



Shire of Irwin
Mid West Coastal Nodes
Biological Survey Report

August 2015

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1. Introduction

1.1 Background

The Shires of Northampton, Coorow and Dandaragan required biological assessments to be completed for proposed low key camping areas (the Study Areas) located at:

- Halfway Bay / Lucky Bay – Shire of Northampton
- Little Anchorage – Shire of Coorow
- Sandy Cape – Shire of Dandaragan

1.2 Purpose of this Report

GHD Pty Ltd was commissioned to undertake a biological assessment of the Study Areas. The purpose of this assessment is to identify vegetation, flora and fauna values within the Study Areas.

The survey methodology and reporting was undertaken with reference to a Level 1 Fauna and Flora Assessment, as defined under Environmental Protection Authority (EPA) Guidance Statements 51 and 56 (EPA 2004a and EPA 2004b).

This Report presents the findings of this investigation and identification of the environmental values recorded at each Study Area.

1.3 Scope and Limitations

1.3.1 Study Areas

The Study Areas are located within the coastal region of Western Australia in the Shires of Northampton, Coorow and Dandaragan.

Within each Study Area, a number of smaller search areas were examined during the field assessments.

Table 1 Field Search Areas Surveyed

Study Area	Search Areas
Halfway Bay / Lucky Bay	Lucky Bay Central Flats Halfway Bay
Little Anchorage	Shell Beach Ti-Tree Milligan Island Billy Goat Bay
Sandy Cape	Northern Central Southern

1.3.2 Scope of Works

GHD completed the following scope of works for this project:

- Desktop assessment;
- Field survey; and
- Reporting and mapping.

The methodology to achieve the scope of works is detailed in Section 2.

1.3.3 Limitations

This report has been prepared by GHD for the Shire of Irwin (on behalf of the Shires of Northampton, Dandaragan and Coorow) (the Shires) and may only be used and relied on by these Shires for the purpose agreed between GHD and the Shires, as set out in Sections 1.2 and 1.3.2 of this report.

GHD otherwise disclaims responsibility to any person other than the Shires 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 the Shires 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.

Site conditions (including the presence of species and communities of conservation significance) 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.

Clearing of Native Vegetation

In the event that native vegetation is required to be cleared for the proposed project, a Clearing Permit under Part V of the *Environmental Protection Act 1986* may be required. This document can be used to support an application of a Clearing Permit.

1.4 Assumptions

This report has assessed flora, fauna and vegetation within the Study Areas, which has been defined by the Shires. Any change to the extent of the Study Areas may alter the results and recommendations presented in this assessment.

2. Methodology

2.1 Desktop Assessment

The desktop assessment of the Study Areas included a review of background data, including flora and fauna previously recorded in them.

The desktop review included:

- A review of Beard (various) broadscale vegetation association mapping;
- A review of the *NatureMap* database for flora and fauna species previously recorded within the Study Area (DPaW, 2007-);
- A review of the Department of Parks and Wildlife (DPaW)'s Threatened Ecological Communities (TEC) and Priority Ecological Communities (PEC) databases (DPaW, 2007) to determine the potential for TECs or PECs to be present within the Study Areas;
- A review of the Department of the Environment (DotE)'s Protected Matters Search Tool (DotE, 2014a) to identify Matters of National Environmental Significance (MNES), in particular threatened species, migratory species and ecological communities listed under the *Environment, Protection, Biodiversity and Conservation Act 1999* (EPBC Act) potentially occurring within 10 kilometres of the Study Areas;
- A review of aerial photography, geology/soils and hydrological information; and
- A search of the Department of Environment Regulation's (DER's) Clearing Permit System to determine the presence of Environmentally Sensitive Areas (ESAs) in the area (DER, 2015).

Desktop and field survey results are provided by Study Area in Sections 3; 4 and 5.

2.2 Field Survey

A field survey was conducted to identify the fauna habitats, flora and fauna species and communities present in the Study Areas. GHD's Principal Ecologist, Joshua Foster, and Environmental Scientist, Steven Petts, undertook the field surveys in June 2015.

2.2.1 Vegetation and Flora

Terrestrial Flora

A Level 1 vegetation and flora assessment was undertaken with reference to the EPA Guidance Statement No. 51 *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* (EPA, 2004a) and Draft Technical Guide – Flora and Vegetation Surveys for Environmental Impact Assessment (DEC, 2012).

Field assessment methods involved a combination of sampling temporary quadrat sites (10 m x 10 m) and traversing the Study Areas on foot to record opportunistic plant species present (visible) at the time of the survey.

Field data at each quadrat was recorded on a pro-forma data sheet and included the parameters indicated in data collection for each quadrat following requirements stipulated by the Department of Parks and Wildlife (DPaW). Table 2 provides a summary of data collected during the survey.

Table 2 Data Collected During the Field Survey

Aspect	Measurement
Collection Attributes	Personnel/recorder, date, quadrat dimensions, photograph of the quadrat.
Physical Features	Aspect, soil attributes, percentage surface cover by rocks, logs and branches, leaf litter, bare ground.
Location of Important Features	Coordinates recorded in GDA94 datum using a hand-held Global Positioning System (GPS) tool to accuracy approximately \pm five metres.
Vegetation Condition	Vegetation condition was assessed using the condition rating scale devised by Keighery (1994).
Disturbance	Level and nature of disturbances (e.g. weed presence, fire - and time since last fire, impacts from grazing, exploration activities).
Flora	List of dominant flora from each structural layer.

The surveys within the Study Areas included searches for species not previously recorded, as well as conservation significant species.

Flora Species Identification and Nomenclature

Species that were well known were identified in the field, while species that were unknown were collected and assigned a unique number to facilitate tracking. Plant species were identified by the use of local herbaria specimens, electronic flora keys and databases.

The conservation status of all recorded flora was compared against the current lists available on *FloraBase* (DPaW, 1998-) and the EPBC Act Threatened species database provided by the DoE (2015).

Nomenclature used in this report follows that used by the Western Australian Herbarium as reported on *FloraBase* (DPaW, 1998-).

Vegetation Condition

The vegetation condition of the site was assessed using the vegetation condition rating scale developed by Keighery (1994). This rating scale recognises the intactness of vegetation, which is defined by the following:

- Completeness of structural levels;
- Extent of weed invasion;
- Historical disturbance from tracks and other clearing or dumping; and
- The potential for natural or assisted regeneration.

The scale consists of six rating levels, as outlined in Table 3.

Table 3 Vegetation Condition Rating Scale

Vegetation Condition Rating	Vegetation Condition	Description
1	<i>Pristine or Nearly So</i>	No obvious signs of disturbance.
2	<i>Excellent</i>	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
3	<i>Very Good</i>	Vegetation structure altered. Obvious signs of disturbance.
4	<i>Good</i>	Vegetation structure significantly altered by very obvious signs of multiple disturbances retains basic vegetation structure or ability to regenerate it.
5	<i>Degraded</i>	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not in a state approaching good condition without intensive management.
6	<i>Completely Degraded</i>	The structure of the vegetation is no longer intact and the area is completely or almost without native species.

2.2.2 Fauna

GHD ecologists undertook a Level 1 fauna survey (reconnaissance survey) of the Study Areas in conjunction with the vegetation and flora assessment, and undertaken with reference to the EPA Guidance Statement No. 56 *Terrestrial Fauna Survey for Environmental Impact Assessment in Western Australia* (EPA 2004b). The purpose of the reconnaissance survey was to verify the accuracy of the desktop study and delineate and characterise the fauna and faunal assemblages present in the Study Areas.

The Study Areas were traversed on foot and by vehicle to identify and describe the dominant fauna habitat types and their condition, assess habitat connectivity, identify and record fauna species within the Study Areas. An assessment of the likelihood of conservation significant fauna and their habitats occurring within the Study Areas was also undertaken.

Opportunistic Fauna Searches

Opportunistic fauna searches were also conducted across the Study Areas. Opportunistic searches were undertaken at most of the habitat assessment locations and included:

- Searching through micro-habitats, including turning over rocks, turning over leaf litter and examining tree hollows and hollow logs;
- Visual and aural surveys. This accounted for many bird species potentially utilising the Study Areas;
- Searching the Study Areas for tracks, scats, bones, diggings and feeding areas for both native and feral fauna; and
- Recording of Global Positioning System (GPS) locations of any conservation significant fauna species.

Fauna Species Identification

Identification of fauna species was made in the field using available field guides. Where identification was not possible, photographs of specimens were collected to be later identified. Nomenclature follows that used by the Western Australian Museum and the DPaW *NatureMap*

database, as it is deemed to contain the most up-to-date species information for Western Australia.

2.3 Survey Limitations

2.3.1 Desktop Limitations

The EPBC Act Protected Matters Search Tool (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 DPaW and searches of threatened flora and fauna provide more accurate information for the general area. GHD notes that some records of collections, sightings or trappings can be dated and often misrepresent the current range of threatened species.

2.3.2 Field Survey Limitations

Guidance Statement No. 51 and No. 56 (EPA 2004a, 2004b) states that flora and fauna survey reports for environmental impact assessment in Western Australia 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.

Table 4 Field Survey Constraints and Limitations

Aspect	Constraint	Comment
Sources of information and availability of contextual information.	Minor	<ul style="list-style-type: none"> Broad scale (1:250,000) mapping by Beard (1976) and digitised by Shepherd <i>et al.</i> (2002); and Previous reports (where available).
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 assessed as part of survey.
Proportion of flora collected and identified (based on sampling, timing and intensity). Proportion of fauna identified, recorded and/or collected.	Minor	<p>The flora survey was a Level 1 survey only, and took place during one season in one year. The survey took place during Winter 2015. Sampling was undertaken at an early time of the main flowering season, which was reflected by a relatively low collection of annual flora taxa. GHD expects that the majority of flora species present were recorded during the field assessments.</p> <p>The fauna survey was undertaken in June 2015 and was a reconnaissance survey only. The fauna assessment sampled only those species that can be easily seen, heard or have distinctive signs, such as but not limited to, tracks, scats, diggings. Many cryptic and nocturnal 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 species were identified to a species level.</p> <p>The fauna assessment was aimed at identifying habitat types and terrestrial vertebrate fauna utilising the Study Areas. 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 that of vertebrate species.</p>
Flora determination.	Minor	<p>Flora determination was undertaken by GHD ecologists in field and at the Geraldton Regional Herbarium. Priority Flora taxa will be submitted to the WA Herbarium for inclusion into their records. One flora collection could be identified to genus only due to lack of flowering and fruiting material required for identification.</p> <p>Additionally, some species, particularly annuals and grasses, may have been overlooked due to lack of material; however this is unlikely to affect the results of the survey as these species are not likely to be conservation significant species, nor dominate throughout the Study Areas.</p> <p>The taxonomy and conservation status of the Western Australian flora is dynamic. This report was prepared with reliance on taxonomy and conservation current at the time of issuing, but it should be noted this may change.</p>

Aspect	Constraint	Comment
Completeness and further work which might be needed (e.g. was the relevant area fully surveyed?).	Nil	This survey was conducted to provide information on potential constraints associated with the proposed Project. The survey was sufficiently detailed and covered enough of the relevant area at this stage of the Project. The Study Areas were sufficiently traversed during this study.
Mapping reliability.	Nil	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 inaccuracies.
Timing/weather/season/cycle.	Minor	The survey was conducted in June 2015. In the three months directly prior to the survey, March to May 2015 Halfway Bay received above average rainfall; and the Little Anchorage and Sandy Cape Study Areas received below average rainfall. GHD considers it likely that species of annual flora may not have been present at the time of survey. The Level 1 survey was undertaken during winter. Some taxa (particularly reptiles) may have been less active and therefore less detectable in winter. Complete fauna surveys can require multiple surveys at different times of year and over a period of a number of years to enable observation of all species present. Some degree of variability is likely if subsequent surveys were to occur.
Disturbances (e.g. fire, flood, accidental human intervention).	Nil	Evidence of disturbance (through human interaction) was widespread throughout the Study Areas.
Intensity (in retrospect, was the intensity adequate?).	Nil	The vascular flora of the Study Areas was sampled with reference to the EPA (2004a) guideline, and terrestrial fauna with reference to the EPA (2004b) guideline.
Resources.	Nil	Adequate resources were employed during the field survey. A total of 4 person-days were spent undertaking the survey.
Access restrictions.	Minor	The Study Areas were completely accessible.
Experience levels.	Nil	The ecologists who executed the survey were practitioners suitably qualified in their respective fields. Joshua Foster is a Principal Ecologist with over 18 years' experience in undertaking ecological surveys. Steven Petts is an Environmental Scientist with over five years' experience in undertaking ecological surveys.

3. Halfway Bay / Lucky Bay

3.1 Desktop Assessment – Regional Context

3.1.1 Bioregion

The Interim Biogeographic Regionalisation of Australia (IBRA) divides the Australian continent into 85 biogeographic regions based on their climatic, faunal, vegetation, landform and geological features.

The Study Area lies within the Geraldton Sandplains IBRA region (DPaW, 2007-).

Table 5 Study Area Location Information

Study Area	IBRA	IBRA sub-Region	Local Government Area
Halfway Bay/Lucky Bay	Geraldton Sandplains	Geraldton Hills	Shire of Northampton

3.1.2 Surrounding Land Use

The Study Area's current land use includes designated camping areas and access tracks. The Study Area's surrounding land use includes gazetted roads; garnet sand extraction; farming and conservation areas.

3.1.3 Climate

The climate experienced within the Study Area is a Mediterranean climate with mild summers and cool wet winters.

The Bureau of Meteorology (BoM) weather station in closest proximity to the Study Area is: Kalbarri (Station 008251) (BoM, 2015a).

Kalbarri

- Mean Daily Maximum Temperature 21.8 °C in July to 34.3 °C in February;
- Mean Daily Minimum Temperature 9.6 °C in July to 20.7 °C in February;
- Mean Annual Rainfall 345.7 mm; and
- Mean Annual Rain Days 44.7 days.
- Rainfall: March to May 2015: 139.2 mm. Above long-term average of 90.1 mm for the same 3-month period.

3.1.4 Conservation Reserves

There are no conservation reserves within, or immediately adjacent to, the Study Areas.

Table 6 Conservation Area Information

Study Area	Nearest Conservation Reserve	Nearest National Park	Environmentally Sensitive Area
Halfway Bay/Lucky Bay	Utcha Well Nature Reserve 7 km south of the Study Area	Kalbarri National Park 14 km north of the Study Area	Hutt Lagoon 10 km south of the Study Area

3.1.5 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are defined under Section 51B of the *Environmental Protection Act 1986* (EP Act) and may include areas such those requiring special management attention to protect important scenic values, fish and wildlife resources, historical and cultural values and other natural systems or processes.

A search of the DER's Clearing Permit System MapViewer indicated that there are no ESAs within the Study Areas. The nearest ESAs are listed in Table 4.

3.1.6 Public Drinking Water Source Areas

A search was undertaken on the Department of Water (DoW) Geographic Data Atlas which indicated no Public Drinking Water Source Areas located within the Study Area (DoW, 2015).

The hydrology and hydrogeology aspects proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act) within the Study Area are provided in Table 7.

Table 7 Department of Water Geographic Data Atlas Query Results (DoW, 2015)

Aspect	Detail	Result
RIWI Groundwater Areas	Groundwater areas proclaimed under the RIWI Act.	Halfway Bay/Lucky Bay is in the Gascoyne Groundwater Area.
Groundwater sub-areas	Groundwater areas proclaimed under the RIWI Act.	Halfway Bay/Lucky Bay is in the Kalbarri/Eurardy Groundwater sub-Area.
RIWI Watercourses	Watercourses proclaimed under the RIWI Act.	There are no watercourses within the Study Area.
RIWI Surface water area	Surface water areas proclaimed under the RIWI Act.	Halfway Bay/Lucky Bay is in the Northampton Coast surface water area.
Public Drinking Water Source Areas (PDWSA)	PDWSAs is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the <i>Metropolitan Water Supply, Sewage and Drainage Act 1909</i> (MWSSD) or the <i>Country Area Water Supply Act 1947</i> (CAWS).	The Study Area does not fall within a PDWSA.

3.1.7 Wetlands and Watercourses

A desktop search indicated that no DoW-defined watercourses or wetlands intersect, or are adjacent to, the Study Area (DoW, 2015).

A search of the EPBC PMST identified that wetlands recognised as "Nationally Important Wetlands" are located within 10 km of the Study Areas, that being Hutt Lagoon (DoW, 2015).

3.1.8 Geology

This region of Western Australia falls within the Greenough Province which principally overlies Cretaceous, Jurassic, Triassic, Permian, Carboniferous and Silurian sedimentary rocks of the northern Perth Basin. These rocks include sandstone, siltstone, shale and claystone. There is also some limestone, coal measures and conglomerate. North-east of Geraldton are the Mesoproterozoic granulite and migmatite (with numerous dolerite dykes) of the Northampton Complex. To the west of Three Springs are the Proterozoic gneiss, granite and pegmatite of the Mullingar Inlier as well as the Neoproterozoic siltstone (with common volcanic fragments),

sandstone and conglomerate of the Yandanooka Group. Extensive laterite formation commenced in the Tertiary. In the Quaternary, Tamala Limestone developed in aeolian coastal deposits (Tille, 2006).

The Study Area encompasses underlying Tumblagooda Sandstone (Halfway Bay/Lucky Bay). On the coastal strip the soils are dominated by dunes of Calcareous deep sands, with Yellow deep sands overlying the Tamala Limestone (Tille, 2006).

Acid Sulphate Soils

The Australian Soil Resource Information System (ASRIS) generally indicated that there is “Extremely Low Probability with Very Low Confidence” of Acid Soils occurring in this Study Area. However, the CSIRO ASRIS database indicates that there is an area of “high probability of occurrence” immediately east of the Halfway Bay Study Area, which is likely to be related to the presence of wetlands (CSIRO, 2009).

Soil Degradation Risks

The Study Area was assessed using the Department of Agriculture and Food NRM SLIP mapping portal to assess the risk of degradation to soil by wind and water. The NRM SLIP mapping portal indicates no risk to the Study Area by water erosion.

NRM SLIP indicates a 50-70% high to extreme erosion risk. GHD notes that the Study Area occurs within a location subjected to strong prevailing winds (sea-breezes), and as such appropriate land management practices to minimise risks of wind erosion are recommended.

3.1.9 Vegetation

Broad scale vegetation mapping within the Study Area was undertaken by Beard (1976), which indicates one Beard Vegetation Association (BVA) is present (Table 8). This BVA is not represented by any plant species, but is mapping of moving, dune sands.

Table 8 Beard Vegetation Associations

Beard Vegetation Association	Description
129	bare areas: drift sand

Vegetation Association Extent and Status

Beard (1976) vegetation mapping has been adapted and digitised by Shepherd *et al.* (2002). The extent of Beard’s (1976) vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DPaW (latest update 2013 – GoWA 2013). The extent remaining of the vegetation associations that have been mapped within the Study Area is detailed in Table 9. The extents of these vegetation types are above the 30% threshold level for the State, IBRA bioregion, IBRA sub-region and local government area.

Table 9 Vegetation Association and Status

Vegetation Association	Scale	Pre-European Extent (ha)	Current Extent (ha)	% Current Extent in IUCN (1-4)	% Remaining	Status
Geraldton Sandplains (GES) IBRA Region		3,136,037.56	1,408,729.07	15.34	44.92	<i>Under-represented</i>
Geraldton Hills (GES01) IBRA Sub-region		1,964,262.38	904,526.10	13.88	46.05	<i>Under-represented</i>
LGA – Shire of Northampton		1,258,431.43	930,131.26	19.79	73.91	<i>Least Concern</i>
129	State	95,286.20	82,051.84	40.23	86.11	<i>Least Concern</i>
	IBRA – Geraldton Sandplains (GES)	6,470.36	5,653.30	19.38	87.37	<i>Least Concern</i>
	IBRA Sub-region – Geraldton Hills (GES01)	4,606.44	3,834.95	0.19	83.25	<i>Least Concern</i>
	LGA – Shire of Northampton	3,235.92	2,827.95	0.32	87.39	<i>Least Concern</i>

3.1.10 Conservation Significant Ecological Communities

A search of the EPBC Act PMST (DotE, 2014a) did not identify the presence of any Australian Government listed TECs within 10 km of the Study Area.

A search on DPaW's *NatureMap* database identified no State-listed TECs or Priority Ecological Communities within 10 km of the Study Area.

3.1.11 Flora

Diversity

A search of the *NatureMap* database (DPaW, 2007-) and EPBC Act PMST search results for plant taxa previously recorded within 10 km of the Halfway Bay / Lucky Bay Study Area is provided in Table 10.

Table 10 Summary of *NatureMap* Flora Results

Study Area	Flora Taxa Count	Dominant Families
Halfway Bay / Lucky Bay	166	Myrtaceae, Asteraceae, Chenopodiaceae

Conservation Significant Flora

Desktop searches of the DPaW Threatened and Priority Flora databases and Western Australian Herbarium database via *NatureMap* (NM), and the EPBC Act PMST database identified 12 conservation significant flora (including EPBC Act listed, WC Act listed and DPaW Priority Flora) that have either been recorded or are predicted to occur within 10 km of the Study Area.

A likelihood of occurrence assessment (based on the range, habitat requirements and previous records of the species) was conducted for all conservation significant taxa identified in the desktop assessment.

GHD considers that of the conservation significant flora taxa, only one is considered to possibly occur within the Study Area: the Priority 1 *Melaleuca huttensis*. This taxon typically occurs on shallow soils over limestone on coastal ridges between Kalbarri and Coronation Beach, but has been observed at Little Bay (near Horrocks) growing immediately adjacent to the beach (J Foster, pers. obs.).

Table 11 Conservation Significant Flora – Halfway Bay/Lucky Bay

Taxon	EPBC Act Status	WC Act Status	DPaW Status	Source	Likelihood of occurrence in Study Area
<i>Androcalva microphylla</i>			P2	NM	Unlikely – within known range, no habitat present
<i>Caladenia barbarella</i>	En	T		EPBC	Unlikely – within known range, no habitat present
<i>Caladenia bryceana</i> subsp. <i>cracens</i>	Vu	T		EPBC	Unlikely – within known range, no habitat present
<i>Caladenia elegans</i>	En	T		NM	Unlikely – within known range, no habitat present
<i>Caladenia hoffmanii</i>	En	T		EPBC	Unlikely – not within range, no habitat present
<i>Drummondita ericoides</i>	En	T		EPBC	Unlikely – not within range, no habitat present
<i>Eucalyptus cuprea</i>	En	T		EPBC	Unlikely – not within range, no habitat present
<i>Hypocalymma longifolium</i>	Vu	T		EPBC	Unlikely – not within range, no habitat present
<i>Lasiopetalum oldfieldii</i> subsp. <i>oldfieldii</i>			P3	NM	Unlikely – within known range, no habitat present
<i>Melaleuca huttensis</i>			P1	NM	Possible – within known range, potential habitat present
<i>Scholtzia</i> sp. Eurardy (J.S. Beard 6886)			P2	NM	Unlikely – within known range, no habitat present
<i>Wurmbea tubulosa</i>	En	T		EPBC	Unlikely – not within range, no habitat present

*En=Endangered, Vu = Vulnerable, T = Threatened (Declared Rare), P1= Priority 1, P2 = Priority 2 and P3 = Priority 3, P4 = Priority 4.

Invasive Flora

The EPBC Act PMST (PMST_DKLBJS DotE, 2015) indicates that there are five invasive flora taxa that may occur within 10 km of the Study Area (Table 12). The *NatureMap* database (DPaW, 2015) indicates 23 invasive flora taxa may occur within 10 km of the Study Area, these are presented in Appendix B.

Table 12 EPBC SPRAT Invasive Flora that may occur within 10 km of the Study Area

Species Name	Common Name	Status	Source
<i>Cenchrus ciliaris</i>	Buffel Grass	*	EPBC
<i>Lantana camara</i>	Lantana	*WoNS, DP	EPBC
<i>Lycium ferocissimum</i>	African Boxthorn	*WoNS	EPBC
<i>Prosopis</i> spp.	Mesquite	*WoNS, DP	EPBC
<i>Tamarix aphylla</i>	Tamarisk	*WoNS, DP	EPBC

3.1.12 Disease and Pathogens

Phytophthora cinnamomi (Dieback) disease is generally restricted to areas of the south west of the State, south of the 26th parallel of latitude, in areas receiving an average annual rainfall of greater than 400 mm.

The Study Area is south of the 26th parallel, and the locality receives over 400 mm per annum. While less common in the well-drained alkaline soils of the coastal dune systems, amended soils such as developed gardens may contain pockets of acidic duplex soils and still be susceptible to the disease. However, the Study Area is not considered to support plant species susceptible to Dieback.

The disease is not considered to be an issue for development of the Study Area.

3.1.13 Fauna

Existing Fauna Records

A search on *NatureMap* (DPaW, 2007-) and the EPBC Act PMST (DotE, 2015) was undertaken for the Study Area. The *NatureMap* and EPBC Act PMST results are shown in Appendix B. According to these search results:

- 200 fauna taxa have been previously recorded within 10 km of the Halfway Bay / Lucky Bay Study Area.

Conservation Significant Fauna

Searches of the EPBC Act PMST (PMST_DKLJB5) (DotE, 2015) and *NatureMap* database (DPaW, 2007-) identified the presence or potential presence of 36 conservation significant fauna species. A list of the conservation significant species identified in the desktop review is provided Table 13.

A number of marine species including, fish, turtles and cetaceans were indicated in the EPBC Act PMST and *NatureMap* search results. As the survey was limited to terrestrial fauna only these marine species were not considered for likelihood of occurrence assessment.

Likelihood of Occurrence Assessment

A total of seven terrestrial conservation significant fauna taxa were identified as potentially occurring within the Study Area during the desktop investigation. An assessment of the likelihood of these species occurring in the Study Area was undertaken. This assessment is based on species biology, habitat requirements, the quality and availability of suitable habitat and records of the species in the area.

The assessment indicates that it is considered possible for two Threatened taxa (Chuditch; Shield-backed Trapdoor Spider) to potentially be recorded within the Study Area, due to known records occurring within 5 km of the Study Area. Preferred habitat is not considered to be present within the Study Area.

In addition, four terrestrial Migratory-Listed taxa (White-bellied Sea-Eagle; Rainbow Bee-eater) may be recorded foraging within the Study Area. The Study Area does not provide breeding habitat for these taxa.

Table 13 Conservation Significant Fauna Assessment – Halfway Bay / Lucky Bay

Taxon Name	Common Name	EPBC Act Status	WC Status	Likelihood of occurrence
<i>Arenaria interpres</i>	Ruddy Turnstone	Mi	S3	Possible during foraging on the coastline immediately west of the Study Area. Breeding habitat not present.
<i>Calyptorhynchus latirostris</i>	Carnaby's Black Cockatoo	En	T	Unlikely – within known range, no habitat present
<i>Dasyurus geoffroi</i>	Chuditch	Vu	T	Possible – within known range, preferred habitat not present
<i>Egernia stokesii</i> subsp. <i>aethiops</i>	Baudin Island Spiny-tailed Skink	Vu	T	Extremely Unlikely – Study Area well outside known range. Habitat may be present.
<i>Egernia stokesii</i> subsp. <i>badia</i>	Western Spiny-tailed Skink	En	T	Unlikely – Study Area well outside known range. Habitat may be present.
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Mi	S3	Possible during foraging on the coastline immediately west of the Study Area. Breeding habitat not present.
<i>Idiosoma nigrum</i>	Shield-backed Trapdoor Spider	Vu	T	Possible – within known range, preferred habitat not present.
<i>Leipoa ocellata</i>	Malleefowl	Vu	T	Unlikely – not within known range, no habitat present
<i>Merops ornatus</i>	Rainbow Bee-eater	Mi	S3	Possible during foraging in air above Study Area. Breeding habitat not present.
<i>Neophoca cinerea</i>	Australian Sea Lion	Vu; Ma	T	Unlikely – not within known range. Preferred habitat not present.
<i>Pandion cristatus</i>	Eastern Osprey	Mi	S3	Possible during foraging on the coastline immediately west of the Study Area. Natural breeding habitat not present.
<i>Sterna neries</i> subsp. <i>neries</i>	Fairy Tern	Vu	T	Unlikely – Study Area well outside known range. Habitat may be present.

Introduced Fauna

The results of the EPBC Act PMST and NatureMap searches indicated the potential presence of seven introduced fauna taxa within 10 km of the Study Area (DotE, 2015; DPAW, 2007-). The search results are shown in Table 14.

Table 14 Introduced Fauna Database Search Results

Species	Common Name	Source
<i>Streptopelia senegalensis</i>	Laughing Turtle-Dove	EPBC
<i>Columba livia</i>	Domestic Pigeon	EPBC
<i>Capra hircus</i>	Goat	EPBC
<i>Felis catus</i>	Cat	EPBC
<i>Mus musculus</i>	House Mouse	NM; EPBC
<i>Oryctolagus cuniculus</i>	Rabbit	EPBC
<i>Rattus rattus</i>	Black Rat	EPBC
<i>Sus scrofa</i>	Pig	EPBC
* <i>Vulpes vulpes</i>	Red Fox	EPBC

3.2 Results of Field Assessment

3.2.1 Wetlands and Watercourses

No wetlands or watercourses occur within the Study Area. The proposed project will not impact on the nearby Hutt Lagoon.

3.2.2 Vegetation

Study Area Vegetation Types

The Study Area was split into three search areas: Lucky Bay (North); Central Flats; and Halfway Bay (South).

A total of five vegetation types were recorded within the Study Area (Table 15). The Study Area is dominated by degraded sandy dunes and flats with mixed coastal scrubs. There are small portions of samphire-dominated flats and a good condition swale immediately west of the eastern boundary dune in the Halfway Bay search area.

GHD has mapped bare dunes and cleared/degraded areas as vegetation types, shown in Figure 1.

Vegetation Extent

Vegetation types recorded broadly correspond to the Beard Vegetation Associations known from the vicinity of the Study Area. BVA 17: Shrublands: *Acacia rostellifera* thicket is known from the vicinity of the Study Area and is a more accurate representation of the majority of vegetation types within the Study Area. BVA 17 is not considered to be under-represented with over 88% of this Vegetation Association remaining.

Study Area Vegetation Condition



The vegetation condition of the Study Areas was mapped during the field survey using the Vegetation Condition Scale (after Keighery, 1994). The vegetation in the Study Area ranged



from Condition 2 (*Excellent*) to Condition 6 (*Completely Degraded*). The most noticeable areas of disturbance were within the vehicle access tracks, and existing camp sites. The best condition areas were immediately behind the primary dune in the Central Flats search area; and the swale immediately west of the eastern boundary dune in the Halfway Bay search area.


Threatened and Priority Ecological Communities

Vegetation types recorded within the Study Area are not considered to be associated with any TECs or PECs known from the general vicinity (DPaW, 2007-; DotE, 2015).

Table 15 Recorded Vegetation Types

Vegetation Type	Short Description	Description	Photograph	Location	Condition	Equivalent Beard Vegetation Association
1	Bare Dunes	Predominantly bare soils with scattered shrubs including <i>Acacia rostellifera</i> . Impacts: Off-road vehicles		Lucky Bay (North) and Central Flats	Very Good to Completely Degraded	129
2	Coastal Scrub	Mixed Scrub predominantly on dunes dominated by <i>Acacia rostellifera</i> , <i>Rhagodia preissii</i> ; <i>Myoporum insulare</i> over <i>Tetragonia implexicoma</i> with <i>Spinifex longifolius</i> , <i>Acanthocarpus preissii</i> , <i>Olearia axillaris</i> over <i>Zygophyllum billardieri</i> . Impacts: Off-road vehicles, pedestrian tracks, expanding campgrounds, firewood collection		Lucky Bay (North); Central Flats Halfway Bay	Very Good to Completely Degraded	17 Shrublands: <i>Acacia rostellifera</i> Thicket.

Vegetation Type	Short Description	Description	Photograph	Location	Condition	Equivalent Beard Vegetation Association
3	Samphire Flats	<p>Small, degraded areas of saline flats dominated by samphires and salt tolerant taxa including: <i>Sarcocornia</i> spp., <i>Frankenia pauciflora</i>, <i>Samolus repens</i>.</p> <p>Appear to be preferred camping areas due to being flat.</p> <p>Impacts: Off-road vehicles, pedestrian tracks, expanding campgrounds.</p>		Lucky Bay (North)	<i>Degraded to Completely Degraded</i>	129
4	Swale	<p>Sedgeland dominated by <i>Juncus kraussii</i> and <i>Acanthocarpus preissii</i> with Scattered Shrubs from adjacent vegetation types located immediately west of the eastern boundary of the Halfway Bay search area.</p> <p>Impacts: currently nil – however, likely to be buried or turned into access road as part of proposed project.</p>		Halfway Bay	<i>Excellent</i>	?17 – uncertain.

Vegetation Type	Short Description	Description	Photograph	Location	Condition	Equivalent Beard Vegetation Association
5	Degraded Areas	Existing cleared tracks and camp areas. Dominated by scattered shrubs from adjacent vegetation types. Impacts: represents already impacted areas.		All areas	<i>Completely Degraded</i>	nil

3.2.3 Flora

Recorded Diversity

A total of 48 plant taxa from 31 families were recorded from the Study Area. This total comprised 34 native taxa (71%) with two weed species (4%) and 12 planted (ornamental) species (25%). The total is considered to be similar to that able to be recorded from areas of similar size in the local and regional area, with an equivalent level of disturbance.

The dominant families recorded in the Study Area included:

- Chenopodiaceae (saltbush, samphires) 6 taxa; and
- Poaceae (grasses) 4 taxa.

The flora list is provided in Table 16.

Conservation Significant Flora

The field survey did not record any conservation significant flora taxa listed under the EPBC Act or the WC Act and DPaW listed flora taxa.

The flora taxa recorded during the field surveys were assessed to determine whether any were regarded as other 'significant flora' as defined by the EPA (2004a). None of the recorded flora taxa were at or beyond their known range.

Weeds and Introduced Species

The Study Area was relatively weed free, considering the high volume of vehicular traffic and level of disturbance at the site. The low number of weeds present is considered to be due to the relative isolation of the site, and the high salinity levels present due to proximity to the ocean and saline groundwater.

Only two weed taxa were recorded during the field assessment. Both weed species were recorded on the main access track leading from Halfway Bay to Lucky Bay.

Twelve planted species (for ornamental, fruit or shelter purposes) were present at Halfway Bay and the Central Flats search areas. A number of these plants have the ability to spread (as weedy species) from their current location and the management (removal) of these plants should be encouraged. These plants include: Tamarisk, Olive, Brazilian Pepper, Cape Lilac and Date Palm. If management (removal) of these trees occurs, local native plants should be provided as an alternative.

One of the planted taxa: *Tamarix aphylla* (Tamarisk, Athel Tree) is classified as a Weed of National Significance (WoNS) and as a Declared Pest (s22) under the BAM Act. Prevention of the spread of Athel Tree is critical to the successful management of this problem (Commonwealth Department of the Environment and Heritage, 2003).

Table 16 Study Area Recorded Flora

Family	Genus	Species	Common Name	Status	Lucky Bay	Central Flats	Halfway Bay
Aizoaceae	<i>Carpobrotus</i>	<i>virescens</i>	Coastal Pigface		x	x	
Aizoaceae	<i>Tetragonia</i>	<i>implexicoma</i>	Bower Spinach			x	
Anacardiaceae	<i>Schinus</i>	<i>terebinthifolius</i>	Brazilian Pepper Tree	+			x
Anonnaceae	<i>Asimina</i>	<i>triloba</i>	Pawpaw	+	x	x	
Apocynaceae	<i>Plumeria</i>	sp.	Frangipani	+			x
Arecaceae	<i>Phoenix</i>	<i>dactylifera</i>	Date Palm	+			x
Asparagaceae	<i>Acanthocarpus</i>	<i>preissii</i>				x	x
Asteraceae	<i>Olearia</i>	<i>axillaris</i>	Coastal Daisybush		x	x	x
Asteraceae	<i>Olearia</i>	sp. Kennedy Range (G. Byrne 66)					x
Asteraceae	<i>Sonchus</i>	<i>oleraceus</i>	Common Sowthistle	*			x
Casuarinaceae	<i>Casuarina</i>	<i>obesa</i>	Swamp Sheoak			x	
Chenopodiaceae	<i>Atriplex</i>	<i>isatidea</i>	Coast Saltbush		x	x	
Chenopodiaceae	<i>Rhagodia</i>	<i>preissii</i> subsp. <i>obovata</i>			x	x	x
Chenopodiaceae	<i>Salsola</i>	<i>australis</i>	Roly-poly		x		
Chenopodiaceae	<i>Sarcocornia</i>	<i>blackiana</i>			x		
Chenopodiaceae	<i>Sarcocornia</i>	<i>quinqueflora</i>	Beaded Samphire		x		
Chenopodiaceae	<i>Thelkeldia</i>	<i>diffusa</i>	Coast Bonefruit		x		x
Cyperaceae	<i>Ficinia</i>	<i>nodosa</i>	Knotted Club Rush			x	
Cyperaceae	<i>Gahnia</i>	<i>trifida</i>			x	x	x
Fabaceae	<i>Acacia</i>	<i>rostellifera</i>	Summer-scented Wattle		x	x	x
Frankeniaceae	<i>Frankenia</i>	<i>pauciflora</i>	Seaheath		x	x	
Goodeniaceae	<i>Scaevola</i>	<i>crassifolia</i>	Thick-leaved Fan-flower		x	x	x
Gyrostemonaceae	<i>Gyrostemon</i>	<i>ramulosus</i>	Corkybark			x	
Hemerocallidaceae	<i>Dianella</i>	<i>revoluta</i>	Blueberry Lily				x
Juncaceae	<i>Juncus</i>	<i>kraussii</i>	Sea Rush		x	x	

Family	Genus	Species	Common Name	Status	Lucky Bay	Central Flats	Halfway Bay
Lauraceae	<i>Cassytha</i>	<i>racemosa</i>	Dodder Laurel		x	x	x
Malvaceae	<i>Alyogyne</i>	<i>hakeifolia</i>		+			x
Malvaceae	<i>Hibiscus</i>	<i>tiliaceus</i>	Cotton Tree	+			x
Meliaceae	<i>Melia</i>	<i>azedarach</i>	Cape Lilac	+			x
Musaceae	<i>Musa</i>	sp.	Banana	+	x	x	
Myrtaceae	<i>Eucalyptus</i>	<i>gomphocephala</i>	Tuart	+			x
Myrtaceae	<i>Eucalyptus</i>	<i>platypus</i>	Coastal Moort	+			x
Nyctaginaceae	<i>Commicarpus</i>	<i>australis</i>	Perennial Tar Vine				x
Oleaceae	<i>Jasminum</i>	<i>calcareum</i>	Poison Creeper				x
Oleaceae	<i>Olea</i>	<i>europaea</i>	Olive	+			x
Poaceae	<i>Austrostipa</i>	<i>elegantissima</i>	Showy Feathergrass				x
Poaceae	<i>Austrostipa</i>	sp. (insufficient material)					x
Poaceae	<i>Spinifex</i>	<i>longifolius</i>	Beach Spinifex		x	x	x
Poaceae	<i>Sporobolus</i>	<i>virginicus</i>	Marine Couch		x	x	
Primulaceae	<i>Lysimachia</i>	<i>arvensis</i>	Pimpernel	*			x
Primulaceae	<i>Samolus</i>	<i>repens</i>	Creeping Brookweed		x	x	x
Santalaceae	<i>Anthobolus</i>	<i>foveolatus</i>				x	x
Santalaceae	<i>Exocarpos</i>	<i>sparteus</i>	Broom Ballart		x	x	
Scrophulariaceae	<i>Myoporum</i>	<i>insulare</i>	Blueberry Tree			x	
Solanaceae	<i>Anthocercis</i>	<i>littorea</i>	Yellow Tailflower				x
Tamaricaceae	<i>Tamarix</i>	<i>aphylla</i>	Tamarisk	+DP, WoNS			x
Thymeleaceae	<i>Pimelea</i>	<i>microcephala</i>	Shrubby Riceflower				x
Zygophyllaceae	<i>Zygophyllum</i>	<i>billardieri</i>	Coast Twinleaf			x	

where: * = weed; + = planted; WoNS = Weed of National Significance; DP = Declared Pest

3.2.4 Fauna

Recorded Diversity

A Level 1 fauna field survey was conducted in conjunction with the flora survey. The survey was limited to daylight hours and only recorded terrestrial vertebrate animals occurring within the Study Area. Fauna records are shown in Table 17.

This survey only provides a brief snapshot of those species present at the time of sampling (daytime), in one season, in one year. Not all potentially occurring species would be recorded during a single survey, due to spatial and temporal variations in fauna population numbers and methods used to record fauna, for example, no trapping was undertaken as part of this survey.

A total of 10 birds, six mammal and one reptile taxa were recorded from the Study Area.

Table 17 Fauna Taxa Recorded from the Study Area

Family	Genus	Species	Common Name	Status
Birds				
Charadriidae	<i>Charadrius</i>	<i>ruficapillus</i>	Red-capped Plover	
Columbidae	<i>Streptopelia</i>	<i>senegalensis</i>	Laughing Turtle-dove	*
Corvidae	<i>Corvus</i>	<i>orru</i>	Torresian Crow	
Dicruridae	<i>Rhipidura</i>	<i>leucophrys</i>	Willie Wagtail	
Hirundinidae	<i>Hirundo</i>	<i>neoxena</i>	Welcome Swallow	
Hirundinidae	<i>Hirundo</i>	<i>nigricans</i>	Tree Martin	
Laridae	<i>Larus</i>	<i>pacificus</i>	Pacific Gull	
Maluridae	<i>Malurus</i>	<i>splendens</i>	Splendid Fairy-wren	
Meliphagidae	<i>Lichenostomus</i>	<i>virescens</i>	Singing Honeyeater	
Pachycephalidae	<i>Pachycephala</i>	<i>harmonica</i>	Grey Shrike-thrush	
Mammals				
Bovidae	<i>Bos</i>	spp.	Cattle	+
Canidae	<i>Canus</i>	<i>lupis familiaris</i>	Dog	+
Canidae	<i>Vulpes</i>	<i>vulpes</i>	Red Fox	*
Felidae	<i>Felis</i>	<i>catus</i>	Feral Cat	*
Leporidae	<i>Oryctolagus</i>	<i>cuniculus</i>	European Rabbit	*
Macropodidae	<i>Macropus</i>	<i>fuliginosus</i>	Western Grey Kangaroo	
Reptiles				
Agamidae	<i>Ctenophorus</i>	<i>maculatus</i> subsp. <i>maculatus</i>	Spotted Military Dragon	

Conservation Significant Fauna

The field survey did not record any conservation significant fauna taxa listed under the EPBC Act. No Migratory Listed taxa were recorded during the survey.

The field survey did not record any conservation significant fauna taxa listed under the WC Act or taxa listed by the DPaW as Priority.

The fauna taxa recorded during the field surveys were assessed to determine whether any were regarded as other 'significant fauna as defined by the EPA (2004a). The field survey did not record any fauna taxa at or beyond their known range.

Introduced Fauna

Six fauna taxa were recorded in the Study Area that are introduced, either as livestock or pets, or naturalised fauna.

Fauna Habitat

The habitat types within the Study Area broadly corresponded to the vegetation types described. The habitats have been severely impacted by current and historical camping, and off-road activities. The condition of the habitats ranged from *Completely Degraded* to *Excellent*.

Habitat linkages are important to allow animals to move between areas of resource availability. Habitat linkage is important for ground and aerial fauna, providing cover, resources and linking areas for rest and reproduction.

Fragmentation of habitat limits the resources available to species, particularly sedentary species, which means they may be more vulnerable to natural disasters (such as fire) or habitat change over time. Fragmentation of habitat can also lead to edge effects, leading to degradation of the habitat. Where the distance between habitat fragments is small, species may still be able to move between these areas, but may be more exposed to predation pressures in the cleared areas between them.

The Study Area contains largely fragmented habitat due to the presence of disturbed vegetation, and the absence of vegetation associated with the large sand dunes present. Potential works are unlikely to increase the fragmentation and may improve existing habitat by the delineation of specific camping sites.

3.3 Conclusions

Based on the findings of the desktop and field results, GHD concludes:

- Native vegetation and fauna habitat is present in the Study Area;
- No conservation significant flora or fauna were recorded during the field assessment; and
- One Weed of National Significance was recorded in the Study Area. The removal of this species (Tamarisk) is recommended.

4. Little Anchorage

4.1 Desktop Assessment - Regional Context

4.1.1 Bioregion

The Interim Biogeographic Regionalisation of Australia (IBRA) divides the Australian continent into 85 biogeographic regions based on their climatic, faunal, vegetation, landform and geological features.

The Study Area lies within the Geraldton Sandplains IBRA region (DPaW, 2007-).

Table 18 Study Area Location Information

Study Area	IBRA	IBRA sub-Region	Local Government Area
Little Anchorage	Geraldton Sandplains	Lesueur Sandplain	Shire of Coorow

4.1.2 Surrounding Land Use

The Study Areas' current land use includes designated camping areas and access tracks. The surrounding land use includes gazetted roads, lime sand extraction, urban areas, a waste transfer station and conservation areas.

4.1.3 Climate

The climate experienced within the Study Area is a Mediterranean climate with mild summers and cool wet winters.

The Bureau of Meteorology (BoM) weather station in closest proximity to the Study Area is: Jurien Bay (009131) (BoM, 2015b).

Jurien Bay

- Mean Daily Maximum Temperature 19.5 °C in July to 30.9 °C in February;
- Mean Daily Minimum Temperature 9.3 °C in July to 18.0 °C in February;
- Mean Annual Rainfall 530.3 mm; and
- Mean Annual Rain Days 70.1 days.
- Rainfall: March to May 2015: 89.7 mm. Below long-term average of 120.7 mm for the same 3-month period.

4.1.4 Conservation Reserves

There are no conservation reserves within the Study Area.

Table 19 Conservation Area Information

Study Area	Nearest Conservation Reserve	Nearest National Park	Environmentally Sensitive Area
Little Anchorage	Beekeepers Nature Reserve 1.3 km east of the Study Area	Lesueur National Park 6.2 km south-east of the Study Area	Lipfert, Milligan, Etc, Islands Nature Reserve 5.8 km south of the Study Area

4.1.5 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are defined under Section 51B of the *Environmental Protection Act 1986* (EP Act) and may include areas such those requiring special management attention to protect important scenic values, fish and wildlife resources, historical and cultural values and other natural systems or processes.

A search of the DER's Clearing Permit System MapViewer indicated that there are no ESAs within the Study Area. The nearest ESAs are listed in Table 19.

4.1.6 Public Drinking Water Source Areas

A search was undertaken on the Department of Water (DoW) Geographic Data Atlas which indicated no Public Drinking Water Source Areas located within the Study Area (DoW, 2014).

The hydrology and hydrogeology aspects proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act) within the Study Area are provided in Table 20.

Table 20 Department of Water Geographic Data Atlas Query Results (DoW 2015)

Aspect	Detail	Result
RIWI Groundwater Areas	Groundwater areas proclaimed under the RIWI Act.	Little Anchorage is in the Arrowsmith Groundwater Area.
Groundwater sub-areas	Groundwater areas proclaimed under the RIWI Act.	Little Anchorage is in the Dongara Groundwater sub-Area.
RIWI Watercourses	Watercourses proclaimed under the RIWI Act.	There are no watercourses within the Study Area.
RIWI Surface water area	Surface water areas proclaimed under the RIWI Act.	Little Anchorage is within the Eneabba Coastal Tributaries surface water area.
Public Drinking Water Source Areas (PDWSA)	PDWSAs is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the <i>Metropolitan Water Supply, Sewage and Drainage Act 1909</i> (MWSSD) or the <i>Country Area Water Supply Act 1947</i> (CAWS).	The Study Area does not fall within a PDWSA.

4.1.7 Wetlands and Watercourses

A desktop search indicates that no DoW-defined watercourses or wetlands intersect, or are adjacent to, the Study Area.

A search of the EPBC PMST identified that no wetlands recognised as Ramsar-Listed or Nationally Important Wetlands (NIW) are located within ten kilometres of the Study Area.

4.1.8 Geology and Soils

This region of Western Australia falls within the Greenough Province which principally overlies Cretaceous, Jurassic, Triassic, Permian, Carboniferous and Silurian sedimentary rocks of the northern Perth Basin. These rocks include sandstone, siltstone, shale and claystone. There is also some limestone, coal measures and conglomerate. North-east of Geraldton are the Mesoproterozoic granulite and migmatite (with numerous dolerite dykes) of the Northampton Complex. To the west of Three Springs are the Proterozoic gneiss, granite and pegmatite of the Mullingar Inlier as well as the Neoproterozoic siltstone (with common volcanic fragments),

sandstone and conglomerate of the Yandanooka Group. Extensive laterite formation commenced in the Tertiary. In the Quaternary, Tamala Limestone developed in aeolian coastal deposits (Tille, 2006).

On the coastal strip the soils are dominated by dunes of Calcareous deep sands, with Yellow deep sands overlying the Tamala Limestone (Tille, 2006).

Acid Sulphate Soils

The Australian Soil Resource Information System (ASRIS) indicated that there is generally an “Extremely Low Probability with Very Low Confidence” of Acid Soils occurring in the Study Area.

Soil Degradation Risks

The Study Area was assessed using the Department of Agriculture and Food NRM SLIP mapping portal to assess the risk of degradation to soil by wind and water.

NRM SLIP indicates a 30-50% high to extreme erosion risk. The Study Area occurs within a location subjected to strong prevailing winds (sea-breezes), and as such appropriate land management practices to minimise risks of wind erosion are recommended.

4.1.9 Vegetation

Broad scale vegetation mapping within the Study Area was undertaken by Beard (1976), and indicates that one Beard Vegetation Association (BVA) is present (Table 21).

Table 21 Beard Vegetation Association

Vegetation Association	Description
1026	Mosaic: Shrublands; <i>Acacia rostellifera</i> , <i>Acacia cyclops</i> (in the south) & <i>Melaleuca cardiophylla</i> (in the north) thicket / Shrubland; <i>Acacia lasiocarpa</i> & <i>Melaleuca acerosa</i> [systema] heath

Vegetation Association Extent and Status

Beard vegetation mapping (1976) has been adapted and digitised by Shepherd *et al.* (2002). The extent of Beard’s (1976) vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DPaW (latest update 2013 – GoWA 2013). The extent remaining of the vegetation association that has been mapped within the Study Area is detailed in Table 22. The extents of these vegetation types are above the 30% threshold level for the State, IBRA bioregion, IBRA sub-region and local government area.

Table 22 Vegetation Association and Status

Vegetation Association	Scale	Pre-European Extent (ha)	Current Extent (ha)	% Current Extent in IUCN (1-4)	% Remaining	Status
Geraldton Sandplains (GES) IBRA Region		3,136,037.56	1,408,729.07	15.34	44.92	<i>Under-represented</i>
Lesueur Sandplain (GES02) IBRA Sub-region		1,171,775.18	504,202.97	17.78	43.03	<i>Under-represented</i>
LGA – Shire of Coorow		418,942.38	166,034.75	43.24	39.63	<i>Under-represented</i>
1026	State	70,700.48	65,641.37	50.70	92.84	<i>Least Concern</i>
	IBRA – Geraldton Sandplains (GES)	11,426.90	10,651.50	48.52	93.21	<i>Least Concern</i>
	IBRA Sub-region – Lesueur Sandplains (GES02)	11,426.90	10,651.50	48.52	93.21	<i>Least Concern</i>
	LGA – Shire of Coorow	7,109.73	6,243.85	54.19	87.82	<i>Least Concern</i>

4.1.10 Conservation Significant Ecological Communities

A search of the EPBC Act PMST (DotE, 2015) did not identify the presence of any Australian Government listed TECs within 10 km of the Study Area.

A search on DPaW's *NatureMap* database identified no State-listed TECs or Priority Ecological Communities within 10 km of the Study Area.

4.1.11 Flora

Diversity

The *NatureMap* database (DPaW, 2007-) and EPBC Act PMST search results for plant taxa previously recorded within 10 km of the Study Area are provided in Table 23.

Table 23 Summary of *NatureMap* Flora Results

Study Area	Flora Taxa Count	Dominant Families
Little Anchorage	134	Myrtaceae, Fabaceae, Asteraceae

Conservation Significant Flora

Desktop searches of the DPaW Threatened and Priority Flora databases and Western Australian Herbarium database via *NatureMap* (NM), and the EPBC Act PMST database identified 15 conservation significant flora (including EPBC Act listed, WC Act listed and DPaW Priority Flora) that have either been recorded or are predicted to occur within 10 km of the Study Area.

A likelihood of occurrence assessment (based on the range, habitat requirements and previous records of the species) was conducted for all conservation significant taxa identified in the desktop assessment.

Based on this, GHD considers that one species, *Beyeria cinerea* subsp. *cinerea* could potentially occur within the Study Area.

Table 24 Conservation Significant Flora - Little Anchorage

Taxon	EPBC Act Status	WC Act Status	DPaW Status	Source	Likelihood of occurrence in Study Area
<i>Beyeria cinerea</i> subsp. <i>cinerea</i>			P3	NM	Possible – within known range, potential habitat present
<i>Caladenia huegelii</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Calandrinia oraria</i>			P3	NM	Possible – within known range, potential habitat present
<i>Centrolepis caespitosa</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Eucalyptus zopherophloia</i>			P4	NM	Unlikely – within known range, no habitat present
<i>Jacksonia rubra</i>			P2	NM	Unlikely – within known range, no habitat present

Taxon	EPBC Act Status	WC Act Status	DPaW Status	Source	Likelihood of occurrence in Study Area
<i>Grevillea batrachioides</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Grevillea humifusa</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Grevillea olivacea</i>			P4	NM	Unlikely – within known range, no habitat present
<i>Grevillea uniformis</i>			P3	NM	Possible – within known range, potential habitat present
<i>Hemiandra gardneri</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Leucopogon obtectus</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Thelymitra stellata</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Thryptomene</i> sp. Lancelin (M.E. Trudgen 14000)			P3	NM	Unlikely – within known range, no habitat present
<i>Verticordia aurea</i>			P4	NM	Unlikely – within known range, no habitat present

*En=Endangered, Vu = Vulnerable, S1 = Schedule 1, P1= Priority 1, P2 = Priority 2 and P3 = Priority 3, P4 = Priority 4.

Invasive Flora

The EPBC Act PMST (PMST_AUBMJ7 DotE, 2015) indicates that there are four invasive flora taxa that may occur within 10 km of the Study Area (Table 25). The *NatureMap* database (DPaW, 2015) indicates eight invasive flora taxa may occur within 10 km of the Study Area are presented in Appendix B.

Table 25 EPBC SPRAT Invasive Flora that may occur Within 10 km of the Study Area

Species Name	Common Name	Status	Source
<i>Asparagus asparagoides</i>	Bridal Creeper	WoNS, DP	EPBC
<i>Cenchrus ciliaris</i>	Buffel Grass	no management required	EPBC
<i>Lycium ferocissimum</i>	African Boxthorn	WoNS	EPBC
<i>Tamarix aphylla</i>	Tamarisk	WoNS, DP	EPBC

*= weeds; WoNS = Weeds of National Significance; DP = Declared Pest

4.1.12 Diseases and Pathogens

Phytophthora cinnamomi (Dieback) disease is generally restricted to areas of the south west of the State, south of the 26th parallel of latitude, in areas receiving an average annual rainfall of greater than 400 mm.

The Study Area is south of the 26th parallel, and the locality receives over 400 mm per annum. While less common in the well-drained alkaline soils of the coastal dune systems, amended soils such as developed gardens may contain pockets of acidic duplex soils and still be susceptible to the disease. The Study Area is not considered to support native plant species which are highly susceptible to Dieback.

Dieback is not considered to be an issue for the development of the Study Area.

4.1.13 Fauna

Existing Fauna Records

A search on *NatureMap* (DPaW, 2007-) and the EPBC Act PMST (DotE, 2015) was undertaken for the Study Areas. The results are shown in Appendix B and indicate that:

- 121 fauna taxa have been previously recorded within 10 km of the Little Anchorage Study Area.

Conservation Significant Fauna

Searches of the EPBC Act PMST (PMST_AUBMB7 DotE, 2015) and *NatureMap* database (DPaW, 2007-) identified the presence or potential presence of 30 conservation significant fauna species.

A total of 26 Marine-Listed species, including birds, sharks, turtles and cetaceans, was indicated in the EPBC Act PMST search results. As the survey was limited to terrestrial fauna only, these Marine-Listed species have not been considered further.

A list of the conservation significant species identified in the desktop review is provided in Table 26.

Likelihood of Occurrence Assessment

Seven terrestrial vertebrate conservation significant fauna taxa were identified as potentially occurring within the Study Areas, during the desktop investigation. An assessment of the likelihood of these species occurring in the Study Areas was undertaken. This assessment is based on species biology, habitat requirements, the quality and availability of suitable habitat and records of the species in the area.

The assessment indicates that it is possible for one Threatened fauna species, the Fairy Tern to occur within this Study Area; The Fairy Tern (*Sternula nereis* subsp. *nereis*), “nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation” (DoE, 2015). The Study Area is away from the beach and behind the dune swales and therefore preferred habitat is not considered to occur within the Study Area. The nearest record is approximately 11 km north-west of the Study Area.

In addition, three terrestrial Migratory-Listed taxa may be recorded within the Study Area during foraging. The Study Area does not provide breeding habitat for these taxa.

Table 26 Conservation Significant Fauna Assessment - Little Anchorage

Taxon Name	Common Name	EPBC Act Status	WC Status	DPaW Status	Likelihood of occurrence
<i>Calyptorhynchus latirostris</i>	Carnaby's Black Cockatoo	En	T		Unlikely – within known range, no habitat present.
<i>Charadrius rubricollis</i>	Hooded Plover			P4	Possible during foraging on the coastline immediately west of the Study Area. Breeding present close to the Study Area in sandy soils on beach, or nearby salt lakes.
<i>Dasyurus geoffroii</i>	Chuditch	Vu	T		Unlikely – not within known range, no habitat present
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Mi	S3		Possible during foraging on the coastline immediately west of the Study Area. Breeding present on rocky areas (and islands) close to the Study Area.
<i>Leipoa ocellata</i>	Malleefowl	Vu	T		Unlikely – not within known range, no habitat present
<i>Macropus irma</i>	Western Brush Wallaby			P4	Unlikely – within known range. Preferred habitat not present.
<i>Merops ornatus</i>	Rainbow Bee-eater	Mi	S3		Possible during foraging in air above Study Area. Breeding habitat not present.
<i>Neophoca cinerea</i>	Australian Sea Lion	Vu; Ma	T		Unlikely –within known range. Preferred habitat not present. Possible on coast immediately west of the Study Area.
<i>Pandion cristatus</i>	Eastern Osprey	Mi	S3		Possible during foraging on the coastline immediately west of the Study Area. Breeding present on rocky areas (and islands) close to the Study Area.
<i>Pezporus flaviventris</i>	Western Ground Parrot	CE	T		Unlikely. There is an uncertain record 8 km to the north of the Study Area. There is suitable habitat east of the Study Area, but it is unknown whether this species remains present in the region.
<i>Sterna neries</i> subsp. <i>neries</i>	Fairy Tern	Vu	T		Possible – Study Area within known range, preferred breeding habitat present on islands immediately west of Study Area.

Introduced Fauna

The results of the EPBC Act PMST and NatureMap searches indicated the potential presence of seven introduced fauna taxa within 10 km of the Study Area (DotE, 2015; DPAW, 2007-). The search results are shown in Table 27.

Table 27 Introduced Fauna Database Search Results

Species	Common Name	Source
<i>Streptopelia senegalensis</i>	Laughing Turtle-Dove	EPBC
<i>Columba livia</i>	Domestic Pigeon	EPBC
<i>Capra hircus</i>	Goat	EPBC
<i>Felis catus</i>	Cat	EPBC
Feral Deer	Deer	EPBC
<i>Mus musculus</i>	House Mouse	NM; EPBC
<i>Oryctolagus cuniculus</i>	Rabbit	EPBC
<i>Rattus rattus</i>	Black Rat	EPBC
<i>Sus scrofa</i>	Pig	EPBC
<i>Vulpes vulpes</i>	Red Fox	EPBC

4.2 Results of Field Assessment

4.2.1 Wetlands and Watercourses

No wetlands or watercourses occur within the Study Area.

4.2.2 Vegetation

Study Area Vegetation Types

The Study Area was split into four search areas: Shell Beach, Ti-Tree, Milligan, and Billy Goat.

Four vegetation types were recorded within the Study Area (see Table 28). The Study Area is dominated by degraded sandy flats supporting mixed coastal scrubs, with small areas supporting a mix of *Melaleuca lanceolata* over samphires.

GHD has mapped bare dunes and cleared/degraded areas as vegetation types, shown in Figure 1.

Vegetation Extent

The vegetation types broadly correspond to the Beard Vegetation Associations (BVAs) known from the vicinity of the Study Area. BVAs are described by the most dominant vegetation unit within the area and as such, vegetation types that are small in areal extent will be included within the broader BVA. For example the Study Area supports the BVA 1026 "Mosaic: Shrublands; *Acacia rostellifera*, *Acacia cyclops* (in the south) & *Melaleuca cardiophylla* (in the north) thicket / Shrubland; *Acacia lasiocarpa* & *Melaleuca acerosa* [systema] heath", which also includes the small vegetation type of *Melaleuca lanceolata* over samphires.

Study Area Vegetation Condition


The vegetation condition of the Study Areas was mapped during the field survey using the Vegetation Condition Scale (after Keighery, 1994). The vegetation in the Study Area ranged from Condition 2 (*Excellent*) to Condition 6 (*Completely Degraded*). The most noticeable areas of disturbance were within the vehicle access tracks, and existing camp sites. The best condition areas were immediately behind the primary dune in the Shell Beach search area.



Threatened and Priority Ecological Communities

Vegetation types recorded confirms the desktop finding, which is no TECs or PECs occurs within 10 km of the Study Area.

GHD recorded a small limestone outcrop in the northern portion of the Ti-Tree search area. This location should be avoided as part of any proposed works if possible.

Table 28 Recorded Vegetation Types

Vegetation Type	Short Description	Description	Photograph	Location	Condition	Equivalent Vegetation Association
1	Mixed Coastal Scrub and Heath	<p>A mosaic of Tall Shrubland of <i>Acacia cyclops</i>, <i>Myoporum insulare</i>, <i>Olearia axillaris</i>, <i>Santalum acuminatum</i>, <i>Nitraria billardieri</i>, <i>Spyridium globulosum</i> to Low Heath of <i>Melaleuca cardiophylla</i>, <i>Melaleuca systema</i>, <i>Acanthocarpus preissii</i>, <i>Acacia lasiocarpa</i>, <i>Cryptandra mutila</i>.</p> <p>Impacts: Off-road vehicles, pedestrian tracks, expanding campgrounds, firewood collection</p>		Shell Beach Milligan Billy Goat	<i>Excellent to Completely Degraded</i>	<p>1026</p> <p>Mosaic: Shrublands; <i>Acacia rostelifera</i>, <i>Acacia cyclops</i> (in the south) & <i>Melaleuca cardiophylla</i> (in the north) thicket / Shrubland; <i>Acacia lasiocarpa</i> & <i>Melaleuca acerosa</i> [systema] heath</p>

Vegetation Type	Short Description	Description	Photograph	Location	Condition	Equivalent Vegetation Association
2	Melaleuca lanceolata over Samphire	Thickets of <i>Melaleuca lanceolata</i> with adjacent intervening areas dominated by Samphire Heath of <i>Tecticornia indica</i> subsp. <i>bidens</i> , <i>T. halocnemoides</i> , <i>Frankenia pauciflora</i> , <i>Samolus repens</i> and <i>Atriplex cinerea</i> . Impacts: Off-road vehicles, pedestrian tracks, expanding campgrounds, firewood collection, Asbestos and rubbish dumping.		Ti-Tree Milligan	Very Good to Completely Degraded	1026 Mosaic: Shrublands; Acacia rostellifera, Acacia cyclops (in the south) & Melaleuca cardiophylla (in the north) thicket / Shrubland; Acacia lasiocarpa & Melaleuca acerosa [systema] heath
3	Outcrop	Small, isolated Limestone outcrop dominated by Mixed Shrubland of <i>Melaleuca huegelii</i> , <i>Templetonia retusa</i> , <i>Athocercis littorea</i> over <i>Lepidosperma gladiatum</i> , <i>Desmocladus asper</i> , <i>Austrostipa</i> spp. Impacts: Weed encroachment		Ti-Tree	Good	1026 Mosaic: Shrublands; Acacia rostellifera, Acacia cyclops (in the south) & Melaleuca cardiophylla (in the north) thicket / Shrubland; Acacia lasiocarpa & Melaleuca acerosa [systema] heath

Vegetation Type	Short Description	Description	Photograph	Location	Condition	Equivalent Vegetation Association
4	Degraded Areas	Existing cleared tracks and camp areas. Dominated by scattered shrubs from adjacent vegetation types. Impacts: already impacted from camping, vehicle movements and weed infestation.		Shell Beach Ti-Tree Milligan Billy Goat	<i>Degraded to Completely Degraded</i>	nil

4.2.3 Flora

Recorded Diversity

A total of 67 plant taxa from 33 families was recorded from the Study Area. This total comprised 53 native taxa (79%) with 11 weed species (16%) and three planted (ornamental) species (5%). The total is considered to be similar to that able to be recorded from areas of similar size in the local and regional area, with an equivalent level of disturbance.

The dominant families recorded in the Study Area included:

- Myrtaceae (melaleuca, eucalypts) 7 taxa;
- Fabaceae (peas, wattles) 6 taxa;
- Chenopodiaceae (saltbush, samphires) 5 taxa; and
- Asteraceae (daisies) 4 taxa.

The flora list is provided in Table 30.

Conservation Significant Flora

The field survey did not record any conservation significant flora taxa listed under the EPBC Act or the WC Act.

The field survey recorded one conservation significant flora taxon listed by the DPaW as Priority Flora:

- *Thryptomene* sp. Lancelin (M.E. Trudgen 14000) Priority 3.

Thryptomene sp. Lancelin is a small low-growing shrub up to 0.5 m tall with pink flowers typically occurring in September. This taxon has been recorded on coastal calcareous sands with 25 known records between Arrowsmith in the north and Lancelin in the south (DPaW, 1998-; DPaW, 2007-)

Priority species are those that may be threatened or near threatened but are typically data deficient and have not yet been adequately surveyed to be listed as Threatened (Declared Rare) under the WC Act.

A Priority 3 taxon is a poorly-known species, recorded from several locations with the species not appearing to be under imminent threat. These taxa are typically in need of further surveys to assist in the clarification of conservation status.



Plate 1 *Thryptomene* sp. Lancelin (M.E. Trudgen 14000)

GHD is familiar with this taxon having observed it in a number of locations along the Indian Ocean Drive. Within the Little Anchorage Study Area, this taxon was recorded in two search areas: Shell Beach and Billy Goat Bay. Two plants were recorded. The locations of these plants should be avoided, if possible.

Table 29 Recorded Locations of Significant Flora

Taxon	Status	Location	Easting	Northing
<i>Thryptomene</i> sp. Lancelin (M.E. Trudgen 14000)	Priority 3	Shell Beach	303725	6680983
<i>Thryptomene</i> sp. Lancelin (M.E. Trudgen 14000)	Priority 3	Billy Goat	303315	6674944

The flora taxa recorded during the field surveys were assessed to determine whether any were regarded as other 'significant flora' as defined by the EPA (2004a). The field survey did not record any flora taxa at or beyond their known range.

Weeds and Introduced Species

The Study Area contained a relatively high proportion of grass and daisy weeds within the understorey in areas adjacent to camping areas and access tracks. In areas away from disturbance, the number of introduced flora taxa was low.

The field survey recorded 11 weed species and three deliberately planted species (for shelter purposes). The weed species recorded are those considered to be a common component of disturbed sites in coastal areas.

One weed recorded from the Study Area is classified as a Weed of National Significance (WoNS): *Lycium ferocissimum* (African Boxthorn). This species was recorded in one location (at 303321 E; 6674905 N) in the Billy Goat search area. Removal of this taxon is considered to be prudent before it spreads into adjacent native vegetation.

Table 30 Study Area Recorded Flora

Family	Genus	Species	Common Name	Status	Shell	TiTTree	Milligan	Billy Goat
Aizoaceae	<i>Carpobrotus</i>	<i>virescens</i>	Coastal Pigface			x	x	
Aizoaceae	<i>Mesembryanthemum</i>	<i>crystallinum</i>	Iceplant	*				x
Aizoaceae	<i>Tetragonia</i>	<i>implexica</i>	Bower Spinach					x
Anacardiaceae	<i>Schinus</i>	<i>terebinthifolius</i>	Brazilian Pepper Tree	+				x
Araliaceae	<i>Trachymene</i>	<i>pilosa</i>	Native Parsnip				x	
Asparagaceae	<i>Acanthocarpus</i>	<i>preissii</i>	Prickle Lily		x		x	x
Asteraceae	<i>Arctotheca</i>	<i>calendula</i>	Capeweed	*				x
Asteraceae	<i>Hedypnois</i>	<i>rhagalioides</i>	Cretan Weed	*	x			
Asteraceae	<i>Hypochaeris</i>	<i>glabra</i>	Flatweed	*	x			
Asteraceae	<i>Olearia</i>	<i>axillaris</i>	Coastal Daisybush		x		x	x
Asteraceae	<i>Reichardia</i>	<i>tingitiana</i>	False Sowthistle	*	x			
Casuarinaceae	<i>Allocasuarina</i>	<i>humilis</i>	Dwarf Sheoak				x	x
Casuarinaceae	<i>Casuarina</i>	<i>obesa</i>	Swamp Sheoak				x	
Chenopodiaceae	<i>Atriplex</i>	<i>cinerea</i>	Grey Saltbush			x	x	x
Chenopodiaceae	<i>Rhagodia</i>	<i>latifolia</i>			x			
Chenopodiaceae	<i>Salsola</i>	<i>australis</i>	Roly-poly		x			
Chenopodiaceae	<i>Tecticornia</i>	<i>indica</i> subsp. <i>bidens</i>				x		
Chenopodiaceae	<i>Threlkeldia</i>	<i>diffusa</i>	Coast Bonefruit		x	x	x	x
Crassulaceae	<i>Crassula</i>	<i>colorata</i>	Dense Stonecrop			x	x	
Cyperaceae	<i>Ficinia</i>	<i>nodosa</i>	Knotted Club-rush				x	
Cyperaceae	<i>Gahnia</i>	<i>trifida</i>	Coast Saw-sedge			x		
Cyperaceae	<i>Lepidosperma</i>	<i>gladiatum</i>	Coast Sword-sedge			x	x	
Cyperaceae	<i>Lepidosperma</i>	<i>squamatum</i>			x		x	
Ericaceae	<i>Leucopogon</i>	<i>parviflorus</i>	Coast Beard-heath		x		x	
Euphorbiaceae	<i>Euphorbia</i>	<i>terraccina</i>	Geraldton Carnation Weed	*			x	

Family	Genus	Species	Common Name	Status	Shell	TiTree	Milligan	Billy Goat
Fabaceae	<i>Acacia</i>	<i>cyclops</i>	Coastal Wattle		x		x	x
Fabaceae	<i>Acacia</i>	<i>lasiocarpa</i>	Panjang		x		x	x
Fabaceae	<i>Hardenbergia</i>	<i>comptoniana</i>	Native Wisteria				x	
Fabaceae	<i>Kennedia</i>	<i>prostrata</i>	Running Postman				x	
Fabaceae	<i>Medicago</i>	<i>polymorpha</i>	Burr Medic	*	x			x
Fabaceae	<i>Templetonia</i>	<i>retusa</i>	Cockies Tongues			x	x	
Frankeniaceae	<i>Frankenia</i>	<i>pauciflora</i>	Seaheath			x		x
Goodeniaceae	<i>Scaevola</i>	<i>crassifolia</i>	Thick-leaved Fanflower		x		x	x
Goodeniaceae	<i>Scaevola</i>	<i>nitida</i>			x		x	
Haemodoraceae	<i>Conostylis</i>	<i>candicans</i> subsp. <i>calcicola</i>			x		x	
Iridaceae	<i>Romulea</i>	<i>rosea</i>	Guildford Grass	*	x		x	
Lamiaceae	<i>Hemiandra</i>	<i>glabra</i> subsp. <i>glabra</i>		ms			x	
Lauraceae	<i>Cassytha</i>	<i>racemosa</i>	Dodder Laurel			x	x	
Loranthaceae	<i>Amyema</i>	<i>miraculosa</i>			x		x	
Malvaceae	<i>Alyogyne</i>	<i>hakeifolia</i>			x			
Myrtaceae	<i>Eucalyptus</i>	<i>gomphocephala</i>	Tuart	+	x			x
Myrtaceae	<i>Eucalyptus</i>	<i>platypus</i>	Coastal Moort	+	x		x	x
Myrtaceae	<i>Melaleuca</i>	<i>cardiophylla</i>	Tangling Melaleuca		x			
Myrtaceae	<i>Melaleuca</i>	<i>huegelii</i>	Chenille Honey-myrtle			x	x	x
Myrtaceae	<i>Melaleuca</i>	<i>lanceolata</i>	Rottneest Teatree			x	x	x
Myrtaceae	<i>Melaleuca</i>	<i>systema</i>			x		x	x
Myrtaceae	<i>Thryptomene</i>	sp. Lancelin (M.E. Trudgen 14000)		P3	x			x
Nitrariaceae	<i>Nitraria</i>	<i>billardieri</i>	Nitre Bush				x	x
Phyllanthaceae	<i>Phyllanthus</i>	<i>calycinus</i>	False Boronia		x			
Poaceae	<i>Austrostipa</i>	<i>elegantissima</i>	Showy Feathergrass		x		x	
Poaceae	<i>Austrostipa</i>	sp. (insufficient material)				x	x	

Family	Genus	Species	Common Name	Status	Shell	TiTree	Milligan	Billy Goat
Poaceae	<i>Ehrharta</i>	<i>calycina</i>	Annual Veldt Grass	*	x	x	x	x
Poaceae	<i>Lagurus</i>	<i>ovatus</i>	Hare's Tail Grass				x	
Primulaceae	<i>Lysimachia</i>	<i>arvensis</i>	Pimpernel	*	x			
Primulaceae	<i>Samolus</i>	<i>repens</i>	Creeping Brookweed			x		
Ranunculaceae	<i>Clematis</i>	<i>linearifolia</i>	Old Man's Beard		x	x	x	x
Restionaceae	<i>Chaetanthus</i>	<i>aristatus</i>					x	x
Restionaceae	<i>Desmocladius</i>	<i>asper</i>			x	x	x	
Restionaceae	<i>Hypolaena</i>	<i>exsulca</i>				x		
Rhamnaceae	<i>Cryptandra</i>	<i>mutila</i>			x			
Rhamnaceae	<i>Spyridium</i>	<i>globulosum</i>	Basket Bush		x		x	x
Rubiaceae	<i>Opercularia</i>	<i>vaginalis</i>	Dogweed		x			
Santalaceae	<i>Santalum</i>	<i>acuminatum</i>	Quandong		x	x	x	x
Scrophulariaceae	<i>Myoporum</i>	<i>insulare</i>	Blueberry Tree		x		x	x
Solanaceae	<i>Anthocercis</i>	<i>littorea</i>	Yellow Tailflower		x	x	x	
Solanaceae	<i>Lycium</i>	<i>ferrocissimum</i>	African Boxthorn	*WoNS				x
Zygophyllaceae	<i>Zygophyllum</i>	<i>fruitulosum</i>	Shrubby Twinleaf		x		x	

Where: * = weed; + = planted; WoNS = Weed of National Significance; DP = Declared Pest, ms = manuscript name (i.e. not yet formally recognised); P3 = Priority 3 plant taxon

4.2.4 Fauna

Recorded Diversity

A Level 1 fauna field survey was conducted in conjunction with the flora survey. The survey was limited to daylight hours and only examined terrestrial vertebrate animals occurring within the Study Area. Fauna records are shown Table 31.

This survey only provides a brief snapshot of those species present at the time of sampling (daytime), in one season, in one year.

Not all potentially occurring species would be recorded during a single survey, due to spatial and temporal variations in fauna population numbers and methods used to record fauna, for example, no trapping was undertaken as part of this survey.

Ten birds and five mammal taxa were recorded from the Study Area.

Table 31 Fauna Taxa Recorded from the Study Area

Family	Genus	Species	Common Name	Status
Birds				
Acanthizidae	<i>Gerygone</i>	<i>fusca</i>	Western Gerygone	
Columbidae	<i>Ocyphaps</i>	<i>lophotes</i>	Crested Pigeon	
Cracticidae	<i>Cracticus</i>	<i>nigrogularis</i>	Pied Butcherbird	
Cracticidae	<i>Cracticus</i>	<i>torquatus</i>	Grey Butcherbird	
Dicruridae	<i>Rhipidura</i>	<i>fuliginosa</i>	Grey Fantail	
Dicruridae	<i>Rhipidura</i>	<i>leucophrys</i>	Willie Wagtail	
Falconidae	<i>Falco</i>	<i>cenchroides</i>	Australian Kestrel	
Laridae	<i>Larus</i>	<i>novaehollandiae</i>	Silver Gull	
Laridae	<i>Larus</i>	<i>pacificus</i>	Pacific Gull	
Phalacrocoracidae	<i>Phalacrocorax</i>	<i>varius</i>	Pied Cormorant	
Mammals				
Canidae	<i>Vulpes</i>	<i>vulpes</i>	Red Fox	*
Felidae	<i>Felis</i>	<i>catus</i>	Feral Cat	*
Leporidae	<i>Oryctolagus</i>	<i>cuniculus</i>	European Rabbit	*
Macropodidae	<i>Macropus</i>	<i>fuliginosus</i>	Western Grey Kangaroo	
Suidae	<i>Sus</i>	<i>scrofa</i>	Feral Pig	*

Conservation Significant Fauna

The field survey did not record any conservation significant fauna taxa listed under the EPBC Act. No Migratory Listed taxa were recorded during the survey.

The field survey did not record any conservation significant fauna taxa listed under the WC Act or listed by the DPaW as Priority.

The fauna taxa recorded during the field surveys were assessed to determine whether any were regarded as other 'significant fauna as defined by the EPA (2004a). The field survey did not record any fauna taxa at or beyond their known range.

Introduced Fauna

Four fauna taxa were recorded in the Study Area that are introduced naturalised fauna.

Fauna Habitat

The habitat types within the Study Area broadly corresponded to the vegetation types described. Parts of the habitats recorded in the Study Area have been severely impacted by current and historical camping and off-road activities. The condition of these fauna habitats ranged from *Completely Degraded* to *Excellent*.

Habitat linkages are important to allow animals to move between areas of resource availability. Habitat linkage is important for ground and aerial fauna, providing cover, resources and linking areas for rest and reproduction.

Fragmentation of habitat limits the resources available to species, particularly sedentary species, which means they may be more vulnerable to natural disasters or habitat change over time. Fragmentation of habitat can also lead to edge effects, leading to degradation of the habitat. Where the distance between habitat fragments is small, species may still be able to move between these habitats areas, but may be more exposed to predation pressures in the cleared areas.

The Study Area contains relatively fragmented habitat in a north-south direction due to the presence of disturbed vegetation from historical camping activities. However, there is a contiguous adjacent vegetated area on the eastern margin of the search areas allowing linkage to areas of better quality habitat to remain.

Potential works are unlikely to increase the fragmentation and may improve existing habitat by the delineation of specific camping sites, thereby protecting remnant native vegetation.

4.3 Conclusions

Based on the findings of the desktop and field results, GHD concludes:

- Native vegetation and good quality fauna habitat is present in the Study Area;
- One Priority 3 conservation significant flora species was recorded during the field assessment;
- No conservation significant fauna were recorded during the field assessment; and
- One Weeds of National Significance (African Boxthorn) was present in the Study Area. The removal of this taxon is recommended.

5. Sandy Cape

5.1 Desktop Assessment - Regional Context

5.1.1 Bioregion

The Interim Biogeographic Regionalisation of Australia (IBRA) divides the Australian continent into 85 biogeographic regions based on their climatic, faunal, vegetation, landform and geological features.

The Study Area lies within the Swan Coastal Plain IBRA region (DPaW, 2007-).

Table 32 Study Area Location Information

Study Area	IBRA	IBRA sub-Region	Local Government Area
Sandy Cape	Swan Coastal Plain	Perth	Shire of Dandaragan

5.1.2 Surrounding Land Use

The Study Area's current land use includes designated camping areas and access tracks. The surrounding land use includes gazetted roads, lime sand extraction and conservation areas.

5.1.3 Climate

The climate experienced within the Study Area is a Mediterranean climate with mild summers and cool wet winters.

The Bureau of Meteorology (BoM) weather station in closest proximity to the Study Area is: Jurien Bay (009131) (BoM, 2015b).

Jurien Bay (Little Anchorage; Sandy Cape)

- Mean Daily Maximum Temperature 19.5 °C in July to 30.9 °C in February;
- Mean Daily Minimum Temperature 9.3 °C in July to 18.0 °C in February;
- Mean Annual Rainfall 530.3 mm; and
- Mean Annual Rain Days 70.1 days.
- Rainfall: March to May 2015: 89.7 mm. Below long-term average of 120.7 mm for the same 3-month period.

5.1.4 Conservation Reserves

There are no conservation reserves within, or immediately adjacent to, the Study Area.

Table 33 Conservation Area Information

Study Area	Nearest Conservation Reserve	Nearest National Park	Environmentally Sensitive Area
Sandy Cape	Jurien Bay Marine Park	Lesueur National Park 5.2 km east of the Study Area	Sandland Islands Nature Reserve 2.6 km southwest of the Study Area

5.1.5 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are defined under Section 51B of the *Environmental Protection Act 1986* (EP Act) and may include areas such those requiring special management attention to protect important scenic values, fish and wildlife resources, historical and cultural values and other natural systems or processes.

A search of the DER's Clearing Permit System MapViewer indicated that there are no ESAs within the Study Areas. The nearest ESA is listed in Table 33.

5.1.6 Public Drinking Water Source Areas

A search was undertaken on the Department of Water (DoW) Geographic Data Atlas which indicated that no Public Drinking Water Source Areas are located within the Study Area (DoW, 2014).

The hydrology and hydrogeology aspects proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act) within the Study Area are provided in Table 34.

Table 34 Department of Water Geographic Data Atlas Query Results (DoW 2015)

Aspect	Detail	Result
RIWI Groundwater Areas	Groundwater areas proclaimed under the RIWI Act.	Sandy Cape is in the Jurien Groundwater Area.
Groundwater sub-areas	Groundwater areas proclaimed under the RIWI Act.	Sandy Cape is in the Cervantes Groundwater sub-Area.
RIWI Watercourses	Watercourses proclaimed under the RIWI Act.	There are no watercourses within the Study Area.
RIWI Surface water area	Surface water areas proclaimed under the RIWI Act.	Sandy Cape occurs within the Eneabba Coastal Tributaries surface water area.
Public Drinking Water Source Areas (PDWSA)	PDWSAs is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the <i>Metropolitan Water Supply, Sewage and Drainage Act 1909</i> (MWSSD) or the <i>Country Area Water Supply Act 1947</i> (CAWS).	The Study Areas do not fall within a PDWSA.

5.1.7 Wetlands and Watercourses

A desktop search indicates that no DoW-defined watercourses or wetlands intersect, or are adjacent to, the Study Area.

A search of the EPBC PMST identified that no wetlands recognised as Ramsar-Listed or as Nationally Important Wetlands (NIW) are located within ten kilometres of the Study Area.

5.1.8 Geology and Soils

This region of Western Australia falls within the Greenough Geological Province which principally overlies Cretaceous, Jurassic, Triassic, Permian, Carboniferous and Silurian sedimentary rocks of the northern Perth Basin. These rocks include sandstone, siltstone, shale and claystone. There is also some limestone, coal measures and conglomerate. North-east of Geraldton are the Mesoproterozoic granulite and migmatite (with numerous dolerite dykes) of the Northampton Complex. To the west of Three Springs are the Proterozoic gneiss, granite

and pegmatite of the Mullingarra Inlier as well as the Neoproterozoic siltstone (with common volcanic fragments), sandstone and conglomerate of the Yandanooka Group. Extensive laterite formation commenced in the Tertiary. In the Quaternary, Tamala Limestone developed in aeolian coastal deposits (Tille, 2006).

On the coastal strip the soils are dominated by dunes of Calcareous deep sands, with Yellow deep sands overlying the Tamala Limestone (Tille, 2006).

Acid Sulphate Soils

The Australian Soil Resource Information System (ASRIS) generally indicated that there is “Extremely Low Probability with Very Low Confidence” of Acid Soils occurring in the Study Area.

Soil Degradation Risks

The Study Areas were assessed using the Department of Agriculture and Food NRM SLIP mapping portal to assess the risk of degradation to soil by wind and water.

NRM SLIP indicates a 30-50% high to extreme erosion risk. GHD notes that the Study Area occurs within a location subjected to strong prevailing winds (sea-breezes), and as such appropriate land management practices to minimise risks to wind erosion is recommended.

5.1.9 Vegetation

Broad scale vegetation mapping within the Study Area was undertaken by Beard (1976), which indicates two Beard Vegetation Associations (BVAs) are present (Table 35). GHD notes that BVA 129: bare areas; drift sand, is considered to be a vegetation type.

Table 35 Beards Vegetation Associations

Vegetation Association	Description
129	bare areas: drift sand
1026	Mosaic: Shrublands; <i>Acacia rostellifera</i> , <i>Acacia cyclops</i> (in the south) & <i>Melaleuca cardiophylla</i> (in the north) thicket / Shrubland; <i>Acacia lasiocarpa</i> & <i>Melaleuca acerosa</i> [systema] heath

Vegetation Association Extent and Status

Beard vegetation mapping (1974) has been adapted and digitised by Shepherd *et al.* (2002). The extent of Beard’s (1974) vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DPaW (latest update 2013 – GoWA 2013). The extent remaining of the vegetation associations that have been mapped within the Study Area are detailed in Table 36. The extents of these vegetation types are above the 30% threshold level for the State, IBRA bioregion, IBRA sub-region and local government area.

Table 36 Vegetation Association and Status

Vegetation Association	Scale	Pre-European Extent (ha)	Current Extent (ha)	% Current Extent in IUCN (1-4)	% Remaining	Status
Swan Coastal Plain (SWA) IBRA Region		1,501,221.92	586,975.23	10.14	39.10	<i>Under-represented</i>
Perth (SWA2) IBRA Sub-region		1,117,757.02	473,175.87	11.13	42.33	<i>Under-represented</i>
LGA – Shire of Dandaragan		670,531.64	297,436.67	40.17	44.36	<i>Under-represented</i>
129	State	95,286.20	82,051.84	40.23	86.11	<i>Least Concern</i>
	IBRA – Swan Coastal Plain (SWA)	10,346.37	9,435.48	49.52	91.20	<i>Least Concern</i>
	IBRA Sub-region – Perth (SWA02)	10,346.37	9,435.48	49.52	91.20	<i>Least Concern</i>
	LGA - Shire of Dandaragan	7,929.01	7,790.32	63.91	98.25	<i>Least Concern</i>
1026	State	70,700.48	65,641.37	50.70	92.84	<i>Least Concern</i>
	IBRA – Swan Coastal Plain (SWA)	58,419.39	54,978.88	51.87	94.11	<i>Least Concern</i>
	IBRA Sub-region – Perth (SWA02)	58,419.39	54,978.88	51.87	94.11	<i>Least Concern</i>
	LGA - Shire of Dandaragan	52,458.27	48,843.98	55.22	93.11	<i>Least Concern</i>

5.1.10 Conservation Significant Ecological Communities

A search of the EPBC Act PMST (PMST_C6B26D, DotE, 2015) did not identify the presence of any Australian Government listed TECs within 10 km of the Study Areas.

A search on DPaW's *NatureMap* database identified no State-listed TECs or Priority Ecological Communities within 10 km of the Study Area.

5.1.11 Flora

Diversity

A search of the *NatureMap* database (DPaW, 2007-) and EPBC Act PMST search results for plant taxa previously recorded within 10 km of the Study Areas is provided in Table 37.

Table 37 Summary of *NatureMap* Flora Results

Study Area	Flora Taxa Count	Dominant Families
Sandy Cape	371 (includes algae)	Fabaceae, Ceramiaceae, Asteraceae

Conservation Significant Flora

Desktop searches of the DPaW Threatened and Priority Flora databases and Western Australian Herbarium database via *NatureMap* (NM), and the EPBC Act Protected Matters (EPBC) database identified 34 conservation significant flora (including EPBC Act listed, WC Act listed and DPaW Priority Flora) that have either been recorded or are predicted to occur within 10 km of the Study Area.

A likelihood of occurrence assessment (based on the range, habitat requirements and previous records of the species) was conducted for all conservation significant taxa identified in the desktop assessment. The assessment concluded that three taxa are considered 'Possible' to occur and the remainder 'Unlikely' within the Study Area.

Table 38 Conservation Significant Flora – Sandy Cape

Taxon	EPBC Act Status	WC Act Status	DPaW Status	Source	Likelihood of occurrence in Study Area
<i>Acacia plicata</i>			P3	NM	Unlikely – not within known range, no habitat present
<i>Andersonia gracilis</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Anigozanthos viridis</i> subsp. <i>terraspectans</i>	Vu	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Banksia tricuspis</i>			P4	NM	Unlikely – not within known range, no habitat present
<i>Beyeria cinerea</i> subsp. <i>cinerea</i>			P3	NM	Possible – within known range, potential habitat present
<i>Caladenia huegelii</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present

Taxon	EPBC Act Status	WC Act Status	DPaW Status	Source	Likelihood of occurrence in Study Area
<i>Calandrinia oraria</i>			P3	NM	Possible – within known range, potential habitat present
<i>Centrolepis caespitosa</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Darwinia foetida</i>	CE	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Diuris recurva</i>			P4	NM	Extremely Unlikely – not in known range, no habitat present
<i>Drakaea elastica</i>	E	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Eucalyptus balanites</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Eucalyptus angularis</i>			P2	NM	Unlikely – not within known range, no habitat present
<i>Eucalyptus impensa</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Gompholobium gairdnerianum</i>			P3	NM	Unlikely – not within known range, no habitat present
<i>Grevillea batrachioides</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Grevillea christineae</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Grevillea humifusa</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Grevillea olivacea</i>			P4	NM	Unlikely – within known range, no habitat present
<i>Grevillea saccata</i>			P4	NM	Extremely Unlikely – not in known range, no habitat present
<i>Guichenotia alba</i>			P3	NM	Unlikely – not within known range, habitat present
<i>Hemiandra gardneri</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present

Taxon	EPBC Act Status	WC Act Status	DPaW Status	Source	Likelihood of occurrence in Study Area
<i>Hensmania stoniella</i>			P3	NM	Unlikely – not within known range, habitat present
<i>Leucopogon plumuliflorus</i>			P2	NM	Unlikely – not within known range, no habitat present
<i>Paracaleana dixonii</i>	En	T		EPBC	Unlikely – not within known range, no habitat present
<i>Stenanthemum limitatum</i>			P2	NM	Unlikely – not within known range, no habitat present
<i>Stylidium maritimum</i>			P3	NM	Possible – within known range, potential habitat present
<i>Synaphea lesueurensis</i>			P2	NM	Unlikely – not within known range, no habitat present
<i>Tetradthea nephelioides</i>	CE	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Tetradthea remota</i>			P1	NM	Unlikely – not within known range, no habitat present
<i>Thelymitra apiculata</i>			P4	NM	Extremely Unlikely – not in known range, no habitat present
<i>Thelymitra stellata</i>	En	T		EPBC	Extremely Unlikely – not in known range, no habitat present
<i>Thryptomene</i> sp. Lancelin (M.E. Trudgen 14000)			P3	NM	Unlikely – within known range, no habitat present
<i>Xanthosia tomentosa</i>			P4	NM	Extremely Unlikely – not in known range, no habitat present

*En=Endangered, Vu = Vulnerable, S1 = Schedule 1, P1= Priority 1, P2 = Priority 2 and P3 = Priority 3, P4 = Priority 4.

Invasive Flora

The EPBC Act PMST (DotE, 2015) indicates that there is one invasive flora taxon that may occur within 10 km of the Study Area. The *NatureMap* database (DPaW, 2007-) indicates 12 invasive flora taxa may occur within 10 km of the Study Areas.

The search results are shown in Table 39.

Table 39 EPBC SPRAT Invasive Flora that may Occur Within 10 km of the Study Area

Species Name	Common Name	Status	Source
<i>Asparagus asparagoides</i>	Bridal Creeper	*WoNS, DP	EPBC
<i>Brachiaria [Urochloa] mutica</i>	Para Grass	*	EPBC
<i>Briza maxima</i>	Blowfly Grass	*	EPBC
<i>Cenchrus ciliaris</i>	Buffel Grass	*	EPBC
<i>Chrysanthemoides monilifera</i>	Boneseed	*WoNS, DP	EPBC
<i>Genista</i> sp. x <i>Genista mospessulana</i>	Broom	*WoNS	EPBC
<i>Heliophila pusilla</i>	-	*	EPBC
<i>Olea europaea</i>	Olive	*	EPBC
<i>Pinus radiata</i>	Radiata Pine	*	EPBC
<i>Tamarix aphylla</i>	Tamarisk	*WoNS, DP	EPBC

*= weeds; WoNS = Weeds of National Significance; DP = Declared Pest

5.1.12 Disease and Pathogens

Phytophthora cinnamomi (Dieback) disease is generally restricted to areas of the south west of the State, south of the 26th parallel of latitude, in areas receiving an average annual rainfall of greater than 400 mm.

The Study Area is south of the 26th parallel, and the locality receives over 400 mm per annum. While less common in the well-drained alkaline soils of the coastal dune systems, amended soils such as developed gardens may contain pockets of acidic duplex soils and still be susceptible to the disease. The Study Area is not considered to support native plant species which are highly susceptible to Dieback.

Not considered to be an issue for the development of the Study Area.

5.1.13 Fauna

Existing Fauna Records

A search on *NatureMap* (DPaW, 2007-) and the EPBC Act PMST (DotE, 2015) was undertaken for the Study Areas. The results are shown in Appendix B. According to the searches:

- 121 fauna taxa have been previously recorded within 10 km of the Study Area.

Conservation Significant Fauna

Searches of the EPBC Act PMST (PMST_C6B26D) (DotE, 2015) and *NatureMap* database (DPaW, 2007-) identified the presence or potential presence of 30 conservation significant fauna species.

A total of 26 Marine-Listed species, including birds, sharks, turtles and cetaceans, were indicated in the EPBC Act PMST search results. As the survey was limited to terrestrial fauna only, these Marine-Listed species have been not considered further.

A list of the conservation significant species identified in the desktop review is provided Table 40.

Likelihood of Occurrence Assessment

A total of seven terrestrial vertebrate conservation significant fauna taxa were identified as potentially occurring within the Study Areas during the desktop investigation. An assessment of the likelihood of these species occurring in the Study Areas was undertaken. This assessment is based on species biology, habitat requirements, the quality and availability of suitable habitat and records of the species in the area.

The assessment indicates that it is possible for one Threatened fauna species, the Fairy Tern to occur within this Study Area; The Fairy Tern (*Sternula nereis* subsp. *nereis*), “nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation” (DoE, 2015). The Study Area is away from the beach and behind the dune swales and therefore preferred habitat is not considered to occur within the Study Area. The nearest record is approximately 11 km north-west of the Study Area.

Three terrestrial, Migratory-Listed taxa may be recorded within the Study Area while foraging. The Study Area does not provide breeding habitat for these taxa.

Table 40 Conservation Significant Fauna Assessment – Sandy Cape

Taxon Name	Common Name	EPBC Act Status	WC Status	DPaW Status	Likelihood of occurrence
<i>Calyptorhynchus latirostris</i>	Carnaby's Black Cockatoo	En	T		Unlikely – within known range, no habitat present
<i>Leipoa ocellata</i>	Malleefowl	Vu	T		Unlikely – not within known range, no habitat present
<i>Dasyurus geoffroii</i>	Chuditch	Vu	T		Unlikely – not within known range, no habitat present
<i>Neophoca cinerea</i>	Australian Sea Lion	Vu; Ma	T		Unlikely – within known range. Preferred habitat not present. Possible on coast immediately west of the Study Area.
<i>Parantechinus apicalis</i>	Dibbler	En	T		Possible – within historical known range. Preferred habitat present. Only known from islands south west of the Study Area.
<i>Charadrius rubricollis</i>	Hooded Plover			P4	Possible during foraging on the coastline immediately west of the Study Area. Breeding present close to the Study Area in sandy soils on dune swales, or nearby salt lakes.
<i>Macropus irma</i>	Western Brush Wallaby			P4	Unlikely – within known range. Preferred habitat not present.
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Mi	S3		Possible during foraging on the coastline immediately west of the Study Area. Breeding present on rocky areas (and islands) close to the Study Area.
<i>Merops ornatus</i>	Rainbow Bee-eater	Mi	S3		Possible during foraging in air above Study Area. Breeding habitat not present.

Taxon Name	Common Name	EPBC Act Status	WC Status	DPaW Status	Likelihood of occurrence
<i>Pandion cristatus</i>	Eastern Osprey	Mi	S3		Possible during foraging on the coastline immediately west of the Study Area. Breeding present on rocky areas (and islands) close to the Study Area
<i>Sterna nereis</i> subsp. <i>nereis</i>	Fairy Tern	Vu	S1		Possible – Study Area within known range, preferred breeding habitat present on islands immediately west of Study Area.

Introduced Fauna

The results of the EPBC Act PMST and NatureMap searches indicated the potential presence of seven introduced fauna taxa within 10 km of the Study Area (DotE, 2015; DPAW, 2007-). The search results are shown in Table 41.

Table 41 Introduced Fauna Database Search Results

Species	Common Name	Source
<i>Streptopelia senegalensis</i>	Laughing Turtle-Dove	EPBC
<i>Columba livia</i>	Domestic Pigeon	EPBC
<i>Capra hircus</i>	Goat	EPBC
<i>Felis catus</i>	Cat	EPBC
Feral Deer	Deer	EPBC
<i>Mus musculus</i>	House Mouse	NM; EPBC
<i>Oryctolagus cuniculus</i>	Rabbit	EPBC
<i>Rattus rattus</i>	Black Rat	EPBC
<i>Sus scrofa</i>	Pig	EPBC
* <i>Vulpes vulpes</i>	Red Fox	EPBC

5.1 Results of Field Assessment

5.1.1 Wetlands and Watercourses

No watercourses occur within the Study Area.

One artificial wetland occurs within the Northern search area as a small soak which intercepts saline groundwaters and is surrounded by a fringe of samphire and rushes.

5.1.2 Threatened Ecological Community

This artificial wetland may be associated within a Threatened Ecological Community (TEC 19 'Sedgeland in Holocene dune swales of the southern Swan Coastal Plains'). The damplands of this TEC occur between Holocene dunes in south-western Australia. The TEC was listed as Endangered under the EPBC Act 1999 and endorsed by the Minister for Environment (May 19th, 2014) as Critically Endangered. Gibson *et. al.* (1994) identified the following flora species associated with this TEC including: *Acacia rostelifera*, *Acacia saligna*, *Xanthorrhoea preissii*, the sedges *Baumea juncea*, *Ficinia nodosa*, *Lepidosperma gladiatum*, and the grass *Poa porphyroclados*. The flora species recorded in this vegetation type by GHD is not similar to that described by Gibson *et. al.* (1994) (Table 42). GHD recommends consultation with the Department of Parks and Wildlife in relation this artificial wetland and whether the TEC is likely or unlikely to occur.



Plate 2 Artificial Wetland, Sandy Cape

5.1.3 Vegetation

Study Area Vegetation Types

The Study Area was split into three search areas: Northern, Central and Southern.

A total of three vegetation types were recorded within the Study Area. The Study Area is dominated by a mixed coastal scrub that varies in condition due to level of disturbance by current camping activities.

GHD notes that cleared/degraded areas are considered to be vegetation types.

Vegetation Extent

GHD notes that the vegetation types broadly correspond to the Beard Vegetation Association known from the vicinity of the Study Area.

Study Area Vegetation Condition


The vegetation condition of the Study Areas was mapped during the field survey using the Vegetation Condition Scale (after Keighery, 1994). The vegetation in the Study Area ranged from Condition 2 (*Excellent*) to Condition 6 (*Completely Degraded*). The most noticeable areas of disturbance were within the vehicle access tracks, and existing camp sites. The better condition areas were present in the relatively undisturbed areas of the Northern search area.



Threatened and Priority Ecological Communities

Vegetation types recorded within the Study Area are not considered to be associated with any TECs or PECs known from the vicinity of the Study Area.

No TECs or PECs will be impacted by the proposed works.

Table 42 Recorded Vegetation Types

Vegetation Type	Short Description	Description	Photograph	Location	Condition	Equivalent Vegetation Association
1	Mixed Coastal Scrub	<p>A mosaic of Tall Shrubland of <i>Acacia cyclops</i>, <i>Allocasuarina humilis</i>, <i>Myoporum insulare</i>, <i>Olearia axillaris</i>, <i>Santalum acuminatum</i>, <i>Nitraria billardieri</i>, <i>Spyridium globulosum</i> over <i>Acanthocarpus preissii</i>, <i>Acacia lasiocarpa</i> with weedy species present in the understorey of disturbed areas.</p> <p>Impacts: Off-road vehicles, pedestrian tracks, expanding campgrounds, firewood collection</p>		Northern Central Southern	<i>Excellent to Completely Degraded</i>	<p>1026</p> <p>Mosaic: Shrublands; <i>Acacia rostellifera</i>, <i>Acacia cyclops</i> (in the south) & <i>Melaleuca cardiophylla</i> (in the north) thicket / Shrubland; <i>Acacia lasiocarpa</i> & <i>Melaleuca acerosa</i> [systema] heath</p>

Vegetation Type	Short Description	Description	Photograph	Location	Condition	Equivalent Vegetation Association
2	Artificial Wetland	<p>Small artificial wetland surrounded by a fringe of <i>Tecticornia</i> spp., <i>Juncus kraussii</i> and <i>Samolus repens</i>, with scattered shrubs from adjacent Mixed Coastal Scrub</p> <p>Impacts: firewood collection, rubbish dumping.</p>		Northern	<i>Very Good</i>	Nil
3	Degraded Areas	<p>Existing cleared tracks and camp areas. Dominated by scattered shrubs from adjacent vegetation types.</p> <p>Impacts: represents already impacted areas.</p>		Northern Central Southern	<i>Degraded to Completely Degraded</i>	nil

5.1.4 Flora

Recorded Diversity

A total of 53 plant taxa from 26 families were recorded from the Study Area. This total comprised 53 native taxa (71%) with 13 weed species (25%) and 2 planted (ornamental) species (4%). The total is considered to be similar to that able to be recorded from areas of similar size in the local and regional area, with an equivalent level of disturbance.

The dominant families recorded in the Study Area included:

- Fabaceae (peas, wattles) 6 taxa;
- Asteraceae (daisies) 5 taxa;
- Myrtaceae (melaleuca, eucalypts) 5 taxa; and
- Poaceae (grasses) 5 taxa.

The flora list is provided in Table 44.

Conservation Significant Flora

The field survey did not record any conservation significant flora taxa listed under the EPBC Act or WC Act.

The field survey recorded one conservation significant flora taxon listed by the DPaW as Priority Flora:

- *Thryptomene* sp. Lancelin (M.E. Trudgen 14000) Priority 3.

Thryptomene sp. Lancelin is a small low-growing shrub up to 0.5 m tall with pink flowers typically occurring in September. This taxon has been recorded on coastal calcareous sands with 25 known records between Arrowsmith in the north and Lancelin in the south.

Priority species are those that may be threatened or near threatened but are typically data deficient and have not yet been adequately surveyed to be listed as Threatened (Declared Rare) under the WC Act.

A Priority 3 taxon is a poorly-known species, recorded from several locations with the species not appearing to be under imminent threat. These taxa are typically in need of further surveys to assist in the clarification of conservation status.



Plate 3 *Thryptomene* sp. Lancelin (M.E. Trudgen 14000)

GHD is familiar with this taxon having observed it in a number of locations along the Indian Ocean Drive. Within the Sandy Cape Study Area, this taxon was recorded from one location in the Northern search area. This location should be avoided during the proposed project works, if possible.

Table 43 Recorded Locations of Significant Flora

Taxon	Status	Location	Easting	Northing
<i>Thryptomene</i> sp. Lancelin (M.E. Trudgen 14000)	Priority 3	Northern	307524	6659633

The flora taxa recorded during the field surveys were assessed to determine whether any were regarded as other 'significant flora' as defined by the EPA (2004a). The field survey did not record any flora taxa at or beyond their known range.

Weeds and Introduced Species

The Study Area contained a relatively high proportion of grass and daisy weeds within the understorey in areas adjacent to camping areas and access tracks. In areas away from disturbance, the number of introduced flora taxa was low.

The field survey recorded 13 weed species and two planted species (for shelter purposes). The weed species recorded are those considered to be a common component of disturbed sites in coastal areas. No Weeds of National Significance or Declared Pests were recorded during the field assessment.

Table 44 Study Area Recorded Flora

Family	Genus	Species	Common Name	Status	North	Central	South
Aizoaceae	<i>Carpobrotus</i>	<i>virescens</i>	Pigface		X		
Aizoaceae	<i>Tetragonia</i>	<i>decumbens</i>	Sea Spinach	*	X		
Asparagaceae	<i>Acanthocarpus</i>	<i>preissii</i>	Prickle Lily		X	X	
Asphodelaceae	<i>Trachyandra</i>	<i>divaricata</i>	Dune Onion Weed	*	X	X	
Asteraceae	<i>Arctotheca</i>	<i>calendula</i>	Capeweed	*	X		
Asteraceae	<i>Dittrichia</i>	<i>graveolens</i>	Stinkwort	*		X	
Asteraceae	<i>Hypochaeris</i>	<i>glabra</i>	Flatweed	*	X		
Asteraceae	<i>Olearia</i>	<i>axillaris</i>	Coastal Daisybush		X	X	
Asteraceae	<i>Reichardia</i>	<i>tingitiana</i>	False Sowthistle	*		X	
Asteraceae	<i>Sonchus</i>	<i>oleraceus</i>	Sowthistle	*		X	
Brassicaceae	<i>Sisymbrium</i>	<i>orientale</i>	Indian Hedge Mustard	*			X
Casuarinaceae	<i>Allocasuarina</i>	<i>humilis</i>	Dwarf Sheoak		X		X
Casuarinaceae	<i>Casuarina</i>	<i>obesa</i>	Swamp Sheoak		X	X	
Chenopodiaceae	<i>Rhagodia</i>	<i>latifolia</i>			X		
Chenopodiaceae	<i>Tecticornia</i>	<i>halocnemoides</i>	Shrubby Samphire		X		
Chenopodiaceae	<i>Tecticornia</i>	<i>indica</i> subsp. <i>bidens</i>			X		
Chenopodiaceae	<i>Threlkeldia</i>	<i>diffusa</i>	Coast Bonefruit		X	X	X
Convolvulaceae	<i>Cuscuta</i>	<i>epithymum</i>	Lesser Dodder	*	X		
Cyperaceae	<i>Ficinia</i>	<i>nodosa</i>	Knotted Club-rush		X		
Cyperaceae	<i>Lepidosperma</i>	<i>gladiatum</i>	Coast Sword-sedge		X	X	
Euphorbiaceae	<i>Adriana</i>	<i>quadripartita</i>	Bitter Bush				X
Euphorbiaceae	<i>Euphorbia</i>	<i>terraccina</i>	Geraldton Carnation Weed	*			X
Fabaceae	<i>Acacia</i>	<i>cyclops</i>	Coastal Wattle		X	X	X
Fabaceae	<i>Acacia</i>	<i>lasiocarpa</i>	Panjang		X	X	X
Fabaceae	<i>Acacia</i>	<i>truncata</i>			X		X
Fabaceae	<i>Hardenbergia</i>	<i>comptoniana</i>	Native Wisteria		X		
Fabaceae	<i>Kennedia</i>	<i>prostrata</i>	Running Postman		X		
Fabaceae	<i>Templetonia</i>	<i>retusa</i>	Cockies Tongues		X		X

Family	Genus	Species	Common Name	Status	North	Central	South
Geraniaceae	<i>Pelargonium</i>	<i>capitatum</i>	Rose Pelargonium	*		x	
Goodeniaceae	<i>Scaevola</i>	<i>crassifolia</i>	Thick-leaved Fan-flower		x		
Goodeniaceae	<i>Scaevola</i>	<i>nitida</i>			x		
Haemodoraceae	<i>Conostylis</i>	<i>candicans</i> subsp. <i>calcicola</i>				x	
Juncaceae	<i>Juncus</i>	<i>kraussii</i>			x		
Lamiaceae	<i>Hemiandra</i>	<i>glabra</i> subsp. <i>glabra</i>		ms			x
Lauraceae	<i>Cassytha</i>	<i>racemosa</i>			x		x
Myrtaceae	<i>Eucalyptus</i>	<i>gomphocephala</i>	Tuart	+			x
Myrtaceae	<i>Eucalyptus</i>	<i>platypus</i>	Coastal Moort	+			x
Myrtaceae	<i>Melaleuca</i>	<i>huegelii</i>	Chenille Honeymyrtle		x		x
Myrtaceae	<i>Melaleuca</i>	<i>systema</i>			x	x	
Myrtaceae	<i>Thryptomene</i>	sp. Lancelin (M.E. Trudgen 14000)		P3	x		
Poaceae	<i>Austrostipa</i>	<i>elegantissima</i>	Showy Feathergrass		x		
Poaceae	<i>Austrostipa</i>	sp. (insufficient material)			x		
Poaceae	<i>Cynodon</i>	<i>dactylon</i>	Couch	*			x
Poaceae	<i>Ehrharta</i>	<i>calycina</i>	Annual Veldt Grass	*	x	x	
Poaceae	<i>Spinifex</i>	<i>longifolius</i>	Beach Spinifex		x		
Ranunculaceae	<i>Clematis</i>	<i>linearifolia</i>	Clematis		x		
Restionaceae	<i>Chaetanthus</i>	<i>aristatus</i>			x		
Restionaceae	<i>Desmocladus</i>	<i>asper</i>			x		
Rhamnaceae	<i>Spyridium</i>	<i>globulosum</i>	Basket Bush		x		
Santalaceae	<i>Santalum</i>	<i>acuminatum</i>	Quandong		x	x	x
Scrophulariaceae	<i>Myoporum</i>	<i>insulare</i>	Blueberry Tree		x		x
Solanaceae	<i>Anthocercis</i>	<i>littorea</i>	Yellow Tailflower		x		x
Zygophyllaceae	<i>Zygophyllum</i>	<i>fruticulosum</i>	Shrubby Twinleaf		x		x

where: * = weed; + = planted; WoNS = Weed of National Significance; ms = manuscript name (i.e. not yet formally recognised); P3 = Priority 3 plant taxon

5.1.5 Fauna

Recorded Diversity

A Level 1 fauna field survey was conducted in conjunction with the flora survey. The survey was limited to daylight hours and only examined terrestrial vertebrate animals occurring within the Study Area. Fauna records are shown in Table 45.

This survey only provides a brief snapshot of those species present at the time of sampling (daytime), in one season, in one year.

Not all potentially occurring species would be recorded during a single survey, due to spatial and temporal variations in fauna population numbers and methods used to record fauna, for example, no trapping was undertaken as part of this survey.

A total of nine birds, and two mammal taxa were recorded from the Study Area.

Table 45 Fauna Taxa Recorded from the Study Area

Family	Genus	Species	Common Name	Status
Birds				
Corvidae	<i>Corvus</i>	<i>coronoides</i>	Australian Raven	
Dicruridae	<i>Rhipidura</i>	<i>fuliginosa</i>	Grey Fantail	
Dicruridae	<i>Rhipidura</i>	<i>leucophrys</i>	Willie Wagtail	
Hirundinidae	<i>Hirundo</i>	<i>neoxena</i>	Welcome Swallow	
Hirundinidae	<i>Hirundo</i>	<i>nigricans</i>	Tree Martin	
Laridae	<i>Larus</i>	<i>novaehollandiae</i>	Silver Gull	
Meliphagidae	<i>Lichenostomus</i>	<i>virescens</i>	Singing Honeyeater	
Motacillidae	<i>Anthus</i>	<i>novaeseelandiae</i>	Richard's Pipit	
Psittacidae	<i>Platycercus</i>	<i>zonarius</i>	Australian Ringneck	
Mammals				
Felidae	<i>Felis</i>	<i>catus</i>	Feral Cat	*
Macropodidae	<i>Macropus</i>	<i>fuliginosus</i>	Western Grey Kangaroo	

Conservation Significant Fauna

The field survey did not record any conservation significant fauna taxa listed under the EPBC Act. No Migratory Listed taxa were recorded during the survey.

The field survey did not record any conservation significant fauna taxa listed under the WC Act or listed by the DPaW as Priority.

The fauna taxa recorded during the field surveys were assessed to determine whether any were regarded as other 'significant fauna as defined by the EPA (2004a). The field survey did not record any fauna taxa at or beyond their known range.

Introduced Fauna

One introduced, naturalised species fauna taxon was recorded in the Study Area.

Fauna Habitat

The habitat types within the Study Area broadly corresponded to the vegetation types described. Parts of the habitats recorded from the Study Area have been severely impacted by

current and historical camping; and off-road activities. The condition of these fauna habitats ranged from *Completely Degraded* to *Excellent*.

Habitat linkages are important to allow animals to move between areas of resource availability. Habitat linkage is important for ground and aerial fauna, providing cover, resources and linking areas for rest and reproduction.

Fragmentation of habitat limits the resources available to species, particularly sedentary species, which means they may be more vulnerable to natural disasters or habitat change over time. Fragmentation of habitat can also lead to edge effects, leading to degradation of the habitat. Where the distance between habitat fragments is small, species may still be able to move between these habitats areas, but may be more exposed to predation pressures in the cleared areas.

The Study Area contains relatively fragmented habitat in a north-south direction due to the presence of disturbed vegetation from historical camping activities. However, there is contiguous adjacent vegetated area on the eastern margin of the search areas allowing linkage to areas of better quality habitat to remain.

Potential works are unlikely to increase the fragmentation and may improve existing habitat by the delineation of specific camping sites, thereby protecting remnant native vegetation.

5.2 Conclusions

Based on the findings of the desktop and field results, GHD concludes:

- Native vegetation and fauna habitat is present in the Study Area;
- One Priority 3 conservation significant flora species was recorded during the field assessment; and
- No conservation significant fauna were recorded during the field assessment.

6. References

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Appendices

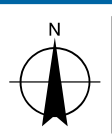
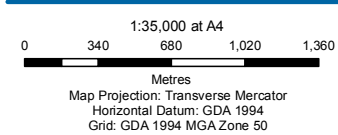
Appendix A - Figures

Project Figures



LEGEND

- | | | |
|--------------|---|--------------------|
| — Road | Vegetation Type | 3 - Outcrop |
| - - Track | 1 - Mixed Coastal Scrub | 4 - Degraded Areas |
| □ Study Area | 2 - <i>Melaleuca lanceolata</i> over Samphire | |



Shire of Irwin
Mid West Coastal Node Biological Surveys

Job Number	61-32098
Revision	0
Date	06 Aug 2015

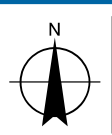
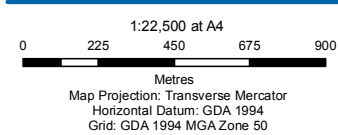
**Vegetation Type
- Anchorage**

Figure 1



LEGEND

— Road	Vegetation Type	3 - Sapphire Flats
- - Track	1 - Bare Dunes	4 - Swale
□ Study Area	2 - Coastal Scrub	5 - Degraded Areas



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Vegetation Type - Halfway

Figure 1



LEGEND

- Road
 - - Track
 - Study Area
- | | |
|---|---|
| Vegetation Type | 2 - Artificial Wetland |
| 1 - Mixed Coastal Scrub | 3 - Degraded Areas |

<p>1:7,500 at A4</p> <p>0 75 150 225 300</p> <p>Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 50</p>				<p>Shire of Irwin Mid West Coastal Node Biological Surveys</p> <p>Vegetation Type - Sandy</p>	<table border="0"> <tr> <td>Job Number</td> <td>61-32098</td> </tr> <tr> <td>Revision</td> <td>0</td> </tr> <tr> <td>Date</td> <td>06 Aug 2015</td> </tr> </table>	Job Number	61-32098	Revision	0	Date	06 Aug 2015
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Date	06 Aug 2015										

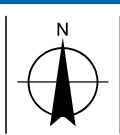
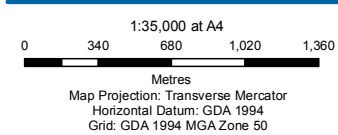
Figure 1

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 Data source: GHD: Vegetation Type, Study Area - 20150706; Landgate: Virtual Mosaic, Road - 20150706. Created by: mczekaj



LEGEND

- | | | |
|--------------|-----------------------------|------------------------|
| — Road | Vegetation Condition | 4. Good |
| - - Track | 1. Pristine or Nearly so | 5. Degraded |
| ▭ Study Area | 2. Excellent | 6. Completely Degraded |
| | 3. Very Good | |



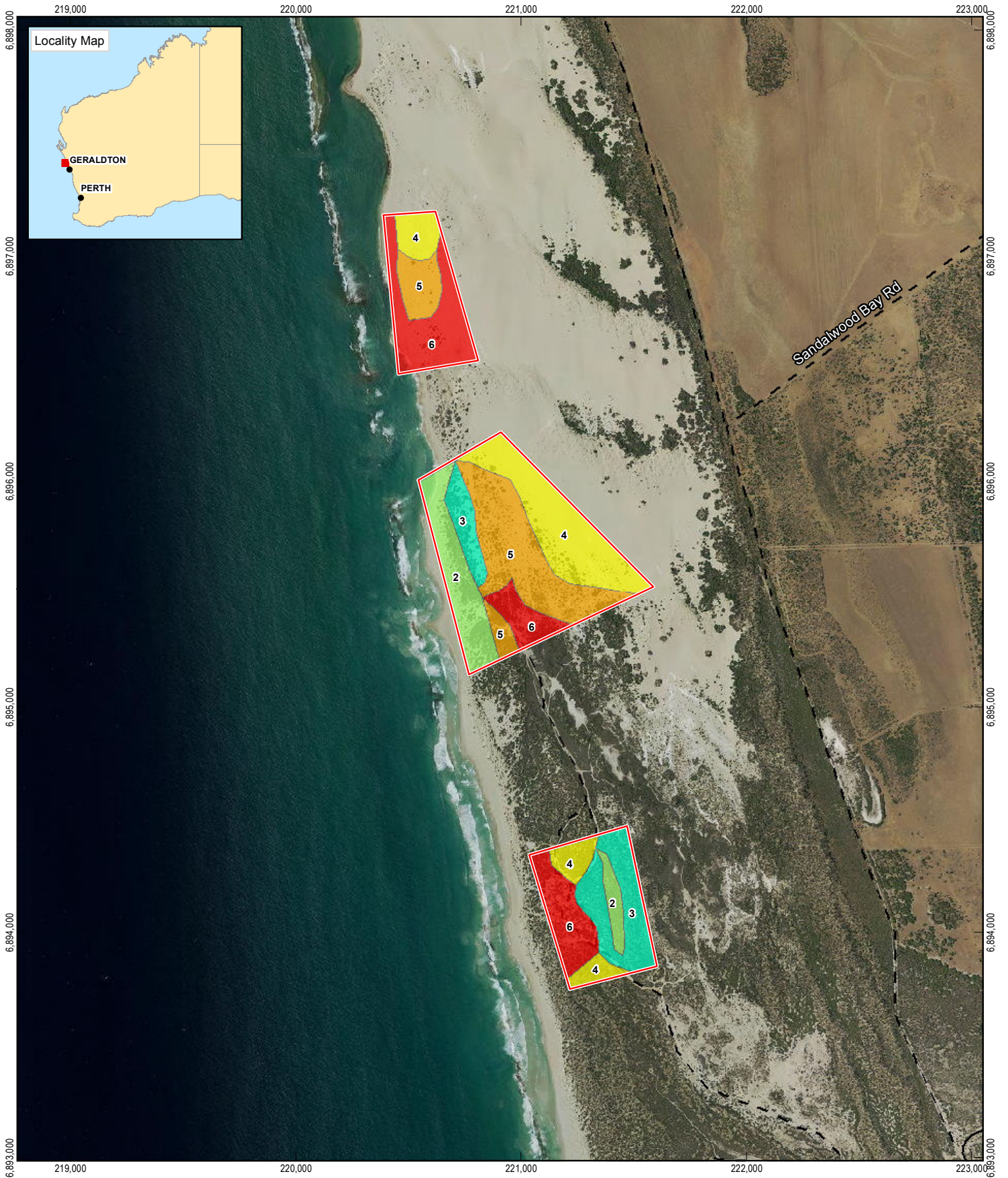
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**Vegetation Condition
- Anchorage**

Figure 1

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 Data source: GHD: Vegetation Condition - 20150706, Study Area - 20150706; Landgate: Virtual Mosaic - 20150706, Road - 20150706, Track - 20150706. Created by: mczekaj



LEGEND

— Road	Vegetation Condition	4. Good
- - Track	1. Pristine or Nearly so	5. Degraded
□ Study Area	2. Excellent	6. Completely Degraded
	3. Very Good	

<p>1:22,500 at A4 Metres Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 50</p>			<p>SHIRE OF IRWIN COUNCIL OFF BUILDING A BRIGHTER BLEND</p>	<p>Shire of Irwin Mid West Coastal Node Biological Surveys</p> <p>Vegetation Condition - Halfway</p>	<table border="0"> <tr> <td>Job Number</td> <td>61-32098</td> </tr> <tr> <td>Revision</td> <td>0</td> </tr> <tr> <td>Date</td> <td>06 Aug 2015</td> </tr> </table>	Job Number	61-32098	Revision	0	Date	06 Aug 2015
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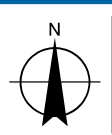
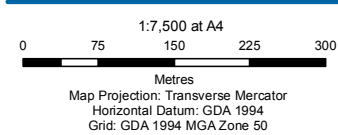
Figure 1

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 Data source: GHD: Vegetation Condition - 20150706, Study Area - 20150706; Landgate: Virtual Mosaic - 20150706, Road - 20150706, Track - 20150706. Created by: mccekaj



LEGEND

- | | | |
|--------------|-----------------------------|------------------------|
| — Road | Vegetation Condition | 4. Good |
| - - Track | 1. Pristine or Nearly so | 5. Degraded |
| □ Study Area | 2. Excellent | 6. Completely Degraded |
| | 3. Very Good | |



Shire of Irwin
Mid West Coastal Node Biological Surveys

Job Number	61-32098
Revision	0
Date	06 Aug 2015

**Vegetation Condition
- Sandy**

Figure 1

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 Data source: GHD: Vegetation Condition - 20150706, Study Area - 20150706; Landgate: Virtual Mosaic - 20150706, Road - 20150706, Track - 20150706. Created by: mczekaj

Appendix B – Results of Database Searches

EPBC Act Protected Matters Search Results

NatureMap Search Results



EPBC Act Protected Matters Report

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

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

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

Report created: 06/05/15 15:26:27

[Summary](#)

[Details](#)

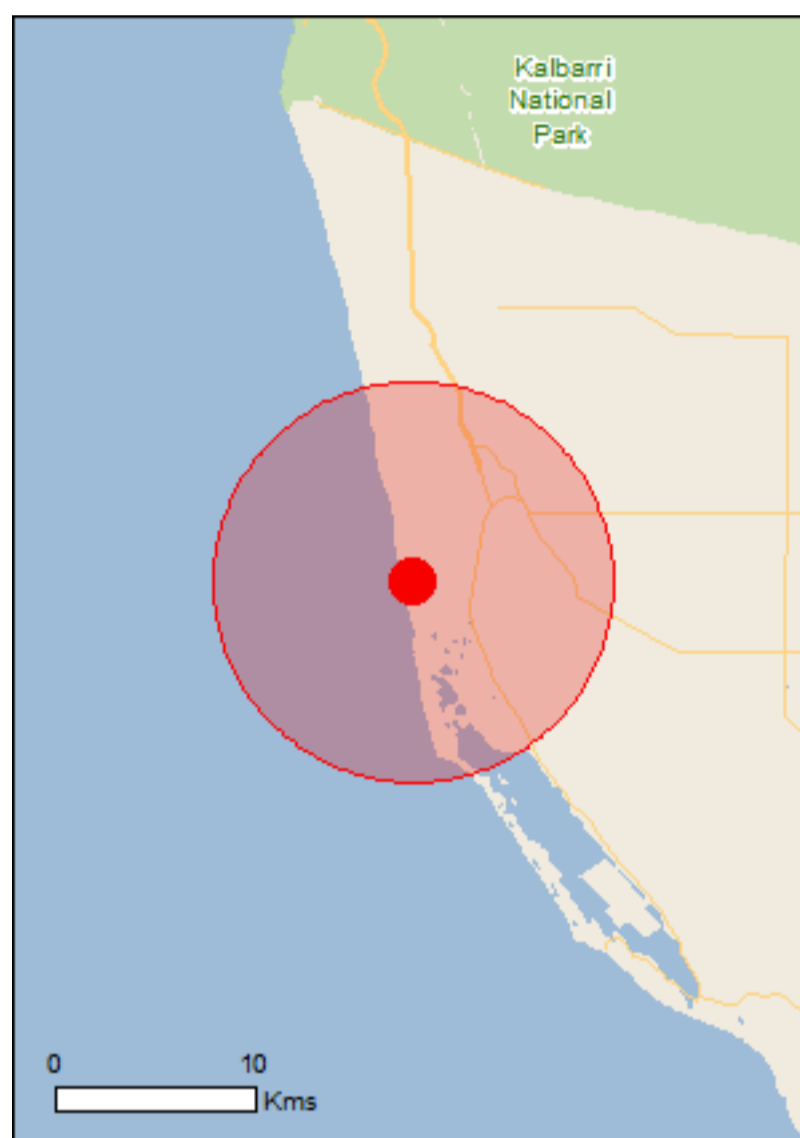
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

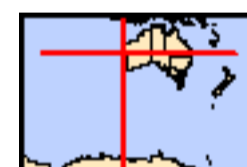
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[Coordinates](#)

[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:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	38
Listed Migratory Species:	44

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/index.html>

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:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	68
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	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:	1
Regional Forest Agreements:	None
Invasive Species:	15
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	2

Details

Matters of National Environmental Significance

Commonwealth Marine Area

[\[Resource Information \]](#)

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

Name

EEZ and Territorial Sea

Marine Regions

[\[Resource Information \]](#)

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

Name

[South-west](#)

Listed Threatened Species

[\[Resource Information \]](#)

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Calyptorhynchus latirostris Carnaby's Black-Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora epomophora Southern Royal Albatross [25996]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans amsterdamensis Amsterdam Albatross [82330]	Endangered	Species or species habitat may occur within area
Diomedea exulans exulans Tristan Albatross [82337]	Endangered	Species or species habitat may occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within

Name	Status	Type of Presence area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta steadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris impavida Campbell Albatross [82449]	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
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Neophoca cinerea Australian Sea-lion [22]	Vulnerable	Species or species habitat may occur within area
Other		
Idiosoma nigrum Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat may occur within area
Plants		
Caladenia barbarella Small Dragon Orchid, Common Dragon Orchid [68686]	Endangered	Species or species habitat may occur within area
Caladenia bryceana subsp. cracens Northern Dwarf Spider-orchid [64556]	Vulnerable	Species or species habitat likely to occur within area
Caladenia hoffmanii Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat likely to occur within area
Drummondita ericoides Morseby Range Drummondita [9193]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Eucalyptus cuprea Mallee Box [56773]	Endangered	Species or species habitat may occur within area
Hypocalymma longifolium Long-leaved Myrtle [8081]	Vulnerable	Species or species habitat may occur within area
Wurmbea tubulosa Long-flowered Nancy [12739]	Endangered	Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Egernia stokesii aethiops [26192]	Vulnerable	Species or species habitat may occur within area
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
Carcharodon carcharias Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered*	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered*	Species or species habitat may occur within area
Diomedea epomophora (sensu stricto) Southern Royal Albatross [1072]	Vulnerable*	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Sterna anaethetus Bridled Tern [814]		Foraging, feeding or related behaviour likely to occur within area
Sterna caspia Caspian Tern [59467]		Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta (sensu stricto) Shy Albatross, Tasmanian Shy Albatross [64697]	Vulnerable*	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross [64459]	Vulnerable*	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
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 Great White Shark [64470]	Vulnerable	Species or species habitat known 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	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		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	Foraging, feeding or related behaviour known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew [847]		Species or species habitat known to occur within area
Pandion cristatus Eastern Osprey [82411]		Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

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		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]		Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered*	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered*	Species or species habitat may occur within area
Diomedea epomophora (sensu stricto) Southern Royal Albatross [1072]	Vulnerable*	Species or species habitat may occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Species or species habitat known to occur within area
Himantopus himantopus Black-winged Stilt [870]		Species or species habitat known to occur within area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour known to occur within area
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew [847]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area
Sterna anaethetus Bridled Tern [814]		Foraging, feeding or related behaviour likely to occur within area
Sterna caspia Caspian Tern [59467]		Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta (sensu stricto) Shy Albatross, Tasmanian Shy Albatross [64697]	Vulnerable*	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross [64459]	Vulnerable*	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		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
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri New Zealand Fur-seal [20]		Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion [22]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Aipysurus pooleorum Shark Bay Seasnake [66061]		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	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known

Name	Threatened	Type of Presence
Disteira kingii Spectacled Seasnake [1123]		to occur within area Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans [Resource Information]

Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may 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 truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Utcha Well	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
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Birds

Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
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Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
--	--	--

Mammals

Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
--	--	--

Capra hircus Goat [2]		Species or species habitat likely to occur within area
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Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
--	--	--

Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
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Oryctolagus cuniculus Rabbit, European Rabbit [128]		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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Sus scrofa Pig [6]		Species or species habitat likely to occur within area
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Vulpes vulpes Red Fox, Fox [18]		Species or species
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Name	Status	Type of Presence
habitat likely to occur within area		
Plants		
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Prosopis spp. Mesquite, Algaroba [68407]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Nationally Important Wetlands [\[Resource Information \]](#)

Name	State
Hutt Lagoon System	WA

Key Ecological Features (Marine) [\[Resource Information \]](#)

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

Name	Region
Commonwealth marine environment within and Western rock lobster	South-west South-west

Caveat

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

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

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

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

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

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

-28.04453 114.16488

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:

- [-Department of Environment, Climate Change and Water, New South Wales](#)
- [-Department of Sustainability and Environment, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment and Natural Resources, South Australia](#)
- [-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts](#)
- [-Environmental and Resource Management, Queensland](#)
- [-Department of Environment and Conservation, Western Australia](#)
- [-Department of the Environment, Climate Change, Energy and Water](#)
- [-Birds Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-SA 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, Atherton and Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [-State Forests of NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- 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 06/05/2015

Current Names Only Yes
 Core Datasets Only Yes
 Method 'By Circle'
 Centre 114°09' 50" E,28°02' 46" S
 Buffer 10km
 Group By Family

Family	Species	Records
Acanthizidae	3	3
Accipitridae	1	1
Aeshnidae	1	1
Agamidae	1	2
Aizoaceae	2	2
Amaranthaceae	4	4
Anatidae	5	9
Apocynaceae	1	1
Araliaceae	2	5
Arrenuridae	1	1
Artamidae	1	1
Asparagaceae	5	6
Asphodelaceae	1	1
Asteraceae	13	16
Baetidae	1	1
Balaenopteridae	1	3
Brachionidae	1	1
Brassicaceae	2	2
Campanulaceae	2	3
Caryophyllaceae	2	3
Casuarinaceae	1	1
Celastraceae	2	2
Chenopodiaceae	10	14
Chironomidae	8	8
Coenagrionidae	1	1
Colchicaceae	1	1
Convolvulaceae	1	2
Corixidae	2	2
Corvidae	1	4
Cracticidae	1	1
Crassulaceae	1	1
Cuculidae	1	1
Cyclopidae	1	1
Cyperaceae	3	4
Cypridae	1	1
Cypridopsidae	1	1
Daphniidae	1	1
Dasyuridae	1	2
Dilleniaceae	4	6
Dioscoreaceae	1	3
Diplodactylidae	3	3
Dytiscidae	3	3
Elapidae	1	1
Ericaceae	1	1
Fabaceae	9	11
Falconidae	1	1
Frankeniaceae	1	3
Gekkonidae	1	6
Geraniaceae	2	2
Goodeniaceae	2	2
Haematopodidae	1	1
Haemodoraceae	3	3
Hirundinidae	1	2
Hydrachnidae	1	1
Hydrocharitaceae	1	1
Hydrophilidae	1	1
Juncaceae	1	6
Juncaginaceae	1	1
Lamiaceae	2	6
Lamponidae	1	1
Laridae	1	1
Lecanidae	1	1
Leptoceridae	2	2
Lestidae	1	1
Libellulidae	2	2
Loganiaceae	1	1
Loranthaceae	1	1
Lycosidae	3	3
Maluridae	3	6
Malvaceae	7	28
Muridae	1	2
Myrtaceae	15	30
Noteridae	1	1
Notodromadidae	1	1
Notommatidae	1	1

Notonectidae	2	2
Nyctaginaceae	1	1
Orchidaceae	6	7
Otididae	1	1
Pachycephalidae	2	2
Petroicidae	1	1
Phalacrocoracidae	2	3
Phyllanthaceae	2	3
Poaceae	18	25
Podicipedidae	1	1
Portulacaceae	3	5
Primulaceae	1	4
Prodidomidae	3	4
Proteaceae	8	10
Pygopodidae	4	5
Rallidae	2	2
Restionaceae	1	1
Rhamnaceae	1	1
Rutaceae	1	1
Santalaceae	1	1
Sapindaceae	1	2
Scincidae	12	33
Scolopacidae	1	1
Scrophulariaceae	2	2
Solanaceae	4	5
Stylidiaceae	3	3
Surianaceae	1	2
Sylviidae	1	1
Thymelaeaceae	2	4
Trochanteriidae	1	1
Typhaceae	1	2
Urticaceae	1	1
Velliidae	1	1
Violaceae	2	3
Vitaceae	1	2
Zosteropidae	1	1
TOTAL	269	406

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Acanthizidae				
1.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
2.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
3.	25534 <i>Sericornis frontalis</i> (White-browed Scrubwren)			
Accipitridae				
4.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
Aeshnidae				
5.	<i>Hemianax papuensis</i>			
Agamidae				
6.	24882 <i>Ctenophorus nuchalis</i> (Central Netted Dragon)			
Aizoaceae				
7.	2814 <i>Mesembryanthemum nodiflorum</i> (Slender Iceplant)	Y		
8.	2823 <i>Tetragonia implexicoma</i> (Bower Spinach)			
Amaranthaceae				
9.	2719 <i>Ptilotus eriotrichus</i>			
10.	2727 <i>Ptilotus gaudichaudii</i>			
11.	2742 <i>Ptilotus manglesii</i> (Pom Poms, Mulamula)			
12.	28340 <i>Ptilotus</i> sp. Northampton (R. Davis 10952)			
Anatidae				
13.	24312 <i>Anas gracilis</i> (Grey Teal)			
14.	24315 <i>Anas rhynchotis</i> (Australasian Shoveler)			
15.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
16.	24318 <i>Aythya australis</i> (Hardhead)			
17.	24326 <i>Malacorhynchus membranaceus</i> (Pink-eared Duck)			
Apocynaceae				
18.	6565 <i>Alyxia buxifolia</i> (Dysentery Bush)			
Araliaceae				
19.	6272 <i>Trachymene elachocarpa</i>			
20.	6280 <i>Trachymene pilosa</i> (Native Parsnip)			
Arrenuridae				
21.	<i>Arrenurus (Truncaturus) sp.</i>			
Artamidae				
22.	24356 <i>Artamus personatus</i> (Masked Woodswallow)			
Asparagaceae				
23.	1208 <i>Acanthocarpus preissii</i>			
24.	20797 <i>Acanthocarpus</i> sp. Ajana (C.A. Gardner 8596)			
25.	1290 <i>Dichopogon tyleri</i>			
26.	1231 <i>Lomandra maritima</i>			
27.	1343 <i>Thysanotus patersonii</i>			
Asphodelaceae				
28.	1366 <i>Bulbine semibarbata</i> (Leek Lily)			
Asteraceae				
29.	7836 <i>Angianthus tomentosus</i> (Camel-grass)			
30.	12780 <i>Gilberta tenuifolia</i>			
31.	8086 <i>Hypochoeris glabra</i> (Smooth Catsear)	Y		
32.	13289 <i>Lawrencella davenportii</i>			
33.	13284 <i>Lawrencella rosea</i>			
34.	8184 <i>Podotheca gnaphalioides</i> (Golden Long-heads)			
35.	13241 <i>Rhodanthe chlorocephala</i> subsp. <i>rosea</i>			
36.	13300 <i>Rhodanthe citrina</i>			
37.	8207 <i>Senecio glossanthus</i> (Slender Groundsel)			
38.	8231 <i>Sonchus oleraceus</i> (Common Sowthistle)	Y		
39.	25902 <i>Symphotrichum squamatum</i> (Bushy Starwort)	Y		
40.	8281 <i>Waitzia podolepis</i>			
41.	8282 <i>Waitzia suaveolens</i> (Fragrant Waitzia)			
Baetidae				
42.	<i>Cloeon</i> sp.			
Balaenopteridae				
43.	24051 <i>Megaptera novaeangliae</i> (Humpback Whale)			T

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Brachionidae				
44.	<i>Keratella procurva</i>			
Brassicaceae				
45.	3000 <i>Brassica tournefortii</i> (Mediterranean Turnip)	Y		
46.	3069 <i>Sisymbrium erysimoides</i> (Smooth Mustard)	Y		
Campanulaceae				
47.	7403 <i>Lobelia heterophylla</i> (Wing-seeded Lobelia)			
48.	7389 <i>Wahlenbergia preissii</i>			
Caryophyllaceae				
49.	2910 <i>Silene nocturna</i> (Mediterranean Catchfly)	Y		
50.	2915 <i>Spergularia rubra</i> (Sand Spurry)	Y		
Casuariidae				
51.	24470 <i>Dromaius novaehollandiae</i> (Emu)			
Casuarinaceae				
52.	1732 <i>Allocasuarina humilis</i> (Dwarf Sheoak)			
Ceinidae				
53.	<i>Austrochiltonia subtenuis</i>			
Celastraceae				
54.	4734 <i>Stackhousia muricata</i>			
55.	9070 <i>Stackhousia pubescens</i> (Downy Stackhousia)			
Chenopodiaceae				
56.	2452 <i>Atriplex cinerea</i> (Grey Saltbush)			
57.	2470 <i>Atriplex paludosa</i> (Marsh Saltbush)			
58.	2494 <i>Chenopodium murale</i> (Nettle-leaf Goosefoot)	Y		
59.	2581 <i>Rhagodia drummondii</i>			
60.	2584 <i>Rhagodia preissii</i>			
61.	2591 <i>Sarcocornia blackiana</i>			
62.	2593 <i>Sarcocornia quinqueflora</i> (Beaded Samphire)			
63.	33236 <i>Tecticornia halocnemoides</i> (Shrubby Samphire)			
64.	31716 <i>Tecticornia syncarpa</i>			
65.	2644 <i>Threlkeldia diffusa</i> (Coast Bonefruit)			
Chironomidae				
66.	<i>Alotanypus dalyupensis</i>			
67.	<i>Chironomus aff. alternans</i> (V24)			
68.	<i>Corynoneura sp.</i> (V49)			
69.	<i>Dicrotendipes conjunctus</i>			
70.	<i>Kiefferulus interinctus</i>			
71.	<i>Paramerina levidensis</i>			
72.	<i>Procladius villosimanus</i>			
73.	<i>Tanytarsus fuscithorax/semibarbitarsus</i>			
Coenagrionidae				
74.	<i>Ischnura aurora aurora</i>			
Colchicaceae				
75.	1386 <i>Burchardia rosea</i>			
Convolvulaceae				
76.	6659 <i>Wilsonia humilis</i> (Silky Wilsonia)			
Corixidae				
77.	<i>Agraptocorixa eurynome</i>			
78.	<i>Micronecta robusta</i>			
Corvidae				
79.	25592 <i>Corvus coronoides</i> (Australian Raven)			
Cracticidae				
80.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
Crassulaceae				
81.	3137 <i>Crassula colorata</i> (Dense Stonecrop)			
Cuculidae				
82.	25598 <i>Cacomantis flabelliformis</i> (Fan-tailed Cuckoo)			
Cyclopidae				
83.	<i>Mesocyclops brooksi</i>			
Cyperaceae				
84.	794 <i>Cyperus gymnocaulos</i> (Spiny Flat-sedge)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
85.	801 <i>Cyperus laevigatus</i>	Y		
86.	917 <i>Isolepis marginata</i> (Coarse Club-rush)			
Cyprididae				
87.	<i>Alboa worooa</i>			
Cypridopsidae				
88.	<i>Sarscypridopsis aculeata</i>			
Daphniidae				
89.	<i>Simocephalus elizabethae</i>			
Dasyuridae				
90.	24109 <i>Sminthopsis dolichura</i> (Little long-tailed Dunnart)			
Dilleniaceae				
91.	5120 <i>Hibbertia desmophylla</i>			
92.	5135 <i>Hibbertia hypericoides</i> (Yellow Buttercups)			
93.	5162 <i>Hibbertia racemosa</i> (Stalked Guinea Flower)			
94.	5171 <i>Hibbertia spicata</i>			
Dioscoreaceae				
95.	1509 <i>Dioscorea hastifolia</i> (Warrine, Warram)			
Diplodactylidae				
96.	24938 <i>Diplodactylus ornatus</i>			
97.	25518 <i>Strophurus spinigerus</i>			
98.	24942 <i>Strophurus spinigerus</i> subsp. <i>spinigerus</i>			
Dytiscidae				
99.	<i>Hyphydrus elegans</i>			
100.	<i>Megaporus</i> sp.			
101.	<i>Onychohydrus</i> sp.			
Elapidae				
102.	25261 <i>Pseudechis australis</i> (Mulga Snake)			
Ericaceae				
103.	34736 <i>Lysinema pentapetalum</i>			
Fabaceae				
104.	3238 <i>Acacia bidentata</i>			
105.	3466 <i>Acacia oldfieldii</i>			
106.	3525 <i>Acacia rostellifera</i> (Summer-scented Wattle)			
107.	3549 <i>Acacia spathulifolia</i>			
108.	3710 <i>Bossiaea eriocarpa</i> (Common Brown Pea)			
109.	20482 <i>Gastrolobium nervosum</i>			
110.	3957 <i>Gompholobium tomentosum</i> (Hairy Yellow Pea)			
111.	4044 <i>Kennedia prostrata</i> (Scarlet Runner)			
112.	4312 <i>Trifolium striatum</i> (Knotted Clover)	Y		
Falconidae				
113.	25622 <i>Falco cenchroides</i> (Australian Kestrel)			
Frankeniaceae				
114.	5209 <i>Frankenia pauciflora</i> (Seaheath)			
Gekkonidae				
115.	24959 <i>Gehyra variegata</i>			
Geraniaceae				
116.	4333 <i>Erodium cicutarium</i> (Common Storksbill)	Y		
117.	4335 <i>Erodium cygnorum</i> (Blue Heronsbill)			
Goodeniaceae				
118.	7459 <i>Dampiera oligophylla</i> (Sparse-leaved Dampiera)			
119.	7666 <i>Verreauxia reinwardtii</i> (Common Verreauxia)			
Haematopodidae				
120.	25627 <i>Haematopus fuliginosus</i> (Sooty Oystercatcher)			
Haemodoraceae				
121.	11565 <i>Anigozanthos manglesii</i> subsp. <i>quadrans</i>			
122.	1418 <i>Conostylis aculeata</i> (Prickly Conostylis)			
123.	12028 <i>Conostylis aculeata</i> subsp. <i>septentrionora</i>			
Hirundinidae				
124.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
Hydrachnidae				

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
125.	<i>Hydrachna nr approximata</i>			
Hydrocharitaceae				
126.	138 <i>Najas marina</i> (Prickly Water Nymph)			
Hydrophilidae				
127.	<i>Berosus approximans</i>			
Juncaceae				
128.	11922 <i>Juncus kraussii</i> subsp. <i>australiensis</i>			
Juncaginaceae				
129.	147 <i>Triglochin mucronata</i>			
Lamiaceae				
130.	6780 <i>Lachnostachys eriobotrya</i> (Lambswool)			
131.	41041 <i>Quoya atriplicina</i>			
Lamponidae				
132.	<i>Lampona cylindrata</i>			
Laridae				
133.	25638 <i>Larus pacificus</i> (Pacific Gull)			
Lecanidae				
134.	<i>Lecane luna</i>			
Leptoceridae				
135.	<i>Oecetis</i> sp.			
136.	<i>Triplectides australis</i>			
Lestidae				
137.	<i>Austrolestes annulosus</i>			
Libellulidae				
138.	<i>Diplacodes bipunctata</i>			
139.	<i>Orthetrum caledonicum</i>			
Loganiaceae				
140.	6512 <i>Logania spermacocea</i>			
Loranthaceae				
141.	13266 <i>Amyema miraculosa</i> subsp. <i>miraculosa</i>			
Lycosidae				
142.	<i>Arteria cingulipes</i>			
143.	<i>Arteria taeniifera</i>			
144.	<i>Artoriopsis expolita</i>			
Maluridae				
145.	25651 <i>Malurus lamberti</i> (Variegated Fairy-wren)			
146.	24544 <i>Malurus lamberti</i> subsp. <i>assimilis</i> (Variegated Fairy-wren)			
147.	25652 <i>Malurus leucopterus</i> (White-winged Fairy-wren)			
Malvaceae				
148.	4905 <i>Alyogyne hakeifolia</i>			
149.	40906 <i>Androcalva microphylla</i>		P2	
150.	5011 <i>Guichenotia ledifolia</i>			
151.	5012 <i>Guichenotia macrantha</i> (Large-flowered Guichenotia)			
152.	5022 <i>Keraudrenia hermanniifolia</i>			
153.	17263 <i>Lasiopetalum oldfieldii</i> subsp. <i>oldfieldii</i>		P3	
154.	4960 <i>Lawrenzia viridigrisea</i>			
Muridae				
155.	24223 <i>Mus musculus</i> (House Mouse)	Y		
Myrtaceae				
156.	5460 <i>Calytrix fraseri</i> (Pink Summer Calytrix)			
157.	14102 <i>Eremaea ebracteata</i> var. <i>ebracteata</i>			
158.	35345 <i>Eucalyptus camaldulensis</i> subsp. <i>obtusa</i> (Blunt-budded River Red Gum)			
159.	15494 <i>Eucalyptus diminuta</i>			
160.	5887 <i>Melaleuca cardiophylla</i> (Tangling Melaleuca)			
161.	19451 <i>Melaleuca huttensis</i>		P1	
162.	18112 <i>Melaleuca leuropoma</i>			
163.	5936 <i>Melaleuca megacephala</i>			
164.	5959 <i>Melaleuca raphiophylla</i> (Swamp Paperbark)			
165.	6008 <i>Phymatocarpus porphyrocephalus</i>			
166.	20220 <i>Pileanthus rubronitidus</i>			
167.	14922 <i>Scholtzia</i> sp. <i>Eurardy</i> (J.S. Beard 6886)		P2	

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
168.	16837 <i>Scholtzia</i> sp. <i>Kalbarri</i> (N. Hoyle 623)			
169.	15427 <i>Scholtzia spatulata</i>			
170.	6041 <i>Scholtzia umbellifera</i>			
Noteridae				
171.	<i>Hydrocoptus subfasciatus</i>			Y
Notodromadidae				
172.	<i>Kennethia cristata</i>			
Notommatidae				
173.	<i>Cephalodella gibba</i>			
Notonectidae				
174.	<i>Anisops elstoni</i>			
175.	<i>Anisops thienemanni</i>			
Nyctaginaceae				
176.	2776 <i>Commicarpus australis</i> (Perennial Tar Vine)			
Orchidaceae				
177.	13618 <i>Caladenia elegans</i>		T	
178.	15348 <i>Caladenia flava</i> subsp. <i>flava</i>			
179.	15349 <i>Caladenia flava</i> subsp. <i>maculata</i>			
180.	15360 <i>Caladenia longicauda</i> subsp. <i>borealis</i>			
181.	1603 <i>Caladenia longiclavata</i> (Clubbed Spider Orchid)			
182.	17760 <i>Caladenia nobilis</i>			
Otididae				
183.	24610 <i>Ardeotis australis</i> (Australian Bustard)			
Pachycephalidae				
184.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
185.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
Petroicidae				
186.	24651 <i>Eopsaltria australis</i> subsp. <i>griseogularis</i> (Western Yellow Robin)			
Phalacrocoracidae				
187.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
188.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
Phyllanthaceae				
189.	4675 <i>Phyllanthus calycinus</i> (False Boronia)			
190.	4691 <i>Poranthera microphylla</i> (Small Poranthera)			
Poaceae				
191.	200 <i>Amphipogon turbinatus</i>			
192.	17237 <i>Austrostipa elegantissima</i>			
193.	17240 <i>Austrostipa flavescens</i>			
194.	17255 <i>Austrostipa trichophylla</i>			
195.	233 <i>Avena barbata</i> (Bearded Oat)	Y		
196.	8661 <i>Brachypodium distachyon</i> (False Brome)	Y		
197.	249 <i>Bromus diandrus</i> (Great Brome)	Y		
198.	29721 <i>Cenchrus setiger</i> (Birdwood Grass)	Y		
199.	346 <i>Ehrharta brevifolia</i> (Annual Veldt Grass)	Y		
200.	349 <i>Ehrharta longiflora</i> (Annual Veldt Grass)	Y		
201.	374 <i>Eragrostis cilianensis</i> (Stinkgrass)	Y		
202.	378 <i>Eragrostis dielsii</i> (Mallee Lovegrass)			
203.	516 <i>Parapholis incurva</i> (Coast Barbgrass)	Y		
204.	551 <i>Phalaris minor</i> (Lesser Canary Grass)	Y		
205.	573 <i>Poa drummondiana</i> (Knotted Poa)			
206.	582 <i>Polypogon monspeliensis</i> (Annual Beardgrass)	Y		
207.	592 <i>Puccinellia stricta</i> (Marsh Grass)			
208.	635 <i>Sporobolus virginicus</i> (Marine Couch)			
Podicipedidae				
209.	24682 <i>Tachybaptus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
Portulacaceae				
210.	2848 <i>Calandrinia corrigioloides</i> (Strap Purslane)			
211.	2856 <i>Calandrinia liniflora</i> (Parakeelya)			
212.	2860 <i>Calandrinia polyandra</i> (Parakeelya)			
Primulaceae				
213.	6484 <i>Samolus repens</i> (Creeping Brookweed)			

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Prodidomidae				
214.	<i>Cryptoerithus ninan</i>			
215.	<i>Cryptoerithus quobba</i>			
216.	<i>Myandra bicincta</i>			
Proteaceae				
217.	1800 <i>Banksia attenuata</i> (Slender Banksia, Piara)			
218.	1834 <i>Banksia menziesii</i> (Firewood Banksia)			
219.	1842 <i>Banksia prionotes</i> (Acorn Banksia)			
220.	1956 <i>Grevillea argyrophylla</i> (Silvery-leaved Grevillea)			
221.	18116 <i>Grevillea commutata</i> subsp. <i>commutata</i>			
222.	2032 <i>Grevillea leucopteris</i> (White Plume Grevillea)			
223.	2254 <i>Persoonia acicularis</i>			
224.	2301 <i>Petrophile macrostachya</i>			
Pygopodidae				
225.	24991 <i>Aprasia repens</i> (Sand-plain Worm-lizard)			
226.	<i>Aprasia</i> sp.			
227.	24999 <i>Delma grayii</i>			
228.	25008 <i>Pygopus lepidopodus</i> (Common Scaly Foot)			
Rallidae				
229.	24761 <i>Fulica atra</i> subsp. <i>australis</i> (Eurasian Coot)			
230.	24771 <i>Porzana tabuensis</i> (Spotless Crane)			
Restionaceae				
231.	17846 <i>Desmocladus parthenicus</i>			
Rhamnaceae				
232.	4802 <i>Cryptandra mutila</i>			
Rutaceae				
233.	15274 <i>Diplolaena mollis</i>			
Santalaceae				
234.	2356 <i>Santalum acuminatum</i> (Quandong, Warnga)			
Sapindaceae				
235.	4748 <i>Diplopeltis petiolaris</i>			
Scincidae				
236.	30893 <i>Cryptoblepharus buchananii</i>			
237.	25020 <i>Cryptoblepharus plagiocephalus</i>			
238.	25133 <i>Lerista elegans</i>			
239.	25144 <i>Lerista kendricki</i>			
240.	25148 <i>Lerista lineopunctulata</i>			
241.	25484 <i>Lerista planiventralis</i>			
242.	25160 <i>Lerista planiventralis</i> subsp. <i>decora</i>			
243.	25165 <i>Lerista praepedita</i>			
244.	25184 <i>Menetia greyii</i>			
245.	25191 <i>Morethia lineoocellata</i>			
246.	25203 <i>Tiliqua occipitalis</i> (Western Bluetongue)			
247.	25207 <i>Tiliqua rugosa</i> subsp. <i>rugosa</i>			
Scolopacidae				
248.	25736 <i>Arenaria interpres</i> (Ruddy Turnstone)		IA	
Scrophulariaceae				
249.	7291 <i>Myoporum insulare</i> (Blueberry Tree, boobialla)			
250.	17158 <i>Myoporum montanum</i> (Native Myrtle)			
Solanaceae				
251.	11537 <i>Anthocercis ilicifolia</i> subsp. <i>caldariola</i>			
252.	11725 <i>Anthocercis ilicifolia</i> subsp. <i>ilicifolia</i>			
253.	6949 <i>Anthocercis littorea</i> (Yellow Tailflower)			
254.	6959 <i>Cyphanthera racemosa</i>			
Stylidiaceae				
255.	7720 <i>Stylidium elongatum</i> (Tall Triggerplant)			
256.	17412 <i>Stylidium kalbarriense</i>			
257.	25837 <i>Stylidium purpureum</i>			
Surianaceae				
258.	3182 <i>Stylobasium spathulatum</i> (Pebble Bush)			
Sylviidae				
259.	25758 <i>Megalurus gramineus</i> (Little Grassbird)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Thymelaeaceae				
260.	5246 <i>Pimelea gilgiana</i>			
261.	5256 <i>Pimelea microcephala</i> (Shrubby Riceflower, Banjine)			
Trochanteriidae				
262.	<i>Longrita findal</i>			
Typhaceae				
263.	98 <i>Typha domingensis</i> (Bulrush, Djandjid)			
Urticaceae				
264.	1762 <i>Parietaria debilis</i> (Pellitory)			
Veliidae				
265.	<i>Microvelia peramoena</i>			
Violaceae				
266.	5221 <i>Hybanthus floribundus</i>			
267.	12007 <i>Hybanthus floribundus</i> subsp. <i>floribundus</i>			
Vitaceae				
268.	4853 <i>Clematicissus angustissima</i>			
Zosteropidae				
269.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silvereeye)			

Conservation Codes

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

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



EPBC Act Protected Matters Report

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

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

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

Report created: 06/05/15 15:24:57

[Summary](#)

[Details](#)

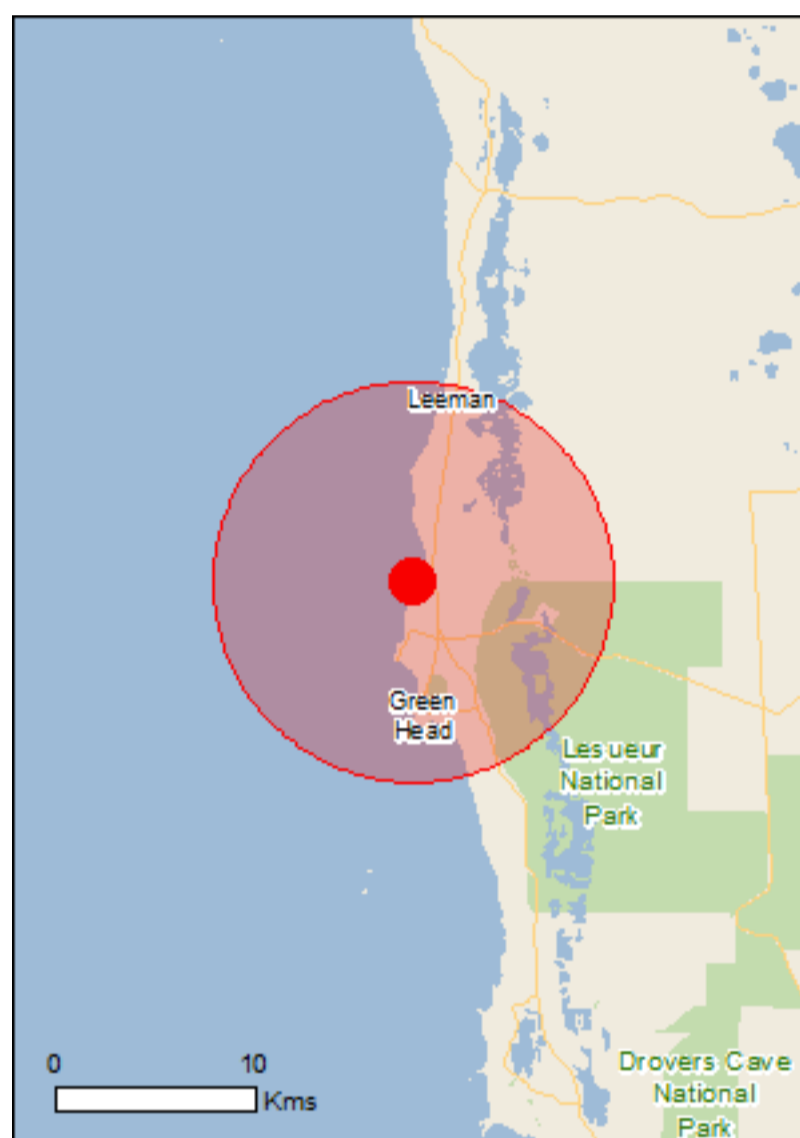
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

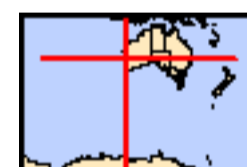
[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[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:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	37
Listed Migratory Species:	37

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/index.html>

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:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	60
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	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:	4
Regional Forest Agreements:	None
Invasive Species:	14
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	1

Details

Matters of National Environmental Significance

Commonwealth Marine Area

[\[Resource Information \]](#)

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

Name

EEZ and Territorial Sea

Marine Regions

[\[Resource Information \]](#)

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

Name

[South-west](#)

Listed Threatened Species

[\[Resource Information \]](#)

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Calyptorhynchus latirostris Carnaby's Black-Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora epomophora Southern Royal Albatross [25996]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora sanfordi Northern Royal Albatross [82331]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans amsterdamensis Amsterdam Albatross [82330]	Endangered	Species or species habitat may occur within area
Diomedea exulans exulans Tristan Albatross [82337]	Endangered	Species or species habitat may occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence area
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta steadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris impavida Campbell Albatross [82449]	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
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Neophoca cinerea Australian Sea-lion [22]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Plants		
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat may occur within area
Centrolepis caespitosa [6393]	Endangered	Species or species habitat may occur within area
Grevillea batrachioides Mt Lesueur Grevillea [21735]	Endangered	Species or species habitat may occur within area
Grevillea humifusa Spreading Grevillea [61182]	Endangered	Species or species

Name	Status	Type of Presence
Hemiandra gardneri Red Snakebush [7945]	Endangered	habitat may occur within area Species or species habitat likely to occur within area
Leucopogon obtectus Hidden Beard-heath [19614]	Endangered	Species or species habitat may occur within area
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour 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		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered*	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered*	Species or species habitat may occur within area
Diomedea epomophora (sensu stricto) Southern Royal Albatross [1072]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered*	Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Sterna caspia Caspian Tern [59467]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta (sensu stricto) Shy Albatross, Tasmanian Shy Albatross [64697]	Vulnerable*	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross [64459]	Vulnerable*	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
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
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharodon carcharias Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known 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	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Name	Threatened	Type of Presence
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		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	Foraging, feeding or related behaviour known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Migratory Terrestrial Species

Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area

Migratory Wetlands Species

Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Pandion cristatus Eastern Osprey [82411]		Breeding known to occur within area

Other Matters Protected by the EPBC Act

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		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered*	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered*	Species or species habitat may occur within area
Diomedea epomophora (sensu stricto) Southern Royal Albatross [1072]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered*	Foraging, feeding or related behaviour likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Larus novaehollandiae Silver Gull [810]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour known to occur within area
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur

Name	Threatened	Type of Presence within area
Sterna caspia Caspian Tern [59467]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area
Sterna fuscata Sooty Tern [794]		Breeding known to occur within area
Sterna nereis Fairy Tern [796]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta (sensu stricto) Shy Albatross, Tasmanian Shy Albatross [64697]	Vulnerable*	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross [64459]	Vulnerable*	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species

Name	Threatened	Type of Presence
Mitotichthys meraculus Western Crested Pipefish [66259]		habitat may occur within area Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		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
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri New Zealand Fur-seal [20]		Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion [22]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Reptiles		
Aipysurus pooleorum Shark Bay Seasnake [66061]		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	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Name	Threatened	Type of Presence
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans [Resource Information]

Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may 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 truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Beekeepers	WA
Lesueur	WA
Lipfert, Milligan, Etc Islands	WA
Unnamed WA42030	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
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Key Ecological Features (Marine) [[Resource Information](#)]

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

Name	Region
Western rock lobster	South-west

Caveat

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

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

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

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

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

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

-30.01748 114.96367

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:

- [-Department of Environment, Climate Change and Water, New South Wales](#)
- [-Department of Sustainability and Environment, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment and Natural Resources, South Australia](#)
- [-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts](#)
- [-Environmental and Resource Management, Queensland](#)
- [-Department of Environment and Conservation, Western Australia](#)
- [-Department of the Environment, Climate Change, Energy and Water](#)
- [-Birds Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-SA 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, Atherton and Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [-State Forests of NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- 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 06/05/2015

Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 114°57' 52" E, 29°58' 32" S
Buffer 10km
Group By Family

Family	Species	Records
Acanthizidae	5	39
Accipitridae	4	14
Actinopodidae	1	1
Agamidae	2	19
Aizoaceae	2	2
Anatidae	1	5
Araneidae	4	5
Ardeidae	2	3
Asparagaceae	2	2
Asteraceae	8	8
Balaenidae	1	1
Campephagidae	1	1
Caryophyllaceae	1	1
Casuarinaceae	2	4
Caulerpaceae	1	1
Charadriidae	6	13
Chenopodiaceae	7	9
Columbidae	3	13
Convolvulaceae	1	1
Corvidae	1	19
Cracticidae	3	9
Cuculidae	1	1
Cyperaceae	6	9
Dasyuridae	1	1
Dicaeidae	1	4
Dicruridae	2	29
Dioscoreaceae	1	1
Diplodactylidae	3	21
Elapidae	7	36
Ericaceae	5	6
Euphorbiaceae	1	1
Fabaceae	13	30
Falconidae	3	13
Frankeniaceae	1	1
Funariaceae	1	1
Gekkonidae	1	11
Goodeniaceae	5	8
Haematopodidae	1	8
Haemodoraceae	3	6
Halcyonidae	1	6
Henicopidae	1	1
Hirundinidae	1	40
Ixodidae	1	1
Labridae	1	1
Lamiaceae	2	2
Lamponidae	1	1
Laridae	4	38
Lauraceae	1	1
Limnodynastidae	1	9
Loranthaceae	1	1
Lycosidae	3	5
Macropodidae	1	1
Maluridae	4	15
Malvaceae	6	7
Megapodiidae	1	1
Meliphagidae	4	17
Muridae	2	28
Myrtaceae	15	20
Nemesiidae	1	2
Nicodamidae	1	8
Nitrariaceae	1	2
Olaceae	1	2
Orchidaceae	8	13
Ostraciidae	1	1
Otididae	1	2
Pachycephalidae	3	13
Pardalotidae	1	4
Pelecanidae	1	3
Petroicidae	1	1
Phalacrocoracidae	4	58
Phasianidae	1	2
Phyllanthaceae	1	1
Physciaceae	1	1
Pittosporaceae	2	2
Poaceae	3	3
Podicipedidae	1	1
Polygonaceae	2	2

Portulacaceae	2	2
Primulaceae	1	1
Proteaceae	8	14
Psittacidae	5	6
Pygopodidae	6	124
Ranunculaceae	1	1
Recurvirostridae	1	1
Restionaceae	2	4
Rhamnaceae	3	4
Rubiaceae	1	1
Rutaceae	1	1
Santalaceae	3	7
Sapindaceae	1	1
Scincidae	11	94
Scolopacidae	5	19
Scombridae	1	1
Scorpaenidae	1	1
Scrophulariaceae	4	6
Solanaceae	2	3
Stylidiaceae	1	1
Sylviidae	1	1
Tetragoniidae	1	1
Theridiidae	1	1
Thymelaeaceae	2	3
Trochanteridae	1	1
Urodacidae	1	2
Vespertilionidae	1	1
Zodariidae	1	2
Zosteropidae	1	20
Zygophyllaceae	1	1
TOTAL	271	998

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Acanthizidae				
1.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
2.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
3.	24269 <i>Calamanthus campestris</i> (Rufous Fieldwren)			
4.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
5.	25534 <i>Sericornis frontalis</i> (White-browed Scrubwren)			
Accipitridae				
6.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
7.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
8.	24293 <i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)		IA	
9.	25543 <i>Pandion haliaetus</i> (Osprey)			
Actinopodidae				
10.	<i>Missulena hoggi</i>			
Agamidae				
11.	30899 <i>Ctenophorus adelaidensis</i> (Southern Heath Dragon, Western Heath Dragon)			
12.	24907 <i>Pogona minor subsp. minor</i> (Dwarf Bearded Dragon)			
Aizoaceae				
13.	2798 <i>Carpobrotus virescens</i> (Coastal Pigface, Kolboko)			
14.	2820 <i>Tetragonia decumbens</i> (Sea Spinach)	Y		
Anatidae				
15.	24331 <i>Tadorna tadornoides</i> (Australian Shelduck, Mountain Duck)			
Araneidae				
16.	<i>Araneus cyphoxis</i>			
17.	<i>Araneus eburnus</i>			
18.	<i>Austracantha minax</i>			
19.	<i>Backbourkia heroine</i>			
Ardeidae				
20.	24341 <i>Ardea pacifica</i> (White-necked Heron)			
21.	25560 <i>Ardea sacra</i> (Eastern Reef Egret, Eastern Reef Heron)		IA	
Asparagaceae				
22.	1208 <i>Acanthocarpus preissii</i>			
23.	1227 <i>Lomandra hastilis</i>			
Asteraceae				
24.	7827 <i>Angianthus cunninghamii</i> (Coast Angianthus)			
25.	12741 <i>Hyalosperma cotula</i>			
26.	8127 <i>Olearia axillaris</i> (Coastal Daisybush)			
27.	32716 <i>Olearia lehmanniana</i>			
28.	8149 <i>Olearia rudis</i> (Rough Daisybush)			
29.	8197 <i>Reichardia tingitana</i> (False Sowthistle)	Y		
30.	8231 <i>Sonchus oleraceus</i> (Common Sowthistle)	Y		
31.	8257 <i>Vellereophyton dealbatum</i> (White Cudweed)	Y		
Balaenidae				
32.	24043 <i>Eubalaena australis</i> (Southern Right Whale)		T	
Campephagidae				
33.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
Caryophyllaceae				
34.	2914 <i>Spergularia diandra</i> (Lesser Sand Spurry)	Y		
Casuarinaceae				
35.	13908 <i>Allocasuarina lehmanniana subsp. lehmanniana</i>			
36.	1742 <i>Casuarina obesa</i> (Swamp Sheoak, Kuli)			
Caulerpaceae				
37.	26559 <i>Caulerpa cupressoides</i>			
Charadriidae				
38.	24370 <i>Charadrius bicinctus subsp. bicinctus</i> (Double-banded Plover)			
39.	24376 <i>Charadrius rubricollis</i> (Hooded Plover)		P4	
40.	24377 <i>Charadrius ruficapillus</i> (Red-capped Plover)			
41.	24382 <i>Pluvialis fulva</i> (Pacific Golden Plover)		IA	
42.	24383 <i>Pluvialis squatarola</i> (Grey Plover)		IA	
43.	24386 <i>Vanellus tricolor</i> (Banded Lapwing)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Chenopodiaceae				
44.	2452 <i>Atriplex cinerea</i> (Grey Saltbush)			
45.	2470 <i>Atriplex paludosa</i> (Marsh Saltbush)			
46.	2584 <i>Rhagodia preissii</i>			
47.	30434 <i>Salsola australis</i>			
48.	33236 <i>Tecticornia halocnemoides</i> (Shrubby Samphire)			
49.	33319 <i>Tecticornia indica</i> subsp. <i>bidens</i>			
50.	2644 <i>Threlkeldia diffusa</i> (Coast Bonefruit)			
Columbidae				
51.	24399 <i>Columba livia</i> (Domestic Pigeon)	Y		
52.	24407 <i>Ocyphaps lophotes</i> (Crested Pigeon)			
53.	25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove)	Y		
Convolvulaceae				
54.	6659 <i>Wilsonia humilis</i> (Silky Wilsonia)			
Corvidae				
55.	25592 <i>Corvus coronoides</i> (Australian Raven)			
Cracticidae				
56.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
57.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
58.	25597 <i>Strepera versicolor</i> (Grey Currawong)			
Cuculidae				
59.	25598 <i>Cacomantis flabelliformis</i> (Fan-tailed Cuckoo)			
Cyperaceae				
60.	743 <i>Baumea juncea</i> (Bare Twigrush)			
61.	907 <i>Gahnia trifida</i> (Coast Saw-sedge)			
62.	42742 <i>Lepidosperma calcicola</i>			
63.	933 <i>Lepidosperma gladiatum</i> (Coast Sword-sedge, Kerbin)			
64.	997 <i>Schoenus lanatus</i> (Woolly Bog-rush)			
65.	1004 <i>Schoenus nitens</i> (Shiny Bog-rush)			
Dasyuridae				
66.	24109 <i>Sminthopsis dolichura</i> (Little long-tailed Dunnart)			
Dicaeidae				
67.	25607 <i>Dicaeum hirundinaceum</i> (Mistletoebird)			
Dicruridae				
68.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
69.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
Dioscoreaceae				
70.	1509 <i>Dioscorea hastifolia</i> (Warrine, Warram)			
Diplodactylidae				
71.	24938 <i>Diplodactylus ornatus</i>			
72.	42414 <i>Lucasium alboguttatum</i>			
73.	24942 <i>Strophurus spinigerus</i> subsp. <i>spinigerus</i>			
Elapidae				
74.	42380 <i>Brachyurophis fasciolatus</i> subsp. <i>fasciolatus</i> (Narrow-banded Shovel-nosed Snake)			
75.	25296 <i>Demansia psammophis</i> subsp. <i>reticulata</i> (Yellow-faced Whipsnake)			
76.	25251 <i>Echiopsis curta</i> (Bardick)			
77.	25248 <i>Neelaps bimaculatus</i> (Black-naped Snake)			
78.	25261 <i>Pseudechis australis</i> (Mulga Snake)			
79.	42416 <i>Pseudonaja mengdeni</i> (Western Brown Snake)			
80.	25267 <i>Simoselaps littoralis</i> (West Coast Banded Snake)			
Ericaceae				
81.	6295 <i>Acrotriche cordata</i> (Coast Ground Berry)			
82.	6314 <i>Andersonia lehmanniana</i>			
83.	6405 <i>Leucopogon insularis</i>			
84.	6427 <i>Leucopogon parviflorus</i> (Coast Beard-heath)			
85.	17723 <i>Leucopogon</i> sp. <i>Lesueur</i> (B. Evans 530)			
Euphorbiaceae				
86.	34236 <i>Beyeria cinerea</i> subsp. <i>cinerea</i>		P3	
Fabaceae				
87.	11611 <i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>			
88.	3525 <i>Acacia rostellifera</i> (Summer-scented Wattle)			
89.	30033 <i>Acacia saligna</i> subsp. <i>lindleyi</i>			
90.	3549 <i>Acacia spathulifolia</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
91.	3584 <i>Acacia truncata</i>			
92.	3604 <i>Acacia xanthina</i> (White-stemmed Wattle)			
93.	3961 <i>Hardenbergia comptoniana</i> (Native Wisteria)			
94.	3966 <i>Hovea pungens</i> (Devil's Pins, Puyenak)			
95.	14751 <i>Jacksonia rubra</i>		P2	
96.	4029 <i>Jacksonia sternbergiana</i> (Stinkwood, Kapur)			
97.	4044 <i>Kennedia prostrata</i> (Scarlet Runner)			
98.	4046 <i>Lablab purpureus</i> (Lablab Bean)	Y		
99.	4100 <i>Mirbelia spinosa</i>			
Falconidae				
100.	24471 <i>Falco berigora</i> subsp. <i>berigora</i> (Brown Falcon)			
101.	25622 <i>Falco cenchroides</i> (Australian Kestrel)			
102.	25623 <i>Falco longipennis</i> (Australian Hobby)			
Frankeniaceae				
103.	5209 <i>Frankenia pauciflora</i> (Seaheath)			
Funariaceae				
104.	32371 <i>Funaria microstoma</i>			
Gekkonidae				
105.	24959 <i>Gehyra variegata</i>			
Goodeniaceae				
106.	29362 <i>Goodenia coerulea</i>			
107.	7606 <i>Scaevola crassifolia</i> (Thick-leaved Fan-flower)			
108.	7614 <i>Scaevola globulifera</i>			
109.	7626 <i>Scaevola nitida</i> (Shining Fanflower)			
110.	13152 <i>Scaevola thesioides</i> subsp. <i>thesioides</i>			
Haematopodidae				
111.	24487 <i>Haematopus longirostris</i> (Pied Oystercatcher)			
Haemodoraceae				
112.	1427 <i>Conostylis candicans</i> (Grey Cottonhead)			
113.	12027 <i>Conostylis candicans</i> subsp. <i>calcicola</i>			
114.	1451 <i>Conostylis seminuda</i>			
Halcyonidae				
115.	25549 <i>Todiramphus sanctus</i> (Sacred Kingfisher)			
Henicopidae				
116.	<i>Henicops dentatus</i>			
Hirundinidae				
117.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
Ixodidae				
118.	<i>Amblyomma triguttatum</i>			
Labridae				
119.	<i>Bodianus vulpinus</i>			
Lamiaceae				
120.	6842 <i>Hemigenia barbata</i>			
121.	41020 <i>Hemiphora bartlingii</i> (Woolly Dragon)			
Lamponidae				
122.	<i>Lampona brevipes</i>			
Laridae				
123.	24511 <i>Larus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Silver Gull)			
124.	25638 <i>Larus pacificus</i> (Pacific Gull)			
125.	24523 <i>Sterna caspia</i> (Caspian Tern)		IA	
126.	24530 <i>Sterna nereis</i> subsp. <i>nereis</i> (Fairy Tern)		T	
Lauraceae				
127.	2948 <i>Cassytha aurea</i>			
Limnodynastidae				
128.	25426 <i>Neobatrachus pelobatoides</i> (Humming Frog)			
Loranthaceae				
129.	13267 <i>Amyema linophylla</i> subsp. <i>linophylla</i>			
Lycosidae				
130.	<i>Artoria taeniifera</i>			
131.	<i>Dingosa serrata</i>			
132.	<i>Venator immansueta</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Macropodidae				
133.	24133 <i>Macropus irma</i> (Western Brush Wallaby)		P4	
Maluridae				
134.	25651 <i>Malurus lamberti</i> (Variegated Fairy-wren)			
135.	25652 <i>Malurus leucopterus</i> (White-winged Fairy-wren)			
136.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
137.	25655 <i>Stipiturus malachurus</i> (Southern Emu-wren)			
Malvaceae				
138.	4905 <i>Alyogyne hakeifolia</i>			
139.	4906 <i>Alyogyne huegelii</i> (Lilac Hibiscus)			
140.	40872 <i>Commersonia borealis</i>			
141.	4955 <i>Lawrenzia glomerata</i>			
142.	4959 <i>Lawrenzia squamata</i>			
143.	31351 <i>Malva preissiana</i>			
Megapodiidae				
144.	24557 <i>Leipoa ocellata</i> (Malleefowl)		T	
Meliphagidae				
145.	24559 <i>Acanthagenys rufogularis</i> (Spiny-cheeked Honeyeater)			
146.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
147.	24567 <i>Epthianura albifrons</i> (White-fronted Chat)			
148.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
Muridae				
149.	24223 <i>Mus musculus</i> (House Mouse)	Y		
150.	24243 <i>Rattus fuscipes</i> (Western Bush Rat)			
Myrtaceae				
151.	5518 <i>Darwinia neildiana</i> (Fringed Bell)			
152.	5545 <i>Eucalyptus accedens</i> (Powderbark Wandoo)			
153.	5638 <i>Eucalyptus erythrocorys</i> (Illyarrie)			
154.	5722 <i>Eucalyptus obtusiflora</i> (Dongara Mallee)			
155.	5761 <i>Eucalyptus rigidula</i> (Stiff-leaved Mallee)			
156.	13544 <i>Eucalyptus zopherophloia</i> (Blackbutt Mallee)		P4	
157.	5881 <i>Melaleuca brevifolia</i>			
158.	5887 <i>Melaleuca cardiophylla</i> (Tangling Melaleuca)			
159.	13271 <i>Melaleuca huegelii</i> subsp. <i>huegelii</i>			
160.	5922 <i>Melaleuca lanceolata</i> (Rottnest Teatree, Moonah)			
161.	13280 <i>Melaleuca viminea</i> subsp. <i>viminea</i>			
162.	6014 <i>Regelia inops</i>			
163.	17266 <i>Thryptomene</i> sp. <i>Lancelin</i> (M.E. Trudgen 14000)		P3	
164.	12393 <i>Verticordia aurea</i>		P4	
165.	12411 <i>Verticordia densiflora</i> var. <i>cespitosa</i>			
Nemesiidae				
166.	<i>Aname mainae</i>			
Nicodamidae				
167.	<i>Ambicodamus kochi</i>			
Nitrariaceae				
168.	4366 <i>Nitraria billardierei</i> (Nitre Bush)			
Olacaceae				
169.	2365 <i>Olox benthamiana</i>			
Orchidaceae				
170.	11038 <i>Caladenia bicalliata</i>			
171.	18035 <i>Caladenia bicalliata</i> subsp. <i>bicalliata</i>			
172.	1582 <i>Caladenia crebra</i> (Arrowsmith Spider Orchid)			
173.	10916 <i>Cyrtostylis huegelii</i>			
174.	11049 <i>Diuris corymbosa</i>			
175.	44162 <i>Diuris tinkeri</i>			
176.	15418 <i>Leptoceras menziesii</i>			
177.	41982 <i>Pterostylis microglossa</i>			
Ostraciidae				
178.	<i>Lactoria concatenatus</i>			
Otididae				
179.	24610 <i>Ardeotis australis</i> (Australian Bustard)			
Pachycephalidae				
180.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
181.	25679 <i>Pachycephala pectoralis</i> (Golden Whistler)			
182.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
Pardalotidae				
183.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
Pelecanidae				
184.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)			
Petroicidae				
185.	24652 <i>Eopsaltria georgiana</i> (White-breasted Robin)			
Phalacrocoracidae				
186.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
187.	25698 <i>Phalacrocorax melanoleucos</i> (Little Pied Cormorant)			
188.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
189.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
Phasianidae				
190.	25701 <i>Coturnix ypsilophora</i> (Brown Quail)			
Phyllanthaceae				
191.	4675 <i>Phyllanthus calycinus</i> (False Boronia)			
Physciaceae				
192.	27602 <i>Buellia georgei</i>			
Pittosporaceae				
193.	19421 <i>Marianthus bicolor</i> (Painted Marianthus)			
194.	19745 <i>Pittosporum ligustrifolium</i>			
Poaceae				
195.	247 <i>Bromus arenarius</i> (Sand Brome)			
196.	551 <i>Phalaris minor</i> (Lesser Canary Grass)	Y		
197.	577 <i>Poa poiformis</i> (Coastal Poa)			
Podicipedidae				
198.	24681 <i>Poliiocephalus poliocephalus</i> (Hoary-headed Grebe)			
Polygonaceae				
199.	17739 <i>Acetosa vesicaria</i>	Y		
200.	2412 <i>Muehlenbeckia adpressa</i> (Climbing Lignum)			
Portulacaceae				
201.	44226 <i>Calandrinia oraria</i>		P3	
202.	2860 <i>Calandrinia polyandra</i> (Parakeelya)			
Primulaceae				
203.	6484 <i>Samolus repens</i> (Creeping Brookweed)			
Proteaceae				
204.	32215 <i>Banksia kippistiana</i> var. <i>kippistiana</i>			
205.	1825 <i>Banksia lanata</i>			
206.	1828 <i>Banksia leptophylla</i>			
207.	15041 <i>Conospermum canaliculatum</i>			
208.	2054 <i>Grevillea olivacea</i> (Olive Grevillea)		P4	
209.	15838 <i>Grevillea preissii</i> subsp. <i>glabrilimba</i>			
210.	13900 <i>Grevillea uniformis</i>		P3	
211.	20368 <i>Petrophile axillaris</i>			
Psittacidae				
212.	25716 <i>Cacatua sanguinea</i> (Little Corella)			
213.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo (short-billed black-cockatoo), Carnaby's Cockatoo)		T	
214.	24739 <i>Neophema petrophila</i> (Rock Parrot)			
215.	41348 <i>Pezoporus flaviventris</i> (Western Ground Parrot)		T	
216.	25722 <i>Polytelis anthoepus</i> (Regent Parrot)			
Pygopodidae				
217.	30905 <i>Delma concinna</i> subsp. <i>concinna</i> (Javelin Legless Lizard)			
218.	25766 <i>Delma fraseri</i> (Fraser's Legless Lizard)			
219.	24999 <i>Delma grayii</i>			
220.	25005 <i>Lialis burtonis</i>			
221.	25007 <i>Pletholax gracilis</i> subsp. <i>gracilis</i> (Keeled Legless Lizard)			
222.	25008 <i>Pygopus lepidopodus</i> (Common Scaly Foot)			
Ranunculaceae				
223.	10804 <i>Clematis linearifolia</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Recurvirostridae				
224.	24776 <i>Recurvirostra novaehollandiae</i> (Red-necked Avocet)			
Restionaceae				
225.	17685 <i>Chaetanthus aristatus</i>			
226.	17663 <i>Desmocladus asper</i>			
Rhamnaceae				
227.	4802 <i>Cryptandra mutila</i>			
228.	9076 <i>Cryptandra myriantha</i>			
229.	4828 <i>Spyridium globulosum</i> (Basket Bush)			
Rubiaceae				
230.	18256 <i>Opercularia spermacocea</i>			
Rutaceae				
231.	15275 <i>Diplolaena obovata</i>			
Santalaceae				
232.	2344 <i>Leptomeria empetriformis</i>			
233.	2352 <i>Leptomeria preissiana</i>			
234.	2356 <i>Santalum acuminatum</i> (Quandong, Wamga)			
Sapindaceae				
235.	4746 <i>Diplopeltis huegelii</i>			
Scincidae				
236.	25027 <i>Ctenotus australis</i>			
237.	25039 <i>Ctenotus fallens</i>			
238.	25087 <i>Cyclodomorphus celatus</i> (Western Slender Blue-tongue)			
239.	25119 <i>Hemiergis quadrilineata</i>			
240.	25133 <i>Lerista elegans</i>			
241.	25148 <i>Lerista lineopunctulata</i>			
242.	25165 <i>Lerista praepedita</i>			
243.	25184 <i>Menetia greyii</i>			
244.	25191 <i>Morethia lineocellata</i>			
245.	25192 <i>Morethia obscura</i>			
246.	25203 <i>Tiliqua occipitalis</i> (Western Bluetongue)			
Scolopacidae				
247.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
248.	25736 <i>Arenaria interpres</i> (Ruddy Turnstone)		IA	
249.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
250.	30932 <i>Limosa lapponica</i> (Bar-tailed Godwit)		IA	
251.	25742 <i>Numenius phaeopus</i> (Whimbrel)		IA	
Scombridae				
252.	<i>Katsuwonus pelamis</i>			
Scorpaenidae				
253.	<i>Pterois volitans</i>			
Scrophulariaceae				
254.	17175 <i>Eremophila glabra</i> subsp. <i>albicans</i>			
255.	14340 <i>Eremophila glabra</i> subsp. <i>glabra</i>			
256.	7289 <i>Myoporum caprarioides</i> (Slender Myoporum)			
257.	7291 <i>Myoporum insulare</i> (Blueberry Tree, boobialla)			
Solanaceae				
258.	6949 <i>Anthocercis littorea</i> (Yellow Tailflower)			
259.	11327 <i>Nicotiana occidentalis</i> subsp. <i>hesperis</i>			
Stylidiaceae				
260.	7720 <i>Stylidium elongatum</i> (Tall Triggerplant)			
Sylviidae				
261.	24834 <i>Cincloramphus mathewsi</i> (Rufous Songlark)			
Tettigoniidae				
262.	33976 <i>Hemisaga vepreculae</i> (cricket)		P3	
Theridiidae				
263.	<i>Latrodectus hasseltii</i>			
Thymelaeaceae				
264.	5243 <i>Pimelea ferruginea</i>			
265.	5246 <i>Pimelea gilgiana</i>			
Trochanteriidae				

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
266.	<i>Longrita zuytdorp</i>			
Urodacidae				
267.	<i>Urodacus novaehollandiae</i>			
Vespertilionidae				
268.	24194 <i>Nyctophilus geoffroyi</i> (Lesser Long-eared Bat)			
Zodariidae				
269.	<i>Holasteron humphreysi</i>			
Zosteropidae				
270.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silvereye)			
Zygophyllaceae				
271.	4390 <i>Zygophyllum fruticosum</i> (Shrubby Twinleaf)			

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

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



EPBC Act Protected Matters Report

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

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

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

Report created: 06/05/15 13:41:10

[Summary](#)

[Details](#)

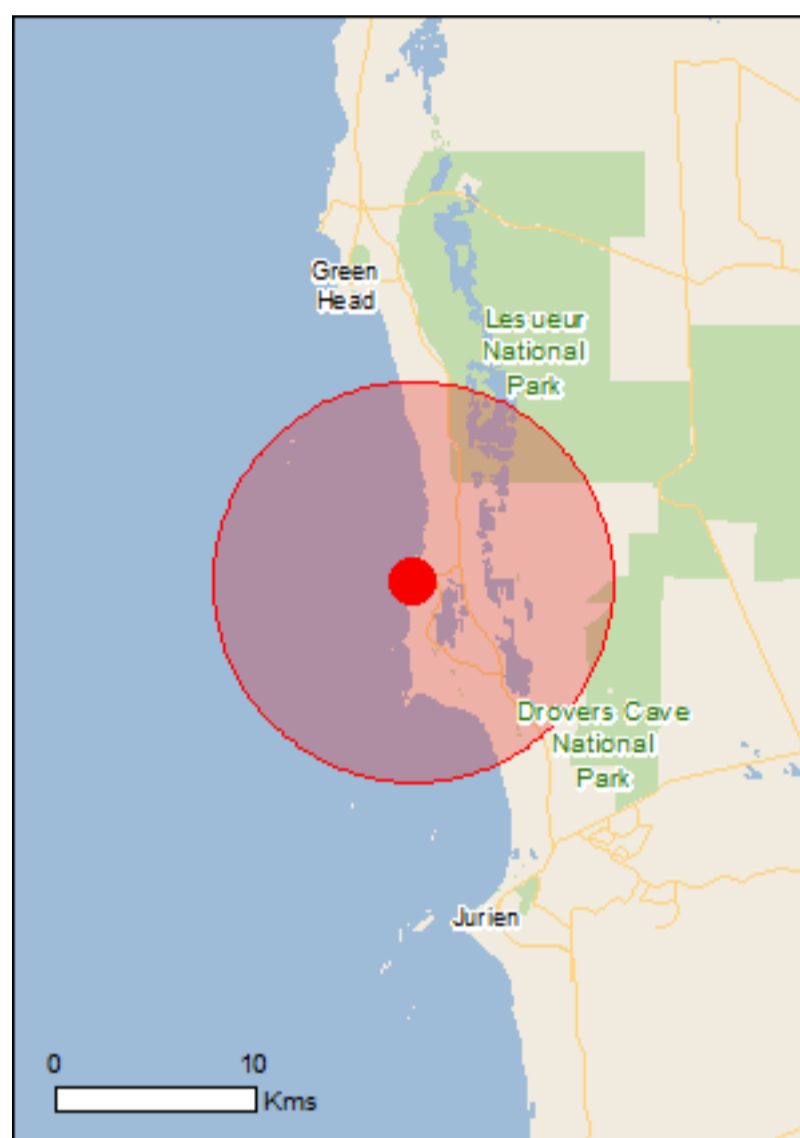
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

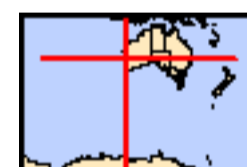
[Acknowledgements](#)



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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:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	46
Listed Migratory Species:	39

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/index.html>

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:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	62
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	1

Extra Information

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

State and Territory Reserves:	6
Regional Forest Agreements:	None
Invasive Species:	17
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	1

Details

Matters of National Environmental Significance

Commonwealth Marine Area

[\[Resource Information \]](#)

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

Name

EEZ and Territorial Sea

Marine Regions

[\[Resource Information \]](#)

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

Name

[South-west](#)

Listed Threatened Species

[\[Resource Information \]](#)

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Calyptorhynchus latirostris Carnaby's Black-Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora epomophora Southern Royal Albatross [25996]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora sanfordi Northern Royal Albatross [82331]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans amsterdamensis Amsterdam Albatross [82330]	Endangered	Species or species habitat may occur within area
Diomedea exulans exulans Tristan Albatross [82337]	Endangered	Species or species habitat may occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence area
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta steadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris impavida Campbell Albatross [82449]	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
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Neophoca cinerea Australian Sea-lion [22]	Vulnerable	Breeding known to occur within area
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat may occur within area
Plants		
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Anigozanthos viridis subsp. terraspectans Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat may occur within area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence area
Centrolepis caespitosa [6393]	Endangered	Species or species habitat may occur within area
Darwinia foetida Muchea Bell [83190]	Critically Endangered	Species or species habitat may occur within area
Drakaea elastica Glossy-leafed Hammer-orchid, Praying Virgin [16753]	Endangered	Species or species habitat may occur within area
Eucalyptus balanites Cadda Road Mallee, Cadda Mallee [24264]	Endangered	Species or species habitat may occur within area
Eucalyptus impensa Eneabba Mallee [56711]	Endangered	Species or species habitat may occur within area
Grevillea batrachioides Mt Lesueur Grevillea [21735]	Endangered	Species or species habitat may occur within area
Grevillea christineae Christine's Grevillea [64520]	Endangered	Species or species habitat may occur within area
Grevillea humifusa Spreading Grevillea [61182]	Endangered	Species or species habitat may occur within area
Hemiandra gardneri Red Snakebush [7945]	Endangered	Species or species habitat known to occur within area
Paracaleana dixonii Sandplain Duck Orchid [86882]	Endangered	Species or species habitat likely to occur within area
Tetratheca nephelioides [83217]	Critically Endangered	Species or species habitat likely to occur within area
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias Great White Shark [64470]	Vulnerable	Foraging, feeding or

Name	Status	Type of Presence
Rhincodon typus Whale Shark [66680]	Vulnerable	related behaviour known to occur within area 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		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered*	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered*	Species or species habitat may occur within area
Diomedea epomophora (sensu stricto) Southern Royal Albatross [1072]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered*	Foraging, feeding or related behaviour likely to occur within area
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
Puffinus pacificus Wedge-tailed Shearwater [1027]		Breeding known to occur within area
Sterna anaethetus Bridled Tern [814]		Breeding known to occur within area
Sterna caspia Caspian Tern [59467]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta (sensu stricto) Shy Albatross, Tasmanian Shy Albatross [64697]	Vulnerable*	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Thalassarche impavida Campbell Albatross [64459]	Vulnerable*	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
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
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharodon carcharias Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known 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	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		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	Foraging, feeding or related behaviour known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Migratory Terrestrial Species		
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Pandion cristatus Eastern Osprey [82411]		Breeding known to occur within area

Other Matters Protected by the EPBC Act

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		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered*	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered*	Species or species habitat may occur within area
Diomedea epomophora (sensu stricto) Southern Royal Albatross [1072]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered*	Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Larus novaehollandiae Silver Gull [810]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour known to occur within area
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
Puffinus pacificus Wedge-tailed Shearwater [1027]		Breeding known to occur within area
Sterna anaethetus Bridled Tern [814]		Breeding known to occur within area
Sterna bergii Crested Tern [816]		Breeding known to occur within area
Sterna caspia Caspian Tern [59467]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta (sensu stricto) Shy Albatross, Tasmanian Shy Albatross [64697]	Vulnerable*	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross [64459]	Vulnerable*	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat may occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Stigmatopora argus Spotted Pipefish, Gulf Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		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
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area

Mammals

Arctocephalus forsteri New Zealand Fur-seal [20]		Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion [22]	Vulnerable	Breeding known to occur within area

Reptiles

Aipysurus pooleorum Shark Bay Seasnake [66061]		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	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans

Name	Status	Type of Presence
[Resource Information]		
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may 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 truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Commonwealth Reserves Marine [Resource Information]

Name	Label
Jurien	Special Purpose Zone (IUCN VI)

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Beekeepers	WA
Drovers Cave	WA
Fisherman Islands	WA
Lesueur	WA
Sandland Islands	WA
Unnamed WA11883	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		

Name	Status	Type of Presence
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Mammals		
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

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

Name	Region
Western rock lobster	South-west

Caveat

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

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

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

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

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

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

-30.18411 114.99835

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:

- [-Department of Environment, Climate Change and Water, New South Wales](#)
- [-Department of Sustainability and Environment, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment and Natural Resources, South Australia](#)
- [-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts](#)
- [-Environmental and Resource Management, Queensland](#)
- [-Department of Environment and Conservation, Western Australia](#)
- [-Department of the Environment, Climate Change, Energy and Water](#)
- [-Birds Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-SA 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, Atherton and Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [-State Forests of NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- 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 06/05/2015

Current Names Only Yes
 Core Datasets Only Yes
 Method 'By Circle'
 Centre 114°59' 54" E,30°11' 00" S
 Buffer 10km
 Group By Family

Family	Species	Records
Acanthizidae	4	12
Accipitridae	3	11
Acrotylaceae	3	6
Agamidae	3	36
Alariaceae	1	1
Amaranthaceae	1	1
Anadyomenaceae	2	3
Anatidae	2	2
Apiaceae	2	2
Ardeidae	1	3
Areschougiaceae	6	11
Artamidae	1	1
Asparagaceae	7	9
Asteraceae	15	21
Bonnemaisoniaceae	2	2
Boodleaceae	1	1
Brassicaceae	4	6
Campanulaceae	2	3
Casuaridae	1	2
Caulerpaceae	3	6
Celastraceae	2	2
Ceramiaceae	18	35
Champiaceae	2	6
Charadriidae	3	12
Chenopodiaceae	6	8
Chnoosporaceae	1	1
Chordariaceae	1	1
Cladophoraceae	2	2
Codiaceae	6	14
Colchicaceae	2	2
Convolvulaceae	1	3
Corallinaceae	4	5
Corvidae	1	3
Cracticidae	1	1
Cuculidae	1	1
Cupressaceae	1	1
Cyperaceae	5	5
Cystocloniaceae	2	3
Cystoseiraceae	5	5
Dasyaceae	4	14
Dasyopogonaceae	1	1
Dasyuridae	3	8
Delesseriaceae	6	10
Dicaeidae	1	1
Dicranemataceae	1	1
Dicruridae	1	7
Dictyotaceae	9	10
Dilleniaceae	3	4
Diplodactylidae	5	61
Droseraceae	4	5
Ecdעיocoleaceae	1	1
Elaeocarpaceae	1	1
Elapidae	5	20
Ericaceae	4	5
Euphorbiaceae	3	5
Fabaceae	18	32
Fauceaceae	2	3
Funariaceae	1	1
Galaxauraceae	2	5
Gekkonidae	2	31
Gelidiaceae	2	4
Gonorynchidae	1	1
Goodeniaceae	14	20
Gracilariaceae	3	6
Gyrostemonaceae	1	2
Haematopodidae	2	2
Haemodoraceae	12	18
Halymeniaceae	2	5
Hemerocallidaceae	4	6
Hirundinidae	1	8
Hydrobatidae	1	13
Hylidae	1	4
Hypneaceae	2	3
Hypoxidaceae	1	1
Iridaceae	1	1
Juncaceae	1	1
Juncaginaceae	1	1

Labridae	1	1
Lamiaceae	2	2
Laridae	9	66
Lauraceae	2	3
Liagoraceae	1	1
Limnodynastidae	3	18
Loganiaceae	2	2
Loranthaceae	1	1
Lynceidae	1	1
Macropodidae	1	2
Maluridae	3	4
Malvaceae	10	20
Megadermatidae	1	1
Megapodiidae	1	1
Meliphagidae	4	6
Monacanthidae	1	1
Muridae	3	111
Mychodeaceae	2	2
Myobatrachidae	1	9
Myrtaceae	36	66
Nizyeniaceae	1	6
Olacaceae	1	1
Onagraceae	1	1
Orchidaceae	5	7
Otariidae	1	11
Otididae	1	3
Pachycephalidae	3	7
Pardalotidae	1	1
Petroicidae	1	1
Phacelocarpaceae	2	3
Phalacrocoracidae	3	15
Phyllanthaceae	1	2
Plocamiaceae	2	5
Poaceae	10	11
Polygonaceae	1	1
Portulacaceae	1	2
Posidoniaceae	1	1
Primulaceae	2	4
Procellariidae	2	12
Proteaceae	21	30
Psittacidae	2	3
Pygopodidae	6	16
Racopilaceae	1	1
Rallidae	1	1
Ranunculaceae	1	3
Restionaceae	1	1
Rhamnaceae	3	4
Rhodomelaceae	36	92
Rutaceae	5	14
Santalaceae	4	8
Sapindaceae	2	4
Sargassaceae	11	17
Scincidae	15	109
Scolopacidae	7	17
Scrophulariaceae	2	2
Scytosiphonaceae	2	2
Sillaginidae	1	1
Siphonocladaceae	1	1
Solanaceae	3	6
Stylidiaceae	5	21
Tarsipedidae	1	1
Teloschistaceae	1	1
Tettigoniidae	1	1
Thymelaeaceae	4	6
Typhaceae	1	1
Udoteaceae	1	1
Urticaceae	1	1
Varanidae	2	2
Zosteropidae	1	8
Zygophyllaceae	2	2
TOTAL	525	1360

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Acanthizidae				
1.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
2.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
3.	24269 <i>Calamanthus campestris</i> (Rufous Fieldwren)			
4.	25534 <i>Sericornis frontalis</i> (White-browed Scrubwren)			
Accipitridae				
5.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
6.	24293 <i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)		IA	
7.	25543 <i>Pandion haliaetus</i> (Osprey)			
Acrotylaceae				
8.	26456 <i>Amphiplexia hymenocladoides</i>			
9.	26665 <i>Claviconium ovatum</i>			
10.	26915 <i>Hennedya crispa</i>			
Agamidae				
11.	30899 <i>Ctenophorus adelaidensis</i> (Southern Heath Dragon, Western Heath Dragon)			
12.	24881 <i>Ctenophorus maculatus</i> subsp. <i>maculatus</i> (Spotted Military Dragon)			
13.	24907 <i>Pogona minor</i> subsp. <i>minor</i> (Dwarf Bearded Dragon)			
Alariaceae				
14.	26805 <i>Ecklonia radiata</i>			
Amaranthaceae				
15.	41505 <i>Ptilotus gaudichaudii</i> subsp. <i>eremita</i>			
Anadyomenaceae				
16.	26464 <i>Anadyomene brownii</i>			
17.	27074 <i>Microdictyon umbilicatum</i>			
Anatidae				
18.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
19.	24331 <i>Tadorna tadornoides</i> (Australian Shelduck, Mountain Duck)			
Apiaceae				
20.	6210 <i>Apium annuum</i>			
21.	6294 <i>Xanthosia tomentosa</i> (Lesueur Southern Cross)		P4	
Ardeidae				
22.	25560 <i>Ardea sacra</i> (Eastern Reef Egret, Eastern Reef Heron)		IA	
Areschougiaceae				
23.	26484 <i>Areschougia ligulata</i>			
24.	26503 <i>Betaphycus speciosum</i>			
25.	26534 <i>Callophycus dorsifer</i>			
26.	26535 <i>Callophycus harveyanus</i>			
27.	26536 <i>Callophycus oppositifolius</i>			
28.	27281 <i>Solleria robusta</i>			
Artamidae				
29.	24353 <i>Artamus cyanopterus</i> (Dusky Woodswallow)			
Asparagaceae				
30.	1208 <i>Acanthocarpus preissii</i>			
31.	8788 <i>Chamaescilla versicolor</i>			
32.	1305 <i>Laxmannia omnifertilis</i>			
33.	11679 <i>Laxmannia sessiliflora</i> subsp. <i>drummondii</i>			
34.	1239 <i>Lomandra preissii</i>			
35.	1319 <i>Thysanotus arenarius</i>			
36.	1358 <i>Thysanotus triandrus</i>			
Asteraceae				
37.	7832 <i>Angianthus milnei</i> (Cone-spike Angianthus)			
38.	7851 <i>Asteridea pulverulenta</i> (Common Bristle Daisy)			
39.	7878 <i>Brachyscome iberidifolia</i>			
40.	12741 <i>Hyalosperma cotula</i>			
41.	17852 <i>Leptorhynchus scaber</i> (Lanky Buttons)			
42.	8105 <i>Millotia myosotidifolia</i>			
43.	8149 <i>Olearia rudis</i> (Rough Daisybush)			
44.	18353 <i>Pithocarpa pulchella</i> var. <i>pulchella</i>			
45.	8175 <i>Podolepis gracilis</i> (Slender Podolepis)			
46.	8177 <i>Podolepis lessonii</i>			
47.	13300 <i>Rhodanthe citrina</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
48.	20161 <i>Senecio pinnatifolius</i>			
49.	25884 <i>Senecio pinnatifolius</i> var. <i>latilobus</i>			
50.	8231 <i>Sonchus oleraceus</i> (Common Sowthistle)	Y		
51.	8275 <i>Waitzia acuminata</i> (Orange Immortelle)			
Bonnemaisoniaceae				
52.	26486 <i>Asparagopsis taxiformis</i>			
53.	26757 <i>Delisea pulchra</i>			
Boodleaceae				
54.	26660 <i>Cladophoropsis herpestica</i>			
Brassicaceae				
55.	3016 <i>Heliophila pusilla</i>	Y		
56.	3027 <i>Lepidium foliosum</i> (Leafy Peppergrass)			
57.	3030 <i>Lepidium lyratogynum</i>			
58.	3072 <i>Sisymbrium orientale</i> (Indian Hedge Mustard)	Y		
Campanulaceae				
59.	7396 <i>Isotoma hypocrateriformis</i> (Woodbridge Poison)			
60.	36863 <i>Lobelia heterophylla</i> subsp. <i>heterophylla</i>			
Casuariidae				
61.	24470 <i>Dromaius novaehollandiae</i> (Emu)			
Caulerpaceae				
62.	26556 <i>Caulerpa cactoides</i>			
63.	27380 <i>Caulerpa flexilis</i> var. <i>muelleri</i>			
64.	26578 <i>Caulerpa simpliciuscula</i>			
Celastraceae				
65.	9070 <i>Stackhousia pubescens</i> (Downy Stackhousia)			
66.	4737 <i>Tripterococcus brunonis</i> (Winged Stackhousia)			
Ceramiaceae				
67.	26447 <i>Acrothamnion preissii</i>			
68.	26471 <i>Anthamnion armatum</i>			
69.	26475 <i>Anthamnion hanovioides</i>			
70.	26511 <i>Bornetia binderiana</i>			
71.	26588 <i>Ceramium australe</i>			Y
72.	26599 <i>Ceramium puberulum</i>			
73.	26601 <i>Ceramium rubrum</i>			
74.	26753 <i>Dasyphila preissii</i>			
75.	26797 <i>Drewiana nitella</i>			
76.	26830 <i>Euptilota articulata</i>			
77.	26883 <i>Griffithsia monilis</i>			
78.	26900 <i>Haloplegma preissii</i>			
79.	27153 <i>Pleonosporium caribaeum</i>			Y
80.	27193 <i>Psilothallia siliculosa</i>			
81.	27194 <i>Psilothallia striata</i>			
82.	27301 <i>Spongoclonium conspicuum</i>			
83.	27310 <i>Spyridia filamentosa</i>			
84.	27364 <i>Wollastoniella myriophylloides</i>			
Champiaceae				
85.	26619 <i>Champia stipitata</i>			
86.	26621 <i>Champia zostericola</i>			
Charadriidae				
87.	24376 <i>Charadrius rubricollis</i> (Hooded Plover)		P4	
88.	24377 <i>Charadrius ruficapillus</i> (Red-capped Plover)			
89.	24383 <i>Pluvialis squatarola</i> (Grey Plover)		IA	
Chenopodiaceae				
90.	2450 <i>Atriplex amnicola</i> (Swamp Saltbush)			
91.	2452 <i>Atriplex cinerea</i> (Grey Saltbush)			
92.	2463 <i>Atriplex isatidea</i> (Coast Saltbush)			
93.	2639 <i>Suaeda australis</i> (Seablite)			
94.	33297 <i>Tecticornia pergranulata</i> subsp. <i>pergranulata</i> (Blackseed Samphire)			
95.	2644 <i>Threlkeldia diffusa</i> (Coast Bonefruit)			
Chnoosporaceae				
96.	27226 <i>Roseningea orientalis</i>			
Chordariaceae				
97.	27164 <i>Polycerea zostericola</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Cladophoraceae				
98.	26650			
99.	26659			
Codiaceae				
100.	26672			
101.	26674			
102.	26675			
103.	26676			
104.	26677			
105.	26683			
Colchicaceae				
106.	1385			
107.	1398			
Convolvulaceae				
108.	6659			
Corallinaceae				
109.	26458			
110.	26463			
111.	13141			
112.	27070			
Corvidae				
113.	25592			
Cracticidae				
114.	25596			
Cuculidae				
115.	25598			
Cupressaceae				
116.	36560			
Cyperaceae				
117.	801			
118.	912			
119.	42742			
120.	997			
121.	35582			
Cystocloniaceae				
122.	26701			
123.	27314			
Cystoseiraceae				
124.	26586			
125.	26946			
126.	27090			
127.	27151			
128.	27264			
Dasyaceae				
129.	26735			
130.	26738			
131.	26936			
132.	27331			
Dasypogonaceae				
133.	1220			
Dasyuridae				
134.	24108			
135.	24109			
136.	24112			
Delesseriaceae				
137.	26444			
138.	26622			
139.	26977			
140.	26979			
141.	27145			
142.	27146			
Dicaeidae				

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
143.	25607 <i>Dicaeum hirundinaceum</i> (Mistletoebird)			
Dicranemataceae				
144.	26758 <i>Dicranema revolutum</i>			
Dicruridae				
145.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
Dictyotaceae				
146.	26766 <i>Dictyopteris muelleri</i>			
147.	29537 <i>Dictyota fastigiata</i>			
148.	29939 <i>Dictyota moniliformis</i>			
149.	35216 <i>Dictyota paniculata</i>			
150.	35223 <i>Dictyota polyclada</i>			
151.	26791 <i>Distromium flabellatum</i>			
152.	27116 <i>Padina elegans</i>			
153.	27317 <i>Stoechospermum polypodioides</i>			
154.	27373 <i>Zonaria turneriana</i>			
Dilleniaceae				
155.	5135 <i>Hibbertia hypericoides</i> (Yellow Buttercups)			
156.	5162 <i>Hibbertia racemosa</i> (Stalked Guinea Flower)			
157.	5171 <i>Hibbertia spicata</i>			
Diplodactylidae				
158.	24918 <i>Crenadactylus ocellatus</i> subsp. <i>ocellatus</i> (Clawless Gecko)			
159.	24938 <i>Diplodactylus ornatus</i>			
160.	24939 <i>Diplodactylus polyophthalmus</i>			
161.	42414 <i>Lucasium alboguttatum</i>			
162.	24942 <i>Strophurus spinigerus</i> subsp. <i>spinigerus</i>			
Droseraceae				
163.	13201 <i>Drosera eneabba</i>			
164.	13216 <i>Drosera menziesii</i> subsp. <i>penicillaris</i>			
165.	3119 <i>Drosera parvula</i> (Small Sundew)			
166.	29178 <i>Drosera porrecta</i>			
Ecdeiocoleaceae				
167.	18404 <i>Georgeantha hexandra</i>			
Elaeocarpaceae				
168.	4542 <i>Tetratheca remota</i>		P1	
Elapidae				
169.	42380 <i>Brachyuropis fasciolatus</i> subsp. <i>fasciolatus</i> (Narrow-banded Shovel-nosed Snake)			
170.	25296 <i>Demansia psammophis</i> subsp. <i>reticulata</i> (Yellow-faced Whipsnake)			
171.	25251 <i>Echiopsis curta</i> (Bardick)			
172.	42416 <i>Pseudonaja mengdeni</i> (Western Brown Snake)			
173.	25267 <i>Simoselaps littoralis</i> (West Coast Banded Snake)			
Ericaceae				
174.	6332 <i>Astroloma microdonta</i> (Sandplain Cranberry)			
175.	6348 <i>Conostephium pendulum</i> (Pearl Flower)			
176.	6432 <i>Leucopogon plumuliflorus</i>		P2	
177.	6434 <i>Leucopogon polymorphus</i>			
Euphorbiaceae				
178.	4594 <i>Beyeria cinerea</i>			
179.	34237 <i>Beyeria cinerea</i> subsp. <i>borealis</i>			
180.	34236 <i>Beyeria cinerea</i> subsp. <i>cinerea</i>		P3	
Fabaceae				
181.	3376 <i>Acacia idiomorpha</i>			
182.	3409 <i>Acacia lasiocarpa</i> (Panjang)			
183.	11611 <i>Acacia lasiocarpa</i> var. <i>lasiocarpa</i>			
184.	11448 <i>Acacia leptospermoides</i> subsp. <i>leptospermoides</i>			
185.	3493 <i>Acacia plicata</i>		P3	
186.	3525 <i>Acacia rostellifera</i> (Summer-scented Wattle)			
187.	3584 <i>Acacia truncata</i>			
188.	3604 <i>Acacia xanthina</i> (White-stemmed Wattle)			
189.	18560 <i>Daviesia divaricata</i> subsp. <i>divaricata</i>			
190.	3833 <i>Daviesia podophylla</i>			
191.	3894 <i>Gastrolobium callistachys</i> (Rock Poison)			
192.	23489 <i>Gompholobium gairdnerianum</i>		P3	
193.	3955 <i>Gompholobium preissii</i>			
194.	19700 <i>Isotropis cuneifolia</i> subsp. <i>cuneifolia</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
195.	4010 <i>Jacksonia floribunda</i> (Holly Pea)			
196.	4029 <i>Jacksonia sternbergiana</i> (Stinkwood, Kapur)			
197.	17551 <i>Sphaerolobium drummondii</i>			
198.	14738 <i>Trifolium resupinatum</i> var. <i>resupinatum</i>	Y		
Fauceaceae				
199.	26859 <i>Gloiocladia australe</i>			
200.	26860 <i>Gloiocladia halymenioides</i>			
Funariaceae				
201.	32370 <i>Funaria hygrometrica</i>			
Galaxauraceae				
202.	29615 <i>Dichotomaria obtusata</i>			
203.	26835 <i>Galaxaura rugosa</i>			
Gekkonidae				
204.	24980 <i>Christinus marmoratus</i> (Marbled Gecko)			
205.	24959 <i>Gehyra variegata</i>			
Gelidiaceae				
206.	26849 <i>Gelidium pusillum</i>			
207.	27195 <i>Pterocladia lucida</i>			
Gonorynchidae				
208.	<i>Gonorynchus greyi</i>			
Goodeniaceae				
209.	7482 <i>Dampiera teres</i> (Terete-leaved Dampiera)			
210.	12516 <i>Goodenia convexa</i>			
211.	19286 <i>Goodenia pulchella</i> subsp. <i>Coastal Plain A</i> (M. Hislop 634)			
212.	7586 <i>Lechenaultia stenosepala</i> (Narrow-sepaled Lechenaultia)			
213.	7603 <i>Scaevola canescens</i> (Grey Scaevola)			
214.	7606 <i>Scaevola crassifolia</i> (Thick-leaved Fan-flower)			
215.	7613 <i>Scaevola glandulifera</i> (Viscid Hand-flower)			
216.	7614 <i>Scaevola globulifera</i>			
217.	29356 <i>Scaevola repens</i> subsp. <i>Northern Sandplains</i> (R.J. Cranfield & P.J. Spencer 8445)			
218.	13181 <i>Scaevola repens</i> var. <i>angustifolia</i>			
219.	7647 <i>Scaevola thesioides</i>			
220.	13152 <i>Scaevola thesioides</i> subsp. <i>thesioides</i>			
221.	7665 <i>Velleia trinervis</i>			
222.	7666 <i>Verreauxia reinwardtii</i> (Common Verreauxia)			
Gracilariaceae				
223.	26712 <i>Curdiea obesa</i>			
224.	26868 <i>Gracilaria cliftonii</i>			
225.	26872 <i>Gracilaria preissiana</i>			
Gyrostemonaceae				
226.	2791 <i>Tersonia cyathiflora</i> (Button Creeper)			
Haematopodidae				
227.	25627 <i>Haematopus fuliginosus</i> (Sooty Oystercatcher)			
228.	24487 <i>Haematopus longirostris</i> (Pied Oystercatcher)			
Haemodoraceae				
229.	1409 <i>Anigozanthos humilis</i> (Catspaw)			
230.	11434 <i>Anigozanthos humilis</i> subsp. <i>humilis</i>			
231.	1417 <i>Blancoa canescens</i> (Winter Bell)			
232.	11414 <i>Conostylis aculeata</i> subsp. <i>breviflora</i>			
233.	1423 <i>Conostylis aurea</i> (Golden Conostylis)			
234.	1427 <i>Conostylis candicans</i> (Grey Cottonhead)			
235.	12027 <i>Conostylis candicans</i> subsp. <i>calcicola</i>			
236.	11438 <i>Conostylis candicans</i> subsp. <i>candicans</i>			
237.	1428 <i>Conostylis canteriata</i>			
238.	11870 <i>Conostylis teretifolia</i> subsp. <i>teretifolia</i>			
239.	1473 <i>Haemodorum simulans</i>			
240.	1475 <i>Haemodorum spicatum</i> (Mardja)			
Halymeniaceae				
241.	26709 <i>Cryptonemia undulata</i>			
242.	26850 <i>Gelinaria ulvoidea</i>			
Hemerocallidaceae				
243.	1264 <i>Arnocrinum preissii</i>			
244.	1292 <i>Hensmania stoniella</i>		P3	
245.	19632 <i>Johnsonia pubescens</i> subsp. <i>pubescens</i>			

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246.	1361 <i>Tricoryne elatior</i> (Yellow Autumn Lily)			
Hirundinidae				
247.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
Hydrobatidae				
248.	24495 <i>Oceanites marinus</i> subsp. <i>dulciae</i> (White-faced Storm Petrel)			
Hylidae				
249.	25388 <i>Litoria moorei</i> (Motorbike Frog)			
Hypneaceae				
250.	35898 <i>Hypnea musciformis</i>			
251.	26973 <i>Hypnea valentiae</i>			
Hypoxidaceae				
252.	43763 <i>Pauridia glabella</i>			
Iridaceae				
253.	1550 <i>Patersonia occidentalis</i> (Purple Flag, Koma)			
Juncaceae				
254.	11922 <i>Juncus kraussii</i> subsp. <i>australiensis</i>			
Juncaginaceae				
255.	152 <i>Triglochin trichophora</i>			
Labridae				
256.	<i>Thalassoma lunare</i>			
Lamiaceae				
257.	16933 <i>Hemiandra glabra</i>			
258.	6939 <i>Westringia dampieri</i>			
Laridae				
259.	24511 <i>Larus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Silver Gull)			
260.	25638 <i>Larus pacificus</i> (Pacific Gull)			
261.	24520 <i>Sterna anaethetus</i> subsp. <i>anaethetus</i> (Bridled Tern)			
262.	24522 <i>Sterna bergii</i> (Crested Tern)			
263.	24523 <i>Sterna caspia</i> (Caspian Tern)		IA	
264.	25640 <i>Sterna dougallii</i> (Roseate Tern)		IA	
265.	24524 <i>Sterna dougallii</i> subsp. <i>gracilis</i> (Roseate Tern)		IA	
266.	24525 <i>Sterna fuscata</i> subsp. <i>nubilosa</i> (Sooty Tern)			
267.	24530 <i>Sterna nereis</i> subsp. <i>nereis</i> (Fairy Tern)		T	
Lauraceae				
268.	2957 <i>Cassytha racemosa</i> (Dodder Laurel)			
269.	11799 <i>Cassytha racemosa</i> forma <i>racemosa</i>			
Liagoraceae				
270.	26913 <i>Helminthora australis</i>			
Limnodynastidae				
271.	25410 <i>Heleioporus eyrei</i> (Moaning Frog)			
272.	25415 <i>Limnodynastes dorsalis</i> (Western Banjo Frog)			
273.	25426 <i>Neobatrachus pelobatoides</i> (Humming Frog)			
Loganiaceae				
274.	16798 <i>Logania litoralis</i>			
275.	6512 <i>Logania spermacocea</i>			
Loranthaceae				
276.	13266 <i>Amyema miraculosa</i> subsp. <i>miraculosa</i>			
Lyncaeiidae				
277.	<i>Lynceus tatei</i>			
Macropodidae				
278.	24132 <i>Macropus fuliginosus</i> (Western Grey Kangaroo)			
Maluridae				
279.	25652 <i>Malurus leucopterus</i> (White-winged Fairy-wren)			
280.	24551 <i>Malurus pulcherrimus</i> (Blue-breasted Fairy-wren)			
281.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
Malvaceae				
282.	4905 <i>Alyogyne hakeifolia</i>			
283.	43023 <i>Alyogyne</i> sp. <i>Hutt River</i> (B.J. Lepschi & T.R. Lally 2310)			
284.	13233 <i>Guichenotia alba</i>		P3	
285.	5011 <i>Guichenotia ledifolia</i>			

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286.	5031 <i>Lasiopetalum drummondii</i>			
287.	36660 <i>Lasiopetalum</i> sp. Mount Lesueur (E.A. Griffin 1997)			
288.	4958 <i>Lawrencia spicata</i>			
289.	31351 <i>Malva preissiana</i>			
290.	5080 <i>Thomasia foliosa</i>			
291.	5084 <i>Thomasia grandiflora</i> (Large Flowered Thomasia)			
Megadermatidae				
292.	24180 <i>Macroderma gigas</i> (Ghost Bat)		P4	
Megapodiidae				
293.	24557 <i>Leipoa ocellata</i> (Malleefowl)		T	
Meliphagidae				
294.	24559 <i>Acanthagenys rufogularis</i> (Spiny-cheeked Honeyeater)			
295.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
296.	24567 <i>Epthianura albifrons</i> (White-fronted Chat)			
297.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
Monacanthidae				
298.	<i>Acanthaluteres spilomelanurus</i>			
Muridae				
299.	24223 <i>Mus musculus</i> (House Mouse)	Y		
300.	24230 <i>Pseudomys albocinereus</i> (Ash-grey Mouse)			
301.	24243 <i>Rattus fuscipes</i> (Western Bush Rat)			
Mychodeaceae				
302.	27078 <i>Mychodea australis</i>			Y
303.	27080 <i>Mychodea disticha</i>			
Myobatrachidae				
304.	25433 <i>Pseudophryne guentheri</i> (Crawling Toadlet)			
Myrtaceae				
305.	5426 <i>Calothamnus quadrifidus</i> (One-sided Bottlebrush, Kwowdward)			
306.	5441 <i>Calytrix aurea</i>			
307.	5479 <i>Calytrix strigosa</i>			
308.	5498 <i>Chamelaucium uncinatum</i> (Geraldton Wax)			
309.	5511 <i>Darwinia helichrysoides</i>			
310.	5518 <i>Darwinia neildiana</i> (Fringed Bell)			
311.	5522 <i>Darwinia pauciflora</i>			
312.	5528 <i>Darwinia sanguinea</i>			
313.	5537 <i>Eremaea beaufortioides</i>			
314.	14099 <i>Eremaea beaufortioides</i> var. <i>lachnosanthe</i>			
315.	5540 <i>Eremaea fimbriata</i>			
316.	5543 <i>Eremaea violacea</i> (Violet Eremaea)			
317.	13545 <i>Eucalyptus angularis</i>		P2	
318.	5649 <i>Eucalyptus foecunda</i> (Narrow-leaved Red Mallee)			
319.	5722 <i>Eucalyptus obtusiflora</i> (Dongara Mallee)			
320.	19815 <i>Eucalyptus obtusiflora</i> subsp. <i>dongarraensis</i>			
321.	13541 <i>Eucalyptus petrensis</i>			
322.	5790 <i>Eucalyptus todtiana</i> (Coastal Blackbutt)			
323.	12905 <i>Eucalyptus wandoo</i> subsp. <i>pulverea</i>			
324.	5857 <i>Leptospermum spinescens</i>			
325.	13271 <i>Melaleuca huegelii</i> subsp. <i>huegelii</i>			
326.	5930 <i>Melaleuca leiopyxis</i>			
327.	18112 <i>Melaleuca leuropoma</i>			
328.	5949 <i>Melaleuca platycalyx</i>			
329.	18598 <i>Melaleuca systema</i>			
330.	5983 <i>Melaleuca trichophylla</i>			
331.	5986 <i>Melaleuca urceolaris</i>			
332.	6034 <i>Scholtzia laxiflora</i>			
333.	6037 <i>Scholtzia parviflora</i>			
334.	6041 <i>Scholtzia umbellifera</i>			
335.	17266 <i>Thryptomene</i> sp. <i>Lancelin</i> (M.E. Trudgen 14000)		P3	
336.	12411 <i>Verticordia densiflora</i> var. <i>cespitosa</i>			
337.	15432 <i>Verticordia densiflora</i> var. <i>densiflora</i>			
338.	12437 <i>Verticordia laciniata</i>			
339.	10822 <i>Verticordia nobilis</i>			
340.	6103 <i>Verticordia ovalifolia</i>			
Nizyeniaceae				
341.	27103 <i>Nizyenia conferta</i>			

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Olacaceae				
342.	2365 <i>Olax benthamiana</i>			
Onagraceae				
343.	16390 <i>Oenothera drummondii</i> subsp. <i>drummondii</i>	Y		
Orchidaceae				
344.	15360 <i>Caladenia longicauda</i> subsp. <i>borealis</i>			
345.	12936 <i>Diuris recurva</i>		P4	
346.	1672 <i>Prasophyllum fimbria</i> (Fringed Leek Orchid)			
347.	1682 <i>Prasophyllum sargentii</i>			
348.	11032 <i>Thelymitra apiculata</i>		P4	
Otariidae				
349.	24210 <i>Neophoca cinerea</i> (Australian Sea Lion)		S	
Otididae				
350.	24610 <i>Ardeotis australis</i> (Australian Bustard)			
Pachycephalidae				
351.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
352.	25679 <i>Pachycephala pectoralis</i> (Golden Whistler)			
353.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
Pardalotidae				
354.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
Petroicidae				
355.	24652 <i>Eopsaltria georgiana</i> (White-breasted Robin)			
Phacelocarpaceae				
356.	27131 <i>Phacelocarpus alatus</i>			
357.	27133 <i>Phacelocarpus labillardieri</i>			
Phalacrocoracidae				
358.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
359.	25698 <i>Phalacrocorax melanoleucos</i> (Little Pied Cormorant)			
360.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
Phyllanthaceae				
361.	4675 <i>Phyllanthus calycinus</i> (False Boronia)			
Plocamiaceae				
362.	27156 <i>Plocamium mertensii</i>			
363.	27157 <i>Plocamium preissianum</i>			
Poaceae				
364.	17234 <i>Austrostipa compressa</i>			
365.	17240 <i>Austrostipa flavescens</i>			
366.	17245 <i>Austrostipa mollis</i>			
367.	244 <i>Briza maxima</i> (Blowfly Grass)	Y		
368.	247 <i>Bromus arenarius</i> (Sand Brome)			
369.	13685 <i>Catapodium rigidum</i> (Rigid Fescue)	Y		
370.	516 <i>Parapholis incurva</i> (Coast Barbgrass)	Y		
371.	573 <i>Poa drummondiana</i> (Knotted Poa)			
372.	625 <i>Spinifex longifolius</i> (Beach Spinifex)			
373.	635 <i>Sporobolus virginicus</i> (Marine Couch)			
Polygonaceae				
374.	2415 <i>Muehlenbeckia polybotrya</i>			
Portulacaceae				
375.	44226 <i>Calandrinia oraria</i>		P3	
Posidoniaceae				
376.	125 <i>Posidonia sinuosa</i>			
Primulaceae				
377.	6484 <i>Samolus repens</i> (Creeping Brookweed)			
378.	14107 <i>Samolus repens</i> var. <i>paucifolius</i>			
Procellariidae				
379.	25712 <i>Puffinus assimilis</i> (Little Shearwater)			
380.	24716 <i>Puffinus pacificus</i> (Wedge-tailed Shearwater)		IA	
Proteaceae				
381.	32580 <i>Banksia dallanneyi</i> var. <i>dallanneyi</i>			
382.	32519 <i>Banksia glaucifolia</i>			
383.	1834 <i>Banksia menziesii</i> (Firewood Banksia)			

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384.	32077 <i>Banksia sessilis</i> var. <i>cygnorum</i>			
385.	1853 <i>Banksia tricuspis</i> (Pine Banksia)		P4	
386.	15041 <i>Conospermum canaliculatum</i>			
387.	1864 <i>Conospermum crassinervium</i> (Summer Smokebush)			
388.	15611 <i>Conospermum stoechadis</i> subsp. <i>stoechadis</i> (Common Smokebush)			
389.	15763 <i>Grevillea biformis</i> subsp. <i>biformis</i>			
390.	2054 <i>Grevillea olivacea</i> (Olive Grevillea)		P4	
391.	15838 <i>Grevillea preissii</i> subsp. <i>glabrilimba</i>			
392.	2087 <i>Grevillea saccata</i> (Pouched Grevillea)		P4	
393.	14420 <i>Grevillea synapheae</i> subsp. <i>pachyphylla</i>			
394.	2161 <i>Hakea flabellifolia</i> (Fan-leaved Hakea)			
395.	2197 <i>Hakea prostrata</i> (Harsh Hakea)			
396.	2232 <i>Isopogon linearis</i>			
397.	2301 <i>Petrophile macrostachya</i>			
398.	12856 <i>Stirlingia abrotanoides</i>			
399.	2319 <i>Strangea cynanchicarpa</i> (Heath Strangea)			
400.	15530 <i>Synaphea lesueurensis</i>		P2	
401.	15532 <i>Synaphea spinulosa</i> subsp. <i>spinulosa</i>			
Psittacidae				
402.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo (short-billed black-cockatoo), Carnaby's Cockatoo)		T	
403.	30854 <i>Polytelis anthopeplus</i> subsp. <i>westralis</i> (Regent Parrot)			
Pygopodidae				
404.	30905 <i>Delma concinna</i> subsp. <i>concinna</i> (Javelin Legless Lizard)			
405.	25766 <i>Delma fraseri</i> (Fraser's Legless Lizard)			
406.	24999 <i>Delma grayii</i>			
407.	25005 <i>Lialis burtonis</i>			
408.	25007 <i>Pletholax gracilis</i> subsp. <i>gracilis</i> (Keeled Legless Lizard)			
409.	25008 <i>Pygopus lepidopodus</i> (Common Scaly Foot)			
Racopilaceae				
410.	32480 <i>Racopilum cuspidigerum</i> var. <i>convolutaceum</i>			
Rallidae				
411.	24769 <i>Porzana fluminea</i> (Australian Spotted Crane)			
Ranunculaceae				
412.	10804 <i>Clematis linearifolia</i>			
Restionaceae				
413.	17685 <i>Chaetanthus aristatus</i>			
Rhamnaceae				
414.	4809 <i>Cryptandra pungens</i>			
415.	4810 <i>Cryptandra scoparia</i>			
416.	14236 <i>Stenanthemum limitatum</i>		P2	
Rhodomelaceae				
417.	26440 <i>Acanthophora dendroides</i>			
418.	30312 <i>Aneurianna dentata</i>			
419.	26520 <i>Brongniartella australis</i>			
420.	26632 <i>Chondria curdieana</i>			
421.	26633 <i>Chondria dangeardii</i>			
422.	29619 <i>Chondrophyucus brandenii</i>			
423.	26663 <i>Cladurus elatus</i>			
424.	26688 <i>Coeloclonium tasmanicum</i>			
425.	26752 <i>Dasyclonium incisum</i>			
426.	26762 <i>Dictyomenia sonderi</i>			
427.	26763 <i>Dictyomenia tridens</i>			
428.	26795 <i>Doxodasya bolbochaete</i>			
429.	26903 <i>Halydictyon arachnoideum</i>			
430.	26919 <i>Herposiphonia rostrata</i>			
431.	26920 <i>Herposiphonia secunda</i>			Y
432.	26939 <i>Heterostroma nereidiis</i>			
433.	26994 <i>Kuetzingia angusta</i>			
434.	26995 <i>Kuetzingia canaliculata</i>			
435.	26997 <i>Laurencia arbuscula</i>			
436.	26998 <i>Laurencia brongniartii</i>			
437.	26999 <i>Laurencia clavata</i>			
438.	27000 <i>Laurencia elata</i>			
439.	27001 <i>Laurencia filiformis</i>			
440.	27011 <i>Lenormandia latifolia</i>			

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441.	27013 <i>Lenormandia spectabilis</i>			
442.	27050 <i>Lophocladia kuetzingii</i>			
443.	27100 <i>Neurymenia fraxinifolia</i>			
444.	27161 <i>Pollexfenia lobata</i>			
445.	27162 <i>Pollexfenia pedicellata</i>			
446.	27168 <i>Polysiphonia amphibolis</i>			
447.	27171 <i>Polysiphonia blandii</i>			
448.	27173 <i>Polysiphonia decipiens</i>			
449.	29621 <i>Polysiphonia forfex</i>			
450.	27190 <i>Protokuetzingia australasica</i>			
451.	27336 <i>Tolypiocladia glomerulata</i>			
452.	27360 <i>Vidalia spiralis</i>			
Rutaceae				
453.	11381 <i>Boronia ramosa</i> subsp. <i>anethifolia</i>			
454.	4453 <i>Diplolaena angustifolia</i> (Yanchep Rose)			
455.	4455 <i>Diplolaena ferruginea</i>			
456.	15273 <i>Diplolaena leemaniana</i>			
457.	15275 <i>Diplolaena obovata</i>			
Santalaceae				
458.	2344 <i>Leptomeria empetriformis</i>			
459.	2350 <i>Leptomeria pauciflora</i> (Sparse-flowered Currant Bush)			
460.	2352 <i>Leptomeria preissiana</i>			
461.	2356 <i>Santalum acuminatum</i> (Quandong, Warrga)			
Sapindaceae				
462.	18541 <i>Diplopeltis huegelii</i> subsp. <i>huegelii</i>			
463.	4761 <i>Dodonaea ericoides</i>			
Sargassaceae				
464.	44573 <i>Sargassopsis decurrens</i>			
465.	27238 <i>Sargassum distichum</i>			
466.	27239 <i>Sargassum fallax</i>			
467.	27246 <i>Sargassum lacerifolium</i>			
468.	27248 <i>Sargassum ligulatum</i>			
469.	27249 <i>Sargassum linearifolium</i>			
470.	27258 <i>Sargassum spinuligerum</i>			
471.	27260 <i>Sargassum tristicum</i>			
472.	27262 <i>Sargassum verruculosum</i>			
473.	42785 <i>Sirophysis trinodis</i>			
474.	27345 <i>Turbinaria gracilis</i>			
Scincidae				
475.	30893 <i>Cryptoblepharus buchananii</i>			
476.	25027 <i>Ctenotus australis</i>			
477.	25039 <i>Ctenotus fallens</i>			
478.	25065 <i>Ctenotus pantherinus</i> subsp. <i>pantherinus</i> (Leopard Ctenotus)			
479.	25087 <i>Cyclodomorphus celatus</i> (Western Slender Blue-tongue)			
480.	25100 <i>Egernia napoleonis</i>			
481.	25119 <i>Hemiergis quadrilineata</i>			
482.	25133 <i>Lerista elegans</i>			
483.	25160 <i>Lerista planiventralis</i> subsp. <i>decora</i>			
484.	25165 <i>Lerista praepedita</i>			
485.	41413 <i>Liopholis multiscutata</i> (Bull Skink)			
486.	25184 <i>Menetia greyii</i>			
487.	25191 <i>Morethia lineoocellata</i>			
488.	25192 <i>Morethia obscura</i>			
489.	25203 <i>Tiliqua occipitalis</i> (Western Bluetongue)			
Scolopacidae				
490.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
491.	25736 <i>Arenaria interpres</i> (Ruddy Turnstone)		IA	
492.	24779 <i>Calidris acuminata</i> (Sharp-tailed Sandpiper)		IA	
493.	24780 <i>Calidris alba</i> (Sanderling)		IA	
494.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
495.	30932 <i>Limosa lapponica</i> (Bar-tailed Godwit)		IA	
496.	25742 <i>Numenius phaeopus</i> (Whimbrel)		IA	
Scrophulariaceae				
497.	7289 <i>Myoporum caprarioides</i> (Slender Myoporum)			
498.	7291 <i>Myoporum insulare</i> (Blueberry Tree, boobialla)			
Scytosiphonaceae				

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
499.	26694 <i>Colpomenia sinuosa</i>			
500.	26949 <i>Hydroclathrus clathratus</i>			
Sillaginidae				
501.	<i>Sillago ingenuua</i>			
Siphonocladaceae				
502.	27318 <i>Struvea plumosa</i>			
Solanaceae				
503.	6949 <i>Anthocercis littorea</i> (Yellow Tailflower)			
504.	11327 <i>Nicotiana occidentalis</i> subsp. <i>hesperis</i>			
505.	7037 <i>Solanum symonii</i>			
Stylidiaceae				
506.	7709 <i>Stylidium crossoccephalum</i> (Posy Triggerplant)			
507.	7710 <i>Stylidium cygnorum</i>			
508.	7720 <i>Stylidium elongatum</i> (Tall Triggerplant)			
509.	25801 <i>Stylidium hesperium</i>			
510.	13127 <i>Stylidium maritimum</i>		P3	
Tarsipedidae				
511.	24167 <i>Tarsipes rostratus</i> (Honey Possum, Noolbenger)			
Teloschistaceae				
512.	28065 <i>Teloschistes chrysophthalmus</i>			
Tettigoniidae				
513.	33976 <i>Hemisaga vepreculae</i> (cricket)			P3
Thymelaeaceae				
514.	5243 <i>Pimelea ferruginea</i>			
515.	5244 <i>Pimelea floribunda</i>			
516.	11402 <i>Pimelea imbricata</i> var. <i>piligera</i>			
517.	5268 <i>Pimelea sulphurea</i> (Yellow Banjine)			
Typhaceae				
518.	98 <i>Typha domingensis</i> (Bulrush, Djandjid)			
Udoteaceae				
519.	27121 <i>Penicillus nodulosus</i>			
Urticaceae				
520.	1762 <i>Parietaria debilis</i> (Pellitory)			
Varanidae				
521.	25218 <i>Varanus gouldii</i> (Bungarra or Sand Monitor)			
522.	25526 <i>Varanus tristis</i> (Racehorse Monitor)			
Zosteropidae				
523.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silvereye)			
Zygophyllaceae				
524.	4387 <i>Zygophyllum billardierei</i> (Coast Twinleaf)			
525.	4390 <i>Zygophyllum fruticosum</i> (Shrubby Twinleaf)			

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.

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