

**Line 51 (344.9 -  
346.485 KM)**

**Fleming Grove  
Road**

**Gibson, WA 6448**

**Reconnaissance flora and vegetation and basic fauna  
survey report**



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Bio Diverse Solutions

Final v. 2

04/03/2022

## DOCUMENT CONTROL

Title: Reconnaissance flora and vegetation and basic fauna survey report – Line 51 Fleming Grove

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Reviewer (s): K. Bain, K. Kinnear

Job No.: AI003

Client: Arc Infrastructure

### REVISION RECORD

Revision	Summary	Prepared By	Reviewed By	Date
Draft v.1	QA Technical review – fauna only	K. White & B. Theyer	K. Bain	09/08/2021
Draft v.1	Internal QA review of report (80% complete) pending herbarium identification of species	K. White & B. Theyer	K. Kinnear	11/08/2021
Draft v.2	Submission of draft report (80% complete - pending herbarium identification of species) to client	K. White & B. Theyer	Arc Infrastructure	12/08/2021
Final	QA Technical Review – Flora only	K. White	C. van der Mescht	24/09/2021
Final	Approval from Client	K. White	C. Doulton – Arc Infrastructure	14/02/2022
Final v.2	Minor update post submission to DWER as final.	B. Theyer		4/03/2022



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## Table of Contents

1.	Introduction, scope and background information.....	1
1.1.	Site location and Development Proposal.....	2
1.2.	Existing Land use.....	2
2.	Desktop Assessment.....	3
2.1.	Geology and soils.....	3
2.2.	Climate.....	3
2.3.	Habitat Connectivity.....	3
2.4.	Water.....	3
2.5.	Environmentally Sensitive Areas.....	3
2.6.	Remnant Vegetation.....	4
2.7.	Conservation Significant Flora.....	4
2.8.	Threatened and Priority Ecological Communities.....	5
2.9.	Conservation Significant Fauna.....	6
3.	Flora and Vegetation Survey Methodology.....	7
3.1.	Survey Limitations and constraints.....	7
4.	Flora and vegetation survey outcomes.....	8
4.1.	Vegetation Units.....	8
4.2.	Vegetation Condition.....	13
4.3.	Weeds and disturbance.....	14
4.4.	Threatened Flora.....	14
4.4.1.	Likelihood of occurrence assessment.....	14
4.4.2.	Presence of conservation significant flora.....	15
4.5.	Threatened and Priority Ecological Communities.....	28
5.	Basic Fauna Survey Methodology.....	31
5.1.	Survey Limitations and Constraints.....	31
6.	Basic Fauna Habitat Survey Outcomes.....	32
6.1.	Fauna Survey Observations.....	32
7.	Summary.....	34
7.1.	Vegetation, Threatened and Priority Flora and Ecological Communities.....	34
7.2.	Basic Fauna Survey.....	40
7	References.....	41
8	Appendices.....	43

### LIST OF TABLES

Table 1: Assessment of potential survey limitations

Table 2: Vegetation condition rating

Table 3: Weed species recorded from the survey area.

Table 4: Conservation significant flora identified within the 10 km desktop survey assessed to be likely or possible to be present, but could not be adequately surveyed due to the out-of-season nature of the reconnaissance survey.

Table 5: Conservation significant flora identified within the survey area.

Table 6: Estimate Areas of 'Proteaceae Dominated Kwongkan Shrubland of the South-east Coastal Floristic Province' detected within the survey area.

Table 7: Condition thresholds for the 'Proteaceae Dominated Kwongkan Shrublands of the southeast Coastal Floristic Province.

Table 8: Fauna survey limitations and constraints

Table 9: Summary of priority flora and vegetation limitations, broken into the separate areas of the survey area and recommendations if further surveys are required per area.

### LIST OF FIGURES

Figure 1: Survey Area Locality

Figure 2: Vegetation Type 1, Myrtaceous Shrubland (Myr SL), present within the survey area

Figure 3: Vegetation Type 2, *Banksia armata* dominated shrubland with scattered Mallee and Acacia (Ban arm SL) present within the survey area

Figure 4: Vegetation Type 3, Mixed Proteaceous Shrubland with scattered Mallee (Pro SL) present within the survey area

Figure 5: Vegetation Type 4, Low Chenopod and Samphire Forbland on immediate salt lakes (Chen, Sam), present within the survey area

Figure 6: Vegetation Type 5, Closed Melaleuca Shrublands on salt lake peripheries (Mel SL) vegetation type present within the survey area

Figure 7: Vegetation Type 6, Paperbark Melaleuca Woodland wetland (Mel WL) present within the survey area

Figure 8: Vegetation Type 7, Open Mallee Woodland with dense sedgeland (Mal WL), present within the survey area

Figure 9: Photos of *Eremophila* sp. 1 within the survey area in comparison with a lodged specimen of *E. glabra* subsp. Scaddan in the Esperance district herbarium.

Figure 10: Photos of *Darwinia* sp. Gibson within the Survey Area.

Figure 11: Regional distribution of *Darwinia* sp. Gibson (AVH, n.d.).

Figure 12: Photos of *Conostephium marchantiorum* within the survey area.

Figure 13: Regional distribution of *Conostephium marchantiorum* (AVH, n.d.).

Figure 14: Photos of *Isopogon alpicornis* within the Survey Area.

Figure 15: Regional distribution of *Isopogon alpicornis* (AVH n.d.).

Figure 16: Photos of *Brachyloma mogin* within the Survey Area.

Figure 17: Regional distribution of *Brachyloma mogin* (AVH, n.d.)

Figure 18: Photos of *Persoonia scabra* within the Survey Area.

Figure 19: Regional distribution of *Persoonia scabra* (AVH, n.d.)

Figure 20: Photos of *Kunzea salina* within the Survey Area.

Figure 21: Regional distribution of *Kunzea salina* (AVH, n.d.)

Figure 22: Photos of *Stachystemon vinosus* within the Survey Area.

Figure 23: Regional distribution of *Stachystemon vinosus* (AVH n.d.)

Figure 24: Photographs of evidence of fauna presence within the survey area.

## APPENDICES

Appendix A – Survey Findings Mapping

Appendix B - Conservation Significant Values Likelihood of Occurrence Analysis

Appendix C - Conservation Status Definitions and Condition Scale

Appendix D - Species Lists and Relevé Data

Appendix E – DBCA Threatened and Priority Report Forms (TPFL)

Appendix F - NatureMap and EPBC Act PMST reports

## Executive Summary

Arc Infrastructure (“the client”) commissioned Bio Diverse Solutions as Environmental Consultants to undertake an out of season reconnaissance flora and vegetation survey and a basic (previously reconnaissance) fauna assessment of a total of 3.22ha along Line 51 (344.9 - 346.485) near Fleming Grove Road in the Shire of Esperance. The reconnaissance survey was required due to assess the impact of areas of native vegetation proposed to be cleared for the maintenance of the railway line.

Seven Vegetation types were recorded in during the survey, with two Vegetation Types identified to potentially be the threatened (TEC)/priority (PEC) ecological community ‘*Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province*’. Formal quadrat analysis is required during a spring targeted vegetation survey to confirm the presence of PEC/TEC. The condition of the vegetation units ranged from ‘Degraded’ through to ‘Excellent’, the majority of the vegetation types being in ‘Very Good’ or ‘Excellent’ condition.

The floristic diversity was extremely high, as is typical for the Esperance Sandplain bioregion. Seven species of priority flora were recorded across the survey area. These included P1 *Darwinia* sp. Gibson, P3 *Isopogon alcornis*, P3 *Conostephium marchantiorum*, P3 *Brachyloma mogin*, P3 *Kunzea salina*, P3, *Persoonia scabra* and P4 *Stachystemon vinous*. Additionally, seven species identified in the 10 km desktop survey that were assessed to be ‘likely’ or ‘possible’ to occur could not accurately be surveyed due to the out-of-season limitations of the flowering survey. Further surveys will be required to a certain presence of these seven species. Lastly, a single plant was present that could not be identified due to lacking taxonomic features that bears similarity to the Critically Endangered threatened flora, *Eremophila scabra* subsp. Scaddan and requires further surveys to formally determine.

The only conservation significant faunal taxa identified during the survey was *Calyptorhynchus latirostris* (Carnaby’s Black Cockatoo, En). The species was observed through direct observation of birds flying over the site several times, and individuals were seen in adjacent vegetation. Feed evidence was observed, but was not considered a significant feed event. Three habitat types within the survey area are of particular importance to Carnaby’s Cockatoo as they contain suitable foraging habitat, with a high proportion of Proteaceous and Myrtaceous plant taxa present. Approximately 0.85ha of suitable foraging habitat is proposed to be cleared as part of this project, this equates to approximately 26.4% of the entire 3.22ha survey area. This does not exceed 1ha, and there are no direct impacts to roosting or breeding trees (none present). It is unlikely this proposal would need to be referred for assessment under the *Environmental Protection and Biodiversity Conservation Act 1999*.

## 1. Introduction, scope and background information

Arc Infrastructure (“the client”) commissioned Bio Diverse Solutions as Environmental Consultants to undertake an out of season reconnaissance flora and vegetation survey and a basic (previously reconnaissance) fauna assessment of a total of 3.22ha along Line 51 (344.9 - 346.485) near Fleming Grove Road in the Shire of Esperance. The total 3.22ha consists of 12 separate ‘areas’ or zones and 1.87km of linear survey along an existing service road for the railway line. The scope of works included:

- Desktop assessment of the survey area, including all publicly available and Department of Biodiversity, Conservation and Attractions (DBCA) database searches for threatened flora, vegetation communities and threatened fauna data;
- An out of season reconnaissance flora and vegetation survey across survey area to identify vegetation types, condition, possible ecological communities and conservation significant flora habitat;
- Identification of flora species, including herbarium identification if required;
- Basic fauna survey to map fauna habitat in the area, identify areas likely to provide habitat for conservation significant species and opportunistic sampling of fauna species (including conservation significant);
- GPS and map any populations of threatened species (if applicable);
- GIS mapping of vegetation types present and their condition;
- GIS mapping of fauna habitat;
- Prepare a report on survey outcomes; and
- Provide the client with the IBSA Data package (as required to be submitted by the client).

### 1.1. Site location and Development Proposal

The ‘survey area’ is defined as the total area being surveyed, consisting of 12 areas and 1.87km of linear survey located along Line 51 (344.9 - 346.485), near Fleming Grove Road, in the Shire of Esperance. The areas surveyed ranged between 1.14ha and 0.07ha, the total length of the Survey Area is approximately 3km (Figure 1). These areas have been earmarked by Arc Infrastructure for clearing as part of the required upgrades and ongoing maintenance of the railway track. This reconnaissance flora and vegetation and basic fauna survey provide base-line data for determining what further surveys and environmental approvals are required for the clearing and development of these areas.

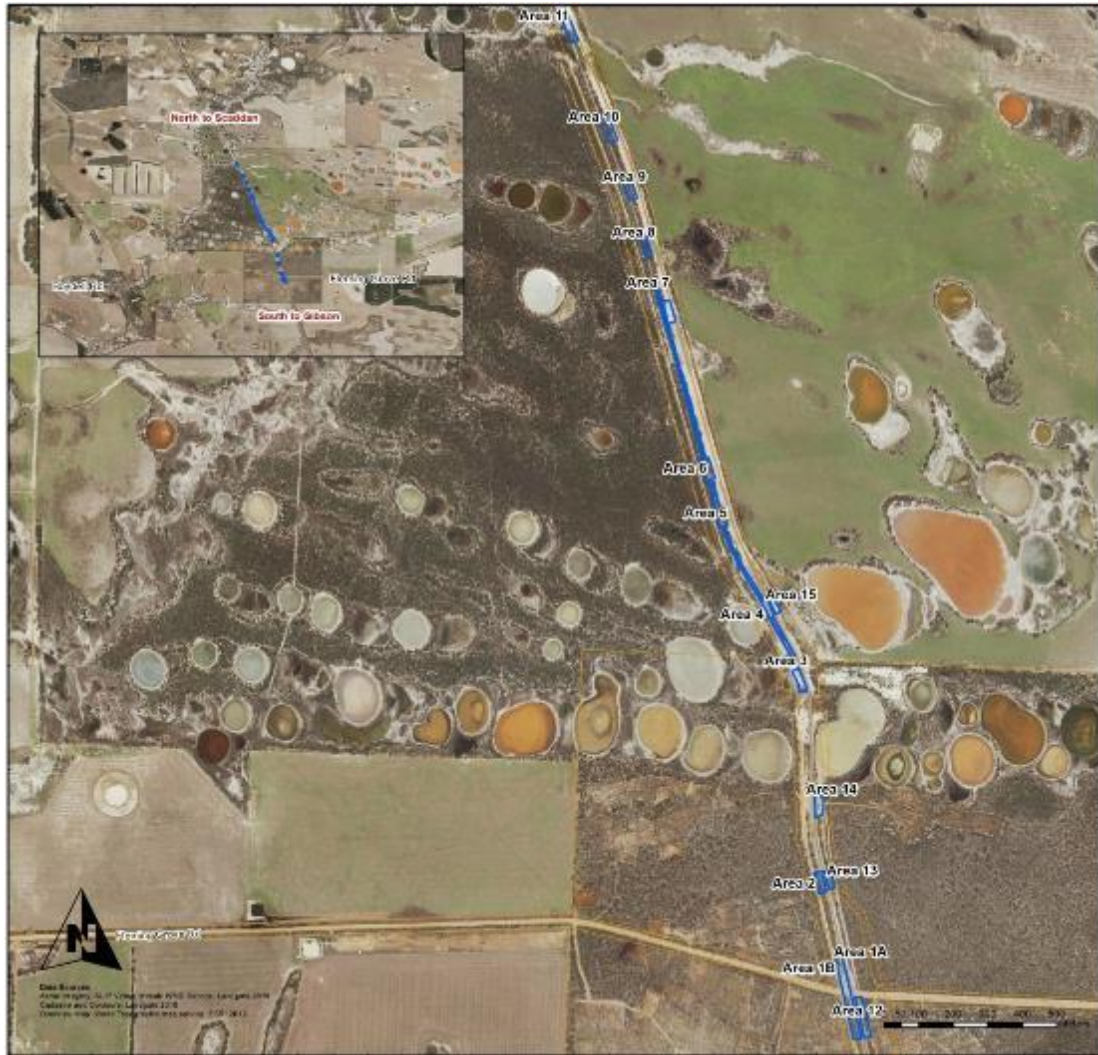


Figure 1: Survey Area Locality

### 1.2. Existing Land use

The survey area consists mostly of remnant vegetation, located within the cadastral boundary of the Arc Infrastructure managed railway line. Some areas within the survey area are already cleared for the purpose of a maintenance access track or part of existing lay down areas. The surrounding area is dominated by a large area of intact native vegetation reserve (managed by the Shire of Esperance) and broad acre cropping agricultural private land.

## 2. Desktop Assessment

### 2.1. Geology and soils

Database searches shows the survey area lies within the Scaddan System (246Sc) and the Esperance System (245Es). The Scaddan System is described as *“Level to gently undulating plain with numerous clay pans and salt lakes, and small areas of undulating rises. The geology comprises Tertiary sediments overlying Proterozoic granites with some minor Pleistocene sand sheets.”* The Esperance System is described as *“Level to gently undulating mid-level plain with poor external drainage. Incised by river valleys (mapped as Young System). The southern boundary is defined by a low escarpment which forms a boundary to the Gore System below.”* (DPIRD, 2021).

Database searches shows the survey area lies within the Esperance Sandplain Zone and the Salmon Gums Mallee Zone. The Esperance Sandplain Zone is described as *“Level to gently undulating plain dissected by a number of short rivers flowing south. Formed on Eocene marine sediments overlying Proterozoic granitic and metamorphic rocks. Soils are grey fine sandy duplex soils and fine sands.”* The Salmon Gums Mallee Zone is described as *“Level to gently undulating plain, with Tertiary sediments over Proterozoic granites. Salt lakes, scattered or in swarms are a common feature. Drainage lines become indistinct towards the north. Alkaline and salt lake soils predominate.”* (DPIRD, 2018a).

### 2.2. Climate

The closest Bureau of Meteorology (BoM) site is Esperance Aero (009542). The average annual temperature ranges from 11.3 – 22.3°C. The average summer temperature ranges between 11.3-27.9°C, whilst average winter temperatures range between 7.6-19.1°C. The annual mean rainfall is 568.5mm (BoM, 2021).

### 2.3. Habitat Connectivity

There are large areas in intact remnant vegetation located within private property and Shire of Esperance managed reserves immediately to the west, east and south of the survey area. There is remnant vegetation located along the railway line itself which extends out into the broader Esperance area. In a regional context these larger areas of remnant vegetation are connected through smaller interconnecting patches within the surrounding agricultural landscape. These areas ultimately connect to the Speddingup East Nature Reserve approximately 3.2km to the north. The area is located within an ancient paleochannel forming a connected pattern of salt lakes, which extend to the north, east and west of the survey area.

### 2.4. Water

The survey area does not lie within any Public Drinking Water Source areas (DWER, 2020a). The survey area lies within the Salmon Gums Mallee (HZ26\_SGM) and the Esperance Sandplain (HZ25\_ES) Hydrological Zones (DPIRD, 2018b). The Salmon Gums Mallee zone is described as *“Level to gently undulating plain, with Tertiary sediments over Proterozoic granites. Salt lakes, scattered or in swarms are a common feature. Drainage lines become indistinct towards the north”* (DPIRD, 2018b). And the Esperance Sandplain zone is described as *“Level to gently undulating plain dissected by a number of short rivers flowing south. Formed on Eocene marine sediments overlying Proterozoic granitic and metamorphic rocks. Soils are grey fine sandy duplex soils and fine sands”* (DPIRD, 2018b).

No RAMSAR wetlands, or significant wetlands are located within or near the survey area. However, the desktop survey did identify that the Lake Gore RAMSAR wetland was 20-30km upstream and the Lake Warden RAMSAR system was 10-20km upstream (DAWE, 2021). Given the distance and the extensive cleared pastoralist land and road networks between the RAMSAR listed wetlands and the survey area, it is unlikely to be of direct impact.

### 2.5. Environmentally Sensitive Areas

The survey area does not contain any listed Environmentally Sensitive Areas (ESA; DWER, 2020b). However, distinct hydrological features as salt lakes are present within the survey area.

## 2.6. Remnant Vegetation

The survey area lies within the Esperance Plains (ESP) Bioregion and Recherche (ESP02) subregion. Comer *et al* (2001) describes the Esperance bioregion as “characterised by proteaceous scrub and mallee heaths on sandplain overlying Eocene sediments; rich in endemics. Herbfields and heaths (rich in endemics) on abrupt granite and quartzite ranges that rise from the plain. Eucalypt woodlands occur in gullies and alluvial foot-slopes. ESP2 Subregion has variable relief, comprising the Quaternary coastal sandplains and dunes overlying Proterozoic gneiss and granite as well as Eocene and more recent coastal limestones. Numerous granitic islands occur in the near shore area of this subregion. Vegetation comprises heath, coastal dune scrub, mallee, mallee-heath and granite heath.”

The vegetation has been mapped on a broad scale by J.S. Beard (Shepherd *et al.* 2002) in the 1970’s, where a system was devised for state-wide mapping and vegetation classification based on geographic, geological, soil, climate structure, life form and vegetation characteristics (Sandiford and Barrett, 2010). Vegetation units were regarded as associations and were grouped into Vegetation Systems representing a particular pattern of association distribution within a given area. A GIS search of J.S. Beards (Beard *et al.* 2013) vegetation classification places the survey area within two System and Vegetation Associations (DPIRD, 2019) Refer to Map 1 in Appendix A:

- **System Association Name:** Esperance
- **Vegetation Association Number:** 41
- **Structure Description:** Scrub, open scrub or sparse scrub.
- **Floristic Description:** Wattle, teatree & other species *Acacia* spp. *Melaleuca* spp.
- **Remnant Vegetation by Beard Association Rarity in LGA:** 24.43% remaining (GoWA, 2019).
- **Remnant Vegetation by Beard Association Rarity in IBRA Region:** 40.42% remaining (GoWA, 2019).
  
- **System Association Name:** Esperance
- **Vegetation Association Number:** 47
- **Structure Description:** Mallee-heath.
- **Floristic Description:** Mixed heath with scattered mallee e.g. tallerack *Eucalyptus tetragona*.
- **Remnant Vegetation by Beard Association Rarity in LGA:** 13.43% remaining (GoWA, 2019).
- **Remnant Vegetation by Beard Association Rarity in IBRA Region:** 35.05% remaining (GoWA, 2019).

## 2.7. Conservation Significant Flora

Desktop inventory of potential conservation significant flora species likely to occur within the survey area was undertaken using the following databases:

- 10km Nature Map Database Search (combined data from DBCA, WA Museum and WA Herbarium; DBCA, 2007-, WAH 1998-);
- 10km Protected matters search tool (DAWE 2021);
- 15 km Flora DBCA database records (DBCA, 2021a); and
- 15 km TEC/PEC DBCA database records (DBCA, 2021b).

The full species list compiled from all available data (Table A2 in Appendix D) is based on observations from a broader area than the survey area and is likely to include species that would not occur in the actual survey area due to a lack of suitable habitat. The data also includes very old records and in some cases the species in question may have become locally or regionally extinct. Species that have previously been recorded within the study area are shown in Map 2 in Appendix A. Conservation categories for Threatened and Priority flora and ecological communities are presented in Tables A5-A8 in Appendix C. NatureMap and Protected matters search tool database searches are provided in Appendix F.

The conservation significance of flora species has been assessed using data from the following sources:

- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. Administered by the Australian Government Department of Agriculture, Water and the Environment (DAWE);
- *Biodiversity Conservation Act 2016 (BC Act)*. Administered by the Western Australian Department of Biodiversity Conservation and Attractions (DBCA); and
- DBCA Priority Flora list. A non-legislative list maintained by DBCA for management purposes.



As a result of the above-mentioned database searches detected a total of 42 conservation-listed flora within a 10 km radius of the survey area, consisting of 6 Threatened and 36 Priority species. Refer to Appendix C for likelihood of presence analysis.

## 2.8. Threatened and Priority Ecological Communities

Database results also indicate that two threatened or priority ecological communities ‘*Subtropical and Temperate Coastal Saltmarsh*’ and ‘*Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia*’ may be present within the survey area, as follows:

### **Subtropical and Temperate Coastal Saltmarsh**

‘*Subtropical and Temperate Coastal Saltmarsh*’ is listed as a Priority Ecological Community ([PEC], P3) within WA under the *Biodiversity Conservation Act 2016* (BC Act). ‘*Subtropical and Temperate Coastal Saltmarsh*’ is listed as a Vulnerable Threatened Ecological Community (TEC) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The *Subtropical and Temperate Coastal Saltmarsh* ecological community is defined and assessed in the conservation advice consists of organisms including and associated with saltmarsh in coastal regions of sub-tropical and temperate Australia (DoE, 2015a). Refer to Table A3 in Appendix B.

The community “consists of the assemblage of plants, animals and micro-organisms associated with saltmarsh in coastal regions of sub-tropical and temperate Australia (south of 23 Degrees S latitude). It occurs on the coastal margin, along estuaries and coastal embayments and on low wave energy coast in places with at least some tidal connection, including rarely-inundated supratidal areas, intermittently opened or closed lagoons, and groundwater tidal influences. The community occurs on sandy or muddy substrate and may include coastal clay pans and similar habitats. It consists of dense to patchy areas of characteristic coastal saltmarsh plant species that include salt-tolerant herbs, succulent shrubs or grasses, and may also include bare sediment as part of the mosaic. It can occur where the proportional cover by tree canopy such as mangroves, *Melaleucas* or *Casuarinas* or seagrass is not greater than 50%” (DoE, 2015a).

The description, area and condition thresholds that apply to the EPBC-listed TEC of the same name, also apply to this priority ecological community.

### **Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia**

‘*Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia*’ is listed as Priority 3 (P3) PEC within WA under the *Biodiversity Conservation Act 2016* (BC Act) and as an Endangered Threatened Ecological Community (TEC) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It is defined and assessed in the conservation advice is generally Kwongan shrubland, ranging from sparse to dense, thicket-forming, where Proteaceous species form a significant component (DoE, 2015b). It is confined to the southeast botanical province of Western Australia (*sensu* Hopper and Gioia, 2004) and primarily occurs on sandplains and marine plains and lower to upper slopes and ridges, as well as uplands across this region. Refer to Table A3 in Appendix B.

The community “consists of predominantly obligate seeding proteaceous shrubland and heath (kwongan) and mallee heath on sandplain, duplex sand/clay and gravels overlying Eocene sediments, quartzite, schist, Yilgarn and Albany Fraser granite and greenstone ranges. Its flora is characterised by high species diversity and a high degree of endemism, particularly in the Stirling Range, Fitzgerald River National Park, Ravensthorpe Range and Russell Ranges. Due to the high levels of endemism, there are few species that exist across the entire range of the dense, obligate seeding Proteaceae dominated shrublands and kwongan of the Esperance Sandplains, however particular species have been identified as common dominant species in each of its ecodistricts” (DoE, 2015b).

The description, area and condition thresholds that apply to the EPBC-listed TEC of the same name, also apply to this Priority Ecological Community (PEC).

## 2.9. Conservation Significant Fauna

Desktop inventory of potential conservation significant fauna species likely to occur within 30-40km of the survey area was undertaken using the following databases:

- Nature Map Database Search (combined data from DBCA, WA Museum and WA Herbarium; DBCA 2007-, WAH 1998-);
- Protected matters search tool (DAWE, 2021); and
- DBCA database records (DBCA, 2021c).

The full species list compiled from all available data (Table A4 Appendix B) is based on observations from a broader area than the survey area and is likely to include species that would not occur in the actual survey area due to a lack of suitable habitat. The data also includes very old records and in some cases the species in question may have become locally or regionally extinct.

The conservation significance of fauna species has been assessed using data from the following sources:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Administered by the Australian Government Department of Agriculture, Water and the Environment (DAWE); and
- *Biodiversity Conservation Act 2016* (BC Act). Administered by the Western Australian Department of Biodiversity Conservation and Attractions (DBCA);

As a result of the above-mentioned database searches 79 Threatened and Priority fauna species were identified as potentially being present within the survey area. It was also noted as part of the DBCA searches that there are 6 black cockatoo roost sites within 30km of the survey area. DBCA database species records are shown in Map 3 in Appendix A. Conservation categories for Threatened and Priority fauna are presented in Tables A5 and A6 in Appendix C. NatureMap and Protected matters search tool database searches are provided in Appendix F.

### 3. Flora and Vegetation Survey Methodology

An out-of-season flora reconnaissance flora and vegetation survey was undertaken by Katie White (Botanist/Ecologist) of Bio Diverse Solutions on the 28<sup>th</sup> June 2021. The survey area was surveyed via meandering traverses on foot, to identify the different vegetation types, their condition category and targeted survey for conservation significant species. Where areas contained suitable habitat for conservation significant flora these were more intensely surveyed. Eight relevés were systematically surveyed within representative vegetation types to enable analysis and categorisation across the wider area (refer to Appendix B). No quadrat sampling was conducted due to the out-of-season nature of the survey and recommendations have been made for areas requiring follow-up quadrat surveying methodology, primarily relating to the presence of the TEC Kwongkan. The flora was systematically recorded within the relevés and collections of plant specimens were made where further identification was required, using Katie White's Regulation 60 Flora Taking Licence FTB62000237. For species that were not flowering and where foliage or nuts / fruit couldn't be used for identification, potential habitat was used as an indication of the likelihood of species occurrence. The vegetation types occurring within the survey area were mapped and described using opportunistic mapping and relevés. Vegetation types were described based on structure, dominant taxa and cover characteristics as defined by relevé data and field observations, as both Muirs and NVIS Level 5 (sub-association) description methods.

Information collected within each relevé included:

- Location: GPS coordinates of the relevé.
- Date and site code.
- Site description: landform, slope, soil colour and type and hydrology.
- Vegetation description: dominant and non-dominant species present within the different growth forms and percentage cover.
- Vegetation condition.

The aim of this survey was to provide context and gather knowledge of the survey area. This type of survey aims to verify the desktop information obtained, and to characterise the flora / vegetation units present within the survey area.

#### 3.1. Survey Limitations and constraints

An assessment of potential survey limitations is outlined below in Table 1. Several limitations were present, primarily relating to the timing of the out-of-season nature of the survey in winter.

**Table 1: Assessment of potential survey limitations**

Limitation	Constraint	Comment
Experience of personnel	Nil	Katie White has over 5 years' experience at conducting targeted, reconnaissance and detailed flora surveys within the Esperance sandplains bioregion and is competent in taxonomic identification and assessment of vegetation in the area. Additionally, she has conducted targeted flora surveys alongside the regional DBCA Flora Conservation Officer for a large number of flora species listed on the 10 km desktop analysis. Bianca Theyer has 5 years' experience in flora and vegetation assessment since working with Bio Diverse Solutions.
Survey timing	Major	The winter (end of June) out-of-season nature of the reconnaissance flora survey significantly limited the detection of numerous species identified in the 10km likelihood analysis and more broadly at measuring diversity. The Esperance sandplain region peak flowering season ranges between September to November. This specifically applies to species in the families of Orchidaceae, Droseraceae, Stylidiaceae, Iridaceae, Dilleniaceae and Asparagaceae, being annual, herbaceous or cryptic perennial species.

Table 1 continued.

Limitation	Constraint	Comment
Access restrictions	Nil	No access restrictions that would affect the conclusiveness of this survey were encountered. Numerous areas were inundated with water and had aquatic species ( <i>Myriophyllum tillaeoides</i> ) growing in standing puddles. These areas were surveyed at a lower intensity due to access restrictions, with puddles circumnavigated to assess flora growing in the water. The areas were small enough that this method was sufficient for covering the area.
Availability of contextual information	Minor	Publicly available desktop and background information was readily available to give a broad contextual understanding of the site. However, it must be noted that the Esperance area is highly understudied.
Survey effort and extent	Nil	The area was sufficiently and lengthily searched. A random meandering traverse ensured that all areas within two m of each other were covered. Following the CoA (2013) <i>Draft Survey guidelines for Australia's Threatened Orchids</i> , it is recognised that due to the complex nature of Orchid phenology and physiology, more intensive survey transects and surveys over multiple time periods may be required.
Disturbances that may affect results	Minor	Disturbance has the potential to affect the biological representation of species and therefore ecological communities present, for example through the presence of disturbance opportunists, loss of sensitive species from direct impact, increased nutrient loading from runoff or novel ecosystems created through microclimate creation. This was observed across the subject site through disturbance from the railway track, areas with altered drainage and increased nutrients in ponding from the surrounding agricultural area.  No fires had previously occurred and the native vegetation showed indications of being long unburnt (density of leaf litter, age and height of obligate seeders, height of Mallee re-sprouters). It is possible that fire responding ephemeral species are stored in the soil seed bank that were not captured by this survey for areas outside of the salt lakes.
Identification issues	Minor	The vast majority of species present contained sufficient taxonomic information for identification (such as nuts, fruit, leaf structure or flowers). It is estimated that 40-45% of species present were flowering. However, numerous emerging annual herbs were present that were not recorded, reducing the likely total biodiversity of the area. Specifically, numerous Orchid leaves, Asteraceae leaves and Stylidium rosettes were observed but could not be identified.  Plant identification was undertaken through the most relevant, current and available taxonomic literature, keys and herbarium reference specimens available (BHL, 2015; Brophy <i>et al.</i> , 2013; Cranfield 2005; JSTOR, 2000 - ; Maslin, 2018 - ; Perkins, 2018; Euclid, n.d.). All resources used were the most current to knowledge. Nomenclature used through this report follows the most recent scientific names through the Western Australian Herbarium.

#### 4. Flora and vegetation survey outcomes

During the survey, 145 flora species, consisting of 34 families and 87 genera were found. The most commonly occurring families were Myrtaceae, Proteaceae and Fabaceae. The list includes 141 native species (refer to Table A10 Appendix D), and four introduced / alien species. The vegetation units identified across the survey area are described in Section 4.1. Refer to Map 4a-f in Appendix A for vegetation mapping, and Table A10 Appendix D for full species list.

##### 4.1. Vegetation Units

Seven vegetation types were identified during the survey period, vegetation descriptions can be found in the following sections, with relevé data presented in Appendix D. Refer to Figures 2 – 8 for photographs of vegetation units and Map 4a-f in Appendix A for extent.

### 1. Vegetation type 1: Myrtaceous shrubland (Myr SL)

Vegetation Description (NVIS): U +/- *Acacia cyclops*, *Acacia saligna* shrub<sup>5</sup>; M+ *Guichenotia indutum*, *Cyathostemon ambiguus*, *Grevillea oligantha*, +/- *Micromyrtus imbricata*, *Lysinema ciliatum*, *Daviesia teretifolia* shrub<sup>3,2</sup>; G *Jacksonia venosa*, *Lepidospermoides carphoides*, *Lepidosperma squamatum* sedge, low shrub<sup>1</sup>.

Vegetation Description (Muir): *Acacia cyclops* and *Acacia saligna* sparse tall shrubland, over *Cyathostemon ambiguus*, *Grevillea oligantha* and *Daviesia teretifolia* mid-shrubland, over *Guichenotia indutum*, *Micromyrtus imbricata* and *Lysinema ciliatum* low-shrubland, over *Lepidosperma carphoides* and *Lepidosperma squamatum* sparse low sedgeland.

Area: 0.03ha

Site description: Flat sandplain, with light grey sand and good drainage.

Condition: Very Good

Represented in R1 (refer to Appendix D).



Figure 2: Vegetation Type 1, Myrtaceous Shrubland (Myr SL), present within the survey area

### 2. Vegetation type 2: Banksia armata dominated shrubland with scattered Mallee and Acacia (Ban arm SL)

Vegetation Description (NVIS): U+ *Eucalyptus pleurocarpa*, *Eucalyptus leptocalyx* Mallee<sup>6</sup>; M+ *Hakea corymbosa*, *Banksia armata*, *Allocasuarina humilis* shrub<sup>3</sup>; G *Caustis dioica*, +/- *Lepidosperma carphoides*, *Neurachne alopecuroides* sedge, grass<sup>2</sup>.

Vegetation Description (Muir): *Eucalyptus pleurocarpa* and *Eucalyptus leptocalyx* Open Mallee mid and low woodland, over *Acacia cyclops* and *Hakea corymbosa* sparse tall shrubland, over *Banksia armata*, *Allocasuarina humilis*, *Beaufortia empetrifolia*, *Calothamnus gracilis* and *Daviesia teretifolia* mid shrubland, over *Hibbertia gracilipes* sparse low shrubland, over *Lepidosperma carphoides*, *Caustis dioica*, *Chorizandra enodis* open tall sedgeland, over *Dampiera lavandulacea* sparse forbland, over *Neurachne alopecuroidea* sparse grassland.

Area: 0.21ha

Site description: Flat sandplain, with light grey sand and good drainage.

Condition: Good, Excellent

Represented in R2 (refer to Appendix D).



Figure 3: Vegetation Type 2, *Banksia armata* dominated shrubland with scattered Mallee and Acacia (Ban arm SL) present within the survey area

### 3. Vegetation type 3: Mixed Proteaceous Shrubland with Scattered Mallee (Pro SL)

Vegetation Description (NVIS): U *Eucalyptus pleurocarpa*, *Eucalyptus leptocalyx* Mallee; M+ *Hakea lissocarpha*, *Isopogon polycephalus*, *Grevillea oligantha* shrub; G *Banksia blechnifolia*, *Hibbertia gracilipes*, *Caustis dioica* low shrub, sedge.

Vegetation Description (Muirs): *Eucalyptus pleurocarpa* and *Eucalyptus leptocalyx* Open Mallee Mid Woodland, over *Acacia cyclops* isolated tall shrubs, *Hakea lissocarpha*, *Isopogon polycephalus*, *Grevillea oligantha*, *Daviesia apiculata* and *Calothamnus gracilis* closed mid shrubland, over *Banksia blechnifolia* and *Hibbertia gracilipes* open low shrubland, over *Lepidosperma carphoides*, *Caustis dioica* and *Lepidobolus chaetocephalus* open tall shrubland, over *Dampiera lavandulacea* sparse forbland.

Area: 0.16ha.

Site description: Flat sandplain, with light grey sand and good drainage

Condition: Good, Excellent

Represented in R3 and R8 (refer to Appendix D).



Figure 4: Vegetation Type 3, Mixed Proteaceous Shrubland with scattered Mallee (Pro SL) present within the survey area

#### 4. Vegetation type 4: Low Chenopod and Samphire forbland on immediate salt lakes (Chen, Sam)

Vegetation Description (NVIS): U +/- *Melaleuca brevifolia*\shrub\3\; ^^*Dianella brevicaulis*, *Austrostipa juncifolia*\dwarf shrub, grass\1\; G+ ^^*Disphyma crassifolium*, *Salicornia* sp., *Tecticornia* sp., *Frankenia tetrapetala*\forb\1\c

Vegetation Description (Muir): *Melaleuca brevifolia* sparse mid shrubland, over *Dianella brevicaulis* sparse low shrubland, over *Austrostipa juncifolia* sparse tall grassland, over *Disphyma crassifolium*, *Salicornia* sp., *Tecticornia* sp., *Frankenia tetrapetala* forbland, over *Myriophyllum tillaeoides* sparse aquatics.

Area: 0.07ha

Site description: Flat drainage depression of a salt lake with light grey sand overlying clay and poor drainage.

Condition: Good

Represented in R4 (refer to Appendix D).



Figure 5: Vegetation Type 4, Low Chenopod and Samphire Forbland on immediate salt lakes (Chen, Sam), present within the survey area

#### 5. Vegetation type 5: Closed Melaleuca shrubland on salt lake peripheries (Mel SL)

Vegetation Description (NVIS): U+ ^^*Melaleuca brevifolia*, *Melaleuca calycina*, +/- *Hakea cinerea*\shrub\4\; M ^*Cyathostemon ambiguus*, +/-*Acacia patagiata*, *Darwinia vestita*\shrub\3\; G ^^*Loxocarya striata*, *Coopermookia strophiolata*, +/-*Drosera glanduligera*\^rush, forb\1\i

Vegetation Description (Muir): *Melaleuca brevifolia*, *Melaleuca calycina*, *Hakea cinerea* and *Melaleuca cuticularis* closed tall shrubland, over *Cyathostemon ambiguus*, *Acacia patagiata*, *Darwinia vestita*, *Grevillea oligantha* mid shrubland, over *Loxocarya striata* tall rushland, over *Coopermookia strophiolata*, *Drosera glanduligera* and *Drosera macrantha* sparse forbland.

Area: 0.24ha

Site description: Gentle slope on periphery of salt lake drainage depression, with light grey, seasonally wet clay sand.

Condition: Degraded, Good

Represented in R7 (refer to Appendix D).

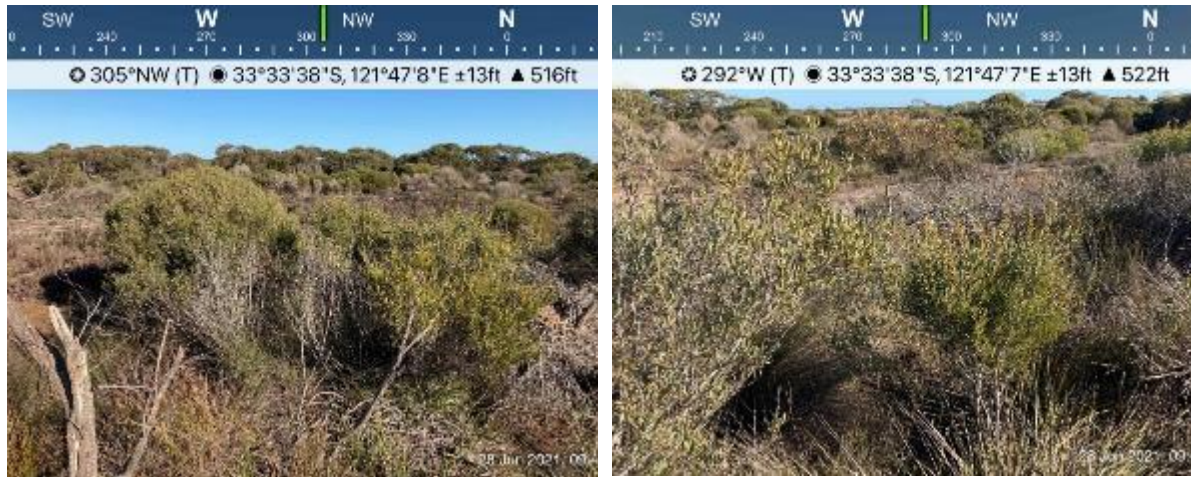


Figure 6: Vegetation Type 5, Closed Melaleuca Shrublands on salt lake peripheries (Mel SL) vegetation type present within the survey area

#### 6. Vegetation type 6: Paperbark Melaleuca woodland wetland (Mel WL)

Vegetation Description (NVIS): U+ *Melaleuca calycina* shrub; M *Grevillea oligantha*, *Cyathostemon ambiguus*, +/- *Chamelaucium ciliatum* shrub; G+ *Ficinia nodosa*, *Loxocarya striata*, *Lepidosperma carphoides* sedge, rush

Vegetation Description (Muir): *Melaleuca calycina* tall shrubland, over *Grevillea oligantha* and *Cyathostemon ambiguus* open mid shrubland, over *Chamelaucium ciliatum* open low shrubland, over *Ficinia nodosa* and *Lepidosperma carphoides* tall sedgeland, over *Loxocarya striata* tall rushland.

Area: 0.06ha

Site description: Drainage depression with poor drainage and light grey clay sand.

Condition: Good

Represented in R5 (refer to Appendix D).



Figure 7: Vegetation Type 6, Paperbark Melaleuca Woodland wetland (Mel WL) present within the survey area

#### 7. Vegetation type 7: Open Mallee Woodland with dense Sedgeland (Mal WL)

Vegetation Description (NVIS): U *Eucalyptus uncinata*, *Hakea cinerea*, *Hakea cygna*, *Melaleuca pulchella* Mallee, Shrub; M+ *Allocasuarina humilis*, *Acacia pulchella*, *Grevillea pauciflora*, *Cyathostemon ambiguus* shrub; G *Coopernookia strophiolata*, *Gahnia ancistrophylla*, *Loxocarya striata* dwarf shrub, sedge, rush.

Vegetation Description (Muir): *Eucalyptus uncinata* open mallee woodland, over *Hakea cinerea*, *Hakea cygna* and *Melaleuca pulchella* open tall shrubland, over *Allocasuarina humilis*, *Acacia pulchella*,



*Grevillea pauciflora* and *Cyathostemon ambiguus* mid shrubland, over *Cooperhooikia strophiolata* isolated low shrubland, over *Gahnia ancistrophylla* tall sedgeland, over *Loxocarya striata* tall rushland, over *Cassytha* sp. isolated clumps of vines over *Drosera glanduligera* and *Orchid* sp. isolated forbs.

Area: 0.48ha

Site description: Flat sandplain, with light grey clay sand and good drainage.

Condition: Very Good, Excellent

Represented in R6 (refer to Appendix D).



Figure 8: Vegetation Type 7, Open Mallee Woodland with dense sedgeland (Mal WL), present within the survey area

#### 4.2. Vegetation Condition

The vegetation condition for the survey area (Table 3) has been mapped using the condition rating scale (adapted from Keighery 1994) outlined in *EPA Flora and Vegetation Survey Technical Guidance* (2016).

The vegetation ranged from Good to Excellent condition throughout the survey area. Areas along the existing railway line or laydown areas included within the survey area were not assessed as native vegetation, being previously and historically cleared. These classification levels are related to degradation of structure and vegetation integrity by processes such as clearing, fire, weeds, grazing, *Phytophthora* Dieback and vehicle tracks. Table 2 over the page demonstrates the condition rating for the 7 vegetation types identified in the survey area. Condition had primarily been reduce from previous, historical disturbance related to being directly adjacent to the railway line and the servicing infrastructure. This included the presence of a service four-wheel drive gravel track running parallel to the railway line and often intersected or was directly adjacent to the survey areas. These areas had been effectively cleared in the past. Additionally, numerous lay down areas or areas where it is believed to have been historically cleared once and regenerated were present.

The disturbance vectors throughout the survey area has the potential to affect the biological representation of species present or vegetation types assessed. On the buffer of the access tracks adjacent to the railway line, detection of disturbance responding opportunists (e.g. *Cooperhooikia strophiolata*) was present. Additionally, the tracks became a braid of boggy trails in areas of Vegetation Type 4 (Chen, Sam) within the Salt Lake drainage depression that had caused degradation and likely loss of sensitive or non-clonal species that aren't as easily able to continue survival if run over. Some areas within Vegetation Type 6 also had indicators of previous disturbance and clearing, such as what appeared to be non-natural large ponding of water, and was suspected to be excavated or machinery created. This is likely to have led to a natural novel ecosystem scenario and the assessment of likelihood analysis for 10 km desktop survey will be limited. In the northern reaches of the survey area, where the vegetation buffer surrounding the railway line and agricultural pastoral land was reduced, it was evident in areas of standing water that increased nutrient run-off was occurring. The presence of green algae mats in standing ponds of water opposed to native aquatic species demonstrated degradation from increased nitrogen and phosphorous within the system, and the algae had likely smothered native aquatic species.

**Table 2: Vegetation condition rating**

Vegetation type	Condition rating	Area (ha)
Veg Type 1 – Myrtaceous Shrubland (Myr SL)	Very Good	0.03
Veg Type 2 – <i>Banksia armata</i> dominated shrubland with scattered Mallee and Acacia (Ban arm SL)	Good	0.18
	Excellent	0.03
Veg Type 3 – Mixed Proteaceous Shrubland with scattered Mallee (Pro SL)	Good	0.06
	Excellent	0.09
Veg Type 4 – Low Chenopod and Samphire forbland on immediate Salt Lake (Chen, Sam)	Good	0.07
Veg Type 5 – Closed Melaleuca shrubland on Salt Lake periphery (Mel SL)	Degraded	0.06
	Good	0.18
Veg Type 6 – Paperbark Melaleuca woodland wetland (Mel WL)	Good	0.06
Veg Type 7 - Open Mallee woodland with dense sedgeland (Mal WL)	Very Good	0.41
	Excellent	0.07
<b>Total</b>		<b>1.25ha</b>

### 4.3. Weeds and disturbance

Of the 145 flora species recorded within the survey area, four species are considered introduced and non-native species. This is significantly lower than expected, indicating the high conservation value of the survey area despite the degradation from the access track and other incidental clearing related to the railway line from the past. Typically, these areas would be filled with a variety of significant weed infestations, which are not present here. The full suite of weed species recorded is listed below in Table 3, with their corresponding ratings under the WA Weed Strategy (CALM, 1999) and the *BAM Act* (2007). The ratings given under the WA Weed Strategy relate to determining the significance of a weed, based on the criteria of invasiveness, impacts, potential for spread and socioeconomic and environmental values, and can be either 'High', 'Moderate', 'Mild', or 'Low' (CALM, 1999).

It is strongly recommended that all machinery entering the survey area (if clearing is approved in the future) has rigorous and thorough biosecurity hygiene applied to limit the introduction of invasive species infestation and the potential to significantly degrade the surrounding reserve, incidentally observed to be in pristine to excellent condition.

**Table 3: Weed species recorded from the survey area.**

Family	Species	Common Name	WA Weed Strategy rating (CALM 1999) / BAM Act (2007)
Asteraceae	<i>Onopordum acanthium</i>	Scotch Thistle	- / Permitted (s11)
Poaceae	<i>Briza maxima</i>	Blowfly Grass	Moderate / Permitted (s11)
Poaceae	<i>Ehrharta longiflora</i>	Annual Veldt Grass	Moderate / Permitted (s11)
Poaceae	<i>Eragrostis curvula</i>	African Lovegrass	High / Permitted (s11)

### 4.4. Threatened Flora

#### 4.4.1. Likelihood of occurrence assessment

The scope for this survey was to provide the client with information on any Threatened or priority flora species that are potentially present within the survey area. Species were deemed either likely or unlikely to occur in the area based on habitat suitability (e.g. soil type and vegetation association) and distribution. The out-of-season reconnaissance flora survey then determined presence or absence for numerous large shrubs or perennial species, with numerous priority and a potential Threatened flora being identified (See section 4.4.2). However, for species that were not flowering and that require flowers for accurate identification, a risk assessment was undertaken of habitat suitability (Table A2, Appendix B).

Specifically, seven species were identified in the 10 km likelihood of analysis that are possible or likely to occur with specific vegetation types meeting criteria as potential habitat that were not able to be accurately surveyed outside of peak flowering season (September to November). These are listed in Table 4 (over page), and it is recommended that a targeted flora survey be undertaken during peak flowering season (September to November) to ascertain presence or absence within the specific survey areas deemed as suitable habitat. Please refer to Table 9 for a summary of recommendations for further surveys required per area in Section 7.1.

**Table 4: Conservation significant flora identified within the 10 km desktop survey assessed to be likely or possible to be present, but could not be adequately surveyed due to the out-of-season nature of the reconnaissance survey.**

Family	Species	Common Name	Cons Code	Potential suitable Veg types	Potential suitable Areas
Goodeniaceae	<i>Goodenia turleyana</i>		P1	4 (Chen, Sam), and 5 (Mel SL)	3, between area 3 and 4, between area 4 and 5, 7, between area 7 and 8, 8, 11, 15
Dilleniaceae	<i>Hibbertia turleyana</i>		P2	1 (Myr SL), 2, (Ban arm SL), 3 (Pro SL), 5 (Mel SL) and 7 (Mal SL)	1a, 1b, 2, between area 3 and 4, between area 4 and 5, 5, 6, 7, between area 7 and 8, 8, 9, 10, 11, 12, 13, 14
Araliaceae	<i>Hydrocotyle tuberculata</i>	Bumpy Fruited Pennywort	P2	4 (Chen, Sam)	3, 15
Araliaceae	<i>Hydrocotyle asterocarpa</i>	Starry Pennywort	P2	4 (Chen, Sam) and 5 (Mel SL)	1a, 1b, 2, 3, 5, 9, 10, 12, 13, 14
Goodeniaceae	<i>Dampiera sericantha</i>		P3	1 (Myr SL), 2, (Ban arm SL), 3 (Pro SL) and 7 (Mal SL)	1a, 1b, 2, 3, 5, 9, 10, 12, 13, 14
Fabaceae	<i>Daviesia pauciflora</i>		P3	1 (Myr SL), 2, (Ban arm SL), 3 (Pro SL), 5 (Mel SL) and 7 (Mal SL)	1a, 1b, 2, 3, 5, 9, 10, 12, 13, 14
Orchidaceae	<i>Pterostylis faceta</i>	Bird Orchid	P3	1 (Myr SL), 2, (Ban arm SL), 3 (Pro SL), 5 (Mel SL) and 7 (Mal SL)	1a, 1b, 2, 3, 5, 9, 10, 12, 13, 14

#### 4.4.2. Presence of conservation significant flora

Of the 42 potential threatened and priority flora species within the survey area, four species had been recorded directly within the survey area or in the immediate surrounds (<100 m), including *Darwinia* sp. Gibson (P1), *Isopogon alcornis* (P3), *Conostephium marchantiorum* (P3) and *Grevillea baxteri* (P4). This is further expanded in Table 5 and further below per species discussion. An additional 27 species of the 42 identified in the desktop survey had been assessed to be 'likely' or 'possible' to occur, of which only one species was listed as threatened and 26 as priority.

In total, seven species of priority conservation status were identified within the survey area directly. Of the four species previously recorded directly within the survey area or immediate surrounds (<100 m), three species were located (Table 5), including *D. sp.* Gibson, *C. marchantiorum*, and *I. alcornis*. New populations of *Persoonia scabra*, *Brachyloma mogin* and *Kunzea salina* were also identified in the survey area, that had been identified in the 10 km radius desktop analysis that were 'likely' or 'possible' to occur. In addition, a new population of *Stachystemon vinosus* which had not been identified in the 10 km radius desktop, was identified within the site. For all new populations of priority flora identified in the field, a specimen was collected under Katie White's Regulation 60 FTB2000327 Flora Taking licence. These were submitted to the WA Herbarium for confirmation of a new priority population (Accession 9059), as required under the EPA *Flora and Vegetation Survey Guidelines* (2016) and Flora Taking Licence FTB2000327 conditions. An estimated 8-15 species could not be identified due to lacking suitable taxonomic information. Further details on presence of conservation significant flora is displayed in Table 5 and in species specific sections below.

In addition, a single plant of *Eremophila* sp. was detected in the area that could not be identified to species-level due to the out-of-season nature of the flora survey, and is deemed to be taxonomically similar to Critically Endangered (Threatened Flora) *E. glabra* subsp. Scaddan. Further surveys are required during peak flowering season to ascertain identification and confirm if threatened flora or other similar non-threatened sub-species of *E. glabra*.

A Threatened and Priority Report Form (TPFL) was submitted to DBCA Species district Flora Conservation Office (Emma Adams) and Species and Communities Branch for all priority species observed in the survey area (existing and new) on the

24/09/2021, also a licence requirement under FTB2000327 (Appendix E). A TPFL form for *Eremophila* sp. 1 species was not submitted as formal identification had not occurred.

Additionally, numerous non-threatened species were identified with close similarities to conservation listed species that were identified in the 10 km radius survey. Key rationale behind identification as non-threatened are listed below, and are further expanded in Table A2 of Appendix B:

- *Acacia cyclops* – bears similarities to P3 *Acacia bartlei*, which was identified in the 10 km desktop analysis and deemed ‘Possible’ to occur. The species present was determined as common, non-threatened *A. cyclops* by the distinctively curled pods remaining on the shrub and red arils present.
- *Micromyrtus elobata* subsp. *elobata* – bears similarities to P2 *M. elobata* subsp. *scopula*. Was determined as being the non-threatened subspecies as the leaves were too thin and not circular enough to be considered the P2 subspecies.
- *Spyridium mucronatum* subsp. *mucronatum* – bears similarities to P2 *S. mucronatum* subsp. *multiflorum* that was identified as ‘Possible’ to occur in the 10 km desktop assessment, but species present had 4-5 flowers present per umbel, opposed to >7 to be considered *S. mucronatum* subsp. *multiflorum*.
- *Frankenia tetrapetala* – bears similarities to P4 *Frankenia glomerata*, with suitable habitat being present and an extremely wide and varied distribution, despite not being detected in the 10 km desktop analysis. Leaf structure of species present was inconsistent with *F. glomerata*, but limitations without flowering is present.
- *Acacia chrysellia* – bears similarities to P3 *Acacia euthyphylla*, which was assessed as ‘Likely’ to occur in the 10 km desktop analysis. Determined as non-threatened *A. chrysellia* by distinctive hooks at end of phyllodes and a greater number of flower cluster per raceme, opposed to only the two on *A. euthyphylla*.
- *Patersonia occidentalis* – bears similarities to P2 *Patersonia inaequalis*, which was assessed as ‘Possible’ to occur in the 10 km desktop analysis. Determined as non-threatened *P. occidentalis* by shape and structure of the bracts, that weren’t consistent with *P. inaequalis*.
- *Calectasia gracilis* – bears similarities to P2 *Calectasia jubillaea*, but was not consistent with descriptors with significantly smaller flowers and structure of leaves.
- *Melaleuca pulchella* – bears similarities to P3 *Melaleuca dempta*, identified as ‘Likely’ to occur in the 10 km desktop analysis, but was eliminated due to shape of nuts, star shape retained, smaller leaves and high reticulation on the leaves.
- *Stenanthemum notiale* – bears similarities to P3 *Commersonia rotundifolia*, which was identified as ‘Possible’ to occur in the 10 km desktop. Identified as non-threatened *S. notiale*, by smaller leaves, sparseness of leaves on stem/inter-node distance of leaves and density of hairs.

**Table 5: Conservation significant flora identified within the survey area.**

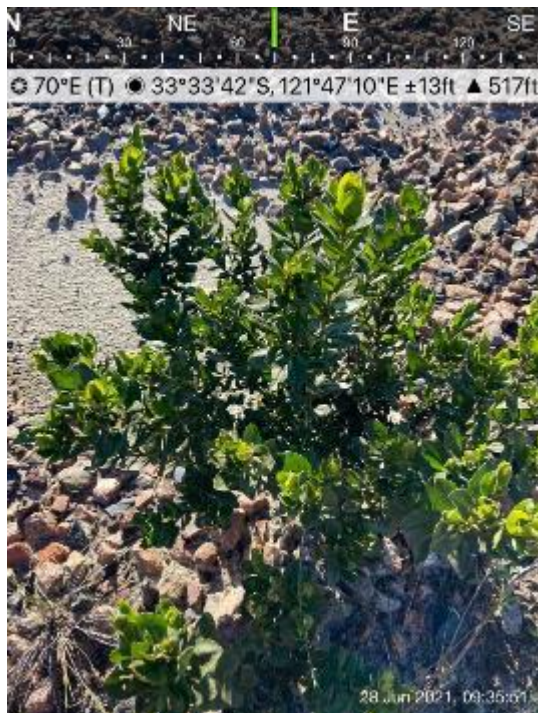
Family	Species	Cons Code	Population status	Vegetation Types Present	Areas Present	Abundance
Scrophulariaceae	<i>Eremophila</i> sp. 1 – Potential <i>Eremophila glabra</i> subsp. Scaddan (C. Turley s.n. 10/11/2005)	Potential TF – Cr	New – further survey required	4 (Chen, Sam)	3	1
Myrtaceae	<i>Darwinia</i> sp. Gibson	P1	Existing	5 (Mel SL)	Between Area 3 and 4, 4, Between Area 4 and 5, 11	51
Ericaceae	<i>Conostephium marchantiorum</i>	P3	Existing	2 (Ban arm SL), 3 (Pro SL), 7 (Mal WL)	2, 5, Between Area 7 and 8, 12, 13	5

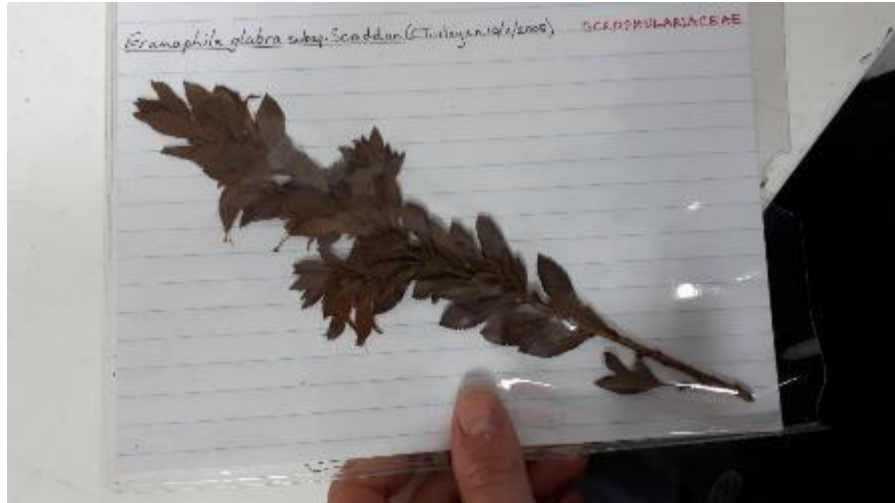
Table 5 continued.

Family	Species	Cons Code	Population status	Vegetation Types Present	Areas Present	Abundance
Proteaceae	<i>Isopogon allicornis</i>	P3	Existing	5 (Mel SL), 7 (Mal WL)	Between Area 4 and 5, 5, 6, 10	26
Proteaceae	<i>Persoonia scabra</i>	P3	New	2 (Ban arm SL), 3 (Pro SL), 7 (Mal WL)	2, 9, 10, 12, 13	14
Ericaceae	<i>Brachyloma mogin</i>	P3	New	3 (Pro SL), 5 (Mel SL)	2, Between Area 3 and 4, 4, 7	10
Myrtaceae	<i>Kunzea salina</i>	P3	New	4 (Chen, Sam), 5 (Mel SL)	Between Area 3 and 4, 15	31
Euphorbiaceae	<i>Stachystemon vinosus</i>	P4	New	7 (Mal WL)	6	1

***Eremophila* sp. – *Eremophila glabra* subsp. Scaddan (C. Turley s.n. 10/11/2005), TF Cr En**

A single plant of *Eremophila* sp. was present directly adjacent to the survey area and on the active footprint (stone rubble) of the railway line, located in Area 3/Vegetation Type 4 (Chen, Sam), as shown in Map 5a-f Appendix A. The habitat the plant was detected in is considered to be suitable habitat for *Eremophila glabra* subsp. Scaddan (C. Turley s.n. 10/11/2005). Due to the plant lacking flowers or buds or other taxonomic indications that could distinguish the critically endangered *E. glabra* subsp. Scaddan from other non-threatened other sub-species, no formal specimens were collected or submitted to the WA Herbarium. Due to the extremely rare nature of the species, and that the botanist (Katie White) had only surveyed the species <5 times, photos (Figure 9) were sent to the DBCA Threatened Flora Officer, Emma Adams, for her validation. She confirmed that there was a possibility of being the threatened flora (*pers. comms*, E. Adams 2021). Further surveys are required during peak flowering season to confirm identification of the species.





**Figure 9: Photos of *Eremophila* sp. 1 within the survey area in comparison with a lodged specimen of *E. glabra* subsp. Scaddan (C. Turley s.n. 10/11/2005) in the Esperance district herbarium.**

### **Darwinia sp. Gibson, P1**

*Darwinia* sp. Gibson (R.d. Royce 3569) (P1) has previously been recorded directly within the survey area or in the immediate vicinity (<100m), record PERTH06466710 at WA Herbarium (DBCA, 2021d) and observable in Map 2 Appendix A. The population of *D. sp. Gibson* (R.D. Royce 3569) was detected at 1.1 to 1.4 km north of the Fleming Grove Road crossing along the railway, and a second population at 2.9 km north of the crossing (Figure 10). Specifically, it was only located in Vegetation Type 5, Melaleuca Shrubland on Salt Lake Periphery, which is considered consistent with suitable habitat for the species (Table 5; Map 5a-f Appendix A). It was recorded within Area 4 and 11 and along the linear survey between Area 3-4 and 4-5. A total of 51 plants were recorded within the survey area, with a summary of number of plants per area recorded in Table 9. As the population had previously been recorded, no specimen was collected for formal verification.

The plants of *D. sp. Gibson* (R.D. Royce 3569) counted represent a partial or edge survey, with only plants directly located within the survey area counted. It is likely that the population extends more broadly into the surrounding salt lakes and the total population number is much higher. Further surveys may be required to quantify impact of proposed clearing of areas identified in the survey area, within the context of the total population.

The known distribution and records of *D. sp. Gibson* (R.D. Royce 3569) within the Australasian Virtual Herbarium (AVH, n.d.) and Florabase (WAH, 1998-) indicate that *D. sp. Gibson* (R.D. Royce 3569) is known from eight records, with seven directly in the Gibson to Scaddan region in a radius of 30 km region of salt lakes (Figure 11). An additional record is located ~90 km east of Kalgoorlie. It has been recorded within the Local Government Areas of Esperance and Kalgoorlie-Boulder, and IBRA subregions of Eastern Mallee, Eastern Murchison and Recherche.



Figure 10: Photos of *Darwinia* sp. Gibson (R.D. Royce 3569) within the Survey Area.



Figure 11: Regional distribution of *Darwinia* sp. Gibson (R.D. Royce 3569) (AVH, n.d.).

**Conostephium marchantiorum, P3**

*Conostephium marchantiorum* (P3) has previously been recorded directly within the survey area or in the immediate vicinity (<100m), record PERTH04191161 at WA Herbarium (DBCA, 2021d) and observable in Map 2 Appendix A. The population of *C. marchantiorum* was detected at approximately 170m south of the Fleming Grove Road railway crossing to 2.1km north of the railway crossing, sporadically scattered (Figure 12). Specifically, it was located in multiple vegetation types across the survey area, including Vegetation Type 2 (*Banksia armata* dominated shrubland with scattered Mallee and Acacia), Vegetation Type 3 (mixed Proteaceous shrubland with scattered Mallee) and Vegetation Type 7 (Open Mallee Woodland with dense

sedgeland), which is considered consistent with suitable habitat for the species (Table 5; Map 5a-f Appendix A). It was recorded across multiple areas within the survey area, including Area 2, 5, 12 and 13, and along the linear survey between Area 7-8. A total of five plants were recorded within the survey area, with a single plant detected per area it was recorded indicating the scattered and sparse distribution of the species. A summary of the number of plants per area recorded in Table 9. As the population had previously been recorded, no specimen was collected for formal verification.

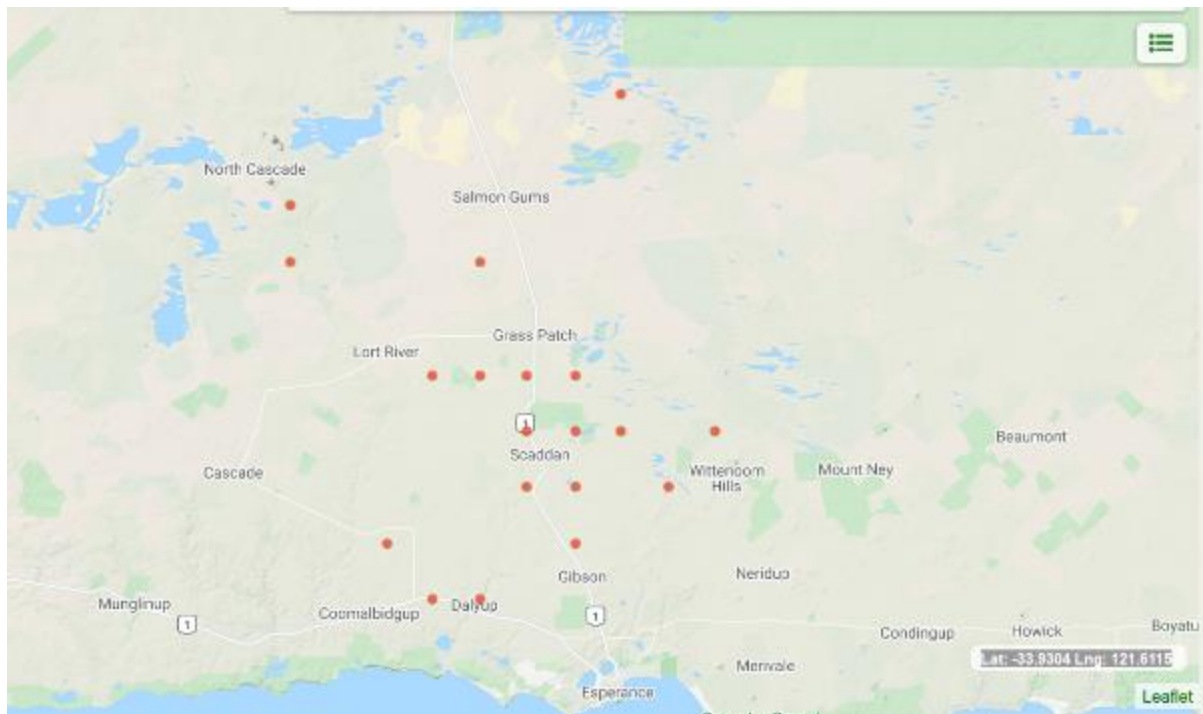
The plants of *C. marchantiorum* counted represent a partial or an edge survey, with only plants directly located within the survey area counted. It is likely that the population extends more broadly into the surrounding suitable habitat of the adjacent reserve within the vicinity, and the total population number is much higher. Further surveys may be required to quantify impact of proposed clearing of areas identified in the survey area, within the context of the total population.

The known distribution and records of *C. marchantiorum* within the Australasian Virtual Herbarium (AVH, n.d.) and Florabase (WAH, 1998 - ) indicate that *C. marchantiorum* has a total of 59 records, scattered regularly between Gibson (~30 km north of Esperance) and north of Salmon Gums (150 km north of Esperance), and west towards Peak Charles region (Figure 13). It has been recorded within the Local Government Areas of Esperance, and IBRA subregions of Eastern Mallee and Recherche.



Figure 12: Photos of *Conostephium marchantiorum* within the survey area.





**Figure 13: Regional distribution of *Conostephium marchantiorum* (AVH, n.d.).**

### ***Isopogon alpicornis*, P3**

*Isopogon alpicornis* (P3), Elkhorn Coneflower, has previously been recorded directly within the survey area or in the immediate vicinity (<100m), record PERTH05814731 at WA Herbarium (DBCA, 2021d) and observable in Map 2 Appendix A. The population of *I. alpicornis* was detected at approximately 1.1 to 1.6 km north of the crossing on Fleming Grove Road along the railway line, with a second population recorded from 2.9 to 3 km north (Figure 14). Specifically, it was located in multiple vegetation types across the survey area, including Vegetation Type 5 (Closed Melaleuca Shrubland on Salt Lake Periphery) and Vegetation Type 7 (Open Mallee Woodland with dense sedgeland), which is considered consistent with suitable habitat for the species (Table 5; Map 5a-f Appendix A). It was recorded across multiple areas within the survey area, including Area 5, 6 and 10 and along the linear survey between Area 4-5. A total of 26 plants were recorded within the survey area, with a summary of the number of plants per area recorded in Table 9 (Section 7). As the population had previously been recorded, no specimen was collected for formal verification.

The plants of *I. alpicornis* counted represent an edge or partial survey, with only plants directly located within the survey area counted. It is likely that the population extends more broadly into the surrounding suitable habitat of the adjacent reserve, and the total population number is much higher. Further surveys may be required to quantify impact of proposed clearing of areas identified in the survey area, within the context of the total population.

The known distribution and records of *I. alpicornis* within the Australasian Virtual Herbarium (AVH, n.d.) and Florabase (WAH, 1998 - ) indicate that *I. alpicornis* has a total of 39 records, located in a wide distribution between Dalyup west of Esperance to Cape Arid, east of Esperance, spanning over 200 km east-west distribution (Figure 15). It is then scattered from Dalyup, south of Esperance to Grass Patch in the north of Esperance, spanning a 30 km north-south distribution. It has been recorded within the Local Government Areas of Esperance, and IBRA subregions of Eastern Mallee and Recherche.



Figure 14: Photos of *Isopogon alcornis* within the Survey Area.

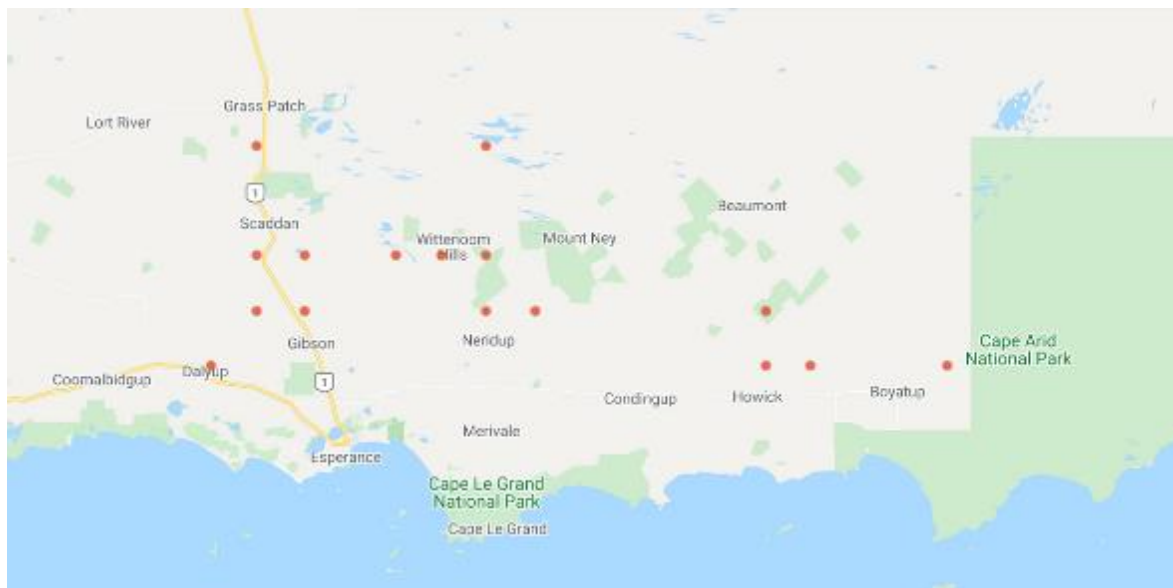


Figure 15: Regional distribution of *Isopogon alcornis* (AVH n.d.).

**Brachyloma mogin, P3 (new)**

A new population of *Brachyloma mogin* (P3) was detected within the survey area, after being identified as 'Likely' to occur in the 10 km desktop analysis due to populations within the near vicinity along Fleming Grove Road, suitability of habitat with salt lakes present and being within the known distribution of the species (Map 5a-f Appendix A; Table A2 Appendix B; Figure 16). Due to being a new population recorded, a specimen was collected and submitted to the WA Herbarium for verification of identification (KW150, Accession 9059, not retained by WA Herbarium). The population of *B. mogin* was detected at approximately 400m to 2km north of the crossing at Fleming Grove Road along the railway line. Specifically, it was located in multiple vegetation types across the survey area, including Vegetation 3 (mixed Proteaceous shrubland with scattered Mallee) and 5 (Dense Melaleuca shrubland on salt lake periphery), which is considered consistent with suitable habitat for the species

(Table 5). It was recorded across multiple areas within the survey area, including Area 2, 4 and 7, and along the linear survey between Area 3-4. A total of 10 plants were recorded within the survey area, with a summary of the number of plants per area recorded in Table 9 (Section 7).

The plants of *B. mogin* counted represent an edge or partial survey, with only plants directly located within the survey area counted. It is likely that the population extends more broadly into the surrounding suitable habitat of the adjacent reserve within the vicinity, and the total population number is much higher. Further surveys may be required to quantify impact of proposed clearing of areas identified in the survey area, within the context of the total population.

The known distribution and records of *B. mogin* within the Australasian Virtual Herbarium (AVH, n.d.) and Florabase (WAH, 1998 - ) indicate that *B. mogin* has a total of 39 records, located in 450km east-west and 150km north-south distribution. It has been recorded within IBRA regions of Avon Wheatbelt, Esperance Plains, Jarrah Forest and Mallee, and the Local Government Areas of Beverley, Broomehill-Tambellup, Corrigin, Cranbrook, Esperance, Gnowangerup, Jerramungup, Kent, Kojonup, Kulin and Pingelly. See Figure 17.

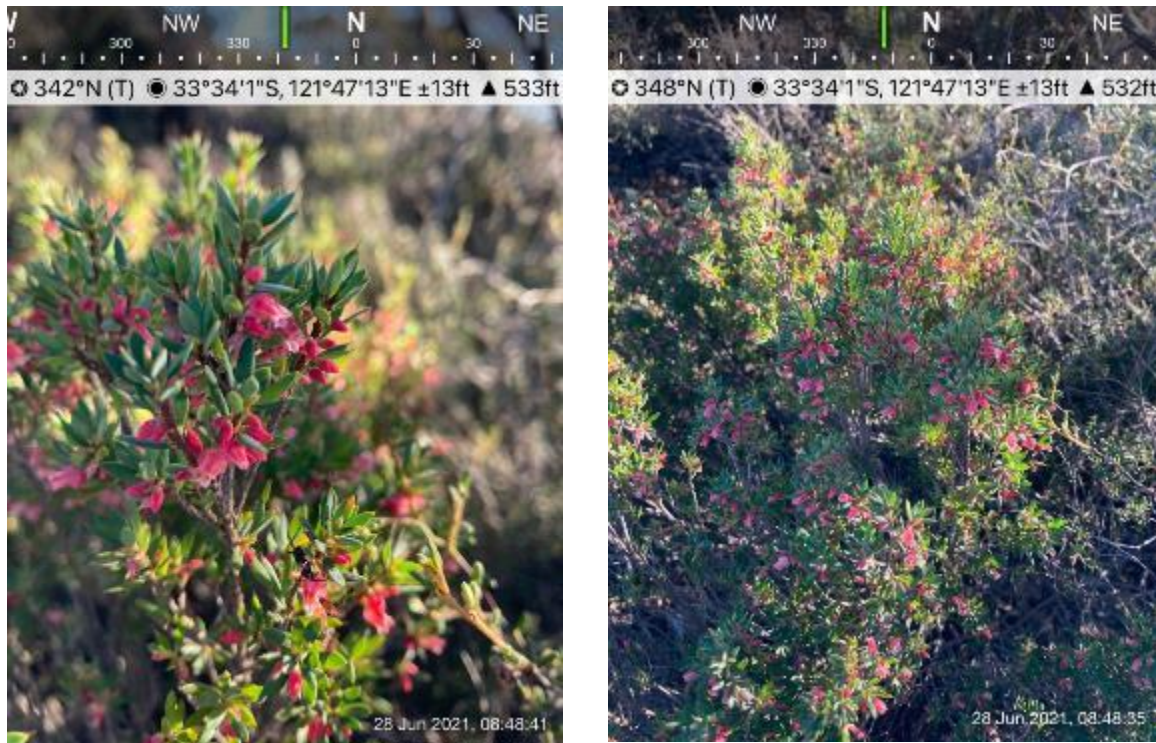


Figure 16: Photos of *Brachyloma mogin* within the Survey Area.



**Figure 17: Regional distribution of *Brachyloma mogin* (AVH, n.d.)**

***Persoonia scabra*, P3 (new)**

A new population of *Persoonia scabra* (P3) was detected within the survey area, after being identified as 'Likely' to occur in the 10 km desktop analysis due to the distribution in the general and correct sandy soil type present in the areas outside of the salt lakes (Map 5a-f Appendix A; Table A2 Appendix B; Figure 18). Due to being a new population recorded, a specimen was collected and submitted to the WA Herbarium for verification of identification (KW151, Accession 9059, not retained by WA Herbarium). The population of *P. scabra* was detected at approximately 70m south to 300m north of the crossing at Fleming Grove Road along the railway line, with a second population at 2.3 to 2.5km north. Specifically, it was located in multiple vegetation types across the survey area, including Vegetation 2 (*Banksia armata* dominated shrubland with scattered Mallee and Acacia) and 3 (mixed Proteaceous shrubland with scattered Mallee), which is consistent with considered suitable habitat (Table 5). It was recorded across multiple areas within the survey area, including Area 2, 9, 10, 12, and 13. A total of 14 plants were recorded within the survey area, with a summary of the number of plants per area recorded in Table 9 (Section 7).

The plants of *P. scabra* counted represent a partial or edge survey, with only plants directly located within the survey area counted. It is likely that the population extends more broadly into the surrounding suitable habitat of the adjacent reserve within the vicinity, and the total population number is much higher. Further surveys may be required to quantify impact of proposed clearing identified in the survey area, within the context of the total population.

The known distribution and records of *P. cymbifolia* within the Australasian Virtual Herbarium (AVH, n.d.) and Florabase (WAH, 1998 - ) indicate that *P. cymbifolia* a total of 21 records, and is largely located in a 250km east-west and 150km north-south distribution around the Esperance townsite. There is also a single outlier record north of Kalgoorlie. It has been recorded within the Local Government Areas of Esperance, Kalgoorlie-Boulder, Lake Grace and Ravensthorpe, and IBRA regions of Esperance Plains, Mallee and Murchinson. See Figure 19.



Figure 18: Photos of *Persoonia scabra* within the Survey Area.



Figure 19: Regional distribution of *Persoonia scabra* (AVH, n.d.)

**Kunzea salina, P3 (new)**

A new population of *Kunzea salina* (P3) was detected within the survey area, after being identified as ‘Likely’ to occur in the 10 km desktop analysis. Rationale behind assessment due to nearby records and suitable soil type and habitat present, of salt lake peripheries in low shrubland margins and winter wet lowlands with grey sands (Map 5a-f Appendix A; Table A2 Appendix B; Figure 20). Due to being a new population recorded, a specimen was collected and submitted to the WA Herbarium for verification of identification (KW148, Accession 9059, not retained by WA Herbarium). The population of *K. salina* was detected at approximately 1 km north along the railway line, from Fleming Grove Road crossing. Specifically, it was located in multiple vegetation types across the survey area, including Vegetation Type 4 (Low Chenopod and Saphire forbland on immediate Salt Lake) and 5 (Dense Melaleuca Shrubland on Salt Lake Periphery), which is consistent with suitable habitat descriptions (Table 5). It was recorded across multiple areas within the survey area, including Area 5 and linear survey

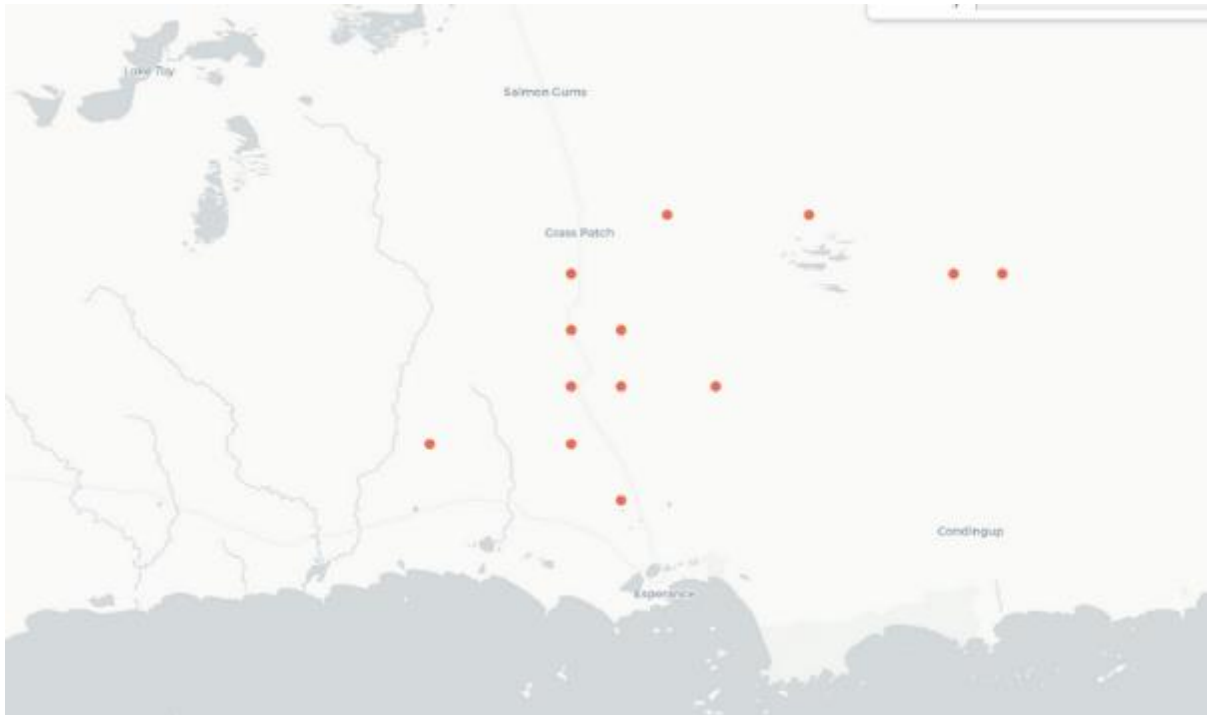
between Area 3 and 4. A total of 31 plants were recorded within the survey area, with a summary of the number of plants per area recorded in Table 9 (Section 7). The plants formed dense colonies and aggregated together, with often 2-3 plants growing in a clump.

The plants of *K. salina* counted represent an edge survey, with only plants directly located within the survey area counted. It is likely that the population extends more broadly into the surrounding suitable habitat of the adjacent reserve within the vicinity, and the total population number is much higher. Further surveys may be required to quantify impact of proposed clearing of areas identified in the survey area, within the context of the total population.

The known distribution and records of *K. salina* within the Australasian Virtual Herbarium (AVH, n.d.) and Florabase (WAH, 1998 - ) indicate that *K. salina* has a total of 22 records, located in 60km north-south and 80km east-west distribution. It has been recorded within the Local Government Areas of Esperance, and IBRA regions of Esperance Plains and Mallee. See Figure 21.



Figure 20: Photos of *Kunzea salina* within the Survey Area.



**Figure 21: Regional distribution of *Kunzea salina* (AVH, n.d.)**

***Stachystemon vinosus*, P4 (new)**

A new population of *Stachystemon vinosus* (P4) was detected within the survey area (Figure 22). It was not detected during the 10 km desktop analysis, but has an extremely broad and scattered distribution. Due to being a new population recorded, a specimen was collected and submitted to the WA Herbarium for verification of identification (KW149, Accession 9059, not retained by WA Herbarium). The population of *S. vinosus* was detected at approximately 1.6km north along the railway line, from Fleming Grove Road crossing. Specifically, a single plant was found in a single location, at Area 6 within Vegetation Type 7 (Open Mallee Woodland with dense sedgeland) (Table 5; Map 5a-f, Appendix A).

The plant of *S. vinosus* counted represents an edge or partial survey, with only plants directly located within the survey area counted. It is likely that the population extends more broadly into the surrounding suitable habitat of the adjacent reserve within the vicinity, and the total population number is much higher. Further surveys may be required to quantify impact of proposed clearing of areas identified in the survey area, within the context of the total population.

The known distribution and records of *S. vinosus* within the Australasian Virtual Herbarium (AVH, n.d.) and Florabase (WAH, 1998 - ) indicate that *S. vinosus* has a total of 29 records, located in 250km east-west and 70km north-south distribution. It has been recorded within the Local Government Areas of Esperance and Ravensthorpe, and IBRA regions of Esperance Plains and Mallee. See Figure 23.



Figure 22: Photos of *Stachystemon vinosus* within the Survey Area.

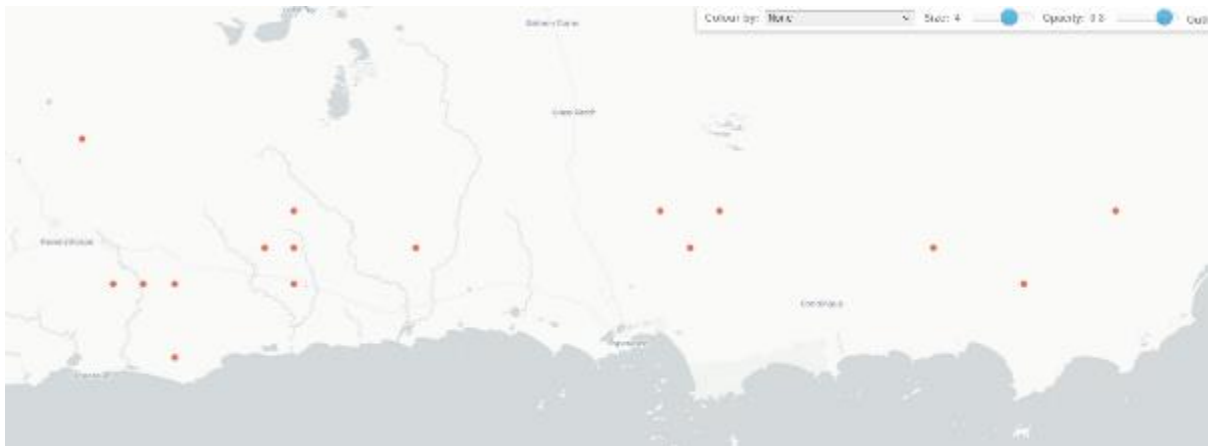


Figure 23: Regional distribution of *Stachystemon vinosus* (AVH n.d.)

#### 4.5. Threatened and Priority Ecological Communities

Two threatened (TEC) and priority (PEC) ecological communities were identified in the 10 km desktop analysis, Subtropical and Temperate coastal saltmarsh (CSM) and the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongkan) (Section 2.8; Table A3 Appendix B). Due to the out-of-season nature and reconnaissance nature of the survey, recommendations have been made on where the Kwongkan TEC is likely to occur, specifically relating to the areas present within the survey area, but requires formal quadrat sampling to be undertaken during spring flora season for confirmation of presence of the TEC.

##### **Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province (Kwongkan)**

Kwongkan is listed as an Endangered TEC under the federal *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. Multiple more specific and define communities are applicable under the state legislation *Biodiversity Conservation (BC) Act 2016*, meeting key diagnostic characteristics of the federal TEC Kwongkan. Generally, Kwongkan is listed as a Priority 3 PEC under the BC Act 2016. An additional community listed as a P2 under the BC Act 2016 is 'Tallerack (*Eucalyptus*



*pleurocarpa*) Mallee heath on seasonally inundated soils (Tallerack Mallee)', which can be considered a component of Kwongkan TEC (DBCA, 2021d). The survey area is located within the defined South Coastal Floristic Province as outlined in key diagnostic feature 1 below, and therefore meets geographic boundary criteria.

During the survey, multiple vegetation types were detected that were likely to meet Kwongkan TEC criteria, specifically Vegetation Type 2 (*Banksia armata* dominated shrubland with scattered Mallee and Acacia) and Vegetation Type 3 (Mixed Proteaceous shrubland with scattered Mallee). These Vegetation Types were recorded in Areas 1b, 2, 12, 13 and 14. The assessment that Kwongkan TEC was likely to occur was defined using primarily key diagnostic feature described in 2a, with the cover of Proteaceous species in the area consisting of greater than 30% cover of the total area. Additionally, a high number of Proteaceous species were recorded, with 14 species present in Vegetation Type 2 (Ban arm SL) and 15 in Vegetation Type 3 (Pro SL), of which numerous met key diagnostic species listed in the Approved Conservation Advice Guidelines (DoE, 2015b) for Kwongkan TEC. These include *Adenanthos cuneatus*, *Banksia armata*, *Hakea cinerea*, *Hakea corymbosa*, *Hakea nitida*, *Hakea trifurcata* and *Isopogon polycephalus*. Vegetation Type 7 consisted of numerous Proteaceous species, most notably *Hakea cinerea* and *Hakea cygna*. However, it is believed that these remain well below the 30% cover required in key diagnostic feature 2a.

Both Vegetation Type 2 (Ban arm SL) and Vegetation Type 3 (Pro SL) had *Eucalyptus pleurocarpa* as a dominant Mallee identified in the NVIS L5 sub-association descriptions. It is therefore possible that both ecological communities also meet the P2 Tallerack Mallee PEC under the state BC Act 2016.

However, as described above, formal quadrat analysis to measure cover is required during a spring season survey to determine the presence of Kwongkan TEC under federal EPBC Act 1999, and as the P3 Kwongkan PEC or P2 Tallerack Mallee PEC under state BC Act 2016. For Areas 12 and 14, this is particularly prudent as previous disturbance likely through a process of historical clearing and regeneration may result in sensitive Proteaceous species lacking in the community (despite showing characteristics of the vegetation type assigned) and not meet Kwongkan criteria. A summary is provided in Table 9 (Section 7) on further surveys required per area to formally determine the presence of Kwongkan TEC. In total it is estimated 0.36 ha of Kwongkan TEC is present across the survey area.

**Table 6: Estimate Areas of 'Proteaceae Dominated Kwongkan Shrubland of the South-east Coastal Floristic Province' detected within the survey area.**

Vegetation Type	Area Identified in	Total area (ha)	Condition	Comment
2 (Ban arm SL)	1b	0.03		
2 (Ban arm SL)	12	0.18		Unlikely to meet Kwongkan TEC due to historical disturbance.
3 (Pro SL)	2	0.09		
3 (Pro SL)	13	0.06		
3 (Pro SL)	14	0 – no vegetation remaining		Unlikely to meet Kwongkan TEC due to historical disturbance.

The Kwongkan PEC/TEC is recognised by the below key diagnostic features and mete condition thresholds outlined in Table 6 (DoE, 2015b):

- 1) Occurs within the South Coastal Floristic Province (*sensu* Hopper and Gioia, 2004; relating to south west phytogeographic boundaries. Includes Island of the Recherche Archipelago.
- 2) a) Characterised by Proteaceae species having 30% or greater cover of Proteaceae species across all layers of where shrubs occur (crowns measured as if opaque). OR;  
 b) Two or more diagnostic Proteaceae species are present that are likely to form a significant vegetative component when regenerated. The use of diagnostic species is for situations in which the cover or Proteaceae species is reduced due to recent disturbance (eg. Fire).

Tallerack Mallee is described as "mallee-heath in which the conspicuous *E. pleurocarpa* is the dominant Eucalypt species in an open Mallee or very open formation that typically includes abundant *Eucalyptus decipiens* subsp. *adesmophloia* and

*Eucalyptus falcata*, *Eucalyptus buprestium*, *Eucalyptus decurva* and *Eucalyptus uncinata* are sometimes present. *Hakea cucullata*, *Hakea nitida* and *Hakea pandanica* subsp. *crassifolia* are usually present as tall open shrubs. Commonly, these heaths or closed heaths are dominated by *Acacia biflora*, *Beaufortia empetrifolia*, *Banksia mucronulata* subsp. *mucronulata*, *Banksia tenuifolia* var. *tenuifolia*, *Hakea denticulata*, *Isopogon trilobus*, *Melaleuca striata*, *Rinzia schollerifolia* or *Taxandria spathulata*.”

**Table 7: Condition thresholds for the ‘Proteaceae Dominated Kwongkan Shrublands of the southeast Coastal Floristic Province.**

Condition Category	Minimum patch size	Weeds	Dieback
High	1 ha	< 30% perennial weed cover	No known Dieback infestations
Moderate	0.05 ha	<70% perennial weed cover	May to be present or absent.

### **Subtropical and Temperate Coastal Saltmarsh (CSM)**

CSM forms a P3 PEC within WA under the state *BC Act 2018* and a Vulnerable TEC under the *EPBC Act 1999* (see Section 2.8). Listed below are the key diagnostic characteristics for defining and determining CSM. The ecological community is the assemblage of organisms including and associated with coastal subtropical and temperate saltmarsh. Key diagnostic characteristics for describing the *Coastal Saltmarsh* ecological community include (DoE, 2015a):

- occurs below 23° S latitude - from the central Mackay coast on the east coast of Australia, southerly around to the Carnarvon bioregion on the west coast of Australia, and including the Tasmanian coast;
- occurs on the coastal margin, along estuaries and coastal embayments and on low wave energy coasts;
- may occur on offshore coastal islands;
- occurs primarily on sandy, muddy substrate and may include coastal clay pans; and
- consists of dense to patchy areas of characteristic coastal saltmarsh plant species (that may also include bare sediment as part of the mosaic) that have a connection with a tidal regime (i.e. in intertidal and supratidal zones).

Despite salt lakes and saltmarsh dominated by *Tecticornia* sp. and *Salicornia* sp. Samphire being present, no coastal interaction with tidal influence is experienced, and therefore the Saltmarshes present within survey area do not meet criteria as CSM PEC/TEC.

## 5. Basic Fauna Survey Methodology

Field survey work was carried out by Bianca Theyer (Senior Environmental Consultant & Conservation and Wildlife Biologist) from Bio Diverse Solutions on the 28<sup>th</sup> June 2021, in accordance with Guidance Statement 56: *Terrestrial Fauna Surveys* (EPA 2020).

The assessment was carried out in a manner consistent with the following documents developed by the EPA and Department of Agriculture, Water and the Environment (DAWE) formerly the Department of Sustainability, Water, Population, and Communities (DSEWPac) and Department of the Environment, Water, Heritage and the Arts (DEWHA):

- EPA (2020) Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment;
- DEWHA (2010) Survey guidelines for Australia’s threatened birds; and
- DSEWPac (2012) Referral Guidelines for Three Threatened Black Cockatoo Species.

The vegetation units described in Section 4.1 broadly define habitat types across the survey area. The aim of the basic fauna survey was to assess and map the fauna habitat within the survey area, assess the likelihood of conservation fauna species utilising the general area and/or particular vegetation types, recording actual presence of conservation fauna taxa, and undertaking an opportunistic inventory of vertebrate species encountered whilst traversing the survey area on foot.

The conclusions presented are based upon field data collected over a limited period of time and are indicative of the environmental condition of the site at the time. Some fauna species are reported as potentially occurring within the survey area based on the presence of suitable habitat (quality and extent) within the survey area or immediately adjacent. With respect to opportunistic observations, the possibility exists that certain species may not have been detected during field investigations due to seasonal inactivity during the field survey, species present within micro habitats not surveyed, cryptic species able to avoid detection and transient wide-ranging species not present during the survey period.

### 5.1. Survey Limitations and Constraints

No limitations occurred for this survey. Please see Table 8 below for details.

**Table 8: Fauna survey limitations and constraints**

Limitation	Comment
Scope	The scope was a basic fauna survey to generally assess the presence / evidence of fauna species within the survey area, map the fauna habitat, undertake opportunistic inventory of species including priority conservation species.
Disturbances that may affect results	No recent disturbances which may affect results of the survey were identified, e.g. recent fire or grazing. Recent high rainfall events meant there was some standing water present in the survey area, but this did not impact and negatively affect the survey.
Intensity of survey	The basic fauna survey was deemed appropriate given the scope was to identify the general presence of fauna species in the survey area and to describe and map fauna habitat in the survey area.
Sources of information (recent or historic) and availability of contextual information	Publicly available desktop and background information was readily available to give a broad contextual understanding of the site. DBCA database records were also requested as part of this project, these provided a more detailed understanding of potential conservation significant fauna species that may be present in the survey area. The Esperance area is highly understudied, particularly in regards to fauna surveys and it is likely that numerous threatened or priority fauna could be present within the area that were not detected by a 10 km desktop survey. To rectify this issue, the fauna datasets for the desktop analysis were analysed at a 30-40 km radius.
Remoteness or access issues	No access restrictions were encountered.
Experience of personnel	Bianca Theyer has 5 years of fauna survey experience through her role at Bio Diverse Solutions and has been mentored by Dr Karlene Bain (Wildlife Ecologist) during this time. She has 6 years’ experience assisting other Zoologists (Bush Heritage, Australian Wildlife Conservancy and DBCA) in a voluntary capacity with fauna monitoring surveys.

## 6. Basic Fauna Habitat Survey Outcomes

### 6.1. Fauna Survey Observations

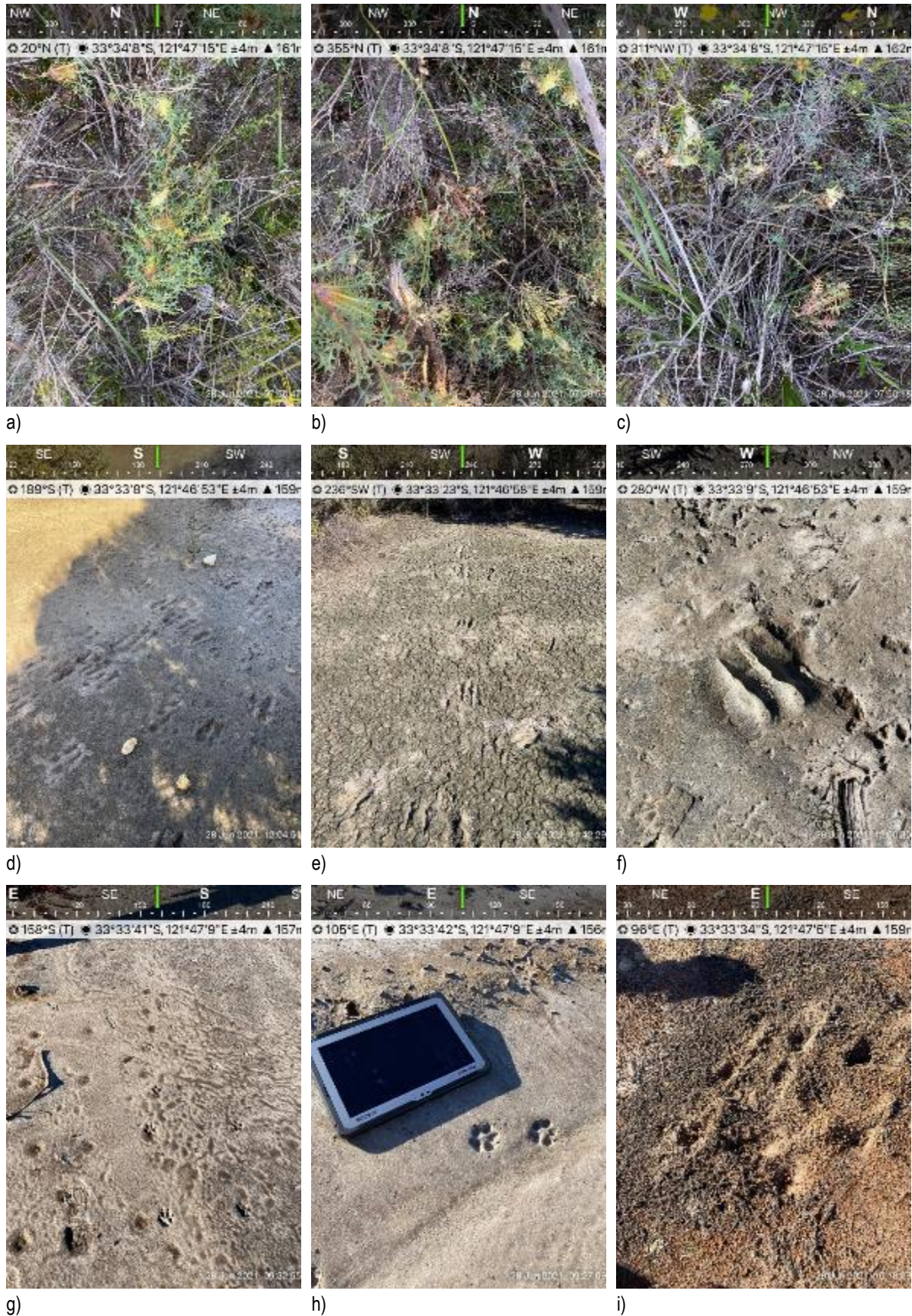
A description of the six vegetation units identified during the survey is given in Section 4.1, which broadly correspond to different fauna habitat types. The locations of all vegetation units and fauna recorded during the survey can be seen in Map 6a-6e in Appendix A, as well as a full list of fauna species (Table A11 in Appendix D).

Fauna were observed either directly (observed), or indirectly from calls or from indicators of activity such as tracks, runnels, scats, diggings, feeding remains or scratching on trees. During the survey, 16 species of fauna were recorded, including thirteen birds and three mammals. Refer to Map 6a-6e (Appendix A) and Table A12 (Appendix D).

Notable observations during the survey included direct observation of *Calyptorhynchus latirostris* (Carnaby's Cockatoo, EN), which were seen flying over the southern portion of the survey area as well as seen and heard in the adjacent vegetation to the east and west of the survey area. Chewed banksia plants and flowers were observed in the south of the survey area (Area 1b) consistent with Cockatoo feeding (refer to Figure 24). It would be expected that given the relatively continuous nature of the surrounding vegetation Carnaby's Cockatoo would feed within the survey area on suitable food plants. Carnaby's Cockatoo feed predominately on native shrubland, Kwongkan heathland and woodland dominated by proteaceous plant species such as *Banksia*, *Hakea*, and *Grevillea*, as well as in eucalypt woodlands and forest that contain food plants (DSEWPac, 2012). The areas that contain suitable foraging habitat are located within Vegetation Type 2 *Banksia armata* dominated shrubland with scattered Mallee and Acacia (Ban arm SL), Vegetation Type 3 Mixed Proteaceous Shrubland with Scattered Mallee (Pro SL) and Vegetation Type 7 Open Mallee Woodland with dense Sedgeland (Mal WL). The total amount of vegetation proposed to be cleared that contains suitable foraging habitat for Carnaby's Cockatoo is 0.85ha which is approximately 26.4% of the entire 3.22ha survey area. No significant trees (based on DBH, DSEWPac, 2012) were present and no indicators of roosting were observed (scat/droppings and feathers) within the survey area.

Macropod tracks were observed within the survey area, which based on size are likely to be due to the presence of *Macropus fuliginosus* (western grey kangaroo). However, tracks were difficult to interpret due to the recent heavy rainfall events seen within the broader Esperance Region. The print details of the hind foot were not visible, and size was variable due to the wet soil present in the area.

No other conservation significant species were observed during the survey period. However, there is suitable habitat for 22 species (including Carnaby's Cockatoo) within the survey area (refer to Table A4 in Appendix B). There is marginal suitable habitat present for 16 migratory (MI) conservation bird taxa including: *Actitis hypoleucos*, *Calidris canutus subsp. rogersi*, *Calidris melanotos*, *Charadrius bicinctus*, *Hydroprogne caspia*, *Limicola falcinellus*, *Limosa lapponica menzbieri* (CR), *Limosa limosa*, *Motacilla cinerea*, *Numenius minutus*, *Plegadis falcinellus*, *Pluvialis fulva*, *Pluvialis squatarola*, *Thalasseus bergii*, *Tringa nebularia* and *Tringa stagnatilis*. Habitat for these species occurs particularly in the central part of the survey area where the area is low lying (seasonally wet) and is directly adjacent to existing salt lakes. The woodland, shrubland and sedgeland vegetation present throughout the survey area also provides potentially suitable habitat for *Apus pacificus* (MI), *Isodon fusciventer* (P4), *Notamacropus Irma* (P4), *Parantechinus apicalis* (EN) and *Parasuta spectabilis subsp. bushi* (P1). There is very marginal habitat present for *Leipoa ocellata* (VU). Please see Figure 9 for photographs of indicators of species presence observed during the survey period and Map 6a – 6e in Appendix A.



**Figure 24: Photographs of evidence of fauna presence within the survey area.**

a) – c) feed evidence from Carnaby's Cockatoo; d) – f); western grey kangaroo tracks; g) & h) fox tracks; j) old rabbit diggings

## 7. Summary

### 7.1. Vegetation, Threatened and Priority Flora and Ecological Communities

The scope for this survey was to provide the client with information on any threatened or priority flora species that are potentially present within the survey area, as well as threatened/priority ecological communities, and to provide an assessment on vegetation types and their general condition. Seven Vegetation types were recorded in during the survey, namely, Myrtaceous Shrubland (Myr SL), *Banksia armata* dominated shrubland with scattered Mallee and Acacia (Ban arm SL), Mixed Proteaceous Shrubland with scattered Mallee (Pro SL), Low Chenopod and Samphire forbland on immediate salt lake (Chen, Sam), Closed Melaleuca shrubland on salt lake peripheries (Mel SL), Paperbark Melaleuca woodland wetlands (Mel WL) and Open Mallee Woodland with dense sedgeland (Mal WL). These vegetation units broadly align with different habitat types, at a landscape level of woodland/shrublands on a sandplain and the communities associated with distinct hydrological regimes of inland salt lakes. The condition of the vegetation units ranged from 'Degraded' through to 'Excellent', the majority of the vegetation types being in 'Very Good' or 'Excellent' condition.

A total of 145 species of flora were recorded, consisting of 142 native species and four introduced/non-native species. This indicates the extremely high level of biodiversity recorded within the area, as is typical for the Esperance Sandplain bioregion. Seven species of priority flora were recorded across the survey area, which is summarised below in Table 9 for specific numbers of individual plants per area within the survey area. These included P1 *Darwinia* sp. Gibson (R.D. Royce 3569), P3 *Isopogon alpicornis*, P3 *Conostephium marchantiorum*, P3 *Brachyloma mogin*, P3 *Kunzea salina*, P3, *Persoonia scabra* and P4 *Stachystemon vinous*. Three of these species had been previously recorded within the area, and 4 were new populations (*B. mogin*, *K. salina*, *P. scabra* and *S. vinosus*). All species of priority flora required had plants counted only within the survey area and not in the broader reserve, with ample habitat likely present surrounding the reserve that may harbour additional plants of the population. Additionally, seven species identified in the 10 km desktop survey that were assessed to be 'likely' or 'possible' to occur could not accurately be surveyed due to the out-of-season limitations of the flowering survey, primarily being cryptic without flowers or being annual herbs. Further surveys will be required to ascertain presence of these seven species. Lastly, a single plant was present that could not be identified due to lacking taxonomic features that bears similarity to the Critically Endangered threatened flora, *Eremophila scabra* subsp. Scaddan (C. Turley s.n. 10/11/2005) and requires further surveys to formally determine.

Of the two Threatened/Priority Ecological Communities identified as possibly being present within the survey area, the '*Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province*' was detected at Vegetation Type 2 (*Banksia armata* Dominated shrublands with scattered Mallee and Acacias, Ban arm SL) and Vegetation Type 3 (mixed Proteaceous shrublands with scattered Mallee, Pro SL) and Areas 1b, 2, 12, 13 and 14. However, formal quadrat analysis conducted during the spring flora season is required to formally determine, with it expected that Areas 12 and 14 not meeting Kwongkan TEC due to previous disturbance. A detailed flora survey entailing quadrat sampling is beyond the scope of this survey, as the purpose of this survey was to determine the presence/distribution of vegetation communities and their condition, and presence of conservation flora taxa encountered at a reconnaissance level only.

**Table 9: Summary of priority flora and vegetation limitations, broken into the separate areas of the survey area and recommendations if further surveys are required per area.**

Area	Rail KMLs	Vegetation	Fauna	Flora	Recommended Further surveys are conducted
1a	346.97	1			Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>• P3 <i>Dampiera sericantha</i></li> <li>• P2 <i>Hibbertia turleyana</i></li> <li>• P3 <i>Daviesia pauciflora</i></li> <li>• P2 <i>Patersonia inaequalis</i></li> <li>• P3 <i>Pterostylis faceta</i></li> </ul>
1b	346.97	2 - Potential Kwongkan TEC Present.	Potential Black Cockatoo Foraging		Quadrats required to formally determine presence of Kwongkan TEC.  Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>• P3 <i>Dampiera sericantha</i></li> <li>• P2 <i>Hibbertia turleyana</i></li> <li>• P3 <i>Daviesia pauciflora</i></li> <li>• P2 <i>Patersonia inaequalis</i></li> <li>• P3 <i>Pterostylis faceta</i></li> </ul>
2	346.759	3 – Potential Kwongkan TEC Present.	Potential Black Cockatoo Foraging	<ul style="list-style-type: none"> <li>• <i>Conostephium marchantiorum</i> - 1 plant.</li> <li>• <i>Brachyloma mogin</i> -1 plant.</li> <li>• <i>Persoonia scabra</i> - 3 plants.</li> </ul>	Quadrats required to formally determine presence of Kwongkan TEC.  Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>• P3 <i>Dampiera sericantha</i></li> <li>• P2 <i>Hibbertia turleyana</i></li> <li>• P3 <i>Daviesia pauciflora</i></li> <li>• P2 <i>Patersonia inaequalis</i></li> <li>• P3 <i>Pterostylis faceta</i></li> </ul>
3	346.150	4		<ul style="list-style-type: none"> <li>• <i>Eremophila</i> sp. 1 - potential <i>E. glabra</i> subsp. Scaddan (C. Turley s.n. 10/11/2005). 1 plant.</li> </ul>	Formal species identification of <i>Eremophila</i> species present, suspected to be Cr En <i>E. glabra</i> subsp. Scaddan.  Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>• P1 <i>Goodenia turleyana</i></li> <li>• P2 <i>Hydrocotyle tuberculata</i></li> <li>• P2 <i>Hydrocotyle asterocarpa</i></li> </ul>

Table 9 continued.

Area	Rail KMLs	Vegetation	Fauna	Flora	Recommended Further surveys are conducted
Linear survey between Area 3 and 4	345.933 to 346.50	5		<ul style="list-style-type: none"> <li><i>Darwinia</i> sp. Gibson (R.D. Royce 3569) - 2 plants.</li> <li><i>Brachyloma mogin</i> - 5 plants.</li> <li><i>Kunzea salina</i> - 29 plants.</li> </ul>	Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>P1 <i>Goodenia turleyana</i></li> <li>P2 <i>Hydrocotyle tuberculata</i></li> <li>P2 <i>Hydrocotyle asterocarpa</i></li> </ul>
4	345.933	5		<ul style="list-style-type: none"> <li><i>Darwinia</i> sp. Gibson (R.D. Royce 3569) - 35 plant.</li> <li><i>Brachyloma mogin</i> - 3 plants.</li> </ul>	Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>P1 <i>Goodenia turleyana</i></li> <li>P2 <i>Hydrocotyle tuberculata</i></li> <li>P2 <i>Hydrocotyle asterocarpa</i></li> </ul>
Linear Survey between Area 4 and 5	345.631 to 345.905	5		<ul style="list-style-type: none"> <li><i>Darwinia</i> sp. Gibson (R.D. Royce 3569) - 10 plants.</li> <li><i>Isopogon alcornis</i> - 1 plant.</li> </ul>	Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>P2 <i>Hibbertia turleyana</i></li> <li>P1 <i>Goodenia turleyana</i></li> </ul>
5	345.953	6 and 7	Potential Black Cockatoo Foraging	<ul style="list-style-type: none"> <li><i>Conostephium marchantiorum</i> - 1 plant.</li> <li><i>Isopogon alcornis</i> - 12 plants.</li> </ul>	Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>P3 <i>Dampiera sericantha</i></li> <li>P2 <i>Hibbertia turleyana</i></li> <li>P3 <i>Daviesia pauciflora</i></li> <li>P2 <i>Patersonia inaequalis</i></li> <li>P3 <i>Pterostylis faceta</i></li> </ul>
6	345.431	7	Potential Black Cockatoo Foraging	<ul style="list-style-type: none"> <li><i>Isopogon alcornis</i> - 6 plants.</li> <li><i>Stachystemon vinosus</i> - 1 plant.</li> </ul>	Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>P3 <i>Dampiera sericantha</i></li> <li>P2 <i>Hibbertia turleyana</i></li> <li>P3 <i>Daviesia pauciflora</i></li> <li>P2 <i>Patersonia inaequalis</i></li> <li>P3 <i>Pterostylis faceta</i></li> </ul>



Table 9 continued

Area	Rail KMLs	Vegetation	Fauna	Flora	Recommended Further surveys are conducted
7	345	5		<ul style="list-style-type: none"> <li><i>Brachyloma mogin</i> - 1 plant.</li> </ul>	Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>P1 <i>Goodenia turleyana</i></li> <li>P2 <i>Hydrocotyle tuberculata</i></li> <li>P2 <i>Hydrocotyle asterocarpa</i></li> </ul>
Linear survey between Area 7 and 8	345 to 344.941	5		<ul style="list-style-type: none"> <li><i>Conostephium marchantiorum</i> - 1 plant.</li> </ul>	Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>P1 <i>Goodenia turleyana</i></li> <li>P2 <i>Hydrocotyle tuberculata</i></li> <li>P2 <i>Hydrocotyle asterocarpa</i></li> </ul>
8	344.784	5			Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>P1 <i>Goodenia turleyana</i></li> <li>P2 <i>Hydrocotyle tuberculata</i></li> <li>P2 <i>Hydrocotyle asterocarpa</i></li> </ul>
9	344.446	7	Potential Black Cockatoo Foraging	<ul style="list-style-type: none"> <li><i>Persoonia scabra</i> - 3 plants.</li> </ul>	Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>P3 <i>Dampiera sericantha</i></li> <li>P2 <i>Hibbertia turleyana</i></li> <li>P3 <i>Daviesia pauciflora</i></li> <li>P2 <i>Patersonia inaequalis</i></li> <li>P3 <i>Pterostylis faceta</i></li> </ul>
10	344.397	7	Potential Black Cockatoo Foraging	<ul style="list-style-type: none"> <li><i>Isopogon alpicornis</i> - 7 plants</li> <li><i>Persoonia scabra</i> - 3 plants.</li> </ul>	Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>P3 <i>Dampiera sericantha</i></li> <li>P2 <i>Hibbertia turleyana</i></li> <li>P3 <i>Daviesia pauciflora</i></li> <li>P2 <i>Patersonia inaequalis</i></li> <li>P3 <i>Pterostylis faceta</i></li> </ul>

Table 9 continued.

Area	Rail KMLs	Vegetation	Fauna	Flora	Recommended Further surveys are conducted
11	344.083	5		<i>Darwinia</i> sp. Gibson (R.D. Royce 3569) - 4 plants.	Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>• P1 <i>Goodenia turleyana</i></li> <li>• P2 <i>Hydrocotyle tuberculata</i></li> <li>• P2 <i>Hydrocotyle asterocarpa</i></li> </ul>
12	347.174	2 – Potentially doesn't meet Kwongkan TEC due to previous disturbance.	Potential Black Cockatoo Foraging	<ul style="list-style-type: none"> <li>• <i>Conostephium marchantiorum</i> - 1 plant.</li> <li>• <i>Persoonia scabra</i> - 1 plant.</li> </ul>	Quadrats required to formally determine presence of Kwongkan TEC.  Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations) including: <ul style="list-style-type: none"> <li>• P3 <i>Dampiera sericantha</i></li> <li>• P2 <i>Hibbertia turleyana</i></li> <li>• P3 <i>Daviesia pauciflora</i></li> <li>• P2 <i>Patersonia inaequalis</i></li> <li>• P3 <i>Pterostylis faceta</i></li> </ul>
13	346.759	3 - Potential Kwongkan TEC Present.	Potential Black Cockatoo Foraging	<ul style="list-style-type: none"> <li>• <i>Conostephium marchantiorum</i> - 1 plant.</li> <li>• <i>Persoonia scabra</i> - 4 plants.</li> </ul>	Quadrats required to formally determine presence of Kwongkan TEC.  Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>• P3 <i>Dampiera sericantha</i></li> <li>• P2 <i>Hibbertia turleyana</i></li> <li>• P3 <i>Daviesia pauciflora</i></li> <li>• P2 <i>Patersonia inaequalis</i></li> <li>• P3 <i>Pterostylis faceta</i></li> </ul>

Table 9. Continued

Area	Rail KMLs	Vegetation	Fauna	Flora	Recommended Further surveys are conducted
14		2 - Potentially doesn't meet Kwongkan TEC due to previous disturbance.	Potential Black Cockatoo Foraging		Quadrats required to formally determine presence of Kwongkan TEC.  Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>• P3 <i>Dampiera sericantha</i></li> <li>• P2 <i>Hibbertia turleyana</i></li> <li>• P3 <i>Daviesia pauciflora</i></li> <li>• P2 <i>Patersonia inaequalis</i></li> <li>• P3 <i>Pterostylis faceta</i></li> </ul>
15	345.933	4		<ul style="list-style-type: none"> <li>• <i>Kunzea salina</i> - 2 plants.</li> </ul>	Suitable habitat for species identified in 10 km desktop survey and likelihood assessment requiring targeted spring flora survey (due to out-of-season limitations), including: <ul style="list-style-type: none"> <li>• P1 <i>Goodenia turleyana</i></li> <li>• P2 <i>Hydrocotyle tuberculata</i></li> <li>• P2 <i>Hydrocotyle asterocarpa</i></li> </ul>

## 7.2. Basic Fauna Survey

The aim of the basic fauna survey was to assess and map the fauna habitat within the survey area, assess the likelihood of conservation significant fauna species utilising the general area and/or particular vegetation types, recording actual presence of conservation significant fauna, and undertaking opportunistic inventory of vertebrate species encountered whilst traversing the survey area on foot.

The only conservation significant taxa identified during the survey was *Calyptorhynchus latirostris* (Carnaby's Black Cockatoo, EN). The species was observed through direct observation of birds flying over the site several times, and individuals were seen in adjacent vegetation. No individuals were observed landing within the survey area. Feed evidence was observed in Vegetation Type 2 (Area 1b); however, this was not considered a significant feed event (approximately 8 plants observed to have been chewed). No other signs of feeding / foraging were observed throughout the survey area.

Three habitat types (Vegetation Type 2, 3 and 7), within the survey area are of particular importance to Carnaby's Cockatoo as they contain suitable foraging habitat, with a high proportion of proteaceous and myrtaceous plant taxa present. Although some proteaceous and myrtaceous taxa were detected in other vegetation types, they were low in occurrence and / or not suitable foraging species. Approximately 0.85ha of suitable foraging habitat is proposed to be cleared as part of this project, this equates to approximately 26.4% of the entire 3.22ha survey area. This does not exceed 1ha, and there are no direct impacts to roosting or breeding trees (none present). It is unlikely this proposal would need to be referred for assessment under the EPBC Act.

The vegetation present within the survey area runs parallel to the railway line, and thus does provide an ecological linkage within the broader landscape. However, the relatively small areas that are proposed to be cleared as part of this proposal would not significantly impact the ability for fauna to disperse between vegetated areas.

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## **8 Appendices**

Appendix A – Maps

Appendix B – Conservation Significant Values Likelihood of Occurrence Analysis

Appendix C – Conservation Status Definitions and Condition Scale

Appendix D – Species Lists and Relevé Data

Appendix E – DBCA Threatened and Priority Reporting Forms (TPFL)

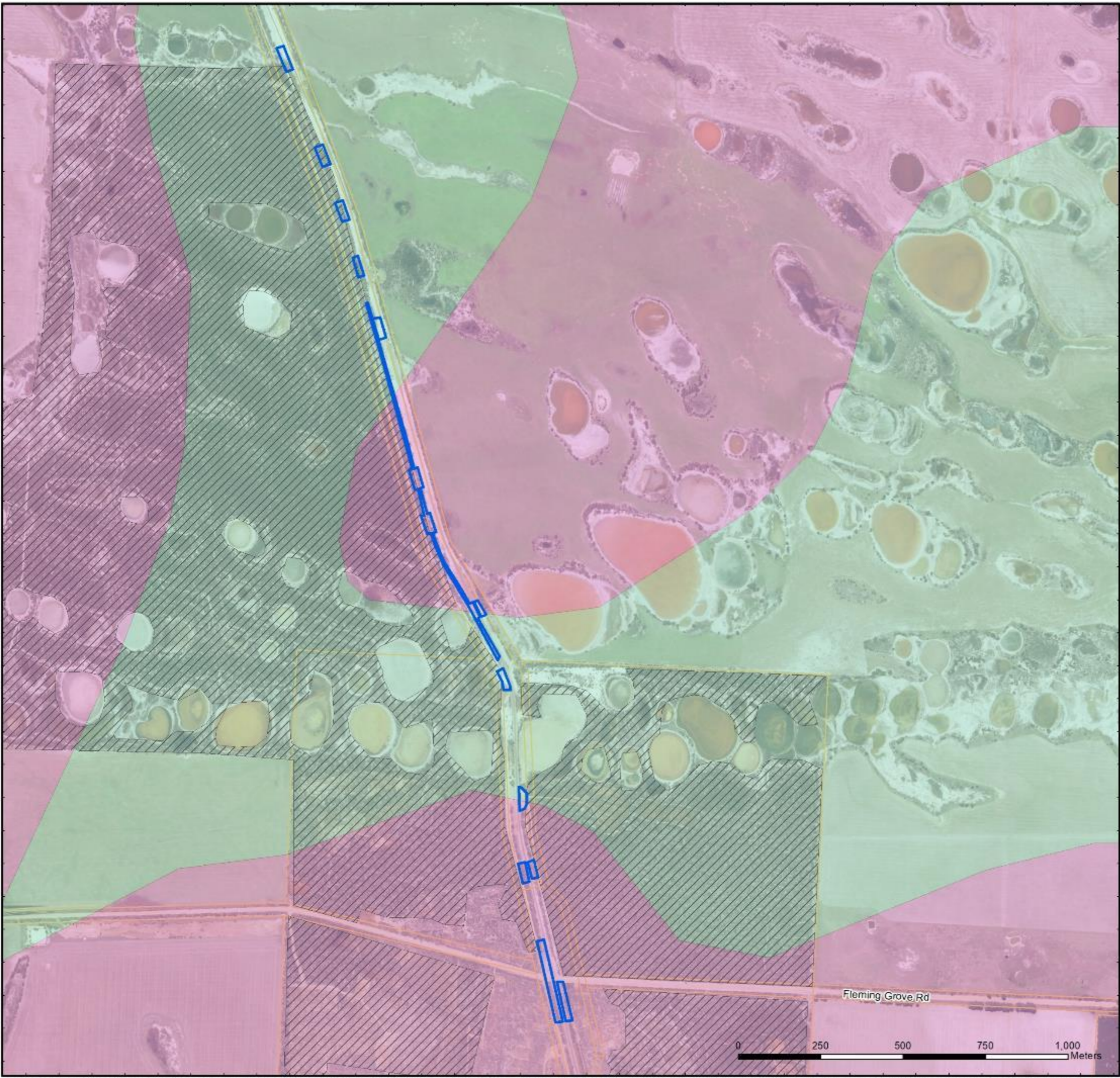
Appendix F - NatureMap and EPBC Act PMST reports

# Appendix A

## Maps



6275000 6275100 6275200 6275300 6275400 6275500 6275600 6275700 6275800 6275900 6276000 6276100 6276200 6276300 6276400 6276500 6276600 6276700 6276800 6276900 6277000 6277100 6277200 6277300 6277400 6277500 6277600 6277700 6277800 6277900 6278000 6278100 6278200



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Esperance, WA 8450  
(08) 9072 1382



Overview Map Scale 1:100,000

- Legend**
- Survey Area
  - Cadastre
  - Native Vegetation Extent (DPIRD\_005)**
  - Native Vegetation Extent (DPIRD\_005)
  - Pre European Vegetation (DPIRD\_006)**
  - ESPERANCE\_41
  - ESPERANCE\_47



Scale  
1:11,500 @ A3  
GDA MGA 94 Zone 50

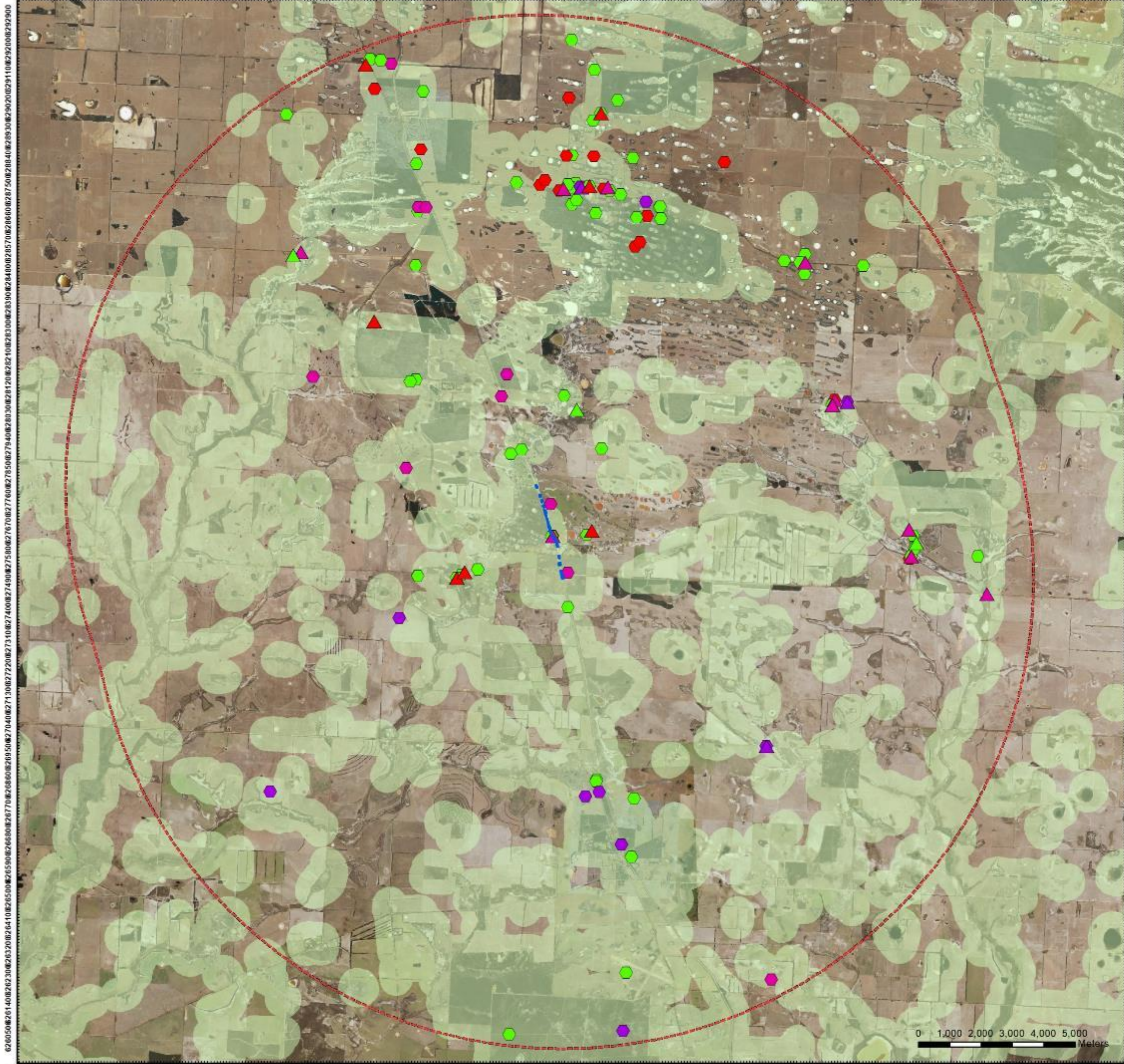
**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
RIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

**CLIENT**  
Arc Infrastructure  
Line 51 (344.9 - 346.485) Fleming Grove Road  
Gibson, WA 6448

**Map 1: Desktop Vegetation Data**

	QA Check <b>KW</b>	Drawn by <b>BT</b>
STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>01/07/2021</b>

943000 943100 943200 943300 943400 943500 943600 943700 943800 943900 944000 944100 944200 944300 944400 944500 944600 944700 944800 944900 945000 945100 945200 945300 945400 945500 945600 945700 945800 945900 946000 946100 946200 946300



62605082614082623082632082641082650082659082668082677082686082695082704082713082722082731082740082749082758082767082776082785082794082803082812082821082830082839082848082857082866082867508287508288408289308290208291108292008292900

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Esperance, WA 6450  
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Overview Map Scale 1:100,000

- Legend**
- Survey Area
  - 15km Flora and Ecological Community Study Area

**32-0621FL\_TPFL**

- ▲ P1
- ▲ P2
- ▲ P3
- ▲ T

**32-0621FL\_WAHerb**

- P1
- P2
- P3
- P4

**Priority and Threatened Ecological Communities**  
**State Category, Commonwealth Category**

- Priority 3, Endangered



Scale  
1:120,000@ A3  
GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastral, Relief Contours and Roads: Landgate 2017  
RIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

**CLIENT:**  
Arc Infrastructure  
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**Map 2: Desktop Flora & TEC/PEC Data**

	QA Check <b>KW</b>	Drawn by <b>BT</b>
STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>01/07/2021</b>

927300828100828900829700930500931300932100932800933700934500935300936100936800937700938500939300940100940900941700942500943300944100944900945700946500947300948100948800949700950500951300952100952900953700954500955300956100956900957700958500959300960100960900961700962500



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Overview Map Scale 1:100,000

- Legend**
- Survey Area
  - 30km Flora and Ecological Community Study Area

**Conservation Significant Fauna**

**WA Status, EPBC Status**

- ◆ CR, CR
- ◆ EN,
- ◆ EN, EN
- ◆ EN, MI
- ◆ MI, MI
- ◆ VU, MI
- ◆ VU, VU
- + OS,
- ▲ P1,
- ▲ P2,
- ▲ P4,
- ▲ P4, MI

Scale  
1:240,000 @ A3  
GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
IRIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

**CLIENT**  
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**Map 3: Desktop Fauna Data**

	QA Check <b>KW</b>	Drawn by <b>BT</b>
STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>01/07/2021</b>

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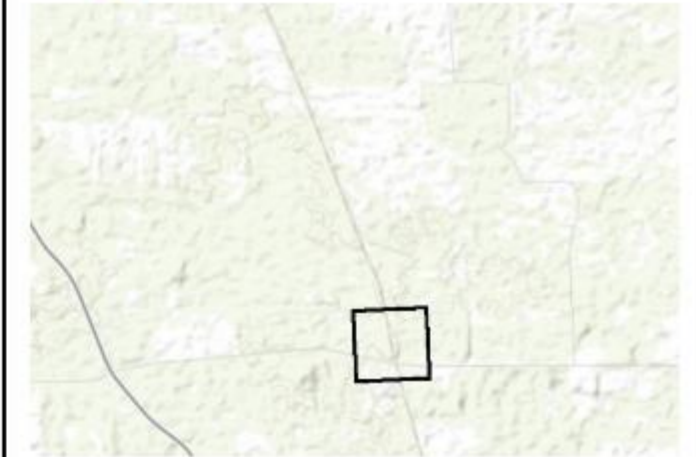
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(08) 9072 1382



Overview Map Scale 1:100,000

**Legend**

- Survey Area
- Cadastre
- Presence of Kwongkan TEC
- Relieve

**Vegetation Type**

- Vegetation Type 1
- Vegetation Type 2
- Vegetation Type 3
- Vegetation Type 4
- Vegetation Type 5
- Vegetation Type 6
- Vegetation Type 7

**Vegetation Condition**

- Excellent
- Very Good
- Good
- Degraded



Scale  
1:2,750 @ A3  
GDA MGA 94 Zone 50

**Data Sources**

Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
RIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

**CLIENT**

Arc Infrastructure  
Line 51 (344.9 - 346.485) Fleming Grove Road  
Gibson, WA 6448

**Map 4a: Vegetation Types**

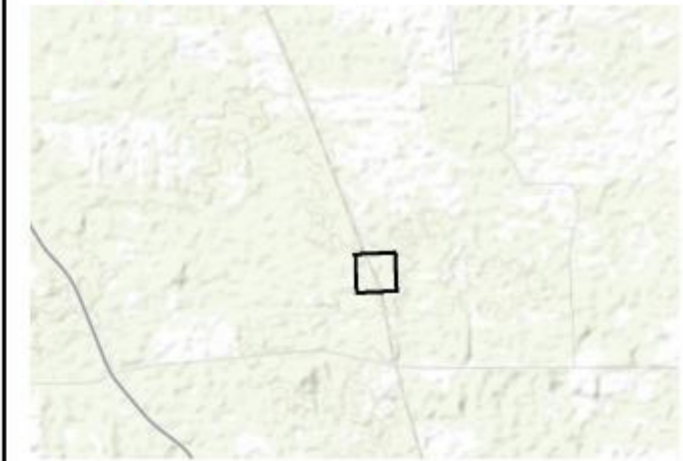
	QA Check <b>KW</b>	Drawn by <b>BT</b>
STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>22/07/2021</b>



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Overview Map Scale 1:100,000

**Legend**

- Survey Area
- Cadastre
- Relieve

**Vegetation Type**

- Vegetation Type 1
- Vegetation Type 2
- Vegetation Type 3
- Vegetation Type 4
- Vegetation Type 5
- Vegetation Type 6
- Vegetation Type 7

**Vegetation Condition**

- Excellent
- Very Good
- Good
- Degraded



Scale  
1:1,500 @ A3  
GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
RIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

**CLIENT**  
Arc Infrastructure  
Line 51 (344.9 - 346.485) Fleming Grove Road  
Gibson, WA 6448

**Map 4b: Vegetation Types**

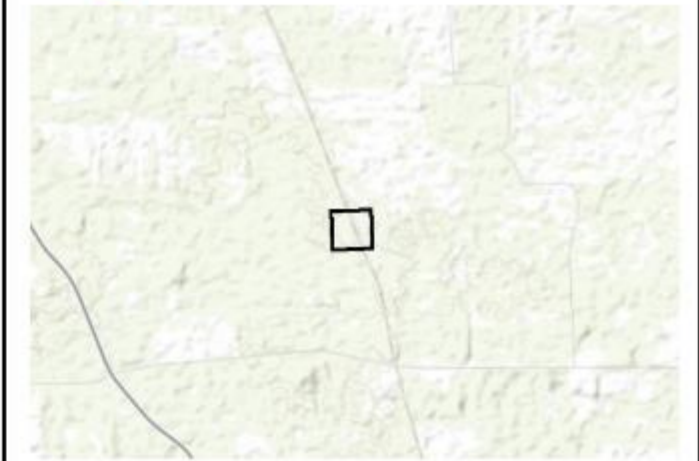
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STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>22/07/2021</b>



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Overview Map Scale 1:100,000

**Legend**

Survey Area (Blue outline)  
Cadastral (Yellow outline)  
Releve (White outline)

**Vegetation Type**

- Vegetation Type 1 (Green)
- Vegetation Type 2 (Purple)
- Vegetation Type 3 (Red)
- Vegetation Type 4 (Yellow)
- Vegetation Type 5 (Blue)
- Vegetation Type 6 (Light Green)
- Vegetation Type 7 (Pink)

**Vegetation Condition**

- Excellent (Diagonal lines)
- Very Good (Dotted pattern)
- Good (Horizontal lines)
- Degraded (Cross-hatch pattern)

Scale  
1:1,500 @ A3  
GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastral, Relief Contours and Roads: Landgate 2017  
RIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

**CLIENT**  
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Line 51 (344.9 - 346.485) Fleming Grove Road  
Gibson, WA 6448

**Map 4c: Vegetation Types**

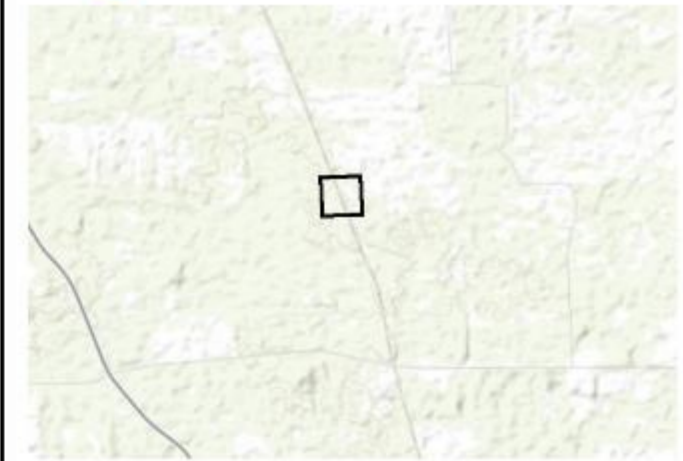
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STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>22/07/2021</b>



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Overview Map Scale 1:100,000

- Legend**
- Survey Area
  - Cadastre
  - Relieve
- Vegetation Type**
- Vegetation Type 1
  - Vegetation Type 2
  - Vegetation Type 3
  - Vegetation Type 4
  - Vegetation Type 5
  - Vegetation Type 6
  - Vegetation Type 7
- Vegetation Condition**
- Excellent
  - Very Good
  - Good
  - Degraded

Scale  
1:1,500 @ A3  
GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
RIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

**CLIENT**  
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**Map 4d: Vegetation Types**

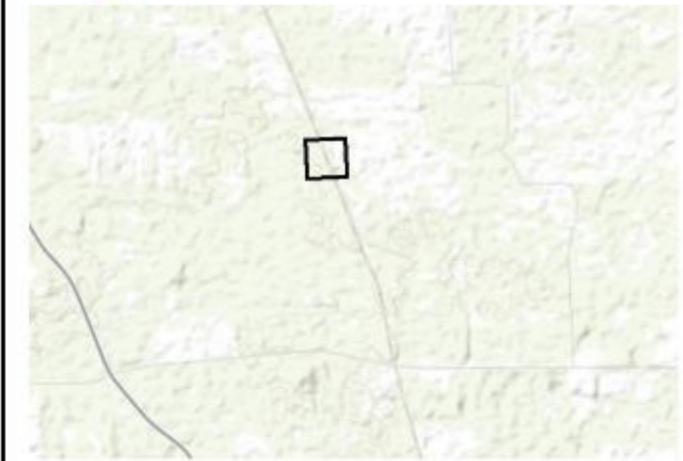
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STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>22/07/2021</b>



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Overview Map Scale 1:100,000

- Legend**
- Survey Area
  - Cadastre
  - Releve
- Vegetation Type**
- Vegetation Type 1
  - Vegetation Type 2
  - Vegetation Type 3
  - Vegetation Type 4
  - Vegetation Type 5
  - Vegetation Type 6
  - Vegetation Type 7
- Vegetation Condition**
- Excellent
  - Very Good
  - Good
  - Degraded

Scale  
1:1,500 @ A3  
GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
RIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

**CLIENT**  
Arc Infrastructure  
Line 51 (344.9 - 346.485) Fleming Grove Road  
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**Map 4e: Vegetation Types**

	QA Check <b>KW</b>	Drawn by <b>BT</b>
STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>22/07/2021</b>

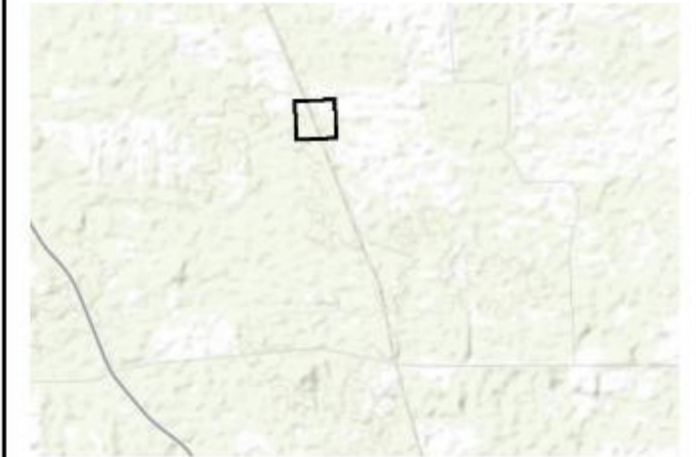




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(08) 9072 1382



Overview Map Scale 1:100,000

**Legend**

- Survey Area
- Cadastre
- Releve

**Vegetation Type**

- Vegetation Type 1
- Vegetation Type 2
- Vegetation Type 3
- Vegetation Type 4
- Vegetation Type 5
- Vegetation Type 6
- Vegetation Type 7

**Vegetation Condition**

- Excellent
- Very Good
- Good
- Degraded



Scale  
1:1,500 @ A3  
GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
RIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

**CLIENT**  
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Gibson, WA 6448

**Map 4f: Vegetation Types**

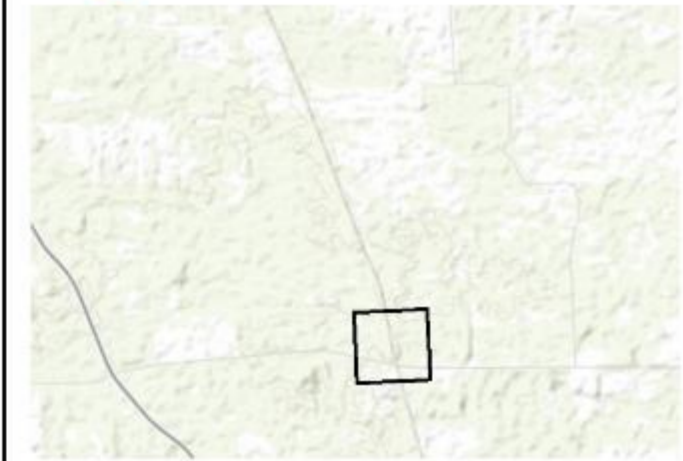
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STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>22/07/2021</b>



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Overview Map Scale 1:100,000

- Legend**
- Survey Area
  - Cadastre
  - Presence of Kwongkan TEC
- Vegetation Unit**
- Vegetation Type 1
  - Vegetation Type 2
  - Vegetation Type 3
  - Vegetation Type 4
  - Vegetation Type 5
  - Vegetation Type 6
  - Vegetation Type 7
- Conservation Significant Flora**
- ▲ *Eremophila* sp 1., TF
  - ▲ *Darwinia* sp. Gibson, P1
  - ▲ *Brachyloma mogin*, P3
  - ▲ *Conostephium marchanitorium*, P3
  - ▲ *Isopogon alpicornis*, P3
  - ▲ *Kunzea salina*, P3
  - ▲ *Persoonia scabra*, P3
  - ▲ *Stachystemon vinosus*, P4



Scale  
1:2,750 @ A3  
GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
IRIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

**CLIENT**  
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Gibson, WA 6448

**Map 5a: Conservation Significant Flora**

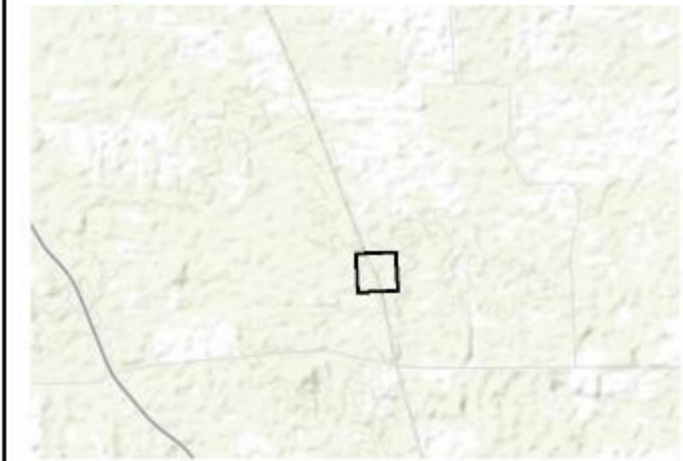
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STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>28/09/2021</b>



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(08) 9072 1382



Overview Map Scale 1:100,000

**Legend**

- Survey Area
- Cadastre
- Vegetation Unit**
- Vegetation Type 1
- Vegetation Type 2
- Vegetation Type 3
- Vegetation Type 4
- Vegetation Type 5
- Vegetation Type 6
- Vegetation Type 7

**Conservation Significant Flora**

- ▲ *Eremophila* sp 1., TF
- ▲ *Darwinia* sp. Gibson, P1
- ▲ *Brachyloma mogin*, P3
- ▲ *Conostephium marchanitorium*, P3
- ▲ *Isopogon alpicornis*, P3
- ▲ *Kunzea salina*, P3
- ▲ *Persoonia scabra*, P3
- ▲ *Stachystemon vinosus*, P4



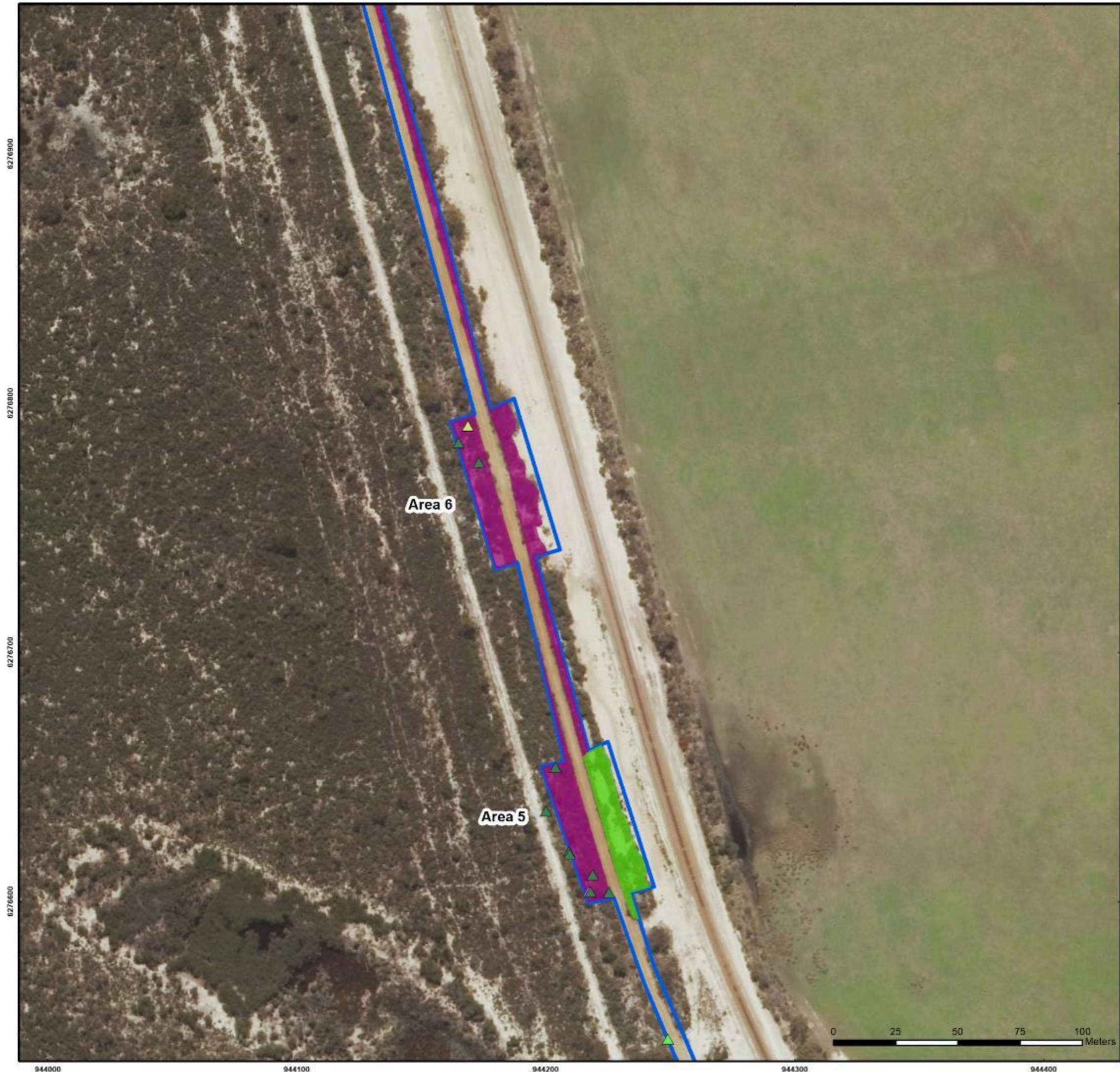
Scale  
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GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
IRIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

**CLIENT**  
Arc Infrastructure  
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Gibson, WA 6448

**Map 5b: Conservation Significant Flora**

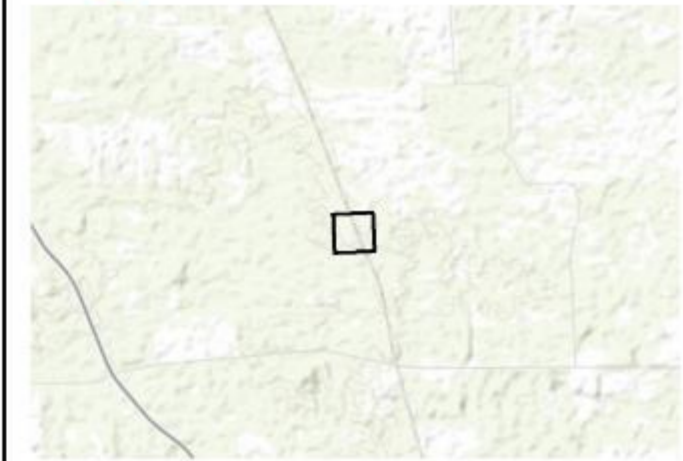
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STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>28/09/2021</b>



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Overview Map Scale 1:100,000

- Legend**
- Survey Area
  - Cadastre
- Vegetation Unit**
- Vegetation Type 1
  - Vegetation Type 2
  - Vegetation Type 3
  - Vegetation Type 4
  - Vegetation Type 5
  - Vegetation Type 6
  - Vegetation Type 7
- Conservation Significant Flora**
- ▲ *Eremophila* sp 1., TF
  - ▲ *Darwinia* sp. Gibson, P1
  - ▲ *Brachyloma* mogin, P3
  - ▲ *Conostephium* marchanitorium, P3
  - ▲ *Isopogon* alaicornis, P3
  - ▲ *Kunzea* salina, P3
  - ▲ *Persoonia* scabra, P3
  - ▲ *Stachystemon* vinosus, P4



Scale  
1:1,500 @ A3  
GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
IRIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

**CLIENT**  
Arc Infrastructure  
Line 51 (344.9 - 346.485) Fleming Grove Road  
Gibson, WA 6448

**Map 5c: Conservation Significant Flora**

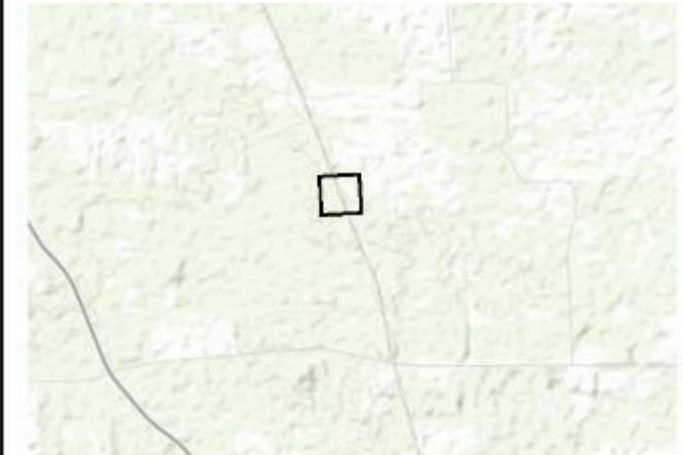
	QA Check <b>KW</b>	Drawn by <b>CV</b>
STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>28/09/2021</b>



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(08) 9072 1382



Overview Map Scale 1:100,000

**Legend**

- Survey Area
- Cadastre

**Vegetation Unit**

- Vegetation Type 1
- Vegetation Type 2
- Vegetation Type 3
- Vegetation Type 4
- Vegetation Type 5
- Vegetation Type 6
- Vegetation Type 7

**Conservation Significant Flora**

- ▲ *Eremophila* sp 1., TF
- ▲ *Darwinia* sp. Gibson, P1
- ▲ *Brachyloma mogin*, P3
- ▲ *Conostephium marchanitorum*, P3
- ▲ *Isopogon alpicornis*, P3
- ▲ *Kunzea salina*, P3
- ▲ *Persoonia scabra*, P3
- ▲ *Stachystemon vinosus*, P4



Scale  
1:1,500 @ A3  
GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
IRIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

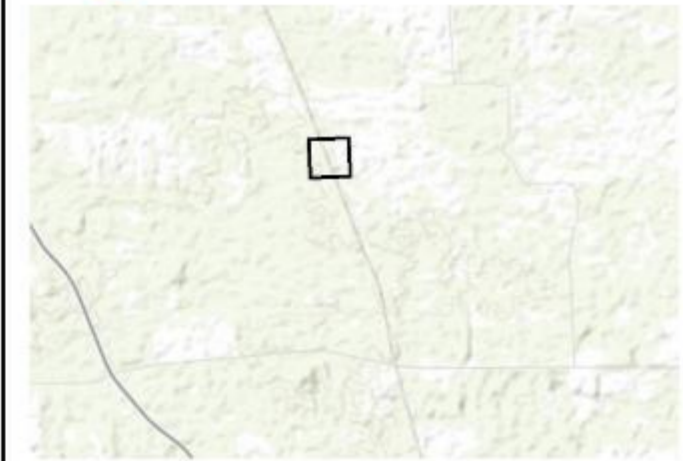
**CLIENT**  
Arc Infrastructure  
Line 51 (344.9 - 346.485) Fleming Grove Road  
Gibson, WA 6448

**Map 5d: Conservation Significant Flora**

	QA Check <b>KW</b>	Drawn by <b>CV</b>
STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>28/09/2021</b>



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 Denmark Office: 7/40 South Coast Highway, Denmark, WA 6333, (08) 9846 1309  
 Esperance Office: 2A/113 Dempster Street, Esperance, WA 6450, (08) 9072 1382



Overview Map Scale 1:100,000

- Legend**
- Survey Area
  - Cadastre
- Vegetation Unit**
- Vegetation Type 1
  - Vegetation Type 2
  - Vegetation Type 3
  - Vegetation Type 4
  - Vegetation Type 5
  - Vegetation Type 6
  - Vegetation Type 7

- Conservation Significant Flora**
- ▲ *Eremophila* sp 1., TF
  - ▲ *Darwinia* sp. Gibson, P1
  - ▲ *Brachyloma mogin*, P3
  - ▲ *Conostephium marchanitorium*, P3
  - ▲ *Isopogon alpicornis*, P3
  - ▲ *Kunzea salina*, P3
  - ▲ *Persoonia scabra*, P3
  - ▲ *Stachystemon vinosus*, P4



Scale  
 1:1,500 @ A3  
 GDA MGA 94 Zone 50

**Data Sources**  
 Aerial Imagery: WA Now, Landgate Subscription Imagery  
 Cadastre, Relief Contours and Roads: Landgate 2017  
 IRIS Road Network: Main Roads Western Australia 2017  
 Overview Map: World Topographic map service, ESRI 2012

**CLIENT**  
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**Map 5e: Conservation Significant Flora**

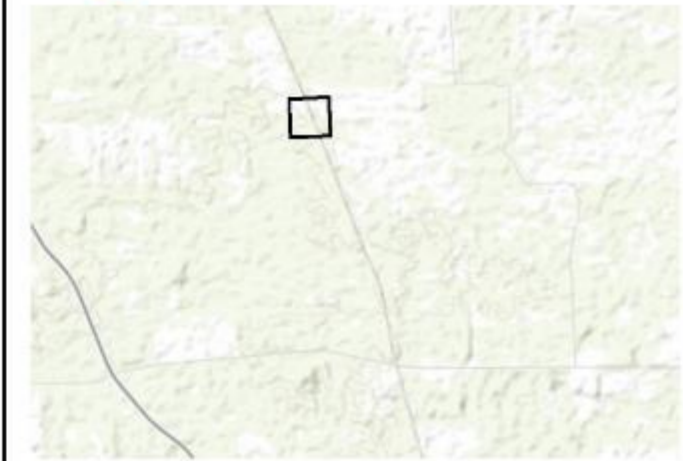
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STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>28/09/2021</b>



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Overview Map Scale 1:100,000

- Legend**
- Survey Area
  - Cadastre
- Vegetation Unit**
- Vegetation Type 1
  - Vegetation Type 2
  - Vegetation Type 3
  - Vegetation Type 4
  - Vegetation Type 5
  - Vegetation Type 6
  - Vegetation Type 7

- Conservation Significant Flora**
- ▲ *Eremophila* sp 1., TF
  - ▲ *Darwinia* sp. Gibson, P1
  - ▲ *Brachyloma mogin*, P3
  - ▲ *Conostephium marchanitorium*, P3
  - ▲ *Isopogon alpicornis*, P3
  - ▲ *Kunzea salina*, P3
  - ▲ *Persoonia scabra*, P3
  - ▲ *Stachystemon vinosus*, P4



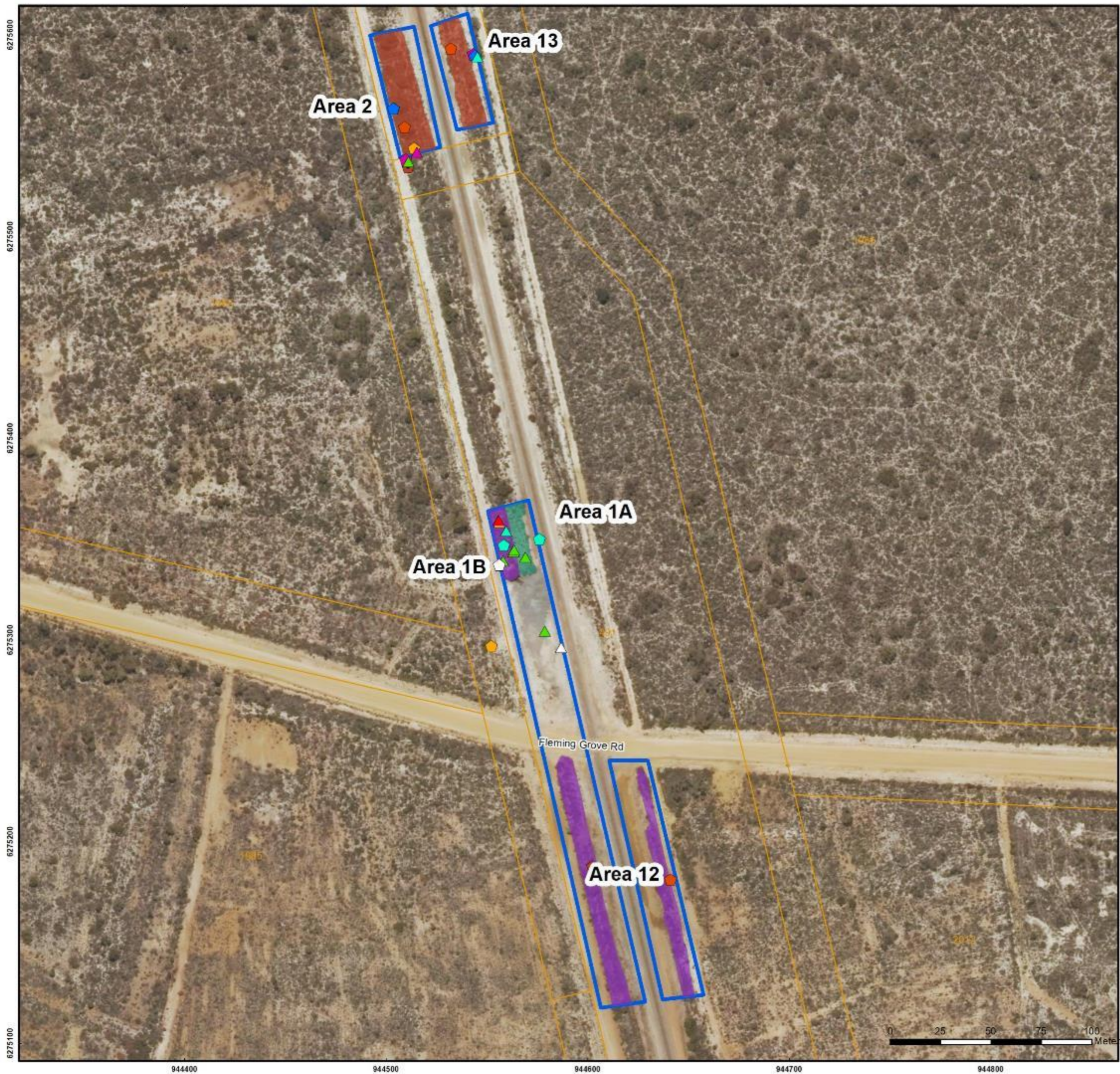
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GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
IRIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

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**Map 5f: Conservation Significant Flora**

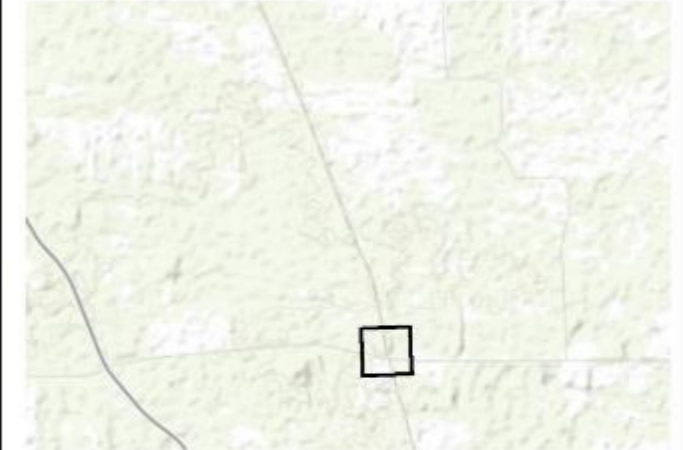
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STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>28/09/2021</b>



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Overview Map Scale 1:100,000

- Legend**
- Survey Area
  - Cadastre
- Vegetation Type**
- Vegetation Type 1
  - Vegetation Type 2
  - Vegetation Type 3
  - Vegetation Type 4
  - Vegetation Type 5
  - Vegetation Type 6
  - Vegetation Type 7
- Fauna Habitat**
- Bird Nest
  - Burrow
  - Reptile Burrow
- Fauna Observed**
- ▲ *Calyptorhynchus latirostris* (EN)
  - ▲ *Acanthiza chrysorrhoa*
  - ▲ *Anas superciliosa*
  - ▲ *Anthochaera carunculata*
  - ▲ *Aquila audax*
  - ▲ *Corvus coronoides*
  - ▲ *Cracticus tibicen*
  - ▲ *Grallina cyanoleuca*
  - ▲ *Hirundo neoxena*
  - ▲ *Macropus fuliginosus*
  - ▲ *Manorina flavigula*
  - ▲ *Neophema elegans*
  - ▲ *Oryctolagus cuniculus*
  - ▲ *Pardalotus punctatus*
  - ▲ *Platycercus spurius*
  - ▲ *Vulpes vulpes*

Scale  
1:1,850 @ A3  
GDA MGA 94 Zone 50

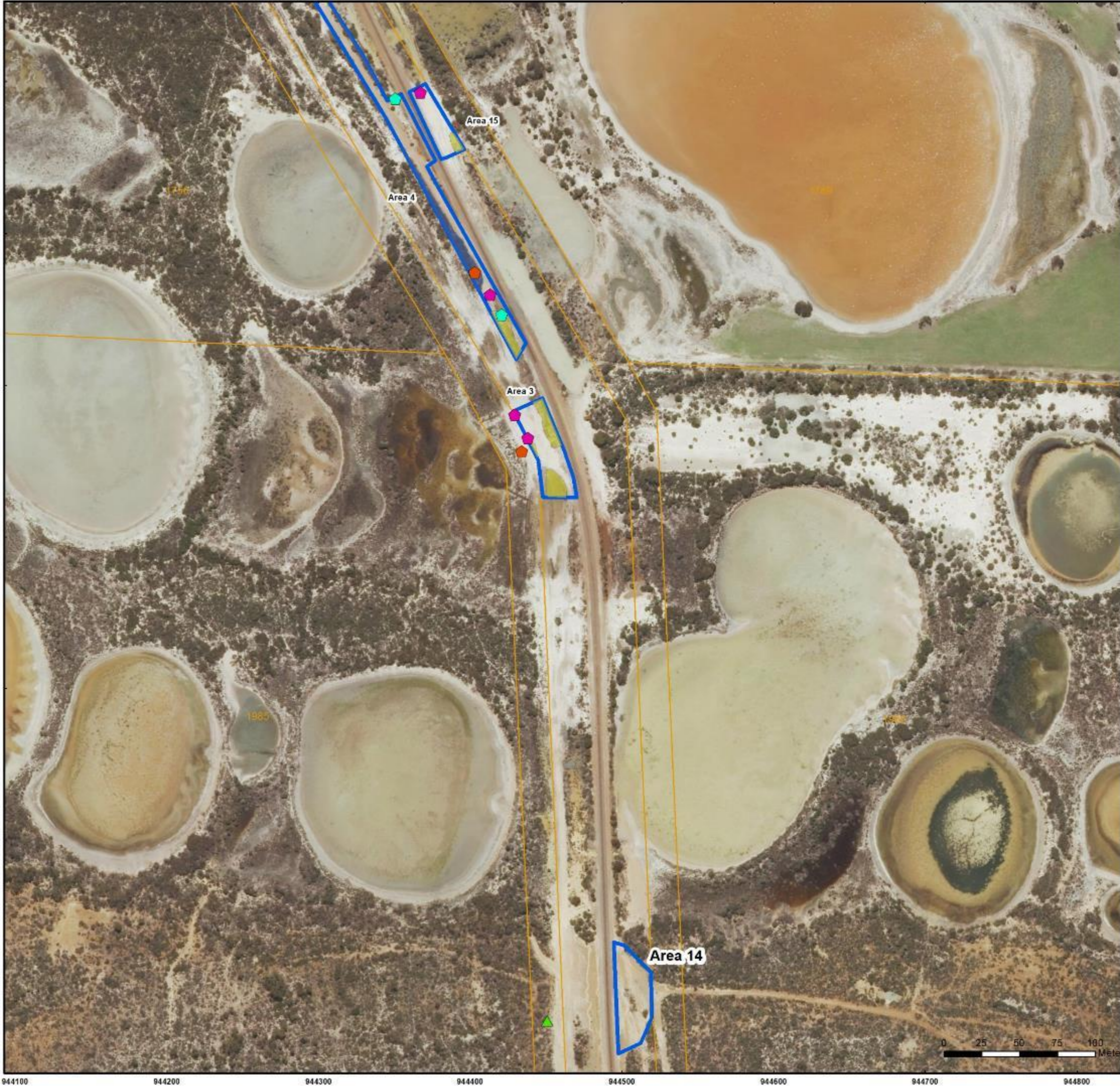
**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
RIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

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**Map 6a: Fauna & Fauna Habitat Observed**

	QA Check <b>KW</b>	Drawn by <b>BT</b>
STATUS <b>FINAL</b>	FILE <b>A1003</b>	DATE <b>22/07/2021</b>

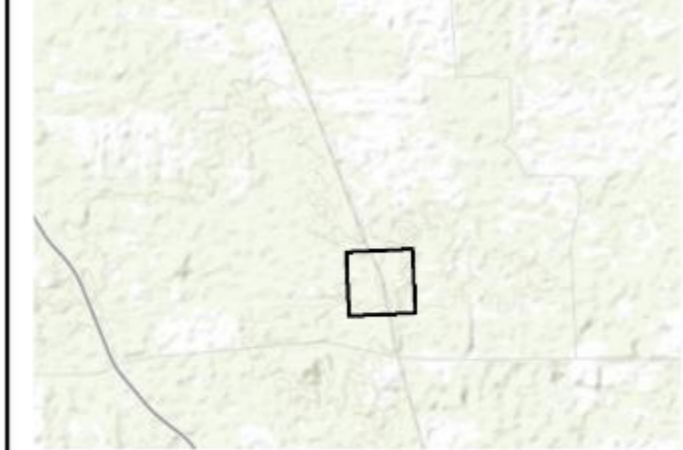




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**Legend**

- Survey Area
- Cadastre
- Vegetation Type 1
- Vegetation Type 2
- Vegetation Type 3
- Vegetation Type 4
- Vegetation Type 5
- Vegetation Type 6
- Vegetation Type 7
- Bird Nest
- Burrow
- Reptile Burrow
- Calyptorhynchus latirostris* (EN)
- Acanthiza chrysorrhoa*
- Anas superciliosa*
- Anthochaera carunculata*
- Aquila audax*
- Corvus coronoides*
- Cracticus tibicen*
- Grallina cyanoleuca*
- Hirundo neoxena*
- Macropus fuliginosus*
- Manorina flavigula*
- Neophema elegans*
- Oryctolagus cuniculus*
- Pardalotus punctatus*
- Platycercus spurius*
- Vulpes vulpes*

Scale  
1:2,500 @ A3  
GDA MGA 94 Zone 50

**Data Sources**  
Aerial Imagery: WA Now, Landgate Subscription Imagery  
Cadastre, Relief Contours and Roads: Landgate 2017  
IRIS Road Network: Main Roads Western Australia 2017  
Overview Map: World Topographic map service, ESRI 2012

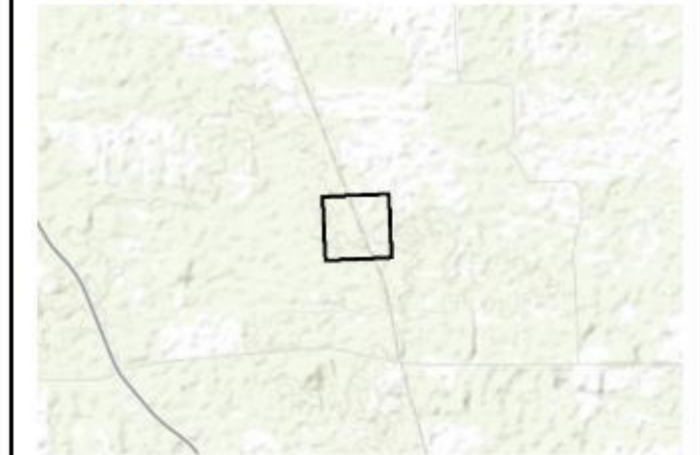
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**Map 6b: Fauna & Fauna Habitat Observed**

	QA Check <b>KW</b>	Drawn by <b>BT</b>
STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>22/07/2021</b>



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Overview Map Scale 1:100,000

**Legend**

- |                   |   |
|-------------------|---|
| Survey Area       | <b>Fauna Observed</b>                   |
| Cadastre          | <i>Calyptorhynchus latirostris</i> (EN) |
| Vegetation Type 1 | <i>Acanthiza chrysorrhoa</i>            |
| Vegetation Type 2 | <i>Anas superciliosa</i>                |
| Vegetation Type 3 | <i>Anthochaera carunculata</i>          |
| Vegetation Type 4 | <i>Aquila audax</i>                     |
| Vegetation Type 5 | <i>Corvus coronoides</i>                |
| Vegetation Type 6 | <i>Cracticus tibicen</i>                |
| Vegetation Type 7 | <i>Grallina cyanoleuca</i>              |
| Bird Nest         | <i>Hirundo neoxena</i>                  |
| Burrow            | <i>Macropus fuliginosus</i>             |
| Reptile Burrow    | <i>Manorina flavigula</i>               |
|                   | <i>Neophema elegans</i>                 |
|                   | <i>Oryctolagus cuniculus</i>            |
|                   | <i>Pardalotus punctatus</i>             |
|                   | <i>Platycercus spurius</i>              |
|                   | <i>Vulpes vulpes</i>                    |



Scale  
 1:2,500 @ A3  
 GDA MGA 94 Zone 50

**Data Sources**  
 Aerial Imagery: WA Now, Landgate Subscription Imagery  
 Cadastre, Relief Contours and Roads: Landgate 2017  
 RIS Road Network: Main Roads Western Australia 2017  
 Overview Map: World Topographic map service, ESRI 2012

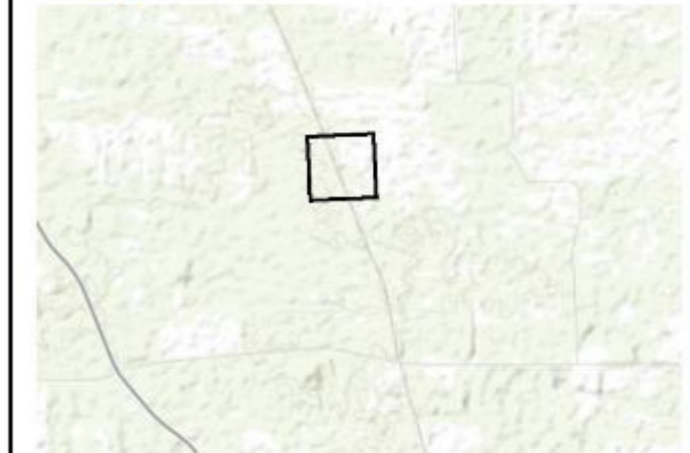
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**Map 6c: Fauna & Fauna Habitat Observed**

	QA Check <b>KW</b>	Drawn by <b>BT</b>
STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>22/07/2021</b>



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Overview Map Scale 1:100,000

**Legend**

- Survey Area
- Cadastre
- Vegetation Type 1
- Vegetation Type 2
- Vegetation Type 3
- Vegetation Type 4
- Vegetation Type 5
- Vegetation Type 6
- Vegetation Type 7
- ▲ *Calyptorhynchus latirostris* (EN)
- ▲ *Acanthiza chrysorrhoa*
- ▲ *Anas superciliosa*
- ▲ *Anthochaera carunculata*
- ▲ *Aquila audax*
- ▲ *Corvus coronoides*
- ▲ *Cracticus tibicen*
- ▲ *Grallina cyanoleuca*
- *Hirundo neoxena*
- *Macropus fuliginosus*
- *Manorina flavigula*
- *Neophema elegans*
- *Oryctolagus cuniculus*
- *Pardalotus punctatus*
- *Platycercus spurius*
- *Vulpes vulpes*
- ◆ Bird Nest
- ◆ Burrow
- ◆ Reptile Burrow



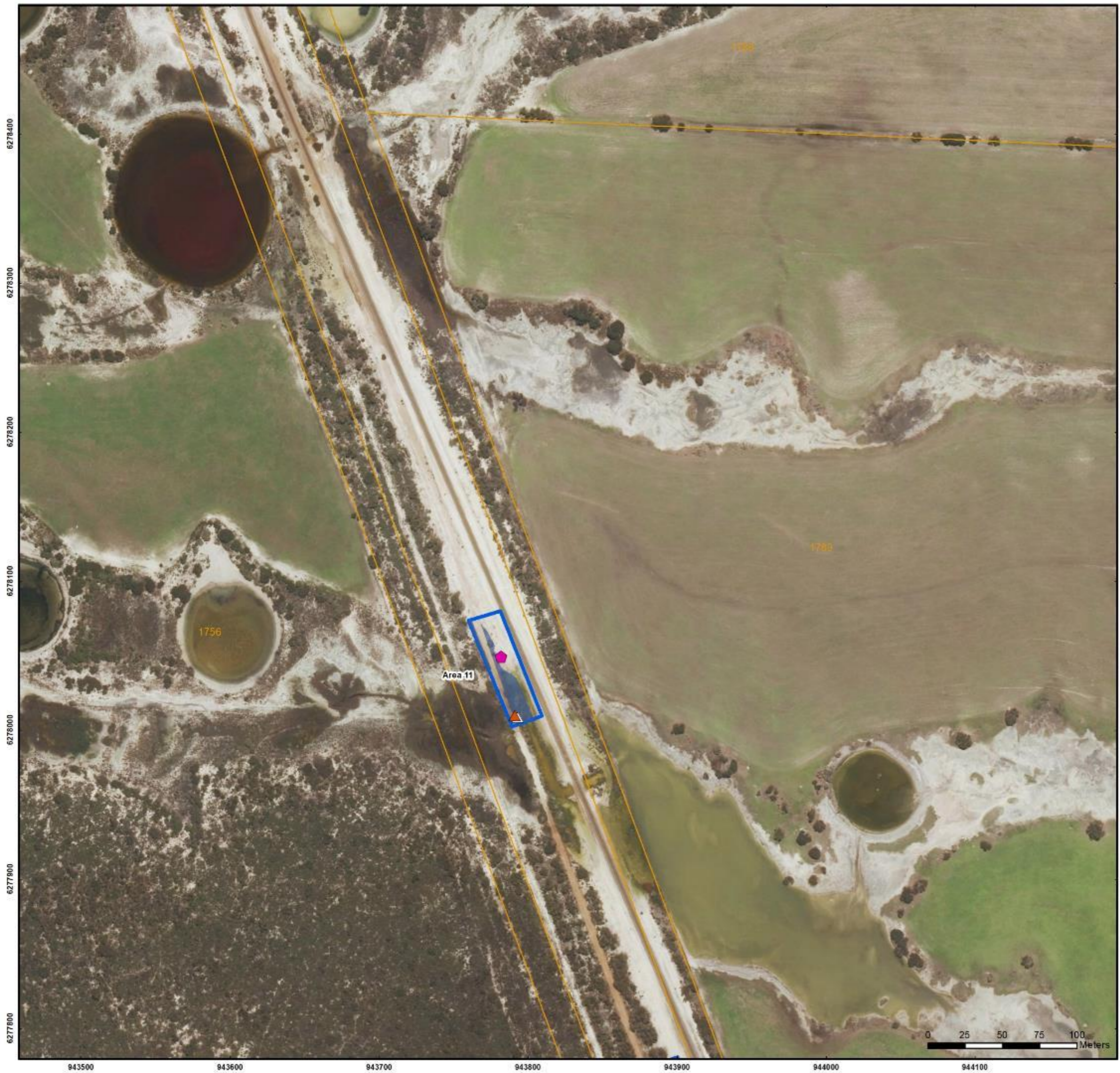
Scale  
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 GDA MGA 94 Zone 50

**Data Sources**  
 Aerial Imagery: WA Now, Landgate Subscription Imagery  
 Cadastre, Relief Contours and Roads: Landgate 2017  
 RIS Road Network: Main Roads Western Australia 2017  
 Overview Map: World Topographic map service, ESRI 2012

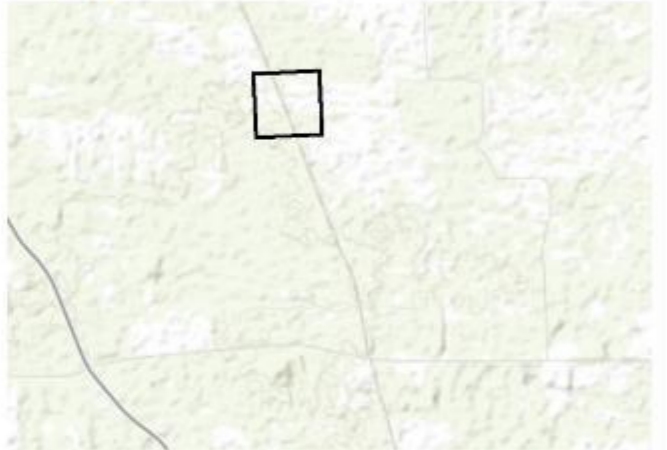
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**Map 6d: Fauna & Fauna Habitat Observed**

	QA Check <b>KW</b>	Drawn by <b>BT</b>
STATUS <b>FINAL</b>	FILE <b>AI003</b>	DATE <b>22/07/2021</b>



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Overview Map Scale 1:100,000

- Legend**
- Survey Area
  - Cadastre
- Vegetation Type**
- Vegetation Type 1
  - Vegetation Type 2
  - Vegetation Type 3
  - Vegetation Type 4
  - Vegetation Type 5
  - Vegetation Type 6
  - Vegetation Type 7
- Fauna Habitat**
- Bird Nest
  - Burrow
  - Reptile Burrow
- Fauna Observed**
- ▲ *Calyptorhynchus latirostris* (EN)
  - ▲ *Acanthiza chrysorrhoa*
  - ▲ *Anas superciliosa*
  - ▲ *Anthochaera carunculata*
  - ▲ *Aquila audax*
  - ▲ *Corvus coronoides*
  - ▲ *Cracticus tibicen*
  - ▲ *Grallina cyanoleuca*
  - ▲ *Hirundo neoxena*
  - ▲ *Macropus fuliginosus*
  - ▲ *Manorina flavigula*
  - ▲ *Neophema elegans*
  - ▲ *Oryctolagus cuniculus*
  - ▲ *Pardalotus punctatus*
  - ▲ *Platycercus spurius*
  - ▲ *Vulpes vulpes*

Scale  
 1:2,500 @ A3  
 GDA MGA 94 Zone 50

**Data Sources**  
 Aerial Imagery: WA Now, Landgate Subscription Imagery  
 Cadastre, Relief Contours and Roads: Landgate 2017  
 RIS Road Network: Main Roads Western Australia 2017  
 Overview Map: World Topographic map service, ESRI 2012

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**Map 6e: Fauna & Fauna Habitat Observed**

	QA Check <b>KW</b>	Drawn by <b>BT</b>
STATUS <b>FINAL</b>	FILE <b>A1003</b>	DATE <b>22/07/2021</b>

## **Appendix B**

### Conservation Significant Values Likelihood of Occurrence Analysis

**Table A1: Criteria for assessing the likelihood of occurrence of conservation significant flora within a 10km radius of the survey area**

Likelihood	Criteria
Present	Species is recorded within the survey area.
Likely	Species has been previously recorded in close proximity and suitable habitat occurs within the survey area.
Possible	Species previously recorded within 10 km and suitable habitat occurs in the survey area.
Unlikely	Suitable habitat for the species does not occur at the survey area OR Suitable habitat may occur but the species has a highly restricted distribution, is very rare and only known from a limited number of populations.
Highly Unlikely	The survey area is outside the species' natural distribution.

**Table A2: Potential conservation significant flora located within 10km of the survey area and likelihood of occurrence analysis (post survey).**

NB - Species are sorted by likelihood of presence

Family	Species	Common Name	Status (WA)	Desktop Survey			Description - Species	Description - Habitat	Peak Flowering period	Likelihood of occurring – pre field survey	Likelihood of occurring – post field survey
				Naturemap	PMST	DBCA					
Myrtaceae	<i>Darwinia</i> sp. Gibson (R.D. Royce 3569)		P1	X		X	Compact shrub to 0.4 m high. Flowers yellow/orange. Small succulent looking shrub.	Grey-brown sandy clay and white sand on margins of salt lake	Jun to July	Known existing population - (PERTH06466710) located on western railway line, between and adjacent to track.	Detected within the area
Proteaceae	<i>Isopogon alcornis</i>	Elkhorn Coneflower	P3	X		X	Low, lignotubers shrub, 0.3-0.5 m high to 0.6 m wide. Flowers yellow, white, pink. Distinctive shaped leaves forming cluster. No distinct stems.	Sandy soils, skeletal loam, sandhills, sandplains	Oct to Dec or Feb	Known population at site - (PERTH 05814731) located along the railway line adjacent to salt lakes	Detected within the area
Ericaceae	<i>Conostephium marchantiorum</i>		P3	X		X	Erect, much branched shrub. 0.4-1.8 m high. Red, purple, brown and yellow flower. Bright green and hairy leaves.	White/grey sand. Plains on edges of salt lakes.	Mar or Jul or Nov	Known existing population - (PERTH04191161) recorded 400 m north of railway line. Correct suitable habitat present.	Detected within the area
Proteaceae	<i>Grevillea baxteri</i>	Cape Arid Grevillea	P4	X		X	Erect to spreading shrub. 0.8-4 m high. Large and bushy form. Toothbrush grevillea form, flower colour yellow-orange-brown-red.	Sand, sandplains. Wide associated vegetation type. Often associated with gravel.	Feb or May to Jul or Sept to Dec	Known population at site - (PERTH 01076973 and PERTH 08744297) located adjacent Fleming Grove Road and along the railway line.	No further survey required - Not found during out-of-season survey. Suitable habitat present within Vegetation Type 1, 2, 3 and 7. Unlikely that surveying during spring season increases probability of detecting, due being a large, distinctive shrub.
Ericaceae	<i>Brachyloma mogin</i>		P3	X		X	Compact shrub, 0.4 m high. Flowers red/pink/white.	Grey clayey sand. Swamp flat.	Jun	Likely - immediately adjacent populations present on Fleming Grove Road. Suitable habitat of area traverses through margins of salt lake's and correct distribution.	Detected within area – KW150, Accession 9059.
Proteaceae	<i>Persoonia cymbifolia</i>		P3			X	Erect, spreading shrub, 0.2-0.6 (1) m high. Flowers yellow.	Sandy soils. On flats or in rock crevices	Dec or Jan	Likely - Distributed in general area and correct soil type present	No further survey required – similar P3, <i>Persoonia scabra</i> , detected within area. Formal verification as P3 <i>P. scabra</i> , opposed to P3, <i>P. cymbifolia</i> .
Myrtaceae	<i>Kunzea salina</i>		P3	X		X	Low shrub <1 m. Very small leaves. Spreading shrub. Flowers white.	Adjacent to salt lake periphery in low shrub margin. Winter wet lowlands with grey sands. Saline water bodies	Dec to Jan	Likely - Recorded in the general area, suitable soil type and habitat	Detected within area – KW148, Accession 9059.
Goodeniaceae	<i>Dampiera sericantha</i>		P3	X		X	Erect, slender perennial, herb, 0.05-0.3(-0.6) m high, stems with blunt angles. Fl. blue,	Sand, sometimes with gravel. Plains. Associated with disturbance	May or Aug to Dec.	Likely - suitable habitat, generally associated disturbance such as roads or railways	Further survey required - limitations with existing survey due to cryptic nature of species without flower. Suitable habitat present within Vegetation type 1 (Myr SL), 2 (Ban arm SL), 3 (Pro SL) and 7 (Mal WL).
Dilleniaceae	<i>Hibbertia turleyana</i>		P2	X		X	Procumbent shrub to 0.2 , high, to 0.35 m wide. Flowers yellow.	Dry white sand, flats, seasonally wet areas	Aug	Likely - Recorded in the general area, suitable soil type and habitat	Further survey required - limitations with existing survey due to cryptic nature of species without flower. Suitable habitat present within Vegetation type 1 (Myr SL), 2 (Ban arm SL), 3 (Pro SL), 5 (Mel SL) and 7 (Mal WL).
Fabaceae	<i>Daviesia pauciflora</i>		P3	X		X	Diffuse, many stemmed, sprawling shrub. 0.3-0.8 m high. Lacking formal leaves. Flowers Yellow and red.	White or grey sand over laterite or limestone. Flats. Associated with deep sands, often with <i>Banksia speciosa</i> or <i>Kwongkan</i> shrublands	Oct to Dec or Jan	Likely - Recorded in the general area, suitable soil type and habitat	Further survey required - limitations with existing survey due to cryptic nature of species without flower. Suitable habitat presents within Vegetation type 1 (Myr SL), 2 (Ban arm SL), 3 (Pro SL) and 7 (Mal WL).
Iridaceae	<i>Patersonia inaequalis</i>	Unequal bract Patersonia	P2	X		X	Rhizomatous, tufted perennial, herb. 0.2-0.4 m high. Flowers White	Sandy clay, lateritic or granitic sand.	Aug to Oct	Possible - mostly recorded in Cape Le grand National Park, but single record in the Gibson area. Possible suitable soil type present.	Further survey required - limitations with existing survey due to cryptic nature of species without flower. Suitable habitat present within Vegetation type 1 (Myr SL), 2 (Ban arm SL), 3 (Pro SL), and 7 (Mal WL).

Table A2 continued

Family	Species	Common Name	Status (WA)	Desktop Survey			Description - Species	Description - Habitat	Peak Flowering period	Likelihood of occurring – pre field survey	Likelihood of occurring – post field survey
				Naturemap	PMST	DBCA					
Orchidaceae	<i>Pterostylis faceta</i>	Bird Orchid	P3			X	Annual herb. Flowers green.	Mallee dominated shrubland, dense low heath. Mixed soil types	Aug to Sept	Possible	Further survey required - limitations with nature of being an annual herb. Suitable habitat present within Vegetation type 1 (Myr SL), 2 (Ban arm SL), 3 (Pro SL), and 7 (Mal WL).
Goodeniaceae	<i>Goodenia turleyana</i>		P1			X	Annual herb, 0.03-0.04 m high. White or grey-brown sand over clay, yellow-brown gravelly clay and granite.	Moist sheltered areas near salt lakes		Possible - salt lakes present.	Further survey required - limitations with nature of being an annual herb. Suitable habitat present within Vegetation type 4 (Chen, Sam) and 5 (Mel SL).
Araliaceae	<i>Hydrocotyle tuberculata</i>	Bumpy fruited Pennywort	P2			X	Small herb, 1-3 cm high, 2-4 cm wide, reddish green colour. Simple umbel flowers.	Low shrubs and samphire with Disphyma and Wilsonia humilis. Full sun area.	Oct	Possible - correct vegetation type. Wide and scattered distribution	Further survey required - limitations with nature of being an annual herb. Suitable habitat present within Vegetation type 4 (Chen, Sam).
Araliaceae	<i>Hydrocotyle asterocarpa</i>	Starry Pennywort	P2			X	Small annual herb, trilobed and toothed leaves. Bright green with purple stem.	Distribution restricted to Truslove Nature reserve. Sandy loam soils on margins of inland salt lakes in sheltered positions of Tecticornia and Frankenia sp.	Winter annual - Sept to Nov	Possible - likely understudied.	Further survey required - limitations with nature of being an annual herb. Suitable habitat present within Vegetation type 4 (Chen, Sam) and 5 (Mel SL).
Myrtaceae	<i>Eucalyptus foliosa</i>		P3	X		X	Mallee to 4 m high. Bark smooth.	Grey/white sandy clay, flats adjacent to salt lakes.		Likely - Recorded in the general area, suitable soil type and habitat	No further survey required - Multiple Eucalyptus present, with non-bearing similarities to E. foliosa. Associated habitat present in Veg Type 4 (Chen, Sam) and 5 (Mel SL). Unlikely that surveying during spring season increases probability of detecting.
Myrtaceae	<i>Eucalyptus litorea</i>	Saline Mallee	P2	X			Mallee, 2-6 m high. Bark rough at base and smooth above	Calcareous sand, sandy clam loam and stones. Leeward of primary dunes, around salt lakes.		Likely - Recorded in the general area, suitable soil type and habitat	No further survey required - Multiple Eucalyptus present, with non-bearing similarities to E. litorea. Associated habitat present in Veg Type 4 (Chen, Sam) and 5 (Mel SL). Unlikely that surveying during spring season increases probability of detecting.
Ericaceae	<i>Leucopogon corymbiformis</i>		P2	X		X	Open or erect low shrub with white flowers. <0.5 m high.	Associated with Banksia speciosa woodland and deep white sands.	Aug to Sept	Possible - recorded in general area. Possible vegetation and soil type present.	No further survey required - Multiple Ericaceae present that were eliminated by structure of flower or shape of leaf. Associated habitat possible in Veg 3 (Pro SL) and 7 (Mal WL), but unlikely with gravel duplex likely present.
Ericaceae	<i>Leucopogon remotus</i>		P1			X	Woody shrub of 1 m high x 8 m wide.	Associated with mixed woodlands and variety of soil types.	Jul	Possible - likely understudied.	No further survey required - Multiple Ericaceae present that were eliminated by structure of flower or shape of leaf. Associated habitat present in Veg Type 1 (Myr SL), 2 (Ban arm SL), 3 (Pro SL) and 7 (Mal WL). Unlikely that surveying during spring season increases probability of detecting.
Malvaceae	<i>Commersonia rotundifolia</i>	Round Leaved Rulingia	P3	X		X	Shrub to 1.5 m high. Semi-erect. Cream flowers, white calyx with green base. Petals cream, ligule on green base, staminodes white. Dull green leaves.	Open Eucalyptus woodland and shrubs, with Eucalyptus platypus or other Mallee or Mallet species. Well drained grey brown loams.		Possible - wide distribution. Recorded in the nearby Gibson vicinity, but in 1931. Likely to be suitable habitat.	No further survey required - Associated habitat present in Veg Type 1 (Myr SL), 2 (Ban arm SL), 3 (Pro SL) and 7 (Mal WL). Unlikely that surveying during spring season increases probability of detecting.



Table A2 continued

Family	Species	Common Name	Status (WA)	Desktop Survey			Description - Species	Description - Habitat	Peak Flowering period	Likelihood of occurring – pre field survey	Likelihood of occurring – post field survey
				Naturemap	PMST	DBCA					
Myrtaceae	<i>Darwinia polycephala</i>		P4			X	Diffuse shrub, 0.1-0.5 m high. Flowers red-purple.	Sand, clay. Flats near Salt Lakes	Mar or May to Jul or Sept	Possible - distribution mostly recorded further north in Grass Patch area but suitable salt lake habitat present.	No further survey required - Similar P1 <i>Darwinia</i> sp. Gibson present. <i>D. polycephala</i> eliminated by structure of flower and previous record of <i>D.</i> sp. Gibson. Associated habitat present in Veg type 4 (Chen, Sam) and 5 (Mel SL). Unlikely that surveying during spring season increases probability of detecting, due to scattered flowering time recorded.
Myrtaceae	<i>Melaleuca fissurata</i>		P4			X	Shrub, 0.5-2 (4) m. Flowers white/yellow.	White/grey sand. Sandy loam. Samphire flats and salt pans.	Jul to Aug	Possible - correct vegetation and soil type, however typically distribution further north towards Grass Patch	No further survey required - No similar <i>Melaleuca</i> species present. Associated habitat present at Veg Type 5 (Mel SL) and 6 (Mel WL). Unlikely that surveying during spring season increases probability of detecting, due being a large, distinctive shrub. Slightly incorrect distribution for survey area.
Thymelaeaceae	<i>Pimelea pelinos</i>		P1			X	Erect, scraggly shrub, 0.3-0.6 m high. Flowers Cream	Sandy clay, salt lakes	Jun to Jul	Possible - distribution mostly too far north, but potential correct habitat present.	No further survey required - Winter survey conducted during flowering time of species. Associated habitat present at Veg Type 5 (Mel SL) and 6 (Mel WL).
Fabaceae	<i>Acacia bartlei</i>		P3			X	Erect shrub or tree from 1.5-7 m tall. Narrow phyllodes, oblong to elliptic. Glabrous. Pods linear 20-65 mm long, 2.5-3.5 mm wide.	Uncommon, around Esperance. Flat or gently undulating landscape. Waterlogged depressions in brown or grey, sandy loam or clay-loam or in grey sand over clay adjacent to depressions. Tolerates level of salinity.	Late June to Mid Oct	Possible - suitable habitat present and soil type.	No further survey required - Non-threatened <i>A. cyclops</i> present, eliminated by curled pods and red arils. Associated habitat present at Veg Type 5 (Mel SL) and 6 (Mel WL). Unlikely that surveying during spring season increases probability of detecting, due being a large, distinctive shrub.
Rhamnaceae	<i>Spyridium mucronatum</i> subsp. <i>Multiflorum</i>		P2	X		X	Erect or spreading shrub, 0.15-0.6 m high. Flowers white, cream or yellow.	Gravelly loam or clay	Oct to Dec or Jan	Possible - record nearby and possible suitable soil present	No further survey required - Non-threatened <i>S. mucronatum</i> subsp. <i>Mucronatum</i> detected, eliminated by low number of flower heads in cluster. Associated habitat present in Veg Type 1 (Myr SL), 2 (Ban arm SL), 3 (Pro SL) and 7 (Mal WL). Unlikely that surveying during spring season increases probability of detecting.
Scrophulariaceae	<i>Eremophila chamaephila</i>		P3			X	Low, dome shaped Shrub, 0.1-0.25 m high. 0.2-0.8 m wide. Flowers blue-purple.	White sand, clay. Sandplains and disturbed road verges	Nov to Dec	Possible - sandplains present and correct soil type. Associated vegetation isn't an exact match	No further survey required - Associated habitat present is not similar to previous records of the species.
Myrtaceae	<i>Eucalyptus merrickiae</i>	Goblet Mallee	T- Vu		X	X	Mallee, 2-4(6) m high. Bark rough and flaky. Distinguished by extremely red bud caps. Silver sheen to leaves.	Sandy clay, grey sand. Associated strongly with salt lakes in the Scaddan to Salmon Gums area, Esperance.	Aug to Nov	Possible - Suitable salt lake habitat, be on the extreme southern end of distribution	No further survey required - Potential habitat present in Veg Type 5 (Mel SL), but distribution slightly too far south to be considered suitable.
Ericaceae	<i>Styphelia rotundifolia</i>		P3			X	Erect, compact shrub to 1.5 m high x 1.5 m wide. Flowers cream and erect.	Mixed heath and shrublands. Mostly recorded in coastal areas.	April	Unlikely - outside of recorded distribution	No further survey required - Multiple Ericaceae present that were eliminated by structure of flower or shape of leaf. Potential Associated habitat present in Veg Type 1 (Myr SL), 2 (Ban arm SL), 3 (Pro SL) and 7 (Mal WL). Remains outside of recorded distribution.

Table A2 continued

Family	Species	Common Name	Status (WA)	Desktop Survey			Description - Species	Description - Habitat	Peak Flowering period	Likelihood of occurring – pre field survey	Likelihood of occurring – post field survey
				Naturemap	PMST	DBCA					
Haemodoraceae	<i>Anigozanthos bicolor</i> subsp. minor	Little Kangaroo Paw	T - En		X		Rhizomatous, perennial, herb, 0.05-0.2 m high. Fl. Green & red,	Sand. Well-watered sites. Subcoastal freshwater sumps, off granite	Aug to Oct	Unlikely - no suitable habitat	No further survey required - no suitable habitat present
Myrtaceae	<i>Eucalyptus preissiana</i> subsp. lobata		P4			X	Mallee to 2.5 m high. Bark smooth. Flowers yellow.	Sand. Coastal limestone rises and sand dunes	Nov	Unlikely - vast majority of records to the far west of Esperance along coastal sandplains. Single record in Gibson area, which given the species is widely commercially available may not be reliable.	No further survey required - no suitable habitat present
Fabroniaceae	<i>Fabronia hampeana</i>		P2			X	Moss species. Silver green species.	Often growing on <i>Macrozamia</i> species. Mixed woodlands		Unlikely - most records in Western Australia in mixed woodlands with <i>Banksia</i> and coastal <i>Melaleuca</i> species. No <i>Macrozamia</i> species detected.	No further survey required - no suitable habitat present. Not covered by expertise of surveyors.
Goodeniaceae	<i>Goodenia laevis</i> subsp. laevis		P3			X	Erect, woody shrub or subshrub. 0.1-0.25 m high. Largest leaves 15-25 x 1-3 mm, entire. Flowers yellow.	Sandy loam or laterite	Aug to Dec	Unlikely - mostly recorded in dense <i>Eucalyptus mallee</i> or Mallet Woodlands of Grass Patch area.	No further survey required - no suitable habitat present
Scrophulariaceae	<i>Eremophila lactea</i>	Milky Emu Bush	T - En		X		Shrub, 0.3 to 3.5 shrub. Erect and spindly looking. Flowers blue-purple. Small flowers	White sandy clay loam, small area restricted in the Grass Patch area. Open Mallee. Often associated with disturbance, fire or disturbed road verge	Sept to Nov	Unlikely - incorrect soil type associated	No further survey required - no suitable habitat present
Myrtaceae	<i>Eucalyptus dolichorhyncha</i>	Fuchsia Gum / Pear Mallee	P4	X		X	Mallee or tree, 1-5 m high. Flowers yellow. Distinct elongated operculum bud caps, differentiating from non-threatened <i>Eucalyptus forrestiana</i>	Sandy clay or clay. Flats. Mallee Woodlands	Jan to Mar or May	Unlikely - outside the general distribution and lacks suitable vegetation habitat	No further survey required - no suitable habitat present
Proteaceae	<i>Lambertia echinata</i> subsp. echinata		T - En		X		Prickly, much branched, non-lignotubers shrub. 1.5 m high. Flower orange, red to pink. Leaves with tridentate shape	Gravelly sandy loam, brown sandy loam, white grey sand, granite, laterite. Entirely restricted or known from Cape Le Grand National Park	Sept to Oct	Unlikely - Outside distribution	No further survey required - no suitable habitat present
Fabaceae	<i>Kennedia glabrata</i>	Northcliffe Kennedia	T - Vu		X		Prostrate shrub, 0.05-0.5 m high, to 5 m wide. Fl. red,	Soil pockets, sandy soils. Granite outcrops.	Aug to Nov.	Highly Unlikely - over 300 km west to nearest known population, outside distribution. Incorrect habitat present, no granite.	
Myrtaceae	<i>Eucalyptus misella</i>		P1			X	Mallee, 1-3 m high. Bark smooth. Flowers cream	White, yellow or grey sand. Low lying sandplain	Nov	Highly Unlikely - Distribution entirely associated with Frank Hann Nature Reserve, 350 km north of survey area.	
Euphorbiaceae	<i>Ricinocarpus trichophorus</i>	Wedding Bush	T - En		X		Erect, openly branching shrub. 0.3-1 m high. Flowers White	Sandy clay, loam. Breakaways, among sandstone rock.	May or Aug to Sept	Highly Unlikely - incorrect soil type associated, not recorded in the general Gibson area.	

**Table A3: Potential Threatened and Priority Ecological Communities located within 10km of the survey area.**

Community Name	Source	Status	Description	Survey Outcome
Threatened Ecological Community - Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia	PMST, DBCA Databases	Priority 3 (WA) EN (EPBC Act)	Consists of predominantly obligate seeding proteaceous shrubland and heath (Kwongan) and mallee heath on sandplain, duplex sand/clay and gravels overlying Eocene sediments, quartzite, schist, Yilgarn and Albany Fraser granite and greenstone ranges. Its flora is characterised by high species diversity and a high degree of endemism, particularly in the Stirling Range, Fitzgerald River National Park, Ravensthorpe Range and Russell Ranges. Due to the high levels of endemism, there are few species that exist across the entire range of the dense, obligate seeding Proteaceae dominated shrublands and Kwongan of the Esperance Sandplains, however particular species have been identified as common dominant species in each of its eco-districts (DBCA, 2017a).	<b>Detected - Present within Vegetation Type 2 and 3. Spring Flora survey with quadrat analysis required to formally determine presence or absence.</b>
Subtropical and temperate coastal saltmarsh (synonymous with the Subtropical and Temperate Coastal Saltmarsh EPBC-listed TEC)	DBCA Databases	Priority 3 (WA), Vulnerable (EPBC)	Consists of the assemblage of plants, animals and micro-organisms associated with saltmarsh in coastal regions of sub-tropical and temperate Australia (south of 23oS latitude). It occurs on the coastal margin, along estuaries and coastal embayments and on low wave energy coast in places with at least some tidal connection, including rarely-inundated supratidal areas, intermittently opened or closed lagoons, and groundwater tidal influences. The community occurs on sandy or muddy substrate and may include coastal clay pans and similar habitats. It consists of dense to patchy areas of characteristic coastal saltmarsh plant species that include salt-tolerant herbs, succulent shrubs or grasses, and may also include bare sediment as part of the mosaic. It can occur where the proportional cover by tree canopy such as mangroves, Melaleucas or Casuarinas or seagrass is not greater than 50%. The description, area and condition thresholds that apply to the EPBC-listed TEC of the same name, also apply to this Priority ecological community.	Not present - outside of coastal margin and tidal influence area

Table A4: Potential conservation significant fauna located within 30-40km of the survey area and likelihood of occurrence analysis (post survey).

Family	Scientific Name	Vernacular	Status (WA) / EPBC Act	Habitat Description	Habitat Present (Y/N)	Likelihood of occurrence	Species Present	Comment
Elapidae	<i>Acanthophis antarcticus</i>	Southern Death Adder	P3 / -	Mallee and coastal vegetation.	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Actitis hypoleucos</i>	Common Sandpiper	MI / MI	Almost entirely coastal, coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats	Y	LOW	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Apodidae	<i>Apus pacificus</i>	Fork-tailed Swift	MI / MI	Dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. Almost exclusively aerial, flying from less than 1 m to at least 300 m above ground over inland plains but sometimes above foothills or in coastal areas.	Y	MEDIUM	No	
Procellariidae	<i>Ardenna carneipes</i>	Flesh-footed Shearwater, Fleishy-footed Shearwater	VU / MI	Mainly occurs in the subtropics over continental shelves and slopes and occasionally inshore waters. Breeds on islands in burrows on sloping ground in coastal forest, scrubland, shrubland or grassland.	N	Not Applicable. No habitat present	No	
Procellariidae	<i>Ardenna grisea</i>	Sooty Shearwater	MI / MI	Marine species. Occurs in pelagic (open ocean) sub-tropical, sub-Antarctic and Antarctic waters.	N	Not Applicable. No habitat present	No	
Procellariidae	<i>Ardenna tenuirostris</i>	Short-tailed Shearwater	MI / MI	Found in coastal waters.	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Arenaria interpres</i>	Ruddy Turnstone	MI / MI	Prefers coastal regions with exposed rock coast lines or coral reefs, platforms and shelves, often with shallow tidal pools and rocky, shingle or gravel beaches. Occasionally been sighted in estuaries, harbours, bays and coastal lagoons, among low saltmarsh or on exposed beds of seagrass, around sewage ponds and on mudflats.	N	Not Applicable. No habitat present	No	
Ardeidae	<i>Botaurus poiciloptilus</i>	Australasian Bittern	EN / EN	Wetlands, permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and reeds (e.g. Phragmites, Cyperus, Eleocharis, Juncus, Typha, Baumea, Bolboschoenus) or cutting grass (Gahnia) growing over a muddy or peaty substrate	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	MI / MI	Muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation.	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Calidris alba</i>	Sanderling	MI / MI	Almost entirely coastal mostly on open sandy beaches exposed to open sea-swell, and also on exposed sandbars and spits, and shingle banks, where they forage in the wave-wash zone and amongst rotting seaweed.	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Calidris canutus</i>	Red Knot, knot	EN / EN & MI	Intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs.	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Calidris canutus subsp. rogersi</i>	Red Knot (north-eastern Siberia)	T	Intertidal mudflats, sandflats and sandy beaches of sheltered coasts and sometimes on sandy ocean beaches or shallow pools on exposed rock platforms. They are occasionally seen on terrestrial saline wetlands near the coast and on sewage ponds and saltworks	Y	LOW	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Scolopacidae	<i>Calidris ferruginea</i>	Curlew Sandpiper	CR / CR & MI	Intertidal mudflats in sheltered coastal areas, non-tidal swamps, lakes and lagoons near the coast, and occasionally around ephemeral and permanent lakes and dams with bare edges of mud or sand	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Calidris melanotos</i>	Pectoral Sandpiper	MI / MI	Shallow fresh to saline wetlands.	Y	LOW	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Scolopacidae	<i>Calidris ruficollis</i>	Red-necked Stint	MI / MI	Coastal areas, including sheltered inlets, bays, lagoons and estuaries with intertidal mudflats; ephemeral or permanent shallow wetlands near the coast or inland, and sometimes flooded paddocks or damp grasslands (Higgins & Davies 1996).	N	Not Applicable. No habitat present	No	

Table A4 continued.

Family	Scientific Name	Vernacular	Status (WA) / EPBC Act	Habitat Description	Habitat Present (Y/N)	Likelihood of occurrence	Species Present	Comment
Scolopacidae	<i>Calidris tenuirostris</i>	Great Knot	CR / CR & MI	Intertidal mudflats and sandflats in sheltered coasts, including bays harbours and estuaries.	N	Not Applicable. No habitat present	No	
Cacatuidae	<i>Calyptorhynchus latirostris</i>	Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo	EN / EN	Eucalypt woodlands, especially those that contain salmon gum and wandoo, and in shrubland or kwongan heathland dominated by hakea, dryandra, banksia and grevillea species. It also occurs in remnant patches of native vegetation on land otherwise cleared for agriculture. It also forages in forests containing marri, jarrah or karri.	Y	HIGH	Yes	Observed flying over the survey area. Large flock >100 individuals heard and seen in surrounding remnant vegetation. Some minor feed evidence observed in south of the survey area. Suitable foraging habitat in veg types 2, 3 and 7.
Anatidae	<i>Cereopsis novaehollandiae</i>	Cape Barren Goose	VU / VU	It occurs on offshore islands and rocks, and at adjacent sites on the mainland. It inhabits grasslands and low fields of succulent herbs (comprised of <i>Carpobrotus</i> sp.), and occasionally occurs in open areas in taller and denser vegetation	N	Not Applicable. No habitat present	No	
Anatidae	<i>Cereopsis novaehollandiae</i> subsp. <i>Grisea</i>	Recherche Cape Barren Goose	VU / VU	It occurs on offshore islands and rocks, and at adjacent sites on the mainland. It inhabits grasslands and low fields of succulent herbs (comprised of <i>Carpobrotus</i> sp.), and occasionally occurs in open areas in taller and denser vegetation	N	Not Applicable. No habitat present	No	
Charadriidae	<i>Charadrius bicinctus</i>	Double-banded Plover	MI / MI	littoral, estuarine and fresh or saline terrestrial wetlands and also saltmarsh, grasslands and pasture. It occurs on muddy, sandy, shingled or sometimes rocky beaches, bays and inlets, harbours and margins of fresh or saline terrestrial wetlands such as lakes, lagoons and swamps, shallow estuaries and rivers. The species is sometimes associated with coastal lagoons, inland saltlakes and saltworks. It is also found on seagrass beds, especially <i>Zostera</i> , which, when exposed at low tide, remain heavily saturated or have numerous water-filled depressions. This species sometimes utilises kelp beds found on open grassy areas including short pasture, ploughed or newly cropped paddocks, swards, airstrips, and sports grounds such as golf courses or race-tracks near the coast and further inland	Y	MEDIUM	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Charadriidae	<i>Charadrius leschenaultii</i>	Greater Sand Plover	VU / VU & MI	Almost entirely coastal, inhabiting littoral and estuarine habitats. Mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons. Seldom occur at shallow freshwater wetlands.	N	Not Applicable. No habitat present	No	
Charadriidae	<i>Charadrius mongolus</i>	Lesser Sand Plover	EN / EN & MI	Inhabits large intertidal sandflats or mudflats in sheltered bays, harbours and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops.	N	Not Applicable. No habitat present	No	
Dasyuridae	<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	VU / VU	Woodland or forest. Logs must have a diameter > 30 cm and a hollow with 7–20 cm diameter and 1 m length (Dunlop and Morris 2012). Burrows are constructed beneath habitat features such as stumps, logs, trees or rock outcrops.	N	Not Applicable. No habitat present	No	
Diomedidae	<i>Diomedea antipodensis</i>	Antipodean Albatross	EN / VU & MI	Marine, pelagic and aerial species. Nests in open patchy vegetation, such as among tussock grassland or shrubs on ridges, slopes and plateaus	N	Not Applicable. No habitat present	No	
Diomedidae	<i>Diomedea dabbenena</i>	Tristan Albatross	CR/ EN & MI	Marine, pelagic seabird that sleeps and rests on ocean waters when not breeding.	N	Not Applicable. No habitat present	No	
Diomedidae	<i>Diomedea epomophora</i>	Southern Royal Albatross	VU / VU & MI	Marine, pelagic seabird that sleeps and rests on ocean waters when not breeding.	N	Not Applicable. No habitat present	No	
Diomedidae	<i>Diomedea exulans</i>	Wandering Albatross	VU / VU & MI	Marine, pelagic seabird that sleeps and rests on ocean waters when not breeding.	N	Not Applicable. No habitat present	No	
Diomedidae	<i>Diomedea sanfordi</i>	Northern Royal Albatross	EN / EN & MI	Marine, pelagic and aerial. Habitat includes subantarctic, subtropical, and occasionally Antarctic waters	N	Not Applicable. No habitat present	No	
Falconidae	<i>Falco hypoleucos</i>	Grey Falcon	VU / -	Usually in lightly timbered country, especially stony plains and lightly timbered acacia shrublands.	N	Not Applicable. No habitat present	No	

Table A4 continued.

Family	Scientific Name	Vernacular	Status (WA) / EPBC Act	Habitat Description	Habitat Present (Y/N)	Likelihood of occurrence	Species Present	Comment
Falconidae	<i>Falco peregrinus</i>	Peregrine Falcon	OS / -	It requires abundant prey and secure nest sites, and prefers coastal and inland cliffs or open woodlands near water.	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Gallinago megala</i>	Swinhoe's Snipe	MI / MI	Dense clumps of grass and rushes round the edges of fresh and brackish wetlands. This includes swamps, billabongs, river pools, small streams and sewage ponds. They are also found in drying claypans and inundated plains pitted with crab holes	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Gallinago stenura</i>	Pin-tailed Snipe	MI / MI	Occurs most often in or at the edges of shallow freshwater swamps, ponds and lakes with emergent, sparse to dense cover of grass/sedge or other vegetation.	N	Not Applicable. No habitat present	No	
Geotriidae	<i>Geotria australis</i>	Pouched Lamprey	P3 / -	Species is anadromous and requires estuaries and coastal waters connected to freshwater rivers and streams with slow flowing, fine sediment microhabitats where spawning and development of ammocoetes occurs.	N	Not Applicable. No habitat present	No	
Procellariidae	<i>Halobaena caerulea</i>	Blue Petrel	- / VU	Pelagic, occasionally over shallow waters.	N	Not Applicable. No habitat present	No	
Laridae	<i>Hydroprogne caspia</i>	Caspian Tern	MI / MI	Sheltered coastal embayments (harbours, lagoons, inlets, bays, estuaries and river deltas) and those with sandy or muddy margins are preferred. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs, rivers and creeks	Y	LOW	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Peramelidae	<i>Isoodon fusciventer</i>	Quenda, southwestern brown bandicoot	P4 / -	Scrubby, often swampy, vegetation with dense cover up to 1 m high, often feeding in adjacent forest and woodland that is burnt on a regular basis. Forest, woodlands, heath and coastal scrub, usually on sandy combination soils.	Y	HIGH	No	
Megapodiidae	<i>Leipoa ocellata</i>	Malleefowl	VU / VU	Arid and semi-arid areas dominated by mallee eucalypts on sandy soils. They are known to also occur in Mulga ( <i>Acacia aneura</i> ), Broombush ( <i>Melaleuca uncinata</i> ), Scrub Pine ( <i>Callitris verrucosa</i> ), Eucalyptus woodlands and coastal heathlands. Malleefowl require abundant leaf litter and a sandy substrate for the successful construction of nest mounds.	Y	LOW	No	Marginal habitat present. Mounds would be readily detected if present.
Scolopacidae	<i>Limicola falcinellus</i>	Broad-billed Sandpiper	MI / MI	Sheltered parts of the coast, favouring estuarine mudflats but also occasionally occur on saltmarshes, shallow freshwater lagoons, saltworks and sewage farms, and in areas with large soft intertidal mudflats, which may have shell or sandbanks nearby. Occasionally they occur on reefs or rocky platforms. They have also been recorded in creeks, swamps and lakes near the coast, particularly those with bare mudflats or sand exposed by receding water.	Y	LOW	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Scolopacidae	<i>Limosa lapponica</i>	Bar-tailed Godwit	MI (& VU or CR at subsp. level) / MI (& VU or CR at subsp. level)	Inhabit estuarine mudflats, beaches and mangroves.	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Limosa lapponica menzbieri</i>	Northern Siberian Bar-tailed Godwit	CR (& MI at sp. level) / CR (& MI at sp. level) /	Occurs mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It has also been recorded in coastal sewage farms and saltworks, saltlakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats.	Y	LOW	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Scolopacidae	<i>Limosa limosa</i>	Black-tailed Godwit	MI / MI	Sheltered bays, estuaries and lagoons with large intertidal mudflats or sandflats, or spits and banks of mud, sand or shell-grit; occasionally recorded on rocky coasts or coral islets. It is also found in shallow and sparsely vegetated, near-coastal, wetlands; such as saltmarsh, saltflats, river pools, swamps, lagoons and floodplains.	Y	LOW	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Procellariidae	<i>Macronectes giganteus</i>	Southern Giant-Petrel	MI / VU & MI	Marine; Antarctic to subtropical waters.	N	Not Applicable. No habitat present	No	

Table A4 continued.

Family	Scientific Name	Vernacular	Status (WA) / EPBC Act	Habitat Description	Habitat Present (Y/N)	Likelihood of occurrence	Species Present	Comment
Procellariidae	<i>Macronectes halli</i>	Northern Giant Petrel	MI / EN & MI	Marine, oceanic; mainly in subantarctic waters.	N	Not Applicable. No habitat present	No	
Motacillidae	<i>Motacilla cinerea</i>	Grey Wagtail	MI / MI	Species has a strong association with water (wetlands, water courses banks of lakes and marshes, artificial wetlands).	Y	LOW	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Macropodidae	<i>Notamacropus irma</i>	Western Brush Wallaby	P4 / -	Preferred habitat includes open forest or woodland, particularly open, seasonally-wet flats with low grasses and open scrubby thickets.	Y	MEDIUM	No	
Scolopacidae	<i>Numenius madagascariensis</i>	Eastern Curlew	CR / CR & MI	Intertidal mudflats and sandflats, often with beds of seagrass, on sheltered coasts, especially estuaries, mangrove swamps, bays, harbours and lagoons.	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Numenius minutus</i>	Little Curlew	MI / MI	Pools, river beds and water-filled tidal channels, and shallow water at edges of billabongs. The species prefers pools with bare dry mud (including mudbanks in shallow water) and they do not use pools if they are totally dry, flooded or heavily vegetated. Feed in short, dry grassland and sedgeland, including dry floodplains and blacksoil plains, which have scattered, shallow freshwater pools or areas seasonally inundated. Open woodlands with a grassy or burnt understorey, dry saltmarshes, coastal swamps, mudflats or sandflats of estuaries or beaches on sheltered coasts, mown lawns, gardens, recreational areas, ovals, racecourses and verges of roads and airstrips are also used	Y	LOW	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Laridae	<i>Onychoprion anaethetus</i>	Bridled Tern	MI / MI	Occupy tropical and subtropical seas, breeding on islands, including vegetated coral cays, rocky continental islands and rock stacks. Bridled Terns are only rarely found in inshore continental waters and along mainland coastlines, though the species is reported to breed on the mainland of far southern Western Australia (Higgins & Davies 1996; Johnstone & Storr 1998)	N	Not Applicable. No habitat present	No	
Anatidae	<i>Oxyura australis</i>	Blue-billed Duck	P4 / -	Prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation.	N	Not Applicable. No habitat present	No	
Procellariidae	<i>Pachyptila turtur subantarctica</i>	Fairy Prion (southern)	- / VU	Sub-antarctic seas and islands while breeding. Subtropical seas non breeding time; rarely inshore expect when sheltering from storms.	N	Not Applicable. No habitat present	No	
Accipitridae	<i>Pandion cristatus</i>	Osprey, Eastern Osprey	MI / MI	Littoral and coastal habitats and terrestrial wetlands and offshore islands. Requires extensive areas of open fresh, brackish or saline water for foraging	Y	HIGH	No	
Accipitridae	<i>Pandion haliaetus</i>	Osprey	MI / MI	Littoral and coastal habitats and terrestrial wetlands and offshore islands. Requires extensive areas of open fresh, brackish or saline water for foraging	Y	HIGH	No	
Dasyuridae	<i>Parantechinus apicalis</i>	Dibbler	EN / EN	Old-growth mallee heath. Prefer vegetation with a dense canopy greater than 1 m high which has been unburnt for at least 10 years or more.	Y	LOW	No	
Elapidae	<i>Parasuta spectabilis subsp. bushi</i>	spectacled hooded snake (Esperance), Mallee Black-headed Snake (Esperance area)	P1	Variety of temperate to semiarid vegetation associations growing on light to heavy, often stony soils, including coastal shell grit beaches, dry sclerophyll forest of mallee and/or other Eucalyptus woodlands, heathlands, shrublands including chenopod, often with Triodia- Brown dominated understorey, and rocky ranges, slopes and foothills	Y	LOW	No	
Psittacidae	<i>Pezoporus flaviventris</i>	Western Ground Parrot	CR / CR	Preferred habitat includes low coastal and near coastal heathlands, unburnt for at least five years.	N	Not Applicable. No habitat present	No	
Dasyuridae	<i>Phascogale calura</i>	Red-tailed Phascogale,	CD / VU	inhabits Wandoo (Eucalyptus wandoo) and Sheoak ( <i>Allocasuarina huegeliana</i> ) woodland associations, with populations being most dense in the latter vegetation type. They show a preference for long unburnt habitat with a continuous canopy, as well as tree hollows.	N	Not Applicable. No habitat present	No	

Table A4 continued.

Family	Scientific Name	Vernacular	Status (WA) / EPBC Act	Habitat Description	Habitat Present (Y/N)	Likelihood of occurrence	Species Present	Comment
Threskiornithidae	<i>Plegadis falcinellus</i>	Glossy Ibis	MI / MI	Fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation. The species is occasionally found in coastal locations such as estuaries, deltas, saltmarshes and coastal lagoons	Y	MEDIUM	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Charadriidae	<i>Pluvialis fulva</i>	Pacific Golden Plover	MI / MI	Coastal habitats, occasionally fresh, brackish or saline wetlands or claypans especially with muddy margins and often with submerged vegetation or short emergent grass. Other terrestrial habitats include short grass in paddocks, or ploughed or recently burnt areas.	Y	MEDIUM	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Charadriidae	<i>Pluvialis squatarola</i>	Grey Plover	MI / MI	Sheltered embayments, estuaries and lagoons with mudflats and sandflats; terrestrial wetlands such as near-coastal lakes and swamps, or salt-lakes (Marchant & Higgins 1993).	Y	MEDIUM	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Hydryphantidae	<i>Pseudohydrphantas doegi</i>	Doeg's Watermite	P2 / -	Pseudohydrphantas is a genus of water mites that are found in lentic (still fresh water) and lotic (moving fresh water).	N	Not Applicable. No habitat present	No	
Procellariidae	<i>Pterodroma mollis</i>	Soft-plumaged Petrel	- / VU	Is a marine, oceanic species.	N	Not Applicable. No habitat present	No	
Stercorariidae	<i>Stercorarius antarcticus</i>	Brown Skua	P4 / -	Marine, oceanic species	N	Not Applicable. No habitat present	No	
Stercorariidae	<i>Stercorarius antarcticus lonnbergi</i>	Brown Skua	P4 -	Marine, oceanic species	N	Not Applicable. No habitat present	No	
Laridae	<i>Sterna hirundo</i>	Common Tern	MI / MI	Marine, pelagic and coastal species, observed in near-coastal waters, both on ocean beaches, platforms and headlands and in sheltered waters, such as bays, harbours and estuaries with muddy, sandy or rocky shores	N	Not Applicable. No habitat present	No	
Laridae	<i>Sternula nereis nereis</i>	Australian Fairy Tern	VU / VU	Coastal areas and embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline.	N	Not Applicable. No habitat present	No	
Diomedeiidae	<i>Thalassarche carteri</i>	Indian Yellow-nosed Albatross	EN / VU & MI	Marine bird, located in subtropical and warmer subantarctic waters (Marchant & Higgins 1990).	N	Not Applicable. No habitat present	No	
Diomedeiidae	<i>Thalassarche cauta cauta</i>	Shy Albatross	VU / VU & MI	Marine species. Breeds on rock islands.	N	Not Applicable. No habitat present	No	
Diomedeiidae	<i>Thalassarche cauta steadi</i>	White-capped Albatross	VU / VU & MI	Shelf-waters around breeding islands and over adjacent rises. During the non-breeding season, birds have been observed over continental shelves around continents. The species occurs both inshore and offshore and enters harbours and bays. The species is scarce in pelagic waters. Birds gather to scavenge at commercial fishing grounds.	N	Not Applicable. No habitat present	No	
Diomedeiidae	<i>Thalassarche chlororhynchos</i>	Atlantic Yellow-nosed Albatross	VU / MI	Marine species. Builds nests built on tussock grass, on rocks and under trees.	N	Not Applicable. No habitat present	No	
Diomedeiidae	<i>Thalassarche impavida</i>	Campbell Albatross	VU / VU & MI	Marine sea bird inhabiting sub-Antarctic and subtropical waters from pelagic to shelf-break water habitats	N	Not Applicable. No habitat present	No	
Diomedeiidae	<i>Thalassarche melanophris</i>	Black-browed Albatross	EN / VU & MI	Marine species that inhabits Antarctic, subantarctic and temperate waters and occasionally enters the tropics.	N	Not Applicable. No habitat present	No	
Diomedeiidae	<i>Thalasseus bergii</i>	Crested Tern	MI / MI	Tropical and subtropical coastlines, foraging in the shallow waters of lagoons, coral reefs, estuaries, bays, harbours and inlets, along sandy, rocky, coral or muddy shores, on rocky outcrops in open sea, in mangrove swamps and also far out to sea on open water. It shows a preference for nesting on offshore islands, low-lying coral reefs, sandy or rocky coastal islets, coastal spits, lagoon mudflats, and artificial islets in salt pans and sewage works within 3 km of the coast	Y	LOW	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.



Table A4 continued.

Family	Scientific Name	Vernacular	Status (WA) / EPBC Act	Habitat Description	Habitat Present (Y/N)	Likelihood of occurrence	Species Present	Comment
Charadriidae	<i>Thinornis rubricollis</i>	Hooded Plover, Hooded Dotterel	P4 / -	Ocean sandy beaches and coastal lakes.	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Tringa brevipes</i>	Grey-tailed Tattler	MI & P4 / MI	Typical habitat is often found to be sheltered coasts with reefs and rock platforms or with intertidal mudflats.	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Tringa glareola</i>	Wood Sandpiper	MI / MI	Inland shallow freshwater wetlands, often with other waders. They prefer ponds and pools with emergent reeds and grass, surrounded by tall plants or dead trees and fallen timber.	N	Not Applicable. No habitat present	No	
Scolopacidae	<i>Tringa nebularia</i>	Common Greenshank, greenshank	MI / MI	Inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass.	Y	LOW	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Scolopacidae	<i>Tringa stagnatilis</i>	Marsh Sandpiper	MI / MI	Prefers permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, salt pans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks	Y	LOW	No	Potential habitat in adjacent salt lake vegetation, some marginal habitat present in low lying areas directly adjacent to salt lakes.
Bivalvia	<i>Westralunio carteri</i>	Carter's Freshwater Mussel	VU / -	Patchily distributed in sandy/muddy sediments of freshwater lakes, rivers and streams with greatest densities associated with woody debris and overhanging riparian vegetation near stream banks and edges of lakes/dams	N	Not Applicable. No habitat present	No	

## **Appendix C**

### Conservation Status Definitions and Condition Scale

**Table A5: Conservation code definitions for flora and fauna as listed as threatened or specially protected.**

Threatened, Extinct and Specially Protected fauna or flora are species which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such.

Threat Category	Definition
Threatened - Critically endangered species (CR)	Facing an extremely high risk of extinction in the wild in the immediate future
Threatened - Endangered species (EN)	Facing a very high risk of extinction in the wild in the near future
Threatened - Vulnerable species (VU)	Facing a high risk of extinction in the wild in the medium-term future
Threatened - Extinct (EX)	There is no reasonable doubt that the last member of the species has died
Threatened – Extinct in the wild (EW)	Species is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form
Specially protected species - Migratory species (MI)	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.
Specially protected species – Conservation Dependent (CD)	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened,
Specially protected species – Other specially protected species (OS)	Fauna otherwise in need of special protection to ensure their conservation

**Table A6: Conservation code definitions for flora and fauna as listed as Priority.**

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3.

Threat Category	Definition
Priority 1: Poorly-known species	Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation.
Priority 2: Poorly-known species	Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation.
Priority 3: Poorly-known species	Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat.
Priority 4: Rare, Near Threatened and other species in need of monitoring	(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands. (b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent. (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

**Table A7: Conservation code definitions for ecological communities listed as threatened (TEC).**

Threat Category	Definition
Presumed Totally Destroyed (PD)	An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.
Critically Endangered (CR)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.
Endangered (EN)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.
Vulnerable (VU)	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

**Table A8: Conservation code definitions for ecological communities listed as priority (PEC).**

Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community List under priorities 1, 2 and 3.

Threat Category	Definition
Priority One (P1)	Ecological communities that are known from very few occurrences with a very restricted distribution (generally $\leq 5$ occurrences or a total area of $\leq 100$ ha), and appear to be under immediate threat.
Priority Two (P2)	Communities that are known from few occurrences with a restricted distribution (generally $\leq 10$ occurrences or a total area of $\leq 200$ ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation.
Priority Three (P3)	(i)Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or: (ii)communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat (within approximately 10 years), or; (iii)communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, inappropriate fire regimes, clearing, hydrological change etc.
Priority Four (P4)	Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.
Priority Five (P5)	Conservation Dependent ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

**Table A9: Condition Rating Scale (adapted from Keighery 1994) outlined in EPA (2016a).**

Vegetation Condition Rating	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.

## **Appendix D**

### Species Lists and Relevé Data

Table A10: Flora Species List recorded within survey area.

Family	Species	Common Name	Cons Code	1 (Myr SL)	2 (Ban arm SL)	3 (Pro SL)	4 (Chen, Sam)	5 (Mel SL)	6 (Mel WL)	7 (Mal WL)
Aizoaceae	<i>Carpobrotus modestus</i>	Inland Pigface				X		X		
Aizoaceae	<i>Disphyma crassifolium</i>	Round leaved Pigface					X			
Anarthriaceae	<i>Anarthria gracilis</i>				X	X				
Anarthriaceae	<i>Anarthria laevis</i>							X		
Apiaceae	<i>Daucus glochidiatus</i>	Australian Carrot				X		X		
Apiaceae	<i>Platysace effusa</i>	Youlk, Native Carrot				X				
Apiaceae	<i>Xanthosia huegelii</i>				X					
Asparagaceae	<i>Laxmannia ramosa</i>	Branching Lilly				X				X
Asparagaceae	<i>Lomandra effusa</i>	Scented Mat Rush								X
Asparagaceae	<i>Thysanotus patersonii</i>	Twining Fringe Lilly								X
Asphodelaceae	<i>Bulbine Semibarbata</i>	Native Leek		X	X	X				
Asteraceae	<i>Onopordum acanthion</i>	Scotch Thistle	*					X		
Casuarinaceae	<i>Allocasuarina helmsii</i>				X	X				X
Casuarinaceae	<i>Allocasuarina humilis</i>	Dwarf Sheoak			X	X				
Casuarinaceae	<i>Allocasuarina thyoides</i>	Horned Sheoak								X
Chenopodiaceae	<i>Rhagodia preissii</i> subsp. <i>preissii</i>	Ruby Salt Bush						X		
Chenopodiaceae	<i>Salicornia</i> sp.	Samphire					X			
Chenopodiaceae	<i>Tecticornia</i> sp.	Samphire					X	X		
Convolvulaceae	<i>Wilsonia humilis</i>	Silky Wilsonia						X		
Cyperaceae	<i>Caustis dioica</i>	Puzzle Grass		X	X	X				
Cyperaceae	<i>Chorizandra enodis</i>	Black Bristlebrush			X	X				
Cyperaceae	<i>Ficinia nodosa</i>	Knotted Club Rush						X	X	
Cyperaceae	<i>Gahnia ancistrophylla</i>	Hooked Leaf Saw Sedge								X
Cyperaceae	<i>Gahnia trifida</i>	Coastal Saw Sedge						X		

Table A10 Continued

Family	Species	Common Name	Cons Code	1 (Myr SL)	2 (Ban arm SL)	3 (Pro SL)	4 (Chen, Sam)	5 (Mel SL)	6 (Mel WL)	7 (Mal WL)
Cyperaceae	<i>Lepidosperma carphoides</i>	Black Rapier Sedge		X	X	X				
Cyperaceae	<i>Lepidosperma gracile</i>	Slender Sword Sedge			X	X				X
Cyperaceae	<i>Lepidosperma squamata</i>			X	X	X		X	X	
Dasypogonaceae	<i>Calectasia gracilis</i>									X
Dilleniaceae	<i>Hibbertia acerosa</i>	Needle Leaved Guinea Flower		X	X					X
Dilleniaceae	<i>Hibbertia gracilipes</i>	Australian Butter Cup			X	X				X
Dilleniaceae	<i>Hibbertia racemosa</i>	Stalked Guinea Flower		X		X				
Dilleniaceae	<i>Hibbertia ulicifolia</i>					X				
Droseraceae	<i>Drosera glanduligera</i>	Pimpernel Sundew						X		X
Droseraceae	<i>Drosera</i> sp.							X		X
<b>Ericaceae</b>	<b><i>Brachyloma mogin</i></b>		<b>P3 – KW150, Acc 9059</b>			<b>X</b>		<b>X</b>		
<b>Ericaceae</b>	<b><i>Conostephium marchantiorum</i></b>		<b>P3 - known population</b>		<b>X</b>	<b>X</b>				<b>X</b>
Ericaceae	<i>Dielsiodoxa oligarrhenoides</i>							X		
Ericaceae	<i>Leucopogon assimilis</i>				X					X
Ericaceae	<i>Leucopogon carinatus</i>			X	X	X		X		
Ericaceae	<i>Leucopogon</i> sp. Coujinup (M.A. Burgman 1085)					X				X
Ericaceae	<i>Lysinema ciliatum</i>	Curry Plant		X	X	X				



Table A10 Continued.

Family	Species	Common Name	Cons Code	1 (Myr SL)	2 (Ban arm SL)	3 (Pro SL)	4 (Chen, Sam)	5 (Mel SL)	6 (Mel WL)	7 (Mal WL)
<b>Euphorbiaceae</b>	<b><i>Stachystemon vinosus</i></b>		<b>P4 – KW149, Acc 9059</b>							<b>X</b>
Fabaceae	<i>Acacia aemula</i>				X	X				
Fabaceae	<i>Acacia chrysella</i>							X		
Fabaceae	<i>Acacia chrysocephala</i>									X
Fabaceae	<i>Acacia cyclops</i>	Coastal Wattle, Red Eyed-Wattle		X	X			X		X
Fabaceae	<i>Acacia flavipila</i> var. <i>flavipila</i>									X
Fabaceae	<i>Acacia gonophylla</i>			X		X				
Fabaceae	<i>Acacia myrtifolia</i>			X	X	X				
Fabaceae	<i>Acacia patagiata</i>			X				X		
Fabaceae	<i>Acacia pulchella</i>	Prickly Moses								X
Fabaceae	<i>Acacia saligna</i>	Orange Wattle		X		X				
Fabaceae	<i>Chorizema aciculare</i>				X	X		X		X
Fabaceae	<i>Daviesia apiculata</i>				X	X				
Fabaceae	<i>Daviesia lancifolia</i>									X
Fabaceae	<i>Daviesia teretifolia</i>			X	X	X				X
Fabaceae	<i>Gastrolobium spinosum</i>	Prickly Poison				X				
Fabaceae	<i>Jacksonia venosa</i>			X	X	X				
Frankeniaceae	<i>Frankenia tetrapetala</i>	Four Petaled Frankenia					X	X		
Goodeniaceae	<i>Coopermookia strophiolata</i>				X	X				X
Goodeniaceae	<i>Dampiera lavandulacea</i>				X	X				X
Goodeniaceae	<i>Goodenia incana</i>	Hoary Goodenia				X				
Goodeniaceae	<i>Goodenia scapigera</i>				X	X				
Haemodoraceae	<i>Conostylis breviscapa</i>				X					

Table A10 Continued.

Family	Species	Common Name	Cons Code	1 (Myr SL)	2 (Ban arm SL)	3 (Pro SL)	4 (Chen, Sam)	5 (Mel SL)	6 (Mel WL)	7 (Mal WL)
Haemodoraceae	<i>Conostylis vaginata</i>			X		X		X		
Haloragaceae	<i>Myriophyllum tillaeoides</i>	Water Milfoil					X			
Hemerocallidaceae	<i>Dianella brevicaulis</i>	Blueberry Flax Lilly				X	X	X		
Iridaceae	<i>Patersonia occidentalis</i>	Purple Flag				X		X		
Lauraceae	<i>Cassytha</i> sp.			X		X			X	X
Malvaceae	<i>Guichenotia indutum</i>			X	X	X				X
Myrtaceae	<i>Beaufortia empetrifolia</i>	South Coast Beaufortia			X					
Myrtaceae	<i>Beaufortia micrantha</i>	Little Bottlebrush		X	X	X				
Myrtaceae	<i>Beaufortia schaueri</i>	Pink Beaufortia			X					X
Myrtaceae	<i>Calothamnus gracilis</i>	One sided Bottlebrush			X	X				
Myrtaceae	<i>Chamelaucium ciliatum</i>				X			X	X	X
Myrtaceae	<i>Conothamnus aureus</i>				X	X				
Myrtaceae	<i>Cyathostemon ambiguus</i>			X		X		X	X	X
<b>Myrtaceae</b>	<b><i>Darwinia</i> sp. Gibson (R.D. Royce 3569)</b>		<b>P1 - known population</b>					<b>X</b>		
Myrtaceae	<i>Darwinia vestita</i>	Pom-pom Darwinia		X	X					
Myrtaceae	<i>Eucalyptus leptocalyx</i>	Hopetoun Mallee			X	X				
Myrtaceae	<i>Eucalyptus pleurocarpa</i>	Tallerack			X	X				
Myrtaceae	<i>Eucalyptus uncinata</i>	Hook Leaved Mallee								X
<b>Myrtaceae</b>	<b><i>Kunzea salina</i></b>		<b>P3 – KW148, Acc 9059</b>					<b>X</b>		
Myrtaceae	<i>Leptospermum erubescens</i>	Roadside Tea Tree		X		X				

Table A10 Continued.

Family	Species	Common Name	Cons Code	1 (Myr SL)	2 (Ban arm SL)	3 (Pro SL)	4 (Chen, Sam)	5 (Mel SL)	6 (Mel WL)	7 (Mal WL)
Myrtaceae	<i>Leptospermum spinescens</i>					X				
Myrtaceae	<i>Melaleuca brevifolia</i>						X	X		
Myrtaceae	<i>Melaleuca calycina</i>								X	X
Myrtaceae	<i>Melaleuca cuticularis</i>	Saltwater Paperbark						X		
Myrtaceae	<i>Melaleuca pulchella</i>	Crab Claw Flower						X		X
Myrtaceae	<i>Melaleuca rigidifolia</i>					X				X
Myrtaceae	<i>Melaleuca scabra</i>	Rough Honeymyrtle			X	X				
Myrtaceae	<i>Melaleuca societatis</i>	Soccer Ball Melaleuca			X	X				X
Myrtaceae	<i>Melaleuca striata</i>					X				
Myrtaceae	<i>Melaleuca tuberculata</i>					X		X		X
Myrtaceae	<i>Micromyrtus elobata</i> subsp. <i>elobata</i>			X	X	X				X
Myrtaceae	<i>Micromyrtus imbricata</i>									X
Myrtaceae	<i>Phymatocarpus maxwellii</i>									X
Myrtaceae	<i>Taxandria spathulata</i>				X	X				
Myrtaceae	<i>Tetrapora preissiana</i>			X	X					
Myrtaceae	<i>Verticordia vicinella</i>	Feather Flower			X					
Orchidaceae	<i>Pterostylis sanguinea</i>	Dark Banded Greenhood						X		
Orchidaceae	<i>Pterostylis serrulata</i>	Hairy Stemmed Snail				X				X
Orchidaceae	<i>Pterostylis vittata</i>	Green Banded Greenhood			X	X		X		X
Orchidaceae	sp.					X				
Orchidaceae	sp.					X				X

Table A10 Continued.

Family	Species	Common Name	Cons Code	1 (Myr SL)	2 (Ban arm SL)	3 (Pro SL)	4 (Chen, Sam)	5 (Mel SL)	6 (Mel WL)	7 (Mal WL)
Orchidaceae	sp.									X
Pittosporaceae	<i>Billardiera fusiformis</i>	Australian Blue bell			X					
Poaceae	<i>Austrostipa juncifolia</i>						X	X		
Poaceae	<i>Briza maxima</i>	Blowfly Grass	*					X		
Poaceae	<i>Ehrharta longiflora</i>	Annual Veldt Grass	*					X		
Poaceae	<i>Eragrostis curvula</i>	African lovegrass	*					X		
Poaceae	<i>Neurachne alopecuroidea</i>	Foxtail Mulga Grass			X	X			X	X
Proteaceae	<i>Banksia armata</i>	Prickly Dryandra			X	X				
Proteaceae	<i>Banksia nivea</i>	Honeypot Dryandra								X
Proteaceae	<i>Banksia obtusa</i>	Shining Honey Pot				X				
Proteaceae	<i>Banksia pulchella</i>	Teasel Banksia			X					
Proteaceae	<i>Banksia repens</i>				X	X				
Proteaceae	<i>Grevillea nudiflora</i>					X				
Proteaceae	<i>Grevillea pauciflora</i>	Few Flowered Grevillea		X	X	X			X	X
Proteaceae	<i>Hakea cinerea</i>	Ashy Hakea			X			X		X
Proteaceae	<i>Hakea corymbosa</i>	Cauliflower Hakea			X	X				
Proteaceae	<i>Hakea cygnus</i>	Swan Hakea							X	X
Proteaceae	<i>Hakea lissocarpa</i>	Honey Bush			X	X		X		X
Proteaceae	<i>Hakea prostrata</i>	Harsh Hakea			X	X				
Proteaceae	<i>Hakea trifurcata</i>	Two Leaf Hakea			X	X				
Proteaceae	<i>Isopogon alpicornis</i>	Elkhorn Coneflower	P3					X		X
Proteaceae	<i>Isopogon polycephalus</i>	Clustered Coneflower			X	X				

Table A10 Continued.

Family	Species	Common Name	Cons Code	1 (Myr SL)	2 (Ban arm SL)	3 (Pro SL)	4 (Chen, Sam)	5 (Mel SL)	6 (Mel WL)	7 (Mal WL)
Proteaceae	<i>Isopogon</i> sp. Fitzgerald River (D.B. Foreman 813)									X
Proteaceae	<i>Lambertia inermis</i> subsp. <i>Inermis</i>	Chiddick, Native Honeysuckle			X					
<b>Proteaceae</b>	<b><i>Personia scabra</i></b>		<b>P3 – KW151, Acc 9059</b>		<b>X</b>	<b>X</b>				<b>X</b>
Proteaceae	<i>Petrophile fastigiata</i>			X	X	X				
Proteaceae	<i>Petrophile squamata</i> subsp. Northern (J. Monks 40)					X				
Proteaceae	<i>Synaphea oligantha</i>			X	X	X				
Proteaceae	<i>Synaphea polymorpha</i>			X		X				
Restionaceae	<i>Desmocladius</i> sp.					X				X
Restionaceae	<i>Lepidobolus chaetocephalus</i>	Bristle headed Chaff Rush			X	X				
Restionaceae	<i>Lepidobolus</i> sp.									X
Restionaceae	<i>Loxocarya striata</i>							X		X
Rhamnaceae	<i>Cryptandra myriantha</i>			X	X	X				
Rhamnaceae	<i>Cryptandra pungens</i>			X		X				
Rhamnaceae	<i>Spyridium mucronatum</i> subsp. <i>mucronatum</i>					X				
Rhamnaceae	<i>Stenanthemum notiale</i>			X	X	X				
Rubiaceae	<i>Opercularia vaginata</i>	Dogweed			X					X

Table A10 Continued.

Family	Species	Common Name	Cons Code	1 (Myr SL)	2 (Ban arm SL)	3 (Pro SL)	4 (Chen, Sam)	5 (Mel SL)	6 (Mel WL)	7 (Mal WL)
Rutaceae	<i>Cyanothamnus ramosus</i> subsp. <i>anethifolius</i>				X	X				
Scrophulariaceae	<b><i>Eremophila</i> sp. 1 – Potential <i>E. glabra</i> subsp. <i>Scaddan</i> (C. Turley s.n. 10/11/2005)</b>		Potential T – Cr En							
Thymelaeaceae	<i>Pimelea cracens</i>							X		

**Table A11: Fauna species recorded within survey area.**

Family	Taxon Name	Common Name	Cons Status WA/ EPBC
Acanthizidae	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	
Anatidae	<i>Anas superciliosa</i>	Pacific Black Duck	
Meliphagidae	<i>Anthochaera carunculata</i>	Red Wattlebird	
Accipitridae	<i>Aquila audax</i>	Wedge-tailed Eagle	
Psittacidae	<i>Calyptorhynchus latirostris</i>	Carnaby's Cockatoo	EN / EN
Corvidae	<i>Corvus coronoides</i>	Australian Raven	
Dicruridae	<i>Grallina cyanoleuca</i>	Magpie-lark	
Cracticidae	<i>Cracticus tibicen</i>	Magpie	
Hirundinidae	<i>Hirundo neoxena</i>	Welcome Swallow	
Macropodidae	<i>Macropus fuliginosus</i>	Western Grey Kangaroo	
Meliphagidae	<i>Manorina flavigula</i>	Yellow-throated Miner	
Psittacidae	<i>Neophema elegans</i>	Elegant Parrot	
Leporidae	<i>Oryctolagus cuniculus</i> *	Rabbit	
Pardalotidae	<i>Pardalotus punctatus</i>	Spotted Pardalote	
Psittacidae	<i>Platycercus spurius</i>	Red-capped Parrot	
Canidae	<i>Vulpes vulpes</i> *	European Red Fox	I

NB: \* denotes an introduced species

<b>Relevé</b>	R1	<b>Veg Code</b>	Veg Type 1: Myrtaceous Shrubland (Mel SL)	<b>Date Surveyed</b>	28/06/2021
<b>Location</b>	Line 51 (344.9 – 346.485), Fleming Grove Road, Gibson Esperance				
<b>GPS (Lat, Long)</b>	33°34'8"S, 121°47'16"E				
<b>Landform and Slope</b>	Flat slope on sandplain				
<b>Soils</b>	Light grey sand				
<b>Hydrology</b>	Good drainage				
<b>Vegetation description</b>	(NVIS): U +/- <i>Acacia cyclops</i> , <i>Acacia saligna</i> \shrub\5r; M+ ^^ <i>Guichenotia indutum</i> , <i>Cyathostemon ambiguus</i> , <i>Grevillea oligantha</i> , +/- <i>Micromyrtus imbricata</i> , <i>Lysinema ciliatum</i> , <i>Daviesia teretifolia</i> \mid shrub\^3,2\c; G ^^ <i>Jacksonia venosa</i> , <i>Lepidospermoides carphoides</i> , <i>Lepidosperma squamatum</i> \^sedge, low shrub\1r  (Muir): <i>Acacia cyclops</i> and <i>Acacia saligna</i> sparse tall shrubland, over <i>Cyathostemon ambiguus</i> , <i>Grevillea oligantha</i> and <i>Daviesia teretifolia</i> mid-shrubland, over <i>Guichenotia indutum</i> , <i>Micromyrtus imbricata</i> and <i>Lysinema ciliatum</i> low-shrubland, over <i>Lepidosperma carphoides</i> and <i>Lepidosperma squamatum</i> sparse low sedgeland.				
<b>Condition</b>	Very Good				
<b>Comments</b>	-				

Life Form	Dominant Species	Other Species	Cover (%)
Trees >30m			
Trees 10-30m			
Shrub >2m			
Shrub 1-2m	<i>Acacia cyclops</i>	<i>Acacia saligna</i>	V 2-10%
Shrub 0.5-1m	<i>Guichenotia indutum</i> , <i>Cyathostemon ambiguus</i> , <i>Grevillea oligantha</i>	<i>Micromyrtus imbricata</i> , <i>Lysinema ciliatum</i> , <i>Daviesia teretifolia</i>	M 30-70%
Shrub <0.5m	<i>Jacksonia venosa</i>		E <5%
Sedge	<i>Lepidosperma carphoides</i> , <i>Lepidosperma squamatum</i>		V 2-10%
Herb			
Grass			





<b>Relevé</b>	R2	<b>Veg Code</b>	Veg Type 2: <i>Banksia armata</i> Shrubland (Ban arm SL)	<b>Date Surveyed</b>	28/06/2021
<b>Location</b>	Line 51 (344.9 – 346.485), Fleming Grove Road, Gibson Esperance				
<b>GPS (Lat, Long)</b>	-33°34'8"S, 121°47'15"E				
<b>Landform and Slope</b>	Flat slope on sandplain				
<b>Soils</b>	Light grey sand				
<b>Hydrology</b>	Good drainage				
<b>Vegetation description</b>	<p>(NVIS): U+ <sup>^^</sup> <i>Eucalyptus pleurocarpa</i>, <i>Eucalyptus leptocalyx</i> \Mallee\6r; M+ <sup>^^</sup> <i>Hakea corymbosa</i>, <i>Banksia armata</i>, <i>Allocasuarina humilis</i> \shrub\3c; G <sup>^</sup> <i>Caustis dioica</i>, +/- <i>Lepidosperma carphoides</i>, <i>Neurachne alopecuroides</i> \^sedge, grass\2r</p> <p>(Muir): <i>Eucalyptus pleurocarpa</i> and <i>Eucalyptus leptocalyx</i> Open Mallee mid and low woodland, over <i>Acacia cyclops</i> and <i>Hakea corymbosa</i> sparse tall shrubland, over <i>Banksia armata</i>, <i>Allocasuarina humilis</i>, <i>Beaufortia empetrifolia</i>, <i>Calothamnus gracilis</i> and <i>Daviesia teretifolia</i> mid shrubland, over <i>Hibbertia gracilipes</i> sparse low shrubland, over <i>Lepidosperma carphoides</i>, <i>Caustis dioica</i>, <i>Chorizandra enodis</i> open tall sedgeland, over <i>Dampiera lavandulacea</i> sparse forbland, over <i>Neurachne alopecuroidea</i> sparse grassland.</p>				
<b>Condition</b>	Excellent				
<b>Comments</b>	-				

Life Form	Dominant Species	Other Species	Cover (%)
Trees >30m			
Trees (Mallee) 10-30m	<i>Eucalyptus pleurocarpa</i> , <i>Eucalyptus leptocalyx</i>		V 2-10%
Shrub >2m	<i>Hakea corymbosa</i>	<i>Acacia cyclops</i>	V 2-10%
Shrub 1-2m	<i>Banksia armata</i> , <i>Allocasuarina humilis</i>		M 30-70%
Shrub 0.5-1m	<i>Beaufortia empetrifolia</i>	<i>Calothamnus gracilis</i> , <i>Daviesia teretifolia</i>	S 10-30%
Shrub <0.5m	<i>Hibbertia gracilipes</i>		E <5%
Sedge	<i>Lepidosperma carphoides</i> , <i>Caustis dioica</i>	<i>Chorizandra enodis</i>	S 10-30%
Herb	<i>Dampiera lavandulacea</i>		E <5%
Grass	<i>Neurachne alopecuroidea</i>		E <5%





<b>Relevé</b>	R3	<b>Veg Code</b>	Veg Type 3: Scattered Mallee and mixed Proteaceous Shrubland (Pro SL)	<b>Date Surveyed</b>	28/06/2021
<b>Location</b>	Line 51 (344.9 – 346.485), Fleming Grove Road, Gibson Esperance				
<b>GPS (Lat, Long)</b>	33°34'2"S, 121°47'13"E				
<b>Landform and Slope</b>	Flat slope on sandplain				
<b>Soils</b>	Light grey sand				
<b>Hydrology</b>	Good drainage				
<b>Vegetation description</b>	<p>(NVIS): U <sup>^</sup> <i>Eucalyptus pleurocarpa</i>, <i>Eucalyptus leptocalyx</i> Mallee; M+ <sup>^</sup> <i>Hakea lissocarpha</i>, <i>Isopogon polycephalus</i>, <i>Grevillea oligantha</i> shrub; G <sup>^</sup> <i>Banksia blechnifolia</i>, <i>Hibbertia gracilipes</i>, <i>Caustis dioica</i> low shrub, sedge</p> <p>(Muirs): <i>Eucalyptus pleurocarpa</i> and <i>Eucalyptus leptocalyx</i> Open Mallee Mid Woodland, over <i>Acacia cyclops</i> isolated tall shrubs, <i>Hakea lissocarpha</i>, <i>Isopogon polycephalus</i>, <i>Grevillea oligantha</i>, <i>Daviesia apiculata</i> and <i>Calothamnus gracilis</i> closed mid shrubland, over <i>Banksia blechnifolia</i> and <i>Hibbertia gracilipes</i> open low shrubland, over <i>Lepidosperma carphoides</i>, <i>Caustis dioica</i> and <i>Lepidobolus chaetocephalus</i> open tall shrubland, over <i>Dampiera lavandulacea</i> sparse forbland.</p>				
<b>Condition</b>	Excellent				
<b>Comments</b>	-				

Life Form	Dominant Species	Other Species	Cover (%)
Trees >30m			
Trees (Mallee) 10-30m	<i>Eucalyptus leptocalyx</i> , <i>Eucalyptus pleurocarpa</i>		V 2-10%
Shrub >2m		<i>Acacia cyclops</i>	E <5%
Shrub 1-2m	<i>Hakea lissocarpha</i> , <i>Isopogon polycephalus</i> , <i>Grevillea oligantha</i> , <i>Daviesia apiculata</i> , <i>Calothamnus gracilis</i>	<i>Melaleuca scabra</i> , <i>Allocasuarina humilis</i> , <i>Cyathostemon ambiguus</i>	D > 70%
Shrub 0.5-1m			
Shrub <0.5m	<i>Banksia blechnifolia</i> , <i>Hibbertia gracilipes</i>		S 10-30%
Sedge	<i>Lepidosperma carphoides</i> , <i>Caustis dioica</i> , <i>Lepidobolus chaetocephalus</i>		S 10-30%
Herb	<i>Dampiera lavandulacea</i>		E <5%
Grass			



<b>Relevé</b>	R4	<b>Veg Code</b>	Veg Type 4: Low Chenopod and Samphire Salt lake (Chen, Sam)	<b>Date Surveyed</b>	28/06/2021
<b>Location</b>	Line 51 (344.9 – 346.485), Fleming Grove Road, Gibson Esperance				
<b>GPS (Lat, Long)</b>	33°33'42"S, 121°47'9"E				
<b>Landform and Slope</b>	Flat Plain at base of drainage depression				
<b>Soils</b>	Light grey clay-sand				
<b>Hydrology</b>	Poor drainage – salt lake drainage depression				
<b>Vegetation description</b>	(NVIS): U +/- <i>Melaleuca brevifolia</i> shrub; <i>Dianella brevicaulis</i> , <i>Austrostipa juncifolia</i> dwarf shrub, grass (Muir): <i>Melaleuca brevifolia</i> sparse mid shrubland, over <i>Dianella brevicaulis</i> sparse low shrubland, over <i>Austrostipa juncifolia</i> sparse tall grassland, over <i>Disphyma crassifolium</i> , <i>Salicornia</i> sp., <i>Tecticornia</i> sp., <i>Frankenia tetrapetala</i> forb, over <i>Myriophyllum tillaeoides</i> sparse aquatics.				
<b>Condition</b>	Good				
<b>Comments</b>	-				
<b>Life Form</b>	<b>Dominant Species</b>	<b>Other Species</b>	<b>Cover (%)</b>		
Trees >30m					
Trees (Mallee) 10-30m					
Shrub >2m					
Shrub 1-2m					
Shrub 0.5-1m		<i>Melaleuca brevifolia</i>	V 2-10%		
Shrub <0.5m					
Sedge		<i>Dianella brevicaulis</i>	V 2-10%		
Herb	<i>Disphyma crassifolium</i> , <i>Salicornia</i> sp., <i>Tecticornia</i> sp., <i>Frankenia tetrapetala</i>		<i>Myriophyllum tillaeoides</i>		
Grass		<i>Austrostipa juncifolia</i>	M 30-70%		
<p> <span style="font-size: small;">E 90 120 150 180 210 240 SW</span>  <span style="font-size: x-small;">154°SE (T) 33°33'42"S, 121°47'9"E ±13ft ▲ 517ft</span>  <span style="float: right; font-size: x-small;">28 Jun 2021 09:25:42</span> </p>					


<b>Relevé</b>	R5	<b>Veg Code</b>	Veg Type 6: Paperbark Melaleuca woodland (Mel WL)	<b>Date Surveyed</b>	28/06/2021
<b>Location</b>	Line 51 (344.9 – 346.485), Fleming Grove Road, Gibson Esperance				
<b>GPS (Lat, Long)</b>	33°33'28"S, 121°47'0"E				
<b>Landform and Slope</b>	Flat				
<b>Soils</b>	Light grey clay-sand				
<b>Hydrology</b>	Poor drainage – drainage depression				
<b>Vegetation description</b>	(NVIS): U+ ^Melaleuca calycina\shrub\4c; M ^^ Grevillea oligantha, Cyathostemon ambiguus, +/- Chamelaucium ciliatum\shrub\^3,1\i; G+ ^^ Ficinia nodosa, Loxocarya striata, Lepidosperma carphoides\sedge, rush\1c  (Muir): Melaleuca calycina tall shrubland, over Grevillea oligantha and Cyathostemon ambiguus open mid shrubland, over Chamelaucium ciliatum open low shrubland, over Ficinia nodosa and Lepidosperma carphoides tall sedgeland, over Loxocarya striata tall rushland.				
<b>Condition</b>	Good				
<b>Comments</b>	-				
<b>Life Form</b>	<b>Dominant Species</b>	<b>Other Species</b>		<b>Cover (%)</b>	
Trees >30m					
Trees (Mallee) 10-30m					
Shrub >2m	<i>Melaleuca calycina</i>			M 30-70%	
Shrub 1-2m	<i>Grevillea oligantha, Cyathostemon ambiguus</i>	<i>Chamelaucium ciliatum</i>		S 10-30%	
Shrub 0.5-1m					
Shrub <0.5m					
Sedge	<i>Ficinia nodosa, Loxocarya striata, Lepidosperma carphoides</i>			M 30-70%	
Herb					
Grass					
					

<b>Relevé</b>	R6	<b>Veg Code</b>	Veg Type 7: Open Mallee Woodland (Mal WL)	<b>Date Surveyed</b>	28/06/2021
<b>Location</b>	Line 51 (344.9 – 346.485), Fleming Grove Road, Gibson Esperance				
<b>GPS (Lat, Long)</b>	33°33'27"S, 121°47'0"E				
<b>Landform and Slope</b>	Flat Plain				
<b>Soils</b>	Light grey clay-sand				
<b>Hydrology</b>	Good drainage				
<b>Vegetation description</b>	<p>(NVIS): U <i>Eucalyptus uncinata</i>, <i>Hakea cinerea</i>, <i>Hakea cygna</i>, <i>Melaleuca pulchella</i> Mallee, Shrub; M+ <i>Allocasuarina humilis</i>, <i>Acacia pulchella</i>, <i>Grevillea pauciflora</i>, <i>Cyathostemon ambiguus</i> shrub; G <i>Cooperookia strophiolata</i>, <i>Gahnia ancistrophylla</i>, <i>Loxocarya striata</i> dwarf shrub, sedge, rush</p> <p>(Muir): <i>Eucalyptus uncinata</i> open mallee woodland, over <i>Hakea cinerea</i>, <i>Hakea cygna</i> and <i>Melaleuca pulchella</i> open tall shrubland, over <i>Allocasuarina humilis</i>, <i>Acacia pulchella</i>, <i>Grevillea pauciflora</i> and <i>Cyathostemon ambiguus</i> mid shrubland, over <i>Cooperookia strophiolata</i> isolated low shrubland, over <i>Gahnia ancistrophylla</i> tall sedgeland, over <i>Loxocarya striata</i> tall rushland, over <i>Cassytha</i> sp. isolated clumps of vines over <i>Drosera glanduligera</i> and <i>Orchid</i> sp. isolated forbs.</p>				
<b>Condition</b>	Excellent				
<b>Comments</b>	-				
<b>Life Form</b>	<b>Dominant Species</b>	<b>Other Species</b>	<b>Cover (%)</b>		
Trees >30m					
Trees (Mallee) 10-30m	<i>Eucalyptus uncinata</i>		S 10-30%		
Shrub >2m	<i>Hakea cinerea</i> , <i>Hakea cygna</i> , <i>Melaleuca pulchella</i>	<i>Melaleuca calycina</i>	S 10-30%		
Shrub 1-2m	<i>Allocasuarina humilis</i> , <i>Acacia pulchella</i> , <i>Grevillea pauciflora</i> , <i>Cyathostemon ambiguus</i> , <i>Acacia patagiata</i>	<i>Leucopogon assimilis</i> , <i>Isopogon alpicornis</i>	M 30-70%		
Shrub 0.5-1m			S 10-30%		
Shrub <0.5m	<i>Cooperookia strophiolata</i>		S 10-30%		
Sedge	<i>Gahnia ancistrophylla</i> , <i>Loxocarya striata</i>		M 30-70%		
Herb		<i>Drosera glanduligera</i> , <i>Cassytha</i> sp., <i>Orchid</i> sp.	E <5%		
Grass					
					

<b>Relevé</b>	R7	<b>Veg Code</b>	Veg Type 5: Closed Melaleuca shrubland (Mel SL)	<b>Date Surveyed</b>	28/06/2021
<b>Location</b>	Line 51 (344.9 – 346.485), Fleming Grove Road, Gibson Esperance				
<b>GPS (Lat, Long)</b>	33°33'8"S, 121°46'53"E				
<b>Landform and Slope</b>	Gently sloping				
<b>Soils</b>	Light grey clay-sand				
<b>Hydrology</b>	Poor drainage – on salt lake drainage depression buffer				
<b>Vegetation description</b>	(NVIS): U+ ^Melaleuca brevifolia, Melaleuca calycina, +/- Hakea cinerea\shrub\4d; M ^Cyathostemon ambiguus, +/-Acacia patagiata, Darwinia vestita\shrub\3c; G ^Loxocarya striata, Coopernookia strophiolata, +/-Drosera glanduligera^^rush, forb\1i  (Muir): Melaleuca brevifolia, Melaleuca calycina, Hakea cinerea and Melaleuca cuticularis closed tall shrubland, over Cyathostemon ambiguus, Acacia patagiata, Darwinia vestita, Grevillea oligantha mid shrubland, over Loxocarya striata tall rushland, over Coopernookia strophiolata, Drosera glanduligera and Drosera macrantha sparse forbland.				
<b>Condition</b>	Good				
<b>Comments</b>	-				

Life Form	Dominant Species	Other Species	Cover (%)
Trees >30m			
Trees (Mallee) 10-30m			
Shrub >2m	Melaleuca calycina, Melaleuca brevifolia	Hakea cinerea, Melaleuca cuticularis	D > 70%
Shrub 1-2m			
Shrub 0.5-1m	Cyathostemon ambiguus	Acacia patagiata, Darwinia vestita, Grevillea oligantha	M 30-70%
Shrub <0.5m			E <5%
Sedge	Loxocarya striata		M 30-70%
Herb	Coopernookia strophiolata	Drosera glanduligera, Drosera macrantha	E <5%
Grass			



<b>Relevé</b>	R8	<b>Veg Code</b>	Veg Type 3: Scattered Mallee and mixed Proteaceae Shrubland (Pro SL)	<b>Date Surveyed</b>	28/06/2021
<b>Location</b>	Line 51 (344.9 – 346.485), Fleming Grove Road, Gibson Esperance				
<b>GPS (Lat, Long)</b>	33°34'1"S, 121°47'14"E				
<b>Landform and Slope</b>	Flat Sandplain				
<b>Soils</b>	Light grey sand				
<b>Hydrology</b>	Good drainage – deep sands				
<b>Vegetation description</b>	<p>(NVIS): U <sup>^</sup><i>Eucalyptus pleurocarpa</i>, <i>Eucalyptus leptocalyx</i> Mallee; M+ <sup>^</sup><i>Hakea lissocarpha</i>, <i>Isopogon polycephalus</i>, <i>Grevillea oligantha</i> shrub; G <sup>^</sup><i>Banksia blechnifolia</i>, <i>Hibbertia gracilipes</i>, <i>Caustis dioica</i> low shrub, sedge</p> <p>(Muirs): <i>Eucalyptus pleurocarpa</i> and <i>Eucalyptus leptocalyx</i> Open Mallee Mid Woodland, over <i>Acacia cyclops</i> isolated tall shrubs, <i>Hakea lissocarpha</i>, <i>Isopogon polycephalus</i>, <i>Grevillea oligantha</i>, <i>Daviesia apiculata</i> and <i>Calothamnus gracilis</i> closed mid shrubland, over <i>Banksia blechnifolia</i> and <i>Hibbertia gracilipes</i> open low shrubland, over <i>Lepidosperma carphoides</i>, <i>Caustis dioica</i> and <i>Lepidobolus chaetocephalus</i> open tall shrubland, over <i>Dampiera lavandulacea</i> sparse forbland.</p>				
<b>Condition</b>	Good				
<b>Comments</b>	-				
<b>Life Form</b>	<b>Dominant Species</b>	<b>Other Species</b>	<b>Cover (%)</b>		
Trees >30m					
Trees (Mallee) 10-30m	<i>Eucalyptus pleurocarpa</i> , <i>Eucalyptus leptocalyx</i>		V 2-10%		
Shrub >2m					
Shrub 1-2m	<i>Melaleuca societatis</i> , <i>Daviesia apiculata</i>		V 2-10%		
Shrub 0.5-1m	<i>Hakea prostrata</i> , <i>Isopogon polycephalus</i> , <i>Grevillea oligantha</i> , <i>Allocasuarina humilis</i>	<i>Acacia myrtifolia</i> , <i>Acacia cyclops</i> , <i>Leptospermum spinescens</i>	M 30-70%		
Shrub <0.5m	<i>Banksia repens</i> , <i>Chorizema aciculare</i>	<i>Leucopogon</i> sp. Coujinup, <i>Synaphea oligantha</i>	M 30-70%		
Sedge	<i>Lepidosperma carphoides</i> , <i>Chorizandra enodis</i> , <i>Caustis dioica</i>		M 30-70%		
Herb					
Grass					
					

## **Appendix E**

### DBCA Threatened and Priority Reporting Forms (TPFL)



## **Appendix F**

NatureMap and EPBC Act PMST reports



# Threatened and Priority Flora Report Form

Version 1.4 March 2021

**Please complete as much of the form as possible, with emphasis on those sections bordered in black.** For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at [www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants](http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants)

<b>TAXON:</b> <u>Darwinia sp. Gibson</u>		<b>TPFL Pop. No.:</b> <u>10</u>
<b>OBSERVATION DATE:</b> <u>28/07/2021</u>	<b>CONSERVATION STATUS:</b> <u>P1</u>	<b>New population</b> <input type="checkbox"/>
<b>OBSERVER/S:</b> <u>Katie White and Bianca Theyer</u>		<b>PHONE</b> <u>0439 993 451</u>
<b>ROLE:</b> <u>Environmental Consultants</u>	<b>ORGANISATION:</b> <u>Bio Diverse Solutions</u>	
<b>EMAIL:</b> <u>Katie@biodiversesolutions.com.au ; enquiry@biodiversesolutions.com.au</u>		

**DESCRIPTION OF LOCATION** (Provide at least nearest town/named locality, and the distance and direction to that place):  
~40 km north-north east of Esperance. The population of D. sp. Gibson was detected at 1.1 to 1.4 km north of the Fleming Grove Rd crossing along the railway, and a second population at 2.9 km north of the crossing.

Gibson Area. On the western side of the railway line only.

<b>DBC DISTRICT:</b> <u>South Coast</u>		<b>LGA:</b> <u>Esperance</u>	<b>Reserve No.:</b> _____
<b>DATUM:</b>		<b>COORDINATES:</b> (If UTM coords provided, Zone is also required)	<b>METHOD USED:</b>
GDA94 / MGA94 <input type="checkbox"/>	DecDegrees <input type="checkbox"/>	DegMinSec <input checked="" type="checkbox"/>	UTMs <input type="checkbox"/>
AGD84 / AMG84 <input type="checkbox"/>	<b>Lat / Northing:</b> <u>33°33'35"</u>	GPS <input type="checkbox"/>	Differential GPS <input type="checkbox"/>
WGS84 <input type="checkbox"/>	<b>Long / Easting:</b> <u>121°47'06"</u>	No. satellites: _____	Map used: <u>Google Earth</u>
Unknown <input type="checkbox"/>	<b>ZONE:</b> _____	Boundary polygon captured: <input type="checkbox"/>	Map scale: <u>1:1,144</u>
<b>LAND TENURE:</b>			
Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input checked="" type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input type="checkbox"/>	SLK/Pole _____ to _____
			Shire road reserve <input type="checkbox"/>
			Other Crown reserve <input type="checkbox"/>
			Specify other: _____

**AREA ASSESSMENT:** Edge survey  Partial survey  Full survey  Area observed (m<sup>2</sup>): \_\_\_\_\_

**EFFORT:** Time spent surveying (minutes): 8 hr No. of minutes spent / 100 m<sup>2</sup>: \_\_\_\_\_

**POP'N COUNT ACCURACY:** Actual  Extrapolation  Estimate  Count method: \_\_\_\_\_  
(Refer to field manual for list)

**WHAT COUNTED:** Plants  Clumps  Clonal stems

TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:	Area of pop (m <sup>2</sup> ): _____ <small>Note: Pls record count as numbers (not percentages) for database.</small>
Alive	<u>51</u>				
Dead					

**QUADRATS PRESENT:** No. \_\_\_\_\_ Size \_\_\_\_\_ Data attached  Total area of quadrats (m<sup>2</sup>): \_\_\_\_\_

**Summary Quad. Totals: Alive**

--	--	--	--

**REPRODUCTIVE STATE:** Clonal  Vegetative  Flowerbud  Flower   
 Immature fruit  Fruit  Dehisced fruit  Percentage in flower: 90%

**CONDITION OF PLANTS:** Healthy  Moderate  Poor  Senescent

**COMMENT:** \_\_\_\_\_

THREATS - type, agent and supporting information:	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. <b>Specify agent</b> where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)			
• Potential impact from infrastructure works / clearing proposed along the railway line	<u>S-M</u>	<u>M-H</u>	<u>S</u>
• Changes in hydrology – clearly related to processes of hydrological salt lake regimes	_____	_____	_____
• Increased runoff from surrounding agricultural lands – observed algal blooms in northern	_____	_____	_____

Please return completed form to **Species And Communities Program DBCA**,  
 Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 OR email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)  
**RECORDS:** Please forward to **Flora Administrative Officer**, Species and Communities Program.  
 Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

Areas, where agricultural properties in closer reach			
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Please return completed form to **Species And Communities Program DBCA**,  
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

**HABITAT INFORMATION:**

<b>LANDFORM:</b>	<b>ROCK TYPE:</b>	<b>LOOSE ROCK:</b>	<b>SOIL TYPE:</b>	<b>SOIL COLOUR:</b>	<b>DRAINAGE:</b>
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input checked="" type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input checked="" type="checkbox"/>	Clay loam <input checked="" type="checkbox"/>	White <input checked="" type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input checked="" type="checkbox"/>	
Flat <input type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input checked="" type="checkbox"/>					
Wetland <input type="checkbox"/>					

Specific Landform Element:  
(Refer to field manual for additional values)

**Inland salt lake, typical of the Scaddan region**

**CONDITION OF SOIL:** Dry  Moist  Waterlogged  Inundated

**VEGETATION CLASSIFICATION\*:**

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

1. *Melaleuca brevifolia*, *Melaleuca calycina*, *Hakea cinerea* and *Melaleuca cuticularis* closed tall shrubland
2. *Cyathostemon ambiguus*, *Acacia patagiata*, *Darwinia vestita*, *Grevillea oligantha* mid shrubland
3. *Loxocarya striata* tall rushland
4. *Cooperookia strophiolata*, *Drosera glandigulera* nad *Drosera macrantha* sparse forbland.

**ASSOCIATED SPECIES:**

Other (non-dominant) spp \_\_\_\_\_

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

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

**COMMENT:** Range of conditions – mostly from disturbance through vehicles driving along railway line for maintenance

**FIRE HISTORY:** Last Fire: Season/Month: \_\_\_\_\_ Year: \_\_\_\_\_ Fire Intensity: High  Medium  Low  No signs of fire

**FENCING:** Not required  Present  Replace / repair  Required  Length req'd: \_\_\_\_\_

**ROADSIDE MARKERS:** Not required  Present  Replace / reposition  Required  Quantity req'd: \_\_\_\_\_

**OTHER COMMENTS:** (Please include recommended management actions and/or implemented actions - include date. Also include details of additional data available, and how to locate it.)  
Previously recorded under Herbarium record PERTH06466710

Report submitted to Arc Infrastructure – Bio Diverse Solutions (2021) Reconnaissance flora and vegetation and basic fauna survey report, Line 51 (344.9 – 346.485), Fleming Grove Rd, Gibson WA

Did not collect or submit specimen as previously recorded population.

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**FLORA AUTHORISATION / LICENCE No:** FTB62000327 Note if only observing plants (i.e. no specimens or plant material is taken) then no authorisation/licence is required. For further information on authorisation and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under authorisations/licences should be recorded above in the OTHER COMMENTS section.

**SPECIMEN:** Collectors No: \_\_\_\_\_ WA Herb.  Regional Herb.  District Herb.  Other: \_\_\_\_\_

**LODGE MENT:** WA Herb Lodgement No: \_\_\_\_\_

**ATTACHED:** Map  Mudmap  Photo  GIS data  Field notes  Other: \_\_\_\_\_

**COPY SENT TO:** Regional Office  District Office  Other: \_\_\_\_\_

Submitter of Record: Katie White Role: Botanist/ Ecologist Signed: KW Date: 29/07/2021

Please return completed form to **Species And Communities Program DBCA**,  
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 OR email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

Version 1.4 March 2021

**Please complete as much of the form as possible, with emphasis on those sections bordered in black.** For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at [www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants](http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants)

<b>TAXON:</b> <u>Conostephium marchantiorum</u>		<b>TPFL Pop. No.:</b> <u>11</u>
<b>OBSERVATION DATE:</b> <u>28/07/2021</u>	<b>CONSERVATION STATUS:</b> <u>P3</u>	<b>New population</b> <input type="checkbox"/>
<b>OBSERVER/S:</b> <u>Katie White and Bianca Theyer</u>		<b>PHONE</b> <u>0439 993 451</u>
<b>ROLE:</b> <u>Environmental Consultants</u>	<b>ORGANISATION:</b> <u>Bio Diverse Solutions</u>	
<b>EMAIL:</b> <u>Katie@biodiversesolutions.com.au ; enquiry@biodiversesolutions.com.au</u>		

**DESCRIPTION OF LOCATION** (Provide at least nearest town/named locality, and the distance and direction to that place):  
~40 km north-north east of Esperance. On railway line, scattered regularly from 170 m north of the railway crossing at Fleming Grove Rd to 2.1 km north. On Both sides of the railway line. Gibson area.

<b>DBC DISTRICT:</b> <u>South Coast</u>		<b>LGA:</b> <u>Esperance</u>	<b>Land manager present:</b> <input type="checkbox"/>
<b>DATUM:</b>	<b>COORDINATES:</b> (If UTM coords provided, Zone is also required)	<b>METHOD USED:</b>	
GDA94 / MGA94 <input type="checkbox"/>	DecDegrees <input type="checkbox"/> DegMinSec <input checked="" type="checkbox"/> UTM <input type="checkbox"/>	GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input checked="" type="checkbox"/>	No. satellites: _____
AGD84 / AMG84 <input type="checkbox"/>	<b>Lat / Northing:</b> <u>33°34'04"</u>	Boundary polygon captured: <input type="checkbox"/>	Map used: <u>Google Earth</u>
WGS84 <input type="checkbox"/>	<b>Long / Easting:</b> <u>121°47'14"</u>	Map scale: <u>1:500</u>	
Unknown <input type="checkbox"/>	<b>ZONE:</b> _____		
<b>LAND TENURE:</b>			
Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input checked="" type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input type="checkbox"/>	SLK/Pole _____ to _____
			Shire road reserve <input type="checkbox"/>
			Other Crown reserve <input type="checkbox"/>
			Specify other: _____

<b>AREA ASSESSMENT:</b> Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/>	Area observed (m <sup>2</sup> ): _____															
<b>EFFORT:</b> Time spent surveying (minutes): <u>8 hr</u>	No. of minutes spent / 100 m <sup>2</sup> : _____															
<b>POP'N COUNT ACCURACY:</b> Actual <input checked="" type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input type="checkbox"/>	Count method: _____															
<small>(Refer to field manual for list)</small>																
<b>WHAT COUNTED:</b> Plants <input checked="" type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>																
<b>TOTAL POP'N STRUCTURE:</b>																
	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Mature:</th> <th>Juveniles:</th> <th>Seedlings:</th> <th>Totals:</th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td style="text-align: center;">5</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Mature:	Juveniles:	Seedlings:	Totals:	Alive	5				Dead				
	Mature:	Juveniles:	Seedlings:	Totals:												
Alive	5															
Dead																
	Area of pop (m <sup>2</sup> ): _____															
<small>Note: Pls record count as numbers (not percentages) for database.</small>																
<b>QUADRATS PRESENT:</b> No. _____ Size _____ Data attached <input type="checkbox"/>	Total area of quadrats (m <sup>2</sup> ): _____															
<b>Summary Quad. Totals: Alive</b>																
<b>REPRODUCTIVE STATE:</b> Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input checked="" type="checkbox"/> Flower <input checked="" type="checkbox"/>	Percentage in flower: <u>100%</u>															
Immature fruit <input type="checkbox"/> Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/>																

**CONDITION OF PLANTS:** Healthy  Moderate  Poor  Senescent

**COMMENT:** \_\_\_\_\_

THREATS - type, agent and supporting information:	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. <b>Specify agent</b> where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)			
• Potential impact from infrastructure works / clearing proposed along the railway line	<u>S-M</u>	<u>M-H</u>	<u>S</u>
• Increased runoff from surrounding agricultural lands – observed algal blooms in northern	_____	_____	_____
•	_____	_____	_____



# Threatened and Priority Flora Report Form

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Please return completed form to **Species And Communities Program DBCA**,  
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

Version 1.4 March 2021

## HABITAT INFORMATION:

<b>LANDFORM:</b>	<b>ROCK TYPE:</b>	<b>LOOSE ROCK:</b>	<b>SOIL TYPE:</b>	<b>SOIL COLOUR:</b>	<b>DRAINAGE:</b>
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input checked="" type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input checked="" type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input checked="" type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input checked="" type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					

Specific Landform Element:  
(Refer to field manual for additional values)

**Inland salt lake, typical of the Scaddan region**

**CONDITION OF SOIL:** Dry  Moist  Waterlogged  Inundated

## VEGETATION CLASSIFICATION\*:

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

1. *Eucalyptus pleurocarpa* and *Eucalyptus leptocalyx* Open Mallee mid and low woodland

2. *Acacia cyclops* and *Hakea corymbosa* sparse tall shrubland, over *Banksia armata*, *Allocasuarina humilis*, *Beaufortia empetrifolia*, *Calothamnus gracilis* and *Daviesia teretifolia* mid shrubland, over *Hibbertia gracilipes* sparse low shrubland

3. *Lepidosperma carphoides*, *Caustis dioica*, *Chorizandra enodis* open tall sedgeland

4. *Dampiera lavaundulacea* sparse forbland, over *Neurachne alopecuroidea* sparse grassland.

## ASSOCIATED SPECIES:

Other (non-dominant) spp

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

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

**COMMENT:** Range of conditions – mostly from disturbance through vehicles driving along railway line for maintenance

**FIRE HISTORY:** Last Fire: Season/Month: \_\_\_\_\_ Year: \_\_\_\_\_ Fire Intensity: High  Medium  Low  No signs of fire

**FENCING:** Not required  Present  Replace / repair  Required  Length req'd: \_\_\_\_\_

**ROADSIDE MARKERS:** Not required  Present  Replace / reposition  Required  Quantity req'd: \_\_\_\_\_

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

Previously recorded under Herbarium record PERTH04191161

Report submitted to Arc Infrastructure – Bio Diverse Solutions (2021) Reconnaissance flora and vegetation and basic fauna survey report, Line 51 (344.9 – 346.485), Fleming Grove Rd, Gibson WA

Did not collect or submit specimen to WA Herbarium for verification as previously recorded population.

**FLORA AUTHORISATION / LICENCE No:** FTB62000327 Note if only observing plants (i.e. no specimens or plant material is taken) then no authorisation/licence is required. For further information on authorisation and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under authorisations/licences should be recorded above in the OTHER COMMENTS section.

**SPECIMEN:** Collectors No: \_\_\_\_\_ WA Herb.  Regional Herb.  District Herb.  Other: \_\_\_\_\_

**LODGEMENT:** WA Herb Lodgement No: \_\_\_\_\_

**ATTACHED:** Map  Mudmap  Photo  GIS data  Field notes  Other: \_\_\_\_\_

**COPY SENT TO:** Regional Office  District Office  Other: \_\_\_\_\_

Submitter of Record: Katie White Role: Botanist/Ecologist Signed: KW Date: 29/07/2021

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

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

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

Version 1.4 March 2021

**Please complete as much of the form as possible, with emphasis on those sections bordered in black.** For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at [www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants](http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants)

<b>TAXON:</b> <u>Isopogon alcornis</u>	<b>TPFL Pop. No:</b> <u>WAHerb record</u>
<b>OBSERVATION DATE:</b> <u>28/07/2021</u>	<b>CONSERVATION STATUS:</b> <u>P3</u>
<b>OBSERVER/S:</b> <u>Katie White and Bianca Theyer</u>	<b>PHONE:</b> <u>0439 993 451</u>
<b>ROLE:</b> <u>Environmental Consultants</u>	<b>ORGANISATION:</b> <u>Bio Diverse Solutions</u>
<b>EMAIL:</b> <a href="mailto:Katie@biodiversesolutions.com.au">Katie@biodiversesolutions.com.au</a> ; <a href="mailto:enquiry@biodiversesolutions.com.au">enquiry@biodiversesolutions.com.au</a>	

**DESCRIPTION OF LOCATION** (Provide at least nearest town/named locality, and the distance and direction to that place):  
~40 km north-north east of Esperance. The population of *I. alcornis* was detected at approximately 1.1 to 1.6 km north of the crossing on Fleming Grove Rd along the railway line, with a second population recorded from 2.9 to 3 km north  
On western sides of the railway line only. Gibson area.

<b>DBC DISTRICT:</b> <u>South Coast</u>		<b>LGA:</b> <u>Esperance</u>		<b>Reserve No:</b> _____
<b>DATUM:</b>		<b>COORDINATES:</b> (If UTM coords provided, Zone is also required)		<b>METHOD USED:</b>
GDA94 / MGA94 <input type="checkbox"/>	DecDegrees <input type="checkbox"/>	DegMinSec <input checked="" type="checkbox"/>	UTMs <input type="checkbox"/>	GPS <input type="checkbox"/>
AGD84 / AMG84 <input type="checkbox"/>	<b>Lat / Northing:</b> <u>33°3'32"</u>		No. satellites: _____	Differential GPS <input type="checkbox"/>
WGS84 <input type="checkbox"/>	<b>Long / Easting:</b> <u>121°47'03"</u>		Boundary polygon captured: <input type="checkbox"/>	Map used: <u>Google Earth</u>
Unknown <input type="checkbox"/>	<b>ZONE:</b> _____		Map scale: <u>1:1,076</u>	
<b>LAND TENURE:</b>				
Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input checked="" type="checkbox"/>	Shire road reserve <input type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/>	Other Crown reserve <input type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input type="checkbox"/>	SLK/Pole _____ to _____	Specify other: _____

**AREA ASSESSMENT:** Edge survey  Partial survey  Full survey  Area observed (m<sup>2</sup>): \_\_\_\_\_

**EFFORT:** Time spent surveying (minutes): 8 hr No. of minutes spent / 100 m<sup>2</sup>: \_\_\_\_\_

**POP'N COUNT ACCURACY:** Actual  Extrapolation  Estimate  Count method: \_\_\_\_\_  
(Refer to field manual for list)

<b>WHAT COUNTED:</b>	Plants <input checked="" type="checkbox"/>	Clumps <input type="checkbox"/>	Clonal stems <input type="checkbox"/>	
<b>TOTAL POP'N STRUCTURE:</b>	<b>Mature:</b>	<b>Juveniles:</b>	<b>Seedlings:</b>	<b>Totals:</b>
Alive	26			
Dead				

Area of pop (m<sup>2</sup>): \_\_\_\_\_  
Note: Pls record count as numbers (not percentages) for database.

**QUADRATS PRESENT:** No. \_\_\_\_\_ Size \_\_\_\_\_ Data attached  Total area of quadrats (m<sup>2</sup>): \_\_\_\_\_

<b>Summary Quad. Totals: Alive</b>				
------------------------------------	--	--	--	--

**REPRODUCTIVE STATE:** Clonal  Vegetative  Flowerbud  Flower   
 Immature fruit  Fruit  Dehisced fruit  Percentage in flower: 100%

**CONDITION OF PLANTS:** Healthy  Moderate  Poor  Senescent

**COMMENT:** \_\_\_\_\_

THREATS - type, agent and supporting information:	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. <b>Specify agent</b> where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)			
• Potential impact from infrastructure works / clearing proposed along the railway line	<u>S-M</u>	<u>M-H</u>	<u>S</u>
•	_____	_____	_____





# Threatened and Priority Flora Report Form

<ul style="list-style-type: none"> <li>Increased runoff from surrounding agricultural lands – observed algal blooms in northern</li> </ul>	_____	_____	_____
Areas, where agricultural properties in closer reach			

Please return completed form to **Species And Communities Program DBCA**,  
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

Version 1.4 March 2021

## HABITAT INFORMATION:

<b>LANDFORM:</b>	<b>ROCK TYPE:</b>	<b>LOOSE ROCK:</b>	<b>SOIL TYPE:</b>	<b>SOIL COLOUR:</b>	<b>DRAINAGE:</b>
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input checked="" type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input checked="" type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input checked="" type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input checked="" type="checkbox"/>	Clay loam <input checked="" type="checkbox"/>	White <input checked="" type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input checked="" type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input checked="" type="checkbox"/>					
Closed depression <input checked="" type="checkbox"/>					
Wetland <input type="checkbox"/>					

Specific Landform Element:  
(Refer to field manual for additional values)

**Inland salt lake, typical of the Scaddan region**

**CONDITION OF SOIL:** Dry  Moist  Waterlogged  Inundated

## VEGETATION CLASSIFICATION\*:

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

1. *Melaleuca brevifolia*, *Melaleuca calycina*, *Hakea cinerea* and *Melaleuca cuticularis* closed tall shrubland, over *Cyathostemon ambiguus*, *Acacia patagiata*, *Darwinia vestita*, *Grevillea oligantha* mid shrubland,

2. *ver Loxocarya striata* tall rushland, over *Cooperookia strophiolata*, *Drosera glandigulera* nad *Drosera macrantha* sparse forbland.

3.

4.

## ASSOCIATED SPECIES:

Other (non-dominant) spp \_\_\_\_\_

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

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

**COMMENT:** Range of conditions – mostly from disturbance through vehicles driving along railway line for maintenance

**FIRE HISTORY:** Last Fire: Season/Month: \_\_\_\_\_ Year: \_\_\_\_\_ Fire Intensity: High  Medium  Low  No signs of fire

**FENCING:** Not required  Present  Replace / repair  Required  Length req'd: \_\_\_\_\_

**ROADSIDE MARKERS:** Not required  Present  Replace / reposition  Required  Quantity req'd: \_\_\_\_\_

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

Previously recorded under Herbarium record PERTH005817431

Report submitted to Arc Infrastructure – Bio Diverse Solutions (2021) Reconnaissance flora and vegetation and basic fauna survey report, Line 51 (344.9 – 346.485), Fleming Grove Rd, Gibson WA

Did not collect or submit specimen to WA Herbarium for verification as previously recorded population.

**FLORA AUTHORISATION / LICENCE No:** FTB62000327 Note if only observing plants (i.e. no specimens or plant material is taken) then no authorisation/licence is required. For further information on authorisation and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under authorisations/licences should be recorded above in the OTHER COMMENTS section.

**SPECIMEN:** Collectors No: \_\_\_\_\_ WA Herb.  Regional Herb.  District Herb.  Other: \_\_\_\_\_

**LODGEMENT:** WA Herb Lodgement No: \_\_\_\_\_

**ATTACHED:** Map  Mudmap  Photo  GIS data  Field notes  Other: \_\_\_\_\_

**COPY SENT TO:** Regional Office  District Office  Other: \_\_\_\_\_

Submitter of Record: Katie White Role: Botanist/Ecologist Signed: KW Date: 29/07/2021

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

Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 OR email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

Version 1.4 March 2021

**Please complete as much of the form as possible, with emphasis on those sections bordered in black.** For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at [www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants](http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants)

<b>TAXON:</b> <u>Brachyloma mogin</u>	<b>TPFL Pop. No.:</b> _____
<b>OBSERVATION DATE:</b> <u>28/07/2021</u>	<b>CONSERVATION STATUS:</b> <u>P3</u> <b>New population</b> <input checked="" type="checkbox"/>
<b>OBSERVER/S:</b> <u>Katie White and Bianca Theyer</u>	<b>PHONE</b> <u>0439 993 451</u>
<b>ROLE:</b> <u>Environmental Consultants</u>	<b>ORGANISATION:</b> <u>Bio Diverse Solutions</u>
<b>EMAIL:</b> <u>Katie@biodiversesolutions.com.au ; enquiry@biodiversesolutions.com.au</u>	

<b>DESCRIPTION OF LOCATION</b> (Provide at least nearest town/named locality, and the distance and direction to that place): <u>~40 km north-north east of Esperance. On railway line, scattered regularly from 290m north of the railway crossing at Fleming Grove Rd to 2 km north. On western side of the railway line. Gibson area.</u>	
<b>Reserve No.:</b> _____	
<b>DBC DISTRICT:</b> <u>South Coast</u>	<b>LGA:</b> <u>Esperance</u> Land manager present: <input type="checkbox"/>
<b>DATUM:</b>	<b>COORDINATES:</b> (If UTM coords provided, Zone is also required) <b>METHOD USED:</b>
GDA94 / MGA94 <input checked="" type="checkbox"/>	DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input checked="" type="checkbox"/>
AGD84 / AMG84 <input type="checkbox"/>	<b>Lat / Northing:</b> <u>944359.49</u> No. satellites: _____ Map used: <u>ArcGIS</u>
WGS84 <input type="checkbox"/>	<b>Long / Easting:</b> <u>6276378.158</u> Boundary polygon captured: <input type="checkbox"/> Map scale: _____
Unknown <input type="checkbox"/>	<b>ZONE:</b> <u>51H</u>
<b>LAND TENURE:</b>	
Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/> Private property <input type="checkbox"/> Rail reserve <input checked="" type="checkbox"/> Shire road reserve <input type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/> Pastoral lease <input type="checkbox"/> MRWA road reserve <input type="checkbox"/> Other Crown reserve <input type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/> UCL <input type="checkbox"/> SLK/Pole _____ to _____ Specify other: _____

<b>AREA ASSESSMENT:</b> Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/> Area observed (m <sup>2</sup> ): _____																
<b>EFFORT:</b> Time spent surveying (minutes): <u>8 hr</u> No. of minutes spent / 100 m <sup>2</sup> : _____																
<b>POP'N COUNT ACCURACY:</b> Actual <input checked="" type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input type="checkbox"/> Count method: _____ (Refer to field manual for list)																
<b>WHAT COUNTED:</b> Plants <input checked="" type="checkbox"/> Clumps <input type="checkbox"/> Clonal stems <input type="checkbox"/>																
<b>TOTAL POP'N STRUCTURE:</b>																
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th><b>Mature:</b></th> <th><b>Juveniles:</b></th> <th><b>Seedlings:</b></th> <th><b>Totals:</b></th> </tr> </thead> <tbody> <tr> <td>Alive</td> <td style="text-align: center;">10</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Dead</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		<b>Mature:</b>	<b>Juveniles:</b>	<b>Seedlings:</b>	<b>Totals:</b>	Alive	10				Dead					Area of pop (m <sup>2</sup> ): _____ <small>Note: Pls record count as numbers (not percentages) for database.</small>
	<b>Mature:</b>	<b>Juveniles:</b>	<b>Seedlings:</b>	<b>Totals:</b>												
Alive	10															
Dead																
<b>QUADRATS PRESENT:</b> No. _____ Size _____ Data attached <input type="checkbox"/> Total area of quadrats (m <sup>2</sup> ): _____																
<b>Summary Quad. Totals: Alive</b>																
<b>REPRODUCTIVE STATE:</b> Clonal <input type="checkbox"/> Vegetative <input type="checkbox"/> Flowerbud <input checked="" type="checkbox"/> Flower <input checked="" type="checkbox"/> Immature fruit <input type="checkbox"/> Fruit <input type="checkbox"/> Dehisced fruit <input type="checkbox"/> Percentage in flower: <u>100%</u>																

**CONDITION OF PLANTS:** Healthy  Moderate  Poor  Senescent

**COMMENT:** \_\_\_\_\_

THREATS - type, agent and supporting information:	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. <b>Specify agent</b> where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)			
• Potential impact from infrastructure works / clearing proposed along the railway line	<u>S-M</u>	<u>M-H</u>	<u>S</u>
• Increased runoff from surrounding agricultural lands – observed algal blooms in northern	_____	_____	_____
•	_____	_____	_____



# Threatened and Priority Flora Report Form

## HABITAT INFORMATION:

<b>LANDFORM:</b>	<b>ROCK TYPE:</b>	<b>LOOSE ROCK:</b>	<b>SOIL TYPE:</b>	<b>SOIL COLOUR:</b>	<b>DRAINAGE:</b>
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input checked="" type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input checked="" type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input checked="" type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input checked="" type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					

Specific Landform Element:  
(Refer to field manual for additional values)

Surrounding Inland salt lake, typical of the Scaddan region

**CONDITION OF SOIL:** Dry  Moist  Waterlogged  Inundated

## VEGETATION CLASSIFICATION\*:

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

- Eucalyptus pleurocarpa* and *Eucalyptus leptocalyx* Open Mallee mid and low woodland
- Acacia cyclops* and *Hakea corymbosa* sparse tall shrubland, over *Banksia armata*, *Allocasuarina humilis*, *Beaufortia empetrifolia*, *Calothamnus gracilis* and *Daviesia teretifolia* mid shrubland, over *Hibbertia gracilipes* sparse low shrubland
- Lepidosperma carphoides*, *Caustis dioica*, *Chorizandra enodis* open tall sedgeland
- Dampiera lavaundulacea* sparse forbland, over *Neurachne alopecuroidea* sparse grassland.

## ASSOCIATED SPECIES:

Other (non-dominant) spp \_\_\_\_\_

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

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

**COMMENT:** Range of conditions – mostly from disturbance through vehicles driving along railway line for maintenance

**FIRE HISTORY:** Last Fire: Season/Month: \_\_\_\_\_ Year: \_\_\_\_\_ Fire Intensity: High  Medium  Low  No signs of fire

**FENCING:** Not required  Present  Replace / repair  Required  Length req'd: \_\_\_\_\_

**ROADSIDE MARKERS:** Not required  Present  Replace / reposition  Required  Quantity req'd: \_\_\_\_\_

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

Report submitted to Arc Infrastructure – Bio Diverse Solutions (2021) Reconnaissance flora and vegetation and basic fauna survey report, Line 51 (344.9 – 346.485), Fleming Grove Rd, Gibson WA

New population of priority flora and sent to WA Herbarium for verification – KW150, Accession 9059. Did not retain Specimen

**FLORA AUTHORISATION / LICENCE No:** FTB62000327 Note if only observing plants (i.e. no specimens or plant material is taken) then no authorisation/licence is required. For further information on authorisation and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under authorisations/licences should be recorded above in the OTHER COMMENTS section.

**SPECIMEN:** Collectors No: KW150 WA Herb.  Regional Herb.  District Herb.  Other: \_\_\_\_\_

**LODGEMENT:** WA Herb Lodgement No: 9059

**ATTACHED:** Map  Mudmap  Photo  GIS data  Field notes  Other: \_\_\_\_\_

**COPY SENT TO:** Regional Office  District Office  Other: \_\_\_\_\_

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

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

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

Submitter of Record: Katie White

Role: Botanist/Ecologist

Signed: KW

Date: 24/09/2021

Please return completed form to **Species And Communities Program DBCA**,  
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

Version 1.4 March 2021

**Please complete as much of the form as possible, with emphasis on those sections bordered in black.** For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at [www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants](http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants)

<b>TAXON:</b> <u>Persoonia scabra</u>		<b>TPFL Pop. No.:</b> _____	
<b>OBSERVATION DATE:</b> <u>28/07/2021</u>		<b>CONSERVATION STATUS:</b> <u>P3</u>	
<b>OBSERVER/S:</b> <u>Katie White and Bianca Theyer</u>		<b>New population</b> <input checked="" type="checkbox"/>	
<b>ROLE:</b> <u>Environmental Consultants</u>		<b>PHONE</b> <u>0439 993 451</u>	
<b>ORGANISATION:</b> <u>Bio Diverse Solutions</u>			
<b>EMAIL:</b> <u>Katie@biodiversesolutions.com.au ; enquiry@biodiversesolutions.com.au</u>			

<b>DESCRIPTION OF LOCATION</b> (Provide at least nearest town/named locality, and the distance and direction to that place): <u>~40 km north-north east of Esperance. On railway line, scattered regularly from 50m south of the railway crossing to 2.6km North of the railway line, from Fleming Grove Rd. On western sides of the railway line only. Gibson area.</u>			
<b>Reserve No.:</b> _____			
<b>DBC DISTRICT:</b> <u>South Coast</u>		<b>LGA:</b> <u>Esperance</u>	
		Land manager present: <input type="checkbox"/>	
<b>DATUM:</b>			
<b>COORDINATES:</b> (If UTM coords provided, Zone is also required)			
DecDegrees <input type="checkbox"/>		DegMinSec <input type="checkbox"/>	
		UTMs <input checked="" type="checkbox"/>	
<b>Lat / Northing:</b> <u>944528.525</u>		GPS <input type="checkbox"/>	
<b>Long / Easting:</b> <u>6275580.304</u>		Differential GPS <input type="checkbox"/>	
GDA94 / MGA94 <input checked="" type="checkbox"/>		Map <input checked="" type="checkbox"/>	
AGD84 / AMG84 <input type="checkbox"/>		No. satellites: _____	
WGS84 <input type="checkbox"/>		Map used: <u>ArcGIS</u>	
Unknown <input type="checkbox"/>		Boundary polygon captured: <input type="checkbox"/>	
<b>ZONE:</b> <u>51H</u>		Map scale: _____	
<b>LAND TENURE:</b>			
Nature reserve <input type="checkbox"/>		Timber reserve <input type="checkbox"/>	
National park <input type="checkbox"/>		Private property <input type="checkbox"/>	
Conservation park <input type="checkbox"/>		Pastoral lease <input type="checkbox"/>	
		Water reserve <input type="checkbox"/>	
		UCL <input type="checkbox"/>	
		SLK/Pole _____ to _____	
		Rail reserve <input checked="" type="checkbox"/>	
		MRWA road reserve <input type="checkbox"/>	
		Shire road reserve <input type="checkbox"/>	
		Other Crown reserve <input type="checkbox"/>	
		Specify other: _____	

<b>AREA ASSESSMENT:</b> Edge survey <input checked="" type="checkbox"/>				Partial survey <input type="checkbox"/>		Full survey <input type="checkbox"/>		Area observed (m <sup>2</sup> ): _____	
<b>EFFORT:</b> Time spent surveying (minutes): <u>8 hr</u>				No. of minutes spent / 100 m <sup>2</sup> : _____					
<b>POP'N COUNT ACCURACY:</b> Actual <input checked="" type="checkbox"/>				Extrapolation <input type="checkbox"/>		Estimate <input type="checkbox"/>		Count method: _____	
				(Refer to field manual for list)					
<b>WHAT COUNTED:</b>				Plants <input checked="" type="checkbox"/>		Clumps <input type="checkbox"/>		Clonal stems <input type="checkbox"/>	
<b>TOTAL POP'N STRUCTURE:</b>				<b>Mature:</b>		<b>Juveniles:</b>		<b>Seedlings:</b>	
				<b>Totals:</b>		Area of pop (m <sup>2</sup> ): _____			
Alive				14					
Dead									
<b>QUADRATS PRESENT:</b>				No. _____		Size _____		Data attached <input type="checkbox"/>	
				Total area of quadrats (m <sup>2</sup> ): _____					
<b>Summary Quad. Totals: Alive</b>									
<b>REPRODUCTIVE STATE:</b>				Clonal <input type="checkbox"/>		Vegetative <input type="checkbox"/>		Flowerbud <input type="checkbox"/>	
				Immature fruit <input type="checkbox"/>		Fruit <input checked="" type="checkbox"/>		Dehisced fruit <input type="checkbox"/>	
				Flower <input type="checkbox"/>					
				Percentage in flower: <u>10%</u>					

**CONDITION OF PLANTS:** Healthy  Moderate  Poor  Senescent

**COMMENT:** \_\_\_\_\_

THREATS - type, agent and supporting information:	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. <b>Specify agent</b> where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)			
• Potential impact from infrastructure works / clearing proposed along the railway line	<u>S-M</u>	<u>M-H</u>	<u>S</u>
• Increased runoff from surrounding agricultural lands – observed algal blooms in northern	_____	_____	_____
•	_____	_____	_____

Please return completed form to **Species And Communities Program DBCA**,  
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

Version 1.4 March 2021

## HABITAT INFORMATION:

<b>LANDFORM:</b>	<b>ROCK TYPE:</b>	<b>LOOSE ROCK:</b>	<b>SOIL TYPE:</b>	<b>SOIL COLOUR:</b>	<b>DRAINAGE:</b>
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input checked="" type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input checked="" type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input checked="" type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input checked="" type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					

Specific Landform Element: Surrounding sandplain rise adjacent to Inland salt lake, typical of the Scaddan region  
(Refer to field manual for additional values)

**CONDITION OF SOIL:** Dry  Moist  Waterlogged  Inundated

## VEGETATION CLASSIFICATION\*:

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

1. Eucalyptus pleurocarpa and Eucalyptus leptocalyx Open Mallee Mid Woodland, over Acacia cyclops isolated tall shrubs, Hakea lissocarpha, Isopogon polycephalus, Grevillea oligantha, Daviesia apiculata and Calothmanus gracilis closed mid shrubland, over Banksia blechenifolia and Hibbertia gracilipes open low shrubland, over Lepidosperma carphoides, Caustis dioica and Lepidobolus chaetocephalus open tall shrubland, over Dampiera lavaundulacea sparse forbland.

2. \_\_\_\_\_  
3. \_\_\_\_\_  
4. \_\_\_\_\_

## ASSOCIATED SPECIES:

Other (non-dominant) spp \_\_\_\_\_

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

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

**COMMENT:** Range of conditions – mostly from disturbance through vehicles driving along railway line for maintenance

**FIRE HISTORY:** Last Fire: Season/Month: \_\_\_\_\_ Year: \_\_\_\_\_ Fire Intensity: High  Medium  Low  No signs of fire

**FENCING:** Not required  Present  Replace / repair  Required  Length req'd: \_\_\_\_\_

**ROADSIDE MARKERS:** Not required  Present  Replace / reposition  Required  Quantity req'd: \_\_\_\_\_

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

Report submitted to Arc Infrastructure – Bio Diverse Solutions (2021) Reconnaissance flora and vegetation and basic fauna survey report, Line 51 (344.9 – 346.485), Fleming Grove Rd, Gibson WA

New population of priority flora – sent to WA Herbarium for verification. KW151, Acc 9059. Specimen not retained.

**FLORA AUTHORISATION / LICENCE No:** FTB62000327 Note if only observing plants (i.e. no specimens or plant material is taken) then no authorisation/licence is required. For further information on authorisation and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under authorisations/licences should be recorded above in the OTHER COMMENTS section.

**SPECIMEN:** Collectors No: KW151 WA Herb.  Regional Herb.  District Herb.  Other: \_\_\_\_\_

**LODGEMENT:** WA Herb Lodgement No: 9059

**ATTACHED:** Map  Mudmap  Photo  GIS data  Field notes  Other: \_\_\_\_\_

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

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

**COPY SENT TO:** Regional Office  District Office  Other: \_\_\_\_\_

Submitter of Record: Katie White Role: Botanist/Ecologist Signed: KW Date: 24/09/2021

Please return completed form to **Species And Communities Program DBCA**,  
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database





# Threatened and Priority Flora Report Form

Version 1.4 March 2021

**Please complete as much of the form as possible, with emphasis on those sections bordered in black.** For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at [www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants](http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants)

<b>TAXON:</b> <u>Kunzea salina</u>		<b>TPFL Pop. No.:</b> _____	
<b>OBSERVATION DATE:</b> <u>28/07/2021</u>		<b>CONSERVATION STATUS:</b> <u>P3</u>	
<b>OBSERVER/S:</b> <u>Katie White and Bianca Theyer</u>		<b>New population</b> <input checked="" type="checkbox"/>	
<b>ROLE:</b> <u>Environmental Consultants</u>		<b>PHONE</b> <u>0439 993 451</u>	
<b>ORGANISATION:</b> <u>Bio Diverse Solutions</u>		_____	
<b>EMAIL:</b> <u>Katie@biodiversesolutions.com.au ; enquiry@biodiversesolutions.com.au</u>			

<b>DESCRIPTION OF LOCATION</b> (Provide at least nearest town/named locality, and the distance and direction to that place): <u>~40 km north-north east of Esperance. On railway line, scattered at 1.1km north of Fleming Grove Rd crossing, on both sides of the railway line. Gibson area.</u>			
<b>Reserve No.:</b> _____			
<b>DBC DISTRICT:</b> <u>South Coast</u>		<b>LGA:</b> <u>Esperance</u>	
		Land manager present: <input type="checkbox"/>	
<b>DATUM:</b> _____			
<b>COORDINATES:</b> (If UTM coords provided, Zone is also required)			
DecDegrees <input type="checkbox"/>		DegMinSec <input type="checkbox"/>	
		UTMs <input checked="" type="checkbox"/>	
<b>Lat / Northing:</b> <u>943312.125</u>		GPS <input type="checkbox"/>	
<b>Long / Easting:</b> <u>6278374.971</u>		Differential GPS <input type="checkbox"/>	
GDA94 / MGA94 <input checked="" type="checkbox"/>		Map <input checked="" type="checkbox"/>	
AGD84 / AMG84 <input type="checkbox"/>		No. satellites: _____	
WGS84 <input type="checkbox"/>		Map used: <u>ArcGIS</u>	
Unknown <input type="checkbox"/>		Boundary polygon captured: <input type="checkbox"/>	
<b>ZONE:</b> <u>51H</u>		Map scale: _____	
<b>LAND TENURE:</b>			
Nature reserve <input type="checkbox"/>		Timber reserve <input type="checkbox"/>	
National park <input type="checkbox"/>		Private property <input type="checkbox"/>	
Conservation park <input type="checkbox"/>		Pastoral lease <input type="checkbox"/>	
		Water reserve <input type="checkbox"/>	
		UCL <input type="checkbox"/>	
		SLK/Pole _____ to _____	
		Rail reserve <input checked="" type="checkbox"/>	
		MRWA road reserve <input type="checkbox"/>	
		Shire road reserve <input type="checkbox"/>	
		Other Crown reserve <input type="checkbox"/>	
		Specify other: _____	

<b>AREA ASSESSMENT:</b> Edge survey <input type="checkbox"/>				Partial survey <input checked="" type="checkbox"/>		Full survey <input type="checkbox"/>		Area observed (m <sup>2</sup> ): _____			
<b>EFFORT:</b> Time spent surveying (minutes): <u>8 hr</u>				No. of minutes spent / 100 m <sup>2</sup> : _____							
<b>POP'N COUNT ACCURACY:</b> Actual <input checked="" type="checkbox"/>				Extrapolation <input type="checkbox"/>		Estimate <input type="checkbox"/>		Count method: _____			
				(Refer to field manual for list)							
<b>WHAT COUNTED:</b> Plants <input checked="" type="checkbox"/>				Clumps <input type="checkbox"/>		Clonal stems <input type="checkbox"/>					
<b>TOTAL POP'N STRUCTURE:</b>				<b>Mature:</b>		<b>Juveniles:</b>		<b>Seedlings:</b>		<b>Totals:</b>	
Alive				31						Area of pop (m <sup>2</sup> ): _____	
Dead										Note: Pls record count as numbers (not percentages) for database.	
<b>QUADRATS PRESENT:</b> No. _____				Size _____		Data attached <input type="checkbox"/>		Total area of quadrats (m <sup>2</sup> ): _____			
<b>Summary Quad. Totals: Alive</b>											
<b>REPRODUCTIVE STATE:</b> Clonal <input type="checkbox"/>				Vegetative <input type="checkbox"/>		Flowerbud <input type="checkbox"/>		Flower <input type="checkbox"/>			
Immature fruit <input type="checkbox"/>				Fruit <input type="checkbox"/>		Dehisced fruit <input type="checkbox"/>		Percentage in flower: <u>0%</u>			

**CONDITION OF PLANTS:** Healthy  Moderate  Poor  Senescent

**COMMENT:** \_\_\_\_\_

THREATS - type, agent and supporting information:	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. <b>Specify agent</b> where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)			
• Potential impact from infrastructure works / clearing proposed along the railway line	<u>S-M</u>	<u>M-H</u>	<u>S</u>
• Increased runoff from surrounding agricultural lands – observed algal blooms in northern	_____	_____	_____
•	_____	_____	_____



# Threatened and Priority Flora Report Form

## HABITAT INFORMATION:

<b>LANDFORM:</b>	<b>ROCK TYPE:</b>	<b>LOOSE ROCK:</b>	<b>SOIL TYPE:</b>	<b>SOIL COLOUR:</b>	<b>DRAINAGE:</b>
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input checked="" type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input checked="" type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input checked="" type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input checked="" type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input checked="" type="checkbox"/>	Grey <input checked="" type="checkbox"/>	
Flat <input type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					

Specific Landform Element:  
(Refer to field manual for additional values)

**Inland salt lake, typical of the Scaddan region**

**CONDITION OF SOIL:** Dry  Moist  Waterlogged  Inundated

## VEGETATION CLASSIFICATION\*:

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

1. *Melaleuca brevifolia*, *Melaleuca calycina*, *Hakea cinerea* and *Melaleuca cuticularis* closed tall shrubland, over *Cyathostemon ambiguus*, *Acacia patagiata*, *Darwinia vestita*, *Grevillea oligantha* mid shrubland, over *Loxocarya striata* tall rushland, over *Cooperookia strophiolata*, *Drosera glandigulera* nad *Drosera macrantha* sparse forbland.

2. \_\_\_\_\_  
3. \_\_\_\_\_  
4. \_\_\_\_\_

## ASSOCIATED SPECIES:

Other (non-dominant) spp \_\_\_\_\_

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

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

**COMMENT:** Range of conditions – mostly from disturbance through vehicles dirivng along railway line for maintenance

**FIRE HISTORY:** Last Fire: Season/Month: \_\_\_\_\_ Year: \_\_\_\_\_ Fire Intensity: High  Medium  Low  No signs of fire

**FENCING:** Not required  Present  Replace / repair  Required  Length req'd: \_\_\_\_\_

**ROADSIDE MARKERS:** Not required  Present  Replace / reposition  Required  Quantity req'd: \_\_\_\_\_

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

Report submitted to Arc Infrastructure – Bio Diverse Solutions (2021) Reconnaissance flora and vegetation and basic fauna survey report, Line 51 (344.9 – 346.485), Fleming Grove Rd, Gibson WA

New population – submitted specimen as KW148, Acc 9059. Specimen not retained by Herbarium.

**FLORA AUTHORISATION / LICENCE No:** FTB62000327 Note if only observing plants (i.e. no specimens or plant matierial is taken) then no authorisation/licence is required. For further information on authorisation and licening requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under authorisations/licences should be recorded above in the OTHER COMMENTS section.

**SPECIMEN:** Collectors No:KW148 WA Herb.  Regional Herb.  District Herb.  Other: \_\_\_\_\_

**LODGEMENT:** WA Herb Lodgement No: Acc 9059

**ATTACHED:** Map  Mudmap  Photo  GIS data  Field notes  Other: \_\_\_\_\_

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

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

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

**COPY SENT TO:** Regional Office  District Office  Other: \_\_\_\_\_

Submitter of Record: Katie White Role: Botanist/Ecologist Signed: KW Date: 24/09/2021

Please return completed form to **Species And Communities Program DBCA**,  
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

**Please complete as much of the form as possible, with emphasis on those sections bordered in black.** For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at [www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants](http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants)

<b>TAXON:</b> <u>Stachystemon vinosus</u>		<b>TPFL Pop. No.:</b> _____	
<b>OBSERVATION DATE:</b> <u>28/07/2021</u>		<b>CONSERVATION STATUS:</b> <u>P4</u>	
<b>OBSERVER/S:</b> <u>Katie White and Bianca Theyer</u>		<b>New population</b> <input checked="" type="checkbox"/>	
<b>ROLE:</b> <u>Environmental Consultants</u>		<b>PHONE</b> <u>0439 993 451</u>	
<b>ORGANISATION:</b> <u>Bio Diverse Solutions</u>			
<b>EMAIL:</b> <u>Katie@biodiversesolutions.com.au ; enquiry@biodiversesolutions.com.au</u>			

**DESCRIPTION OF LOCATION** (Provide at least nearest town/named locality, and the distance and direction to that place):  
 ~40 km north-north east of Esperance. On railway line, at 1.5km north of crossing at Fleming Grove Rd. On the western Side of the railway line. Gibson area.

<b>DBC DISTRICT:</b> <u>South Coast</u>		<b>LGA:</b> <u>Esperance</u>		<b>Reserve No.:</b> _____	
<b>DATUM:</b>		<b>COORDINATES:</b> (If UTM coords provided, Zone is also required)		<b>METHOD USED:</b>	
GDA94 / MGA94 <input checked="" type="checkbox"/>		DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM's <input checked="" type="checkbox"/>		GPS <input type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input checked="" type="checkbox"/>	
AGD84 / AMG84 <input type="checkbox"/>		<b>Lat / Northing:</b> <u>944188.456</u>		No. satellites: _____ Map used: <u>ArcGIS</u>	
WGS84 <input type="checkbox"/>		<b>Long / Easting:</b> <u>6276787.984</u>		Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
Unknown <input type="checkbox"/>		<b>ZONE:</b> <u>51H</u>			
<b>LAND TENURE:</b>					
Nature reserve <input type="checkbox"/>		Timber reserve <input type="checkbox"/>		Private property <input type="checkbox"/>	
National park <input type="checkbox"/>		State forest <input type="checkbox"/>		Pastoral lease <input type="checkbox"/>	
Conservation park <input type="checkbox"/>		Water reserve <input type="checkbox"/>		UCL <input type="checkbox"/> SLK/Pole _____ to _____	
				Rail reserve <input checked="" type="checkbox"/> Shire road reserve <input type="checkbox"/>	
				MRWA road reserve <input type="checkbox"/> Other Crown reserve <input type="checkbox"/>	
				Specify other: _____	

**AREA ASSESSMENT:** Edge survey  Partial survey  Full survey  Area observed (m<sup>2</sup>): \_\_\_\_\_

**EFFORT:** Time spent surveying (minutes): 8 hr No. of minutes spent / 100 m<sup>2</sup>: \_\_\_\_\_

**POP'N COUNT ACCURACY:** Actual  Extrapolation  Estimate  Count method: \_\_\_\_\_  
(Refer to field manual for list)

**WHAT COUNTED:** Plants  Clumps  Clonal stems

<b>TOTAL POP'N STRUCTURE:</b>	<b>Mature:</b>	<b>Juveniles:</b>	<b>Seedlings:</b>	<b>Totals:</b>	Area of pop (m <sup>2</sup> ): _____  Note: Pls record count as numbers (not percentages) for database.
	Alive	1			
	Dead				

**QUADRATS PRESENT:** No. \_\_\_\_\_ Size \_\_\_\_\_ Data attached  Total area of quadrats (m<sup>2</sup>): \_\_\_\_\_

<b>Summary Quad. Totals: Alive</b>				
------------------------------------	--	--	--	--

**REPRODUCTIVE STATE:** Clonal  Vegetative  Flowerbud  Flower   
 Immature fruit  Fruit  Dehisced fruit  Percentage in flower: 0%

**CONDITION OF PLANTS:** Healthy  Moderate  Poor  Senescent

**COMMENT:** \_\_\_\_\_

THREATS - type, agent and supporting information:	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. <b>Specify agent</b> where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)			
• Potential impact from infrastructure works / clearing proposed along the railway line	<u>S-M</u>	<u>M-H</u>	<u>S</u>
• Increased runoff from surrounding agricultural lands – observed algal blooms in northern	_____	_____	_____
•	_____	_____	_____



# Threatened and Priority Flora Report Form

**HABITAT INFORMATION:**

<b>LANDFORM:</b>	<b>ROCK TYPE:</b>	<b>LOOSE ROCK:</b>	<b>SOIL TYPE:</b>	<b>SOIL COLOUR:</b>	<b>DRAINAGE:</b>
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input checked="" type="checkbox"/>	Red <input type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input type="checkbox"/>	10-30% <input checked="" type="checkbox"/>	Clay loam <input type="checkbox"/>	White <input checked="" type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input checked="" type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					

Specific **Landform** Element:  
(Refer to field manual for additional values)

**CONDITION OF SOIL:** Dry  Moist  Waterlogged  Inundated

**VEGETATION CLASSIFICATION\*:**

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

1. Eucalyptus uncinata open mallee woodland, over Hakea cinerea, Hakea cygna and Melaleuca pulchella open tall shrubland, over Allocasuarina humilis, Acacia pulchella, Grevillea pauciflora and Cyathostemon ambiguus mid shrubland, over Cooperookia strophiolata isolated low shrubland, over Gahnia ancistrophylla tall sedgeland, over Loxocarya striata tall rushland, over Cassytha sp. isolated clumps of vines over Drosera glandigulera and Orchid sp. isolated forbs.

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

**ASSOCIATED SPECIES:**

Other (non-dominant) spp \_\_\_\_\_

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

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

**COMMENT:** Range of conditions – mostly from disturbance through vehicles driving along railway line for maintenance

**FIRE HISTORY:** Last Fire: Season/Month: \_\_\_\_\_ Year: \_\_\_\_\_ Fire Intensity: High  Medium  Low  No signs of fire

**FENCING:** Not required  Present  Replace / repair  Required  Length req'd: \_\_\_\_\_

**ROADSIDE MARKERS:** Not required  Present  Replace / reposition  Required  Quantity req'd: \_\_\_\_\_

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

Report submitted to Arc Infrastructure – Bio Diverse Solutions (2021) Reconnaissance flora and vegetation and basic fauna survey report, Line 51 (344.9 – 346.485), Fleming Grove Rd, Gibson WA

New population, sent to WA Herbarium for verification – KW149, Acc 9059. Specimen not retained

**FLORA AUTHORISATION / LICENCE No:** FTB62000327 Note if only observing plants (i.e. no specimens or plant material is taken) then no authorisation/licence is required. For further information on authorisation and licencing requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under authorisations/licences should be recorded above in the OTHER COMMENTS section.

**SPECIMEN:** Collectors No: KW149 WA Herb.  Regional Herb.  District Herb.  Other: \_\_\_\_\_

**LODGEMENT:** WA Herb Lodgement No: 9059

**ATTACHED:** Map  Mudmap  Photo  GIS data  Field notes  Other: \_\_\_\_\_

**COPY SENT TO:** Regional Office  District Office  Other: \_\_\_\_\_

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

**RECORDS:** Please forward to **Flora Administrative Officer**, Species and Communities Program.  
Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# Threatened and Priority Flora Report Form

Submitter of Record: Katie White

Role: Botanist/Ecologist

Signed: KW

Date: 24/09/2021

Please return completed form to **Species And Communities Program DBCA**,  
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: [flora.data@dbca.wa.gov.au](mailto:flora.data@dbca.wa.gov.au)

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

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_\_ Record Entered in Database



# 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: 21/06/21 12:44:26

[Summary](#)

[Details](#)

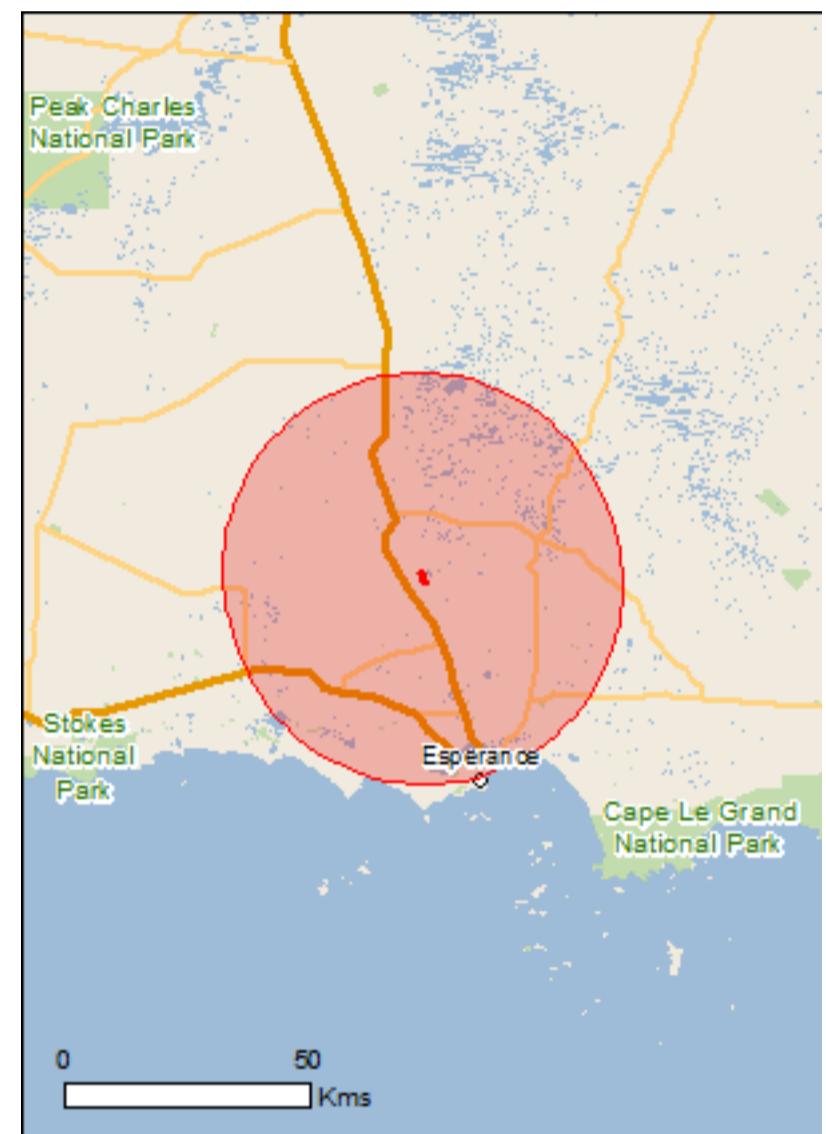
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

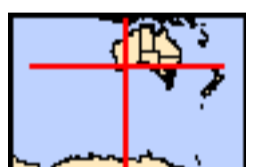
[Acknowledgements](#)



This map may contain data which are  
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[Coordinates](#)

Buffer: 40.0Km



# 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](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance:</a>	2
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	3
<a href="#">Listed Threatened Species:</a>	46
<a href="#">Listed Migratory Species:</a>	51

## Other Matters Protected by the EPBC Act

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

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

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

<a href="#">Commonwealth Land:</a>	1
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	83
<a href="#">Whales and Other Cetaceans:</a>	12
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None

## Extra Information

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

<a href="#">State and Territory Reserves:</a>	29
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Invasive Species:</a>	15
<a href="#">Nationally Important Wetlands:</a>	4
<a href="#">Key Ecological Features (Marine)</a>	None



# Details

## Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[ Resource Information ]
Name	Proximity
<a href="#">Lake gore</a>	Within Ramsar site
<a href="#">Lake warden system</a>	Within Ramsar site

## Listed Threatened Ecological Communities

[ Resource Information ]

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

Name	Status	Type of Presence
<a href="#">Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia</a>	Endangered	Community likely to occur within area
<a href="#">Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia</a>	Endangered	Community likely to occur within area
<a href="#">Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia</a>	Endangered	Community likely to occur within area

## Listed Threatened Species

[ Resource Information ]

Name	Status	Type of Presence
Birds		
<a href="#">Botaurus poiciloptilus</a> Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Calyptorhynchus latirostris</a> Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
<a href="#">Cereopsis novaehollandiae grisea</a> Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea dabbenena</a> Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Halobaena caerulea</a> Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
<a href="#">Leipoa ocellata</a> Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Limosa lapponica menzbieri</a> Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Pachyptila turtur subantarctica</a> Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat may occur within area
<a href="#">Pterodroma mollis</a> Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
<a href="#">Sternula nereis nereis</a> Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

## Mammals

Name	Status	Type of Presence
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat may occur within area
<a href="#">Dasyurus geoffroii</a> Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Breeding known to occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Neophoca cinerea</a> Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area
<a href="#">Parantechinus apicalis</a> Dibbler [313]	Endangered	Species or species habitat likely to occur within area
<a href="#">Phascogale calura</a> Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat may occur within area
<b>Plants</b>		
<a href="#">Anigozanthos bicolor subsp. minor</a> Little Kangaroo Paw, Two-coloured Kangaroo Paw, Small Two-colour Kangaroo Paw [21241]	Endangered	Species or species habitat known to occur within area
<a href="#">Eremophila glabra subsp. Scaddan (C. Turley s.n. 10/11/2005)</a> [89454]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Eremophila lactea</a> Milky Emu Bush [2416]	Endangered	Species or species habitat known to occur within area
<a href="#">Eucalyptus merrickiae</a> Goblet Mallee [13119]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Kennedia glabrata</a> Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Lambertia echinata subsp. echinata</a> Prickly Honeysuckle [56729]	Endangered	Species or species habitat may occur within area
<a href="#">Ricinocarpos trichophorus</a> Barrens Wedding Bush [19931]	Endangered	Species or species habitat likely to occur within area
<b>Reptiles</b>		
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
<b>Sharks</b>		
<a href="#">Carcharias taurus (west coast population)</a> Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Rhincodon typus</a> 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
<b>Migratory Marine Birds</b>		
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardenna carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
<a href="#">Ardenna grisea</a> Sooty Shearwater [82651]		Species or species habitat may occur within area
<a href="#">Ardenna tenuirostris</a> Short-tailed Shearwater [82652]		Breeding known to occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea dabbenena</a> Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Hydroprogne caspia</a> Caspian Tern [808]		Breeding known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Onychoprion anaethetus</a> Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed	Vulnerable	Species or species

Name	Threatened	Type of Presence
Albatross [64459]		habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<b>Migratory Marine Species</b>		
<a href="#">Balaena glacialis australis</a> Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat may occur within area
<a href="#">Caperea marginata</a> Pygmy Right Whale [39]		Species or species habitat may occur within area
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
<a href="#">Lagenorhynchus obscurus</a> Dusky Dolphin [43]		Species or species habitat may occur within area
<a href="#">Lamna nasus</a> Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
<b>Migratory Terrestrial Species</b>		
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat known to occur within area
<b>Migratory Wetlands Species</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]		Species or species habitat known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<a href="#">Calidris alba</a> Sanderling [875]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat known to occur within area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Charadrius bicinctus</a> Double-banded Plover [895]		Species or species habitat known to occur within area
<a href="#">Gallinago megala</a> Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Gallinago stenura</a> Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Numenius minutus</a> Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat likely to occur within area
<a href="#">Tringa brevipes</a> Grey-tailed Tattler [851]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area

## Other Matters Protected by the EPBC Act

### Commonwealth Land

[ [Resource Information](#) ]

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

#### Name

Commonwealth Land -

### 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
<b>Birds</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardea ibis</a> Cattle Egret [59542]		Species or species habitat may occur within area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]		Species or species habitat known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<a href="#">Calidris alba</a> Sanderling [875]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat known to occur within area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Catharacta skua</a> Great Skua [59472]		Species or species habitat may occur within area
<a href="#">Cereopsis novaehollandiae grisea</a> Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
<a href="#">Charadrius bicinctus</a> Double-banded Plover [895]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
<a href="#">Charadrius ruficapillus</a> Red-capped Plover [881]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Chrysococcyx osculans</a> Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea dabbenena</a> Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Eudyptula minor</a> Little Penguin [1085]		Breeding known to occur within area
<a href="#">Gallinago megala</a> Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Gallinago stenura</a> Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
<a href="#">Halobaena caerulea</a> Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
<a href="#">Heteroscelus brevipes</a> Grey-tailed Tattler [59311]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Himantopus himantopus</a> Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
<a href="#">Larus novaehollandiae</a> Silver Gull [810]		Breeding known to occur within area
<a href="#">Larus pacificus</a> Pacific Gull [811]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within



Name	Threatened	Type of Presence area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Numenius minutus</a> Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Pachyptila turtur</a> Fairy Prion [1066]		Species or species habitat may occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat likely to occur within area
<a href="#">Pelagodroma marina</a> White-faced Storm-Petrel [1016]		Breeding known to occur within area
<a href="#">Phalacrocorax fuscescens</a> Black-faced Cormorant [59660]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Pterodroma macroptera</a> Great-winged Petrel [1035]		Breeding likely to occur within area
<a href="#">Pterodroma mollis</a> Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
<a href="#">Puffinus assimilis</a> Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Puffinus carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Breeding known to occur within area
<a href="#">Puffinus griseus</a> Sooty Shearwater [1024]		Species or species habitat may occur within area
<a href="#">Puffinus tenuirostris</a> Short-tailed Shearwater [1029]		Breeding known to occur within area
<a href="#">Recurvirostra novaehollandiae</a> Red-necked Avocet [871]		Species or species habitat known to occur within area
<a href="#">Sterna anaethetus</a> Bridled Tern [814]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Sterna caspia</a> Caspian Tern [59467]		Breeding known to occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thinornis rubricollis</a> Hooded Plover [59510]		Species or species habitat known to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
<b>Fish</b>		
<a href="#">Acentronura australe</a> Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
<a href="#">Campichthys galei</a> Gale's Pipefish [66191]		Species or species habitat may occur within area
<a href="#">Heraldia nocturna</a> Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
<a href="#">Hippocampus breviceps</a> Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
<a href="#">Histiogamphelus cristatus</a> Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
<a href="#">Leptoichthys fistularius</a> Brushtail Pipefish [66248]		Species or species habitat may occur within area
<a href="#">Lissocampus caudalis</a> Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
<a href="#">Lissocampus runa</a> Javelin Pipefish [66251]		Species or species habitat may occur within area
<a href="#">Maroubra perserrata</a> Sawtooth Pipefish [66252]		Species or species habitat may occur within area
<a href="#">Nannocampus subosseus</a> Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
<a href="#">Notiocampus ruber</a> Red Pipefish [66265]		Species or species habitat may occur within area
<a href="#">Phycodurus eques</a> Leafy Seadragon [66267]		Species or species habitat may occur within area
<a href="#">Phyllopteryx taeniolatus</a> Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Pugnaso curtirostris</a> Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
<a href="#">Solegnathus lettiensis</a> Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
<a href="#">Stigmatopora argus</a> Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
<a href="#">Stigmatopora nigra</a> Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
<a href="#">Urocampus carinirostris</a> Hairy Pipefish [66282]		Species or species habitat may occur within area
<a href="#">Vanacampus margaritifer</a> Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
<a href="#">Vanacampus phillipi</a> Port Phillip Pipefish [66284]		Species or species habitat may occur within area
<a href="#">Vanacampus poecilolaemus</a> Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area

## Mammals

<a href="#">Arctocephalus forsteri</a> Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat likely to occur within area
<a href="#">Neophoca cinerea</a> Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area

## Reptiles

<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

## Whales and other Cetaceans

Name	Status	Type of Presence
<b>[ Resource Information ]</b>		
Mammals		
<a href="#">Balaenoptera acutorostrata</a> Minke Whale [33]		Species or species habitat may occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat may occur within area
<a href="#">Caperea marginata</a> Pygmy Right Whale [39]		Species or species habitat may occur within area

Name	Status	Type of Presence
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Breeding known to occur within area
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
<a href="#">Lagenorhynchus obscurus</a> Dusky Dolphin [43]		Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area

## Extra Information

State and Territory Reserves	[ Resource Information ]
Name	State
Bishops	WA
Dalyup	WA
Esperance 827 and Part 373 & 826	WA
Helms Arboretum	WA
Jeffrey Lagoon	WA
Kendall Road	WA
Lake Mortijinup	WA
Lake Warden	WA
Mount Burdett	WA
Mount Ridley	WA
Mullet Lake	WA
Recherche Archipelago	WA
Ridley North	WA
Ridley South	WA
Shark Lake	WA
Speddingup East	WA
Swan Lagoon	WA
Truslove North	WA
Truslove Townsite	WA
Unnamed WA04182	WA
Unnamed WA24511	WA
Unnamed WA24953	WA
Unnamed WA26885	WA
Unnamed WA31313	WA
Unnamed WA32259	WA
Unnamed WA32419	WA
Unnamed WA36183	WA

Name	State
Unnamed WA50792	WA
Woody Lake	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
<b>Birds</b>		
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
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
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
<b>Mammals</b>		
Canis lupus familiaris Domestic Dog [82654]		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
<b>Plants</b>		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Carrichtera annua Ward's Weed [9511]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area

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

Name	State
<a href="#">Lake Gore System</a>	WA
<a href="#">Lake Warden System</a>	WA
<a href="#">Mortijinup Lake System</a>	WA
<a href="#">Pink Lake</a>	WA

# Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

# Coordinates

-33.545137 121.778185,-33.551003 121.781146,-33.557441 121.783635,-33.561124 121.785995,-33.563162 121.78651,-33.56917 121.788141,-33.5706 121.788656

# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
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- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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# NatureMap 40km Fauna Species Report

Created By Guest user on 21/06/2021

**Kingdom** Animalia  
**Current Names Only** Yes  
**Core Datasets Only** Yes  
**Method** 'By Circle'  
**Centre** 121° 47' 18" E, 33° 34' 09" S  
**Buffer** 40km  
**Group By** Family

Family	Species	Records
Acanthizidae	10	321
Accipitridae	10	268
Actinopodidae	3	7
Aegothelidae	1	3
Aeshnidae	2	4
Agamidae	7	29
Ameiridae	4	15
Anatidae	16	2210
Ancylidae	1	1
Anhingidae	1	78
Anostraca	1	1
Antennariidae	1	1
Apodidae	1	2
Apogonidae	1	1
Aracanidae	3	5
Araneidae	13	26
Arcellidae	3	4
Ardeidae	7	439
Arrenuridae	1	1
Arripidae	1	1
Artamidae	2	85
Asplanchnidae	1	1
Atherinidae	2	4
Aulopodidae	1	1
Australomedusidae	1	1
Balaenidae	1	5
Barychelidae	1	1
Bdelloidea	3	13
Bivalvia	1	1
Bothriuridae	1	1
Bovidae	1	2
Brachionidae	16	43
Branchipodidae	3	50
Brentidae	1	3
Burhinidae	2	2
Burramyidae	1	24
Buthidae	2	4
Bythitidae	1	1
Cacatuidae	1	18
Caenidae	1	1
Campephagidae	1	116
Canthocamptidae	3	9
Capitellidae	2	8
Carabidae	1	2
Carangidae	1	1
Carcharhinidae	1	1
Casuaridae	1	49
Ceinidae	2	11
Centropagidae	4	44
Centropyxidae	3	3
Ceratopogonidae	9	82
Charadriidae	13	862
Cheloniidae	1	2
Chiltoniidae	1	40
Chironemidae	1	1
Chironomidae	34	285
Chydoridae	6	8
Clavidae	1	11
Clinidae	1	1
Coenagrionidae	3	6
Columbidae	5	391
Copepoda	2	8
Corduliidae	1	8
Corinnidae	2	2
Corixidae	10	36
Corvidae	3	261
Cracticidae	5	373
Cuculidae	3	109
Culicidae	4	10
Curculionidae	1	1
Cyclopidae	10	55
Cyprididae	25	163
Cypridopsidae	1	24
Cytherideidae	2	23
Cyzicidae	1	1

Daphniidae	8	22
Dasyuridae	2	5
Delphinidae	4	4
Dermochelyidae	1	1
Desidae	1	4
Dicruridae	4	747
Diffugiidae	2	2
Diodontidae	2	2
Diomedidae	2	2
Diosaccidae	1	2
Diplodactylidae	3	11
Dolichopodidae	2	12
Dytiscidae	19	42
Ecnomidae	1	3
Elapidae	11	66
Empididae	1	2
Enchytraeidae	1	20
Ephyridae	4	34
Estrilidae	1	64
Euchlanidae	1	2
Euglyphidae	1	1
Eylaidae	1	3
Falconidae	4	124
Filiniidae	1	1
Galaxiidae	2	15
Garypidae	3	10
Garypinidae	1	1
Gekkonidae	2	36
Gelastocoridae	1	1
Geogarypidae	1	1
Geotriidae	1	1
Glossiphoniidae	1	1
Gobiesocidae	1	1
Gobiidae	3	7
Gonorynchidae	1	1
Gyrinidae	1	1
Haematopodidae	3	65
Halacaridae	9	30
Halcyonidae	2	101
Haliplidae	2	2
Hersiliidae	3	5
Heteroceridae	1	2
Hexarthridae	3	15
Hirudinea	1	2
Hirundinidae	4	280
Hydrachnidae	2	2
Hydraenidae	3	7
Hydridae	1	1
Hydrobiidae	2	12
Hydrophilidae	9	35
Hydroptilidae	1	1
Hydryphantidae	2	2
Hylidae	2	98
Hyriidae	1	1
Ilyocryptidae	1	1
Ilyocyprididae	1	3
Istiophoridae	1	1
Ixodidae	1	2
Kogiidae	1	1
Labridae	4	6
Lamponidae	1	13
Laophontidae	1	21
Laridae	10	248
Lecanidae	5	9
Lepadellidae	4	4
Lepidoptera	3	3
Leporidae	1	1
Leptoceridae	5	49
Leptocytheridae	1	24
Lesquereusidae	1	3
Lestidae	5	37
Libellulidae	1	3
Limnesiidae	1	2
Limnichidae	1	2
Limnocharidae	1	2
Limnodynastidae	6	71
Lobosea	1	4
Lycosidae	20	66
Macropodidae	2	3
Macrotrichidae	3	11
Maluridae	4	21
Megapodiidae	1	8
Meliphagidae	15	1165
Melitidae	1	8
Meropidae	1	9
Mesostigmata	1	19
Micropholcommatidae	1	2
Mimetidae	1	1
Miturgidae	1	1
Monacanthidae	3	4
Monoscutidae	1	1
Moridae	2	2
Motacillidae	1	1
Mugilidae	1	2
Mullidae	1	1
Muridae	4	23
Muscidae	3	31
Myobatrachidae	5	33
NO FAMILY	1	18
Naididae	4	26
Nematoda	1	37
Nemesiidae	2	11
Neosittidae	1	1
Nicodamidae	1	8
Notodromadidae	2	6

Notonectidae	7	17
Oecobiidae	1	4
Oligochaeta	1	5
Oniscidae	3	7
Ophichthidae	1	1
Opisthopora	1	1
Ostracoda	1	1
Otariidae	2	2
Otididae	1	8
Oxyopidae	2	3
Pachycephalidae	4	23
Palaemonidae	1	13
Paralichthyidae	1	1
Paramelitidae	1	1
Pardalotidae	4	83
Passeridae	1	2
Pelecanidae	1	230
Pempheridae	2	2
Peramelidae	1	3
Petroicidae	2	10
Pezidae	1	1
Phalacrocoracidae	6	417
Phasianidae	2	17
Philodiniidae	2	4
Phocidae	1	1
Pholcidae	2	6
Physidae	1	1
Pionidae	1	3
Planorbidae	1	1
Platycephalidae	1	1
Plesiopidae	1	1
Pleuronectidae	1	1
Plumatellidae	1	1
Podargidae	1	6
Podicipedidae	3	360
Pomatopsidae	5	40
Pomatostomidae	1	3
Pristinidae	2	2
Prodidomidae	5	10
Psittacidae	10	219
Psychodidae	1	1
Pygopodidae	5	21
Pyralidae	1	2
Rallidae	8	244
Recurvirostridae	3	442
Sabellidae	1	4
Saldidae	1	1
Salmonidae	1	1
Salticidae	5	8
Sarcoptiformes	4	16
Scatopsidae	1	4
Scincidae	20	145
Sciomyzidae	1	3
Scirtidae	1	1
Scolopacidae	16	622
Scolopendridae	1	1
Scombridae	2	2
Scyliorhinidae	1	1
Sillaginidae	1	2
Sparassidae	5	12
Sparidae	1	1
Sphaeriidae	1	2
Sphaeromatidae	2	16
Spheniscidae	3	3
Staphylinidae	1	5
Stratiomyidae	1	19
Sulidae	1	16
Sylviidae	2	16
Syngnathidae	3	3
Tabanidae	1	11
Talitridae	1	2
Tardigrada	1	1
Tarsipedidae	1	50
Terapontidae	1	1
Testudinellidae	1	8
Tetragnathidae	3	8
Theridiidae	2	8
Threskiornithidae	4	311
Tipulidae	3	6
Trichocercidae	1	1
Tripterygiidae	3	3
Trochanteridae	3	8
Trombidiformes	1	1
Turbellaria	1	8
Turnicidae	2	4
Unionicolidae	1	2
Uranoscopidae	1	2
Urodacidae	1	1
Varanidae	1	6
Vespertilionidae	2	5
Zeidae	1	1
Zodariidae	6	7
Zosteropidae	1	246
<b>TOTAL</b>	<b>805</b>	<b>14454</b>

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
<b>Acanthizidae</b>				
1.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
2.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
3.	24265 <i>Acanthiza uropygialis</i> (Chestnut-rumped Thornbill)			
4.	24269 <i>Calamanthus campestris</i> (Rufous Fieldwren)			
5.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
6.	24277 <i>Hylacola cauta</i> (Shy Groundwren, Shy Heathwren)			
7.	24278 <i>Pyrrholaemus brunneus</i> (Redthroat)			
8.	25534 <i>Sericornis frontalis</i> (White-browed Scrubwren)			
9.	24279 <i>Sericornis frontalis subsp. maculatus</i> (White-browed Scrubwren)			
10.	30948 <i>Smicronis brevirostris</i> (Weebill)			
<b>Accipitridae</b>				
11.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
12.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
13.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
14.	24288 <i>Circus approximans</i> (Swamp Harrier)			
15.	24289 <i>Circus assimilis</i> (Spotted Harrier)			
16.	<i>Elanus axillaris</i>			
17.	24293 <i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)			
18.	24295 <i>Haliastur sphenurus</i> (Whistling Kite)			
19.	47965 <i>Hieraaetus morphnoides</i> (Little Eagle)			
20.	<i>Lophoictinia isura</i>			
<b>Actinopodidae</b>				
21.	<i>Missulena granulosa</i>			
22.	<i>Missulena hoggi</i>			
23.	<i>Missulena occatoria</i>			
<b>Aegothelidae</b>				
24.	25544 <i>Aegotheles cristatus</i> (Australian Owlet-nightjar)			
<b>Aeshnidae</b>				
25.	<i>Adversaeschna brevistyla</i>			
26.	<i>Anax papuensis</i>			
<b>Agamidae</b>				
27.	24860 <i>Amphibolurus norrisi</i> (Mallee Tree Dragon)			
28.	42385 <i>Ctenophorus chapmani</i> (Eastern Heath Dragon)			
29.	25460 <i>Ctenophorus maculatus</i> (Spotted Military Dragon)			
30.	24879 <i>Ctenophorus maculatus subsp. griseus</i> (Spotted Military Dragon)			
31.	24883 <i>Ctenophorus ornatus</i> (Ornate Crevice-Dragon)			
32.	25510 <i>Pogona minor</i> (Dwarf Bearded Dragon)			
33.	24907 <i>Pogona minor subsp. minor</i> (Dwarf Bearded Dragon)			
<b>Ameiridae</b>				
34.	<i>Nitocra near sp. 4</i> (SAP)			
35.	<i>Nitocra reducta</i>			
36.	<i>Nitocra sp. 4</i> (SAP)			
37.	<i>Nitocra sp. 5 (nr reducta)</i> (SAP)			
<b>Anatidae</b>				
38.	24310 <i>Anas castanea</i> (Chestnut Teal)			
39.	24312 <i>Anas gracilis</i> (Grey Teal)			
40.	24313 <i>Anas platyrhynchos</i> (Mallard)			
41.	<i>Anas platyrhynchos subsp. domesticus</i>			
42.	24315 <i>Anas rhynchotis</i> (Australasian Shoveler)			
43.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
44.	24318 <i>Aythya australis</i> (Hardhead)			
45.	24319 <i>Biziura lobata</i> (Musk Duck)			
46.	25551 <i>Cereopsis novaehollandiae</i> (Cape Barren Goose)		T	
47.	24320 <i>Cereopsis novaehollandiae subsp. grisea</i> (Recherche Cape Barren Goose, Cape Barren Goose)		T	
48.	24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck)			
49.	24322 <i>Cygnus atratus</i> (Black Swan)			
50.	24326 <i>Malacorhynchus membranaceus</i> (Pink-eared Duck)			
51.	24328 <i>Oxyura australis</i> (Blue-billed Duck)		P4	
52.	24329 <i>Stictonetta naevosa</i> (Freckled Duck)			
53.	24331 <i>Tadorna tadornoides</i> (Australian Shelduck, Mountain Duck)			
<b>Anclidae</b>				

Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
54.	<i>Ferrissia petterdi</i>			
<b>AnHINGIDAE</b>				
55.	47414 <i>Anhinga novaehollandiae</i> (Australasian Darter)			
<b>ANOSTRACA</b>				
56.	<i>Anostraca</i> (unident.)			
<b>ANTENNARIIDAE</b>				
57.	<i>Phyllophryne scortea</i>			
<b>APODIDAE</b>				
58.	25554 <i>Apus pacificus</i> (Fork-tailed Swift, Pacific Swift)		IA	
<b>APOGONIDAE</b>				
59.	<i>Vincentia punctata</i>			
<b>ARACANIDAE</b>				
60.	<i>Aracana aurita</i>			
61.	<i>Aracana ornata</i>			
62.	<i>Capropygia unistriata</i>			
<b>ARANEIDAE</b>				
63.	<i>Arachnura higginsi</i>			
64.	<i>Araneus necopinus</i>			
65.	<i>Araneus senicaudatus</i>			
66.	<i>Argiope protensa</i>			
67.	<i>Argiope trifasciata</i>			
68.	<i>Austracantha minax</i>			
69.	<i>Backbourkia heroine</i>			
70.	<i>Cyclosa trilobata</i>			
71.	<i>Gea theridioides</i>			
72.	<i>Heurodes turritus</i>			
73.	<i>Nephila edulis</i>			
74.	<i>Novakiella trituberculosa</i>			
75.	<i>Poltys laciniosus</i>			
<b>ARCELLIDAE</b>				
76.	<i>Arcella discoides</i>			
77.	<i>Arcella hemisphaerica</i>			
78.	<i>Arcella</i> sp. b (SAP)			
<b>ARDEIDAE</b>				
79.	25558 <i>Ardea ibis</i> (Cattle Egret)			
80.	41324 <i>Ardea modesta</i> (great egret, white egret)			
81.	24340 <i>Ardea novaehollandiae</i> (White-faced Heron)			
82.	24341 <i>Ardea pacifica</i> (White-necked Heron)			
83.	<i>Egretta garzetta</i>			
84.	<i>Egretta novaehollandiae</i>			
85.	25564 <i>Nycticorax caledonicus</i> (Rufous Night Heron)			
<b>ARRENURIDAE</b>				
86.	<i>Arrenurus (Truncaturus)</i> sp. (SAP)			
<b>ARRIPIDAE</b>				
87.	<i>Arripis truttaceus</i>			Y
<b>ARTAMIDAE</b>				
88.	25566 <i>Artamus cinereus</i> (Black-faced Woodswallow)			
89.	24353 <i>Artamus cyanopterus</i> (Dusky Woodswallow)			
<b>ASPLANCHNIDAE</b>				
90.	<i>Asplanchna brightwelli</i>			
<b>ATHERINIDAE</b>				
91.	<i>Atherinosoma wallacei</i>			
92.	<i>Leptatherina presbyteroides</i>			
<b>AULOPODIDAE</b>				
93.	<i>Aulopus purpurissatus</i>			
<b>AUSTRALOMEDUSIDAE</b>				
94.	<i>Australomedusa ?baylii</i> (SAP)			
<b>BALAEIDAE</b>				
95.	24043 <i>Eubalaena australis</i> (Southern Right Whale)		T	
<b>BARYCHELIDAE</b>				
96.	<i>Idiommata blackwalli</i>			

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<b>Bdelloidea</b>				
97.	<i>Bdelloidea med-large contracted of RJS (SAP)</i>			
98.	<i>Bdelloidea sp.</i>			
99.	<i>Bdelloidea sp. 2:2</i>			
<b>Bivalvia</b>				
100.	<i>Bivalvia sp.</i>			
<b>Bothriuridae</b>				
101.	<i>Cercophonius granulatus</i>			
<b>Bovidae</b>				
102.	34016 <i>Ovis aries (Sheep)</i>			
<b>Brachionidae</b>				
103.	<i>Brachionus angularis</i>			
104.	<i>Brachionus cf. nilsoni (SAP)</i>			
105.	<i>Brachionus cf. plicatilis (SAP)</i>			
106.	<i>Brachionus leydigii</i>			
107.	<i>Brachionus plicatilis complex ("towerinninensis" form)</i>			Y
108.	<i>Brachionus plicatilis s.l.</i>			
109.	<i>Brachionus quadridentatus</i>			
110.	<i>Brachionus quadridentatus cluniorbicularis</i>			
111.	<i>Brachionus rotundiformis</i>			
112.	<i>Brachionus sp.</i>			
113.	<i>Brachionus urceolaris s.l.</i>			
114.	<i>Keratella australis</i>			
115.	<i>Keratella cf. quadrata (SAP)</i>			
116.	<i>Keratella procurva</i>			
117.	<i>Keratella quadrata</i>			
118.	<i>Notholca salina</i>			
<b>Branchipodidae</b>				
119.	<i>Branchipodidae sp.</i>			
120.	<i>Parartemia longicaudata</i>			
121.	<i>Parartemia sp.</i>			
<b>Brentidae</b>				
122.	<i>Brentidae sp.</i>			
<b>Burhinidae</b>				
123.	24359 <i>Burhinus grallarius (Bush Stone-curlew)</i>			
124.	47938 <i>Esacus magnirostris (Beach Stone-curlew, Beach Thick-knee)</i>			
<b>Burramyidae</b>				
125.	24086 <i>Cercartetus concinnus (Western Pygmy-possum, Mundarda)</i>			
<b>Buthidae</b>				
126.	<i>Isometroides vescus</i>			
127.	<i>Lychas sp. 2</i>			
<b>Bythitidae</b>				
128.	<i>Dermatopsis sp.</i>			
<b>Cacatuidae</b>				
129.	<i>Eolophus roseicapillus</i>			
<b>Caenidae</b>				
130.	<i>Tasmanocoenis tillyardi</i>			
<b>Campephagidae</b>				
131.	25568 <i>Coracina novaehollandiae (Black-faced Cuckoo-shrike)</i>			
<b>Canthocamptidae</b>				
132.	<i>Cletocamptus aff deitersi</i>			
133.	<i>Mesochra baylyi</i>			
134.	<i>Mesochra nr flava</i>			
<b>Capitellidae</b>				
135.	<i>Capitella sp.</i>			
136.	<i>Capitellidae sp.</i>			
<b>Carabidae</b>				
137.	<i>Carabidae sp.</i>			
<b>Carangidae</b>				
138.	<i>Pseudocaranx dentex</i>			

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<b>Carcharhinidae</b>				
139.	<i>Carcharhinus brachyurus</i>			
<b>Casuariidae</b>				
140.	24470 <i>Dromaius novaehollandiae</i> (Emu)			
<b>Ceinidae</b>				
141.	<i>Austrochiltonia</i> sp.			
142.	<i>Ceinidae</i> sp.			
<b>Centropagidae</b>				
143.	<i>Boeckella triarticulata</i>			
144.	<i>Calamoecia clitellata</i>			
145.	<i>Calamoecia</i> sp. 342 (ampulla variant) (CB)			
146.	<i>Gladioferens imparipes</i>			
<b>Centropyxidae</b>				
147.	<i>Centropyxis aculeata</i>			
148.	<i>Centropyxis cassis</i>			Y
149.	<i>Centropyxis</i> sp. b (SAP)			
<b>Ceratopogonidae</b>				
150.	<i>Bezzia</i> sp. (not 1 or 2)			
151.	<i>Bezzia</i> sp. 2 (SAP)			
152.	<i>Ceratopogonidae</i> sp.			
153.	<i>Ceratopogonidae</i> sp. A (SAP)			
154.	<i>Clinohelea</i> sp.			
155.	<i>Culicoides</i> sp.			
156.	<i>Dasyhelea</i> sp.			
157.	<i>Monohalea</i> sp. 3 (SAP)			
158.	<i>Nilobezzia</i> sp.			
<b>Charadriidae</b>				
159.	25573 <i>Charadrius bicinctus</i> (Double-banded Plover)		IA	
160.	25575 <i>Charadrius leschenaultii</i> (Greater Sand Plover)		T	
161.	25576 <i>Charadrius mongolus</i> (Lesser Sand Plover)		T	
162.	24377 <i>Charadrius ruficapillus</i> (Red-capped Plover)			
163.	47937 <i>Elseya melanops</i> (Black-fronted Dotterel)			
164.	24379 <i>Erythronys cinctus</i> (Red-kneed Dotterel)			
165.	24381 <i>Pluvialis dominica</i> (American Golden Plover)			
166.	24382 <i>Pluvialis fulva</i> (Pacific Golden Plover)		IA	
167.	24383 <i>Pluvialis squatarola</i> (Grey Plover)		IA	
168.	48135 <i>Thinornis rubricollis</i> (Hooded Plover, Hooded Dotterel)		P4	
169.	25577 <i>Vanellus miles</i> (Masked Lapwing)			
170.	24385 <i>Vanellus miles</i> subsp. <i>novaehollandiae</i> (Masked Lapwing)			
171.	24386 <i>Vanellus tricolor</i> (Banded Lapwing)			
<b>Cheloniidae</b>				
172.	25335 <i>Caretta caretta</i> (Loggerhead Turtle)		T	
<b>Chiltoniidae</b>				
173.	<i>Austrochiltonia subtenuis</i>			
<b>Chironemidae</b>				
174.	<i>Threpterus maculosus</i>			
<b>Chironomidae</b>				
175.	<i>Chironomidae</i> sp.			
176.	<i>Chironominae</i> sp.			
177.	<i>Chironomus</i> aff. <i>alternans</i> (V24) (CB)			
178.	<i>Chironomus occidentalis</i>			
179.	<i>Chironomus tepperi</i>			
180.	<i>Cladopelma curtivalva</i>			
181.	<i>Cladotanytarsus</i> sp. A (SAP)			
182.	<i>Corynoneura</i> sp. (V49) (SAP)			
183.	<i>Cryptochironomus griseidorsum</i>			
184.	<i>Dicrotendipes conjunctus</i>			
185.	<i>Dicrotendipes pseudoconjunctus</i>			
186.	<i>Dicrotendipes</i> sp.			
187.	<i>Dicrotendipes</i> sp. A (V47) (SAP)			
188.	<i>Gymnometriocnemus</i> sp. B (=V45=sp. A&2=ortho sp. O)			
189.	<i>Gymnometriocnemus</i> spp. (not V44 or V45)			
190.	<i>Kiefferulus interinctus</i>			
191.	<i>Kiefferulus martini</i>			
192.	<i>Limnophyes vestitus</i> (V41)			

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193.	<i>Orthoclaadiinae</i> sp.			
194.	<i>Orthoclaadiinae</i> sp. G (SAP)			
195.	<i>Orthoclaadiinae</i> sp. I (SAP)			
196.	<i>Orthoclaadiinae</i> sp. J (SAP)			
197.	<i>Orthoclaadiinae</i> sp. P (SAP)			
198.	<i>Paralimnophyes pullulus</i> (V42)			
199.	<i>Paramerina levidensis</i>			
200.	<i>Polypedilum</i> nr <i>vespertinus</i> (M2) (SAP)			
201.	<i>Polypedilum</i> nr. <i>convexum</i> (SAP)			
202.	<i>Polypedilum nubifer</i>			
203.	<i>Procladius paludicola</i>			
204.	<i>Procladius villosimanus</i>			
205.	<i>Tanypodinae</i> sp.			
206.	<i>Tanytarsus barbatarsis</i>			
207.	<i>Tanytarsus fuscithorax/semibarbitarsus</i>			
208.	<i>Tanytarsus</i> nr <i>bispinosus</i> (SAP)			
<b>Chydoridae</b>				
209.	<i>Leydigia</i> cf. <i>leydigii</i> (SAP)			
210.	<i>Pleuroxus inermis</i>			
211.	<i>Pleuroxus jugosus</i>			
212.	<i>Pleuroxus</i> sp.			
213.	<i>Plurispina</i> cf. <i>multituberculata</i> (SPS)			Y
214.	<i>Plurispina chauliodis</i>			
<b>Clavidae</b>				
215.	<i>Cordylophora</i> sp.			Y
<b>Clinidae</b>				
216.	<i>Heteroclinus</i> sp.			
<b>Coenagrionidae</b>				
217.	<i>Austroagrion cyane</i>			
218.	<i>Ischnura heterosticta heterosticta</i>			
219.	<i>Xanthagrion erythroneurum</i>			
<b>Columbidae</b>				
220.	24399 <i>Columba livia</i> (Domestic Pigeon)	Y		
221.	24407 <i>Ocyphaps lophotes</i> (Crested Pigeon)			
222.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
223.	25587 <i>Phaps elegans</i> (Brush Bronzewing)			
224.	25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove)	Y		
<b>Copepoda</b>				
225.	<i>Calanoida</i> sp.			
226.	<i>Harpacticoida</i> sp.			
<b>Corduliidae</b>				
227.	<i>Hemicordulia tau</i>			
<b>Corinnidae</b>				
228.	<i>Poecilipta smaragdinea</i>			
229.	<i>Supunna funerea</i>			
<b>Corixidae</b>				
230.	<i>Agraptocorixa eurynome</i>			
231.	<i>Agraptocorixa parvipunctata</i>			
232.	<i>Agraptocorixa</i> sp.			
233.	<i>Corixidae</i> sp.			
234.	<i>Diaprepocoris barycephala</i>			
235.	<i>Diaprepocoris</i> sp.			
236.	<i>Micronecta gracilis</i>			
237.	<i>Micronecta robusta</i>			
238.	<i>Micronecta</i> sp.			
239.	<i>Sigara</i> sp.			
<b>Corvidae</b>				
240.	24416 <i>Corvus bennetti</i> (Little Crow)			
241.	25592 <i>Corvus coronoides</i> (Australian Raven)			
242.	24417 <i>Corvus coronoides</i> subsp. <i>perplexus</i> (Australian Raven)			
<b>Cracticidae</b>				
243.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
244.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
245.	24422 <i>Cracticus tibicen</i> subsp. <i>dorsalis</i> (White-backed Magpie)			
246.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			



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247.	25597 <i>Strepera versicolor</i> (Grey Currawong)			
<b>Cuculidae</b>				
248.	25598 <i>Cacomantis flabelliformis</i> (Fan-tailed Cuckoo)			
249.	24427 <i>Cacomantis flabelliformis subsp. flabelliformis</i> (Fan-tailed Cuckoo)			
250.	42307 <i>Cacomantis pallidus</i> (Pallid Cuckoo)			
<b>Culicidae</b>				
251.	<i>Aedes</i> (Och.) sp. 1 (nr. <i>nigrithorax</i> ) (SAP)			
252.	<i>Aedes camptorhynchus</i>			
253.	<i>Aedes</i> sp.			
254.	<i>Culicidae</i> sp.			
<b>Curculionidae</b>				
255.	<i>Curculionidae</i> sp.			
<b>Cyclopidae</b>				
256.	<i>Apocyclops dengizicus</i>			
257.	<i>Australocyclops australis</i>			
258.	<i>Australocyclops similis</i>			
259.	<i>Eucyclops australiensis</i>			
260.	<i>Halicyclops</i> sp. 1 (nr <i>ambiguus</i> ) (SAP)			
261.	<i>Meridiocyclops baylyi</i>			
262.	<i>Mesocyclops brooksi</i>			
263.	<i>Paracyclops ?chiltoni</i> (SAP)			
264.	<i>Pescecyclus</i> sp. 434 (Stuart's original <i>arnaudi</i> sensu Sars)			
265.	<i>Pescecyclus</i> sp. 442=462=465=CB2 ( <i>salinarum</i> in Morton)			
<b>Cyprididae</b>				
266.	<i>Alboa worooa</i>			
267.	<i>Australocypris insularis</i>			
268.	<i>Australocypris</i> sp.			
269.	<i>Bennelongia barangaroo lineage</i>			
270.	<i>Bennelongia frumenta</i>			
271.	<i>Caboncypris kondininensis</i>			
272.	<i>Candonocypris novaezelandiae</i>			
273.	<i>Cyprididae</i> sp.			
274.	<i>Cyprinotus cingalensis</i>			
275.	<i>Cyprinotus cingalensis</i> (ex <i>edwardi</i> )			
276.	<i>Diacypris 'gunyidi'</i> (ms name) (SAP)			
277.	<i>Diacypris compacta</i>			
278.	<i>Diacypris</i> sp.			
279.	<i>Diacypris</i> sp. 581 (n. sp.) (SAP)			Y
280.	<i>Diacypris spinosa</i>			
281.	<i>Ilyodromus</i> sp.			
282.	<i>Mytilocypris ambigua</i>			
283.	<i>Mytilocypris mytiloides</i>			
284.	<i>Mytilocypris</i> sp.			
285.	<i>Platycypris baueri</i>			
286.	<i>Reticypris ?pinguis</i> (SAP)			
287.	<i>Reticypris clava</i>			
288.	<i>Reticypris</i> sp. 557 (n. sp.) (SAP)			
289.	<i>Reticypris walbu</i>			
290.	<i>Zonocypris</i> sp BOS082			Y
<b>Cypridopsidae</b>				
291.	<i>Sarscypridopsis aculeata</i>			
<b>Cytherideidae</b>				
292.	<i>Cyprideis australiensis</i>			
293.	<i>Cytherideidae</i> sp.			Y
<b>Cyzicidae</b>				
294.	<i>Ozestheria packardi</i>			
<b>Daphniidae</b>				
295.	<i>Ceriodaphnia</i> n. sp. c ( <i>Berner</i> sp.#1) (SAP)			
296.	<i>Daphnia australis</i>			
297.	<i>Daphnia carinata</i>			
298.	<i>Daphnia queenslandensis</i>			
299.	<i>Daphnia</i> sp.			
300.	<i>Daphnia truncata</i>			
301.	<i>Daphnia wardi</i>			
302.	<i>Simocephalus elizabethae</i>			

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<b>Dasyuridae</b>				
303.	24108 <i>Sminthopsis crassicaudata</i> (Fat-tailed Dunnart)			
304.	24112 <i>Sminthopsis granulipes</i> (White-tailed Dunnart)			
<b>Delphinidae</b>				
305.	24052 <i>Delphinus delphis</i> (Common Dolphin)			
306.	24056 <i>Grampus griseus</i> (Risso's Dolphin)			
307.	30954 <i>Tursiops aduncus</i> (Indo-Pacific Bottlenose Dolphin)			
308.	24069 <i>Tursiops truncatus</i> (Bottlenose Dolphin)			
<b>Dermochelyidae</b>				
309.	25346 <i>Dermochelys coriacea</i> (Leatherback Turtle)		T	
<b>Desidae</b>				
310.	<i>Badumna insignis</i>			
<b>Dicruridae</b>				
311.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
312.	25610 <i>Myiagra inquieta</i> (Restless Flycatcher)			
313.	48096 <i>Rhipidura albiscapa</i> (Grey Fantail)			
314.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
<b>Diffugiidae</b>				
315.	<i>Diffugia</i> sp.			
316.	<i>Diffugia</i> sp. b (SAP)			
<b>Diodontidae</b>				
317.	<i>Allomycterus pilatus</i>			
318.	<i>Diodon</i> sp.			
<b>Diomedeidae</b>				
319.	25618 <i>Diomedea exulans</i> (Wandering Albatross)		T	
320.	34007 <i>Thalassarche chlororhynchos</i> (Atlantic Yellow-nosed Albatross)		T	
<b>Diosaccidae</b>				
321.	<i>Schizopera clandestina</i>			
<b>Diplodactylidae</b>				
322.	41403 <i>Diplodactylus calcicolus</i> (South Coast Gecko)			
323.	25518 <i>Strophurus spinigerus</i>			
324.	24943 <i>Strophurus spinigerus</i> subsp. <i>inornatus</i>			
<b>Dolichopodidae</b>				
325.	<i>Dolichopodidae</i> sp.			
326.	<i>Dolichopodidae</i> sp. B (SAP)			
<b>Dytiscidae</b>				
327.	<i>Allodessus bistrigatus</i>			
328.	<i>Antiporus gilberti</i>			
329.	<i>Antiporus occidentalis</i>			
330.	<i>Dytiscidae</i> sp.			
331.	<i>Hyderodes crassus</i>			
332.	<i>Hyphydrus elegans</i>			
333.	<i>Hyphydrus</i> sp.			
334.	<i>Lancetes lanceolatus</i>			
335.	<i>Lancetes</i> sp.			
336.	<i>Megaporus howittii</i>			
337.	<i>Megaporus solidus</i>			
338.	<i>Megaporus</i> sp.			
339.	<i>Necterosoma penicillatus</i>			
340.	<i>Necterosoma</i> sp.			
341.	<i>Necterosoma wollastoni</i>			
342.	<i>Paroster niger</i>			
343.	<i>Rhantus suturalis</i>			
344.	<i>Sternopriscus multimaculatus</i>			
345.	<i>Sternopriscus</i> sp.			
<b>Ecnomidae</b>				
346.	<i>Ecnomus pansus/turgidus</i>			
<b>Elapidae</b>				
347.	25242 <i>Acanthopsis antarcticus</i> (Southern Death Adder)		P3	
348.	25300 <i>Drysdalia mastersii</i> (Master's Snake)			
349.	25251 <i>Echiopsis curta</i> (Bardick)			
350.	25250 <i>Elapognathus coronatus</i> (Crowned Snake)			
351.	25252 <i>Notechis scutatus</i> (Tiger Snake)			
352.	25253 <i>Parasuta gouldii</i>			

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353.	25255 <i>Parasuta nigriceps</i>			
354.	25256 <i>Parasuta spectabilis</i> subsp. <i>bushi</i> (spectacled hooded snake (Esperance), Mallee Black-headed Snake (Esperance area))		P1	Y
355.	25259 <i>Pseudonaja affinis</i> subsp. <i>affinis</i> (Dugite)			
356.	25263 <i>Pseudonaja modesta</i> (Ringed Brown Snake)			
357.	30818 <i>Rhinoplocephalus bicolor</i> (Square-nosed Snake)			
<b>Empididae</b>				
358.	<i>Empididae</i> sp.			
<b>Enchytraeidae</b>				
359.	<i>Enchytraeidae</i> sp.			
<b>Ephydriidae</b>				
360.	<i>Ephydriidae</i> sp.			
361.	<i>Ephydriidae</i> sp. 3 (SAP)			
362.	<i>Ephydriidae</i> sp. 6 (SAP)			
363.	<i>Ephydriidae</i> sp. 7(SAP)			
<b>Estrilidae</b>				
364.	24645 <i>Stagonopleura oculata</i> (Red-eared Firetail)			
<b>Euchlanidae</b>				
365.	<i>Euchlanis dilatata</i>			
<b>Euglyphidae</b>				
366.	<i>Euglypha</i> sp.			
<b>Eylaidae</b>				
367.	<i>Eylais</i> sp.			
<b>Falconidae</b>				
368.	25621 <i>Falco berigora</i> (Brown Falcon)			
369.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
370.	25623 <i>Falco longipennis</i> (Australian Hobby)			
371.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
<b>Filiniidae</b>				
372.	<i>Filinia longiseta</i>			
<b>Galaxiidae</b>				
373.	<i>Galaxias maculatus</i>			
374.	39404 <i>Galaxias truttaceus</i> (Trout Minnow)			
<b>Garypidae</b>				
375.	<i>Synsphyronus callus</i>			
376.	<i>Synsphyronus leo</i>			Y
377.	<i>Synsphyronus mimulus</i>			
<b>Garypinidae</b>				
378.	<i>Protogarypinus giganteus</i>			
<b>Gekkonidae</b>				
379.	24980 <i>Christinus marmoratus</i> (Marbled Gecko)			
380.	24983 <i>Underwoodisaurus milii</i> (Barking Gecko)			
<b>Gelastocoridae</b>				
381.	<i>Nerthra</i> sp.			
<b>Geogarypidae</b>				
382.	<i>Geogarypus taylori</i>			
<b>Geotriidae</b>				
383.	34030 <i>Geotria australis</i> (Pouched Lamprey)		P3	
<b>Glossiphoniidae</b>				
384.	<i>Placobdelloides</i> sp.			
<b>Gobiesocidae</b>				
385.	<i>Aspasmogaster occidentalis</i>			
<b>Gobiidae</b>				
386.	<i>Callogobius mucosus</i>			
387.	<i>Favonigobius lateralis</i>			
388.	<i>Pseudogobius olorum</i>			
<b>Gonorynchidae</b>				
389.	<i>Gonorynchus greyi</i>			
<b>Gyrinidae</b>				
390.	<i>Gyrinidae</i> sp.			

Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
<b>Haematopodidae</b>				
391.	25627 <i>Haematopus fuliginosus</i> (Sooty Oystercatcher)			
392.	24485 <i>Haematopus fuliginosus</i> subsp. <i>fuliginosus</i> (Sooty Oystercatcher)			
393.	24487 <i>Haematopus longirostris</i> (Pied Oystercatcher)			
<b>Halacaridae</b>				
394.	<i>Agauae similis</i>			Y
395.	<i>Agauae tenuipes</i>			
396.	<i>Agauopsis calidictyota</i>			Y
397.	<i>Agauopsis miliaris</i>			
398.	<i>Bradyagaue exilis</i>			Y
399.	<i>Lohmannella pinggi</i>			
400.	<i>Rhombognathus delicatulus</i>			
401.	<i>Rhombognathus tener</i>			Y
402.	<i>Rhombognathus vulgaris</i>			
<b>Halcyonidae</b>				
403.	25549 <i>Todiramphus sanctus</i> (Sacred Kingfisher)			
404.	24309 <i>Todiramphus sanctus</i> subsp. <i>sanctus</i> (Sacred Kingfisher)			
<b>Haliplidae</b>				
405.	<i>Haliplus fuscatus</i>			
406.	<i>Haliplus</i> sp.			
<b>Hersiliidae</b>				
407.	<i>Tamopsis amplithorax</i>			
408.	<i>Tamopsis distinguenda</i>			
409.	<i>Tamopsis facialis</i>			
<b>Heteroceridae</b>				
410.	<i>Heteroceridae</i> sp.			
<b>Hexarthridae</b>				
411.	<i>Hexarthra fennica</i>			
412.	<i>Hexarthra mira</i>			
413.	<i>Hexarthra</i> n. sp.a (cf. <i>fennica</i> with 7/7 unci teeth) (SAP)			
<b>Hirudinea</b>				
414.	<i>Hirudinea</i> sp.			
<b>Hirundinidae</b>				
415.	47909 <i>Cheramoeca leucosterna</i> (White-backed Swallow)			
416.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
417.	48060 <i>Petrochelidon ariel</i> (Fairy Martin)			
418.	48061 <i>Petrochelidon nigricans</i> (Tree Martin)			
<b>Hydrachnidae</b>				
419.	<i>Hydrachna</i> sp.			
420.	<i>Hydrachnidae</i> sp.			
<b>Hydraenidae</b>				
421.	<i>Gymnothebius</i> sp. 1 (SAP)			
422.	<i>Ochthebius</i> sp.			
423.	<i>Ochthebius</i> sp. 4			Y
<b>Hydridae</b>				
424.	<i>Hydra</i> sp.			
<b>Hydrobiidae</b>				
425.	<i>Ascorhis occidua</i>			
426.	<i>Hydrobiidae</i> sp.			
<b>Hydrophilidae</b>				
427.	<i>Berosus discolor</i>			
428.	<i>Berosus munitipennis</i>			
429.	<i>Berosus nutans</i>			
430.	<i>Berosus</i> sp.			
431.	<i>Enochrus eyrensis</i>			
432.	<i>Enochrus</i> sp.			
433.	<i>Helochares tenuistriatus</i>			
434.	<i>Hydrophilidae</i> sp.			
435.	<i>Laccobius clarus</i>			
<b>Hydroptilidae</b>				
436.	<i>Hellyethira litua</i>			
<b>Hydryphantidae</b>				

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437.	<i>Hydryphantus meridianus</i>			
438.	44625 <i>Pseudohydryphantus doegi</i> (Doeg's Watermite)		P2	
<b>Hylidae</b>				
439.	25378 <i>Litoria adelaidensis</i> (Slender Tree Frog)			
440.	25383 <i>Litoria cyclorhyncha</i> (Spotted-thighed Frog)			
<b>Hyriidae</b>				
441.	34113 <i>Westralunio carteri</i> (Carter's Freshwater Mussel)		T	
<b>Ilyocryptidae</b>				
442.	<i>Ilyocryptus cf. timmsi</i> (SAP)			Y
<b>Ilyocypridae</b>				
443.	<i>Ilyocypris australiensis</i>			
<b>Istiophoridae</b>				
444.	<i>Makaira</i> sp.			Y
<b>Ixodidae</b>				
445.	<i>Amblyomma triguttatum</i>			
<b>Kogiidae</b>				
446.	24070 <i>Kogia breviceps</i> (Pygmy Sperm Whale)			
<b>Labridae</b>				
447.	<i>Pictilabrus</i> sp.			
448.	<i>Pseudolabrus parilus</i>			
449.	<i>Siphonognathus argyrophanes</i>			
450.	<i>Siphonognathus radiatus</i>			
<b>Lamponidae</b>				
451.	<i>Lampona cylindrata</i>			
<b>Laophontidae</b>				
452.	<i>Onychocampus bengalensis</i>			
<b>Laridae</b>				
453.	<i>Chroicocephalus novaehollandiae</i>			
454.	48587 <i>Hydroprogne caspia</i> (Caspian Tern)		IA	
455.	24510 <i>Larus dominicanus</i> (Kelp Gull)			
456.	24511 <i>Larus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Silver Gull)			
457.	25638 <i>Larus pacificus</i> (Pacific Gull)			
458.	24512 <i>Larus pacificus</i> subsp. <i>georgii</i> (Pacific Gull)			
459.	48116 <i>Stercorarius antarcticus</i> (Brown Skua)		P4	
460.	25643 <i>Sterna hybrida</i> (Whiskered Tern)			
461.	48594 <i>Sternula nereis</i> (Fairy Tern)			
462.	48597 <i>Thalasseus bergii</i> (Crested Tern)		IA	
<b>Lecanidae</b>				
463.	<i>Lecane (M) sp. A</i> (ESP023)			Y
464.	<i>Lecane [M] sp.</i>			
465.	<i>Lecane bulla</i>			
466.	<i>Lecane luna</i>			
467.	<i>Lecane sp. s.str.</i>			
<b>Lepadellidae</b>				
468.	<i>Colurella colurus</i>			
469.	<i>Colurella uncinata</i>			
470.	<i>Lepadella discoidea</i>			
471.	<i>Lepadella patella</i>			
<b>Lepidoptera</b>				
472.	<i>Lepidoptera (non-pyralid)</i>			
473.	<i>Lepidoptera (non-pyralid) sp. 3</i> (SAP)			
474.	<i>Lepidoptera (non-pyralid) sp. 9</i> (SAP) (nr Pilbara sp. 3)			
<b>Leporidae</b>				
475.	24085 <i>Oryctolagus cuniculus</i> (Rabbit)	Y		
<b>Leptoceridae</b>				
476.	<i>Leptoceridae</i> sp.			
477.	<i>Notalina spira</i>			
478.	<i>Oecetis</i> sp.			
479.	<i>Symphitoneuria wheeleri</i>			
480.	<i>Triplectides australis</i>			
<b>Leptocytheridae</b>				
481.	<i>Leptocythere lacustris</i>			

Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
<b>Lesquereusidae</b>				
482.	<i>Lesquereusia</i> sp.			
<b>Lestidae</b>				
483.	<i>Austrolestes analis</i>			
484.	<i>Austrolestes annulosus</i>			
485.	<i>Austrolestes aridus</i>			
486.	<i>Austrolestes io</i>			
487.	<i>Austrolestes</i> sp.			
<b>Libellulidae</b>				
488.	<i>Orthetrum caledonicum</i>			
<b>Limnesiidae</b>				
489.	<i>Limnesia dentifera</i>			
<b>Limnichidae</b>				
490.	<i>Limnichidae</i> sp.			
<b>Limnocharidae</b>				
491.	<i>Limnochares australica</i>			
<b>Limnodynastidae</b>				
492.	25410 <i>Heleioporus eyrei</i> (Moaning Frog)			
493.	25412 <i>Heleioporus psammophilus</i> (Sand Frog)			
494.	25415 <i>Limnodynastes dorsalis</i> (Western Banjo Frog)			
495.	25421 <i>Neobatrachus albipes</i> (White-footed Trilling Frog)			
496.	25425 <i>Neobatrachus kunapalari</i> (Kunapalari Frog)			
497.	25426 <i>Neobatrachus pelobatoides</i> (Humming Frog)			
<b>Lobosea</b>				
498.	<i>Protozoan</i> sp			
<b>Lycosidae</b>				
499.	<i>Arctoria cingulipes</i>			
500.	<i>Arctoria flavimana</i>			
501.	<i>Arctoria taeniifera</i>			
502.	<i>Arctoriopsis eccentrica</i>			
503.	<i>Arctoriopsis expolita</i>			
504.	<i>Arctoriopsis joergi</i>			
505.	<i>Dingosa simsoni</i>			
506.	<i>Hoggicosa bicolor</i>			
507.	<i>Hoggicosa forresti</i>			
508.	<i>Hoggicosa storri</i>			
509.	<i>Hogna crispipes</i>			
510.	<i>Hogna kuyani</i>			
511.	<i>Lycosa australicola</i>			
512.	<i>Lycosa gilberta</i>			
513.	<i>Lycosa godeffroyi</i>			
514.	<i>Mainosa longipes</i>			
515.	<i>Tasmanicosa leuckartii</i>			
516.	<i>Venatrix arenaris</i>			
517.	<i>Venatrix pullastra</i>			
518.	<i>Venatrix tinfos</i>			
<b>Macropodidae</b>				
519.	24132 <i>Macropus fuliginosus</i> (Western Grey Kangaroo)			
520.	48022 <i>Notamacropus irma</i> (Western Brush Wallaby)		P4	
<b>Macrotrichidae</b>				
521.	<i>Macrotrix breviseta</i>			
522.	<i>Macrotrix</i> cf. <i>breviseta</i> (SAP)			
523.	<i>Macrotrix</i> sp.			
<b>Maluridae</b>				
524.	25647 <i>Amytornis striatus</i> (Striated Grasswren)			
525.	24551 <i>Malurus pulcherrimus</i> (Blue-breasted Fairy-wren)			
526.	25655 <i>Stipiturus malachurus</i> (Southern Emu-wren)			
527.	24554 <i>Stipiturus malachurus</i> subsp. <i>westernensis</i> (Southern Emu-wren)			
<b>Megapodiidae</b>				
528.	24557 <i>Leipoa ocellata</i> (Malleefowl)		T	
<b>Meliphagidae</b>				
529.	24559 <i>Acanthagenys rufogularis</i> (Spiny-cheeked Honeyeater)			
530.	24560 <i>Acanthorhynchus superciliosus</i> (Western Spinebill)			

Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
531.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
532.	24562 <i>Anthochaera lunulata</i> (Western Little Wattlebird)			
533.	24567 <i>Epthianura albiglans</i> (White-fronted Chat)			
534.	42314 <i>Gavicalis virescens</i> (Singing Honeyeater)			
535.	47962 <i>Glyciphila melanops</i> (Tawny-crowned Honeyeater)			
536.	24573 <i>Lichenostomus cratitius</i> (Purple-gaped Honeyeater)			
537.	25659 <i>Lichenostomus leucotis</i> (White-eared Honeyeater)			
538.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
539.	24583 <i>Manorina flavigula</i> (Yellow-throated Miner)			
540.	25663 <i>Melithreptus brevirostris</i> (Brown-headed Honeyeater)			
541.	48071 <i>Phylidonyris niger</i> (White-cheeked Honeyeater)			
542.	24596 <i>Phylidonyris novaehollandiae</i> (New Holland Honeyeater)			
543.	42344 <i>Purnella albiglans</i> (White-fronted Honeyeater)			
<b>Melitidae</b>				
544.	<i>Melita kauerti</i>			
<b>Meropidae</b>				
545.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)			
<b>Mesostigmata</b>				
546.	<i>Mesostigmata</i> sp.			
<b>Micropholcommatidae</b>				
547.	<i>Raveniella cirrata</i>			
<b>Mimetidae</b>				
548.	<i>Australomimetes ovidi</i>			
<b>Miturgidae</b>				
549.	<i>Mituliodon tarantulinus</i>			
<b>Monacanthidae</b>				
550.	<i>Brachaluteres jacksonianus</i>			
551.	<i>Eubalichthys mosaicus</i>			
552.	<i>Scobinichthys granulatus</i>			
<b>Monoscutidae</b>				
553.	<i>Hypomegalopsalis tanisphyros</i>			
<b>Moridae</b>				
554.	<i>Lotella rhacinus</i>			
555.	<i>Pseudophyscis breviuscula</i>			
<b>Motacillidae</b>				
556.	24599 <i>Anthus australis</i> subsp. <i>australis</i> (Australian Pipit)			
<b>Mugilidae</b>				
557.	<i>Aldrichetta forsteri</i>			
<b>Mullidae</b>				
558.	<i>Upeneichthys lineatus</i>			
<b>Muridae</b>				
559.	24223 <i>Mus musculus</i> (House Mouse)	Y		
560.	24229 <i>Notomys mitchellii</i> (Mitchell's Hopping-mouse)			
561.	24243 <i>Rattus fuscipes</i> (Western Bush Rat)			
562.	24245 <i>Rattus rattus</i> (Black Rat)	Y		
<b>Muscidae</b>				
563.	<i>Muscidae</i> sp.			
564.	<i>Muscidae</i> sp. A (SAP)			
565.	<i>Muscidae</i> sp. D (SAP)			
<b>Myobatrachidae</b>				
566.	25398 <i>Crinia georgiana</i> (Quacking Frog)			
567.	25399 <i>Crinia glauerti</i> (Clicking Frog)			
568.	25401 <i>Crinia pseudinsignifera</i> (Bleating Froglet)			
569.	25420 <i>Myobatrachus gouldii</i> (Turtle Frog)			
570.	25433 <i>Pseudophryne guentheri</i> (Crawling Toadlet)			
<b>NO FAMILY</b>				
571.	<i>No invertebrates</i>			
<b>Naididae</b>				
572.	<i>Dero digitata</i>			
573.	<i>Ganius</i> sp. WA9 (SAP)			Y
574.	<i>Naididae</i> (ex <i>Tubificidae</i> )			
575.	<i>Paranais litoralis</i>			

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<b>Nematoda</b>				
576.	<i>Nematoda sp.</i>			
<b>Nemesiidae</b>				
577.	<i>Aname mainae</i>			
578.	<i>Aname tepperi</i>			
<b>Neosittidae</b>				
579.	25673 <i>Daphoenositta chrysoptera (Varied Sittella)</i>			
<b>Nicodamidae</b>				
580.	<i>Nicodamus mainae</i>			
<b>Notodromadidae</b>				
581.	<i>Kennethia cristata</i>			
582.	<i>Newnhamia fenestrata</i>			
<b>Notonectidae</b>				
583.	<i>Anisops baylii</i>			
584.	<i>Anisops gratus</i>			
585.	<i>Anisops hackeri</i>			
586.	<i>Anisops hyperion</i>			
587.	<i>Anisops sp.</i>			
588.	<i>Anisops thienemanni</i>			
589.	<i>Notonectidae sp.</i>			
<b>Oecobiidae</b>				
590.	<i>Oecobius navus</i>			
<b>Oligochaeta</b>				
591.	<i>Oligochaeta sp.</i>			
<b>Oniscidae</b>				
592.	<i>Haloniscus searlei</i>			
593.	<i>Haloniscus sp.</i>			
594.	<i>Oniscidae sp.</i>			
<b>Ophichthidae</b>				
595.	<i>Muraenichthys breviceps</i>			
<b>Opisthopora</b>				
596.	<i>Opisthopora sp.</i>			
<b>Ostracoda</b>				
597.	<i>Ostracoda (unident.)</i>			
<b>Otariidae</b>				
598.	24208 <i>Arctocephalus forsteri (New Zealand Fur Seal, long-nosed fur-seal)</i>		S	
599.	24210 <i>Neophoca cinerea (Australian Sea-lion)</i>		T	
<b>Otididae</b>				
600.	24610 <i>Ardeotis australis (Australian Bustard)</i>			
<b>Oxyopidae</b>				
601.	<i>Oxyopes gracilipes</i>			
602.	<i>Oxyopes rubicundus</i>			
<b>Pachycephalidae</b>				
603.	25675 <i>Colluricincla harmonica (Grey Shrike-thrush)</i>			
604.	24618 <i>Oreoica gutturalis (Crested Bellbird)</i>			
605.	24619 <i>Pachycephala inornata (Gilbert's Whistler)</i>			
606.	25680 <i>Pachycephala rufiventris (Rufous Whistler)</i>			
<b>Palaemonidae</b>				
607.	<i>Palaemonetes australis</i>			
<b>Paralichthyidae</b>				
608.	<i>Pseudorhombus jenynsii</i>			
<b>Paramelitidae</b>				
609.	<i>Paramelitidae sp.</i>			
<b>Pardalotidae</b>				
610.	25681 <i>Pardalotus punctatus (Spotted Pardalote)</i>			
611.	24626 <i>Pardalotus punctatus subsp. xanthopyge (Yellow-rumped Pardalote)</i>			
612.	25682 <i>Pardalotus striatus (Striated Pardalote)</i>			
613.	24630 <i>Pardalotus striatus subsp. westraliensis (Striated Pardalote)</i>			
<b>Passeridae</b>				
614.	24642 <i>Passer montanus (Eurasian Tree Sparrow)</i>			



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<b>Pelecanidae</b>				
615.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)	Y		
<b>Pempheridae</b>				
616.	<i>Pempheris klunzingeri</i>			
617.	<i>Pempheris multiradiata</i>			
<b>Peramelidae</b>				
618.	48588 <i>Isoodon fusciventer</i> (Quenda, southwestern brown bandicoot)		P4	
<b>Petroicidae</b>				
619.	24650 <i>Drymodes brunneopygia</i> (Southern Scrub-robin)			
620.	48066 <i>Petroica boodang</i> (Scarlet Robin)			
<b>Pezidae</b>				
621.	<i>Pezidae</i> sp.			
<b>Phalacrocoracidae</b>				
622.	<i>Microcarbo melanoleucos</i>			
623.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
624.	24665 <i>Phalacrocorax fuscescens</i> (Black-faced Cormorant)			
625.	25698 <i>Phalacrocorax melanoleucos</i> (Little Pied Cormorant)			
626.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
627.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
<b>Phasianidae</b>				
628.	24671 <i>Coturnix pectoralis</i> (Stubble Quail)			
629.	25701 <i>Coturnix ypsilophora</i> (Brown Quail)			
<b>Philodidae</b>				
630.	<i>Macrotrachela</i> sp. a (SAP)			Y
631.	<i>Philodidae</i> sp.			
<b>Phocidae</b>				
632.	24213 <i>Mirounga leonina</i> (Southern Elephant Seal)			
<b>Pholcidae</b>				
633.	<i>Pholcus phalangioides</i>			
634.	<i>Trichocyclus nullarbor</i>			
<b>Physidae</b>				
635.	<i>Physa acuta</i>			
<b>Pionidae</b>				
636.	<i>Acercella falcipes</i>			
<b>Planorbidae</b>				
637.	<i>Glyptophysa</i> cf. <i>gibbosa</i> (SAP)			
<b>Platycephalidae</b>				
638.	<i>Platycephalus speculator</i>			
<b>Plesiopidae</b>				
639.	<i>Paraplesiops meleagris</i>			
<b>Pleuronectidae</b>				
640.	<i>Ammotretis elongatus</i>			
<b>Plumatellidae</b>				
641.	<i>Plumatella</i> sp.			
<b>Podargidae</b>				
642.	25703 <i>Podargus strigoides</i> (Tawny Frogmouth)			
<b>Podicipedidae</b>				
643.	25704 <i>Podiceps cristatus</i> (Great Crested Grebe)			
644.	24681 <i>Poliiocephalus poliocephalus</i> (Hoary-headed Grebe)			
645.	25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
<b>Pomatiopsidae</b>				
646.	<i>Coxiella glabra</i>			
647.	<i>Coxiella</i> sp.			
648.	<i>Coxiella</i> sp. 3 (ABP)			Y
649.	<i>Coxiella striatula</i>			
650.	<i>Pomatiopsidae</i> sp.			
<b>Pomatostomidae</b>				
651.	24683 <i>Pomatostomus superciliosus</i> (White-browed Babbler)			

Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
<b>Pristinidae</b>				
652.	<i>Pristina jenkiniae</i>			
653.	<i>Pristina longiseta</i>			
<b>Prodidomidae</b>				
654.	<i>Cryptoerithus shadabi</i>			Y
655.	<i>Molycris quadricauda</i>			
656.	<i>Myandra bicincta</i>			
657.	<i>Myandra cambridgei</i>			
658.	<i>Nomindra flavipes</i>			
<b>Psittacidae</b>				
659.	<i>Barnardius zonarius</i>			
660.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)		T	
661.	48400 <i>Calyptorhynchus</i> sp. (white-tailed black cockatoo)		T	
662.	24736 <i>Melopsittacus undulatus</i> (Budgerigar)			
663.	24738 <i>Neophema elegans</i> (Elegant Parrot)			
664.	24739 <i>Neophema petrophila</i> (Rock Parrot)			
665.	41348 <i>Pezoporus flaviventris</i> (Western Ground Parrot)		T	
666.	25720 <i>Platycercus icterotis</i> (Western Rosella)			
667.	24747 <i>Platycercus spurius</i> (Red-capped Parrot)			
668.	<i>Purpureicephalus spurius</i>			
<b>Psychodidae</b>				
669.	<i>Psychodidae</i> sp.			
<b>Pygopodidae</b>				
670.	24991 <i>Aprasia repens</i> (Sand-plain Worm-lizard)			
671.	24994 <i>Aprasia striolata</i> (Lined Worm-lizard)			
672.	24995 <i>Delma australis</i>			
673.	25766 <i>Delma fraseri</i> (Fraser's Legless Lizard)			
674.	25008 <i>Pygopus lepidopodus</i> (Common Scaly Foot)			
<b>Pyralidae</b>				
675.	<i>Pyralidae</i> sp.			
<b>Rallidae</b>				
676.	25727 <i>Fulica atra</i> (Eurasian Coot)			
677.	24761 <i>Fulica atra</i> subsp. <i>australis</i> (Eurasian Coot)			
678.	25730 <i>Gallirallus philippensis</i> (Buff-banded Rail)			
679.	25731 <i>Porphyrio porphyrio</i> (Purple Swamphen)			
680.	24767 <i>Porphyrio porphyrio</i> subsp. <i>bellus</i> (Purple Swamphen)			
681.	24769 <i>Porzana fluminea</i> (Australian Spotted Crane)			
682.	24771 <i>Porzana tabuensis</i> (Spotless Crane)			
683.	48141 <i>Tribonyx ventralis</i> (Black-tailed Native-hen)			
<b>Recurvirostridae</b>				
684.	24774 <i>Cladorhynchus leucocephalus</i> (Banded Stilt)			
685.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
686.	24776 <i>Recurvirostra novaehollandiae</i> (Red-necked Avocet)			
<b>Sabellidae</b>				
687.	<i>Manayunkia</i> n. sp.			
<b>Saldidae</b>				
688.	<i>Saldula brevicornis</i>			
<b>Salmonidae</b>				
689.	<i>Salmo trutta</i>			
<b>Salticidae</b>				
690.	<i>Clynotis albobarbatus</i>			
691.	<i>Holoplatys grassalis</i>			Y
692.	<i>Maratus chrysomelas</i>			
693.	<i>Ocrisiona leucocomis</i>			
694.	<i>Zebraplatys fractivittata</i>			
<b>Sarcoptiformes</b>				
695.	<i>Astigmata</i> sp.			Y
696.	<i>Oribatida</i> sp.			
697.	<i>Oribatida</i> sp. 1 (PLP)			Y
698.	<i>Oribatida</i> sp. 2(PLP)			Y
<b>Scatopsidae</b>				
699.	<i>Scatopsidae</i> sp.			

Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
<b>Scincidae</b>				
700.	42368 <i>Acritoscincus triineatus</i> (Western Three-lined Skink)			
701.	30893 <i>Cryptoblepharus buchananii</i>			
702.	30888 <i>Cryptoblepharus pulcher</i> subsp. <i>clarus</i>			
703.	25040 <i>Ctenotus gemmula</i> (Jewelled South-west Ctenotus (Swan Coastal Plain subpop P3), skink)			
704.	25047 <i>Ctenotus impar</i>			
705.	25049 <i>Ctenotus labillardieri</i>			
706.	25074 <i>Ctenotus schomburgkii</i>			
707.	25096 <i>Egernia kingii</i> (King's Skink)			
708.	25474 <i>Hemiergis initialis</i>			
709.	25115 <i>Hemiergis initialis</i> subsp. <i>initialis</i>			
710.	25475 <i>Hemiergis peronii</i>			
711.	25117 <i>Hemiergis peronii</i> subsp. <i>peronii</i>			
712.	25131 <i>Lerista distinguenda</i>			
713.	25483 <i>Lerista microtis</i>			
714.	25153 <i>Lerista microtis</i> subsp. <i>intermedia</i>			
715.	25184 <i>Menetia greyii</i>			
716.	25188 <i>Morethia adelaidensis</i>			
717.	25192 <i>Morethia obscura</i>			
718.	25203 <i>Tiliqua occipitalis</i> (Western Bluetongue)			
719.	25207 <i>Tiliqua rugosa</i> subsp. <i>rugosa</i>			
<b>Sciomyzidae</b>				
720.	<i>Sciomyzidae</i> sp.			
<b>Scirtidae</b>				
721.	<i>Scirtidae</i> sp.			
<b>Scolopacidae</b>				
722.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
723.	25736 <i>Arenaria interpres</i> (Ruddy Turnstone)		IA	
724.	24779 <i>Calidris acuminata</i> (Sharp-tailed Sandpiper)		IA	
725.	24780 <i>Calidris alba</i> (Sanderling)		IA	
726.	25738 <i>Calidris canutus</i> (Red Knot, knot)		IA	
727.	24783 <i>Calidris canutus</i> subsp. <i>rogersi</i> (Red Knot (north-eastern Siberia))		T	
728.	24784 <i>Calidris ferruginea</i> (Curlew Sandpiper)		T	
729.	24786 <i>Calidris melanotos</i> (Pectoral Sandpiper)		IA	
730.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
731.	24790 <i>Calidris tenuirostris</i> (Great Knot)		T	
732.	25739 <i>Limicola falcinellus</i> (Broad-billed Sandpiper)		IA	
733.	30932 <i>Limosa lapponica</i> (Bar-tailed Godwit)		IA	
734.	24803 <i>Tringa brevipes</i> (Grey-tailed Tattler)		P4	
735.	24806 <i>Tringa glareola</i> (Wood Sandpiper)		IA	
736.	24808 <i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
737.	24809 <i>Tringa stagnatilis</i> (Marsh Sandpiper, little greenshank)		IA	
<b>Scolopendridae</b>				
738.	<i>Cormocephalus michaelsoni</i>			
<b>Scombridae</b>				
739.	<i>Scomber australasicus</i>			
740.	<i>Scomberomorus semifasciatus</i>			
<b>Scyliorhinidae</b>				
741.	<i>Asymbolus vincenti</i>			
<b>Sillaginidae</b>				
742.	<i>Sillago bassensis</i>			
<b>Sparassidae</b>				
743.	<i>Holconia westralia</i>			
744.	<i>Isopoda leishmanni</i>			
745.	<i>Isopedella cana</i>			
746.	<i>Isopedella cerussata</i>			
747.	<i>Isopedella saundersi</i>			
<b>Sparidae</b>				
748.	<i>Acanthopagrus butcheri</i>			
<b>Sphaeriidae</b>				
749.	<i>Sphaeriidae</i> sp.			
<b>Sphaeromatidae</b>				
750.	<i>Exosphaeroma</i> sp.			
751.	<i>Sphaeromatidae</i> sp.			

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<b>Spheniscidae</b>				
752.	25744 <i>Eudyptes chrysocome</i> (Rockhopper Penguin)			
753.	24816 <i>Eudyptes pachyrhynchus</i> (Fiordland Penguin)			
754.	24817 <i>Eudyptes sclateri</i> (Erect-crested Penguin)			Y
<b>Staphylinidae</b>				
755.	<i>Staphylinidae</i> sp.			
<b>Stratiomyidae</b>				
756.	<i>Stratiomyidae</i> sp.			
<b>Sulidae</b>				
757.	48008 <i>Morus serrator</i> (Australasian Gannet)			
<b>Sylviidae</b>				
758.	25755 <i>Acrocephalus australis</i> (Australian Reed Warbler)			
759.	25758 <i>Megalurus gramineus</i> (Little Grassbird)			
<b>Syngnathidae</b>				
760.	<i>Leptoichthys fistularius</i>			
761.	<i>Phycodurus eques</i> subsp. <i>glauerti</i>			Y
762.	<i>Phyllopteryx taeniolatus</i>			
<b>Tabanidae</b>				
763.	<i>Tabanidae</i> sp.			
<b>Talitridae</b>				
764.	<i>Talitridae</i> sp.			
<b>Tardigrada</b>				
765.	<i>Tardigrada</i> sp.			
<b>Tarsipedidae</b>				
766.	24167 <i>Tarsipes rostratus</i> (Honey Possum, Noolbenger)			
<b>Terapontidae</b>				
767.	<i>Pelsartia humeralis</i>			
<b>Testudinellidae</b>				
768.	<i>Testudinella patina</i>			
<b>Tetragnathidae</b>				
769.	<i>Tetragnatha demissa</i>			
770.	<i>Tetragnatha nitens</i>			
771.	<i>Tetragnatha valida</i>			
<b>Theridiidae</b>				
772.	<i>Latrodectus hasseltii</i>			
773.	<i>Steatoda grossa</i>			
<b>Threskiornithidae</b>				
774.	24841 <i>Platalea flavipes</i> (Yellow-billed Spoonbill)			
775.	24842 <i>Platalea regia</i> (Royal Spoonbill)			
776.	24843 <i>Plegadis falcinellus</i> (Glossy Ibis)		IA	
777.	24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
<b>Tipulidae</b>				
778.	<i>Tipulidae</i> sp.			
779.	<i>Tipulidae</i> type F (SAP)			
780.	<i>Tipulidae</i> type J (SAP)			Y
<b>Trichocercidae</b>				
781.	<i>Trichocerca</i> sp.			
<b>Tripterygiidae</b>				
782.	<i>Helcogramma decurrens</i>			
783.	<i>Lepidoblennius marmoratus</i>			
784.	<i>Norfolkia incisa</i>			Y
<b>Trochanteriidae</b>				
785.	<i>Boolathana mainae</i>			
786.	<i>Longrita grasspatch</i>			
787.	<i>Platorish gelorup</i>			
<b>Trombidiformes</b>				
788.	<i>Acariformes</i> sp.			
<b>Turbellaria</b>				
789.	<i>Turbellaria</i> sp.			

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<b>Turnicidae</b>				
790.	48147 <i>Turnix varius</i> (Painted Button-quail)			
791.	24851 <i>Turnix velox</i> (Little Button-quail)			
<b>Unionicolidae</b>				
792.	<i>Koenikea nr australica</i> (=verrucosa)			
<b>Uranoscopidae</b>				
793.	<i>Kathetostoma laeve</i>			
<b>Urodacidae</b>				
794.	<i>Urodacus novaehollandiae</i>			
<b>Varanidae</b>				
795.	25225 <i>Varanus rosenbergi</i> (Heath Monitor)			
<b>Vespertilionidae</b>				
796.	24194 <i>Nyctophilus geoffroyi</i> (Lesser Long-eared Bat)			
797.	24206 <i>Vespardelus regulus</i> (Southern Forest Bat)			
<b>Zeidae</b>				
798.	<i>Zeus faber</i>			
<b>Zodariidae</b>				
799.	<i>Cavasteron margaretae</i>			
800.	<i>Habronestes grimwadei</i>			
801.	<i>Hetaerica harveyi</i>			
802.	<i>Holasteron esperance</i>			Y
803.	<i>Pentasteron intermedium</i>			
804.	<i>Storena fungina</i>			
<b>Zosteropidae</b>				
805.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silvereye)			

**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

<sup>1</sup> 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.