulls on beaches, sand spits or jetties. Crested Terns are widespread from the south coast of Africa north to Asia, south to Australia and east to Polynesia. They also occur on many islands in the Indian and Pacific Oceans (DEE 2018).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Tringa brevipes</i>	Grey-tailed Tattler	P4, IA	MI	Y	Y	Within Australia, the Grey-tailed Tattler has a primarily northern coastal distribution and is found in most coastal regions (Higgins & Davies 1996). The Grey-tailed Tattler is often found on sheltered coasts with reefs and rock platforms or with intertidal mudflats. It can also be found at intertidal rocky, coral or stony reefs as well as platforms and islets that are exposed at low tide (DEE 2018).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
<i>Tringa glareola</i>	Wood Sandpiper	IA	MI	Y	Y	The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. Wood Sandpipers are more numerous in the north than the south of Australia and are also found in New Guinea, Africa, the Indian subcontinent and South-east Asia. They breed widely across the north of Europe and Asia, mostly in Scandinavia, Baltic countries and Russia. They are the most abundant migratory wader in non-coastal areas of Asia (DEE 2019).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Tringa nebularia</i>	Common Greenshank	IA	MI	Y	Y	The Common Greenshank is found in a wide variety of inland wetlands and coastal habitats of varying salinity. It occurs in sheltered coastal areas typically with large mudflats and saltmarsh, mangroves or seagrass, including embayments, harbours, river estuaries, deltas and lagoons, but less often in round tidal pools, rock-flats and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats, and artificial wetlands. They occur around most of the coast from Cape Arid in the south to Carnarvon in the north-west (DEE 2018), and are moderately common here given suitable habitat. They can be found in areas including Wannamal Lake, many Perth lakes, Alfred Cove, Peel Inlet, Vasse and Harvey Estuaries, and the Albany and Esperance regions (Nevill 2013).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Tringa stagnatilis</i>	Marsh Sandpiper	IA	MI	Y	Y	The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, salt pans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks. They are recorded less often at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes. In north Australia they prefer intertidal mudflats (Higgins & Davies 1996), although surveys in Kakadu National Park	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
						recorded more birds around shallow freshwater lakes than in areas influenced by tide. At the Top End they often use ephemeral pools on inundated freshwater and tidal floodplains (Higgins & Davies 1996). They are found infrequently around mangroves (Higgins & Davies 1996).	
<i>Tringa totanus</i>	Common Redshank	IA	MI		Y	In Australia, the Common Redshank has been recorded at scattered locations. In Western Australia the species is vagrant to the south-west with records at Peel Inlet, Coodanup, the Gascoyne region, Coral Bay and Carnarvon (Higgins & Davis 1996). It is regular and widespread in the north-west, from the Dampier Saltfields to Roebuck Bay and Broome. The Common Redshank is found at sheltered coastal wetlands such as bays, river estuaries, lagoons, inlets and saltmarsh (with bare open flats and banks of mud or sand). They are also found around saltlakes, freshwater lagoons, artificial wetlands and saltworks and sewage farms (Higgins & Davies 1996).	Unlikely – This species known to occur locally within tidal coastline areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Tyto novaehollandiae kimberli</i>	Masked Owl	P1	VU	Y	Y	The range of the Masked Owl is a broad coastal band around most of mainland Australia and throughout Tasmania, and for the most part is less than 300 km from the coast. Population numbers are low on the mainland and several states give this species special conservation status. The Masked Owl inhabits heavy forests, and will hunt over open woodlands, timbered waterways and open country on the fringe of these areas. The main requirements are tall trees with suitable hollows for nesting and roosting and adjacent areas for foraging. Masked Owls are territorial, and pairs remain in or near the territory all year round (Birdlife Australia 2019)	Unlikely – This species prefers heavily timbered forests and tall woodlands for nesting. The study area does not support suitable habitat. However it may hunt over the survey area on an occasional basis.
<i>Xenus cinereus</i>	Terek Sandpiper	IA	MI	Y	Y	In Australia, the Terek Sandpiper has a primarily coastal distribution, with occasional records inland. It is more widespread and common in northern and eastern	Unlikely – This species known to occur locally within tidal coastline

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
REPTILES						Australia than southern Australia (DEE 2018). The Terek Sandpiper mostly forages in the open, on soft wet intertidal mudflats or in sheltered estuaries, embayments, harbours or lagoons. The species has also been recorded on islets, mudbanks, sandbanks and spits, and near mangroves and occasionally in samphire (Halosarcia spp.). Birds are seldom near the edge of water, however, birds may wade into the water (Marchant & Higgins 1993).	areas, however the study area lacks suitable habitat (wetlands, dams, shorelines).
<i>Ctenotus angusticeps</i>	Airlie Island Ctenotus	P3	VU	Y	Y	The Airlie Island Ctenotus is known from approximately 12 locations in north-west WA (DEE 2018). On the mainland, the Airlie Island Ctenotus generally inhabits the landward fringe of salt marsh communities in samphire shrubland dominated by chenopod vegetation or marine couch grassland (Maryan et al. 2013) in the intertidal zone along mangrove (Grey Mangrove (Avicennia marina) with occasional Red Mangrove (Rhizophora stylosa)) margins, however, subtle differences in vegetation/topography exist among sites where the species has been recorded (Biologic 2012).	Highly unlikely – Although not listed on the database search, this species is known to occur within the sider Broome area, however the survey area lacks suitable chenopod habitat that is preferred by this species.
<i>Lerista sepperanda</i>	Dampierland Slider	P2		Y		This fossorial skink occurs in sandy areas of south-west Kimberley coast, particularly sand dunes supporting near-coastal Acacia shrublands, between Kimbolton and Nita Downs (Wilson and Swan 2017).	Unlikely. The closest known record is approximately 10 km south-west of the survey area, near the Broome golf course (RBC pers.ops). Preferred deep coastal sand dunes.
<i>Simoselaps minimus</i>	Dampierland Burrowing Snake		P2	Y		This small fossorial snake is known only from Dampier Land, in the south-west Kimberley, WA. Known to occur in coastal dunes and sandy junction between dunes and adjacent Acacia shrublands. Occasional records occur from near-coastal Pindan Poorly known but presumed	Likely. Known to occur locally. The closest known record is approximately 4 km north of the survey area

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
MAMMALS						to be similar to other <i>Simoselaps</i> ; a sand-swimmer feeding largely or wholly on skinks of the genus <i>Lerista</i> (Wilson and Swan 2017).	on Broome-Cape Leveque Road (GHD 2016b).
<i>Macrotis lagotis</i>	Greater Bilby	VU	VU	Y	Y	In Western Australia the species is restricted to the north, including the Pilbara, Sandy and Gibson Deserts. The Greater Bilby usually spends the daytime in burrows, often built against termite mounds, spinifex hummock or shrubs (Van Dyck and Strahan 2008). Extant population occur in a variety of habitats, usually on landforms with level to low slope topography and light to medium soils. It occupies three major vegetation types; open tussock grassland on uplands and hills, mulga woodland/shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas. Laterite and rock feature substrates are an important part of the species' habitat. These habitat support shrub species, such as <i>Acacia kempeana</i> , <i>A. hilliana</i> and <i>A. rhodophloia</i> , which have root-dwelling larvae that provide a constant food source. The current occurrence of this species is strongly associated with higher rainfall and temperatures, which promote areas of higher plant and food production (DEE 2019).	Likely – This species is known to occur locally based on previous records: active burrows have been recorded approximately 2 km north of the survey area (GHD, 2015). No evidence of Greater Bilby activity was recorded within the survey area, however based on close proximity of records, habitat characteristics, this species is likely to forage or move through the survey area, and the survey area habitat is potential burrowing habitat..
<i>Mesembriomys macrurus</i>	Golden-backed Tree-rat	P4	VU	Y		The golden-backed tree-rat has undergone a catastrophic decline in the Northern Territory, southwest Kimberley and the Pilbara, probably leading to regional extinction in the latter in the last ten years. In Western Australia it has disappeared from the Pilbara (McKenzie and Kerle 2008) and drier parts of the Kimberley (McKenzie 1981), with all known records since 1903 coming from the higher rainfall north-western Kimberley.	Unlikely – Not known to occur within the location of the study area or wider region.

Species name	Common name	Status		Search		Description and habitat requirements	Likelihood of occurrence
		State	Federal	NM	PMST		
<i>Saccolaimus saccolaimus nudicluniatius</i>	Bare-rumped Sheath-tailed Bat	P3	VU		Y	The Bare-rumped Sheath-tail Bat occurs mostly in lowland areas, typically in a range of woodland, forest and open environments (DotE 2016). The Bare-rumped Sheath-tail Bat has been suggested to forage over habitat edges such as the edge of rainforest and in forest clearings (Churchill 1998). There is no information is available on foraging habitat shifts between the dry and wet seasons. The small number of confirmed roosts located in Australia have all been in tree hollows. Overseas other subspecies (perhaps distinct species to the form(s) occurring in Australia) commonly roost in caves, overhangs and man-made structures. However, in Australia no individuals have been found roosting in caves. For example, a survey conducted of about 1000 coastal caves in the Wet Tropics region failed to locate this species (DotE 2016). In 2011, morphological analyses of four <i>S. flaviventris</i> specimens held at the Western Australian Museum indicated that they had been misidentified and are likely to belong to the species <i>S. saccolaimus</i> (Milne pers. comm., 2013). The bare-rumped sheath-tail bat is therefore likely to be distributed through the Kimberley region of Western Australia as far west as Broome, however this has not been confirmed through genetic analyses (Milne pers. comm., 2013).	Unlikely – Not known to occur within the location of the study area or wider region.
<i>Trichosurus vulpecula arnhemensis</i>	Northern Brush-tail Possum	V		Y		A nocturnal and arboreal species that inhabits forests and tall woodlands of the monsoon tropics of the Kimberley and Top End typically in areas with adequate dense canopy density allowing the possum some arboreal habitat connectivity via canopy tree foliage. It feeds primarily on foliage, blossom and fruits, but will also forage on ground for invertebrates (Menkhorst and Knight 2004). Shelters in tree hollow. This species adapts well to rural and urban habitats (Ganslosser et.al 1991) although appears to be in general decline (Woinarski 2004)	Unlikely. The Pindan shrubland habitat throughout the survey area has a paucity of trees that are preferred foraging and denning habitat.

The table presents all fauna recorded within the survey area (current survey). Previous and locally relevant survey results are also included.

Family	Genus	Species	Common Name	Status	GHD 2010	GHD 2014	GHD 2016a	GHD 2015	GHD 2016b	GHD 2019a	Current survey
Amphibians											
Hylidae	<i>Cyclorana</i>	<i>australis</i>	Giant Frog				X				
Hylidae	<i>Cyclorana</i>	<i>longipes</i>	Long-footed Frog				X				
Hylidae	<i>Litoria</i>	<i>caerulea</i>	Green Tree Frog				X		X		
Hylidae	<i>Litoria</i>	<i>rubella</i>	Desert Tree Frog			X					
Limnodynastidae	<i>Platyplectrum</i>	<i>ornatum</i>	Ornate Burrowing Frog				X				
Birds											
Acanthizidae	<i>Gerygone</i>	<i>albugularis</i>	White-throated Gerygone		X	X		X	X	X	
Acanthizidae	<i>Smicromis</i>	<i>brevirostris</i>	Weebill		X		X		X		
Accipitridae	<i>Accipiter</i>	<i>cinerocephalus</i>	Collared Sparrowhawk		X		X	X			
Accipitridae	<i>Accipiter</i>	<i>fasciatus</i>	Brown Goshawk						X	X	X
Accipitridae	<i>Aquila</i>	<i>audax</i>	Wedge-tailed Eagle		X					X	
Accipitridae	<i>Aquila</i>	<i>morphnoides</i>	Little Eagle		X		X		X		
Accipitridae	<i>Elanus</i>	<i>scriptus</i>	Black-shouldered Kite							X	X
Accipitridae	<i>Haliaeetus</i>	<i>leucogaster</i>	White-bellied Sea-Eagle							X	X
Accipitridae	<i>Haliastur</i>	<i>indus</i>	Brahminy Kite			X	X				
Accipitridae	<i>Haliastur</i>	<i>sphenurus</i>	Whistling Kite		X	X	X		X	X	X
Accipitridae	<i>Lophoictinia</i>	<i>isura</i>	Square-tailed Kite		X						
Accipitridae	<i>Milvus</i>	<i>migrans</i>	Fork-tailed Kite		X	X	X	X	X	X	X
Accipitridae	<i>Pandion</i>	<i>haliaetus</i>	Osprey	S5			X				
Alaudidae	<i>Mirafr</i>	<i>javanica horsfieldii</i>	Singing Bushlark		X						
Alcedinidae	<i>Dacelo</i>	<i>leachii</i>	Blue-winged Kookaburra		X	X	X	X	X	X	X
Alcedinidae	<i>Todiramphus</i>	<i>sanctus</i>	Sacred Kingfisher			X	X	X	X		
Anatidae	<i>Anas</i>	<i>gracilis</i>	Grey Teal							X	X

Family	Genus	Species	Common Name	Status	GHD 2010	GHD 2014	GHD 2016a	GHD 2015	GHD 2016b	GHD 2019a	Current survey
Anatidae	<i>Anas</i>	<i>superciliosa</i>	Pacific Black Duck							X	X
Anatidae	<i>Aythya</i>	<i>australis</i>	Hardhead								X
Anatidae	<i>Malacorhynchus</i>	<i>membranaceus</i>	Pink-eared Duck								X
Anseranatidae	<i>Anseranas</i>	<i>semipalmata</i>	Magpie Goose	X							
Artamidae	<i>Artamus</i>	<i>cinereus</i>	Black-faced Woodswallow	X	X	X	X	X	X	X	X
Artamidae	<i>Artamus</i>	<i>leucopygialis</i>	White-breasted Woodswallow	X						X	
Artamidae	<i>Artamus</i>	<i>personatus</i>	Masked Woodswallow				X		X		
Artamidae	<i>Cracticus</i>	<i>tibicen</i>	Australian Magpie	X	X	X	X	X	X	X	
Burhinidae	<i>Burhinus</i>	<i>grallarius</i>	Bush Stone-curlew	X						X	
Cacatuidae	<i>Cacatua</i>	<i>banksii macrorhynchus</i>	Red-tailed Black Cockatoo	X	X				X		
Cacatuidae	<i>Cacatua</i>	<i>sanguinea</i>	Little Corella	X	X	X	X		X	X	X
Cacatuidae	<i>Eolophus</i>	<i>roseicapillus</i>	Galah				X	X		X	
Campephagidae	<i>Coracina</i>	<i>novaeollandiae</i>	Black-faced Cuckoo-Shrike	X	X	X	X	X	X	X	X
Campephagidae	<i>Lalage</i>	<i>sueurii</i>	White-winged Triller	X			X	X			
Charadriidae	<i>Elseyaomis</i>	<i>melanops</i>	Black-fronted Dotterel							X	X
Charadriidae	<i>Vanellus</i>	<i>miles</i>	Masked Lapwing							X	X
Cisticolidae	<i>Cisticola</i>	<i>exilis alexandrae</i>	Golden-headed Cisticola	X							
Columbidae	<i>Geopelia</i>	<i>cuneata</i>	Diamond Dove	X	X					X	
Columbidae	<i>Geopelia</i>	<i>striata</i>	Peaceful Dove		X	X	X	X	X	X	X
Columbidae	<i>Geopelia</i>	<i>humeralis</i>	Bar-shouldered Dove	X	X	X	X		X	X	
Columbidae	<i>Ocyphaps</i>	<i>lophotes</i>	Crested Pigeon	X	X	X	X	X	X		
Coraciidae	<i>Eurystomus</i>	<i>orientalis</i>	Dollarbird			X	X	X			
Corvidae	<i>Corvus</i>	<i>orru</i>	Torresian Crow	X	X	X	X	X	X	X	X
Cracticidae	<i>Cracticus</i>	<i>torquatus</i>	Grey Butcherbird							X	
Cracticidae	<i>Cracticus</i>	<i>nigrogularis</i>	Pied Butcherbird	X	X	X	X	X	X	X	X

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Cuculidae	<i>Centropus</i>	<i>phasianinus</i>	Pheasant Coucal		X		X	X	X	X	
Cuculidae	<i>Chalcites</i>	<i>minutillius</i>	Little Bronze-Cuckoo			X					
Cuculidae	<i>Cuculus</i>	<i>pallidus</i>	Pallid Cuckoo		X	X					
Cuculidae	<i>Cacomantis</i>	<i>variolosus</i>	Brush Cuckoo			X					
Dicaeidae	<i>Dicaeum</i>	<i>hirundinaceum</i>	Mistletoebird			X	X		X		
Estrildidae	<i>Poephila</i>	<i>acuticauda</i>	Long-tailed Finch		X	X	X	X	X		
Estrildidae	<i>Poephila</i>	<i>personata</i>	Masked Finch								
Estrildidae	<i>Taeniopygia</i>	<i>bichenovii</i>	Double -barred Finch				X		X	X	X
Falconidae	<i>Falco</i>	<i>berigora</i>	Brown Falcon		X	X	X	X	X		
Falconidae	<i>Falco</i>	<i>cenchroides</i>	Nankeen Kestrel		X				X	X	X
Falconidae	<i>Falco</i>	<i>longipennis</i>	Australian Hobby				X				
Falconidae	<i>Falco</i>	<i>peregrinus</i>	Peregrine Falcon	S7			X				
Guridae	<i>Grus</i>	<i>rubicunda</i>	Brolga							X	
Hirundinidae	<i>Petrochelidon</i>	<i>nigricans</i>	Tree Martin							X	X
Locustellidae	<i>Cinclooramphus</i>	<i>mathewsi</i>	Rufous Songlark						X	X	X
Manuridae	<i>Malurus</i>	<i>lamberti</i>	Variegated Fairy-wren				X	X	X	X	X
Manuridae	<i>Malurus</i>	<i>melanocephalus cruentatus</i>	Red-backed Fairy-wren		X	X	X	X	X		
Meliphagidae	<i>Conopophila</i>	<i>rufogularis</i>	Rufous-throated Honeyeater		X		X				
Meliphagidae	<i>Entomyzon</i>	<i>cyanotis</i>	Blue-faced Honeyeater				X				
Meliphagidae	<i>Lichenostomus</i>	<i>unicolor</i>	White-gaped Honeyeater				X				
Meliphagidae	<i>Lichenostomus</i>	<i>virescens</i>	Singing Honeyeater		X	X	X	X	X	X	X
Meliphagidae	<i>Lichmera</i>	<i>indistincta</i>	Brown Honeyeater		X		X	X	X	X	X
Meliphagidae	<i>Manorina</i>	<i>flavigula</i>	Yellow Throated Miner				X				
Meliphagidae	<i>Melithreptus</i>	<i>gularis</i>	Black-chinned Honeyeater			X	X				
Meliphagidae	<i>Philemon</i>	<i>argenteiceps</i>	Silver-crowned Fairbird			X	X			X	X

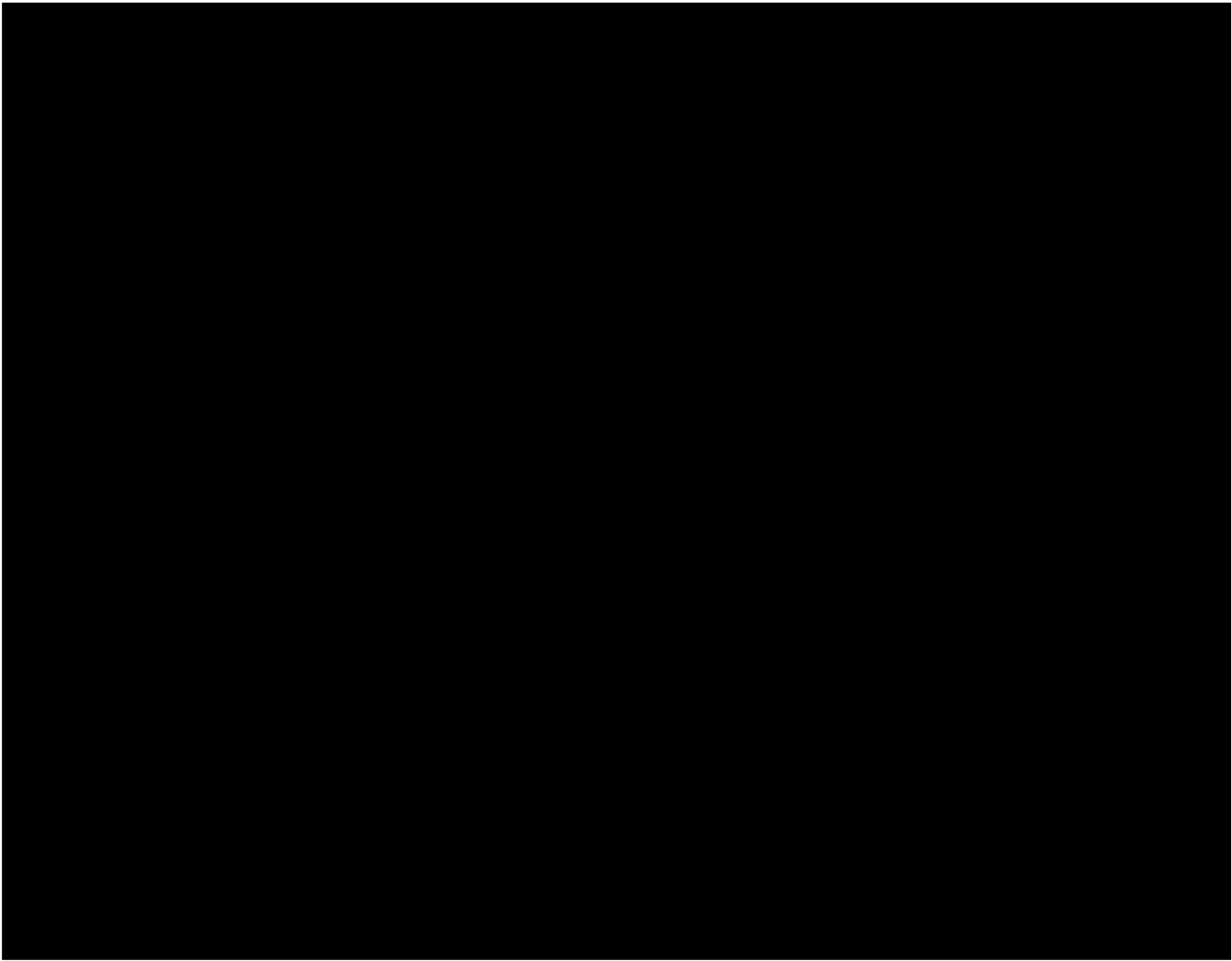
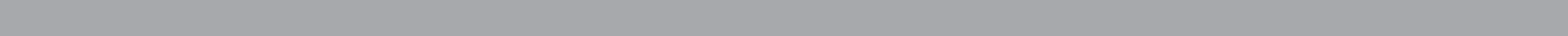
Family	Genus	Species	Common Name	Status	GHD 2010	GHD 2014	GHD 2016a	GHD 2015	GHD 2016b	GHD 2019a	Current survey
Meliphagidae	<i>Philemon</i>	<i>citreogularis</i>	Little Friarbird		X	X	X	X	X	X	
Meropidae	<i>Merops</i>	<i>ornatus</i>	Rainbow Bee-eater		X	X	X	X	X	X	X
Monarchidae	<i>Grallina</i>	<i>cyanoleuca</i>	Magpie-lark		X		X	X	X	X	X
Montacillidae	<i>Anthus</i>	<i>novaeeseelandiae</i>	Australian Pipit							X	
Neosittidae	<i>Daphoenositta</i>	<i>chrysoptera leucoptera</i>	White-winged Sittella					X	X		
Otididae	<i>Ardeotis</i>	<i>australis</i>	Australian Bustard		X			X		X	X
Pachycephalidae	<i>Colluricincla</i>	<i>harmonica</i>	Grey Shrike-thrush		X	X				X	
Pachycephalidae	<i>Pachycephala</i>	<i>rufiventris</i>	Rufous Whistler		X	X	X	X	X	X	X
Pardalotidae	<i>Pardalotus</i>	<i>striatus</i>	Striated Pardalote		X		X		X		
Pelecanidae	<i>Pelecanus</i>	<i>conspicillatus</i>	Australian Pelican							X	X
Petroicidae	<i>Microeca</i>	<i>fascinans</i>	Jacky Winter		X			X			
Podargidae	<i>Podargus</i>	<i>strigoides</i>	Tawny Frogmouth			X			X	X	X
Podicipedidae	<i>Poliiocephalus</i>	<i>poliocephalus</i>	Hoary-headed Grebe								X
Pomatostomidae	<i>Pomatostomus</i>	<i>temporalis</i>	Grey-crowned Babbler		X	X	X	X	X	X	X
Psittacidae	<i>Aprosmictus</i>	<i>erythropterus</i>	Red-winged Parrot		X	X	X	X	X	X	X
Psittacidae	<i>Psitteuteles</i>	<i>versicolor</i>	Varied Loriekeet				X		X		
Psittacidae	<i>Trichoglossus</i>	<i>haematodus rubritorquis</i>	Red Collared Loriekeet		X		X	X	X	X	
Psophodidae	<i>Coturnix</i>	<i>ypsilothora</i>	Brown Quail		X						
Psophodidae	<i>Turnix</i>	<i>velox</i>	Little Button Quail		X			X			
Ptilonorhynchidae	<i>Ptilonorhynchus</i>	<i>nuchalis</i>	Great Bowerbird		X		X		X		
Rallidae	<i>Fulica</i>	<i>atra</i>	Eurasian Coot							X	X
Recurvirostridae	<i>Himantopus</i>	<i>himantopus</i>	Black-winged Stilt								X
Rhipiduridae	<i>Rhipidura</i>	<i>leucophrys</i>	Willie Wagtail		X	X	X	X	X	X	X
Sternidae	<i>Chroicocephalus</i>	<i>novaeahollandiae</i>	Silver Gull							X	X
Strigidae	<i>Ninox</i>	<i>novaeahollandiae</i>	Boobook Owl		X	X			X		

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Threskiornithidae	<i>Platalea</i>	<i>regia</i>	Royal Spoonbill							X	X
Threskiornithidae	<i>Threskiornis</i>	<i>molucca</i>	Australian White Ibis		X		X		X	X	X
Threskiornithidae	<i>Threskiornis</i>	<i>spinirostris</i>	Straw-necked Ibis							X	X
Tyrannidae	<i>Myiagra</i>	<i>iniquita</i>	Restless Flycatcher				X	X	X		
Tyrannidae	<i>Microeca</i>	<i>flavigaster</i>	Lemon bellied Flycatcher			X	X				
Bovidae	<i>Bos</i>	<i>taurus</i>	Cow	int	X				X	X	
Canidae	<i>Canus</i>	<i>dingo</i>	Dingo		X			X	X		
Canidae	<i>Canus</i>	<i>domesticus</i>	Dog	int	X	X	X			X	X
Dasyuridae	<i>Planigale</i>	<i>ingrami</i>	Long-tailed Planigale				X				
Emballonuridae	<i>Saccolaimus</i>	<i>flaviventris</i>	Yellow-bellied Sheath-tailed Bat				X		X		
Equidae	<i>Equus</i>	<i>caballus</i>	Horse	int					X		
Felidae	<i>Felis</i>	<i>catus</i>	Feral Cat	int	X	X	X	X	X		
Macropidae	<i>Macropus</i>	<i>agilis</i>	Agile Wallaby		X	X	X	X	X	X	X
Macropidae	<i>Macropus</i>	<i>rufus</i>	Red Kangaroo		X						
Molossidae	<i>Chaerephon</i>	<i>jobensis</i>	Northern Freetail Bat				X		X		
Molossidae	<i>Mormopterus</i>	<i>cobourgianus</i>	Little North-western Mastiff Bat	P1			X		X		
Muridae	<i>Mus</i>	<i>musculus</i>	House Mouse	int	X						
Muridae	<i>Pseudomys</i>	<i>delicatus</i>	Delicate Mouse		X	X	X		X		
Muridae	<i>Pseudomys</i>	<i>nanus</i>	Western Chestnut Mouse						X		
Phalangeridae	<i>Trichosurus</i>	<i>vulpecula amhemensis</i>	Northern Brushtail Possum	S3, Vu	X		X				
Pteropodidae	<i>Pteropus</i>	<i>alecto</i>	Black Flying Fox				X				
Thylacomyidae	<i>Macrotis</i>	<i>lagotis</i>	Greater Bilby	Vu, Vu		X				X	
Trachyglossidae	<i>Tachyglossus</i>	<i>aculeatus</i>	Echidna			X		X	X		
Vespertilionidae	<i>Chalinolobus</i>	<i>nigrogriseus</i>	Hoary Wattled Bat				X				

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Vespertilionidae	<i>Nyctophilus</i>	<i>amhemensis/geoffroyi</i>	Long-eared Bats				X				
Vespertilionidae	<i>Scotorepens</i>	<i>greyii</i>	Little Broad-nosed Bat				X		X		
Vespertilionidae	<i>Scotorepens</i>	<i>sanborni</i>	Northern Broad-nosed Bat				X				
Agamidae	<i>Lophognathus</i>	<i>gilberti</i>	Gilbert's Water Dragon		X	X	X		X		
Agamidae	<i>Gowidon</i>	<i>longirostris</i>	Long-snouted Water Dragon			X					
Agamidae	<i>Chlamydosaurus</i>	<i>kingii</i>	Frilled Lizard			X	X		X		
Agamidae	<i>Ctenophorus</i>	<i>isolepis</i>	Central Military Dragon			X					
Agamidae	<i>Diporiphora</i>	<i>pindan</i>	Pindan Dragon		X	X	X	X	X	X	X
Agamidae	<i>Pogona</i>	<i>minor</i>	Dwarf Bearded Dragon		X				X		
Diplodactylidae	<i>Diplodactylus</i>	<i>conspicillatus</i>	Fat-tailed Gecko		X				X		
Diplodactylidae	<i>Lucasium</i>	<i>stenodactylum</i>	Sandplain Gecko		X		X		X		
Diplodactylidae	<i>Strophurus</i>	<i>ciliaris aberrans</i>	Northern Spiny-tailed Gecko		X	X	X		X		
Diplodactylidae	<i>Amalosia</i>	<i>rhombifer</i>	Zigzag Velvet Gecko				X	X			
Diplodactylidae	<i>Crenadactylus</i>	<i>rostralis</i>	Clawless Gecko			X					
Elapidae	<i>Demansia</i>	<i>angusticeps</i>	Dampier Land Whipsnake				X		X		
Elapidae	<i>Brachyurops</i>	<i>roperi</i>	Northern Shovel-nosed snake		X	X	X		X		
Elapidae	<i>Furina</i>	<i>ornata</i>	Moon Snake						X		
Elapidae	<i>Pseudechis</i>	<i>australis</i>	Mulga Snake				X	X	X		
Elapidae	<i>Pseudonaja</i>	<i>mengdeni</i>	Gwardar				X		X		
Gekkonidae	<i>Gehyra</i>	<i>australis</i>	Northern Dtella					X			
Gekkonidae	<i>Gehyra</i>	<i>kimberleyi</i>	Robust Termitaria Gecko		X	X	X		X	X	X
Gekkonidae	<i>Gehyra</i>	<i>variegata</i>	Tree Dtella				X		X		
Gekkonidae	<i>Heteronotia</i>	<i>binoei</i>	Bynoe's Gecko				X		X	X	
Gekkonidae	<i>Hemidactylus</i>	<i>frenatus</i>	House Gecko	int			X		X		

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Pygopodidae	<i>Lialis</i>	<i>burtonis</i>	Burton's Legless Lizard		X	X		X	X		
Pygopodidae	<i>Delma</i>	<i>tincta</i>	Excitable Delma						X		
Pygopodidae	<i>Pygopus</i>	<i>nigriceps</i>	Western Hooded Scaly-foot	X							
Pythonidae	<i>Aspidites</i>	<i>melanocephalus</i>	Black-headed Python	X				X	X		
Pythonidae	<i>Antaresia</i>	<i>stimsoni</i>	Stimson's Python			X			X	X	
Scincidae	<i>Carlia</i>	<i>amax</i>	Rainbow Skink	X							
Scincidae	<i>Carlia</i>	<i>munda</i>	Striped Rainbow Skink		X	X	X	X	X		
Scincidae	<i>Carlia</i>	<i>rufilatus</i>	Red-sided Rainbow Skink							X	X
Scincidae	<i>Carlia</i>	<i>triacantha</i>	Desert Rainbow Skink	X							
Scincidae	<i>Cryptoblepharus</i>	<i>ruber</i>	Ruber Snake-eyed Skink						X		
Scincidae	<i>Cryptoblepharus</i>	<i>tythos</i>	Pygmy Snake-eyed Skink		X	X	X	X			
Scincidae	<i>Ctenotus</i>	<i>inornatus</i>	Plain Ctenotus		X		X	X	X		
Scincidae	<i>Ctenotus</i>	<i>pantherinus</i>	Panthers Skink			X					
Scincidae	<i>Ctenotus</i>	<i>saxatilis</i>	Rock Ctenotus		X	X					
Scincidae	<i>Ctenotus</i>	<i>serventyi</i>	Northern Sandy-loam Ctenotus		X						
Scincidae	<i>Eremiascincus</i>	<i>isolepis</i>	Northern Bar-lipped Skink		X	X	X	X	X		
Scincidae	<i>Lerista</i>	<i>apoda</i>	Dampier Land Limbless Slider		X						
Scincidae	<i>Lerista</i>	<i>bipes</i>	Western Two-toed Slider		X						
Scincidae	<i>Lerista</i>	<i>griffini</i>	Griffin's Burrowing skink		X	X	X	X	X	X	X
Scincidae	<i>Lerista</i>	<i>labialis</i>	Eastern Two-toed Slider		X						
Scincidae	<i>Menetia</i>	<i>greyii</i>	Common Dwarf Skink		X	X	X	X	X		
Scincidae	<i>Morethia</i>	<i>ruficauda ruficauda</i>	Fire-tailed skink		X	X					
Scincidae	<i>Morethia</i>	<i>storri</i>	Northern Fire-tailed skink		X						
Scincidae	<i>Proablepharus</i>	<i>tenuis</i>	Slender Snake-eyed Skink			X			X		
Scincidae	<i>Tiliqua</i>	<i>multifasciata</i>	Central Blue-tongue		X	X	X	X	X		

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Scincidae	<i>Tiliqua</i>	<i>scincoides intermedia</i>	Northern Blue-tongue		X		X		X		
Typhlopidae	<i>Anilius</i>	<i>diversus</i>	Northern Blindsnake		X		X		X		
Typhlopidae	<i>Anilius</i>	<i>grypus</i>	Northern Beaked Blindsnake						X		
Varanidae	<i>Varanus</i>	<i>acanthurus</i>	Ridge-tailed Monitor					X	X		
Varanidae	<i>Varanus</i>	<i>gouldii</i>	Gould's Monitor		X	X	X	X	X	X	X
Varanidae	<i>Varanus</i>	<i>panoptes panoptes</i>	Yellow-spotted Monitor				X		X		
Varanidae	<i>Varanus</i>	<i>tristis tristis</i>	Black-headed Monitor			X			X		



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