RECONNAISSANCE FLORA, VEGETATION AND BASIC FAUNA SURVEY REPORT

Line 51 (362.9 – 367.8km). Site 12 and 13.

Esperance to Gibson – Section 2, North & South Bow Road

Gibson, WA 648

Final v. 1

17/05/2022

BUSHFIRE | ENVIRONMENTAL | WATER | GIS

DOCUMENT CONTROL

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Reviewer (s): Dr K. Bain, M. Holt and C. Cramer
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Executive Summary

Arc Infrastructure ("the client") commissioned Bio Diverse Solutions as Environmental Consultants to undertake a Spring reconnaissance flora and vegetation survey and a basic (previously reconnaissance) fauna assessment for a total of 5.85 ha along Railway Line 51, north and south of Bow Road railway crossing, in the Shire of Esperance. Specifically, this was present along railway kilometre markings (KM) 362.9 to 367.8. This corresponded with Site 12 and 13 of the 2022 scope of works programme, as instructed by Arc Infrastructure. The reconnaissance survey was required to assess the impact of areas of native vegetation proposed to be cleared for a significant construction and maintenance project along the railway line. An environmental risk assessment was completed following the commission of the biological survey, to identify where clearing permits or further environmental approvals were required within the operational space of the project. Some areas within the survey area were assessed as not being exempt, and require a clearing permit. A final report was submitted to Arc Infrastructure for review prior to approval for submission to DWER, as supporting information for a clearing permit application.

Six vegetation units were identified within the survey area. Two vegetation units related to specific hydrological regimes, namely 1: Melcut and Sedge WL and 4: Sedgeland. The condition of the vegetation units ranged from 'Completely Degraded' to 'Very Good', largely due to disturbance from the adjacent railway track and invasion of agricultural weeds. 3.2 ha of the 5.85 ha survey area was considered to be cleared, consisting of bare ground or railway tracks. 172 species of flora were identified within the survey area, which demonstrates significantly high diversity and is indicative of the Esperance sandplains bioregion. 29 introduced or non-native species were present, including one species of a 'Declared pest – s22(2) under the *BAM Act 2009*, *Asparagus asparagoides* (Bridal Creeper). 73 species of Priority and Threatened flora were identified in the desktop assessment. Minor limitations were present on numerous species that have been assessed as 'Likely' or 'Possible', relating to lack of information on undescribed species, fire ephemeral species and autumn flowering species. Two species of Priority flora were identified within the survey area, namely P3 *Dampiera sericantha* and P3 *Daviesia pauciflora.* A single Vegetation Unit (5: Banspe Sandplains) met the criteria of the Threatened (TEC) and Priority (PEC) Ecological Community 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province (Kwongkan)', with a total of 0.247 ha present within the survey area. Some areas identified as Vegetation Unit 5: Banspe Sandplains were not considered to meet the Kwongkan TEC/PEC criteria due to patch size criteria and being below the criteria thresholds.

The only conservation significant faunal taxa identified during the survey was *Calyptorhynchus latirostris* (Carnaby's Black Cockatoo, EN). The species was observed through scattered feed evidence (chewed pine cones). The scattered nature of the pine trees and the low diversity of food species within vegetation units 5: Banspe Sandplain and 2: *Nuytsia floribunda* and mixed shrubland provide marginal foraging habitat for the species. The low quantity of feeding debris and the low availability and diversity of suitable foraging habitat suggests that the feeding events observed are likely to be opportunistic and that the area is not a preferred foraging area. The survey area does not contain 1 ha or more of high-quality foraging or roosting habitat for Carnaby's Cockatoo clearing within this area is unlikely to require referral assessment under the *Environmental Protection and Biodiversity Conservation Act 1999.* However, the accumulative total and potential impact across the entire Esperance Branch Line project should be taken into consideration.

Marginal habitat is present throughout the survey area for quenda (*Isoodon fusciventer,* P4), western mouse (*Pseudomys occidentalis,* P4) and heath mouse (*Pseudomys shortridgei,* VU/EN), within vegetation units 1: Melcut and Sedge WL, 2: Nuyflor and Mixed SL, 4: Sedgeland, 5: Banspe sandplain and 6: Myrt Mixed SL. Suitable habitat is marginal and proposed operational works are unlikely to significantly impact these species if altered / removed. Marginal suitable habitat present for fork-tailed swift (*Apus pacificus,* MI), letter-winged kite *(Elanus scriptus,* P4) and peregrine falcon (*Falco peregrinus,* OS) is present throughout the survey area. In addition, marginal habitat is present for the Cape Le Grand assassin spider (*Zephyrarchaea marki*, VU) within the '5: Banspe sandplain' vegetation unit where there is elevated / suspended leaf litter, and for the Recherche atelomastix millipede (*Atelomastix dendritica,* VU) in areas of high leaf litter.

1. Introduction, Scope and Background Information

Arc Infrastructure ("the client") commissioned Bio Diverse Solutions as Environmental Consultants to conduct a spring reconnaissance flora and vegetation survey and a basic (previously reconnaissance) fauna assessment for a total of 5.85 ha along Railway Line 51 near North and South Bow Road, in the Shire of Esperance. Specifically, this was located between Railway Kilometre Markings (KM) 362.9 to 367.8. The total 5.85 ha consists of four separate 'areas' or zones and stretches out over a length of 4.86 km 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;
- A Spring 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. Location and Development Proposal

The 'survey area' is defined as the total area being surveyed, consisting of four areas located along Line 51 (359.79-362km), near North and South Bow Road, in the Shire of Esperance. The areas surveyed ranged between 0.28 ha and 2.5 ha, the total length of the survey area is approximately 4.86 km (Figure 1). These areas have been earmarked by Arc Infrastructure for clearing as within the identified KM of railway requiring upgrades and ongoing maintenance of the railway track. Specifically, the survey area correlates with Site 12 and 13 of the 2022 Scope of Works for Arc Infrastructure (Tanna, 2021).

The 'study area' consists of the 30km radius around the survey area, used for indications of likelihood of occurrence for Threatened or Priority flora, fauna and ecological communities. It provides a broader context for assessment of the survey area.

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 private broad-acre cropping agriculture. A small area of intact vegetation on private tenure backs onto the survey area.

Following the commission of a biological survey, an environmental risk assessment was completed in tandem with Arc Infrastructure Project Team and Kathryn Kinnear of Bio Diverse Solutions (Principle Environmental Consultant). This identified where within Site 12 and 13 (2022 Scope of Works) the operational footprint of construction works required a clearing permit or further environmental approvals. The risk assessment categorised operational space into a 'traffic light' system, as outlined below:

a) Red – further biological surveys or other surveys required;
b) Yellow – clearing permit to be applied for in 2022 (pending application submission to DWER, no CPS number currently assigned); and
c) Green – valid exemptions apply or 'Cleared' areas with no native vegetation remaining.

The environmental risk assessment that corresponds with the survey area is outlined in Figure 20 (Appendix A), illustrating how large areas within the survey area were considered previously cleared or exempt from a clearing permit. A linear corridor on the eastern side of the railway and one laydown area for storage of machinery and construction materials were identified as 'yellow' and a clearing permit will be applied for specifically these areas. This reconnaissance flora and vegetation and

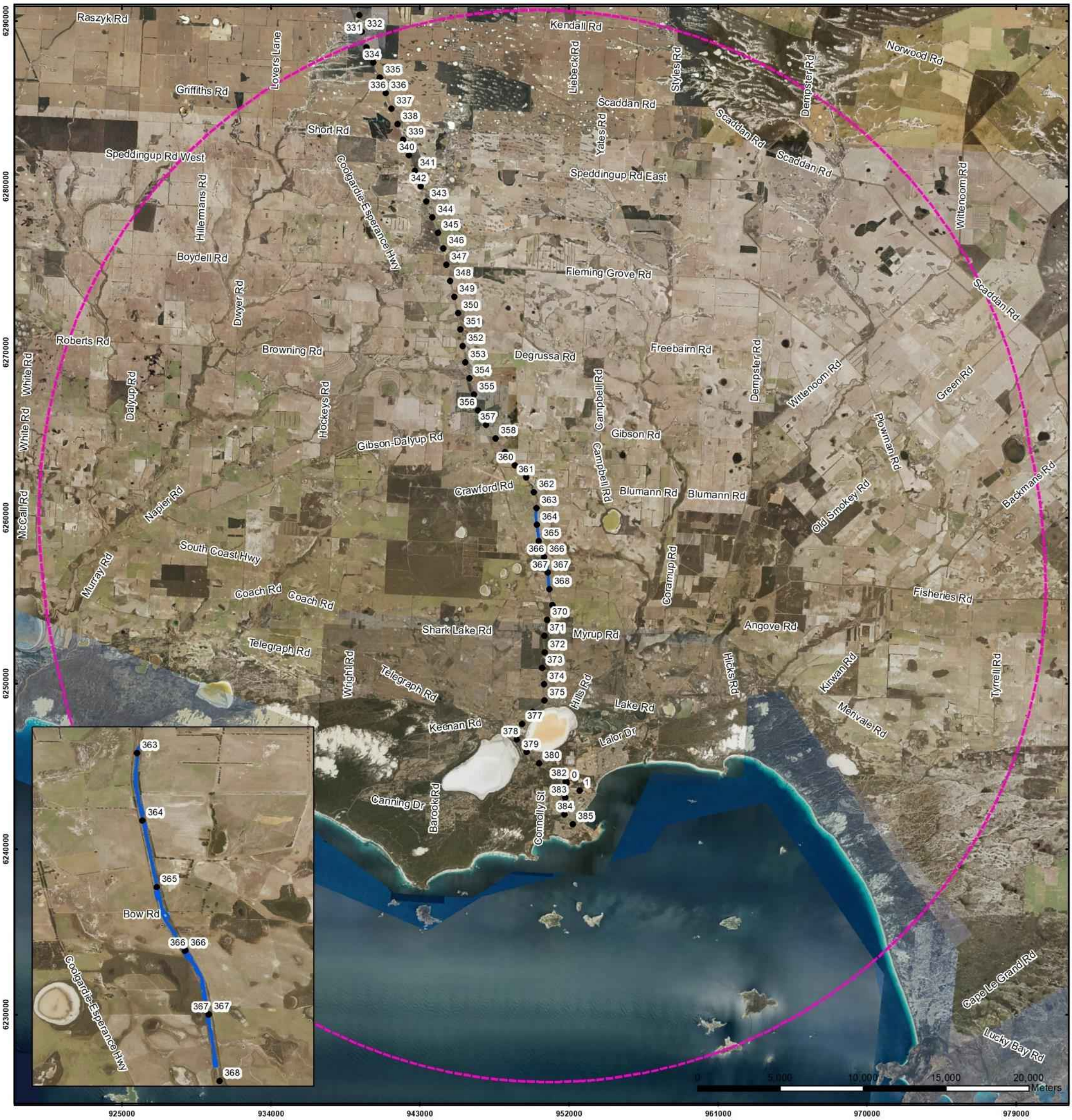
basic fauna survey provides base-line data for the approval of this clearing permit and generalised environmental data for Arc Infrastructure.

The environmental risk assessment process mitigated and reduced the environmental impact of the project, determining the operational space by outlining areas with lower environmental risks, such as existing cleared or previously disturbed areas.

1.2. Alignment to Legislation, Guidelines and Policies

This survey and subsequent report is aligned to the following legislation, guidelines and policies:

- *Environmental Protection and Biodiversity Conservation Act 1999* (EP Act). Administered by the Australian Government of Department of Agriculture, Water and Environment (DAWE);
- *Biodiversity Conservation Act 2016* (BC Act). Administered by the Western Australian Department of Biodiversity, Conservation and Attractions (DBCA);
- *Environmental Protection Act 1986* (EP Act). Administered by the Western Australian Department of Water and Environmental Regulations;
- *Biosecurity and Agriculture Management Act 2007* (BAM Act);
- EPA (2016) Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment;
- EPA (2020) Technical Guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact;
- CoA (2013) Draft Survey guidelines for Australia's Threatened Orchids;
- DEWHA (2010) Survey Guidelines for Australia's Threatened Birds;
- DSEWPaC (2011) Survey Guidelines for Australia's Threatened Mammals; and
- DSEWPaC (2012) Referral Guidelines for Three Threatened Black Cockatoo Species.



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Scale
1:225,000@ A3
GDA MGA 94 Zone 51

Legend

- Survey Area
- 30km Study Area Buffer
- Rail Kilometer Points

Overview Map Scale 1:1,250,000

CLIENT
Arc Infrastructure
Line 51 (362.9 – 367.8km) Site 12 and 13
Esperance to Gibson - Section 2, North & South Bow Road
Gibson, WA 6448

Figure 1: Survey Area Locality

	QA Check	Drawn by
	MLH	**BMT**
STATUS **FINAL**	*FILE* **AI005-002**	*DATE* **31/03/2022**

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

1.3. Geology and soils

Database searches shows the survey area lies within the Esperance System (245Es). 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. 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, 2018a). The soil type within the application area is mapped as the Esperance 1 b Phase (245Es_1E1b), Esperance 1 a Phase (245Es_1E1a), Esperance 2 b Phase (245Es_1E2b) and the Esperance 2E3b Phase (245Es_2E3b). The Esperance 1 b Phase is described as "*Grey deep sandy duplex (gravelly) soils with associated duplex sandy gravels and minor pale deep sands and shallow gravels. On gently undulating plain.*" (DPIRD, 2019a). The Esperance 1 a Phase is described as "*Gravelly, yellow mottled duplex soil with < 30 cm of sand over gravel layer (Fleming (shallow)), Dy5.82, on level plain, <1% slope*" (DPIRD, 2019a). The Esperance 2 b Phase is described as "*Gently undulating plain. Slopes 1-3%, relief <9m."* (DPIRD, 2019a). The Esperance 2E3b Phase is described as "*Deep uniform sand, Podzol > 80 cm (Corinup), Uc2.22, on gently undulating plain, 1-3% slope"* (DPIRD, 2019a).

1.4. 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 13.4-27.9°C, whilst average winter temperatures range between 7.6-17.4°C. The annual mean rainfall is 569 mm (BoM, 2022). On average the months of May – September are the months with the highest rainfall (Figure 2). There was higher than average rainfall recorded in the months of April, May, June and October 2021, and in November 2020 (Figure 2). The total rainfall in the year previous to the survey (November 2020 – October 2021) was 646.4mm which is 77.4 mm above average and equates to 13.60% increase in average rainfall.

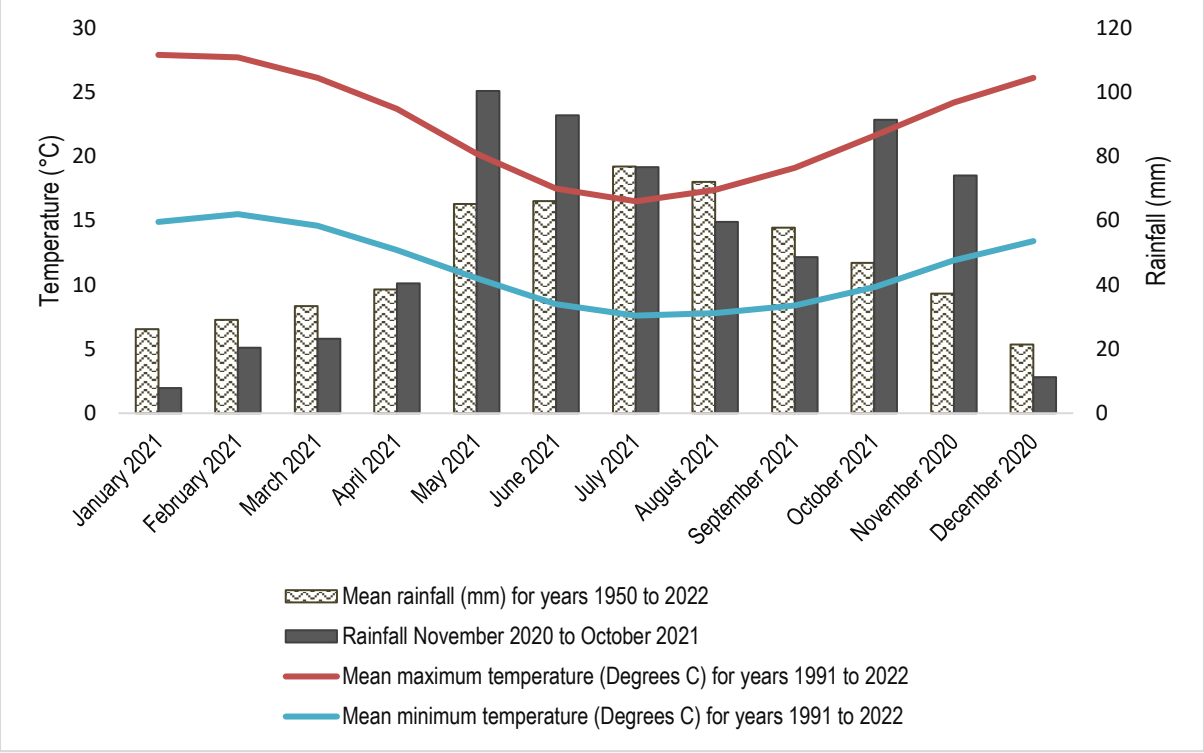


Figure 2: Temperature and Rainfall Data for Esperance Aero BoM Weather Station No. 009542 (BoM, 2022).

1.5. Habitat Connectivity

The survey area is largely disconnected from other native vegetation areas. There is one isolated patch of native vegetation within Reserve 14422 directly adjacent to the survey area. Minor corridors connect this patch to the larger 'Helms Arboretum'

Nature Reserve (R23527). There is remnant vegetation located along the railway line itself which extends out into the broader Esperance area, acting as a habitat corridor. In a regional context these larger areas of remnant vegetation are connected through smaller interconnecting patches within the surrounding agricultural landscape.

Table 1: Reserve Details (GoWA, 2022).

Reserve Number	Responsible Agency	Current Purpose
14422	Water Corporation	Waterway
23527	Department of Biodiversity, Conservation and Attractions	Forestry Purposes

1.6. Water and Wetlands

The survey area does not lie within any Public Drinking Water Source areas (DWER, 2020a). The survey area lies within the Esperance Sandplain (HZ25_ES) Hydrological Zone (DPIRD, 2018b). 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). The survey area lies within the Esperance Coast Basin / Hydrographic Catchment (DWER, 2018a) and within the Bandy Creek Hydrographic Subcatchment (DWER, 2018b).

No RAMSAR wetlands, or significant wetlands are located within the survey area. However, the desktop survey did identify that the Lake Gore RAMSAR wetland is ~30km west and the Lake Warden RAMSAR system is ~3.5km to the south of the survey area (DAWE, 2021). The survey area is not present within the catchment of Lake Gore RAMSAR system. However, it is located within the catchment of Lake Warden RAMSAR system (DBCA, 2017).

No direct standing water bodies or creeks were present within the survey area. However, there was two vegetation units ecologically linked to hydrological regimes, namely Vegetation Unit 1 (Melcut and Sedge WL) and 4 (Sedgeland). Vegetation Unit 1 had small puddles of standing water due to the poor drainage.

1.7. Environmentally Sensitive Areas

The survey area does not contain any DWER listed Environmentally Sensitive Areas (ESA; DWER, 2020b), but is located within Arc Infrastructure's internal ESA system.

1.8. 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 one System and Vegetation Association (DPIRD, 2019b). Refer to Map 1 in Appendix A:

- **System Association Name**: Esperance.
- **Vegetation Association Number:** 6048.
- **Structure Description:** Scrub-heath.
- **Floristic Description:** Mixed heath with scattered tall shrubs Acacia spp., Proteaceae and Myrtaceae.
- **Remnant Vegetation by Beard Association Rarity in LGA:** 14.21% remaining (GoWA, 2019).
- **Remnant Vegetation by Beard Association Rarity in IBRA Region:** 14.16% remaining (GoWA, 2019).

1.9. Heritage

The survey area is located within a 'Other Heritage Places' area (DPLH, 2022), specifically ID 1644 'Bukenerup Road', and is located within the Wudjari Nyungar nation. It is recognised that there has been a large scale of loss of cultural knowledge and information, and the survey area may contain additional heritage values that are not recognised through DPLH (2022).

2. Methodology – Desktop Assessment

2.1. Flora and Vegetation

Desktop inventory of potential conservation significant flora species likely to occur within 30 km 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);
- 30km Flora DBCA database records (DBCA, 2021a); and
- 30km TEC/PEC DBCA database records (DBCA, 2021b).

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);
- DBCA Priority and Threatened Ecological Community list (DBCA, 2021d). A non-legislative list maintained by DBCA for management purposes; and
- DBCA Priority Flora list. A non-legislative list maintained by DBCA for management purposes.

2.2. Fauna

A desktop inventory of conservation significant fauna species known to occur within 30 km of the survey area was undertaken using the following databases:

- Nature Map Database Search (combined data from DBCA and WA Museum: DBCA, 2007-);
- Protected matters search tool (DAWE, 2020); and
- 30km Fauna DBCA database records (DBCA, 2021c).

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).

Desktop assessment for the Black Cockatoo habitat consisted of reviewing DBCA locational records and a range of publicly available datasets relevant to Black Cockatoo breeding, roosting and foraging areas. These included:

- Carnaby's Cockatoo Confirmed (DBCA_050) and Unconfirmed Roost Sites (DBCA_051; DBCA, 2018c).
- Carnaby's Cockatoo Confirmed (DBCA_52) and Unconfirmed Roost Sites Buffered 6km (DBCA-053; DBCA, 2018e).
- Carnaby's Cockatoo Confirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA Regions DBCA_054 (DBCA, 2018f).
- Carnaby's Cockatoo Unconfirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA Regions (DBCA-055; DBCA, 2018g).
- Black Cockatoo Breeding Sites - Buffered DBCA_063 (DBCA, 2019a).
- Black Cockatoo Roosting Sites – Buffered DBCA_064 (DBCA, 2019b).

3. Methodology – Field Survey

3.1. Flora and Vegetation

A Spring flora reconnaissance flora and vegetation survey was undertaken by Katie White (Botanist/Ecologist) of Bio Diverse Solutions on the 29th and 30th September 2021, with a following visit on the 11th November 2021, supported by Kimberly Jenkins (Technical Assistant) of Bio Diverse Solutions. 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.

Six relevés were systematically surveyed within representative vegetation types to enable analysis and categorisation across the wider area (refer to Appendix D), used to describe the composition and structure of vegetation units present. A risk assessment was completed following the 29th and 30th September field survey on vegetation units likely to meet Kwongkan TEC/PEC criteria, and more intensive quadrat sampling to ecologically define communities occurred during the 11th November survey. This methodology is consistent with a targeted vegetation survey. A 10 x 10 m quadrat for mid and understorey and a 20 x 20 m quadrat for overstorey (EPA, 2016) were sampled and analysed for the vegetation unit identified as potentially meeting Kwongkan TEC/PEC criteria (Table 6, Section 4.2; DoE, 2015b), namely 5: Banspe Sandplain (Section 5.2). Two quadrats were systematically sampled within this vegetation unit, with photos and GPS coordinates recorded on the south-western corners.

The flora was systematically recorded within the relevés and quadrats, with collections of plant specimens 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, relevés and quadrats. 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; DoEE, 2017) description methods.

Information collected within each relevé and quadrat 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.

3.2. Flora and Vegetation Survey Limitations and Constraints

An assessment of potential survey limitations is outlined below in Table 2. Limitations were primarily nil-minor in nature, and did not affect the validity of results presented in the reconnaissance survey, such as surveying on the periphery of flowering times for species, presence of bryo-flora species, lack of information on species, standing water limiting access, disturbance, being long unburnt limiting detection of fire ephemeral species and survey intensity for targeting Orchid species. One species (P3 *Styphelia coelophylla)* identified on the desktop assessment as 'Possible' to occur was described as flowering in April, which may represent a limitation on detecting this species. Six species were identified in the desktop assessment (Table 12, Appendix B) as 'Possible' to occur with very limited information present taxonomically, which was taken into account during identification.

Table 2: Flora and vegetation survey limitations and constraints.

Limitation	Significance of limitation	Comment
Experience of personnel	Nil Major – Bryoflora	Katie White has 5 years' experience at conducting targeted, reconnaissance and detailed flora surveys within the Esperance sandplains bioregion. Additionally, she has conducted targeted flora surveys and worked alongside the DBCA Flora Conservation Officer for a large number of flora species listed on the 10 km desktop analysis. Kimberly Jenkins provided technical assistance during the field, following 10 years working as a field technician, environmental educator and various other roles within the natural sciences. A single species of bryo-flora was identified in the desktop assessment, namely moss P2 *Fabronia hampeana*. This is outside the expertise of surveyors. However, a risk assessment was completed based on suitable habitat presence, and was determined as 'Unlikely' to occur.
Survey timing	Minor	A Spring flora and vegetation survey was conducted, consistent with peak flowering times for the majority of species in the area. The timing occurred over three days, 29th and 30th of September and the 11th of November. The November survey detected late-flowering Spring species. Five species that were identified as 'Likely' or 'Possible' to occur on the desktop assessment were not described as flowering in October or November. However, four species were flowering on the periphery of the survey period, in September or December, and is therefore likely had sparse early/late blooms or were distinctively budding. For these species, it is therefore a minor limitation. One species were flowering during Autumn, P3 *Styphelia coelophylla* that was identified as 'Possible' to occur within the survey area. Whilst, Styphelia's are generally recognisable as a shrub without flowering, this does present a more substantial limitation.
Access restrictions	Nil	No access restrictions that would affect the conclusiveness of this survey were encountered. It is noted for Vegetation Unit 1: Melcut Sedge WL (Section 4.2) that standing water was often present, limiting the ability to traverse through some areas. However, puddles and standing water were often small in extent and flora was still able to be systematically surveyed.
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. Database searches were conducted through DBCA (DBCA, 2021a; DBCA 2021b) providing more comprehensive context. Six species were identified in the desktop assessment (Table 12, Appendix B) as 'Possible' to occur with very limited information present taxonomically. This primarily related to undescribed, informal species such as P1 *Cyathostemon sp.* Esperance (A. Fairall 2431) and *Baeckea* sp. Gibson (K.R. Newbey 11084), or having extreme niche abiotic requirements, such as being a fire ephemeral species, such as P1 *Lobelia archeri,* P3 *Gonocarpus pycnostachyus* and P3 *Adelphacme minima.* Due consideration was given to species in these genera during identification.

Table 2 continued.

Limitation	Significance of limitation	Comment
Survey effort and extent	Minor	The area was sufficiently and lengthily searched. A random meandering traverse ensured that all areas within 2 m of each other were covered. Note that the terrestrial flora survey effort depicted in Figure 22, Appendix A does not show the complete effort, due to technological issues not capturing the northern extent of the survey area. Following the CoA (2013) *Draft Survey guidelines for Australia's Threatened Orchids,* 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. Two Orchid species were identified in the desktop assessment (Table 12, Appendix B) as 'Possible' to occur within the survey area, namely P2 *Paracaleana parvula* and P3 *Pterostylis faceta.* Whilst the survey intensity was appropriate for at a reconnaissance level (EPA, 2016), it was recognised that it likely did not meet requirements for sampling Orchids (CoA, 2013), which may represent a minor limitation.
Disturbances that may affect results	Minor	Disturbance has the potential to affect the biological representation of species and therefore ecological communities present. Numerous areas within the survey area had been degraded through historical clearing from railway access and maintenance and weed invasion. This altered the species present, with multiple ecotypes represented in the '3: Cleared' Vegetation Unit. Additional, algal blooms were observed in some standing water within Vegetation Unit 1 'Melcut Sedge WL', indicating that nutrient runoff from surrounding agricultural areas also likely had affected the survey area. Numerous vegetation unit's present had also likely developed due to the impact of man-made drainage networks and extraction of material for the railway maintenance and construction. This had resulted in artificially poorly draining areas, such as some portions of Vegetation Unit 1 'Melcut Sedge WL' and 4 'Sedgeland'. 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 during this survey. Two fire ephemeral species were identified as 'Possible' to occur within the survey area (Table 12, Appendix B), namely P1 *Lobelia archeri,* P3 *Gonocarpus pycnostachyus* and P3 *Adelphacme minima*, which may represent a more substantial limitation.
Identification issues	Nil	The vast majority of species present contained sufficient taxonomic information for identification (such as nuts, fruit, leaf structure or flowers). It is estimated that 60-70% of species present were flowering. Three species of herb and two species of sedges were not identified, but bore no similarities to any species assessed as 'Likely' or 'Possible' to occur in the desktop assessment.

3.3 Basic Fauna Survey Methodology

The aim of the basic fauna survey was to assess and map fauna habitat within the survey area, assess the likelihood of occurrence for conservation significant fauna, record actual presence of conservation significant fauna, and undertake an opportunistic inventory of fauna and introduced species encountered whilst traversing the survey area.

Field survey work was carried out by Bianca Theyer (Conservation and Wildlife Biologist/Ecologist) on the 29 and 30th September and 24th November 2021 with assistance from Dr. Karlene Bain (Wildlife Ecologist). The survey was carried out on foot using traverses and targeted survey techniques 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;
- DSEWPaC (2011) Survey guidelines for Australia's Threatened mammals; and
- DSEWPaC (2012) Referral Guidelines for Three Threatened Black Cockatoo Species.

In addition, published papers, reports and recovery plans were used as a source of ecological information to inform surveys and selected survey techniques.

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 of the survey. 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.

3.4 Targeted Black Cockatoo Habitat Assessment

Carnaby's Cockatoo have a wide-spread distribution across Western Australia extending from Kalbarri and Geraldton in the northwest of the state, inland to Morawa, Dowerin and Merredin and to the east of Esperance (DSEWPaC, 2012). The survey area lies within the known foraging range of the Carnaby's Cockatoo, but is outside of the modelled predicted breeding area (DSEWPaC, 2012).

Baudin's Cockatoo is most commonly found in forested areas, but is also found in the open agricultural areas within the southwest (DEC, 2008). The survey area falls outside the known distribution area for Baudin's Cockatoo, which extends from Mundaring south to Kojonup and Albany, and inland to the Stirling Ranges (DEC, 2008; DSEWPaC, 2012). Based on modelled predicted breeding areas contained within the guidelines (DSEWPaC, 2012), the survey area does not within the breeding distribution for this species.

Forest Red-tailed Black Cockatoo occur within the south-west humid and sub-humid zones of Western Australia, in the dense Jarrah, Karri and Marri forests that receive more than an average of 600mm annual rainfall (DEC, 2008). Their distribution extends from Perth, east to Wundowie and south through to Narrogin, Kojonup, Cranbrook and Albany (DSEWPaC, 2012). The survey area is not located within the known distribution for this species (DSEWPaC, 2012).

Cockatoo surveys targeted Carnaby's Cockatoo and potential habitat for this species, and consisted of a systematic traverse-based assessment of hollow-bearing trees, foraging habitat, feeding activity and roosting sites as described in sections 3.4.1-3.4.3.

3.4.1 Surveys for Breeding Hollows

Carnaby's Cockatoo breed within the inland parts of its distribution, in areas with 300-750mm annual average rainfall (DPaW, 2013). This breeding range has expanded in recent years to extend further south into Jarrah-Marri forests and the coastal Tuart forests south of Perth (Johnstone and Storr 1998; Johnstone *et al.* 2011). Although the survey area does not fall within the modelled predicted breeding area, there is potential for suitable breeding habitat to be present, and as such an assessment of all trees onsite was undertaken.

The aim of the black cockatoo habitat assessment was to identify all potential breeding trees (refer to Table 3) with a diameter, measured at 1.5 metres from the base of the tree, of 500 millimetres or greater and that contained one or more hollows of potential suitability for breeding by Carnaby's Cockatoo. These trees are referred to hereafter as significant trees.

If present, significant trees were GPS located, measured 1.5m above ground (DBH) using a diameter tape, photographed, and the presence or absence of potential breeding hollows determined. Where present, hollows were photographed, the entrance type (chimney, side or elbow) and dimensions of the hollow were recorded and hollows were assessed for signs of

use by cockatoos, based on evidence such as chewing around the hollow entrance, and activity at the base of the tree, e.g., feathers, faecal material, feeding debris.

Long term studies on Carnaby's Cockatoos have shown that they utilise tree hollows ranging from 100 mm – 650 mm (average 260 mm) in diameter (Saunders *et al.* 2014a, 2014b) and a hollow with a depth more than 300 mm. Based on the above information, hollows with an entrance diameter larger than 100 mm x 100 mm that occurred in branches or trunks with the capacity for deep hollows were recorded as potential cockatoo hollows. Smaller hollows with the potential to develop into suitable nesting hollows were also recorded.

3.4.2 Surveys for Foraging Habitat and Feeding Activity

The *EPBC Guidelines for Black Cockatoos* (DSEWPaC, 2012) outline general criteria for identifying foraging habitat for black cockatoos (Table 3) but do not provide detailed criteria for assessing quality. In this instance, the quantity of feeding evidence, overall health of trees (dead, presence of disease), presence of fruiting material, and diversity of known foraging species was taken into account when assessing the quality of foraging habitat. Vegetation types that do not contain known foraging species were not considered to contain foraging habitat.

Assessment of foraging habitat was based on published foraging preferences for the three target species. Carnaby's Cockatoo is known to prefer Kwongkan heathland, shrublands and woodlands dominated by Proteaceous species as foraging habitat but will feed on individual Eucalypts and small stands of Eucalypt woodland or forest (Table 3). The presence of foraging habitat was mapped in the field, and individual locations where feeding activity was encountered were GPS'd.

3.4.3 Surveys for Roosting Habitat and Activity

There is currently an absence of criteria within the EPBC Guidelines (DSEWPaC, 2012) for assessing roosting habitat. In this survey, the presence of cockatoo feathers and faecal material were used as indicators of roosting activity.

The presence of roosting habitat if present was mapped in the field, and individual locations where roosting activity was encountered were GPS'd.

Table 3: Habitats used by Carnaby's Cockatoos (DSEWPaC, 2012).

Habitat	Carnaby's Cockatoo
Breeding	Generally, in woodland or forest, but also breeds in former woodland or forest now present as isolated trees. Nest in hollows in live or dead trees of salmon gum (*E. salmonophloia*), wandoo, tuart, jarrah (*E. marginata*), flooded gum (*E. rudis*), york gum (*E. loxophleba* subsp. *loxophleba*), powder bark (*E. accedens*), karri and marri.
Roosting	Generally, in or near riparian environments or natural and artificial permanent water sources. Flat-topped yate (*E. occidentalis*), salmon gum, wandoo, marri, karri, blackbutt, tuart, introduced eucalypts (for example blue gum) and introduced Pines.
Foraging	Native shrubland, Kwongkan heathland and woodland dominated by Proteaceous plant species such as *Banksia* spp. (including *Dryandra* spp.), *Hakea* spp. and *Grevillea* spp. Forages in Pine plantations (*Pinus* spp.), eucalypt woodland and forest that contains foraging species. Also, individual trees and small stands of these species.
Foraging: common food items	Seeds, flowers and nectar of native Proteaceous plant species (for example, *Banksia* spp., *Hakea* spp., *Dryandra* spp., and *Grevillea* spp.), eucalypts and Callistemon. Also seeds of introduced species including *Pinus* spp., *Erodium* spp., wild radish, canola, almonds and pecan nuts; insects and insect larvae; occasionally flesh and juice of apples and persimmons.

3.5 Fauna Survey Limitations and Constraints

An assessment of potential survey limitations was undertaken as per the EPA (2020) document *Technical Guidance Fauna Surveys for Environmental Impact Assessment* refer to Table 4.

Table 4: Fauna survey limitations and constraints.

Limitation	Constraint	Comment
Scope	Nil	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 Threatened and Priority species.
Disturbances that may affect results	Nil	No recent disturbances which may affect results of the survey were identified, e.g., recent fire or grazing. Historical and ongoing disturbances from the existing operational activities along the railway line may impact the presence of fauna within the survey area. However, given these disturbances are long-term and continuous, they are unlikely to have resulted in a significant limitation on detection probability or species occurrence during the survey period (i.e., activities would result in some fauna moving away / not utilising the survey area at all times).
Intensity of survey	Nil	The basic fauna survey and targeted components of the survey were deemed appropriate given the scope was to identify the general presence of fauna species and fauna habitat in the survey area.
Sources of information (recent or historic) and availability of contextual information	Nil	Publicly available desktop, background and ecological data were readily available to provide a contextual understanding for the site and the survey. DBCA data were also acquired (not publicly available) to provide a more detailed understanding of potential conservation significant fauna in the survey area.
Remoteness or access issues	Nil	No access restrictions were encountered.
Species detection probability (e.g., as a result of seasonal activity, fauna movement patterns and cryptic behaviours)	Nil	Cockatoo breeding periods affect the ability of surveys to detect breeding individuals, however assessment of the suitability of breeding habitat based on the presence of potentially suitable hollows negates this limitation. Carnaby's Cockatoos use a range of areas for foraging and roosting. The use of activity indicators such as feeding debris (nuts) and faecal material that persist onsite negate this limitation and enable determination of the regularity with which an area is visited. While the detection probability for target species during the survey period was relatively high, the conclusions presented in this report are based upon field data collected over a limited period of time. The results are therefore indicative of the environmental condition of the site at the time and the survey timing. E.g. some species are more likely to use seasonally inundated areas when they are dry, transient wide-ranging species may not have been present during the survey period, some cryptic species are less detectable particularly when they are inactive. Cryptic species such as the western mouse (P4), heath mouse (VU) and Cape Le Grand assassin spider (VU) are unlikely to have been detected within the parameters of this survey. The presence of potential habitat was used as an indication of their likelihood of occurrence, and the possible need for follow up targeted surveys. Species-level detection probabilities are dealt with in the Threatened fauna likelihood of occurrence (LOO) in Table 14, Appendix B.

Table 4 continued.

Limitation	Constraint	Comment
Survey techniques	Minor	Identifying hollows from the ground has limitations, as the full characteristics of a hollow are not evident (e.g., internal dimensions such as depth). The entrance dimensions and size of the branch / trunk into which the hollow was forming were used as indicators of the potential internal dimensions. The relative visibility of the canopy can also be limiting in identifying potential hollows, particularly where hollows are upward facing or obscured by foliage.
Experience of personnel	Nil	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. Dr Karlene Bain has 26 years of fauna survey experience through roles in biodiversity survey, research and management working with State Government, State Natural Resource Management groups, Regional NRM groups, Research Institutions, and Private Industry.

4 Results – Desktop Assessment

4.1 Threatened and Priority Flora

The full species list compiled from all available data (Table 12, 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. Conservation categories for Threatened and Priority flora and ecological communities are presented in Tables 15 and 16 in Appendix C. NatureMap and Protected matters search tool database searches are provided in Appendix F.

As a result of the above-mentioned database searches, a total of 73 species were identified, consisting of 8 Threatened and 65 Priority species were identified within the study area (30km buffer). Of these, three were assessed as 'Likely' and 31 as 'Possible' to occur. One species was outside of the expertise of the surveyor, consisting of bryo-flora moss (P2 *Fabronia hampeana*), but was assessed post-field survey as 'Unlikely' to occur due to a lack of suitable habitat. Refer to Table 12 in Appendix B for likelihood of occurrence (LOO) analysis. Species that have previously been recorded within a 30km radius of the survey area are shown in Figure 3.

Numerous limitations were present in detection of species identified within the desktop assessment, which are detailed in Table 2. A brief summary is provided below;

- Flowering time – P3 *Styphelia coelophylla* was identified as 'Possible' to occur and is recorded as flowering in April. This may represent a minor limitation, and it is recognised that detection of the species is possible without flowering.
- Limitation information present on species – six species were deemed as having a lack of information, primarily relating to undescribed, informal species and species with highly specific abiotic requirements, such as being fire ephemeral.
- Fire ephemeral species – the survey area is long unburnt and therefore the three species generally only present post-fire would be unlikely to be detected.

4.2 Threatened and Priority Ecological Communities

Database results also indicate that two Threatened or Priority ecological communities '*Subtropical and Temperate Coastal Saltmarsh* (CSM)*'* and '*Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia* (Kwongkan)*'* may be present within the survey area, which are outlined in further detail below. Conservation categories for Threatened and Priority ecological communities are presented in Tables 17 and 18 in Appendix C. NatureMap and Protected matters search tool database searches are provided in Appendix F.

Subtropical and Temperate Coastal Saltmarsh (CSM)

CSM is listed as a P3 PEC within WA under the *BC Act 2016* and as a Vulnerable TEC under the *EPBC Act 1999.* 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). CSM is recognised by key diagnostic features and minimum condition thresholds outlined in the Approved Conservation Advice Guidelines (DoE, 2015a), which are outlined further below. Refer to Table 13, Appendix B for further information.

1) Occurs south of 23°37'S latitude, from the central Mackay coast on the east coast of Australia, southerly around to Shark Bay on the west coast of Australia (26° latitude), including the Tasmanian coast and islands within the above range;
2) Occurs on the coastal margin, along estuaries and coastal embayment's and on low wave energy coasts;
3) Occurs in places with at least some tidal connection, including rarely-inundated supratidal areas, intermittently opened or closed lagoons, and groundwater tidal influences, but not areas receiving only aerosol spray;
4) Occurs on sandy or muddy substrate and may include coastal clay pans (and the like);
5) Consists of dense to patchy areas of characteristic coastal saltmarsh species (i.e., salt-tolerant herbs, succulent shrubs or grasses, that may also include bare sediment as part of the mosaic); and
6) Proportional cover by tree canopy such as Mangroves, *Melaleucas* or *Casuarinas* is not greater than 50%, nor is proportional ground cover by seagrass greater than 50%.

Table 5: Minimum patch size analysis for CSM PEC/TEC diagnostic criteria.

Patch size	Condition category	Inclusion in community
<0.1ha and occur in isolation	Patches or areas >50% weeds	**Do not** form part of the CSM TEC/PEC
<0.1ha patches within 30m of each other collectively forming 0.1ha, considered as a mosaic	Patches or areas <50% weeds	**Do** form part of the CSM TEC/PEC

The approved conservation advice, available spatial mapping for the Ecological Community, and description above indicates that this PEC is unlikely to occur within the survey area, being 15km away from the coastline or distinct hydrological features that would allow for tidal interaction.

Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Kwongkan)

Kwongkan is listed as Priority 3 (P3) PEC within WA under the *BC Act 2016* and as an Endangered Threatened Ecological Community (TEC) under the *EPBC Act 1999.* The survey area lies within the southeast botanical province of Western Australia (Hopper and Gioia, 2004), which is the geographical location of Kwongkan. It is defined and assessed in the conservation advice as generally Kwongkan 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 (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. Multiple other ecological communities are listed under the *BC Act 2016* that also meet criteria of Kwongkan TEC and should be considered when assessing whether Kwongkan is present.

Kwongkan is recognised by the below key diagnostic features and minimum condition thresholds outlined in Approved Conservation Advice Guidelines (DoE, 2015b):

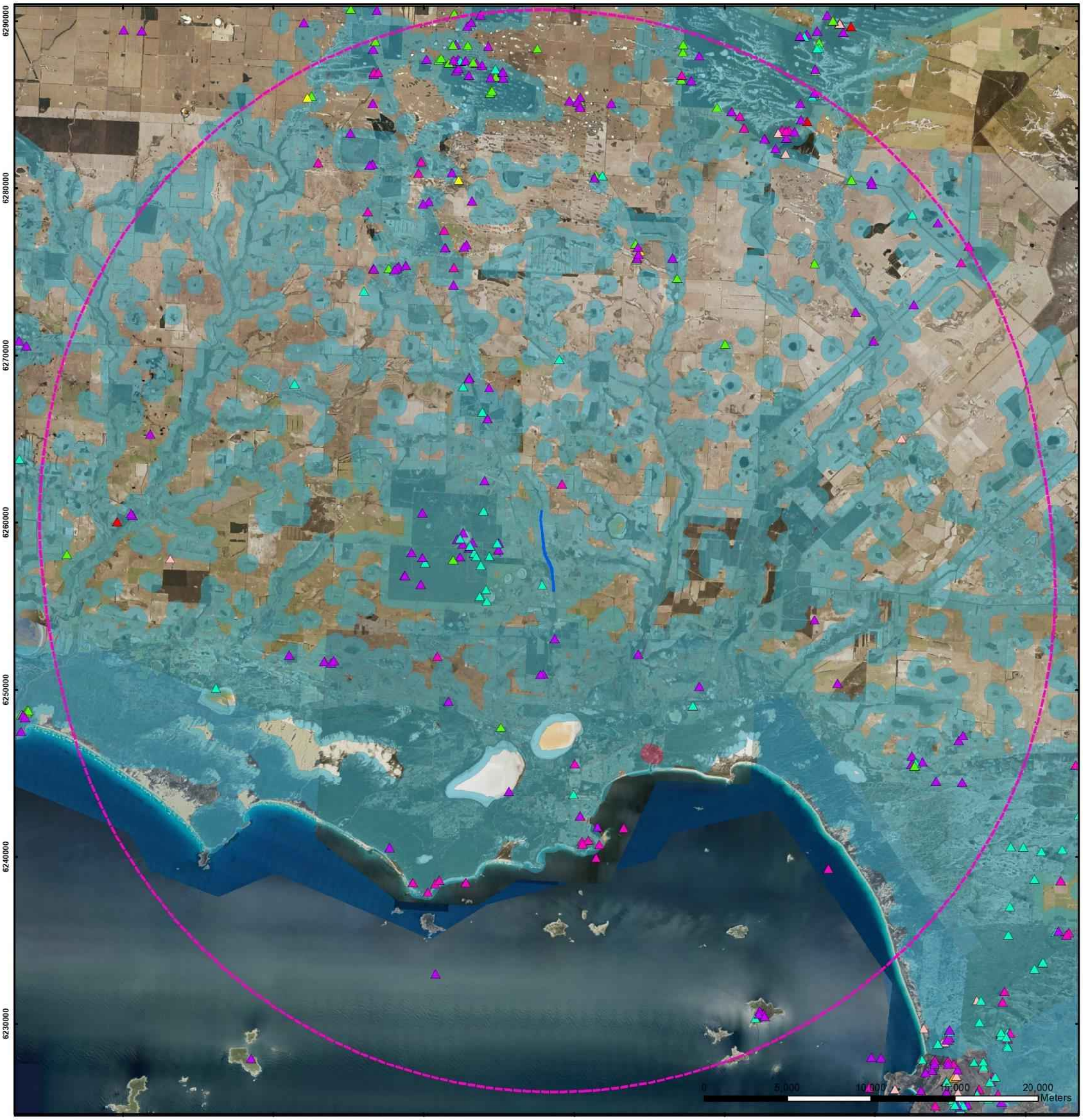
1) Occurs within the South Coastal Floristic Province (Hopper and Gioia, 2004); relating to south west phytogeographic boundaries. Includes Island of the Recherche Archipelago.
2) a) Characterised by Proteaceae species having 30% or greater cover of Proteaceae species across all layers of where shrubs 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 (e.g., fire).

Condition thresholds for the Ecological Community are described in Table 6.

Table 6: Condition thresholds and minimum patch size analysis for Kwongkan PEC/TEC diagnostic criteria.

Condition category	Minimum patch size	Weeds	Dieback
High	1 ha	<30% perennial weed cover	No known Dieback infestation
Moderate	0.5 ha	<70% perennial weed cover	May be present or unknown

The approved conservation advice, available spatial mapping for the Ecological Community, and description above indicates that this TEC/PEC could possibly occur within the survey area.



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BIO DIVERSE SOLUTIONS

Scale
1:225,000@ A3
GDA MGA 94 Zone 51

CLIENT
Arc Infrastructure
Line 51 (362.9 – 367.8km) Site 12 and 13
Esperance to Gibson - Section 2, North & South Bow Road
Gibson, WA 6448

Figure 3: Desktop Flora & TEC/PEC Data (DBCA, 2021a; DBCA, 2021b).

	QA Check	Drawn by
	MLH	BMT
STATUS	FILE	DATE
FINAL	AI005-002	31/03/2022

Legend

- Survey Area
- 30km Study Area Buffer

Ecological Communities

State, Commonwealth

- Priority 3, Endangered
- Priority 3, Vulnerable

59-0921FL_WAHerb

- T
- P1
- P2
- P3
- P4

59-0921FL_TPFL

- T, CR
- T, EN
- T, VU
- P1
- P2
- P3
- P4

Overview Map Scale 1:1,250,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

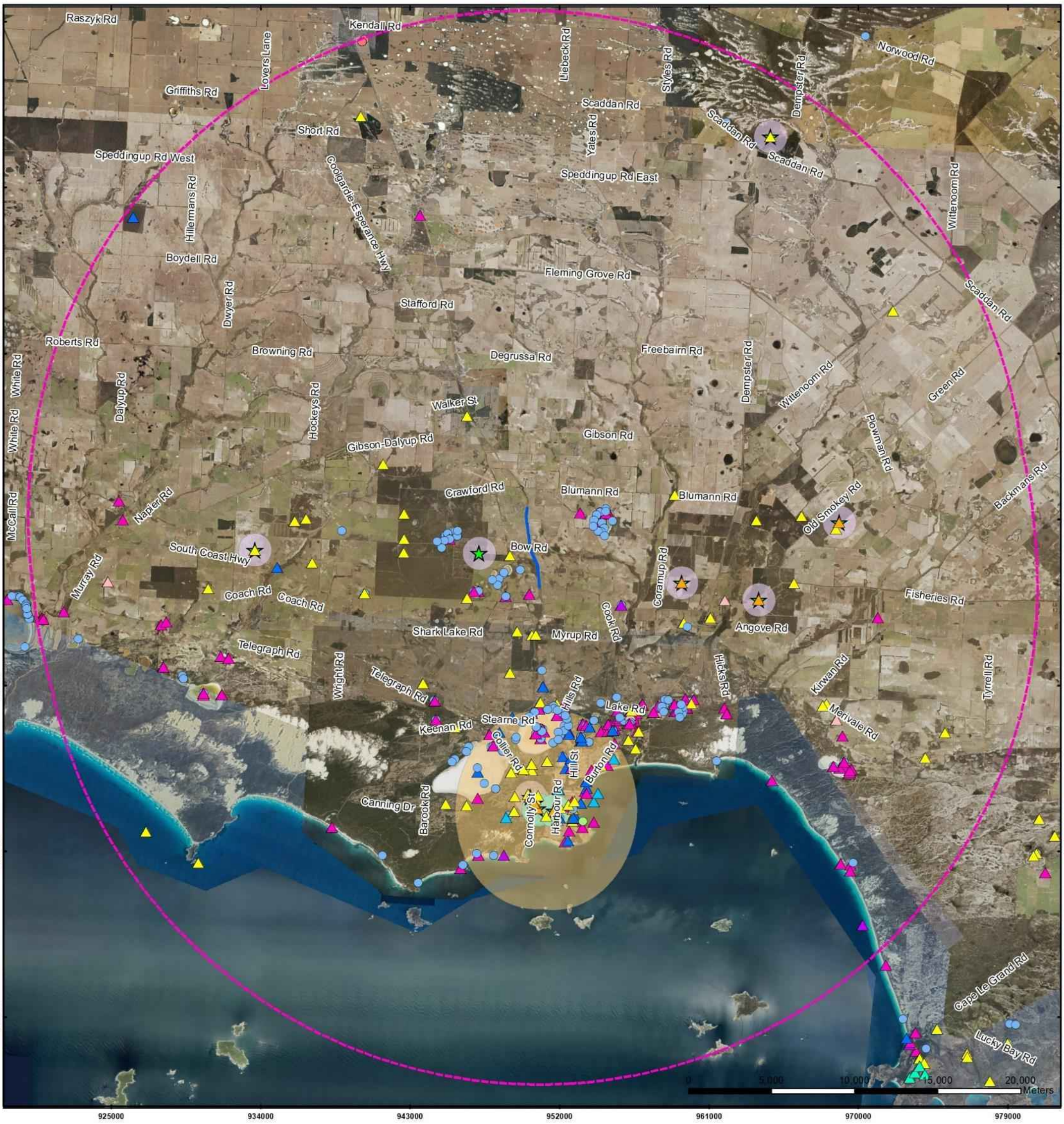
4.3 Fauna

The desktop assessment identified 82 species of conservation significance within 30 km of the survey area. Of these, 45 were Threatened taxa under the *BC Act 2016* and / or *EPBC Act 1999* (critically endangered, endangered or vulnerable), 12 were Priority listed or specially protected taxa and 25 were migratory species protected under international agreements. Of the 45 Threatened taxa and 12 Priority taxa, 24 are also migratory species protected under international agreements (Table 14, Appendix B). Conservation categories for Threatened and Priority fauna are presented in Tables 15 and 16 in Appendix C. NatureMap and Protected Matters Search Tool database searches are provided in Appendix F.

The list of species with the potential to occur within the survey area is compiled from all available data (Table 14, Appendix B) and is based on observations from a broader area than the survey area. As a result, this list is likely to include species that would not occur in the 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.

4.3.1 Potential Breeding, Foraging and Roosting Habitat for Black Cockatoos

There are no known confirmed breeding sites within a 30 km range of the survey area, and the area is outside of the modelled breeding range for black cockatoos. DBCA data supplied by Arc Infrastructure indicates there are 10 black cockatoo roost sites that have been located within 30 km of the survey area, the closest being approximately 3 km to the west (DBCA, 2021c; Figure 4). Publicly available DBCA black cockatoo databases also indicate there are confirmed roosting sites within 30 km of the survey area (DBCA, 2018a; 2018c; 2019b).



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Scale
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GDA MGA 94 Zone 51

CLIENT
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Figure 4: Desktop Fauna Data (DBCA, 2021c).

	QA Check	Drawn by
	MLH	BMT
STATUS: FINAL	FILE: AI005-002	DATE: 31/03/2022

Legend

DBCA Fauna Data

WA Status, EPBC Status

- CR, CR
- EN, EN
- EN, MI
- EN,
- VU,
- VU, EN
- VU, VU
- VU, MI
- MI, MI
- OS,
- P1,
- P2,
- P3,
- P4,
- P4, MI

- Survey Area
- 30km Study Area Buffer
- DBCA Black Cockatoo Roosting Data
- Carnabys Cockatoo Confirmed Roost Sites (DBCA_050)
- Carnabys Cockatoo Confirmed Roost Sites Buffered 6km (DBCA_052)
- Black Cockatoo Roosting Sites Buffered (DBCA_064)

Overview Map Scale 1:1,250,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

5 Results – Flora and Vegetation Field Survey

5.1 Flora Diversity

During the survey 172 flora species, consisting of 39 families and 126 genera were found. The most commonly occurring families were Myrtaceae, Cyperaceae and Fabaceae. The list includes 142 native species and 29 introduced / alien species. The vegetation units identified across the survey area are described in Section 5.2. Refer to Table 20, Appendix D for full species list.

5.2 Vegetation Units

Six 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 5 – 7 for photographs of vegetation units and Figure 11 for distribution and extent of vegetation units.

Cleared areas were also present throughout the survey area, occurring as bare ground along access tracks or hardened laydown areas. A total of 3.2ha of cleared area was present within the survey area. Minor, invasive herbs or agricultural grasses were often present within these bare areas.

1. Vegetation Unit 1: *Melaleuca cuticularis* and Sedge wetland (Melcut and Sedge WL)

Vegetation unit 1 consisted of wetland, riparian community characterised by *Melaleuca cuticularis* Shrubland and a dense, mixed and diverse sedgeland. Common Sedge species present include *Leptocarpus crebriculmis, Chordifex sphacelatus, Ficinia nodosa, Gahnia trifida, Juncus pallidus, Machaerina juncea, Mesolemaena stygia* subsp. *stygia* and *Hypolaena humilis.* Overall, however there is a lower diversity of species within this vegetation unit, with only 44 species recorded. The vegetation unit is present due to wetland depressions and drainage resulting in poor drainage, and is therefore linked to a hydrological regime. However, in areas this is likely as a result of artificial drains, culverts and extraction of materials creating pits from maintenance or construction of the adjacent railway. No Priority or Threatened flora were identified within Vegetation Unit 1 and it did not bear any similarity to any PEC/TEC criteria.

Vegetation Description (NVIS; DoEE, 2017): U ^*Melaleuca cuticularis*, +/-*Acacia cyclops*\shrub\i; M +/-*Micromyrtus elobata* subsp. *elobata*, *Taxandria spathulata*\shrub\2\bc; G+ ^^*Leptocarpus crebriculmis, Chordifex sphacelatus, Eragrostis curvula*\^sedge, grass\1\d

Vegetation Description (Muirs, 1977): *Melaleuca cuticularis* and *Acacia cyclops* Scrub, over *Micromyrtus elobata* subsp. *elobata* and *Taxandria spathulata* Open Low Shrub C and D, over *Ficinia nodosa, Gahnia trifida* and *Juncus pallidus* Dense Tall Sedge, over *Machaerina juncea, Mesomelaena stygia* subsp. *stygia* and *Hypolaena humilis* Dense Low Sedge, over *Chamaescilla corymbosa* Very Open Herb, over *Eragrostis curvula* and *Briza maxima* Very Open Tall and Low Grass.

Area: 0.19 ha.
Site description: Light brown clay-sand in drainage depression, with gentle slope. Seasonally wet. <2% rock cover on surface.
Condition: Good, Degraded, Completely Degraded.
Represented in R1 (refer to Appendix D).

Figure 5: Vegetation Unit 1, Melcut and Sedge WL, present within the survey area.

2. Vegetation Unit 2: *Nuytsia floribunda* and mixed shrubland (Nuyflor and Mixed SL)

Vegetation unit 2 is characterised by *Nuytsia floribunda* and *Lambertia inermis* over a highly diverse and mixed tall shrubland. *N. floribunda* and *L. inermis* both vary in dominance across the Vegetation Unit, ranging from scattered to relatively dense. Common species present within the tall Shrubland including *Taxandria spathulata, Allocasuarina humilis, Adenanthos cuneatus, Phymatocarpus maxwellii, Conospermum leianthum* subsp. *leianthum* and *Hakea trifurcata.* Vegetation Unit 2 is the second most diverse unit within the survey area, with 76 species of flora detected, including Priority 3 species, *Dampiera sericantha.* Whilst Proteaceous species are present within Vegetation Unit 2, they were scattered and not dominant. Therefore, it does not meet Kwongkan PEC/TEC shrubland, which is discussed in more detail in Section 5.6.1. Potential indications of *Phytophthora cinnamomii* Dieback was observed within this Vegetation Unit.

Vegetation Description (NVIS; DoEE, 2017): U ^^*Nuytsia floribunda*, *Lambertia inermis +/-Eucalyptus tetragona*\; M+ ^^*Taxandria spathulata, Allocasuarina humilis, Adenanthos cuneatus*\shrub\^3,2\c; G +/- *Hypolaena exsulca, Lysimachia arvensis, Caustis dioica*\sedge, ^herb\1\bc

Vegetation Description (Muirs, 1977): *Lambertia inermis, Nuytsia floribunda* and *Eucalyptus tetragona* Scrub, over *Taxandria spathulata, Allocasuarina humilis, Adenanthos cuneatus* and *Phymatocarpus maxwellii* Heath A and B, over *Hibbertia racemosa, Leucopogon* sp. Coujinup (M.A. Bergman 11085) and *Lysinema ciliatum* Low Heath C and D, over *Caustis dioica* and *Dianella revoluta* Open Tall Sedges, over *Hypolaena exsulca* and *Anarthria prolifera* Open Low Sedges, over *Avena fatua* Very Open Tall Grass, over *Neurachne alopecuroidea* Very Open Low Grass, over *Lysimachia arvensis, Trachymene pilosa, Chamaescilla corymbosa* and *Levenhookia pusilla* Very Open Herbs.

Area: 0.29 ha.

Site description: Flat sandplain, with light grey sand. Flat slope. Good drainage.

Condition: Good, Degraded.

Represented in R2 (refer to Appendix D).

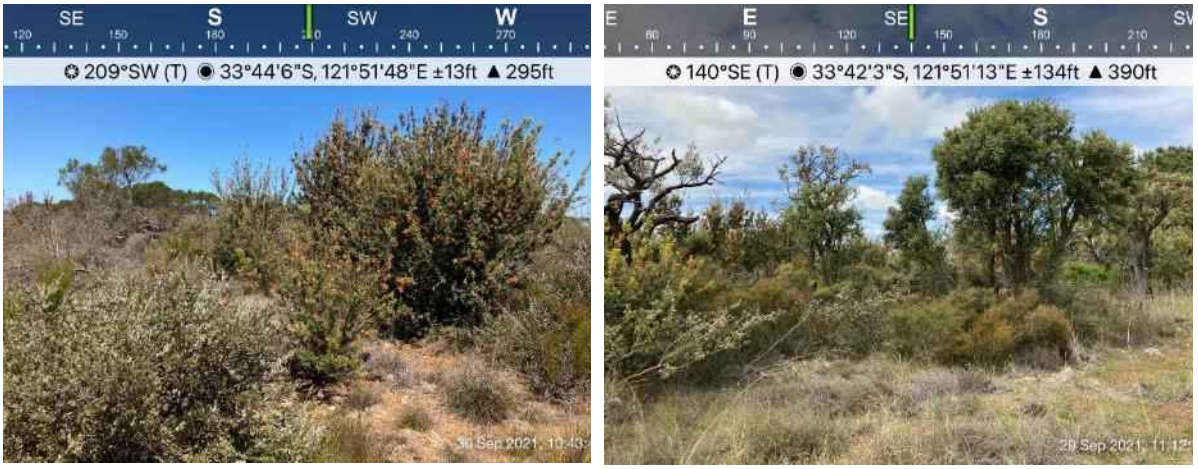


Figure 6: Vegetation Unit 2, Nuyflor and Mixed SL present within the survey area.

3. Vegetation Unit 3: Scattered Natives in Disturbed Areas (Dist Nat)

Vegetation unit 3 occurred in historically cleared and disturbed areas, that formed novel ecosystems primarily dominated by a range of non-native species. These areas had evidently been historically cleared and re-grown with entirely non-natives, consisting of primarily Dense African Lovegrass (*Eragrostis curvula*) with in areas scattered Pine Tress (*Pinus radiata*) or grasslands dominated by agricultural grasses and Kikuyu (C*enchrus clandestinus*). Native vegetation within Vegetation unit 3 consisted of scattered species, primarily disturbance opportunists. Within these areas, the condition rating was considered 'Completely Degraded' due to the sparse and low diversity of native species present.

No NVIS or Muirs description was written as the floristic composition and structure of vegetation unit 3 was largely driven by the invasive species present, such as Pine Tree, Lovegrass or Victorian Tea Tree and the effect this had on the expression of native species and varied dramatically within this vegetation unit. Common native species present include *Acacia cyclops, Adenanthos cuneatus, Hypolaena exsulca* and *Hypolaena humilis.*

Area: 1.24 ha.
Site description: Gentle slopes, good drainage, ridge and sandplains, light grey to white sand.
Condition: Completely Degraded.
Represented in R6 (refer to Appendix D).

a) b)

Figure 7: Vegetation unit 3 Dist Nat present within the survey area.

a) and b) Dominated by African Lovegrass with scattered Pine Trees.

4. Vegetation Unit 4: Sedgeland

Vegetation unit 4 is primarily characterised by a low diversity Sedgeland, lacking any distinct upper or midstorey. Sedges dominating vegetation unit 4 include *Hypolaena exsulca, Chordifex laxus,* and *Gahnia trifida.* Scattered *Acacia cyclops* wattle was observed. It is likely that vegetation unit 4 has been historically disturbed and regenerated from clonal species (i.e. Sedges). It was also observed to be poorly draining, most likely due to artificial man-made drains, culverts or extraction of material from the adjacent railway for maintenance and construction. Vegetation unit 4 is therefore likely linked to a specific hydrological regime, despite likely being novel. Diversity was relatively low, with 47 species detected within the survey area. No Priority or Threatened flora were detected, or met criteria of PEC/TEC.

Vegetation Description (NVIS; DoEE, 2017): U +/-*Acacia cyclops*\shrub\3\i; M +/-*Phymatocarpus maxwellii*\shrub\3\r; G+ ^^*Hypolaena exsulca, Chordifex laxus, Gahnia trifida*\sedge\1, ^2\d

Vegetation Description (Muirs, 1977): *Acacia cyclops* Scrub, over *Phymatocarpus maxwellii* Open Low Scrub A, over *Gahnia trifida* and *Mesomelaena tetragona* Dense Tall Sedge, over *Hypolaena exsulca, Chordifex laxus* and *Lepidosperma squamatum* Dense Low Sedge, over *Eragrostis curvula* and *Avena fatua* Open Tall Grass, over *Pseudognaphalium luteoalbum, Vellereophyton dealbatum* and *Chamaescilla corymbosa* Very Open Herbs.

Area: 0.17 ha.
Site description: Minor drainage depression, light grey sand. Seasonally wet. Flat to minor slope.
Condition: Degraded.
Represented in R3 (refer to Appendix D).

Figure 8: Vegetation Unit 4, Sedgeland present within the survey area.

5. Vegetation Unit 5: *Banksia speciosa* sandplain community (Banspe sandplain)

Vegetation unit 5 was characterised by a community commonly associated with deep yellow sands, on minor ridges within the Esperance Sandplains. *Banksia speciosa* is the keystone marker species, varying in density across the vegetation unit. The flora is highly variable and diverse across every floristic strata, with an overall extremely high 99 species detected within the vegetation unit. Priority three species *Daviesia pauciflora* was detected within vegetation unit 5: Banspe Sandplain. Common midstorey species included *Leptospermum oligandrum, Adenanthos cuneatus* and *Darwinia vestita.* Common understorey species included *Hypolaena exsulca, Caustis dioica* and *Trachymene pilosa.* There was a low number of invasive species, which primarily consisted of herbs with minimal competitive or invasion risks. vegetation unit 5 meets floristically and ecological the criteria for Kwongkan TEC/PEC. However, some areas are excluded as meeting the thresholds due to the patch size criteria. This is further discussed in Section 5.6.1. Potential indication of *Phytophthora cinnamomii* Dieback was observed within this vegetation unit.

Vegetation Description (NVIS; DoEE, 2017): U ^*Banksia speciosa*, +/-*Acacia cyclops*\shrub\4\i; M+ ^^*Leptospermum oligandrum, Adenanthos cuneatus, Darwinia vestita*\shrub\2\i; G ^^*Hypolaena exsulca, Hypochaeris radiata, Eragrostis curvula*\sedge, herb, grass\1\r

Vegetation Description (Muirs, 1977): *Banksia speciosa* and *Acacia cyclops* Scrub, over *Leptospermum oligandrum, Adenanthos cuneatus* and *Darwinia vestita* Low Scrub A and B, over *Hibbertia gracilipes, Leucopogon* sp. Coujinup (M.A. Bergman) and *Lysinema ciliatum* Open Dwarf Scrub C and D, over *Caustis dioica, Lomandra hastilis* and *Tricostularia aphylla* Very Open Tall Sedge, over *Hypolaena exsulca* Very Open Low Sedge, over *Eragrostis curvula* Very Open Tall Grass, over *Rytidosperma setaceum* Very Open Low Grass, over *Hypochaeris radiata, Ursinia anthemoides* and *Trachymene pilosa* Open Herbs.

Area: 0.45 ha.
Site description: Deep yellow to white sand, on Sandplain hill crest. Moderate slopes. Good Drainage.
Condition: Good, Degraded, Completely Degraded.
Represented in R4, Q1 and Q2 (refer to Appendix D).

Figure 9: Vegetation unit 5, Banspe Sandplain vegetation unit present within the survey area.

6. Vegetation Unit 6: Mixed Myrtaceous Shrubland (Myrt Mixed SL)

Vegetation unit 6 is characterised by a dense and highly diverse shrubland largely dominated by species in the Myrtaceae family. Primarily this included *Leptospermum oligandrum, Darwinia vestita* and *Melaleuca thymoides.* Additionally, the shrubland commonly contained *Adenanthos cuneatus* and *Conospermum leianthum* subsp. *leianthum.* Scattered overstorey was present, consisting of *Eucalyptus pleurocarpa* and *Nuytsia floribunda.* Minimal understorey was present. 55 species were present within vegetation unit 6, with no Priority or Threatened flora present.

Vegetation Description (NVIS; DoEE, 2017): U ^*Nuytsia floribunda*, +/-*Eucalyptus pleurocarpa*\Tree, Mallee\4\bc; M+ ^^*Leptospermum oligandrum, Melaleuca thymoides, Adenanthos cuneatus*\shrub\3\c; G ^^*Hypolaena exsulca, Ursinia anthemoides, Eragrostis curvula*\sedge, herb, grass\1\bc

Vegetation Description (Muirs, 1977): *Nuytsia floribunda* Open Low Woodland, over *Eucalyptus pleurocarpa* Very Open Shrub Mallee, over *Leptospermum oligandrum* and *Melaleuca thymoides* Dense Heath A and B, over *Adenanthos cuneatus, Darwinia vestita* and *Conospermum leianthum* subsp. *leianthum* Dense Low Heath C, over *Hibbertia racemosa* and *Leucopogon* sp. Coujinup (M.A. Bergman 1085) Dwarf Scrub D, over *Hypolaena exsulca* Very Open Low Sedge, over *Ursinia anthemoides, Hypochaeris radiata* and *Hyalosperma demissum* Very Open Herb, over *Eragrostis curvula* Very Open Tall Grass.

Area: 0.27 ha.
Site description: White sand along a flat sandplain. Good drainage.
Condition: Very Good, Good, Degraded.
Represented in R5 (refer to Appendix D).

Figure 10: Vegetation unit 6, Myrt Mixed SL present within the survey area.

5.3 Vegetation Condition

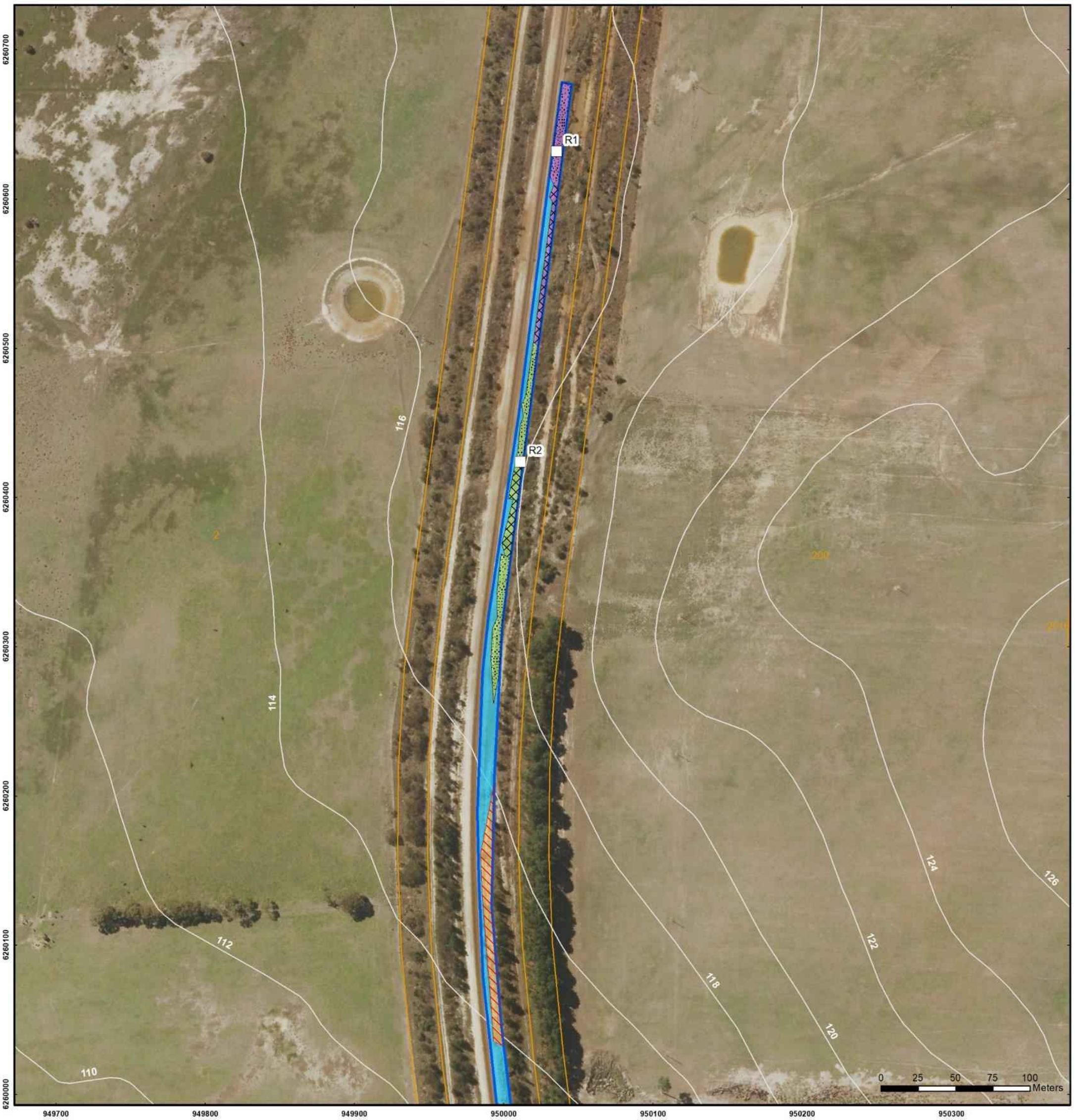
The vegetation condition for the survey area (Table 7) has been mapped using the condition rating scale (adapted from Keighery 1994) outlined in *EPA Flora and Vegetation Survey Technical Guidance* (2016). Condition ratings are outlined in Table 19, Appendix C. A large portion of the survey area (3.2ha) was considered Cleared, consisting of bare ground or railway access tracks.

Vegetation ranged from 'Completely Degraded' to 'Very Good' condition throughout the survey area. Completely Degraded formed the majority of the survey area, consisting of previously/historically cleared areas that regenerated to form novel ecosystems of non-native species, with scattered disturbance opportunist or clonal native species remaining. Condition had primarily been reduced due to degradation of structure and vegetation integrity by processes such as clearing, fire, weeds, grazing, Phytophthora Dieback, vehicle tracks and various other disturbances related to the directly adjacent railway track. Table 7 demonstrates the condition rating for the six vegetation units identified in the survey area. The disturbance vectors throughout the survey area has the potential to affect the biological representation of species present or vegetation units assessed. This was particularly evident in vegetation unit 4: Sedgeland, where evident disturbance had resulted in a change in structure, such as the dominance of sedges and removal of the upperstorey.

Indications of *Phytophthora cinnamomi* Dieback was observed within vegetation unit 2: Nuyflor and Mixed SL and 5: Banspe Sandplain, primarily through the scattered and recent deaths of numerous susceptible species, including *Banksia speciosa, Lambertia inermis* and *Xanthorrhoea platyphylla.* It is likely that indications or evidence of Dieback is observed in these vegetation units due to the presence of Proteaceae species highlighting susceptibility, and other vegetation units with non-susceptible species likely still carry or hold the disease.

Table 7: Vegetation condition rating.

Vegetation Unit	Condition rating	Area (ha)
1: Melcut and Sedge WL	Good	0.03
	Degraded	0.14
	Completely Degraded	0.02
2: Nuyflor and Mixed SL	Good	0.20
	Degraded	0.09
3: Dist Nat	Completely Degraded	1.24
4: Sedgeland	Degraded	0.17
5: Banspe Sandplain	Good	0.23
	Degraded	0.20
	Completely Degraded	0.02
6: Myrt Mixed SL	Very Good	0.10
	Good	0.15
	Degraded	0.02
Cleared		3.20



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BIO DIVERSE SOLUTIONS

Scale
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GDA MGA 94 Zone 51

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Figure 11A: Vegetation Units & Condition.

	QA Check	Drawn by
	MLH	BMT
STATUS	FILE	DATE
FINAL	AI005-002	13/04/2022

Legend

- Survey Area
- Cadastre
- 2m Contours

Sample Sites

- Releve

Vegetation Condition

- Good
- Degraded
- Completely Degraded

Vegetation Units

- 1: Melcut and Sedge WL
- 2: Nuyflor and Mixed SL
- 3: Dist Nat
- Cleared

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

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Scale
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GDA MGA 94 Zone 51

Legend

- Survey Area
- Cadastre
- 2m Contours

Vegetation Condition

- Completely Degraded

Vegetation Units

- 3: Dist Nat
- Cleared

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

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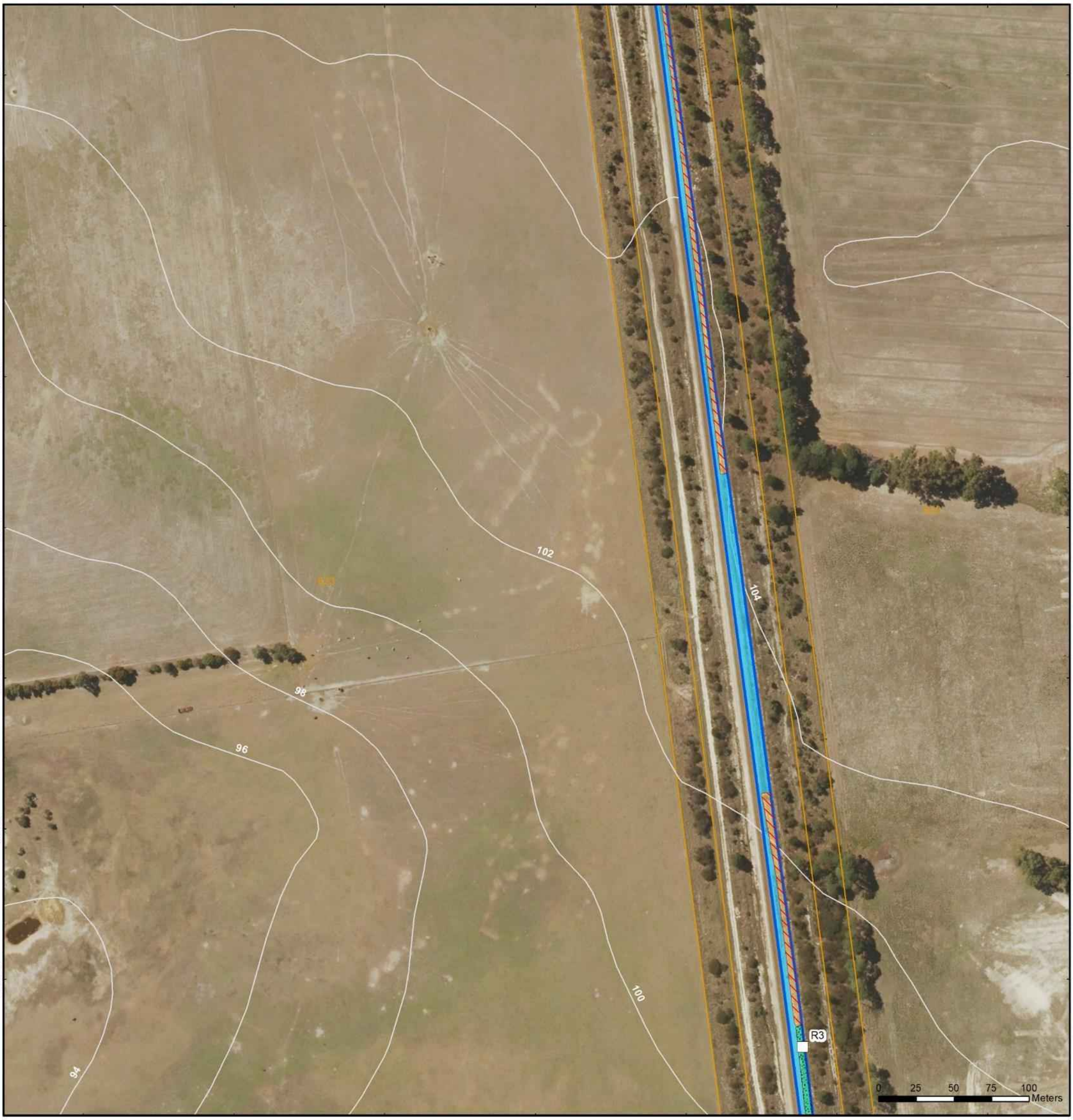
Figure 11B: Vegetation Units & Condition.

	QA Check	Drawn by
	MLH	**BMT**
STATUS **FINAL**	*FILE* **AI005-002**	*DATE* **13/04/2022**



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BIO DIVERSE SOLUTIONS

Scale
1:2,500 @ A3
GDA MGA 94 Zone 51

Legend

- Survey Area
- Cadastre
- 2m Contours

Sample Sites

- Releve

Vegetation Condition

- Degraded
- Completely Degraded

Vegetation Units

- 3: Dist Nat
- 4: Sedgeland
- Cleared

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

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Figure 11C: Vegetation Units & Condition.

	QA Check	*Drawn by*
	MLH	**BMT**
STATUS **FINAL**	*FILE* **AI005-002**	*DATE* **13/04/2022**

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Scale
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GDA MGA 94 Zone 51

Legend

- Survey Area
- Cadastre
- 2m Contours

Vegetation Condition

- Degraded
- Completely Degraded

Vegetation Units

- 1: Melcut and Sedge WL
- 3: Dist Nat
- 4: Sedgeland
- Cleared

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

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Figure 11D: Vegetation Units & Condition.

	QA Check	*Drawn by*
	MLH	**BMT**
STATUS	*FILE*	*DATE*
FINAL	**AI005-002**	**13/04/2022**

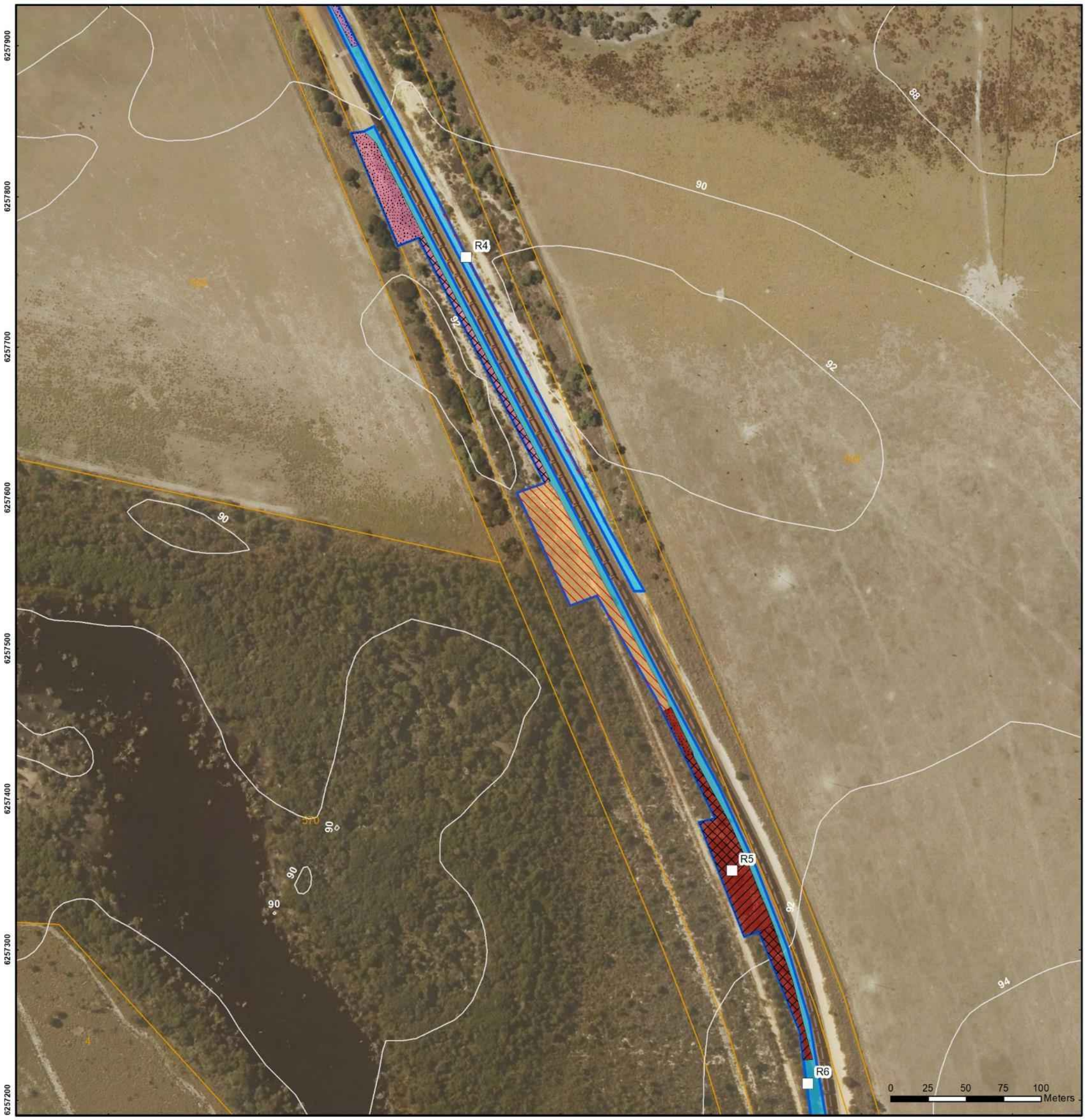

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Figure 11E: Vegetation Units & Condition.

	QA Check	Drawn by
	MLH	BMT
STATUS	FILE	DATE
FINAL	AI005-002	13/04/2022

Legend

- Survey Area
- Cadastre
- 2m Contours

Sample Sites

- Releve

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded

Vegetation Units

- 1: Melcut and Sedge WL
- 3: Dist Nat
- 5: Banspe Sandplain
- 6: Myrt Mixed SL
- Cleared

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

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Scale
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GDA MGA 94 Zone 51

Legend

- Survey Area
- Cadastre
- 2m Contours

Flora

- *Dampiera sericantha*, P3
- *Daviesia paucifloa*, P3

Sample Sites

- Releve
- Quadrat

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded

Vegetation Units

- 1: Melcut and Sedge WL
- 2: Nuyflor and Mixed SL
- 5: Banspe Sandplain
- 6: Myrt Mixed SL
- Cleared

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

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Figure 11F: Vegetation Units & Condition.

	QA Check	*Drawn by*
	MLH	**BMT**
STATUS **FINAL**	*FILE* **AI005-002**	*DATE* **13/04/2022**

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BIO DIVERSE SOLUTIONS

Scale
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GDA MGA 94 Zone 51

Legend

- Survey Area
- Cadastre
- 2m Contours

Vegetation Condition

- Good
- Completely Degraded

Vegetation Units

- 2: Nuyflor and Mixed SL
- 3: Dist Nat
- Cleared

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

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Figure 11G: Vegetation Units & Condition.

	QA Check	*Drawn by*
	MLH	**BMT**
STATUS	*FILE*	*DATE*
FINAL	**AI005-002**	**13/04/2022**

5.4 Weeds and disturbance

Of the 172 flora species recorded within the survey area, 29 species are considered introduced and non-native species. The full suite of weed species recorded is listed below in Table 8, 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).

All species except Bridal Creeper (*Asparagus asparagoides)* are classified as 'Permitted – s11'. Bridal creeper is rated as a higher risk classed as 'Declared Pest – s22(2)' under the *BAM Act 2007*. Under the Environmental Weeds Strategy for Western Australia (CALM, 1999) Bridal Creeper (*A. asparagoides)*, Rose Pelargonium (*Pelargonium capitatum)*, Guildford Grass (*Romulea rosea)*, Victorian Tea Tree (*Leptospermum laevigatum*), Annual Vedt Grass (*Ehrharta calycina*), and Hare Tail Grass (*Lagurus ovatus*) were listed as a 'High' risk.

It is strongly recommended that machinery is regularly cleaned and thorough biosecurity hygiene is applied to limit introduction of invasive species infestation and the potential to significantly degrade the adjacent intact vegetation.

Table 8: Weed species recorded from the survey area.

Family	Species	Common Name	WA Weed Strategy rating (CALM 1999) / BAM Act (2007)
Asparagaceae	*Asparagus asparagoides*	Bridal Creeper	High / Declared Pest s22(2)
Asteraceae	*Arctotheca calendula*	Cape Weed	Moderate / Permitted (s11)
Asteraceae	*Conyza sp.*	Fleabane	Low / Permitted (s11)
Asteraceae	*Gazania linearis*	Treasure Flower	Low / Permitted (s11)
Asteraceae	*Onopordum acanthion*	Scotch Thistle	-/ Permitted (s11)
Asteraceae	*Pseudognaphalium luteoalbum*	Jersey Cudweed	Moderate / Permitted (s11)
Asteraceae	*Ursinia anthemoides*	Ursinia	Moderate / Permitted (s11)
Asteraceae	*Vellereophyton dealbatum*	White Cudweed	-/ Permitted (s11)
Campanulaceae	*Wahlenbergia capensis*	Cape Bluebell	Moderate / Permitted (s11)
Fabaceae	*Ornithopus compressus*	Yellow Serradella	Mild / Permitted (s11)
Fabaceae	*Trifolium sp.*	Clover	-/ Permitted (s11)
Fabaceae	*Vicia sp.*	Vetch	Low / Permitted (s11)
Geraniaceae	*Pelargonium capitatum*	Rose Pelargonium	High / Permitted (s11)
Iridaceae	*Romulea rosea*	Guildford Grass	High / Permitted (s11)
Iridaceae	*Watsonia meriana*	Bugle Lilly	Moderate / Permitted (s11)
Juncaceae	*Juncus bufonius*	Toad Rush	Moderate / Permitted (s11)
Myrtaceae	*Eucalyptus gomphocephala*	Tuart	-/ Permitted (s11)
Myrtaceae	*Leptospermum laevigatum*	Victorian Tea Tree	High / Permitted (s11)
Orchidaceae	*Disa bracteata*	South African Orchid	-/ Permitted (s11)
Pinaceae	*Pinus radiata*	Pine Tree	Moderate/ Permitted (s11)
Plantaginaceae	*Plantago coronopus*	Buckshorn Plantain	Low / Permitted (s11)
Poaceae	*Avena fatua*	Wild Oats	Moderate / Permitted (s11)
Poaceae	*Briza maxima*	Blowfly Grass	Moderate / Permitted (s11)
Poaceae	*Briza minor*	Shivery Grass	Moderate / Permitted (s11)
Poaceae	*Cenchrus clandestinus*	Kikuyu	-/ Permitted (s11)
Poaceae	*Ehrharta calycina*	Annual Veldt Grass	High / Permitted (s11)
Poaceae	*Eragrostis curvula*	African Lovegrass	High / Permitted (s11)
Poaceae	*Lagurus ovatus*	Hare Tail Grass	High / Permitted (s11)
Polygalaceae	*Rumex sp.*	Dock	-/ Permitted (s11)

5.5 Presence of Conservation Significant Flora

No species of Priority or Threatened flora had previously been detected directly within the survey area. Of the 73 species identified in the desktop assessment, two species of Priority flora were detected (Table 9). These included Priority 3 species *Dampiera sericantha* and *Daviesia pauciflora.* Further detail is outlined below. Being 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.

Threatened and Priority Report Forms (TPFL) for both *D. pauciflora* and *D. sericantha* were 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 05/01/2021, also a licence requirement under FTB2000327 (Appendix E).

Six species were identified in the desktop assessment (Table 12, Appendix B) as 'Likely' or 'Possible' to occur with very limited information present taxonomically. This primarily related to undescribed, informal species such as P1 *Cyathostemon sp.* Esperance (A. Fairall 2431) and *Baeckea* sp. Gibson (K.R. Newbey 11084). Or having extreme niche abiotic requirement, such as being a fire ephemeral species, such as P1 *Lobelia archeri,* P3 *Gonocarpus pycnostachyus* and P3 *Adelphacme minima.* Due consideration was given to species in these genera during identification. None of these species were detected within the survey area.

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 12, Appendix B:

- *Leucopogon carinatus* – bears similarities to P2 *Leucopogon corymbiformis*, which was identified in the desktop analysis as 'Likely' to occur. The species present was determined as common, non-Threatened *L. carinatus* due to leaves being <2mm in length, compared to *L. corymbiformis* with leaves over 3mm in length.
- *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.
- *Microtis media* subsp. *media* – bears similarities to the P4 *Microtis quadrata.* Was determined as being non-Threatened species due to the shape of the flowers lip and frilled margins.

Plant identification was undertaken through the most relevant, current and available taxonomic literature, keys and herbarium reference specimens available (Blackall & Grieve, 1981; Euclid, n.d.; George, 2002; Hammer & Thiele, 2021; Hislop, 2014; Hollister *et al.,* n.d.; Hopper *et al.* 1987; ICPS, 2021; JSTOR, 2000 - ; Ng, 2022; Rye, 2009; Rye, 2013; Thiele, 2009; WAH, 1998 -). 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 (WAH, 1998).

Table 9: Conservation significant flora identified within the survey area.

Family	Species	Cons Code	Population status	Vegetation Types Present	Abundance	KM
Fabaceae	*Daviesia pauciflora*	P3	New population	5: Banspe Sandplain	2	366.63
Goodeniaceae	*Dampiera sericantha*	P3	New population	2: Nuyflo Mixed SL	3	367.108

Dampiera sericantha, P3

Dampiera sericantha (P3) plants found within the survey area form a new population. It was detected within vegetation unit 2: Nuyflo Mixed SL, approximately 1.748 km south of the Bow Road railway crossing, and at 367.108 railway KM. A total of three plants were recorded within the survey area. The plants were located within 2 m and on the periphery of a railway access track and is present within a laydown area. Due to being a new population, a specimen was collected (KW171, Accession 9281, not retained).

The plants of *D. sericantha* 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 and the total population number is much higher. However, it is locally known that *D. sericantha* is often associated with disturbance and may be present due to the proximity of the adjacent railway track. Further surveys may be required to quantify impact of proposed clearing, within the context of the total population of *D. sericantha*.

The known distribution and records of *D. sericantha* within the Australasian Virtual Herbarium (AVH, n.d.) and Florabase (WAH, 1998 -) indicate that *D. sericantha* has a total of 34 records, located in 250 km (east-west) and 100 km (north-south) distribution area. It has been recorded within the Local Government Areas of Esperance and Ravensthorpe, and IBRA subregions of Fitzgerald, Recherche and Eastern Mallee (Figure 13).

Figure 12: Photo of *Dampiera sericantha* within the survey area.

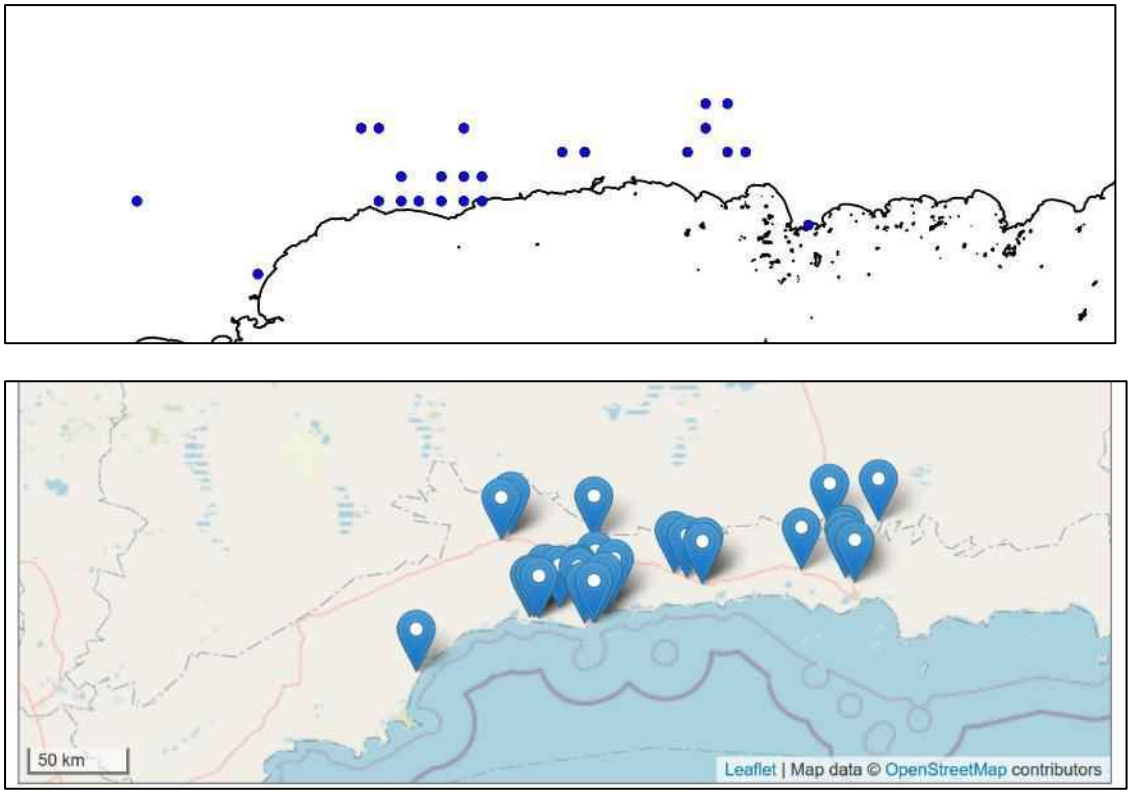


Figure 13: Regional distribution of *Dampiera sericantha* (AVH, n.d.; WAH, 1998-).

Daviesia pauciflora, P3

*Daviesia pauciflora (*P3) plants found within the survey area form a new population. It was detected within vegetation unit 5: Banspe Sandplain, approximately 1.232 km south of the Bow Road railway crossing and specifically at 366.63 Railway KM. A total of two plants were recorded within the survey area. The plants were located along the periphery of a railway access track. Due to being a new population, a specimen was collected (KW172, Accession 9281, not retained).

The plants of *D. pauciflora* 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 in surrounding suitable habitat and the total population number is much higher. Further surveys may be required to quantify impact of proposed clearing, within the context of the total population.

The known distribution and records of *D. pauciflora* within the Australasian Virtual Herbarium (AVH, n.d.) and Florabase (WAH, 1998-) indicate that *D. sericantha* has a total of 40 records, located in 180 km (east-west) and 70 km (north-south) distribution area. It has been recorded within the Local Government Areas of Esperance and Ravensthorpe, and IBRA subregions of Fitzgerald, Recherche and Eastern Mallee (Figure 15).

Figure 14: Photos of *Daviesia pauciflora* within the survey area.

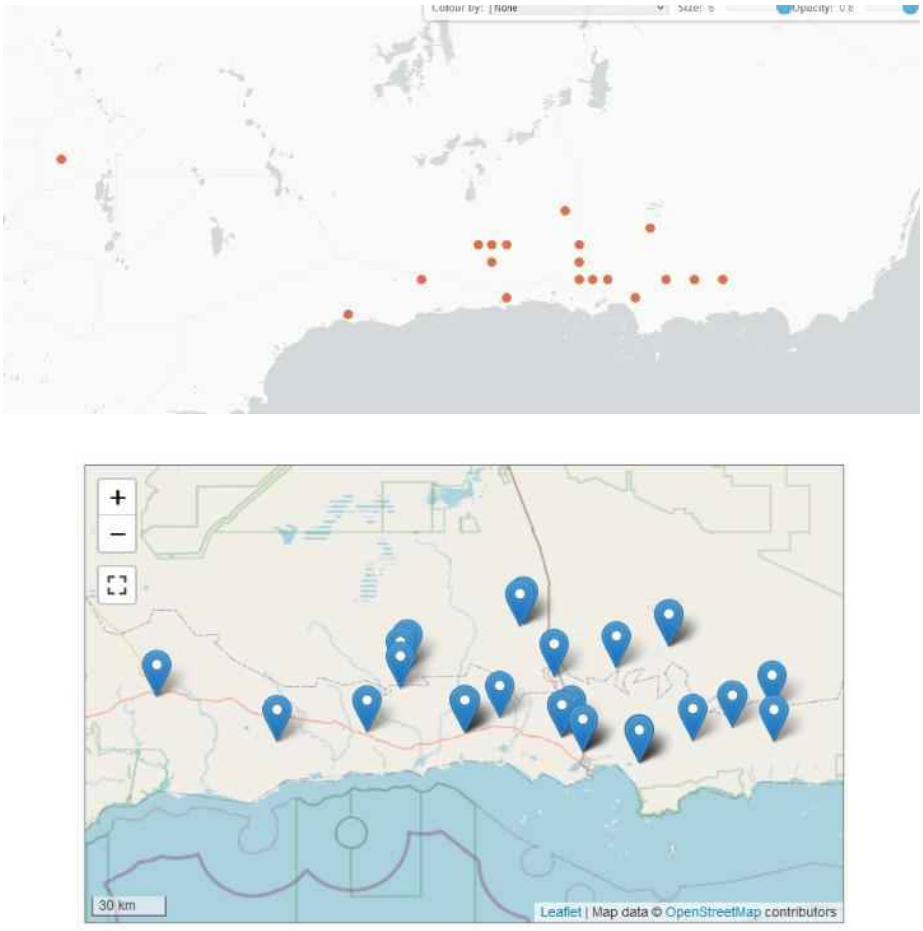


Figure 15: Regional distribution of *Daviesia pauciflora* (AVH, n.d.; WAH, 1998-).

5.6 Threatened and Priority Ecological Communities

Two Threatened (TEC) and Priority (PEC) ecological communities were identified in the 30 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 4.2; Table 13, Appendix B). Analysis of vegetation units identified within the survey area and comparison to TEC/PEC Kwongkan criteria is discussed in further detail below, and is consistent with a Targeted Vegetation Assessment.

CSM was assessed as 'Unlikely' to occur due to it being evident no coastal interaction would occur 20 km north of the coastline. This was confirmed during the field survey and the TEC/PEC was not detected within the survey area.

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

Kwongkan is listed as an Endangered TEC under the federal *EPBC Act 1999*. Multiple communities listed under the state legislation *BC Act 2016*, are considered to meet the key diagnostic characteristics of the federal TEC Kwongkan. Generally, Kwongkan is listed as a Priority 3 PEC under the *BC Act 2016*. Specific criteria of Kwongkan TEC/PEC is outlined Section 4.2.

Vegetation unit 2: Nuyflor and Mixed SL contained numerous Proteaceous species, but did not consistently appear dominant or close to the threshold of 30% crown cover. Additionally, it was generally in lower condition (Degraded) and was present as a linear strip along the edge of the railway track. Therefore, it was not considered to meet Kwongkan TEC/PEC criteria and no further analysis was conducted.

A risk assessment was completed following the 29th and 30th September field survey on relevé data collected and determined there was a high likelihood that 5: Banspe Sandplains met criteria for Kwongkan TEC/PEC. Therefore, more intensive and targeted sampling methodology using quadrat analysis occurred during the 11th November field survey to complete quadrat analysis. Specific analysis of quadrat results of vegetation unit 5: Banspe Sandplains and Kwongkan TEC/PEC criteria is discussed in more detail below. In summary, vegetation unit 5: Banspe Sandplains did meet floristically and ecologically the thresholds, but only certain areas within the survey area met the patch size criteria. In total, 0.274 ha of vegetation unit 5: Banspe Sandplains met Kwongkan PEC/TEC criteria.

Vegetation Unit 5: *Banksia speciosa* Sandplain Community

Two quadrats were sampled within vegetation unit 5 to systematically determine whether the vegetation unit met Kwongkan PEC/TEC criteria. These were placed strategically within laydown areas to provide a comprehensive picture. Comparison of the ecological criteria outlined in Section 4.2 of Kwongkan TEC/PEC occurred, and are presented in Table 10. All floristic structure, composition and analysis indicated that vegetation unit 5: Banspe Sandplains met Kwongkan TEC/PEC criteria.

However, the minimum patch size criteria outlined in Table 6, Section 4.2 determined that the section of vegetation unit 5: Banspe Sandplains located 450m south of Bow Road railway crossing was limited in the 'patch' extent to the railway corridor, and remained disconnected from the native vegetation present in Reserve 14422. This area was also in 'Degraded' condition. It therefore did not meet the Kwongkan TEC/PEC.

The area of vegetation unit 5: Banspe Sandplains that was located 1.5km south of Bow Road railway crossing was directly adjacent to Reserve 14422, forming a part of the 'patch' of native vegetation. This did meet minimum patch size criteria and was in 'Good' condition. In total, 0.247 ha of vegetation unit 5: Banspe Sandplains was considered to meet the Kwongkan TEC/PEC criteria.

Table 10: Quadrat analysis of vegetation unit 5: Banspe Sandplain to determine the presence of 'Proteaceae Dominated Kwongkan Shrubland of the South-east Coastal Floristic Province (Kwongkan)' Threatened and Priority Ecological Community.

Criteria	Description	Discussion	Meet Criteria
1)	Occurs within the South Coastal Floristic Province (Hopper and Gioia, 2004).	Confirmed survey area is located within province.	Yes
2a)	Characterised by Proteaceae species having 30% or greater cover of Proteaceae species across all layers of where shrubs occur (crowns measured as if opaque).	Both quadrat one and four had a total cover exceeding 30% of Proteaceous species. Specifically for quadrat one, *Adenanthos cuneatus* was present at 10-30% cover and *Banksia speciosa* at <10%, exceeding cumulatively overall 30% cover. Specifically for quadrat two, *A. cuneatus* was present at >70% cover.	Yes
2b)	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 (e.g., fire).	Whilst the site had not been recently burnt, which is the basis for this criterion, it does provide an indication of keystone species present within the community. Proteaceous species make up the dominant feature of the vegetation type present, as indicated by the NVIS Level V (DoEE, 2017) and Muirs (Muir, 1977) description, which identifies two Proteaceous species in the description. Specifically, *B. speciosa* is the dominant feature in the upperstorey and *A. cuneatus* is one of the dominant species of the midstorey. Three Proteaceous species occurred in both quadrat one and two. These included *A. cuneatus, Synaphea oligantha* and *Conospermum leianthum* subsp. *leianthum.* Therefore, two or more diagnostic Proteaceous species form a key ecological marker and are likely to be significant when the Ecological Community is regenerating.	Yes
Qualitative	Approved conservation Advice guidelines – form and structure of vegetation. Qualitative description of Kwongkan as below: • Structure of shrubland, ranging from high to low and varying density; • Mallee Eucalypt often scattered and present, forming independent stratum layer; and • High floristic richness and localised endemism.	Descriptions of the vegetation indicate that the vegetation is predominately a shrubland structure, as indicated in the NVIS Level V description (DoEE, 2017). The quadrat analysis indicates that 42% and 61% of plant species present were shrubs, for quadrat one and two respectively. No Mallee species were identified within either quadrat. Quadrat one was highly diverse and evidently incredibly complicated ecologically, with 41 species identified in the 10 x 10 m (and 20 x 20 m for over-story only) quadrat area. Within quadrat two, 28 species were identified within the quadrat.	Yes
Qualitative	Approved Conservation Advice guidelines – key diagnostic species.	Of the Proteaceous species identified in quadrat one and two, three species were identified as key diagnostic species within the Approved Conservation Guidelines (DoE, 2015a) for the 'Esperance (east)' area. These included *A. cuneatus, B. speciosa* and *Isopogon polycephalus.* Overall, five Proteaceous species were present within Vegetation Type 2 (Ban arm SL).	Yes

Table 10 continued.

Criteria	Description	Discussion	Meet Criteria
Qualitative	Condition category for minimum patch size – refer to Table 1, Section 2.2.	Patch criteria refers to the size of a discrete and continuous area of the Ecological Community, opposed to the survey area specifically. The surrounding vegetation outside of the survey area was not surveyed and it is unknown how far the Ecological Community extends in the surrounding vegetation. Vegetation unit 5: Banspe Sandplains is located directly on the periphery of Reserve 14422 at 1.5 km south of Bow Road railway crossing, and immediately north in the linear railway corridor, 450 m south of Bow Road railway crossing. Additionally, this area was in Degraded condition. For the area north of the linear corridor (0.216 ha within the survey area), this is a discrete area that is separate and disconnected to the larger patch within Reserve 14422. The patch size therefore is unlikely to extend further than the existing railway corridor. This area within the survey area does not meet the 0.5ha for moderate condition category (Table 6, Section 4.2), and therefore would not be considered to meet the criteria for Kwongkan TEC/PEC. For the area of vegetation unit 5: Banspe Sandplains directly adjacent to Reserve 14422 (0.247 ha), the surrounding native vegetation in Reserve 14422 may be a part of the 'Patch'. Therefore, it is likely that Ecological Community described in vegetation unit 5: Banspe Sandplains extends further and meets the minimum patch size (Table 6, Section 4.2) to be considered Kwongkan PEC/TEC.	Yes - for the area directly adjacent to Reserve 14422.

6 Results – Fauna Survey

6.1 Basic Fauna Survey

A description of the six vegetation units identified during the survey is given in Section 5.2, and these correlate with fauna habitat types (refer to Figure 19).

During the survey, fauna were observed either directly (sighted) or indirectly via calls, or signs of presence such as tracks, runnels, scats, diggings, bones, feeding remains or scratching. A total of 37 taxa were recorded, of these 16 were birds, 10 invertebrates, five reptiles, four mammals and one amphibian. Refer to full fauna species list in Table 21 in Appendix D.

Notable observations during the survey included observation of scattered foraging evidence from Carnaby's Cockatoo (*Calyptorhynchus latirostris*, EN) through the presence of chewed pine cones in the north of the survey area (Figure 16). These feed events were not considered significant (<10 chewed pine cones). Marginal suitable foraging habitat for this species was also present within vegetation unit 5: Banspe Sandplains and vegetation unit 2: Nuyflor and Mixed SL (Figures 18 and 19), which contains individual *Banksia speciosa* plants and other scattered and sparsely located Proteaceae and Myrtaceae taxa. However, no evidence of foraging was observed within these vegetation units and there is a low diversity of food species available. No other Threatened or Priority fauna species were observed during the survey period.

Very high levels of rabbit (*Oryctolagus cuniculus*) activity were observed within the survey area, as evidenced through multiple warrens, scrapes/diggings, scats/droppings and runnels. Although the runnels were of suitable size for quenda (*Isoodon fusciventer*, P4) no signs of this species were observed. The high activity level of rabbits in the area is likely to be a limiting factor for quenda. Relatively high levels of fox activity were also observed within the survey area through scats, tracks and old and active dens.

No other conservation significant species were observed during the survey period. However, there is marginally suitable habitat for nine species (including Carnaby's Cockatoo) within the survey area (refer to Table 14 in Appendix B). Habitat of marginal quality was detected for quenda (*Isoodon fusciventer,* P4), western mouse (*Pseudomys occidentalis,* P4) and heath mouse (*Pseudomys shortridgei,* VU/EN), within vegetation units 1: Melcut and Sedge WL, 2: Nuyflor and Mixed SL, 4: Sedgeland, 5: Banspe sandplain and 6:Myrt Mixed SL. Refer to Figure 18. Vegetation unit 3: Scattered Natives in Disturbed Areas (Dist Nat) provides marginal habitat but is unlikely to support the three species and would act as connecting habitat corridor between areas of native vegetation.

Marginally suitable habitat was detected for the fork-tailed swift (*Apus pacificus,* MI), letter-winged kite *(Elanus scriptus,* P4) and peregrine falcon (*Falco peregrinus,* OS) throughout the survey area. Areas of native vegetation provide diurnal refuge and hunting habitat, and vegetation unit '5: Scattered Natives in Disturbed Areas (Dist Nat)' provides foraging / hunting opportunities. Refer to Figure 18.

Marginally suitable habitat was detected for the Cape Le Grand assassin spider (*Zephyrarchaea marki*, VU) within vegetation unit '5:Banspe sandplain', where there is elevated / suspended leaf litter. Marginal habitat is also present throughout the survey area for the Recherche atelomastix millipede (*Atelomastix dendritica,* VU) within areas that contain high levels of damp leaf litter. However, opportunistic searching within accumulated leaf litter did not result in the observation of any millipedes during the survey period. Refer to Figure 18.

Figure 16: Photographs of evidence of fauna presence within the survey area.
a) – b) feed evidence from Carnaby's Cockatoo; c) Western bearded dragon; d) – f) rabbit diggings and scats; g) crowned snake; h) fox scat; and i) fox prints outside burrow / den entrance.

Figure 17: Photographs of evidence of fauna presence within the survey area.
a) bobtails; b) western grey kangaroo track; c) – d) rabbit warren and warren entrances; e) active fox den entrance; f) runnel.

Figure 18: Photographs of fauna habitat areas within the survey area.
a) 1: Melcut Sedge WL; b) 2: Nuyflor and Mixed SL; c) 4: Sedgeland; d) 6: Myrt Mixed SL; e) 5: Banspe sandplain; and f) 3: Scattered Natives in Disturbed Areas (Dist Nat) containing Pine trees.

6.2 Targeted Black Cockatoo Assessment

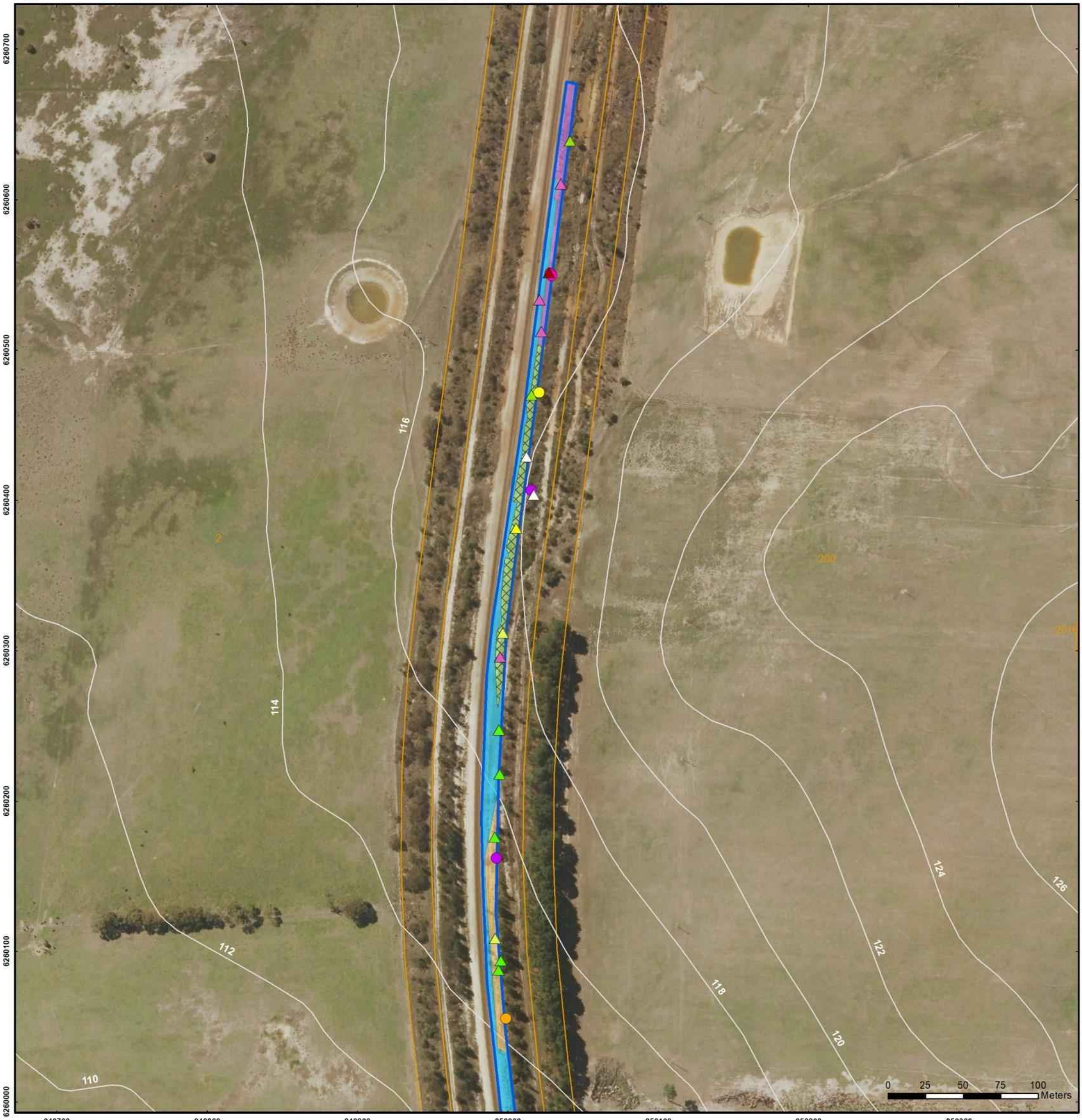
6.2.1 Targeted Black Cockatoo Assessment

No significant trees for black cockatoos were observed within the survey area .

6.2.2 Foraging and Roosting Habitat

Scattered Pine trees, *B. speciosa* and other Proteaceous and Myrtaceous taxa within the survey area contribute to marginal foraging habitat for Carnaby's Cockatoo. A low quantity of scattered feed evidence was observed (<10 chewed pine cones per observed feed location) and is most likely an opportunistic feeding event due to the lack of consistent feeding debris and low availability of food species within the survey area. There was no feed evidence observed within the '5: Banspe sandplain' and '2: Nuyflor and Mixed SL' vegetation units, and these units contain a low diversity and quantity of food species. Due to the overall lack of diversity and quantity of food species available to Carnaby's within the survey area, foraging habitat has been assessed as marginal. It is unlikely the survey area is providing significant foraging habitat to the species, and the area is likely being opportunistically used by transient individuals. The foraging habitat available for Carnaby's cockatoos equates to approximately 0.75 ha which is 28.5% of mapped native vegetation identified within the survey area.

Due to the scattered nature of the pine trees within the survey area, they are not considered to be roosting habitat. No signs of roosting (accumulated scats or feather) were observed within the survey area.



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BIO DIVERSE SOLUTIONS

Scale
1:2,500 @ A3
GDA MGA 94 Zone 51

Legend

- Survey Area
- 2m Contours
- Cadastre

Vegetation Units

- 1: Melcut and Sedge WL
- 2: Nuyflor and Mixed SL
- 3: Dist Nat
- Cleared

Fauna Habitat

- Burrow
- Fox Den
- Rabbit Warren
- Runnel
- Carnaby Foraging Habitat (marginal)

Fauna

- *Anthochaera carunculata*
- *Calyptorhynchus latirostris* EN
- *Grallina cyanoleuca*
- *Gymnorhina tibicen*
- *Myiagra inquieta*
- *Oryctolagus cuniculus*
- *Tiliqua rugosa*

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

CLIENT
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Figure 19A: Fauna Findings

	QA Check	Drawn by
	MLH	BMT
STATUS	FILE	DATE
FINAL	AI005-002	9/05/2022

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Figure 19B: Fauna Findings

	QA Check	Drawn by
	MLH	BMT
STATUS	FILE	DATE
FINAL	AI005-002	9/05/2022

Legend

- Survey Area
- 2m Contours
- Cadastre

Vegetation Units

- 3: Dist Nat
- Cleared

Fauna Habitat

- Pine tree
- Carnaby Foraging Habitat (marginal)

Fauna

- *Calyptorhynchus latirostris* EN
- *Macropus fuliginosus*
- *Oryctolagus cuniculus*
- *Tiliqua rugosa*
- *Vulpes vulpes*

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

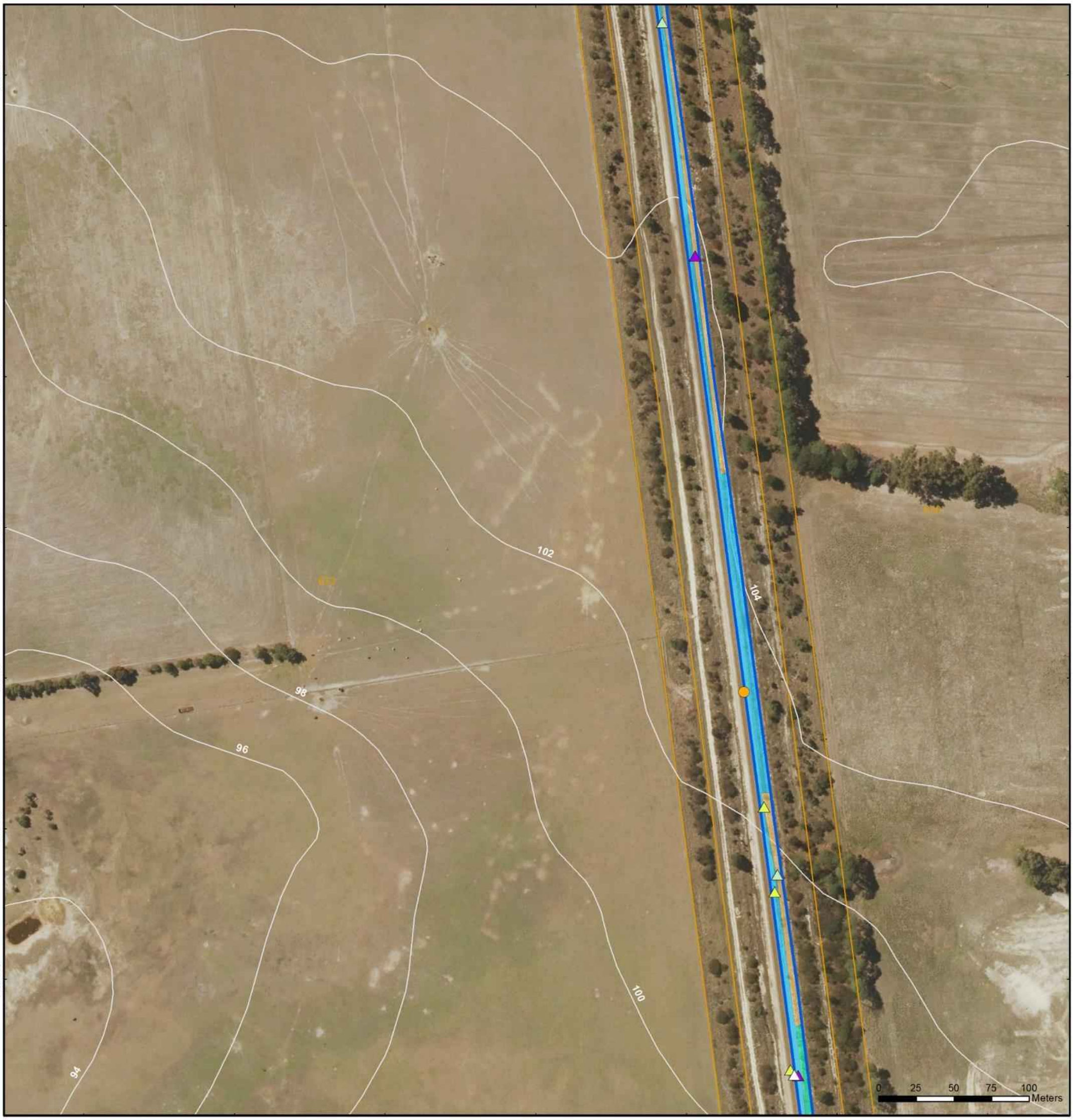

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Figure 19C: Fauna Findings

	QA Check	Drawn by
	MLH	BMT
STATUS	FILE	DATE
FINAL	AI005-002	9/05/2022

Legend

- Survey Area
- 2m Contours
- Cadastre

Vegetation Units

- 3: Dist Nat
- 4: Sedgeland
- Cleared

Fauna Habitat

- Burrow
- Carnaby Foraging Habitat (marginal)

Fauna

- *Anthochaera carunculata*
- *Macropus fuliginosus*
- *Tiliqua rugosa*
- *Vulpes vulpes*

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

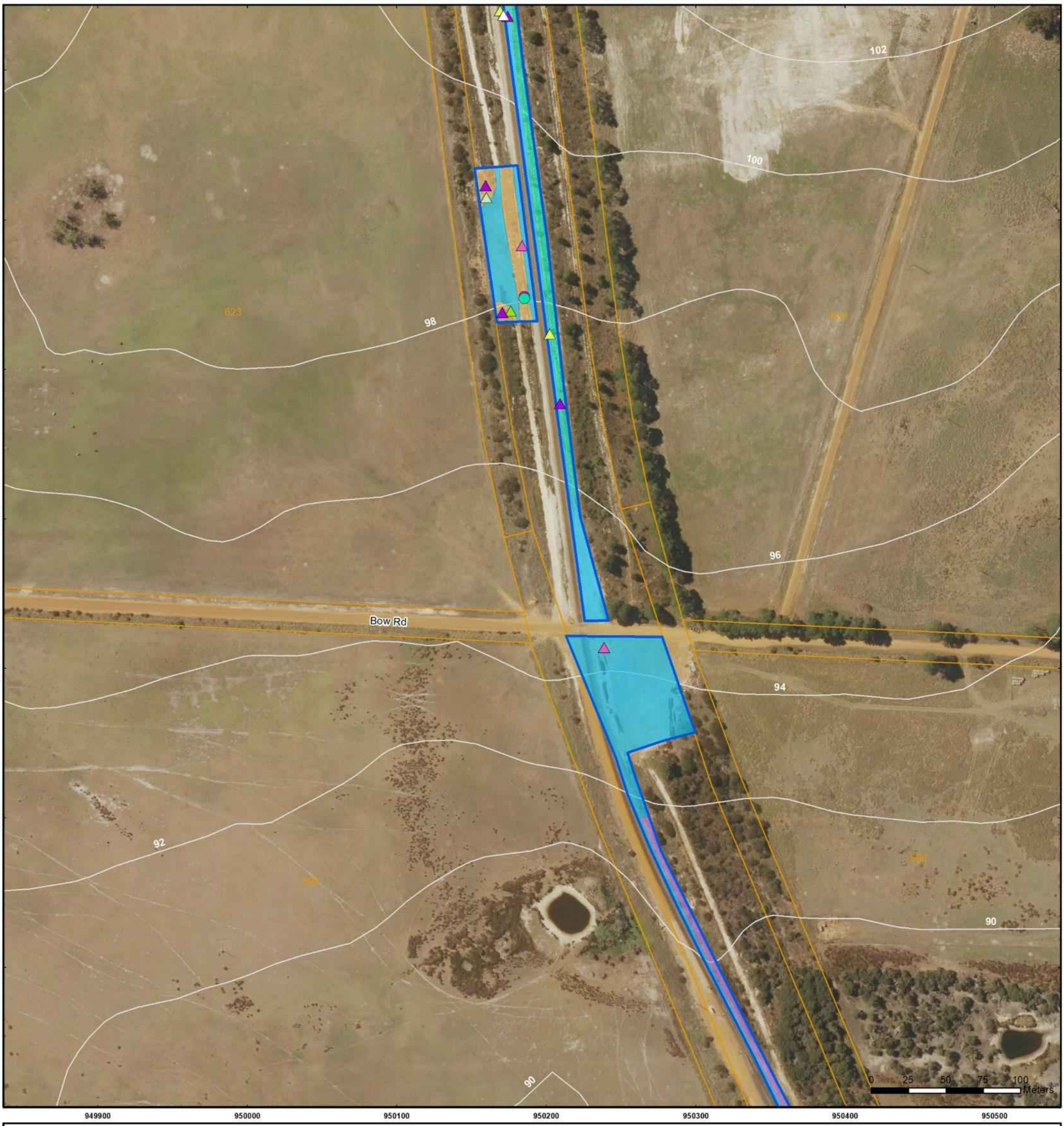

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Figure 19E: Fauna Findings

Figure 19D: Fauna Findings

	QA Check	Drawn by
	MLH	BMT
STATUS	FILE	DATE
FINAL	AI005-002	9/05/2022

Legend

- Survey Area
- 2m Contours
- Cadastre

Vegetation Units

- 1: Melcut and Sedge WL
- 3: Dist Nat
- 4: Sedgeland
- Cleared

Fauna Habitat

- Pine tree
- Runnel
- Carnaby Foraging Habitat (marginal)

Fauna

- *Anthochaera carunculata*
- *Gymnorhina tibicen*
- *Macropus fuliginosus*
- *Oryctolagus cuniculus*
- *Tiliqua rugosa*
- *Vulpes vulpes*

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

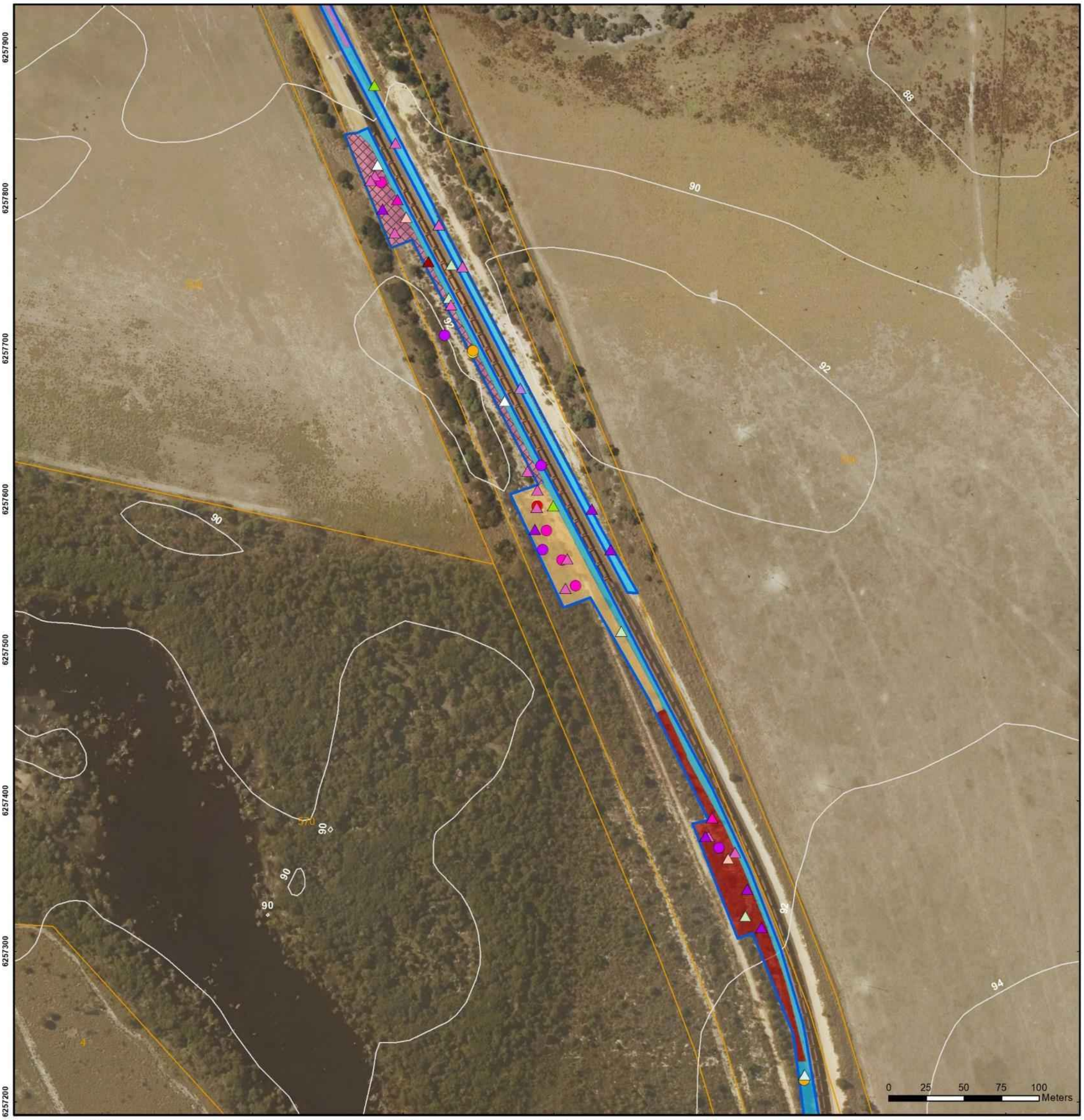

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Figure 19E: Fauna Findings

	QA Check	Drawn by
	MLH	BMT
STATUS	FILE	DATE
FINAL	AI005-002	9/05/2022

Legend

- Survey Area
- 2m Contours
- Cadastre

Vegetation Units

- 1: Melcut and Sedge WL
- 3: Dist Nat
- 5: Banspe Sandplain
- 6: Myrt Mixed SL
- Cleared

Fauna Habitat

- *Banksia speciosa*
- Burrow
- Fox Den
- Rabbit Warren
- Runnel
- Carnaby Foraging Habitat (marginal)

Fauna

- *Anthochaera carunculata*
- *Gymnorhina tibicen*
- *Macropus fuliginosus*
- *Malurus pulcherrimus*
- *Myiagra inquieta*
- *Oryctolagus cuniculus*
- *Rhipidura albiscapa*
- *Rhipidura leucophrys*
- *Sericornis frontalis*
- *Vulpes vulpes*

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

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Figure 19F: Fauna Findings

	QA Check	Drawn by
	MLH	BMT
STATUS	FILE	DATE
FINAL	AI005-002	9/05/2022

Legend

- Survey Area
- 2m Contours
- Cadastre

Vegetation Units

- 1: Melcut and Sedge WL
- 2: Nuyflor and Mixed SL
- 5: Banspe Sandplain
- 6: Myrt Mixed SL
- Cleared

Fauna Habitat

- *Banksia speciosa*
- Burrow
- Murid Runnel
- Runnel
- Carnaby Foraging Habitat (marginal)

Fauna

- *Lichmera indistincta*
- *Macropus fuliginosus*
- *Oryctolagus cuniculus*
- *Rhipidura albiscapa*
- *Tiliqua rugosa*

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

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Figure 19G: Fauna Findings

	QA Check	Drawn by
	MLH	BMT
STATUS	FILE	DATE
FINAL	AI005-002	9/05/2022

Legend

- Survey Area
- 2m Contours
- Cadastre

Vegetation Units

- 2: Nuyflor and Mixed SL
- 3: Dist Nat
- Cleared
- Carnaby Foraging Habitat (marginal)

Fauna

- *Anthochaera carunculata*
- *Gymnorhina tibicen*
- *Rhipidura leucophrys*

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

7 Discussion

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. Six vegetation units were recorded within the survey area, namely 1: *Melaleuca cuticularis* and Sedge Wetland, 2: *Nuytsia floribunda* and mixed Shrubland, 3: Scattered Natives in Disturbed Areas, 4: Sedgeland, 5: *Banksia speciosa* Sandplain, and 6: Myrtaceous Mixed Shrubland. These vegetation units broadly align with different habitat types, and at a local level subtle changes in hydrological regimes, soil types and historical disturbance. The condition of the vegetation units ranged from 'Completely Degraded' to 'Very Good'. Where the survey area corresponded with the native vegetation patch contained within adjacent Reserve 14422, higher condition was observed due to reduced disturbance as a result of agricultural weeds and generally less historical clearing. Indications of *Phytophthora cinammomi* Dieback was observed within vegetation unit 2: Nuyflor Mixed SL and 5: Banspe Sandplain. It is recommended that biosecurity principles and strict clean down occurs to prevent the spread of invasive species and plant pathogens.

A total of 73 flora species were identified in the desktop assessment, consisting of 8 Threatened and 65 Priority species. Numerous minor limitations were present for a number of species identified as 'Likely' or 'Possible' to occur in the Likelihood of Occurrence assessment, mainly relating to autumn flowering species, limitation information on undescribed species and fire ephemeral species.

A total of 172 species of flora were recorded, consisting of 142 native species and 29 introduced/non-native species. This indicates the extremely high level of biodiversity recorded within the area, which is typical for the Esperance Sandplain bioregion. Of the 29 invasive species, one species was classified as 'Declared Pest – s22(2) under the *BAM Act* 2007, *Asparagus asparagoides* (Bridal Creeper). Two species of Priority flora were recorded within the survey area, including two plants of P3 *Daviesia pauciflora* and three plants of P3 *Dampiera sericantha.* Both of these species were considered new populations. 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.

Of the two Threatened/Priority Ecological Communities identified as possibly being present within the survey area through the desktop assessment, the *'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province*' TEC/PEC was detected at vegetation unit 5: Banspe Sandplains, following detailed quadrat analysis consistent with a Targeted Vegetation Assessment. Of the areas identified as vegetation unit 5: Banspe Sandplains, only the areas directly adjacent to Reserve 14422 met the patch size criteria to be considered the TEC/PEC. In total, 0.247 ha of Kwongkan TEC/PEC was present within the survey area.

7.2 Basic Fauna Survey and Significant Tree Survey

The aim of the basic fauna and targeted black cockatoo habitat survey was to assess and map the fauna habitat within the survey area, assess the likelihood of conservation significant fauna being present within the survey area and/or particular habitat types, record actual presence of Threatened and Priority listed species, and undertake opportunistic inventory of fauna encountered whilst traversing the survey area on foot.

During the survey, a moderate level of fauna diversity was detected with 37 taxa recorded. Carnaby's Cockatoo is the only Threatened or Priority fauna species identified during the survey period. No individuals were observed, presence was detected through scattered chewed pine cones. The scattered nature of the pine trees and the low diversity of food species within vegetation units '5: Banspe sandplain' and 2: Nuyflor and Mixed SL provide marginal foraging habitat for the species. The low quantity of feeding debris and the low availability and diversity of suitable foraging habitat suggests that the feeding events observed are likely to be opportunistic and that the area is not a preferred foraging area. The survey area does not contain 1 ha or more of high-quality foraging or roosting habitat for Carnaby's Cockatoo. Clearing within this area is unlikely to require referral assessment under the *EPBC Act 1999.* However, the accumulative total and potential impact across the entire Esperance Branch Line project should be taken into consideration.

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 affect the function of the corridor or the ability of fauna to disperse between vegetated areas.

The survey area provides potential, but low quality, habitat for three small mammals including; western mouse (P4), heath mouse (VU) and quenda (P4). The western and heath mouse both prefer habitats that are long unburnt, are floristically rich, and dense in nature. The survey area appears to be long unburnt with no evidence of recent fire observed. Although there is marginally suitable habitat within the survey area, the vegetation immediately adjacent to the survey area holds more value for these two species. Similarly, the habitat available to the quenda within the survey area is marginal, with more significant habitat outside of the survey area. The high rabbit activity observed within the survey area is highly likely to be a major limiting factor for these three species through direct competition for food and refuge areas as well as deterioration of habitat quality through digging and warren building activities. Furthermore, the relatively high occurrence of foxes is also likely to be a significant limiting factor for small mammalian individuals in the area through direct predation.

Marginally suitable habitat was also detected for the fork-tailed swift (MI), letter-winged kite (P4) and peregrine falcon (OS) throughout the survey area. These species are unlikely to be negatively affected by proposed activities if they are present.

Marginally suitable habitat was detected for the Cape Le Grand assassin spider (VU). This species is currently only known to occur in Cape Le Grande; however, it is likely under surveyed in the Esperance region and may have a broader distribution than currently known. Although the habitat is marginal with only several *Banksia speciosa* plants observed to have high levels of suspended leaf litter it is recommended that these areas be avoided where possible during the track maintenance operations.

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9 Appendices

Appendix A – Maps

Appendix B – Species Lists and Relevé Data

Appendix C – Conservation Significant Values Likelihood of Occurrence Analysis

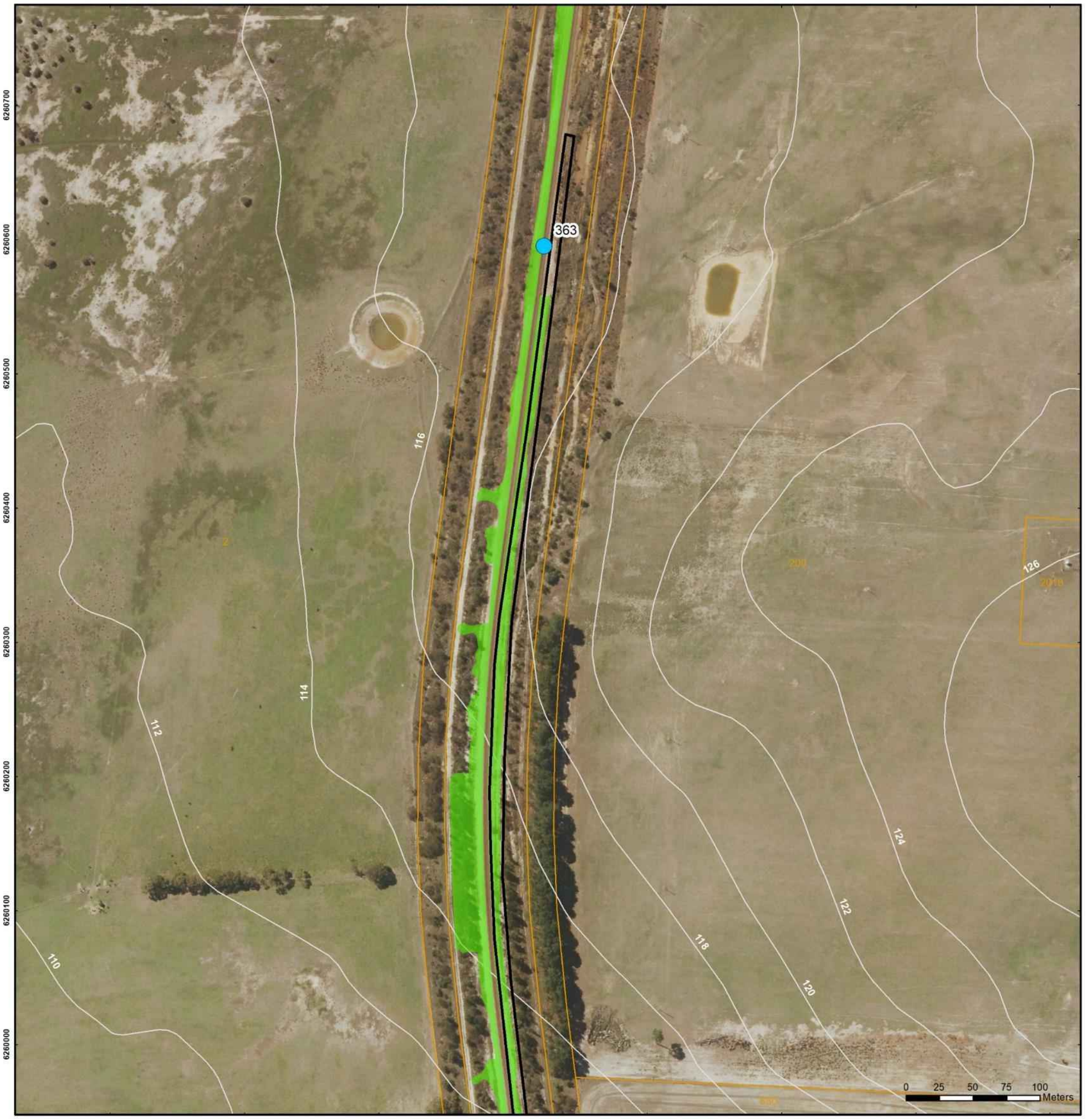
Appendix D – Conservation Status Definitions and Condition Scale

Appendix E – Threatened and Priority Reporting Forms

Appendix F - NatureMap and EPBC Act PMST reports

Appendix A

Maps



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BIO DIVERSE SOLUTIONS

Scale
1:2,805 @ A3
GDA MGA 94 Zone 51

Legend

- Survey Area
- Cadastre
- 2m Contours
- Railway KM

Environmental Risk Assessment

- Green
- Red
- Yellow

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

CLIENT
Arc Infrastructure
Line 51 (362.9 – 367.8km) Site 12 and 13
Esperance to Gibson - Section 2, North & South Bow Road
Gibson, WA 6448

Figure 20A: Environmental Risk Assessment

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STATUS	FILE	DATE
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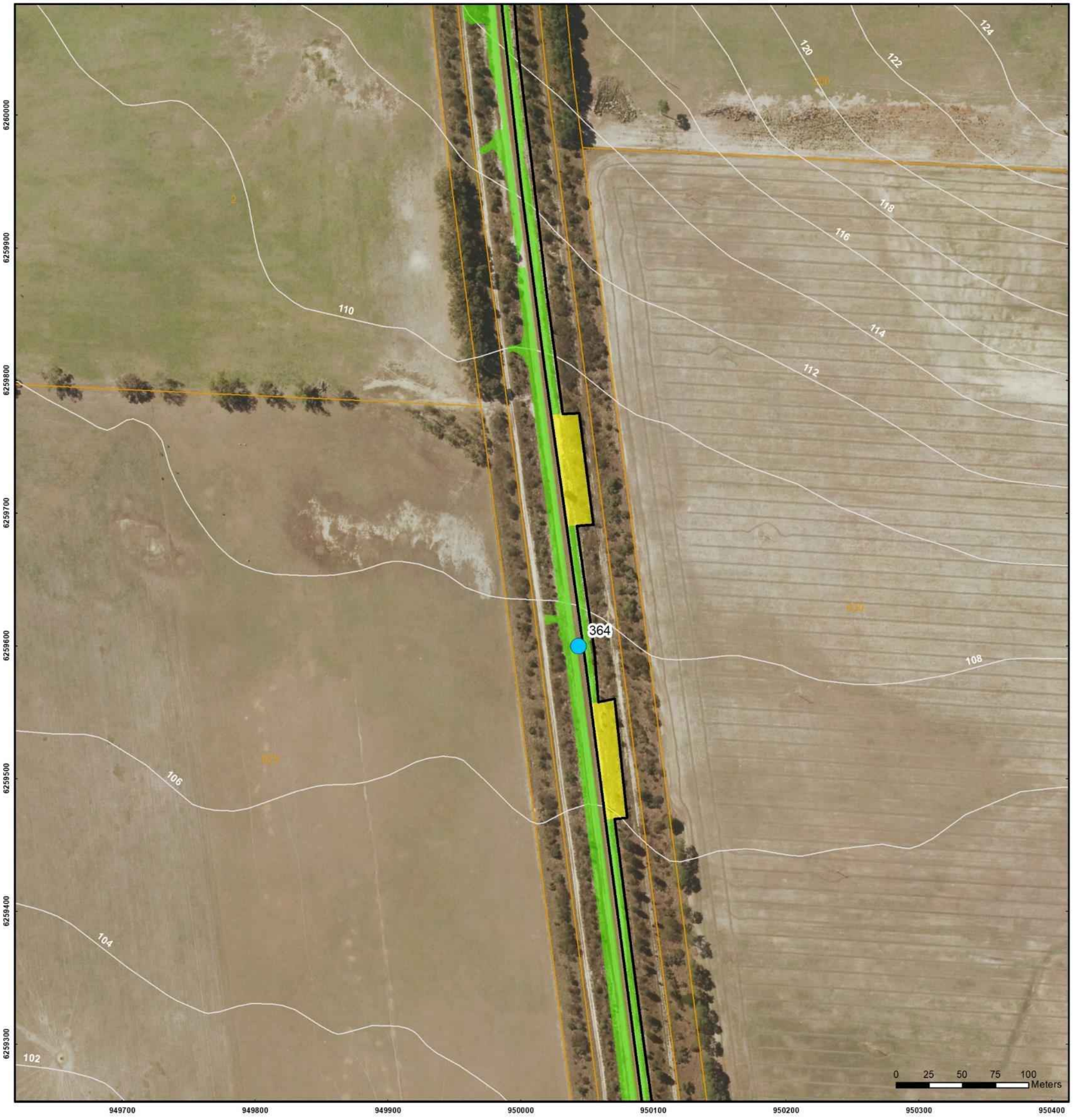

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BIO DIVERSE SOLUTIONS

Scale
1:2,805 @ A3
GDA MGA 94 Zone 51

Legend

- Survey Area
- Cadastre
- 2m Contours
- Railway KM

Environmental Risk Assessment

- Green
- Red
- Yellow

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

CLIENT
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Figure 20B: Environmental Risk Assessment

	QA Check	*Drawn by*
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STATUS	*FILE*	*DATE*
FINAL	**AI005-002**	**13/04/2022**

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BIO DIVERSE SOLUTIONS

Scale
1:2,805 @ A3
GDA MGA 94 Zone 51

Legend

- Survey Area
- Cadastre
- 2m Contours
- Railway KM

Environmental Risk Assessment

- Green
- Red
- Yellow

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

CLIENT
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Figure 20C: Environmental Risk Assessment

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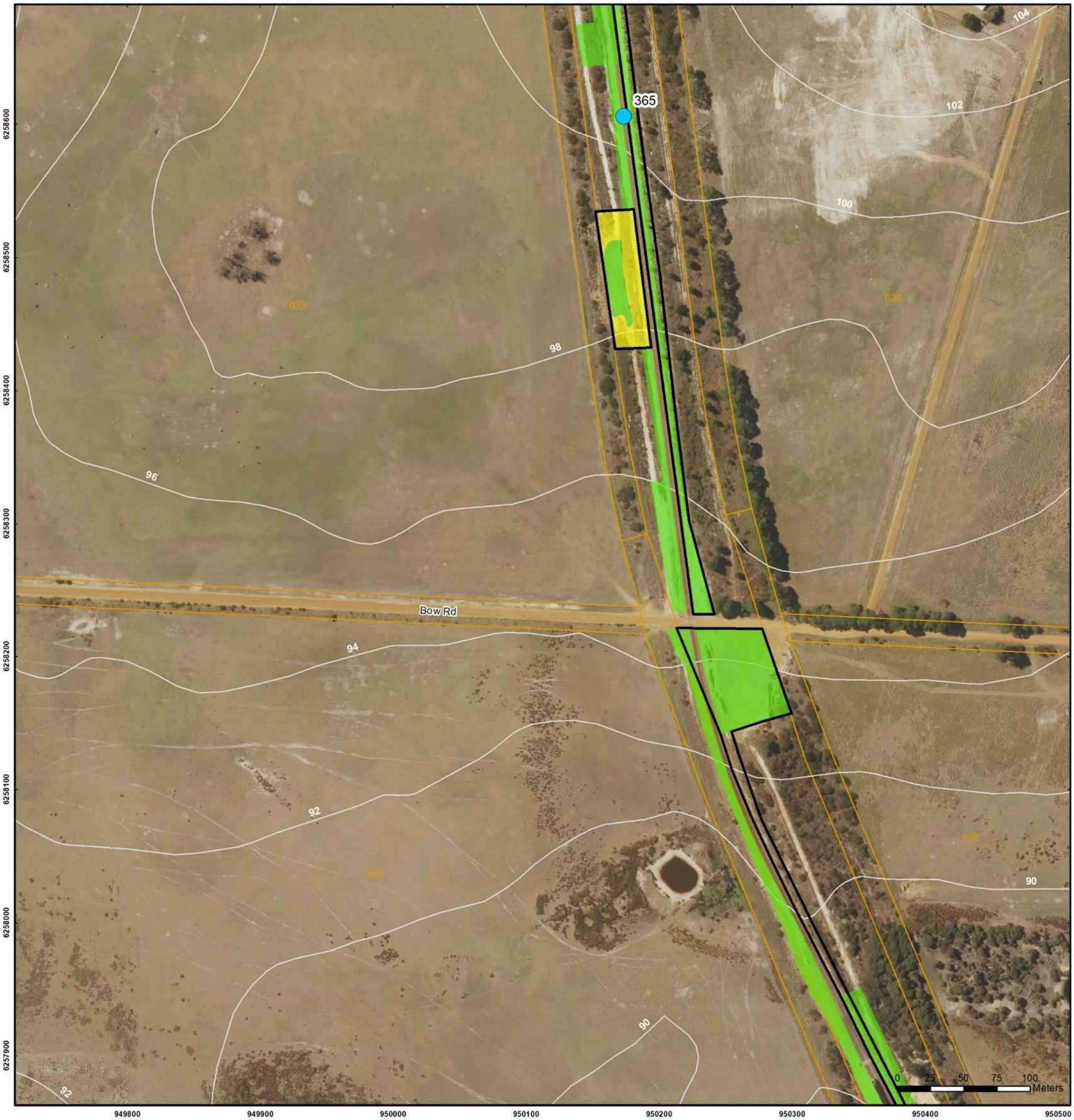

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BIO DIVERSE SOLUTIONS

Scale
1:2,805 @ A3
GDA MGA 94 Zone 51

Legend

- Survey Area
- Cadastre
- 2m Contours
- Railway KM

Environmental Risk Assessment

- Green
- Red
- Yellow

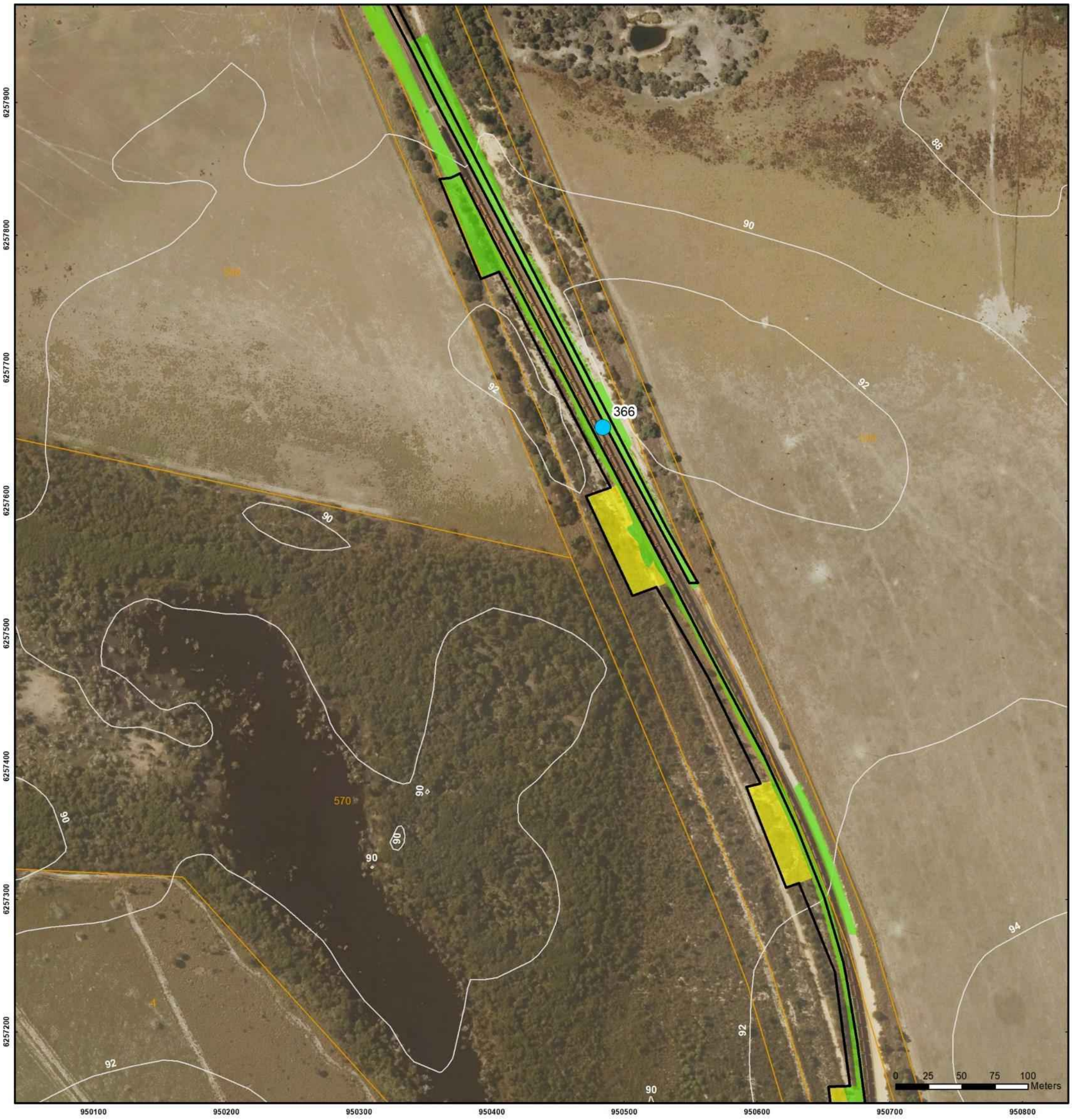
Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

CLIENT
Arc Infrastructure
Line 51 (362.9 – 367.8km) Site 12 and 13
Esperance to Gibson - Section 2, North & South Bow Road
Gibson, WA 6448

Figure 20D: Environmental Risk Assessment

	QA Check	*Drawn by*
	MLH	**BMT**
STATUS **FINAL**	*FILE* **AI005-002**	*DATE* **13/04/2022**



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BIO DIVERSE SOLUTIONS

Scale
1:2,805 @ A3
GDA MGA 94 Zone 51

Legend

- Survey Area
- Cadastre
- 2m Contours
- Railway KM

Environmental Risk Assessment

- Green
- Red
- Yellow

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

CLIENT
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Esperance to Gibson - Section 2, North & South Bow Road
Gibson, WA 6448

Figure 20E: Environmental Risk Assessment

	QA Check	*Drawn by*
	MLH	**BMT**
STATUS **FINAL**	*FILE* **AI005-002**	*DATE* **13/04/2022**

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BIO DIVERSE SOLUTIONS

Scale
1:2,805 @ A3
GDA MGA 94 Zone 51

Legend

- Survey Area
- Cadastre
- 2m Contours
- Railway KM

Environmental Risk Assessment

- Green
- Red
- Yellow

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

CLIENT
Arc Infrastructure
Line 51 (362.9 – 367.8km) Site 12 and 13
Esperance to Gibson - Section 2, North & South Bow Road
Gibson, WA 6448

Figure 20G: Environmental Risk Assessment

	QA Check	*Drawn by*
	MLH	**BMT**
STATUS **FINAL**	*FILE* **AI005-002**	*DATE* **13/04/2022**

Albany Office:
29 Hercules Crescent
Albany, WA 6330
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Denmark Office:
7/40 South Coast Highway
Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450
(08) 9072 1382

BIO DIVERSE SOLUTIONS

Scale
1:2,805 @ A3
GDA MGA 94 Zone 51

Legend

- Survey Area
- Cadastre
- 2m Contours
- Railway KM

Environmental Risk Assessment

- Green
- Red
- Yellow

Overview Map Scale 1:100,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

CLIENT
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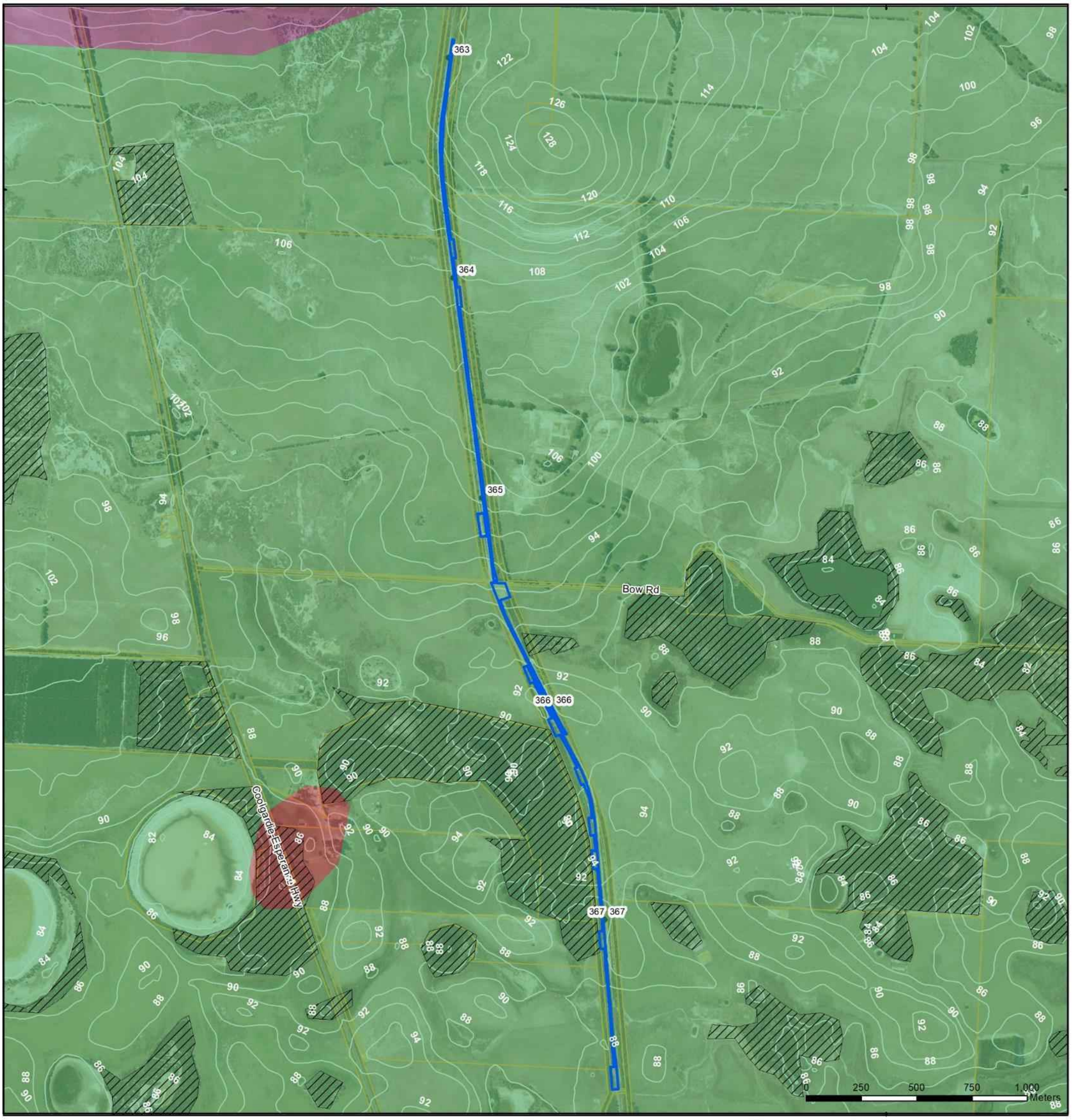
Gibson, WA 6448

Figure 20H: Environmental Risk Assessment

	QA Check	Drawn by
	MLH	BMT
STATUS	FILE	DATE
FINAL	AI005-002	13/04/2022



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Denmark Office:
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Esperance Office:
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Esperance, WA 6450
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BIO DIVERSE SOLUTIONS

Scale
1:17,000 @ A3
GDA MGA 94 Zone 50

CLIENT
Arc Infrastructure
Line 51 (362.9 – 367.8km). Site 12 and 13.
Esperance to Gibson – Section 2, North & South Bow Road
Gibson, WA 648

Figure 21: Desktop Vegetation Data

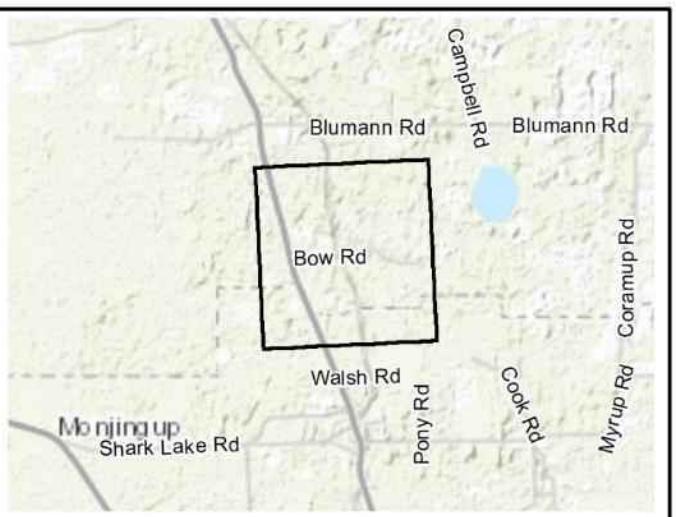
	QA Check	Drawn by
	MLH	BMT
STATUS	FILE	DATE
FINAL	AI005-002	31/03/2022

Legend

- Survey Area
- Rail Kilometer Points
- Native Vegetation Extent (DPIRD_005)

Pre European Vegetation (DPIRD_006)

- ESPERANCE_6048
- ESPERANCE_47
- ESPERANCE_125



Overview Map Scale 1:250,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

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BIO DIVERSE SOLUTIONS

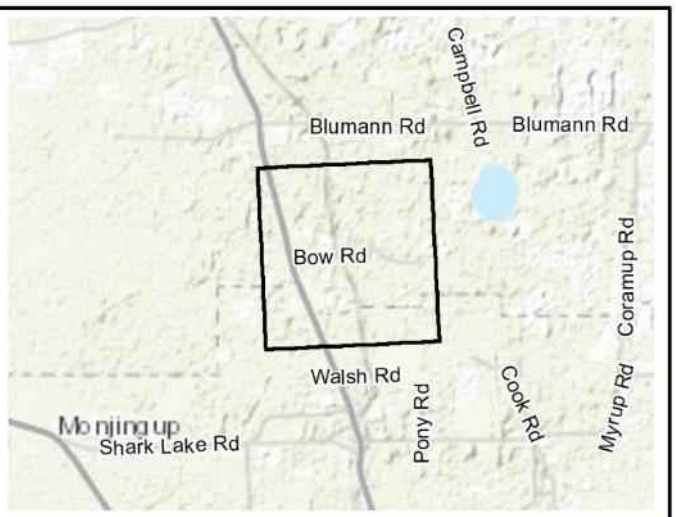
Scale
1:17,000 @ A3
GDA MGA 94 Zone 50

Legend

- Survey Area
- Rail Kilometer Points

Survey Effort

- Terrestrial Flora and Vegetation
- Terrestrial Vertebrate Fauna



Overview Map Scale 1:250,000

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2021
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI

CLIENT
Arc Infrastructure
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Esperance to Gibson – Section 2, North & South Bow Road
Gibson, WA 648

Figure 22: Survey Effort

	QA Check	*Drawn by*
	MLH	**BMT**
STATUS **FINAL**	*FILE* **AI005-002**	*DATE* **31/03/2022**

Appendix B

Conservation Significant Values Likelihood of Occurrence Analysis

Table 11: Criteria for assessing the likelihood of occurrence of Threatened or Priority flora and fauna 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	The species has been recorded locally through database searches. However, 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. Species is unlikely to occur due to the site lacking critical habitat, only containing marginally suitable habitat, and/or the survey area is considerably degraded. The species has not been recorded in the survey area despite adequate survey effort.
Highly Unlikely	No suitable habitat within the survey area or the survey area is outside the species' natural distribution.

Table 12: Potential conservation significant flora located within 10 (NatureMap and PMST) to 30 (DBCA) km of the survey area and likelihood of occurrence analysis (post survey).
NB - Species are sorted by likelihood of presence. Numerous resources specific to Threatened and Priority flora listed below were used in the likelihood assessment (Archer, 2016; Brundrett, 2014; DAWE, 2008; Gilmore, 2012; Hislop, 2014; JSTOR, 2000 - ; van der Moezel, 1987; WAH, 1998 -).

Family	Species	Vernacular	Status (WA)	NatureMap	PMST	DBCA	Description- Species	Description - Habitat	Peak Flowering period	Pre-Survey Likelihood Analysis	Post Survey Likelihood of Occurrence and Flora Survey Outcome
Fabroniaceae	*Fabronia hampeana*		P2	x		x	Moss species. Silver green species.	Often growing on Macrozamia species. Mixed woodlands.		Outside of expertise of surveyor	Unlikely to occur - no Macrozamia plants present within survey area
Goodeniaceae	***Dampiera sericantha***		**P3**	**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**	**Detected**
Fabaceae	***Daviesia pauciflora***		**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 *Banksia speciosa* or Kwongkan shrublands.**	**Oct to Dec or Jan**	**Likely**	**Detected**
Ericaceae	*Leucopogon corymbiformis*		P2	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	Likely	Unlikely - Not detected; similar Leucopogon species present. Determined as non-Threatened *Leucopogon carinatus* due to leaves being below 2mm in length. *L. Corymbiformis* are over 3mm in length.
Myrtaceae	*Cyathostemon* sp. Esperance (A. Fairall 2431)		P1	x		X	Shrub, 2-4 m tall. Leaves pointed. Flowers white; free part of stamens longer than fused part.	Shrubland. Salt Lake Margin. Sandy gravel.	Sept - Oct	Possible	Unlikely - Not detected
Ericaceae	*Leucopogon* sp. Lake Magenta (K.R. Newbey 3387)		P1	x				Uplands; sand or sand over laterite.	Nov	Possible	Unlikely - Not detected; Leucopogon species present were not similar.
Campanulaceae	*Lobelia archeri*		P1	x		X	Annual herb, small flower. Growing to around 40 cm (16") in height, it usually has a thin unbranched stem with several small pale blue flowers near the summit.	Upper slopes of tall non-calcareous sand hills, although odd plants can be found lower down after fire.		Possible	Unlikely - Not detected
Ericaceae	*Styphelia coelophylla*		P1	x			Erect shrub, 0.3-0.6 m high. Flowers pink/white.	Gravelly sandy soils.	Sep to Nov.	Possible	Unlikely - Not detected
Myrtaceae	*Baeckea* sp. Gibson (K.R. Newbey 11084)		P1	x		X	Spreading, erect, mid-dense shrub, to 2 m high. Fl. Pink.	Brown sandy loam over laterite & granite. Moderately exposed hills, cleared bushland.	Jun or Nov to Dec.	Possible - lack of information, scattered distribution	Unlikely - Not detected
Cyperaceae	*Schoenus* sp. Grey Rhizome (K.L. Wilson 2922)		P1	x		x	Grass-like or herb (sedge), 0.06-0.08 m high.	Sandy clay, sand. Scattered subcoastal (<30 km of coastline) from Cape Arid to Albany.		Possible	Unlikely - Not detected; No dwarf Schoenus species identified within survey area.
Rhamnaceae	*Spyridium mucronatum* subsp. *multiform*		P2	x			Erect or spreading shrub, 0.15-0.6 m high. Fl. white-cream-yellow.	Gravelly loam or clay.	Oct to Dec or Jan.	Possible	Unlikely - Not detected
Polygalaceae	*Comesperma griffinii*		P2	X			Annual or perennial herb to 0.15 m high. Flowers white.	Yellow or grey sands, plains. Very wide and scattered distribution from Geraldton to Esperance.	Oct	Possible	Unlikely - Not detected; Comesperma species identified in survey area were not similar.
Dilleniaceae	*Hibbertia turleyana*		P2	x		x	Procumbent shrub to 0.2 m high, to 0.35 m wide. Flowers yellow.	Dry white sand. Flats, seasonally wet areas.	August	Possible	Unlikely - Not detected; Hibbertia species present were not similar.

Table 12 continued.

Family	Species	Vernacular	Status (WA)	NatureMap	PMST	DBCA	Description- Species	Description - Habitat	Peak Flowering period	Pre-Survey Likelihood Analysis	Post Survey Likelihood of Occurrence and Flora Survey Outcome
Orchidaceae	*Paracaleana parvula*	Esperance Duck Orchid	P2	X			Perennial, herb to 0.18 m high. Flowers yellow/green.	Deep white sands, plains. Distribution clustered towards Cape Arid and only single record in Esperance townsite vicinity.	Oct to Nov	Possible	Unlikely - Not detected
Iridaceae	*Patersonia inaequalis*	Unequal Bract Patersonia	P2	x		X	Rhizomatous, tufted perennial, herb, 0.2-0.4 m high. Fl. White.	Sandy clay, lateritic or granitic sand.	Aug to Oct	Possible	Unlikely - Not detected; Patersonia species present differed to *P. inaequalis*, due to shape, colour and size of bracts.
Anarthriaceae	*Hopkinsia adscendens*		P3	x			Rhizomatous, perennial, herb to 0.4 m high.	Sand. Dry or seasonally damp habitats along streams.	Oct	Possible	Unlikely - Not detected
Proteaceae	*Isopogon alcicornis*	Elkhorn Cornflower	P3	x			Low, lignotuberous 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	Possible	Unlikely - Not detected; Isopogon species present were not similar.
Brassicaceae	*Lepidium fasciculatum*	Bundled Peppercress	P3	x		X	Erect annual, herb, (0.1-)0.3-0.6 m high.	Widespread but scattered. Across southern Australia.	Sept to Nov	Possible	Unlikely - Not detected
Ericaceae	*Leucopogon interruptus*		P3	x		X	Spreading shrub, to 2 m high.	Grey sand over granite.	Sept to Nov	Possible	Unlikely - Not detected; Leucopogon species present were not similar
Orchidaceae	*Pterostylis faceta*	*Bird Orchid*	P3			X	Annual herb. Flowers green.	Mallee dominated shrubland, dense low heath. Mixed soil types.	Aug to Sept	Possible	Unlikely - Not detected
Myrtaceae	*Astartea reticulata*		P3	x		x	Single-stemmed or basally branched shrub 0.7–1.5 m tall. Fl. pale pink or white.	Occurs in winter-wet depressions or near watercourses along the coastal plain, commonly associated with the paperbark species *Melaleuca cuticularis*.	late November to January.	Possible	Unlikely - Not detected; Astartea species identified in survey area were not similar.
Polygalaceae	*Comesperma calcicola*		P3	X			Soft perennial herb, to 0.3 m high. Flowers pink.	Calcareous or semi-saline clay loams, limestone. Areas around saline water.	Oct to Dec or Jan	Possible	Unlikely - Not detected; Comesperma species identified in survey area were not similar.
Malvaceae	*Commersonia rotundifolia*	Round Leaved Rulingia	P3	x		X	Shrub to 1.5 m high. Semi-erect. Cream flowers, white calyx with green base. Petal's 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.	Sept to Nov	Possible	Unlikely - Not detected
Ericaceae	*Conostephium marchantiorum*		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	Possible	Unlikely - Not detected
Goodeniaceae	*Dampiera triloba*		P3	X			Erect, perennial herb or shrub to 0.5 m high. Flowers blue.	Lowlands or semi-wet areas, slopes on edge of lakes.	Aug to Dec	Possible	Unlikely - Not detected; Dampiera species present were not similar.
Restionaceae	*Desmocladus biformis*		P3	x		x	Rhizomatous, densely tufted perennial, herb (sedge-like), 0.1-0.2 m high.	Sand, sandy clay, lateritic soils. Dry sites.	Sep to Oct	Possible	Unlikely - Not detected
Myrtaceae	*Eucalyptus semiglobosa*		P3	X		x	Mallee to 6 m, bark smooth grey over tan. Flowers cream-white-yellow.	White sand over laterite, silty sand on edge of granite shelf, limestone. Hillslopes, gullies, cliffs.	June and Oct to Dec	Possible	Unlikely - Not detected; Eucalyptus species present were not similar.
Haloragaceae	*Gonocarpus pycnostachyus*		P3	x		x	Erect annual herb, 0.1-0.15 m high. Flowers green-red.	Sand or clay soils. Wet depressions, granite rock.	Oct	Possible	Unlikely - Not detected

Table 12 continued.

Family	Species	Vernacular	Status (WA)	Nature Map	PMST	DBCA	Description- Species	Description - Habitat	Peak Flowering period	Pre-Survey Likelihood Analysis	Post Survey Likelihood of Occurrence and Flora Survey Outcome
Myrtaceae	*Melaleuca dempta*		P3	x			Shrub, 0.2-0.6 m high. White cream flowers. Rounder and more circular leaves to similar non-Threatened *Melaleuca calycina.*	Shrubland and mallee. White clayey soils. Sometimes recorded on salt lakes.	Aug	Possible	Unlikely - Not detected; Melaleuca species present were not similar.
Proteaceae	*Persoonia scabra*		P3	x			Clumped, spreading shrub. Fl. Yellow.,	Gravelly loam, sandy soils. Slopes. Mixed soil types. Eucalyptus, Allocasuarina or Agonis woodlands.	Sep to Nov.	Possible	Unlikely - Not detected
Loganiaceae	*Adelphacme minima*		P3	x		X	Annual.	Small post fire.	Sept -Oct; Nov-Jan	Possible - Limited information present on suitable habitat. Scattered distribution.	Unlikely - Not detected
Ericaceae	*Styphelia rotundifolia*		P3	x		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	Possible	Unlikely - Not detected
Frankeniaceae	*Frankenia glomerata*	Cluster Head Frankenia	P4			X	Prostrate shrub. Fl. pink-white.	White sand.	Nov	Possible	Unlikely - Not detected
Proteaceae	*Grevillea baxteri*	Cape Arid Grevillea	P4	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	Possible	Unlikely - Not detected
Euphorbiaceae	*Stachystemon vinosus*		P4	x		x	Compact shrub, to 0.1 m high. Fl. purple-red/white.	Fine loamy sand, stony soils. Sandplains, rock crevices on breakaways.	Sep to Nov	Possible	Unlikely - Not detected
Scrophulariaceae	*Eremophila glabra* subsp. Scaddan (C. Turley s.n. 10/11/2005)		T - Cr En	x	x	x	Large shrub, flowers green.	Associated with habitat for salt lakes in the Scaddan/Esperance region	August to November	Unlikely	Unlikely
Haemodoraceae	*Conostylis lepidospermoides*	Sedge Conostylis	T - En	x		X	Rhizomatous, tufted perennial, grass-like or herb, 0.17-0.36 m high. Fl. Yellow.	Grey or yellow-brown sand over laterite.	Sep to Oct	Unlikely	Unlikely
Haemodoraceae	*Anigozanthos bicolor* subsp. *minor*	Little Kangaroo Paw, Two-coloured Kangaroo Paw	T - En	x	x	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	Unlikely
Euphorbiaceae	*Ricinocarpos trichophorus*	*Barrens Wedding Bush*	T - En		x	x	Erect, openly branching shrub, 0.3-1 m high. Fl. White.	Sandy clay, loam. Breakaways, among sandstone rocks.	May or Aug to Sep	Unlikely	Unlikely
Myrtaceae	*Eucalyptus insularis* subsp. *continentalis*	Twin Peak Mallee	T - En		x	x	(Mallee), 1.5-8 m high. Fl. white-cream.	Sand. Granite outcrops & hills.	Aug	Unlikely - distribution restricted to Cape Le Grand. Lack of suitable habitat.	Unlikely
Proteaceae	*Lambertia echinata* subsp. *echinata*	*Western Prickly Honeysuckle*	T - En	x	x	x		Skeletal rocky soils, sandy or silty clay over shale-stone or quartzite. Low to mid slopes of range, edge of breakaway	May, Sept, Nov, Jan	Unlikely - distribution restricted to Cape Le Grand. Lack of suitable habitat.	Unlikely
Myrtaceae	*Eucalyptus merrickiae*	Goblet Mallee	T-Vu	x	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	Unlikely	Unlikely
Euphorbiaceae	*Beyeria physaphylla*		P1	x		X	Shrub, to 0.5 m high. Scraggly. Flowers axial, separate male and female flowers.	Restricted to Scaddan. Grows in Mallee Eucalypt with Melaleuca, Hakea and Leptospermum sp. On grey sandy soil on edge of salt lakes.	Sept	Unlikely	Unlikely
Myrtaceae	*Eucalyptus misella*		P1				Mallee, 1-3 m high. Bark smooth. Flowers cream.	White, yellow or grey sand. Low lying sandplain.	Nov	Unlikely	Unlikely

Table 12 continued.

Family	Species	Vernacular	Status (WA)	NatureMap	PMST	DBCA	Description- Species	Description - Habitat	Peak Flowering period	Pre-Survey Likelihood Analysis	Post Survey Likelihood of Occurrence and Flora Survey Outcome
Myrtaceae	*Darwinia* 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	Unlikely	Unlikely
Goodeniaceae	*Goodenia turleyae*		P1	x		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.		Unlikely	Unlikely
Thymelaeaceae	*Pimelea pelinos*		P1	x		x	Erect, scraggly shrub, 0.3-0.6 m high. Flowers Cream.	Sandy clay, salt lakes.	Jun to Jul	Unlikely	Unlikely
Haloragaceae	*Myriophyllum muelleri*	*Hooded Water Milfoil*	P1	X			Slender, aquatic annual, herb. Stems to 0.6 m long. Flowers red.	Lagoons. Two records - Nambung River near Gingin and pond off South Coast Hwy.		Unlikely - lack of standing water	Unlikely
Araliaceae	*Hydrocotyle asterocarpa*	*Starry Pennywort*	P2	x		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	Unlikely	Unlikely
Ericaceae	*Astroloma* sp. Grass Patch (A.J.G. Wilson 110)		P2	x		x	Multi-stemmed, domed shrub. 0.2-0.4 m high. Red flowers. Flowers facing upwards, very skinny leaves.	White/grey sand, edge of salt lake in Melaleuca thickets.	June to August	Unlikely	Unlikely
Myrtaceae	*Eucalyptus sweedmaniana*		P2	x		x	Prostrate Mallee, smooth silver grey bark, large winged and pink fruit. Flowers red to pink.	Restricted to east of Esperance in coastal habitat.	Sporadic	Unlikely	Unlikely
Goodeniaceae	*Goodenia exigua*		P2	x		x	Perennial, prostrate, compact and rhizomatous shrub. 3 cm high x 4 cm wide. Yellow flowers. Perennial herb, ground hugging, flowers white with purplish brown markings.	Edge of salt lakes or seasonally inundated plains. Grey clay. Occurs in the Stirling Ra. and at Moirs Inlet, W.A. Grows in saline clays.		Unlikely	Unlikely
Chenopodiaceae	*Tecticornia indefessa*	Samphire	P2	x		X	Prostrate, perennial shrub, 0.05-0.15 m high.	White to brown-grey sand. Near the edges of salt lakes.		Unlikely	Unlikely
Goodeniaceae	*Dampiera decurrens*		P2			x	Stiff, robust perennial, herb, 0.1-1 m high. Fl. Blue.	Sandy soils. Granite rocks.	Sep to Dec or Jan	Unlikely - distribution restricted to Cape Le Grand. Lack of suitable habitat.	Unlikely
Goodeniaceae	*Goodenia quadriloculari*s		P2			x	Erect, slender, woody perennial, herb, 0.3-1 m high. Fl. Yellow.	Sand. Sand dunes, granite slope & outcrops.	Sep to Dec	Unlikely - distribution restricted to Cape Le Grand. Lack of suitable habitat.	Unlikely
Araliaceae	*Hydrocotyle tuberculata*	Bumpy fruited Pennywort	P3	x		x	Small herb, 1-3 cm high, 2-4 cm wide, reddish green colour. Simple umbel flowers.	Low shrubs and samphire with Disphymia and *Wilsonia humilis*. Full sun area.	Oct	Unlikely	Unlikely
Fabaceae	*Acacia bartlei*		P3	x		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	Unlikely	Unlikely
Myrtaceae	*Eucalyptus foliosa*		P3	X			Mallee to 4 m high, bark smooth.	Grey/white sandy clay. Flats adjacent to salt lake. Distribution between Grass Patch and Gibson.		Unlikely	Unlikely
Ericaceae	*Brachyloma mogin*		P3	x			Compact shrub, 0.4 m high. Flowers red/pink/white.	Grey clayey sand. Swamp flat.	Jun	Unlikely	Unlikely
Goodeniaceae	*Goodenia laevis* 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	Unlikely

Table 12 continued.

Family	Species	Vernacular	Status (WA)	NatureMap	PMST	DBCA	Description- Species	Description - Habitat	Peak Flowering period	Pre-Survey Likelihood Analysis	Post Survey Likelihood of Occurrence and Flora Survey Outcome
Myrtaceae	*Kunzea salina*		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	Unlikely	Unlikely
Ericaceae	*Leucopogon apiculatus*		P3			X	Erect, open-branched shrub, 0.3-2 m high. Fl. white/pink.	Skeletal sandy or stony soils over quartzite or granite. Granite outcrops & hills, quartzite ridges, rocky slopes.	Jul to Nov.	Unlikely	Unlikely
Proteaceae	*Persoonia cymbifolia*		P3	x		x	Erect, spreading shrub, 0.20.6 (1) m high. Flowers yellow.	Sandy soils. On flats or in rock crevices.	Dec or Jan	Unlikely	Unlikely
Lamiaceae	*Pityrodia chrysocalyx*		P3	x		X	Erect, branched shrub, 0.3-0.75(-1) m high. Fl. White.	Sandy soils.	Aug to Oct.	Unlikely	Unlikely
Poaceae	*Austrostipa mundula*		P3	x			Perennial caespitose grass to 0.5 m.	Sandy to clay loams and limestone in grassland, heathland, shrubland and mallee. Distribution restricted to coastal areas.		Unlikely - survey area not directly present on the coast.	Unlikely
Myrtaceae	*Eucalyptus dolichorhyncha*		P4	x			Mallee or tree, 1-5 m high. Flowers yellow. Distinct elongated operculum bud caps, differentiating from non-Threatened *Eucalyptus forrestiana*.	Sandy clay or clay. Flats. Mallee Woodlands.	Jan to Mar or May	Unlikely	Unlikely
Fabaceae	*Kennedia beckxiana*	Cape Arid Kennedia	P4	x		x	Prostrate or twining shrub or climber. Fl. Red.	Sand, loam. Granite hills & outcrops.	Sep to Dec.	Unlikely	Unlikely
Myrtaceae	*Melaleuca fissurata*		P4	x		X	Shrub, 0.5-2 (4) m. Flowers white/yellow.	White/grey sand. Sandy loam. Samphire flats and salt pans.	Jul to Aug	Unlikely	Unlikely
Proteaceae	*Banksia prolata* subsp. *calcicola*		P4	x		x	Non-lignotuberous shrub, 0.4-1 m high. Fl. Yellow.	White sand over limestone. Coastal areas.	Jul to Sep.	Unlikely - survey area not directly present on the coast.	Unlikely
Myrtaceae	*Eucalyptus ×missilis*		P4	x		x	(Mallee), to 3 m high, bark smooth. Fl. yellow/cream-white.	Sand over limestone or granite. Coastal sites.	Jan-Apr	Unlikely - survey area not directly present on the coast.	Unlikely
Myrtaceae	*Eucalyptus preissiana* subsp. *lobata*	Lobe Fruited Mallee	P4	x		X	Mallee to 2.5 m high. Bark smooth. Flowers yellow.	Sand. Coastal limestone rises and sand dunes.	Nov	Unlikely - survey area not directly present on the coast.	Unlikely
Fabaceae	*Kennedia glabrata*	Northcliffe Kennedia	T - Vu		x	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 - distribution restricted to Northcliffe area.	Highly Unlikely
Proteaceae	*Conospermum quadripetalum*		P2	x			Diffuse, straggly shrub, 0.3-1 m high. Fl. blue/white.	Sandy clay, grey sand. Flats behind coastal hills.	Sept-Nov	Highly Unlikely - distribution restricted to Albany area.	Highly Unlikely

Table 13: Conservation Code definitions for Threatened and Priority Ecological Communities located within 10km of the survey area.

Nt. Acronyms used in table include Endangered (En), Vulnerable (Vu).

Community Name	Status		Description	Pre-Survey Likelihood of Occurrence	Post-Survey Likelihood of Occurrence and Survey Outcome
	EPBC Act 1999	BC Act 2016			
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	En	P3	Consists of predominantly obligate seeding proteaceous shrubland and heath (Kwongkan) 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 (DBCA, 2017a).	Likely	Detected – Present within Vegetation Unit 5: Banspe Sandplains. Further detail provided in Section 4.2.
Subtropical and temperate coastal saltmarsh (synonymous with the Subtropical and Temperate Coastal Saltmarsh EPBC-listed TEC)	Vu	P3	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.	Unlikely – 20km inland from the coast.	Unlikely

Table 14: Potential conservation significant fauna located within 30km of the survey area and likelihood of occurrence analysis (post survey).
Note: Species are presented based on likelihood of occurrence. Habitat information taken from publicly available resources such as: DSEWPaC (2011) Survey guidelines for Australia's Threatened mammals; DEWHA (2010) Survey guidelines for Australia's Threatened birds; SPRAT profiles and species-specific recovery plans

Family	Scientific Name	Vernacular	Status (WA) / EPBC Act	Habitat Description	Likelihood of Occurrence (Post Survey)	Habitat Present (Y/N)	Likelihood of Detection if Present	Species Present (Y/N)	Comment
Cacatuidae	*Calyptorhynchus latirostris*	Carnaby's 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.	Present	Y	HIGH	Y	Chewed Pine cones observed. Foraging habitat is scattered unlikely to be a frequently utilised area.
Apodidae	*Apus pacificus*	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.	Possible	Y	MODERATE	N	Marginal habitat present
Iulomorphidae	*Atelomastix dendritica*	Recherche Atelomastix millipede	VU / -	This species is only known from two males collected from damp leaf litter on Woody Island in the Recherche Archipelago (Edward, K. L., and Harvey M. S. (2010).	Possible	Y	LOW	N	Marginal habitat present in areas of high leaf litter
Accipitridae	*Elanus scriptus*	Letter-winged kite	P4 / -	Semi-desert and desert along tree-lined creeks; hunts over grasslands and other low vegetation.	Possible	Y	HIGH	N	Marginal habitat present
Falconidae	*Falco peregrinus*	Peregrine Falcon	OS / -	It requires abundant prey and secure nest sites, and prefers coastal and inland cliffs or open woodlands near water.	Possible	Y	HIGH	N	Marginal habitat present
Peramelidae	*Isoodon fusciventer*	Quenda,	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.	Possible	Y	HIGH	N	Marginal habitat present within the 1: Melcut Sedge WL, 2: Nuyflor and Mixed SL, 4: Sedgeland, 5: Banspe sandplain vegetation units.
Muridae	*Pseudomys occidentalis*	Western Mouse	P4 / -	Historical distribution. Preference for long unburnt habitat (between 30 and 50 years) on sandy clay loam or sandy loam. Vegetation in suitable habitats is variable and includes sparse low shrubland, tall dense shrubland, sparse to dense shrub mallee and mid-dense woodland. All sites where the western mouse has been collected have had patches of extremely dense vegetation.	Possible	Y	LOW	N	Marginal habitat present within the 1: Melcut Sedge WL, 2: Nuyflor and Mixed SL, 4: Sedgeland, 5: Banspe sandplain vegetation units.
Muridae	*Pseudomys shortridgei*	Heath mouse, Dayang	VU/EN	Historical distribution. Closest recent record Ravensthorpe. Floristically-rich, dry heathland in long unburnt vegetation.	Possible	Y	LOW	N	Marginal habitat present within the 1: Melcut Sedge WL, 2: Nuyflor and Mixed SL, 4: Sedgeland, 5: Banspe sandplain vegetation units.
Archaeidae	*Zephyrarchaea marki*	Cape Le Grand Assassin Spider	VU/-	Elevated leaf litter in *Banksia speciosa* thickets. Currently known from Cape Le Grand.	Possible	Y	LOW	N	Marginal habitat present within the 5: Banspe sandplain vegetation unit.
Elapidae	*Acanthophis antarcticus*	Southern Death Adder	P3 / -	Mallee and coastal vegetation. Prefers sites with deep fixed leaf litter.	Unlikely	N	MODERATE	N	
Scolopacidae	*Actitis hypoleucos*	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.	Unlikely	N	HIGH	N	
Scolopacidae	*Arenaria interpres*	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.	Unlikely	N	HIGH	N	
Iulomorphidae	*Atelomastix anancita*	Cape Arid atelomastix millipede	VU/-	Currently known from Le Grand National Park within the soil and beneath rocks in montane habitat.	Unlikely	N	MODERATE	N	
Iulomorphidae	*Atelomastix brennani,* sp. nov	Brennan's atelomastix millipede	VU/-	Currently known from the soil or under granite rocks within Le Grand National Park.	Unlikely	N	MODERATE	N	
Iulomorphidae	*Atelomastix grandis*	Le Grand atelomastix millipede	VU/-	Currently known from Le Grand National Park under rocks or in soil on granite outcrops and within Agonis heath.	Unlikely	N	MODERATE	N	
Iulomorphidae	*Atelomastix melindae*	Moir's atelomastix millipede	VU/-	Currently known from the rocky outcrops and heath near the summit of Mount Arid in the Cape Arid National Park, and granite outcrop and eucalypt forest of Mount Belches, near the Duke of Orleans Bay.	Unlikely	N	MODERATE	N	
Iulomorphidae	*Atelomastix sarahae*	Comer's atelomastix millipede	VU/-	Currently only known from rocky outcrops near the summit of Mount Arid in the Cape Arid National Park	Unlikely	N	MODERATE	N	

Table 14 continued.

Family	Scientific Name	Vernacular	Status (WA) / EPBC Act	Habitat Description	Likelihood of Occurrence (Post Survey)	Habitat Present (Y/N)	Likelihood of Detection if Present	Species Present (Y/N)	Comment
Ardeidae	*Botaurus poiciloptilus*	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	Unlikely	N	HIGH	N	
Scolopacidae	*Calidris acuminata*	Sharp-tailed Sandpiper	MI / MI	Muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation.	Unlikely	N	HIGH	N	
Scolopacidae	*Calidris alba*	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.	Unlikely	N	HIGH	N	
Scolopacidae	*Calidris canutus*	Red 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.	Unlikely	N	HIGH	N	
Scolopacidae	*Calidris canutus* subsp. *rogersi*	Red Knot (north-eastern Siberia)	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.	Unlikely	N	HIGH	N	
Scolopacidae	*Calidris ferruginea*	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.	Unlikely	N	HIGH	N	
Scolopacidae	*Calidris melanotos*	Pectoral Sandpiper	MI / MI	Shallow fresh to saline wetlands.	Unlikely	N	HIGH	N	
Scolopacidae	*Calidris ruficollis*	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).	Unlikely	N	HIGH	N	
Scolopacidae	*Calidris tenuirostris*	Great Knot	CR / CR & MI	Intertidal mudflats and sandflats in sheltered coasts, including bays harbours and estuaries.	Unlikely	N	HIGH	N	
Anatidae	*Cereopsis novaehollandiae*	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 Carpobrotus sp.), and occasionally occurs in open areas in taller and denser vegetation.	Unlikely	N	HIGH	N	
Anatidae	*Cereopsis novaehollandiae* subsp. *grisea*	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 Carpobrotus sp.), and occasionally occurs in open areas in taller and denser vegetation.	Unlikely	N	HIGH	N	
Charadriidae	*Charadrius bicinctus*	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 Zostera, 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.	Unlikely	N	HIGH	N	
Charadriidae	*Charadrius leschenaultii*	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.	Unlikely	N	HIGH	N	
Charadriidae	*Charadrius mongolus*	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.	Unlikely	N	HIGH	N	
Dasyuridae	*Dasyurus geoffroii*	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.	Unlikely	N	HIGH	N	
Falconidae	*Falco hypoleucos*	Grey Falcon	VU / -	Usually in lightly timbered country, especially stony plains and lightly timbered acacia shrublands.	Unlikely	N	HIGH	N	
Scolopacidae	*Gallinago megala*	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.	Unlikely	N	HIGH	N	
Scolopacidae	*Gallinago stenura*	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.	Unlikely	N	HIGH	N	

Table 14 continued.

Family	Scientific Name	Vernacular	Status (WA) / EPBC Act	Habitat Description	Likelihood of Occurrence (Post Survey)	Habitat Present (Y/N)	Likelihood of Detection if Present	Species Present (Y/N)	Comment
Laridae	*Hydroprogne caspia*	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.	Unlikely	N	HIGH	N	
Scolopacidae	*Limicola falcinellus*	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.	Unlikely	N	HIGH	N	
Scolopacidae	*Limosa lapponica*	Bar-tailed Godwit	MI (& VU or CR at subsp. level) / MI (& VU or CR at subsp. level)	Inhabit estuarine mudflats, beaches and mangroves.	Unlikely	N	HIGH	N	
Scolopacidae	*Limosa lapponica menzbieri*	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.	Unlikely	N	HIGH	N	
Macropodidae	*Notamacropus irma*	Western Brush Wallaby	P4 / -	Preferred habitat includes open forest or woodland, particularly open, seasonally-wet flats with low grasses and open scrubby thickets.	Unlikely	N	HIGH	N	
Scolopacidae	*Numenius madagascariensis*	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.	Unlikely	N	HIGH	N	
Scolopacidae	*Numenius minutus*	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.	Unlikely	N	HIGH	N	
Laridae	*Onychoprion anaethetus*	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).	Unlikely	N	HIGH	N	
Accipitridae	*Pandion haliaetus*	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.	Unlikely	N	HIGH	N	
Dasyuridae	*Parantechinus apicalis*	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.	Unlikely	N	LOW	N	
Psittacidae	*Pezoporus flaviventris*	Western Ground Parrot	CR / CR	Preferred habitat includes low coastal and near coastal heathlands, unburnt for at least five years.	Unlikely	N	LOW	N	
Dasyuridae	*Phascogale calura*	Red Tailed Phascogale, Kenngoor	CD / VU	Inhabits Wandoo (*Eucalyptus wandoo*) and Sheoak (*Allocasuarina huegeliana*) 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.	Unlikely	N	LOW	N	
Threskiornithidae	*Plegadis falcinellus*	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.	Unlikely	N	HIGH	N	
Charadriidae	*Pluvialis fulva*	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.	Unlikely	N	HIGH	N	
Charadriidae	*Pluvialis squatarola*	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).	Unlikely	N	HIGH	N	

Table 14 continued.

Family	Scientific Name	Vernacular	Status (WA) / EPBC Act	Habitat Description	Likelihood of Occurrence (Post Survey)	Habitat Present (Y/N)	Likelihood of Detection if Present	Species Present (Y/N)	Comment
Laridae	*Sternula nereis*	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.	Unlikely	N	HIGH	N	
Scolopacidae	*Tringa brevipes*	Grey-tailed Tattler	MI & P4 / MI	Typical habitat is often found to be sheltered coasts with reefs and rock platforms or with intertidal mudflats.	Unlikely	N	HIGH	N	
Scolopacidae	*Tringa glareola*	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.	Unlikely	N	HIGH	N	
Scolopacidae	*Tringa stagnatilis*	Marsh Sandpiper	MI / MI	Prefers permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks.	Unlikely	N	HIGH	N	
Procellariidae	*Ardenna carneipes*	Flesh-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.	Highly Unlikely	N	HIGH	N	
Procellariidae	*Ardenna grisea*	Sooty Shearwater	MI / MI	Marine species. Occurs in pelagic (open ocean) sub-tropical, sub-Antarctic and Antarctic waters.	Highly Unlikely	N	HIGH	N	
Procellariidae	*Ardenna tenuirostris*	Short-tailed Shearwater	MI / MI	Found in coastal waters.	Highly Unlikely	N	HIGH	N	
Diomedeidae	*Diomedea antipodensis*	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.	Highly Unlikely	N	HIGH	N	
Diomedeidae	*Diomedea dabbenena*	Tristan Albatross	CR/ EN & MI	Marine, pelagic seabird that sleeps and rests on ocean waters when not breeding.	Highly Unlikely	N	HIGH	N	
Diomedeidae	*Diomedea epomophora*	Southern Royal Albatross	VU / VU & MI	Marine, pelagic seabird that sleeps and rests on ocean waters when not breeding.	Highly Unlikely	N	HIGH	N	
Diomedeidae	*Diomedea exulans*	Wandering Albatross	VU / VU & MI	Marine, pelagic seabird that sleeps and rests on ocean waters when not breeding.	Highly Unlikely	N	HIGH	N	
Diomedeidae	*Diomedea sanfordi*	Northern Royal Albatross	EN / EN & MI	Marine, pelagic and aerial. Habitat includes subantarctic, subtropical, and occasionally Antarctic waters.	Highly Unlikely	N	HIGH	N	
Geotriidae	*Geotria australis*	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.	Highly Unlikely	N	HIGH	N	
Procellariidae	*Halobaena caerulea*	Blue Petrel	- / VU	Pelagic, occasionally over shallow waters.	Highly Unlikely	N	HIGH	N	
Megapodiidae	*Leipoa ocellata*	Malleefowl	VU / VU	Arid and semi-arid areas dominated by mallee eucalypts on sandy soils. They are known to also occur in Mulga (*Acacia aneura*), Broombush (*Melaleuca uncinata*), Scrub Pine (*Callitris verrucosa*), Eucalyptus woodlands and coastal heathlands. Malleefowl require abundant leaf litter and a sandy substrate for the successful construction of nest mounds.	Highly Unlikely	N	HIGH	N	
Procellariidae	*Macronectes giganteus*	Southern Giant-Petrel	MI / VU & MI	Marine; Antarctic to subtropical waters.	Highly Unlikely	N	HIGH	N	
Procellariidae	*Macronectes halli*	Northern Giant Petrel	MI / EN & MI	Marine, oceanic; mainly in subantarctic waters.	Highly Unlikely	N	HIGH	N	
Anatidae	*Oxyura australis*	Blue-billed Duck	P4 / -	Prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation.	Highly Unlikely	N	HIGH	N	
Procellariidae	*Pachyptila turtur subantarctica*	Fairy Prion (southern)	- / VU	Sub-Antarctic seas and islands while breeding. Subtropical seas non breeding time; rarely inshore expect when sheltering from storms.	Highly Unlikely	N	HIGH	N	
Procellariidae	*Pterodroma mollis*	Soft-plumaged Petrel	- / VU	Is a marine, oceanic species.	Highly Unlikely	N	HIGH	N	
Stercorariidae	*Stercorarius antarcticus*	Brown Skua	P4 / -	Marine, oceanic species.	Highly Unlikely	N	HIGH	N	
Stercorariidae	*Stercorarius antarcticus lonnbergi*	brown skua, Subantarctic skua	P4 / -	Marine, oceanic species.	Highly Unlikely	N	HIGH	N	
Diomedeidae	*Thalassarche carteri*	Indian Yellow-nosed Albatross	EN / VU & MI	Marine bird, located in subtropical and warmer subantarctic waters (Marchant & Higgins 1990).	Highly Unlikely	N	HIGH	N	

Table 14 continued.

Family	Scientific Name	Vernacular	Status (WA) / EPBC Act	Habitat Description	Likelihood of Occurrence (Post Survey)	Habitat Present (Y/N)	Likelihood of Detection if Present	Species Present (Y/N)	Comment
Diomedeidae	*Thalassarche cauta*	Shy Albatross	VU / VU & MI	Marine species. Breeds on rock islands.	Highly Unlikely	N	HIGH	N	
Diomedeidae	*Thalassarche cauta steadi*	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.	Highly Unlikely	N	HIGH	N	
Diomedeidae	*Thalassarche chlororhynchos*	Atlantic Yellow-nosed Albatross	VU / MI	Marine species. Builds nests built on tussock grass, on rocks and under trees.	Highly Unlikely	N	HIGH	N	
Diomedeidae	*Thalassarche impavida*	Campbell Albatross	VU / VU & MI	Marine sea bird inhabiting sub-Antarctic and subtropical waters from pelagic to shelf-break water habitats.	Highly Unlikely	N	HIGH	N	
Diomedeidae	*Thalassarche melanophris*	Black-browed Albatross	EN / VU & MI	Marine species that inhabits Antarctic, subantarctic and temperate waters and occasionally enters the tropics.	Highly Unlikely	N	HIGH	N	
Diomedeidae	*Thalasseus bergii*	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 saltpans and sewage works within 3 km of the coast.	Highly Unlikely	N	HIGH	N	
Charadriidae	*Thinornis rubricollis*	Hooded Plover, Hooded Dotterel	P4 / -	Ocean sandy beaches and coastal lakes.	Highly Unlikely	N	HIGH	N	
Scolopacidae	*Tringa nebularia*	Common Greenshank, greenshank	MI / MI	Typical habitat is often found to be sheltered coasts with reefs and rock platforms or with intertidal mudflats.	Highly Unlikely	N	HIGH	N	
Bivalvia	*Westralunio carteri*	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.	Highly Unlikely	N	MODERATE	N	

Appendix C

Conservation Status Definitions and Condition Scale

Table 15: 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 16: 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 17: 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 18: 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 ≤5 occurrences or a total area of ≤100ha), and appear to be under immediate threat.
Priority Two (P2)	Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200ha). 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 19: 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 20: Flora Species List recorded within survey area.

Family	Genus	Species	Common Name	Invasive	Cons Code	1	2	3	4	5	6
Anarthriaceae	*Anarthria*	*prolifera*					X				X
Anarthriaceae	*Anarthria*	*scabra*									X
Anarthriaceae	*Lyginia*	*imberbis*				X	X	X	X	X	X
Apiaceae	*Xanthosia*	*huegelii*									X
Araliaceae	*Trachymene*	*cyanopetala*					X			X	
Araliaceae	*Trachymene*	*pilosa*					X			X	X
Asparagaceae	*Asparagus*	*asparagoides*	Bridal Creeper	X				X	X	X	
Asparagaceae	*Laxmannia*	*minor*						X	X		
Asparagaceae	*Lomandra*	*hastilis*						X		X	X
Asparagaceae	*Thysanotus*	*patersonii*	Fringed Lilly				X			X	X
Asteraceae	*Arctotheca*	*calendula*	Cape Weed	X			X			X	
Asteraceae	*Blennospora*	*drummondii*								X	X
Asteraceae	*Conyza*	sp.	Fleabane	X				X		X	
Asteraceae	*Gazania*	*linearis*	Treasure Flower	X					X		
Asteraceae	*Hyalosperma*	*demissum*								X	
Asteraceae	*Hypochaeris*	*radiata*	Flatweed				X	X		X	
Asteraceae	*Onopordum*	*acanthion*	Scotch Thistle	X		X					
Asteraceae	*Podotheca*	*angustifolia*	Sticky Longheads						X	X	
Asteraceae	*Pseudognaphalium*	*luteoalbum*	Jersey Cudweed	X		X	X	X	X	X	
Asteraceae	*Pterochaeta*	*paniculata*	Wooly Waitzia								X
Asteraceae	*Sonchus*	*olearus*	Common Sow Thistle							X	
Asteraceae	*Ursinia*	*anthemoides*	Ursinia	X		X	X	X	X	X	X
Asteraceae	*Vellereophyton*	*dealbatum*	White Cudweed	X					X		
Campanulaceae	*Wahlenbergia*	*capensis*	Cape Bluebell	X							X
Campanulaceae	*Wahlenbergia*	*capillaris*	Australian Bluebell				X			X	X
Casuarinaceae	*Allocasuarina*	*humilis*	Dwarf Sheoak				X				
Centrolepidaceae	*Aphelia*	sp. Albany (B.G. Briggs 596)					X				
Crassulaceae	*Crassula*	*colorata* subsp. *colorata*					X				

Table 20 continued.

Family	Genus	Species	Common Name	Invasive	Cons Code	1	2	3	4	5	6
Crassulaceae	*Crassula*	*decumbens* var *decumbens*	Rufous Stonecrop			X		X			
Cupressaceae	*Callitris*	*drummondii*	Drummonds Cypress Pine							X	
Cyperaceae	*Caustis*	*dioica*	Puzzle Grass				X	X		X	X
Cyperaceae	*Cyathochaeta*	*equitans*	Tibetan Flags							X	X
Cyperaceae	*Ficinia*	*nodosa*	Knotted Club Rush			X	X		X		
Cyperaceae	*Gahnia*	*trifida*	Coast Saw Sedge			X		X	X		
Cyperaceae	*Isolepis*	*cernua*	Nodding Club Rush			X					
Cyperaceae	*Isolepis*	*cyperoides*					X	X			
Cyperaceae	*Lepidosperma*	*squamatum*							X	X	
Cyperaceae	*Machaerina*	*juncea*	Bare Twigrush			X	X			X	
Cyperaceae	*Mesomelaena*	*stygia* subsp. *stygia*				X					
Cyperaceae	*Mesomelaena*	*tetragona*	Semaphore Sedge			X	X		X	X	
Cyperaceae	*Schoenus*	*pleiostemoneus*				X	X		X		
Cyperaceae	*Schoenus*	*sublaxus*				X	X				X
Cyperaceae	sp.					X			X	X	
Cyperaceae	sp.									X	
Cyperaceae	*Tricostularia*	*aphylla*	Medusa Sedge							X	X
Dilleniaceae	*Hibbertia*	*gracilipes*	Australian Butter Cup							X	X
Dilleniaceae	*Hibbertia*	*racemosa*				X	X	X	X	X	X
Droseraceae	*Drosera*	*drummondii*							X		
Droseraceae	*Drosera*	*glanduligera*	Pimpernel Sundew				X				
Droseraceae	*Drosera*	*pygmaea*	Pygmy Drosera				X		X		
Droseraceae	*Drosera*	*trichocaulis*					X		X		
Ericaceae	*Andersonia*	*parvifolia*							X		
Ericaceae	*Leucopogon*	*carinatus*								X	X
Ericaceae	*Leucopogon*	sp. Coujinup (M.A. Burgman 10085)					X			X	X
Ericaceae	*Lysinema*	*ciliatum*	Curry Flower				X			X	
Fabaceae	*Acacia*	*aemula*				X					

Table 20 continued.

Family	Genus	Species	Common Name	Invasive	Cons Code	1	2	3	4	5	6
Fabaceae	*Acacia*	*cyclops*	Coastal Wattle			X	X	X	X	X	
Fabaceae	*Acacia*	*saligna*	Orange Wattle							X	
Fabaceae	*Aotus*	sp. Esperance (P.G. Wilson 7904)								X	
Fabaceae	*Chorizema*	*obtusifolium*								X	
Fabaceae	*Daviesia*	*pauciflora*			P3					X	
Fabaceae	*Gastrolobium*	*spinosum*	Prickly Poison			X			X		
Fabaceae	*Gompholobium*	*tomentosum*	Hairy Yellow Pea				X			X	
Fabaceae	*Jacksonia*	*capitata*							X	X	
Fabaceae	*Jacksonia*	*furcellata*								X	
Fabaceae	*Jacksonia*	*spinosa*					X			X	X
Fabaceae	*Jacksonia*	*venosa*								X	X
Fabaceae	*Ornithopus*	*compressus*	Yellow Serradella	X		X					
Fabaceae	*Trifolium*	sp.	Clover	X		X					
Fabaceae	*Vicia*	sp.	Vetch	X						X	
Geraniaceae	*Pelargonium*	*capitatum*	Rose Pelargonium	X						X	
Goodeniaceae	*Dampiera*	*parvifolia*	Many bracted Dampiera							X	
Goodeniaceae	*Dampiera*	*sericantha*			P3					X	
Goodeniaceae	*Goodenia*	*incana*	Hoary Goodenia							X	
Goodeniaceae	*Goodenia*	*trinervis*							X		
Haemodoraceae	*Anigozanthos*	*rufus*	Esperance Kangaroo Paw				X			X	X
Haemodoraceae	*Conostylis*	*bealiana*	Angels Trumpet						X		
Haemodoraceae	*Conostylis*	*breviscapa*					X			X	
Haemodoraceae	*Conostylis*	*seorsiflora* subsp. *seorsiflora*						X	X		X
Haemodoraceae	*Haemodorum*	*spicatum*	Mardja, Blood root							X	
Hemerocallidaceae	*Chamaescilla*	*corymbosa*	Blue Squill			X	X	X	X		
Hemerocallidaceae	*Dianella*	*brevicaulis*	Flax Lilly				X		X		
Hemerocallidaceae	*Johnsonia*	*acaulis*	Hooded Lilly							X	

Table 20 continued.

Family	Genus	Species	Common Name	Invasive	Cons Code	1	2	3	4	5	6
Hemerocallidaceae	*Tricoryne*	*elatior*	Yellow Autumn Lilly							X	
Iridaceae	*Patersonia*	*lanata*	Woolly Patersonia						X	X	
Iridaceae	*Patersonia*	*occidentalis* var *occidentalis*	Purple Flag				X	X	X	X	
Iridaceae	*Romulea*	*rosea*	Guildford Grass	X			X	X	X		
Iridaceae	*Watsonia*	*meriana*	Bugle Lilly	X		X			X	X	
Juncaceae	*Juncus*	*bufonius*	Toad Rush	X		X		X	X		
Juncaceae	*Juncus*	*pallidus*	Pale Rush			X	X				
Juncaginaceae	*Triglochin*	*minutissima*					X		X	X	X
Lamiaceae	*Microcorys*	*barbata*								X	
Loganiaceae	*Logania*	*micrantha*					X				
Loranthaceae	*Nuytsia*	*floribunda*	Munji; Christmas Tree				X	X		X	X
Myrtaceae	*Astartea*	*astarteoides*								X	
Myrtaceae	*Beaufortia*	*micrantha*	Little Bottlebrush							X	
Myrtaceae	*Calothamnus*	*gracilis*	One-sided Bottle Brush							X	
Myrtaceae	*Calytrix*	*decandra*	Pink Starflower							X	X
Myrtaceae	*Calytrix*	*leschenaultii*	Star Flower							X	
Myrtaceae	*Conothamnus*	*aureus*								X	X
Myrtaceae	*Darwinia*	*vestita*	Pom-pom Darwinia					X		X	X
Myrtaceae	*Eucalyptus*	*gomphocephala*	Tuart	X				X			
Myrtaceae	*Eucalyptus*	*phaenophylla* subsp. *phaenophylla*	Common Southern Mallee				X				
Myrtaceae	*Eucalyptus*	*pleurocarpa*	Tallerack; Silver Mallee								X
Myrtaceae	*Eucalyptus*	*tetragona*					X				
Myrtaceae	*Leptospermum*	*laevigatum*	Victorian Tea Tree	X		X		X		X	
Myrtaceae	*Leptospermum*	*oligandrum*								X	X
Myrtaceae	*Leptospermum*	*spinescens*	Spiny Tea Tree							X	
Myrtaceae	*Melaleuca*	*brevifolia*					X				
Myrtaceae	*Melaleuca*	*cuticularis*	Salt Water Paper Bark			X	X				

Table 20 continued.

Family	Genus	Species	Common Name	Invasive	Cons Code	1	2	3	4	5	6
Myrtaceae	*Melaleuca*	*striata*								X	X
Myrtaceae	*Melaleuca*	*thymoides*								X	
Myrtaceae	*Melaleuca*	*tuberculata*								X	
Myrtaceae	*Micromyrtus*	*elobata* subsp. *elobata*				X	X			X	X
Myrtaceae	*Oxymyrrhine*	*gracilis*								X	
Myrtaceae	*Phymatocarpus*	*maxwellii*					X	X	X	X	
Myrtaceae	sp.						X	X			
Myrtaceae	*Taxandria*	*spathulata*				X	X				X
Myrtaceae	*Verticordia*	*minutifolia*					X		X	X	
Myrtaceae	*Verticordia*	*plumosa* var *grandiflora*	Plumed Featherflower				X				
Myrtaceae	*Verticordia*	sp.								X	
Orchidaceae	*Disa*	*bracteata*	South African Orchid	X			X		X	X	X
Orchidaceae	*Diuris*	*laxiflora*	Bee Orchid				X				
Orchidaceae	*Microtis*	*media* subsp. *media*	Mignonette Orchid					X		X	X
Orchidaceae	sp.									X	
Orchidaceae	sp.									X	
Phyllanthaceae	*Poranthera*	*microphylla*	Small Poranthera			X					
Pinaceae	*Pinus*	*radiata*	Pine Tree	X			X	X			
Pittosporaceae	*Billardiera*	*fusiformis*	Australia Blue Bell			X	X	X		X	X
Plantaginaceae	*Plantago*	*coronopus*	Buckshorn Plantain	X			X				
Poaceae	*Avena*	*fatua*	Wild Oats	X		X	X			X	
Poaceae	*Briza*	*maxima*	Blowfly grass	X		X	X	X	X	X	
Poaceae	*Briza*	*minor*	Shivery grass	X		X		X	X		
Poaceae	*Cenchrus*	*clandestinus*	Kikuyu	X		X					
Poaceae	*Ehrharta*	*calycina*	Annual Veldt Grass	X				X			
Poaceae	*Eragrostis*	*curvula*	African Lovegrass	X		X	X	X	X	X	X
Poaceae	*Lagurus*	*ovatus*	Pussy Tail	X				X		X	

Table 20 continued.

Family	Genus	Species	Common Name	Invasive	Cons Code	1	2	3	4	5	6
Poaceae	*Lolium*	*perenne*	Annual Ryegrass			X		X			
Poaceae	*Neurachne*	*alopecuroidea*	Mulga Foxtail				X				
Poaceae	*Rytidosperma*	*setaceum*							X	X	
Polygalaceae	*Comesperma*	*virgatum*	Milkwort				X		X		
Polygalaceae	*Rumex*	Sp.	Dock	X		X					
Primulaceae	*Lysimachia*	*arvensis*				X	X		X	X	X
Proteaceae	*Adenanthos*	*cuneatus*	Jugflower				X	X	X	X	X
Proteaceae	*Banksia*	*nivea*	Honeypot Dryandra							X	
Proteaceae	*Banksia*	*nutans*	Nodding Banksia				X				X
Proteaceae	*Banksia*	*blechnifolia*							X		
Proteaceae	*Banksia*	*obovata*	Wedge Leaved Dryandra								X
Proteaceae	*Banksia*	*pulchella*	Teasel Banksia							X	
Proteaceae	*Banksia*	*speciosa*	Showy Banksia							X	X
Proteaceae	*Conospermum*	*distichum*	Smokebush							X	
Proteaceae	*Conospermum*	*leianthum* subsp. *leianthum*					X			X	X
Proteaceae	*Hakea*	*trifurcata*	Two Leaf Hakea				X			X	
Proteaceae	*Isopogon*	*polycephalus*	Clustered Coneflower			X				X	X
Proteaceae	*Lambertia*	*inermis*	Chiddick; Native Honey Suckle				X	X			X
Proteaceae	*Synaphea*	*oligantha*				X	X			X	X
Proteaceae	*Synaphea*	*spinulosa* subsp. *spinulosa*				X					
Restionaceae	*Chordifex*	*laxus*					X				X
Restionaceae	*Chordifex*	*sphacelatus*				X	X	X			X
Restionaceae	*Hypolaena*	*exsulca*					X	X	X	X	X
Restionaceae	*Hypolaena*	*humilis*				X		X	X		X
Restionaceae	*Lepidobolus*	*preissianus*								X	
Restionaceae	*Leptocarpus*	*crebriculmis*				X					
Restionaceae	*Lepyrodia*	*macra*	Large Scale Rush						X		
Restionaceae	sp.						X				

Table 20 continued.

Family	Genus	Species	Common Name	Invasive	Cons Code	1	2	3	4	5	6
Rhamnaceae	*Cryptandra*	*pungens*					X				
Rutaceae	*Boronia*	*spathulata*					X				
Rutaceae	*Cyanothamnus*	*ramosus* subsp. *anethifolius*					X	X			
Stylidiaceae	*Levenhookia*	*pusilla*	Midget Stylewort				X			X	X
Stylidiaceae	*Levenhookia*	*stipitata*	Common Stylewort							X	X
Stylidiaceae	*Stylidium*	*breviscapum*	Boomerang Trigger Plant				X				X
Xanthorrhoeaceae	*Xanthorrhoea*	*platyphylla*	Grass Tree				X			X	X

Relevé	R1	**Veg Code**	1: Melcut and Sedge WL	**Date Surveyed**	29/10/2022
Location	2.436km north of Bow Road railway crossing. 363 Railway KM.				
GPS (Lat, Long)	-33.6989417577845, 121.853954258097				
Landform and Slope	Drainage Depression, Gentle slopes				
Soils	Light brown clay sand				
Hydrology	Seasonally wet				
Vegetation description	Vegetation Description (NVIS; DoEE, 2017): U ^*Melaleuca cuticularis*, +/-*Acacia cyclops*\shrub\i; M +/-*Micromyrtus elobata* subsp *elobata*, *Taxandria spathulata*\shrub\2\bc; G+ ^^*Leptocarpus crebriculmis, Chordifex sphacelatus, Eragrostis curvula*\^sedge, grass\1\d Vegetation Description (Muirs, 1977): *Melaleuca cuticularis* and *Acacia cyclops* Scrub, over *Micromyrtus elobata* subsp *elobata* and *Taxandria spathulata* Open Low Shrub C and D, over *Ficinia nodosa, Gahnia trifida* and *Juncus pallidus* Dense Tall Sedge, over *Machaerina juncea, Mesomelaena stygia* subsp *stygia* and *Hypolaena humilis* Dense Low Sedge, over *Chamaescilla corymbosa* Very Open Herb, over *Eragrostis curvula* and *Briza maxima* Very Open Tall and Low Grass.				
Condition	Good				
Comments	Long unburnt. Likely historically disturbed, hydrological regime created from extraction of materials or culverts				

Life Form	**Dominant Species**	**Other Species**	**Cover (%)**
Trees >30m			
Trees 10-30m			
Shrub >2m	*Melaleuca cuticularis*		S 10-30%
Shrub 1-2m			
Shrub 0.5-1m	*Micromyrtus elobata* subsp. *elobata*		E <5%
Shrub <0.5m			
Sedge	*Leptocarpus crebriculmis, Chordifex sphacelatus*		D > 70%
Herb			
Grass	**Eragrostis curvula*		V 2-10%

Relevé	R2	**Veg Code**	2: Nuyflor and Mixed SL	**Date Surveyed**	29/10/2022
Location	2.216km north of Bow Road railway crossing. 363.158 railway KM.				
GPS (Lat, Long)	-33.700822917393, 121.853798754573				
Landform and Slope	Sandplain, flat slopes				
Soils	Light grey sand				
Hydrology	Well drained				
Vegetation description	Vegetation Description (NVIS; DoEE, 2017): U ^^*Nuytsia floribunda*, *Lambertia inermis* +/- *Eucalyptus tetragona*\; M+ ^^*Taxandria spathulata, Allocasuarina humilis, Adenanthos cuneatus*\shrub\^3,2\c; G +/-*Hypolaena exsulca, Lysimachia arvensis, Caustis dioica*\sedge, ^herb\1\bc Vegetation Description (Muirs, 1977): *Lambertia inermis, Nuytsia floribunda* and *Eucalyptus tetragona* Scrub, over *Taxandria spathulata, Allocasuarina humilis, Adenanthos cuneatus* and *Phymatocarpus maxwellii* Heath A and B, over *Hibbertia racemosa, Leucopogon* sp. Coujinup (M.A. Bergman 11085) and *Lysinema ciliatum* Low Heath C and D, over *Caustis dioica* and *Dianella revoluta* Open Tall Sedges, over *Hypolaena exsulca* and *Anarthria prolifera* Open Low Sedges, over *Avena fatua* Very Open Tall Grass, over *Neurachne alopecuroidea* Very Open Low Grass, over *Lysimachia arvensis, Trachymene pilosa, Chamaescilla corymbosa* and *Levenhookia pusilla* Very Open Herbs.				
Condition	Good				
Comments	Long unburnt.				

Life Form	**Dominant Species**	**Other Species**	**Cover (%)**
Trees >30m			
Trees 10-30m			
Shrub >2m	*Lambertia inermis, Nuytsia floribunda*		S 10-30%
Shrub 1-2m	*Taxandria spathulata, Allocasuarina humilis, Adenanthos cuneatus, Phymatocarpus maxwellii*		M 30-70%
Shrub 0.5-1m			
Shrub <0.5m			
Sedge	*Hypolaena exsulca*		S 10-30%
Herb	**Lysimachia arvensis*		E <5%
Grass			

Relevé	R3	**Veg Code**	4: Sedgeland	**Date Surveyed**	29/10/2022
Location	425m north of Bow Road railway crossing. Railway KM 365.				
GPS (Lat, Long)	-33.7166484700853, 121.856479544439				
Landform and Slope	Flat, Drainage Depression base				
Soils	Light grey sand				
Hydrology	Seasonally wet, poor drainage				
Vegetation description	Vegetation Description (NVIS; DoEE, 2017): U +/-*Acacia cyclops*\shrub\3\i; M +/-*Phymatocarpus maxwellii*\shrub\3\r; G+ ^^*Hypolaena exsulca, Chordifex laxus, Gahnia trifida*\sedge\1, ^2\d Vegetation Description (Muirs, 1977): *Acacia cyclops* Scrub, over *Phymatocarpus maxwellii* Open Low Scrub A, over *Gahnia trifida* and *Mesomelaena tetragona* Dense Tall Sedge, over *Hypolaena exsulca, Chordifex laxus* and *Lepidosperma squamatum* Dense Low Sedge, over *Eragrostis curvula* and *Avena fatua* Open Tall Grass, over *Pseudognaphalium luteoalbum, Vellereophyton dealbatum* and *Chamaescilla corymbosa* Very Open Herbs.				
Condition	Good				
Comments	Long unburnt. Evidence extensively of disturbance, responding communities of disturbance opportunists.				

Life Form	**Dominant Species**	**Other Species**	**Cover (%)**
Trees >30m			
Trees 10-30m			
Shrub >2m	*Acacia cyclops*		S 10-30%
Shrub 1-2m			
Shrub 0.5-1m	*Phymatocarpus maxwellii*		V 2-10%
Shrub <0.5m			
Sedge	*Hypolaena exsulca, Chordifex laxus, Lepidosperma squamatum*		D >70%
Herb			
Grass	**Eragrostis curvula, *Avena fatua*		S 10-30%

Relevé	R4	**Veg Code**	5: Banspe Sandplain	**Date Surveyed**	30/10/2022
Location	517m south of Bow Road Railway crossing. Railway KM 365.888.				
GPS (Lat, Long)	-33.7245847619653, 121.859733602195				
Landform and Slope	Hill Crest on Sandplain, moderate slopes				
Soils	Yellow to white sand				
Hydrology	Well drained				
Vegetation description	Vegetation Description (NVIS; DoEE 2017): U ^*Banksia speciosa*, +/-*Acacia cyclops*\shrub\4\i; M+ ^^*Leptospermum oligandrum, Adenanthos cuneatus, Darwinia vestita*\shrub\2\i; G ^^*Hypolaena exsulca, Hypochaeris radiata, Eragrostis curvula*\sedge, herb, grass\1\r Vegetation Description (Muirs, 1977): *Banksia speciosa* and *Acacia cyclops* Scrub, over *Leptospermum oligandrum, Adenanthos cuneatus* and *Darwinia vestita* Low Scrub A and B, over *Hibbertia gracilipes, Leucopogon* sp. Coujinup (M.A. Bergman) and *Lysinema ciliatum* Open Dwarf Scrub C and D, over *Caustis dioica, Lomandra hastilis* and *Tricostularia aphylla* Very Open Tall Sedge, over *Hypolaena exsulca* Very Open Low Sedge, over *Eragrostis curvula* Very Open Tall Grass, over *Rytidosperma setaceum* Very Open Low Grass, over *Hypochaeris radiata, Ursinia anthemoides* and *Trachymene pilosa* Open Herbs.				
Condition	Good				
Comments	Long unburnt. Noted evidence of Dieback.				

Life Form	**Dominant Species**	**Other Species**	**Cover (%)**
Trees >30m			
Trees 10-30m			
Shrub >2m	*Banksia speciosa, Leptospermum oligandrum*	*Acacia cyclops, Acacia saligna*	S 10-30%
Shrub 1-2m	*Darwinia vestita, Adenanthos cuneatus, Conospermum leianthum* subsp. *leianthum*	*Jacksonia spinosa*	S 10-30%
Shrub 0.5-1m			
Shrub <0.5m	*Billardiera fusiformis*		E <5%
Sedge	*Hypolaena exsulca, Lepidosperma squamatum, Caustis dioica*		V 2-10%
Herb	**Hypochaeris radiata, *Ursinia anthemoides*		V 2-10%
Grass	**Eragrostis curvula*		V 2-10%

Relevé	R5	**Veg Code**	6: Myrt Mixed SL	**Date Surveyed**	30/10/2022
Location	939m south of Bow Road railway crossing. Railway KM 366.348				
GPS (Lat, Long)	-33.7281698480123, 121.861838070762				
Landform and Slope	Sandplain, Flat slope				
Soils	White sand				
Hydrology	Well Drained				
Vegetation description	Vegetation Description (NVIS; DoEE, 2017): U ^*Nuytsia floribunda*, *+/-Eucalyptus pleurocarpa*\Tree, Mallee\4\bc; M+ ^^*Leptospermum oligandrum, Melaleuca thymoides, Adenanthos cuneatus*\shrub\3\c; G ^^*Hypolaena exsulca, Ursinia anthemoides, Eragrostis curvula*\sedge, herb, grass\1\bc Vegetation Description (Muirs, 1977): *Nuytsia floribunda* Open Low Woodland, over *Eucalyptus pleurocarpa* Very Open Shrub Mallee, over *Leptospermum oligandrum* and *Melaleuca thymoides* Dense Heath A and B, over *Adenanthos cuneatus, Darwinia vestita* and *Conospermum leianthum* subsp *leianthum* Dense Low Heath C, over *Hibbertia racemosa* and *Leucopogon* sp. Coujinup (M.A. Bergman 1085) Dwarf Scrub D, over *Hypolaena exsulca* Very Open Low Sedge, over *Ursinia anthemoides, Hypochaeris radiata* and *Hyalosperma demissum* Very Open Herb, over *Eragrostis curvula* Very Open Tall Grass.				
Condition	Good				
Comments	Long unburnt.				

Life Form	**Dominant Species**	**Other Species**	**Cover (%)**
Trees >30m			
Trees 10-30m			
Trees <10m	*Nuytsia floribunda*		E <5%
Mallee <8	*Eucalyptus pleurocarpa*		E <5%
Shrub >2m			
Shrub 1-2m	*Leptospermum oligandrum, Melaleuca thymoides*		M 30-70%
Shrub 0.5-1m	*Adenanthos cuneatus, Darwinia vestita, Conospermum leianthum* subsp. *leianthum*		M 30-70%
Shrub <0.5m	*Hibbertia racemosa, Leucopogon* sp. Coujinup (M.A. Burgman 1085)		V 2-10%
Sedge	*Hypolaena exsulca*		E <5%
Herb	**Ursinia anthemoides, Hyalosperma demissum, *Hypochaeris radiata*		E <5%
Grass	**Eragrostis curvula*		E <5%

Relevé	R6	**Veg Code**	3: Disturbed Natives	**Date Surveyed**	30/10/2022
Location	1km south of Bow Road railway crossing. Railway KM 366.477				
GPS (Lat, Long)	-33.7294180817724, 121.862450222103				
Landform and Slope	Sandplain ridge, gentle slopes				
Soils	Light Grey sand				
Hydrology	Well Drained				
Vegetation description	Cleared areas within the survey area were dominated by a variety of non-native novel ecosystems, forming a Completely Degraded Ecological Community. These areas had evidently been historically cleared and re-grown with entirely non-natives, consisting of primarily Dense African Lovegrass (*Eragrostis curvula*) with in areas scattered Pine Tress (*Pinus radiata*) or grasslands dominated by agricultural grasses and Kikuyu (*Cenchrus clandestinus*).				
Condition	Completely Degraded				
Comments	Long unburnt.				

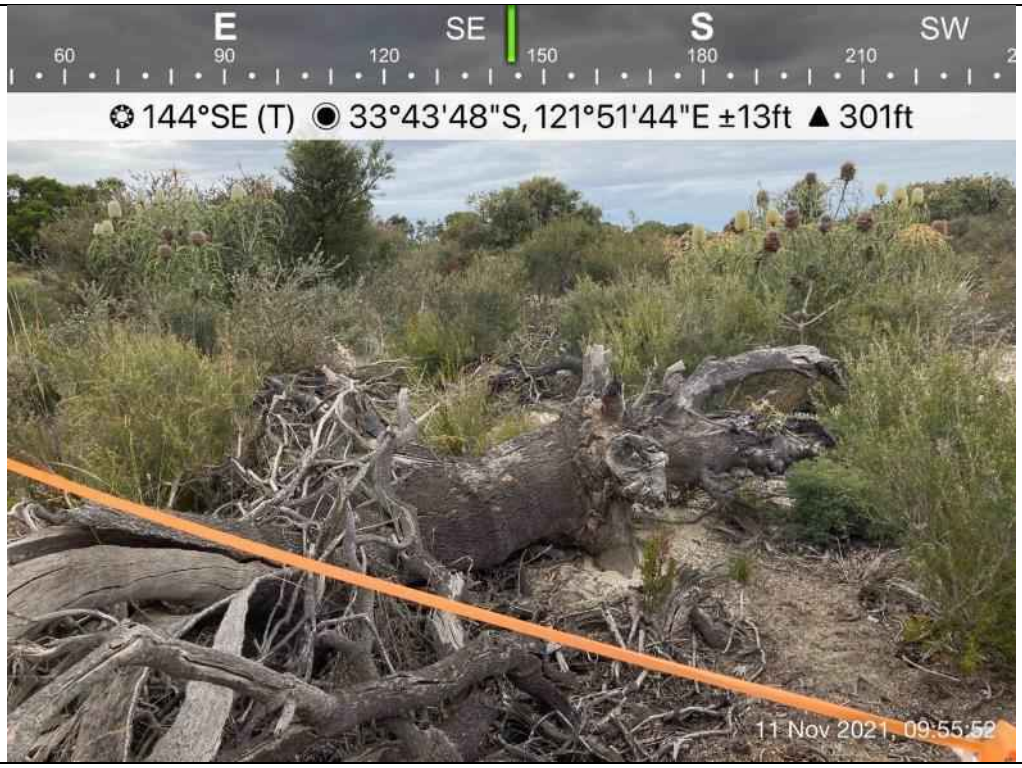
Life Form	**Dominant Species**	**Other Species**	**Cover (%)**
Trees >30m			
Trees 10-30m			
Trees <10m			
Mallee <8			
Shrub >2m	*Acacia cyclops*		M 30-70%
Shrub 1-2m			
Shrub 0.5-1m			
Shrub <0.5m	**Watsonia meriana,* *Adenanthos cuneatus*		V 2-10%
Sedge			
Herb	**Ursinia anthemoides,* **Wahlenbergia capensis,* **Hypochaeris radiata,* **Asparagus asparagoides*		V 2-10%
Grass	**Eragrostis curvula*		D >70%

Quadrat	Q1	Veg Code	Veg Unit 5: Banspe Sandplain	Date Surveyed	11/11/2021
Location	1.2km south of Bow Road railway crossing. Railway 366.624KM.				
GPS (Lat, Long)	-33.7305086871536, 121.862537368804				
Landform and Slope	Flat slope on sandplain				
Soils	Yellow/grey deep sand				
Hydrology	Good drainage				
Vegetation description	Vegetation Description (NVIS; DoEE, 2017): U ^*Banksia speciosa*, *+/-Acacia cyclops*\shrub\4\i; M+ ^^*Leptospermum oligandrum, Adenanthos cuneatus, Darwinia vestita*\shrub\2\i; G ^^*Hypolaena exsulca, Hypochaeris radiata, Eragrostis curvula*\sedge, herb, grass\1\r Vegetation Description (Muirs, 1977): *Banksia speciosa* and *Acacia cyclops* Scrub, over *Leptospermum oligandrum, Adenanthos cuneatus* and *Darwinia vestita* Low Scrub A and B, over *Hibbertia gracilipes, Leucopogon* sp. Coujinup (M.A. Bergman) and *Lysinema ciliatum* Open Dwarf Scrub C and D, over *Caustis dioica, Lomandra hastilis* and *Tricostularia aphylla* Very Open Tall Sedge, over *Hypolaena exsulca* Very Open Low Sedge, over *Eragrostis curvula* Very Open Tall Grass, over *Rytidosperma setaceum* Very Open Low Grass, over *Hypochaeris radiata, Ursinia anthemoides* and *Trachymene pilosa* Open Herbs.				
Condition	Very Good				
Comments	10x10m for mid and understorey, 20x20m for upperstorey.				

Species Name	Form	Height (m)	Cover (%)	Flowering/Fruiting
Tricostularia aphylla	V – Sedge	1	R <10%	Flowering
Melaleuca striata	S – Shrub	0.8	I 10-30%	Fruiting
Patersonia occidentalis	V – Sedge	0.2	r <10%	-
Tricoryne elatior	H – Herb	<0.1	Bi~0	Fruiting
Adenanthos cuneatus	S – Shrub	1	I 10-30%	
Rytidosperma setaceum	G – Grass	1	Bi ~0	Flowering
Caustis dioica	V – Sedge	0.4	R <10%	Flowering
Nuytsia floribunda	T - Tree	2.5	R <10%	
Leucopogon sp. Coujinup (M.A. Burgman 1085)	S – Shrub	<0.1	Bi ~-0	
Conospermum leianthum subsp. *leianthum*	S – Shrub	1	Bi ~0	Flowering / Fruiting
Leptospermum spinescens	S – Shrub	0.2	R <10%	Flowering / Fruiting
Lomandra hastilis	V – Sedge	0.5	Bi ~0	Fruiting
Thysanotus patersonii	H – Herb		Bi ~0	Fruiting
Hibbertia racemosa	S – Shrub	0.1	R <10%	Flowering
Hibbertia gracilipes	S – Shrub	0.1	Bi ~0	Flowering
Comesperma confertum	S – Shrub	0.4	Bi ~0	Flowering
Leucopogon carinatus	S – Shrub	0.1	Bi ~0	Flowering
Stylidium breviscapum	H – Herb	<0.1	Bi ~0	Flowering
Banksia speciosa	S – Shrub	2.5	<10%	Flowering / Fruiting
Synaphea oligantha	S – Shrub	0.1	Bi ~-0	
Isopogon polycephalus	S – Shrub	0.5	Bi ~-0	Flowering
Conothamnus aureus	S – Shrub	0.4	Bi ~-0	Flowering / Fruiting
Acacia cyclops	S – Shrub	1	Bi ~-0	
Cyathochaeta equitans	V – Sedge	1.5	Bi ~-0	Fruiting
Trachymene pilosa	H – Herb	<0.1	Bi ~-0	Flowering / Fruiting
Wahlenbergia capillaris	H – Herb	<0.1	Bi ~-0	Fruiting
Levenhookia pusilla	H – Herb	<0.1	Bi ~-0	Flowering
Neurachne alopecuroidea	G - Grass	<0.1	Bi ~-0	Flowering
**Ursinia anthemoides*	H - Herb	<0.1	Bi ~-0	Fruiting
**Hypolaena glabra*	H – Herb	<0.1	Bi ~-0	Flowering
Billardiera fusiformis		<0.1	R <10%	Flowering
Jacksonia capitata	S – Shrub	<0.1	Bi ~-0	Flowering
Hypolaena exsulca	V – Sedge	0.1	Bi ~-0	Fruiting
Johnsonia acaulis	V – Sedge	<0.1	Bi ~-0	Fruiting

Quadrat 1 continued.

Species Name	Form	Height	Cover (%)	Flowering/Fruiting
Leptospermum oligandrum	S – Shrub	1	Bi ~-0	Flowering
Taxandria spathulata	S – Shrub	0.1	Bi ~-0	Flowering
Anarthria scabra	V – Sedge	0.1	Bi ~-0	Fruiting
Micromyrtus elobata subsp. *elobata*	S – Shrub	0.1	Bi ~-0	Flowering
Microtis media subsp. *media*	H – Herb	<0.1	Bi ~-0	Fruiting
Verticordia sp.	S – Shrub	0.1	Bi ~-0	
**Disa bracteata*	H – Herb	<0.1	Bi ~-0	Fruiting



Quadrat	Q2	Veg Code	Veg Unit 5: Banspe Sandplain	Date Surveyed	11/11/2021
Location	1.34km south of Bow Road railway crossing. Railway KM crossing 366.767.				
GPS (Lat, Long)	-33.7317535273867, 121.862830767364				
Landform and Slope	Flat slope on sandplain				
Soils	Yellow/grey deep sand				
Hydrology	Good drainage				
Vegetation description	Vegetation Description (NVIS; DoEE, 2017): U ^*Banksia speciosa*, +/-*Acacia cyclops*\shrub\4\i; M+ ^^*Leptospermum oligandrum, Adenanthos cuneatus, Darwinia vestita*\shrub\2\i; G ^^*Hypolaena exsulca, Hypochaeris radiata, Eragrostis curvula*\sedge, herb, grass\1\r Vegetation Description (Muirs, 1977): *Banksia speciosa* and *Acacia cyclops* Scrub, over *Leptospermum oligandrum, Adenanthos cuneatus* and *Darwinia vestita* Low Scrub A and B, over *Hibbertia gracilipes, Leucopogon* sp. Coujinup (M.A. Bergman) and *Lysinema ciliatum* Open Dwarf Scrub C and D, over *Caustis dioica, Lomandra hastilis* and *Tricostularia aphylla* Very Open Tall Sedge, over *Hypolaena exsulca* Very Open Low Sedge, over *Eragrostis curvula* Very Open Tall Grass, over *Rytidosperma setaceum* Very Open Low Grass, over *Hypochaeris radiata, Ursinia anthemoides* and *Trachymene pilosa* Open Herbs.				
Condition	Very Good				
Comments	10x10m for mid and understorey, 20x20m for upperstorey.				

Species Name	Form	Height (m)	Cover (%)	Flowering/Fruiting
Anarthria prolifera	V – Sedge	0.2		Flowering
Micromyrtus elobata subsp. *elobata*	S – Shrub	1	R <10%	Flowering
Synaphea oligantha	S – Shrub	0.1	R <10%	-
Adenanthos cuneatus	S – Shrub	2	D >70%	Flowering
Cyathochaeta equitans	V – Sedge	1.1	R <10%	Fruiting
Jacksonia spinosa	S – Shrub	2	I 10-30%	Flowering
Conospermum leianthum subsp. *leianthum*	S – Shrub	1	Bi 0%	Flowering
**Eragrostis curvula*	G – Grass	0.3	Bi 0%	Fruiting
Leucopogon sp. Coujinjup (M.A. Burgman 1085)	S – Shrub	0.1	R <10%	
Caustis dioica	V – Sedge	0.2	R <10%	
Lysinema ciliatum	S – Shrub	1	Bi 0%	Flowering
Verticordia sp.	S – Shrub	1	Bi 0%	
Melaleuca thymoides	S – Shrub	2	I 10-30%	Flowering / Fruiting
Acacia cyclops	S – Shrub	3.5	I 10-30%	Fruiting
Leptospermum oligandrum	S – Shrub	1.5	R <10%	Flowering
Comesperma confertum	S – Shrub	<0.1	Bi 0%	Flowering / Fruiting
Johnsonia acaulis	V – Sedge	<0.1	Bi 0%	Fruiting
Nuytsia floribunda	S – Shrub	1	Bi 0%	
**Disa bracteata*	H – Herb	<0.1	Bi 0%	Fruiting
Lomandra hastilis	V – Sedge	0.5	R <10%	Fruiting
Verticordia minutifolia	S – Shrub	1	Bi 0%	
Hibbertia gracilipes	S – Shrub	0.1	Bi 0%	Flowering
Dampiera sericantha	H – Herb	0.1	Bi 0%	Flowering
Darwinia vestita	S – Shrub	2	Bi 0%	Flowering
Hypolaena exsulca	V – Sedge	0.2	Bi 0%	
Billardiera fusiformis		<0.1	R <10%	Flowering
Beaufortia empetrifolia	S – Shrub	1	Bi 0%	Flowering
Hibbertia racemosa	S – Shrub	0.5	Bi 0%	Flowering


NE
E
SE
S
30
60
90
120
150
180
115°SE (T) 33°43'54"S, 121°51'45"E ±13ft 307ft
11 Nov 2021, 10:35:41

Table 21: Fauna species recorded within survey area.

Species	Common Name	Conservation Code	Comments
Birds			
Anthochaera carunculata	Red Wattlebird		
Calyptorhynchus latirostris	Carnaby's Cockatoo	EN	Chewed nuts observed
Falco cenchroides	Nankeen Kestrel		
Grallina cyanoleuca	Mudlark		
Rhipidura albiscapa	Grey Fantail		
Manorina flavigula	Yellow-throated Miner		
Myiagra inquieta	Restless Flycatcher		
Petroica boodang	Scarlet Robin		
Phylidonyris novaehollandiae	New Holland Honeyeater		
Rhipidura leucophrys	Willy Wagtail		
Sericornis frontalis	White-browed Scrubwren		
Mammals			
Oryctolagus cuniculus	Rabbit		
Rattus fuscipes	Western Bush Rat		
Macropus fuliginosus	Western Grey Kangaroo		
Vulpes vulpe	*Fox*		
Reptiles			
Elapognathus coronatus	Crowned Snake		
Hemiergis initialis brookeri	Southwestern Earless Skink		
Notechis scutatus	Tigersnake		
Pogona minor	Dwarf Bearded Dragon		
Invertebrates			
Apis mellifera	European Honey Bee		
Araneus senicaudatus	Tailed Orbweaver		
Austracantha minax	Christmas Spider		
Calliphora vicina	Blue Blowfly		
Danaus plexippus	Monarch Butterfly		
Iridomyrmex purpureus	Southern Meat Ant		
Myrmecia pilosula	Jumping Ant		
Pieris rapae	Cabbage White		
Porrostoma rhipidium	Long-nosed Lycid Beetle		
Simosyrphus grandicornis	Hoverfly		
Theba pisana	Mediterranean coastal snail		
Litoria moorei	Motorbike frog		

Appendix E

Threatened and Priority reporting forms

Appendix F

NatureMap and EPBC Act PMST reports

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

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

TAXON: Dampiera sericantha **TPFL Pop. No:**

OBSERVATION DATE: 29 and 30/09/2021 **CONSERVATION STATUS:** P3 **New population** ☒

OBSERVER/S: Katie White, Bianca Theyer **PHONE** 0439 993 451 or 0458 441 432

ROLE: Botanist / Consultant **ORGANISATION:** Bio Diverse Solutions

EMAIL: katie@biodiversesolutions.com.au ; enquiry@biodiversesolutions.com.au

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

~14.8 km north of Esperance townsite. On railway line, 1.7 km south of Bow Rd railway crossing, on western side of track

Reserve No:

DBCA DISTRICT: South coast **LGA:** Esperance Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: 950701.145
Long / Easting: 6256584.856
ZONE: 51H

METHOD USED:
GPS ☐ Differential GPS ☐ Map ☒
No. satellites: _____ Map used: ArcGIS
Boundary polygon captured: ☐ Map scale: _____

LAND TENURE:

Nature reserve ☐	Timber reserve ☐	Private property ☐	Rail reserve ☒	Shire road reserve ☐
National park ☐	State forest ☐	Pastoral lease ☐	MRWA road reserve ☐	Other Crown reserve ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole 367.61 to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☒ Full survey ☐ Area observed (m²): _____

EFFORT: Time spent surveying (minutes): _____ No. of minutes spent / 100 m²: _____

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:**
Alive	3			
Dead				

Area of pop (m²): _____

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

QUADRATS PRESENT: No. _____ Size _____ Data attached ☐ Total area of quadrats (m²): _____

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: Adjacent to track disturbance of railway access track and old laydown area

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

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** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☐
10-30% ☒
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other:

SOIL COLOUR:
Red ☐
Brown ☐
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other:

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: Sandplain
(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. Closed Banksia speciosa woodland with dense shrubland and sedgeland
2.
3.
4.

ASSOCIATED SPECIES: Banksia speciosa, Adenanthos cuneatus, Darwinia vestita, Lepidosperma squamatum

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:

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.)

Specimen not retained by WA Herbarium

Proposed impact and targeted level survey results presented in 'Bio Diverse Solutions, reconnaissance flora, vegetation and basic survey, AI005-002 Bow Rd, KM 362.9-367.8 (2022)

FLORA AUTHORISATION / LICENCE No: FB62000327 Note if only observing plants (i.e. no specimens or plant matieral 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: KW171 WA Herb. ☐ Regional Herb. ☐ District Herb. ☐ Other: _____

LODGEMENT: WA Herb Lodgement No: 9281

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: 05/ 01 /2022

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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

TAXON: Daviesia pauciflora **TPFL Pop. No:**

OBSERVATION DATE: 29 and 30/09/2021 **CONSERVATION STATUS:** P3 **New population** ☒

OBSERVER/S: Katie White, Bianca Theyer **PHONE** 0439 993 451 or 0458 441 432

ROLE: Botanist / Consultant **ORGANISATION:** Bio Diverse Solutions

EMAIL: katie@biodiversesolutions.com.au ; enquiry@biodiversesolutions.com.au

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

~14.8 km north of Esperance townsite. On railway line, 1.25 km south of Bow Rd railway crossing, on western side of track

Reserve No:

DBCA DISTRICT: South coast **LGA:** Esperance Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: 950638.906
Long / Easting: 6257099.608
ZONE: 51H

METHOD USED:
GPS ☐ Differential GPS ☐ Map ☒
No. satellites: _____ Map used: ArcGIS
Boundary polygon captured: ☐ Map scale: _____

LAND TENURE:

Nature reserve ☐	Timber reserve ☐	Private property ☐	Rail reserve ☒	Shire road reserve ☐
National park ☐	State forest ☐	Pastoral lease ☐	MRWA road reserve ☐	Other Crown reserve ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole 366.6 to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☒ Full survey ☐ Area observed (m²): _____

EFFORT: Time spent surveying (minutes): _____ No. of minutes spent / 100 m²: _____

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:**
Alive	2			
Dead				

Area of pop (m²): _____

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

QUADRATS PRESENT: No. _____ Size _____ Data attached ☐ Total area of quadrats (m²): _____

Summary Quad. Totals: Alive				

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

CONDITION OF PLANTS: Healthy ☒ Moderate ☐ Poor ☐ Senescent ☐

COMMENT: Adjacent to track disturbance of railway access track and old laydown area

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NatureMap
Mapping Western Australia's biodiversity

AI005-002 NatureMap 30km Species Report

Created By Guest user on 21/09/2021

Current Names Only	Yes
Core Datasets Only	Yes
Method	'By Circle'
Centre	121° 51' 26" E,33° 43' 14" S
Buffer	30km
Group By	Kingdom

Kingdom	Species	Records
Animalia	713	12892
Chromista	47	94
Fungi	56	144
Plantae	1316	4282
TOTAL	**2132**	**17412**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Animalia					
1.	24559	*Acanthagenys rufogularis (Spiny-cheeked Honeyeater)*			
2.	24260	*Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)*			
3.	24261	*Acanthiza chrysorrhoa (Yellow-rumped Thornbill)*			
4.	24265	*Acanthiza uropygialis (Chestnut-rumped Thornbill)*			
5.		*Acanthopagrus butcheri*			
6.	25242	*Acanthophis antarcticus (Southern Death Adder)*		P3	
7.	24560	*Acanthorhynchus superciliosus (Western Spinebill)*			
8.		*Acariformes sp.*			
9.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
10.	25536	*Accipiter fasciatus (Brown Goshawk)*			
11.		*Acercella falcipes*			
12.	42368	*Acritoscincus trilineatus (Western Three-lined Skink)*			
13.	25755	*Acrocephalus australis (Australian Reed Warbler)*			
14.	41323	*Actitis hypoleucos (Common Sandpiper)*		IA	
15.		*Adversaeschna brevistyla*			
16.		*Aedes (Och.) sp. 1 (nr. nigrithorax) (SAP)*			
17.		*Aedes camptorhynchus*			
18.		*Aedes sp.*			
19.	25544	*Aegotheles cristatus (Australian Owlet-nightjar)*			
20.		*Aetapcus maculatus*			
21.		*Agaue similis*			Y
22.		*Agaue tenuipes*			
23.		*Agauopsis calidictyota*			Y
24.		*Agauopsis miliaris*			
25.		*Agraptocorixa eurynome*			
26.		*Agraptocorixa sp.*			
27.		*Alboa worooa*			
28.		*Aldrichetta forsteri*			
29.		*Allodessus bistrigatus*			
30.		*Allomycterus pilatus*			
31.		*Ammotretis elongatus*			
32.	24860	*Amphibolurus norrisi (Mallee Tree Dragon)*			
33.	25647	*Amytornis striatus (Striated Grasswren)*			
34.		*Aname mainae*			
35.		*Aname tepperi*			
36.	24310	*Anas castanea (Chestnut Teal)*			
37.	24312	*Anas gracilis (Grey Teal)*			
38.	24313	*Anas platyrhynchos (Mallard)*			
39.		*Anas platyrhynchos subsp. domesticus*			
40.	24315	*Anas rhynchotis (Australasian Shoveler)*			
41.	24316	*Anas superciliosa (Pacific Black Duck)*			
42.		*Anax papuensis*			
43.	47414	*Anhinga novaehollandiae (Australasian Darter)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
44.		*Anisops baylii*			
45.		*Anisops hackeri*			
46.		*Anisops hyperion*			
47.		*Anisops sp.*			
48.		*Anisops thienemanni*			
49.	24561	*Anthochaera carunculata (Red Wattlebird)*			
50.	24562	*Anthochaera lunulata (Western Little Wattlebird)*			
51.	24599	*Anthus australis subsp. australis (Australian Pipit)*			
52.		*Antiporus occidentalis*			
53.		*Apocyclops dengizicus*			
54.	24991	*Aprasia repens (Sand-plain Worm-lizard)*			
55.	24994	*Aprasia striolata (Lined Worm-lizard)*			
56.	25554	*Apus pacificus (Fork-tailed Swift, Pacific Swift)*		IA	
57.	24285	*Aquila audax (Wedge-tailed Eagle)*			
58.		*Aracana aurita*			
59.		*Aracana ornata*			
60.		*Araneus necopinus*			
61.		*Araneus senicaudatus*			
62.		*Arcella discoides*			
63.		*Arcella hemisphaerica*			
64.	24208	*Arctocephalus forsteri (New Zealand Fur Seal, long-nosed fur-seal)*		S	
65.	25558	*Ardea ibis (Cattle Egret)*			
66.	41324	*Ardea modesta (great egret, white egret)*			
67.	24340	*Ardea novaehollandiae (White-faced Heron)*			
68.	24341	*Ardea pacifica (White-necked Heron)*			
69.	41326	*Ardenna carneipes (Flesh-footed Shearwater, Fleshy-footed Shearwater)*		T	
70.	24610	*Ardeotis australis (Australian Bustard)*			
71.	25736	*Arenaria interpres (Ruddy Turnstone)*		IA	
72.		*Argiope trifasciata*			
73.		*Arrenurus (Truncaturus) sp. (SAP)*			
74.		*Arripis truttaceus*			Y
75.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
76.	24353	*Artamus cyanopterus (Dusky Woodswallow)*			
77.		*Artoria cingulipes*			
78.		*Artoria flavimana*			
79.		*Artoria taeniifera*			
80.		*Artoriopsis eccentrica*			
81.		*Artoriopsis expolita*			
82.		*Artoriopsis joergi*			
83.		*Ascorhis occidua*			
84.		*Aspasmogaster occidentalis*			
85.		*Asplanchna brightwelli*			
86.		*Asymbolus vincenti*			
87.	41383	*Atelomastix dendritica (Recherche Atelomastix millipede)*		T	
88.		*Atherinosoma wallacei*			
89.		*Aulopus purpurissatus*			
90.		*Austracantha minax*			
91.		*Australocypris insularis*			
92.		*Australomedusa ?baylii (SAP)*			
93.		*Austroagrion cyane*			
94.		*Austrochiltonia sp.*			
95.		*Austrochiltonia subtenuis*			
96.		*Austrolestes analis*			
97.		*Austrolestes annulosus*			
98.		*Austrolestes aridus*			
99.		*Austrolestes io*			
100.		*Austrolestes sp.*			
101.	24318	*Aythya australis (Hardhead)*			
102.		*Barnardius zonarius*			
103.		*Bdelloidea med-large contracted of RJS (SAP)*			
104.		*Bdelloidea sp.*			
105.		*Bdelloidea sp. 2:2*			
106.		*Bennelongia barangaroo lineage*			
107.		*Bennelongia frumenta*			
108.		*Berosus discolor*			
109.		*Berosus munitipennis*			
110.		*Berosus sp.*			
111.		*Bezzia sp. (not 1 or 2)*			
112.		*Bivalvia sp.*			
113.	24319	*Biziura lobata (Musk Duck)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
114.		*Boeckella triarticulata*			
115.		*Brachaluteres jacksonianus*			
116.		*Brachionus angularis*			
117.		*Brachionus cf. nilsoni (SAP)*			
118.		*Brachionus cf. plicatilis (SAP)*			
119.		*Brachionus leydigii*			
120.		*Brachionus plicatilis complex ("towerinninensis" form)*			Y
121.		*Brachionus plicatilis s.l.*			
122.		*Brachionus quadridentatus cluniorbicularis*			
123.		*Brachionus rotundiformis*			
124.		*Brachionus sp.*			
125.		*Brachionus urceolaris s.l.*			
126.		*Bradyagaue exilis*			Y
127.		*Branchipodidae sp.*			
128.		*Brentidae sp.*			
129.	24359	*Burhinus grallarius (Bush Stone-curlew)*			
130.		*Caboncypris kondininensis*			
131.	25598	*Cacomantis flabelliformis (Fan-tailed Cuckoo)*			
132.	24427	*Cacomantis flabelliformis subsp. flabelliformis (Fan-tailed Cuckoo)*			
133.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
134.	24269	*Calamanthus campestris (Rufous Fieldwren)*			
135.		*Calamoecia clitellata*			
136.		*Calamoecia sp. 342 (ampulla variant) (CB)*			
137.		*Calanoida sp.*			
138.	24779	*Calidris acuminata (Sharp-tailed Sandpiper)*		IA	
139.	24780	*Calidris alba (Sanderling)*		IA	
140.	25738	*Calidris canutus (Red Knot, knot)*		IA	
141.	24783	*Calidris canutus subsp. rogersi (Red Knot (north-eastern Siberia))*		T	
142.	24784	*Calidris ferruginea (Curlew Sandpiper)*		T	
143.	24786	*Calidris melanotos (Pectoral Sandpiper)*		IA	
144.	24788	*Calidris ruficollis (Red-necked Stint)*		IA	
145.	24790	*Calidris tenuirostris (Great Knot)*		T	
146.		*Callogobius mucosus*			
147.	24734	*Calyptorhynchus latirostris (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)*		T	
148.	48400	*Calyptorhynchus sp. (white-tailed black cockatoo)*		T	
149.		*Candonocypris novaezelandiae*			
150.		*Capitella sp.*			
151.		*Capitellidae sp.*			
152.	24253	*Capra hircus (Goat)*	Y		
153.		*Capropygia unistriata*			
154.		*Carabidae sp.*			
155.		*Carcharhinus brachyurus*			
156.	25335	*Caretta caretta (Loggerhead Turtle)*		T	
157.		*Ceinidae sp.*			
158.		*Centropyxis aculeata*			
159.		*Centropyxis cassis*			Y
160.		*Centropyxis sp. b (SAP)*			
161.		*Ceratopogonidae sp.*			
162.		*Ceratopogonidae sp. A (SAP)*			
163.	24086	*Cercartetus concinnus (Western Pygmy-possum, Mundarda)*			
164.		*Cercophonius granulosus*			
165.	25551	*Cereopsis novaehollandiae (Cape Barren Goose)*		T	
166.	24320	*Cereopsis novaehollandiae subsp. grisea (Recherche Cape Barren Goose, Cape Barren Goose)*		T	
167.		*Ceriodaphnia n. sp. c (Berner sp.#1) (SAP)*			
168.	25573	*Charadrius bicinctus (Double-banded Plover)*		IA	
169.	25575	*Charadrius leschenaultii (Greater Sand Plover)*		T	
170.	25576	*Charadrius mongolus (Lesser Sand Plover)*		T	
171.	24377	*Charadrius ruficapillus (Red-capped Plover)*			
172.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
173.	47909	*Cheramoeca leucosterna (White-backed Swallow)*			
174.		*Chironomidae sp.*			
175.		*Chironominae sp.*			
176.		*Chironomus aff. alternans (V24) (CB)*			
177.		*Chironomus occidentalis*			
178.		*Chironomus tepperi*			
179.	24980	*Christinus marmoratus (Marbled Gecko)*			
180.		*Chroicocephalus novaehollandiae*			
181.	24288	*Circus approximans (Swamp Harrier)*			

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182.	24289	*Circus assimilis (Spotted Harrier)*			
183.		*Cladopelma curtivalva*			
184.	24774	*Cladorhynchus leucocephalus (Banded Stilt)*			
185.		*Cladotanytarsus sp. A (SAP)*			
186.		*Cletocamptus aff deitersi*			
187.		*Clinohelea sp.*			
188.		*Clynotis albobarbatus*			
189.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
190.	24399	*Columba livia (Domestic Pigeon)*	Y		
191.		*Colurella colurus*			
192.		*Colurella uncinata*			
193.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
194.		*Cordylophora sp.*			Y
195.		*Corixidae sp.*			
196.		*Cormocephalus michaelseni*			
197.	24416	*Corvus bennetti (Little Crow)*			
198.	25592	*Corvus coronoides (Australian Raven)*			
199.	24417	*Corvus coronoides subsp. perplexus (Australian Raven)*			
200.		*Corynoneura sp. (V49) (SAP)*			
201.	24671	*Coturnix pectoralis (Stubble Quail)*			
202.	25701	*Coturnix ypsilophora (Brown Quail)*			
203.		*Coxiella glabra*			
204.		*Coxiella sp.*			
205.		*Coxiella sp. 3 (ABP)*			Y
206.		*Coxiella striatula*			
207.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
208.	25595	*Cracticus tibicen (Australian Magpie)*			
209.	24422	*Cracticus tibicen subsp. dorsalis (White-backed Magpie)*			
210.	25596	*Cracticus torquatus (Grey Butcherbird)*			
211.	25398	*Crinia georgiana (Quacking Frog)*			
212.	25399	*Crinia glauerti (Clicking Frog)*			
213.	25401	*Crinia pseudinsignifera (Bleating Froglet)*			
214.	30888	*Cryptoblepharus pulcher subsp. clarus*			
215.		*Cryptochironomus griseidorsum*			
216.	42385	*Ctenophorus chapmani (Eastern Heath Dragon)*			
217.	25460	*Ctenophorus maculatus (Spotted Military Dragon)*			
218.	24879	*Ctenophorus maculatus subsp. griseus (Spotted Military Dragon)*			
219.	24883	*Ctenophorus ornatus (Ornate Crevice-Dragon)*			
220.	25047	*Ctenotus impar*			
221.	25049	*Ctenotus labillardieri*			
222.		*Culicidae sp.*			
223.		*Culicoides sp.*			
224.		*Curculionidae sp.*			
225.		*Cyclosa trilobata*			
226.	24322	*Cygnus atratus (Black Swan)*			
227.		*Cyprideis australiensis*			
228.		*Cyprididae sp.*			
229.		*Cyprinotus cingalensis*			
230.		*Cyprinotus cingalensis (ex edwardi)*			
231.		*Cytherideidae sp.*			Y
232.		*Daphnia australis*			
233.		*Daphnia carinata*			
234.		*Daphnia queenslandensis*			
235.		*Daphnia sp.*			
236.		*Daphnia truncata*			
237.		*Daphnia wardi*			
238.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
239.		*Dasyhelea sp.*			
240.	24995	*Delma australis*			
241.	25766	*Delma fraseri (Fraser's Legless Lizard)*			
242.	24052	*Delphinus delphis (Common Dolphin)*			
243.		*Dermatopsis sp.*			
244.	25346	*Dermochelys coriacea (Leatherback Turtle)*		T	
245.		*Dero digitata*			
246.		*Diacypris compacta*			
247.		*Diacypris sp.*			
248.		*Diacypris sp. 581 (n. sp.) (SAP)*			Y
249.		*Diacypris spinosa*			
250.		*Diaprepocoris barycephala*			
251.		*Diaprepocoris sp.*			

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252.		*Dicrotendipes conjunctus*			
253.		*Dicrotendipes pseudoconjunctus*			
254.		*Dicrotendipes sp.*			
255.		*Dicrotendipes sp. A (V47) (SAP)*			
256.		*Diodon sp.*			
257.	25618	*Diomedea exulans (Wandering Albatross)*		T	
258.	41403	*Diplodactylus calcicolus (South Coast Gecko)*			
259.		*Dolichopodidae sp.*			
260.		*Dolichopodidae sp. B (SAP)*			
261.	24470	*Dromaius novaehollandiae (Emu)*			
262.		*Dytiscidae sp.*			
263.	25251	*Echiopsis curta (Bardick)*			
264.		*Ecnomidae sp.*			
265.		*Ecnomus pansus/turgidus*			
266.	25096	*Egernia kingii (King's Skink)*			
267.		*Egretta garzetta*			
268.		*Egretta novaehollandiae*			
269.		*Elanus axillaris*			
270.	25250	*Elapognathus coronatus (Crowned Snake)*			
271.	47937	*Elseyornis melanops (Black-fronted Dotterel)*			
272.		*Empididae sp.*			
273.		*Enchytraeidae sp.*			
274.		*Enochrus eyrensis*			
275.		*Enochrus sp.*			
276.		*Eolophus roseicapillus*			
277.		*Ephydridae sp.*			
278.		*Ephydridae sp. 3 (SAP)*			
279.		*Ephydridae sp. 6 (SAP)*			
280.		*Ephydridae sp. 7(SAP)*			
281.	24567	*Epthianura albifrons (White-fronted Chat)*			
282.	24379	*Erythrogonys cinctus (Red-kneed Dotterel)*			
283.	47938	*Esacus magnirostris (Beach Stone-curlew, Beach Thick-knee)*			
284.	24043	*Eubalaena australis (Southern Right Whale)*		T	
285.		*Eubalichthys mosaicus*			
286.		*Euchlanis dilatata*			
287.		*Eucyclops australiensis*			
288.	25744	*Eudyptes chrysocome (Rockhopper Penguin)*			
289.	24816	*Eudyptes pachyrhynchus (Fiordland Penguin)*			
290.	24817	*Eudyptes sclateri (Erect-crested Penguin)*			Y
291.		*Exosphaeroma sp.*			
292.		*Eylais sp.*			
293.	25621	*Falco berigora (Brown Falcon)*			
294.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
295.	25623	*Falco longipennis (Australian Hobby)*			
296.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
297.		*Favonigobius lateralis*			
298.		*Ferrissia petterdi*			
299.		*Filinia longiseta*			
300.	25727	*Fulica atra (Eurasian Coot)*			
301.	24761	*Fulica atra subsp. australis (Eurasian Coot)*			
302.		*Galaxias maculatus*			
303.	39404	*Galaxias truttaceus (Trout Minnow)*			
304.	25730	*Gallirallus philippensis (Buff-banded Rail)*			
305.	42314	*Gavicalis virescens (Singing Honeyeater)*			
306.		*Gea theridioides*			
307.		*Geogarypus taylori*			
308.	34030	*Geotria australis (Pouched Lamprey)*		P3	
309.	25530	*Gerygone fusca (Western Gerygone)*			
310.		*Gianius sp. WA9 (SAP)*			Y
311.		*Gladioferens imparipes*			
312.	47962	*Glyciphila melanops (Tawny-crowned Honeyeater)*			
313.		*Glyptophysa cf. gibbosa (SAP)*			
314.		*Gonorynchus greyi*			
315.	24443	*Grallina cyanoleuca (Magpie-lark)*			
316.	24056	*Grampus griseus (Risso's Dolphin)*			
317.		*Gymnocthebius sp. 1 (SAP)*			
318.		*Gymnometriocnemus sp. B (=V45=sp. A&2=ortho sp. O)*			
319.		*Gymnometriocnemus spp. (not V44 or V45)*			
320.		*Habronestes grimwadei*			
321.	25627	*Haematopus fuliginosus (Sooty Oystercatcher)*			

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322.	24485	*Haematopus fuliginosus subsp. fuliginosus (Sooty Oystercatcher)*			
323.	24487	*Haematopus longirostris (Pied Oystercatcher)*			
324.	24293	*Haliaeetus leucogaster (White-bellied Sea-Eagle)*			
325.	24295	*Haliastur sphenurus (Whistling Kite)*			
326.		*Halicyclops sp. 1 (nr ambiguus) (SAP)*			
327.		*Haliplus fuscatus*			
328.		*Haliplus sp.*			
329.		*Haloniscus searlei*			
330.		*Haloniscus sp.*			
331.		*Harpacticoida sp*			
332.		*Helcogramma decurrens*			
333.	25410	*Heleioporus eyrei (Moaning Frog)*			
334.	25412	*Heleioporus psammophilus (Sand Frog)*			
335.		*Hellyethira litua*			
336.		*Helochares tenuistriatus*			
337.		*Hemicordulia tau*			
338.	25117	*Hemiergis peronii subsp. peronii*			
339.		*Heteroceridae sp.*			
340.		*Heteroclinus sp.*			
341.		*Hexarthra fennica*			
342.		*Hexarthra n. sp.a (cf. fennica with 7/7 unci teeth) (SAP)*			
343.	47965	*Hieraaetus morphnoides (Little Eagle)*			
344.	25734	*Himantopus himantopus (Black-winged Stilt)*			
345.		*Hirudinea sp.*			
346.	24491	*Hirundo neoxena (Welcome Swallow)*			
347.		*Histiophryne cryptacanthus*			
348.		*Hogna crispipes*			
349.		*Holasteron esperance*			Y
350.		*Hyderodes crassus*			
351.		*Hydra sp.*			
352.		*Hydrachnidae sp.*			
353.		*Hydrobiidae sp.*			
354.		*Hydrophilidae sp.*			
355.	48587	*Hydroprogne caspia (Caspian Tern)*		IA	
356.		*Hydryphantes meridianus*			
357.		*Hyphydrus elegans*			
358.		*Idiommata blackwalli*			
359.		*Ilyocryptus cf. timmsi (SAP)*			Y
360.		*Ilyocypris australiensis*			
361.		*Ilyodromus sp.*			
362.		*Ischnura heterosticta heterosticta*			
363.	48588	*Isoodon fusciventer (Quenda, southwestern brown bandicoot)*		P4	
364.		*Isopeda leishmanni*			
365.		*Kathetostoma laeve*			
366.		*Kennethia cristata*			
367.		*Keratella australis*			
368.		*Keratella cf. quadrata (SAP)*			
369.		*Keratella procurva*			
370.		*Keratella quadrata*			
371.		*Kiefferulus intertinctus*			
372.		*Kiefferulus martini*			
373.		*Koenikea nr australica (=verrucosa)*			
374.	24070	*Kogia breviceps (Pygmy Sperm Whale)*			
375.		*Lampona cylindrata*			
376.		*Lancetes lanceolatus*			
377.		*Lancetes sp.*			
378.	24510	*Larus dominicanus (Kelp Gull)*			
379.	24511	*Larus novaehollandiae subsp. novaehollandiae (Silver Gull)*			
380.	25638	*Larus pacificus (Pacific Gull)*			
381.	24512	*Larus pacificus subsp. georgii (Pacific Gull)*			
382.		*Lecane (M) sp. A (ESP023)*			Y
383.		*Lecane [M] sp.*			
384.		*Lecane bulla*			
385.		*Lecane luna*			
386.		*Lecane sp. s.str.*			
387.	24557	*Leipoa ocellata (Malleefowl)*		T	
388.		*Lepadella discoidea*			
389.		*Lepadella patella*			
390.		*Lepidoblennius marmoratus*			
391.		*Lepidoptera (non-pyralid)*			

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392.		*Lepidoptera (non-pyralid) sp. 3 (SAP)*			
393.		*Lepidoptera (non-pyralid) sp. 9 (SAP) (nr Pilbara sp. 3)*			
394.		*Leptatherina presbyteroides*			
395.		*Leptoceridae sp.*			
396.		*Leptocythere lacustris*			
397.		*Leptoichthys fistularius*			
398.	25131	*Lerista distinguenda*			
399.		*Lesquereusia sp.*			
400.		*Leydigia cf. leydigii (SAP)*			
401.	25659	*Lichenostomus leucotis (White-eared Honeyeater)*			
402.	25661	*Lichmera indistincta (Brown Honeyeater)*			
403.	25739	*Limicola falcinellus (Broad-billed Sandpiper)*		IA	
404.		*Limnesia dentifera*			
405.		*Limnichidae sp.*			
406.		*Limnochares australica*			
407.	25415	*Limnodynastes dorsalis (Western Banjo Frog)*			
408.		*Limnophyes vestitus (V41)*			
409.	30932	*Limosa lapponica (Bar-tailed Godwit)*		IA	
410.	25378	*Litoria adelaidensis (Slender Tree Frog)*			
411.	25383	*Litoria cyclorhyncha (Spotted-thighed Frog)*			
412.		*Lohmannella pinggi*			
413.		*Lophoictinia isura*			
414.		*Lotella rhacinus*			
415.	24132	*Macropus fuliginosus (Western Grey Kangaroo)*			
416.		*Macrothrix breviseta*			
417.		*Macrothrix cf. breviseta (SAP)*			
418.		*Macrothrix sp.*			
419.		*Macrotrachela sp. a (SAP)*			Y
420.		*Makaira sp.*			Y
421.	24326	*Malacorhynchus membranaceus (Pink-eared Duck)*			
422.	25654	*Malurus splendens (Splendid Fairy-wren)*			
423.		*Manayunkia n. sp.*			
424.	24583	*Manorina flavigula (Yellow-throated Miner)*			
425.		*Maratus chrysomelas*			
426.	25758	*Megalurus gramineus (Little Grassbird)*			
427.		*Megaporus howittii*			
428.		*Megaporus solidus*			
429.		*Megaporus sp.*			
430.		*Melita kauerti*			
431.	24736	*Melopsittacus undulatus (Budgerigar)*			
432.	25184	*Menetia greyii*			
433.		*Meridiecyclops baylyi*			
434.	24598	*Merops ornatus (Rainbow Bee-eater)*			
435.		*Mesochra baylyi*			
436.		*Mesochra nr flava*			
437.		*Mesocyclops brooksi*			
438.		*Mesostigmata sp.*			
439.		*Microcarbo melanoleucos*			
440.		*Micronecta robusta*			
441.		*Micronecta sp.*			
442.	24213	*Mirounga leonina (Southern Elephant Seal)*			
443.		*Missulena granulosa*			
444.		*Missulena hoggi*			
445.		*Molycria quadricauda*			
446.		*Monohelea sp. 3 (SAP)*			
447.	25192	*Morethia obscura*			
448.	48008	*Morus serrator (Australasian Gannet)*			
449.		*Muraenichthys breviceps*			
450.	24223	*Mus musculus (House Mouse)*	Y		
451.		*Muscidae sp.*			
452.		*Muscidae sp. A (SAP)*			
453.		*Muscidae sp. D (SAP)*			
454.		*Myandra bicincta*			
455.	25610	*Myiagra inquieta (Restless Flycatcher)*			
456.		*Mytilocypris ambiguosa*			
457.		*Mytilocypris mytiloides*			
458.		*Mytilocypris sp.*			
459.		*Naididae (ex Tubificidae)*			
460.		*Necterosoma penicillatus*			
461.		*Necterosoma sp.*			

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462.		*Nematoda sp.*			
463.	25421	*Neobatrachus albipes (White-footed Trilling Frog)*			
464.	25425	*Neobatrachus kunapalari (Kunapalari Frog)*			
465.	25426	*Neobatrachus pelobatoides (Humming Frog)*			
466.	24738	*Neophema elegans (Elegant Parrot)*			
467.	24739	*Neophema petrophila (Rock Parrot)*			
468.	24210	*Neophoca cinerea (Australian Sea-lion)*		T	
469.		*Nephila edulis*			
470.		*Newnhamia fenestrata*			
471.		*Nicodamus mainae*			
472.		*Nilobezzia sp.*			
473.		*Nitocra near sp. 4 (SAP)*			
474.		*Nitocra reducta*			
475.		*Nitocra sp. 4 (SAP)*			
476.		*Nitocra sp. 5 (nr reducta) (SAP)*			
477.		*No invertebrates*			
478.		*Norfolkia incisa*			Y
479.		*Notalina spira*			
480.	48022	*Notamacropus irma (Western Brush Wallaby)*		P4	
481.	25252	*Notechis scutatus (Tiger Snake)*			
482.		*Notholca salina*			
483.	24229	*Notomys mitchellii (Mitchell's Hopping-mouse)*			
484.		*Notonectidae sp.*			
485.		*Novakiella trituberculosa*			
486.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
487.	24194	*Nyctophilus geoffroyi (Lesser Long-eared Bat)*			
488.		*Ochthebius sp.*			
489.		*Ochthebius sp. 4*			Y
490.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
491.		*Oecetis sp.*			
492.		*Oecobius navus*			
493.		*Oligochaeta sp.*			
494.		*Oniscidae sp.*			
495.		*Onychocamptus bengalensis*			
496.		*Opisthopora sp.*			
497.		*Oribatida sp.*			
498.		*Oribatida sp. 1 (PLP)*			Y
499.		*Oribatida sp. 2(PLP)*			Y
500.		*Orthetrum caledonicum*			
501.		*Orthocladiinae sp.*			
502.		*Orthocladiinae sp. G (SAP)*			
503.		*Orthocladiinae sp. I (SAP)*			
504.		*Orthocladiinae sp. J (SAP)*			
505.		*Orthocladiinae sp. P (SAP)*			
506.	24085	*Oryctolagus cuniculus (Rabbit)*	Y		
507.	34016	*Ovis aries (Sheep)*			
508.	24328	*Oxyura australis (Blue-billed Duck)*		P4	
509.	24619	*Pachycephala inornata (Gilbert's Whistler)*			
510.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
511.		*Palaemonetes australis*			
512.		*Paracyclops ?chiltoni (SAP)*			
513.		*Paralimnophyes pullulus (V42)*			
514.		*Paramerina levidensis*			
515.		*Paranais litoralis*			
516.		*Parapallene haddoni*			
517.		*Paraplesiops meleagris*			
518.		*Parartemia longicaudata*			
519.		*Parartemia sp.*			
520.		*Parastacidae sp.*			
521.	25255	*Parasuta nigriceps*			
522.	25681	*Pardalotus punctatus (Spotted Pardalote)*			
523.	25682	*Pardalotus striatus (Striated Pardalote)*			
524.		*Paroster niger*			
525.	24642	*Passer montanus (Eurasian Tree Sparrow)*	Y		
526.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
527.		*Pelsartia humeralis*			
528.		*Pempheris klunzingeri*			
529.		*Pempheris multiradiata*			
530.		*Pescecyclops sp. 434 (Stuart's original arnaudi sensu Sars)*			
531.		*Pescecyclops sp. 442=462=465=CB2 (salinarum in Morton)*			

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532.	48060	*Petrochelidon ariel (Fairy Martin)*			
533.	48061	*Petrochelidon nigricans (Tree Martin)*			
534.	48066	*Petroica boodang (Scarlet Robin)*			
535.		*Pezidae sp.*			
536.	41348	*Pezoporus flaviventris (Western Ground Parrot)*		T	
537.	25697	*Phalacrocorax carbo (Great Cormorant)*			
538.	24665	*Phalacrocorax fuscescens (Black-faced Cormorant)*			
539.	25698	*Phalacrocorax melanoleucos (Little Pied Cormorant)*			
540.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
541.	25699	*Phalacrocorax varius (Pied Cormorant)*			
542.	24409	*Phaps chalcoptera (Common Bronzewing)*			
543.	25587	*Phaps elegans (Brush Bronzewing)*			
544.		*Philodinidae sp.*			
545.		*Phycodurus eques subsp. glauerti*			Y
546.	48071	*Phylidonyris niger (White-cheeked Honeyeater)*			
547.	24596	*Phylidonyris novaehollandiae (New Holland Honeyeater)*			
548.		*Phyllophryne scortea*			
549.		*Phyllopteryx taeniolatus*			
550.		*Physa acuta*			
551.		*Pictilabrus sp.*			
552.		*Placobdelloides sp.*			
553.	24841	*Platalea flavipes (Yellow-billed Spoonbill)*			
554.	24842	*Platalea regia (Royal Spoonbill)*			
555.		*Platycephalus speculator*			
556.	25720	*Platycercus icterotis (Western Rosella)*			
557.	24747	*Platycercus spurius (Red-capped Parrot)*			
558.		*Platycypris baueri*			
559.	24843	*Plegadis falcinellus (Glossy Ibis)*		IA	
560.		*Pleuroxus inermis*			
561.		*Pleuroxus jugosus*			
562.		*Pleuroxus sp.*			
563.		*Plumatella sp.*			
564.		*Plurispina chauliodis*			
565.	24381	*Pluvialis dominica (American Golden Plover)*			
566.	24382	*Pluvialis fulva (Pacific Golden Plover)*		IA	
567.	24383	*Pluvialis squatarola (Grey Plover)*		IA	
568.	25703	*Podargus strigoides (Tawny Frogmouth)*			
569.	25704	*Podiceps cristatus (Great Crested Grebe)*			
570.	25510	*Pogona minor (Dwarf Bearded Dragon)*			
571.	24907	*Pogona minor subsp. minor (Dwarf Bearded Dragon)*			
572.	24681	*Poliocephalus poliocephalus (Hoary-headed Grebe)*			
573.		*Polypedilum nr vespertinus (M2) (SAP)*			
574.		*Polypedilum nr. convexum (SAP)*			
575.		*Polypedilum nubifer*			
576.		*Pomatiopsidae sp.*			
577.	24683	*Pomatostomus superciliosus (White-browed Babbler)*			
578.	25731	*Porphyrio porphyrio (Purple Swamphen)*			
579.	24767	*Porphyrio porphyrio subsp. bellus (Purple Swamphen)*			
580.	24769	*Porzana fluminea (Australian Spotted Crake)*			
581.	24771	*Porzana tabuensis (Spotless Crake)*			
582.		*Pristina jenkinae*			
583.		*Pristina longiseta*			
584.		*Procladius paludicola*			
585.		*Procladius villosimanus*			
586.		*Protogarypinus giganteus*			
587.		*Protozoan sp*			
588.		*Pseudocaranx dentex*			
589.		*Pseudogobius olorum*			
590.	44625	*Pseudohydryphantes doegi (Doeg's Watermite)*		P2	
591.		*Pseudolabrus parilus*			
592.	25259	*Pseudonaja affinis subsp. affinis (Dugite)*			
593.	25263	*Pseudonaja modesta (Ringed Brown Snake)*			
594.	25433	*Pseudophryne guentheri (Crawling Toadlet)*			
595.		*Pseudophycis breviuscula*			
596.		*Pseudorhombus jenynsii*			
597.		*Psychodidae sp.*			
598.	42344	*Purnella albifrons (White-fronted Honeyeater)*			
599.		*Purpureicephalus spurius*			
600.	25008	*Pygopus lepidopodus (Common Scaly Foot)*			
601.		*Pyralidae sp.*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
602.	24243	*Rattus fuscipes (Western Bush Rat)*			
603.	24245	*Rattus rattus (Black Rat)*	Y		
604.		*Raveniella cirrata*			
605.	24776	*Recurvirostra novaehollandiae (Red-necked Avocet)*			
606.		*Reticypris ?pinguis (SAP)*			
607.		*Reticypris clava*			
608.		*Reticypris sp. 557 (n. sp.) (SAP)*			
609.		*Reticypris walbu*			
610.		*Rhantus suturalis*			
611.	30818	*Rhinoplocephalus bicolor (Square-nosed Snake)*			
612.	48096	*Rhipidura albiscapa (Grey Fantail)*			
613.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
614.		*Rhombognathus delicatulus*			
615.		*Rhombognathus tener*			Y
616.		*Rhombognathus vulgaris*			
617.		*Saldula brevicornis*			
618.		*Salmo trutta*			
619.		*Sarscypridopsis aculeata*			
620.		*Scatopsidae sp.*			
621.		*Schizopera clandestina*			
622.		*Sciomyzidae sp.*			
623.		*Scirtidae sp.*			
624.		*Scobinichthys granulatus*			
625.		*Scomber australasicus*			
626.		*Scomberomorus semifasciatus*			
627.	25534	*Sericornis frontalis (White-browed Scrubwren)*			
628.	24279	*Sericornis frontalis subsp. maculatus (White-browed Scrubwren)*			
629.		*Sigara sp.*			
630.		*Sillago bassensis*			
631.		*Simocephalus elizabethae*			
632.		*Simuliidae sp.*			
633.		*Siphonognathus argyrophanes*			
634.		*Siphonognathus radiatus*			
635.	30948	*Smicrornis brevirostris (Weebill)*			
636.	24108	*Sminthopsis crassicaudata (Fat-tailed Dunnart)*			
637.	24112	*Sminthopsis granulipes (White-tailed Dunnart)*			
638.		*Sphaeriidae sp.*			
639.		*Sphaeromatidae sp.*			
640.	24645	*Stagonopleura oculata (Red-eared Firetail)*			
641.		*Staphylinidae sp.*			
642.		*Steatoda grossa*			
643.	48116	*Stercorarius antarcticus (Brown Skua)*		P4	
644.	25643	*Sterna hybrida (Whiskered Tern)*			
645.		*Sternopriscus multimaculatus*			
646.		*Sternopriscus sp.*			
647.	48594	*Sternula nereis (Fairy Tern)*			
648.	24329	*Stictonetta naevosa (Freckled Duck)*			
649.	25655	*Stipiturus malachurus (Southern Emu-wren)*			
650.	24554	*Stipiturus malachurus subsp. westernensis (Southern Emu-wren)*			
651.		*Storena fungina*			
652.		*Stratiomyidae sp.*			
653.	25597	*Strepera versicolor (Grey Currawong)*			
654.	25590	*Streptopelia senegalensis (Laughing Turtle-Dove)*	Y		
655.	25518	*Strophurus spinigerus*			
656.	24943	*Strophurus spinigerus subsp. inornatus*			
657.		*Symphitoneuria wheeleri*			
658.		*Synsphyronus callus*			
659.		*Synsphyronus leo*			Y
660.		*Synsphyronus mimulus*			
661.		*Tabanidae sp.*			
662.	25705	*Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
663.	24331	*Tadorna tadornoides (Australian Shelduck, Mountain Duck)*			
664.		*Talitridae sp.*			
665.		*Tanypodinae sp.*			
666.		*Tanytarsus barbitarsis*			
667.		*Tanytarsus fuscithorax/semibarbitarsus*			
668.		*Tanytarsus nr bispinosus (SAP)*			
669.		*Tardigrada sp.*			
670.	24167	*Tarsipes rostratus (Honey Possum, Noolbenger)*			
671.		*Tasmanocoenis tillyardi*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
672.		*Testudinella patina*			
673.		*Tetragnatha nitens*			
674.		*Tetragnatha valida*			
675.	34007	*Thalassarche chlororhynchos (Atlantic Yellow-nosed Albatross)*		T	
676.	48597	*Thalasseus bergii (Crested Tern)*		IA	
677.	48135	*Thinornis rubricollis (Hooded Plover, Hooded Dotterel)*		P4	
678.		*Threpterius maculosus*			
679.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
680.	25203	*Tiliqua occipitalis (Western Bluetongue)*			
681.	25207	*Tiliqua rugosa subsp. rugosa*			
682.		*Tipulidae sp.*			
683.		*Tipulidae type F (SAP)*			
684.		*Tipulidae type J (SAP)*			Y
685.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
686.	24309	*Todiramphus sanctus subsp. sanctus (Sacred Kingfisher)*			
687.	48141	*Tribonyx ventralis (Black-tailed Native-hen)*			
688.		*Trichocerca sp.*			
689.	24803	*Tringa brevipes (Grey-tailed Tattler)*		P4	
690.	24806	*Tringa glareola (Wood Sandpiper)*		IA	
691.	24808	*Tringa nebularia (Common Greenshank, greenshank)*		IA	
692.	24809	*Tringa stagnatilis (Marsh Sandpiper, little greenshank)*		IA	
693.		*Triplectides australis*			
694.		*Turbellaria sp.*			
695.	48147	*Turnix varius (Painted Button-quail)*			
696.	24851	*Turnix velox (Little Button-quail)*			
697.	30954	*Tursiops aduncus (Indo-Pacific Bottlenose Dolphin)*			
698.	24069	*Tursiops truncatus (Bottlenose Dolphin)*			
699.	24983	*Underwoodisaurus milii (Barking Gecko)*			
700.		*Upeneichthys lineatus*			
701.		*Urodacus novaehollandiae*			
702.	25577	*Vanellus miles (Masked Lapwing)*			
703.	24385	*Vanellus miles subsp. novaehollandiae (Masked Lapwing)*			
704.	24386	*Vanellus tricolor (Banded Lapwing)*			
705.	25225	*Varanus rosenbergi (Heath Monitor)*			
706.		*Venatrix pullastra*			
707.	24206	*Vespadelus regulus (Southern Forest Bat)*			
708.		*Vincentia punctata*			
709.	34113	*Westralunio carteri (Carter's Freshwater Mussel)*		T	
710.		*Xanthagrion erythroneurum*			
711.		*Zeus faber*			
712.		*Zonocypris sp BOS082*			Y
713.	25765	*Zosterops lateralis (Grey-breasted White-eye, Silvereye)*			

Chromista

714.	26443	*Acrocarpia robusta*			
715.	26586	*Caulocystis uvifera*			
716.	35912	*Cladosiphon vermicularis*			
717.	26717	*Cystophora brownii*			
718.	26719	*Cystophora gracilis*			
719.	26722	*Cystophora monilifera*			
720.	26724	*Cystophora pectinata*			
721.	26726	*Cystophora racemosa*			
722.	26727	*Cystophora retorta*			
723.	26729	*Cystophora subfarcinata*			
724.	26764	*Dictyopteris australis*			
725.	26765	*Dictyopteris gracilis*			
726.	26766	*Dictyopteris muelleri*			
727.	26767	*Dictyopteris plagiogramma*			
728.	26776	*Dictyota dichotoma*			
729.	27392	*Dictyota dichotoma var. intricata*			
730.	29537	*Dictyota fastigiata*			
731.	26778	*Dictyota furcellata*			
732.	35218	*Dictyota nigricans*			
733.	35216	*Dictyota paniculata*			
734.	35223	*Dictyota polyclada*			
735.	29536	*Dictyota robusta*			
736.		*Dilophus marginatus*			Y
737.	26791	*Distromium flabellatum*			
738.	26792	*Distromium multifidum*			
739.	26805	*Ecklonia radiata*			
740.	26810	*Encyothalia cliftonii*			

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741.	26947	*Hormosira banksii*			
742.	26949	*Hydroclathrus clathratus*			
743.	27043	*Lobophora variegata*			
744.	27044	*Lobospira bicuspidata*			
745.	27090	*Myriodesma quercifolium*			
746.	27092	*Myriodesma tuberosum*			
747.	27105	*Notheia anomala*			
748.	27152	*Platythalia quercifolia*			
749.	27164	*Polycerea zostericola*			
750.	27239	*Sargassum fallax*			
751.	27246	*Sargassum lacerifolium*			
752.	27254	*Sargassum podacanthum*			
753.	27264	*Scaberia agardhii*			
754.	27273	*Scytothalia dorycarpa*			
755.	27304	*Sporochnus comosus*			
756.	27305	*Sporochnus radiciformis*			
757.	36138	*Zonaria angustata*			
758.	27371	*Zonaria crenata*			
759.	27372	*Zonaria spiralis*			
760.	27373	*Zonaria turneriana*			

Fungi

761.		*Agaricus sp.*			
762.	38754	*Amanita conicobulbosa*			
763.	38758	*Anthracophyllum archeri*			
764.		*Armillaria luteobubalina*			
765.	38762	*Auriscalpium barbatum*			
766.	42106	*Austroparmelina conlabrosa*			
767.	38848	*Bolbitius titubans*			
768.		*Boletus sp.*			
769.	27597	*Buellia disciformis*			
770.		*Caloplaca sp.*			
771.	27663	*Cladia aggregata*			
772.	48177	*Cladia muelleri*			
773.	28208	*Cladonia cervicornis subsp. verticillata*			
774.		*Claviceps purpurea*			
775.		*Coltricia cinnamomea*			
776.		*Coprinus comatus*			
777.	27726	*Diplotomma alboatrum*			
778.	27744	*Flavoparmelia ferax*			
779.	27748	*Flavoparmelia rutidota*			
780.	27750	*Flavoparmelia secalonica*			
781.	44983	*Fulgensia cranfieldii*			
782.		*Fusarium avenaceum*			
783.		*Geastrum sp.*			
784.	38789	*Gymnopilus junonius*			
785.	27777	*Heterodermia obscurata*			
786.	28219	*Hypogymnia subphysodes var. subphysodes*			
787.	45301	*Jackelixia ligulata*			
788.	38802	*Laccocephalum tumulosum*			
789.		*Lecidea sp.*			
790.	46454	*Leucoagaricus leucothites*			
791.	38808	*Limacella pitereka*			
792.	49003	*Macrolepiota turbinata*			
793.	38816	*Omphalotus nidiformis*			
794.	49073	*Peziza austrogeaster*			
795.		*Physcia sp.*			
796.		*Phytophthora cinnamomi*			
797.		*Pisolithus sp.*			
798.		*Placoasterella baileyi*			
799.	38824	*Pleurotus australis*			
800.	48835	*Pycnoporus coccineus*			
801.	28027	*Ramalina celastri*			
802.	28224	*Ramalina inflata subsp. australis*			
803.	28034	*Ramboldia crassithallina*			
804.		*Rhizopogon luteolus*			
805.		*Schizophyllum commune*			
806.	28065	*Teloschistes chrysophthalmus*			
807.	28066	*Teloschistes sieberianus*			
808.	28069	*Thelotrema lepadinum*			
809.	45838	*Tilletia ehrhartae*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
810.		*Uromycladium tepperianum*			
811.	28086	*Usnea dasaea*			
812.	28087	*Usnea inermis*			
813.	45909	*Ustilago tritici*			
814.		*Verrucaria sp.*			
815.	29970	*Xanthoparmelia conranensis*			
816.	28327	*Xanthoparmelia semiviridis*			
Plantae					
817.	14608	*Acacia aemula subsp. aemula*			
818.	41461	*Acacia bartlei*		P3	
819.	3239	*Acacia biflora*			
820.	3244	*Acacia brachyclada*			
821.	16114	*Acacia bracteolata*			
822.	3256	*Acacia chrysella*			
823.	3262	*Acacia cochlearis (Rigid Wattle)*			
824.	3268	*Acacia conniana*			
825.	3276	*Acacia crassuloides*			
826.	3277	*Acacia crispula*			
827.	12672	*Acacia cupularis*			
828.	3278	*Acacia curvata*			
829.	3282	*Acacia cyclops (Coastal Wattle)*			
830.	3289	*Acacia delphina*			
831.	3296	*Acacia dermatophylla*			
832.	16123	*Acacia evenulosa*			
833.	3349	*Acacia glaucoptera (Flat Wattle)*			
834.	3353	*Acacia gonophylla*			
835.	3368	*Acacia heteroclita*			
836.	3408	*Acacia lasiocalyx (Silver Wattle, Wilyurwur)*			
837.	11519	*Acacia lasiocarpa var. bracteolata*			
838.	15476	*Acacia latipes subsp. latipes*			
839.	3436	*Acacia maxwellii*			
840.	16134	*Acacia mutabilis subsp. mutabilis*			
841.	3453	*Acacia myrtifolia*			
842.	3457	*Acacia nigricans*			
843.	16138	*Acacia pachyphylla*			
844.	12265	*Acacia patagiata*			
845.	16139	*Acacia pinguiculosa subsp. teretifolia*			
846.	16141	*Acacia pravifolia*			
847.	3496	*Acacia preissiana*			
848.	3498	*Acacia pritzeliana*			
849.	15482	*Acacia pulchella var. goadbyi*			
850.	3504	*Acacia pycnantha (Golden Wattle)*	Y		
851.	16147	*Acacia rostellata*			
852.	3525	*Acacia rostellifera (Summer-scented Wattle)*			
853.	3527	*Acacia saligna (Orange Wattle, Kudjong)*			
854.	30034	*Acacia saligna subsp. pruinescens*			
855.	30032	*Acacia saligna subsp. saligna*			
856.	3548	*Acacia sorophylla*			
857.	15485	*Acacia sphacelata subsp. recurva*			
858.	3564	*Acacia subcaerulea*			
859.	13505	*Acacia sulcata var. planoconvexa*			
860.	3582	*Acacia triptycha*			
861.	15715	*Acacia varia var. parviflora*			
862.	7812	*Achillea millefolium (Yarrow, Milfoil)*	Y		
863.	6295	*Acrotriche cordata (Coast Ground Berry)*			
864.	20328	*Acrotriche sp. Israelite Bay (M. Hislop & F. Hort MH 2630)*			
865.	6203	*Actinotus glomeratus*			
866.	26449	*Adelophycus corneus*			
867.	43201	*Adelphacme minima*		P3	
868.	1773	*Adenanthos cuneatus (Coastal Jugflower)*			
869.	4582	*Adriana quadripartita (Bitter Bush)*			
870.	20331	*Aeonium arboreum*	Y		
871.	20330	*Agonis baxteri*			
872.	23501	*Agrostocrinum scabrum subsp. scabrum*			
873.	185	*Aira cupaniana (Silvery Hairgrass)*	Y		
874.	1719	*Allocasuarina acuaria*			
875.	1730	*Allocasuarina helmsii*			
876.	1732	*Allocasuarina humilis (Dwarf Sheoak)*			
877.	13907	*Allocasuarina lehmanniana subsp. ecarinata*			
878.	1739	*Allocasuarina thuyoides (Horned Sheoak)*			

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879.	48624	*Althenia cylindrocarpa*			
880.	48620	*Althenia preissii*			
881.	4905	*Alyogyne hakeifolia*			
882.	43023	*Alyogyne sp. Hutt River (B.J. Lepschi & T.R. Lally 2310)*			
883.	35909	*Amansia pinnatifida*			
884.	2655	*Amaranthus albus (Tumbleweed)*	Y		
885.	37280	*Amaranthus muricatus*	Y		Y
886.	2669	*Amaranthus retroflexus (Redroot Amaranth)*	Y		
887.	126	*Amphibolis antarctica (Sea Nymph)*			
888.	127	*Amphibolis griffithii*			
889.	13380	*Amphibromus nervosus*			
890.	195	*Amphipogon avenaceus*			
891.	200	*Amphipogon turbinatus*			
892.	1058	*Anarthria gracilis*			
893.	1059	*Anarthria humilis*			
894.	1060	*Anarthria laevis*			
895.	1061	*Anarthria polyphylla*			
896.	1062	*Anarthria prolifera*			
897.	1063	*Anarthria scabra*			
898.	6316	*Andersonia macranthera*			
899.	6318	*Andersonia parvifolia*			
900.	29108	*Andersonia sp. Kulin (J.M. Powell 2588)*			
901.	6321	*Andersonia sprengelioides*			
902.	40903	*Androcalva aphrix*			
903.	7833	*Angianthus preissianus*			
904.	12102	*Anigozanthos bicolor subsp. minor*		T	
905.	1415	*Anigozanthos rufus (Red Kangaroo Paw)*			
906.	6949	*Anthocercis littorea (Yellow Tailflower)*			
907.	11555	*Anthocercis viscosa subsp. caudata*			
908.	7411	*Anthotium humile (Dwarf Anthotium)*			
909.	26475	*Antithamnion hanovioides*			
910.	19627	*Aotus sp. Esperance (P.G. Wilson 7904)*			
911.	43548	*Aphelia sp. Albany (B.G. Briggs 596)*			
912.	6210	*Apium annuum*			
913.	6211	*Apium prostratum (Sea Celery)*			
914.	12040	*Apium prostratum subsp. prostratum var. prostratum (Sea Celery)*			
915.	7838	*Arctotheca calendula (Cape Weed, African Marigold)*	Y		
916.	26483	*Areschougia congesta*			
917.	26484	*Areschougia ligulata*			
918.	13327	*Argentipallium niveum*			
919.	13329	*Argentipallium tephrodes*			
920.	26485	*Asparagopsis armata*			
921.	8779	*Asparagus asparagoides (Bridal Creeper)*	Y		
922.	1364	*Asphodelus fistulosus (Onion Weed)*	Y		
923.	20347	*Astartea astarteoides*			
924.	42787	*Astartea reticulata*		P3	
925.	7850	*Asteridea nivea*			
926.	6326	*Astroloma epacridis*			
927.	6335	*Astroloma prostratum (Cranberry Heath)*			
928.	14503	*Astroloma sp. Grass Patch (A.J.G. Wilson 110)*		P2	
929.	6338	*Astroloma tectum*			
930.	2457	*Atriplex exilifolia*			
931.	2471	*Atriplex prostrata (Hastate Orache)*	Y		
932.	2475	*Atriplex semibaccata (Berry Saltbush)*			
933.	2481	*Atriplex vesicaria (Bladder Saltbush)*			
934.	17231	*Austrostipa acrociliata*			
935.	17236	*Austrostipa drummondii*			
936.	17240	*Austrostipa flavescens*			
937.	17241	*Austrostipa hemipogon*			
938.	17242	*Austrostipa juncifolia*			
939.	17244	*Austrostipa macalpinei*			
940.	35317	*Austrostipa mundula*		P3	
941.	231	*Avellinia michelii*	Y		
942.	233	*Avena barbata (Bearded Oat)*	Y		
943.	5352	*Baeckea latens*			
944.	20674	*Baeckea sp. Esperance (A.G. Gunness AG 2435)*			
945.	20620	*Baeckea sp. Gibson (K.R. Newbey 11084)*		P1	
946.	5373	*Baeckea uncinella*			
947.	32681	*Banksia armata (Prickly Dryandra)*			
948.	32683	*Banksia armata var. ignicida*			

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949.	1805	*Banksia blechnifolia*			
950.	1832	*Banksia media (Southern Plains Banksia)*			
951.	32203	*Banksia nivea subsp. nivea*			
952.	1836	*Banksia nutans (Nodding Banksia)*			
953.	11360	*Banksia nutans var. nutans (Nodding Banksia)*			
954.	32198	*Banksia obovata (Wedge-leaved Dryandra)*			
955.	32197	*Banksia obtusa (Shining Honeypot)*			
956.	1837	*Banksia occidentalis (Red Swamp Banksia)*			
957.	1839	*Banksia petiolaris*			
958.	1840	*Banksia pilostylis*			
959.	32143	*Banksia prolata*			
960.	32145	*Banksia prolata subsp. calcicola*		P4	
961.	1843	*Banksia pulchella (Teasel Banksia)*			
962.	1845	*Banksia repens (Creeping Banksia)*			
963.	1850	*Banksia speciosa (Showy Banksia)*			
964.	32035	*Banksia tenuis*			
965.	32036	*Banksia tenuis var. tenuis*			
966.	1856	*Banksia violacea (Violet Banksia)*			
967.	32315	*Barbula calycina*			
968.	32320	*Barbula subcalycina*			
969.	741	*Baumea articulata (Jointed Rush)*			
970.	743	*Baumea juncea (Bare Twigrush)*			
971.	745	*Baumea preissii*			
972.	5383	*Beaufortia empetrifolia (South Coast Beaufortia)*			
973.	5388	*Beaufortia micrantha (Little Bottlebrush, Small-leaved Beaufortia)*			
974.	5391	*Beaufortia schaueri (Pink Beaufortia, Pink Bottlebrush)*			
975.	34262	*Beyeria physaphylla*		P1	
976.	34297	*Beyeria sulcata var. gracilis*			
977.	3154	*Billardiera coriacea*			
978.	25798	*Billardiera fusiformis (Australian Bluebell)*			
979.	25796	*Billardiera heterophylla (Australian Bluebell)*			
980.	3160	*Billardiera lehmanniana (Kurup)*			
981.	7856	*Blennospora drummondii*			
982.	749	*Bolboschoenus caldwellii (Marsh Club-rush)*			
983.	4403	*Boronia alata (Winged Boronia)*			
984.	4404	*Boronia albiflora*			
985.	16627	*Boronia baeckeacea subsp. baeckeacea*			
986.	4409	*Boronia coerulescens*			
987.	4411	*Boronia crassifolia*			
988.	4416	*Boronia denticulata*			
989.	4425	*Boronia inornata (Desert Boronia)*			
990.	15965	*Boronia inornata subsp. inornata*			
991.	15966	*Boronia inornata subsp. leptophylla*			
992.	11381	*Boronia ramosa subsp. anethifolia*			
993.	4441	*Boronia spathulata (Boronia)*			
994.	4446	*Boronia tetrandra (Yellow Boronia)*			
995.	1267	*Borya constricta*			
996.	30234	*Bossiaea barbarae*			
997.	3707	*Bossiaea dentata*			
998.	3716	*Bossiaea preissii*			
999.	3718	*Bossiaea rufa*			
1000.	26518	*Botryocladia sonderi*			
1001.	30138	*Brachyloma geissoloma*			
1002.	17922	*Brachyloma mogin*		P3	
1003.	7871	*Brachyscome ciliaris*			
1004.	7874	*Brachyscome eyrensis*			
1005.	11187	*Brassica barrelieri subsp. oxyrrhina (Smooth-stem Turnip)*	Y		
1006.	2999	*Brassica rapa*	Y		
1007.	3000	*Brassica tournefortii (Mediterranean Turnip)*	Y		
1008.	2995	*Brassica x napus*	Y		
1009.	244	*Briza maxima (Blowfly Grass)*	Y		
1010.	245	*Briza minor (Shivery Grass)*	Y		
1011.	248	*Bromus catharticus (Prairie Grass)*	Y		
1012.	249	*Bromus diandrus (Great Brome)*	Y		
1013.	250	*Bromus hordeaceus (Soft Brome)*	Y		
1014.	26525	*Bryopsis plumosa*			
1015.	1277	*Caesia occidentalis*			
1016.	3001	*Cakile edentula (American Sea Rocket)*	Y		
1017.	3002	*Cakile maritima (Sea Rocket)*	Y		
1018.	13853	*Caladenia arrecta*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1019.	15333	*Caladenia attingens subsp. gracillima*			
1020.	15334	*Caladenia brevisura*			
1021.	1580	*Caladenia cairnsiana (Zebra Orchid)*			
1022.	15342	*Caladenia cruscula*			
1023.	15343	*Caladenia decora*			
1024.	15348	*Caladenia flava subsp. flava*			
1025.	1594	*Caladenia graminifolia*			
1026.	15353	*Caladenia heberleana*			
1027.	18023	*Caladenia horistes*			
1028.	1599	*Caladenia latifolia (Pink Fairy Orchid)*			
1029.	15362	*Caladenia longicauda subsp. crassa*			
1030.	13860	*Caladenia longicauda subsp. rigidula*			
1031.	1605	*Caladenia marginata (White Fairy Orchid)*			
1032.	15374	*Caladenia pachychila*			
1033.		*Caladenia sp.*			
1034.	1589	*Caladenia x ericksoniae*			
1035.	2845	*Calandrinia brevipedata (Short-stalked Purslane)*			
1036.	2846	*Calandrinia calyptrata (Pink Purslane)*			
1037.	2848	*Calandrinia corrigioloides (Strap Purslane)*			
1038.	48569	*Calandrinia sp. Gypsum (F. Obbens & L. Hancock FO 10/14)*			
1039.	40827	*Calandrinia tholiformis*			
1040.	19084	*Calectasia gracilis*			
1041.	10861	*Callistachys lanceolata (Wonnich)*			
1042.	5395	*Callistemon phoeniceus (Lesser Bottlebrush, Dubarda)*			
1043.	93	*Callitris drummondii (Drummond's Cypress Pine)*			
1044.	96	*Callitris preissii (Rottnest Island Pine, Maro)*			
1045.	97	*Callitris roei (Roe's Cypress Pine)*			
1046.		*Callophyllis lambertii*			
1047.	26538	*Callophyllis rangiferina*			
1048.	5407	*Calothamnus gibbosus*			
1049.	5409	*Calothamnus gracilis*			
1050.	35816	*Calothamnus quadrifidus subsp. quadrifidus*			
1051.	5449	*Calytrix decandra (Pink Starflower)*			
1052.	5450	*Calytrix depressa*			
1053.	48451	*Calytrix hirta*			
1054.	5465	*Calytrix leschenaultii*			
1055.	5483	*Calytrix tetragona (Common Fringe-myrtle)*			
1056.	3003	*Camelina sativa (False Flax)*	Y		
1057.	32461	*Campylopus bicolor var. bicolor*			
1058.	32338	*Campylopus introflexus*	Y		
1059.	43241	*Carex thecata*			
1060.	2796	*Carpobrotus modestus (Inland Pigface)*			
1061.	2798	*Carpobrotus virescens (Coastal Pigface, Kolboko, Bain)*			
1062.	26546	*Carpopeltis elata*			
1063.	26547	*Carpopeltis phyllophora*			
1064.	3008	*Carrichtera annua (Ward's Weed)*	Y		
1065.	2952	*Cassytha glabella (Tangled Dodder Laurel)*			
1066.	11211	*Cassytha glabella forma dispar*			
1067.	2957	*Cassytha racemosa (Dodder Laurel)*			
1068.	11242	*Cassytha racemosa forma pilosa*			
1069.	26555	*Caulerpa brownii*			
1070.	26562	*Caulerpa fergusonii*			
1071.	26563	*Caulerpa flexilis*			
1072.	48455	*Caulerpa geminata*			
1073.	26564	*Caulerpa hedleyi*			
1074.	26570	*Caulerpa obscura*			
1075.	26571	*Caulerpa papillosa*			
1076.	26573	*Caulerpa racemosa*			
1077.	26574	*Caulerpa scalpelliformis*			
1078.	26583	*Caulerpa vesiculifera*			
1079.	760	*Caustis dioica*			
1080.	7915	*Centaurea calcitrapa (Star Thistle)*	Y		
1081.	7916	*Centaurea melitensis (Maltese Cockspur, Malta Thistle)*	Y		
1082.	6539	*Centaurium erythraea (Common Centaury)*	Y		
1083.	6214	*Centella asiatica*			
1084.	35322	*Centranthus ruber subsp. ruber*	Y		
1085.	1121	*Centrolepis aristata (Pointed Centrolepis)*			
1086.	13122	*Centrolepis cephaloformis subsp. cephaloformis*			
1087.	1130	*Centrolepis humillima (Dwarf Centrolepis)*			
1088.	1134	*Centrolepis polygyna (Wiry Centrolepis)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1089.	13125	*Centrolepis strigosa subsp. strigosa*			
1090.	26599	*Ceramium puberulum*			
1091.	2889	*Cerastium glomeratum (Mouse Ear Chickweed)*	Y		
1092.	26607	*Chaetomorpha aerea*			
1093.	1280	*Chamaescilla corymbosa (Blue Squill)*			
1094.	1281	*Chamaescilla spiralis*			
1095.	5489	*Chamelaucium axillare (Esperance Waxflower)*			
1096.	5491	*Chamelaucium ciliatum*			
1097.	5495	*Chamelaucium megalopetalum (Large Waxflower)*			
1098.	26620	*Champia viridis*			Y
1099.	26621	*Champia zostericola*			
1100.	1513	*Chasmanthe floribunda (African Cornflag)*	Y		
1101.	31	*Cheilanthes austrotenuifolia*			
1102.	2490	*Chenopodium glaucum (Glaucous Goosefoot)*	Y		
1103.	2494	*Chenopodium murale (Nettle-leaf Goosefoot)*	Y		
1104.	272	*Chloris virgata (Feathertop Rhodes Grass)*	Y		
1105.	7925	*Chondrilla juncea (Skeleton Weed)*	Y		
1106.	17689	*Chordifex laxus*			
1107.	17834	*Chordifex sphacelatus*			
1108.	13112	*Chorizema aciculare subsp. aciculare*			
1109.	3758	*Chorizema ilicifolium (Holly Flame Pea)*			
1110.	3759	*Chorizema nervosum*			
1111.	13108	*Chorizema obtusifolium*			
1112.	3763	*Chorizema uncinatum*			
1113.	6543	*Cicendia filiformis (Slender Cicendia)*	Y		
1114.	7937	*Cirsium vulgare (Spear Thistle, Scotch Thistle)*	Y		
1115.	48668	*Cladophora subsimplex*			
1116.	26663	*Cladurus elatus*			
1117.	26664	*Claudea elegans*			
1118.	10804	*Clematis linearifolia*			
1119.	2929	*Clematis pubescens (Common Clematis)*			
1120.	26666	*Cliftonaea pectinata*			
1121.	26672	*Codium galeatum*			
1122.	26678	*Codium muelleri*			
1123.	26679	*Codium perriniae*			
1124.	26683	*Codium spongiosum*			
1125.	26685	*Coelarthrum cliftonii*			
1126.	26686	*Coelarthrum opuntia*			
1127.	6342	*Coleanthera coelophylla*		P1	
1128.	14664	*Comesperma calcicola*		P3	
1129.	4552	*Comesperma confertum*			
1130.	4553	*Comesperma drummondii (Drummond's Milkwort)*			
1131.	4554	*Comesperma flavum*			
1132.	14663	*Comesperma griffinii*		P2	
1133.	4555	*Comesperma integerrimum*			
1134.	4563	*Comesperma spinosum (Spiny Milkwort)*			
1135.	4564	*Comesperma virgatum (Milkwort)*			
1136.	4566	*Comesperma volubile (Love Creeper)*			
1137.	48634	*Commersonia corniculata*			
1138.	40923	*Commersonia craurophylla (Brittle Leaved Rulingia)*			
1139.	40924	*Commersonia rotundifolia (Round-leaved Rulingia)*		P3	
1140.	1868	*Conospermum distichum*			
1141.	15518	*Conospermum filifolium subsp. filifolium*			
1142.	16349	*Conospermum leianthum subsp. leianthum*			
1143.	16350	*Conospermum leianthum subsp. orientale*			
1144.	14003	*Conospermum quadripetalum*		P2	
1145.	15611	*Conospermum stoechadis subsp. stoechadis (Common Smokebush)*			
1146.	1883	*Conospermum teretifolium (Spider Smokebush)*			
1147.	6346	*Conostephium marchantiorum*		P3	
1148.	1424	*Conostylis bealiana*			
1149.	1426	*Conostylis breviscapa*			
1150.	1439	*Conostylis lepidospermoides (Sedge Conostylis)*		T	
1151.	1445	*Conostylis phathyrantha*			
1152.	11923	*Conostylis seorsiflora subsp. seorsiflora*			
1153.	1453	*Conostylis serrulata*			
1154.	5500	*Conothamnus aureus*			
1155.	7939	*Conyza bonariensis (Flaxleaf Fleabane)*	Y		
1156.		*Conyza sp.*			
1157.	20074	*Conyza sumatrensis*	Y		
1158.	7418	*Coopernookia polygalacea*			

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1159.	7419	*Coopernookia strophiolata*			
1160.	2891	*Corrigiola litoralis (Strapwort)*	Y		
1161.	1624	*Corybas despectans*			
1162.	12012	*Corynotheca micrantha var. panda*			
1163.	7943	*Cotula australis (Common Cotula)*			
1164.	7944	*Cotula bipinnata (Ferny Cotula)*	Y		
1165.	7945	*Cotula coronopifolia (Waterbuttons)*	Y		
1166.	7946	*Cotula cotuloides (Smooth Cotula)*			
1167.	26701	*Craspedocarpus blepharicarpus*			
1168.	26704	*Craspedocarpus venosus*			
1169.	3136	*Crassula alata*	Y		
1170.	3137	*Crassula colorata (Dense Stonecrop)*			
1171.	3139	*Crassula exserta*			
1172.	3142	*Crassula natans*	Y		
1173.	15706	*Crassula natans var. minus*	Y		
1174.	16188	*Cryptandra minutifolia subsp. brevistyla*			
1175.	9076	*Cryptandra myriantha*			
1176.	4809	*Cryptandra pungens*			
1177.	26709	*Cryptonemia undulata*			
1178.	48865	*Cucumis myriocarpus subsp. myriocarpus*	Y		
1179.	26712	*Curdiea obesa*			
1180.	20717	*Cyanicula aperta*			
1181.	15114	*Cyanicula gemmata*			
1182.	769	*Cyathochaeta clandestina*			
1183.	17618	*Cyathochaeta equitans*			
1184.	42220	*Cyathostemon ambiguus*			
1185.	43962	*Cyathostemon sp. Esperance (A. Fairall 2431)*		P1	
1186.	20422	*Cyathostemon tenuifolius*			
1187.	40661	*Cycnogeton lineare*			
1188.	6680	*Cynoglossum australe (Australian Hound's-tongue)*			
1189.	783	*Cyperus congestus (Dense Flat-sedge)*	Y		
1190.	801	*Cyperus laevigatus*	Y		
1191.	815	*Cyperus tenellus (Tiny Flatsedge)*	Y		
1192.	2779	*Cypselocarpus haloragoides*			
1193.	10964	*Cyrtostylis robusta*			
1194.	10942	*Cyrtostylis tenuissima*			
1195.	287	*Dactylis glomerata (Cocksfoot)*	Y		
1196.	18632	*Dampiera angulata subsp. angulata*			
1197.	7439	*Dampiera fasciculata (Bundled-leaf Dampiera)*			
1198.	7461	*Dampiera parvifolia (Many-bracted Dampiera)*			
1199.	7471	*Dampiera sacculata (Pouched Dampiera)*			
1200.	7474	*Dampiera sericantha*		P3	
1201.	7485	*Dampiera triloba*		P3	
1202.	5510	*Darwinia diosmoides*			
1203.	20451	*Darwinia sp. Gibson (R.D. Royce 3569)*		P1	
1204.	35618	*Darwinia sp. Karonie (K. Newbey 8503)*			
1205.	18574	*Darwinia sp. Ravensthorpe (G.J. Keighery 8030)*			
1206.	5533	*Darwinia vestita (Pom-pom Darwinia)*			
1207.	26734	*Dasya clavigera*			
1208.	26735	*Dasya cliftonii*			
1209.	26736	*Dasya crinita*			Y
1210.	26738	*Dasya elongata*			
1211.	26739	*Dasya extensa*			
1212.	26749	*Dasya villosa*			
1213.	6218	*Daucus glochidiatus (Australian Carrot)*			
1214.	16736	*Daviesia apiculata*			
1215.	15507	*Daviesia incrassata subsp. reversifolia*			
1216.	3818	*Daviesia lancifolia*			
1217.	14892	*Daviesia major*			
1218.	3823	*Daviesia nematophylla*			
1219.	12817	*Daviesia pauciflora*		P3	
1220.	3844	*Daviesia teretifolia*			
1221.	26756	*Delisea hypneoides*			
1222.	26757	*Delisea pulchra*			
1223.	16593	*Desmocladus biformis*		P3	
1224.	16595	*Desmocladus flexuosus*			
1225.	46362	*Desmocladus lateriflorus*			
1226.	299	*Deyeuxia quadriseta (Reed Bentgrass)*			
1227.	16326	*Dianella brevicaulis*			
1228.	26761	*Dictyomenia harveyana*			

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1229.	26762	*Dictyomenia sonderi*			
1230.	26770	*Dictyosphaeria sericea*			
1231.	32346	*Didymodon torquatus*			
1232.	38260	*Dielsiodoxa oligarrhenoides*			
1233.	3862	*Dillwynia acerosa*			
1234.	3864	*Dillwynia divaricata*			
1235.	3866	*Dillwynia uncinata (Silky Parrot Pea)*			
1236.	3012	*Diplotaxis tenuifolia (Sand Rocket)*	Y		
1237.	3867	*Dipogon lignosus (Dolichos Pea)*	Y		
1238.	19649	*Disa bracteata*	Y		
1239.	7054	*Dischisma arenarium*	Y		
1240.	11681	*Disphyma crassifolium subsp. clavellatum*			
1241.	327	*Distichlis distichophylla*			
1242.	7961	*Dittrichia graveolens (Stinkwort)*	Y		
1243.	12942	*Diuris concinna*			
1244.	12941	*Diuris conspicillata*			Y
1245.	42231	*Diuris decrementa*			
1246.	33159	*Diuris immaculata*			Y
1247.	1634	*Diuris laxiflora (Bee Orchid)*			
1248.	46873	*Diuris littoralis*			
1249.	12937	*Diuris pulchella*			
1250.	4756	*Dodonaea caespitosa*			
1251.	4757	*Dodonaea ceratocarpa*			
1252.	26795	*Doxodasya bolbochaete*			
1253.	26796	*Doxodasya lanuginosa*			
1254.	1640	*Drakaea glyptodon (King-in-his-carriage)*			
1255.	48726	*Drosera australis*			
1256.	48751	*Drosera drummondii*			
1257.	3098	*Drosera glanduligera (Pimpernel Sundew)*			
1258.	3102	*Drosera huegelii (Bold Sundew)*			
1259.	3105	*Drosera leucoblasta (Wheel Sundew)*			
1260.	3109	*Drosera menziesii (Pink Rainbow)*			
1261.	3113	*Drosera neesii (Jewel Rainbow)*			
1262.	3114	*Drosera nitidula (Shining Sundew)*			
1263.	3128	*Drosera ramellosa (Branched Sundew)*			
1264.	13227	*Drosera sargentii*			Y
1265.	3130	*Drosera scorpioides (Shaggy Sundew)*			
1266.	49090	*Drosera sp. Branched styles (S.C. Coffey 193)*			
1267.	48708	*Drosera trichocaulis*			
1268.	3135	*Drosera zonaria (Painted Sundew)*			
1269.	33501	*Dysphania cristata (Crested Goosefoot)*			
1270.	33480	*Dysphania pumilio (Clammy Goosefoot)*			
1271.	32351	*Eccremidium pulchellum*			
1272.	26803	*Echinothamnion hystrix*			
1273.	347	*Ehrharta calycina (Perennial Veldt Grass)*	Y		
1274.	349	*Ehrharta longiflora (Annual Veldt Grass)*	Y		
1275.		*Ehrharta sp.*			
1276.	822	*Eleocharis acuta (Common Spikerush)*			
1277.	831	*Eleocharis sphacelata (Tall Spikerush, Djabren)*			
1278.	1643	*Elythranthera brunonis (Purple Enamel Orchid)*			
1279.	1644	*Elythranthera emarginata (Pink Enamel Orchid)*			
1280.	1645	*Epiblema grandiflorum (Babe-in-a-cradle)*			
1281.	11570	*Epilobium billardiereanum subsp. billardiereanum (Smooth Willow Herb)*			
1282.	374	*Eragrostis cilianensis (Stinkgrass)*	Y		
1283.	376	*Eragrostis curvula (African Lovegrass)*	Y		
1284.	7180	*Eremophila alternifolia (Poverty Bush)*			
1285.	28351	*Eremophila glabra subsp. Scaddan (C. Turley s.n. 10/11/2005)*		T	
1286.	7264	*Eremophila saligna (Willowy Eremophila)*			
1287.	14633	*Eremophila subfloccosa subsp. glandulosa*			
1288.	1646	*Eriochilus dilatatus (White Bunny Orchid)*			
1289.	15413	*Eriochilus dilatatus subsp. undulatus*			
1290.	13866	*Eriochilus pulchellus*			
1291.	4336	*Erodium moschatum (Musky Crowfoot)*	Y		
1292.	26823	*Erythroclonium sonderi*			
1293.	5550	*Eucalyptus angulosa (Ridge-fruited Mallee, Kwarar)*			
1294.	19508	*Eucalyptus calycogona subsp. calycogona*			
1295.	13518	*Eucalyptus captiosa*			
1296.	20292	*Eucalyptus conglobata subsp. conglobata*			
1297.	20293	*Eucalyptus conglobata subsp. perata*			
1298.	5604	*Eucalyptus cooperiana (Many-flowered Mallee, Merrit)*			

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1299.	5605	*Eucalyptus cornuta (Yate, Yeid)*			
1300.	5611	*Eucalyptus cylindriflora (White Mallee)*			
1301.	5616	*Eucalyptus decurva (Slender Mallee)*			
1302.	12870	*Eucalyptus densa*			
1303.	12869	*Eucalyptus densa subsp. densa*			
1304.	5624	*Eucalyptus discreta*			
1305.	13517	*Eucalyptus dolichorhyncha*		P4	
1306.	5627	*Eucalyptus doratoxylon (Spearwood Mallee, Keidjngund)*			
1307.	5637	*Eucalyptus eremophila (Tall Sand Mallee)*			
1308.	12377	*Eucalyptus extensa*			
1309.	16043	*Eucalyptus famelica*		P3	
1310.	5648	*Eucalyptus flocktoniae (Merrit, Merid)*			
1311.	13022	*Eucalyptus foliosa*		P3	
1312.	5652	*Eucalyptus forrestiana (Fuchsia Gum)*			
1313.	14277	*Eucalyptus fraseri subsp. fraseri*			
1314.	18216	*Eucalyptus globulus*	Y		
1315.	5659	*Eucalyptus gomphocephala (Tuart, Duart)*			
1316.	5669	*Eucalyptus halophila*			
1317.	5675	*Eucalyptus incrassata (Lerp Mallee)*			
1318.	14299	*Eucalyptus kessellii*			
1319.	13065	*Eucalyptus kessellii subsp. eugnosta*			
1320.	13066	*Eucalyptus kessellii subsp. kessellii*			
1321.	5695	*Eucalyptus leptocalyx (Hopetoun Mallee)*			
1322.	19811	*Eucalyptus leptocalyx subsp. leptocalyx*			
1323.	12696	*Eucalyptus litorea*		P2	
1324.	5704	*Eucalyptus macrandra (Long-flowered Marlock, Dwed)*			
1325.	5712	*Eucalyptus merrickiae (Goblet Mallee)*		T	
1326.	5713	*Eucalyptus micranthera (Alexander River Mallee)*			
1327.	13023	*Eucalyptus misella*		P1	
1328.	5723	*Eucalyptus occidentalis (Flat-topped Yate, Moidj)*			
1329.	5745	*Eucalyptus pileata (Capped Mallee)*			
1330.	18551	*Eucalyptus platypus subsp. platypus*			
1331.	16180	*Eucalyptus pleurocarpa*			
1332.	15068	*Eucalyptus preissiana subsp. lobata*		P4	
1333.	13525	*Eucalyptus quadrans*			
1334.	12694	*Eucalyptus rigens (Saltlake Mallee)*			
1335.	5767	*Eucalyptus salubris (Gimlet)*			
1336.	10834	*Eucalyptus scyphocalyx (Goblet Mallee)*			
1337.	13014	*Eucalyptus semiglobosa*		P3	
1338.		*Eucalyptus sp.*			
1339.	41523	*Eucalyptus sp. Southern Wheatbelt (D. Nicolle & M. French DN 5507)*			
1340.	14189	*Eucalyptus sporadica*			
1341.	13030	*Eucalyptus suggrandis subsp. suggrandis*			
1342.	34778	*Eucalyptus sweedmaniana*		P2	
1343.	13027	*Eucalyptus tenera*			
1344.	5788	*Eucalyptus tetraptera (Four-winged Mallee)*			
1345.	12889	*Eucalyptus tumida*			
1346.	5796	*Eucalyptus uncinata (Hook-leaved Mallee)*			
1347.	18085	*Eucalyptus utilis*			
1348.	15808	*Eucalyptus valens*			
1349.	12864	*Eucalyptus varia*			
1350.	12862	*Eucalyptus varia subsp. salsuginosa*			
1351.	12863	*Eucalyptus varia subsp. varia*			
1352.	8587	*Eucalyptus x erythrandra*			
1353.	19661	*Eucalyptus x missilis*		P4	
1354.	5802	*Eucalyptus yilgarnensis (Yorrell)*			
1355.	4636	*Euphorbia paralias (Sea Spurge)*	Y		
1356.	4643	*Euphorbia segetalis (Shortstemmed Carnation Weed)*	Y		Y
1357.	4648	*Euphorbia terracina (Geraldton Carnation Weed)*	Y		
1358.	11271	*Euphrasia collina subsp. tetragona*			
1359.	26830	*Euptilota articulata*			
1360.	37740	*Eutaxia inuncta*			
1361.	20214	*Eutaxia myrtifolia*			
1362.	3879	*Eutaxia parvifolia*			
1363.	10765	*Exocarpos sparteus (Broom Ballart, Djuk)*			
1364.	20162	*Fabronia hampeana*		P2	
1365.	8850	*Fallopia convolvulus*	Y		
1366.	20216	*Ficinia nodosa (Knotted Club Rush)*			
1367.	5209	*Frankenia pauciflora (Seaheath)*			
1368.	5213	*Frankenia tetrapetala (Four Petaled Frankenia)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1369.	1944	*Franklandia fucifolia (Lanoline Bush)*			
1370.	899	*Gahnia ancistrophylla (Hooked-leaf Saw Sedge)*			
1371.	16249	*Gahnia sp. Headland (G.J. Keighery 8501)*			
1372.	16283	*Gahnia sp. L (K.R. Newbey 7888)*			
1373.	43205	*Gahnia sp. South West (K.L. Wilson & K. Frank KLW 9266)*			
1374.	907	*Gahnia trifida (Coast Saw-sedge)*			
1375.	7323	*Galium murale (Small Goosegrass)*	Y		
1376.	19702	*Gastrolobium discolor*			
1377.	11044	*Gastrolobium heterophyllum*			
1378.	20453	*Gastrolobium latifolium*			
1379.	19725	*Gastrolobium musaceum*			
1380.	10981	*Gastrolobium parviflorum*			
1381.	3913	*Gastrolobium parvifolium (Berry Poison)*			
1382.	20487	*Gastrolobium punctatum*			
1383.	3924	*Gastrolobium spinosum (Prickly Poison)*			
1384.	16311	*Gazania linearis*	Y		
1385.	26850	*Gelinaria ulvoidea*			
1386.	4341	*Geranium solanderi (Native Geranium)*			
1387.	1518	*Gladiolus angustus (Long Tubed Painted Lady)*	Y		
1388.	33620	*Glischrocaryon angustifolium*			
1389.	6143	*Glischrocaryon aureum (Common Popflower)*			
1390.	6145	*Glischrocaryon roei*			
1391.	26859	*Gloiocladia australe*			
1392.	26860	*Gloiocladia halymenioides*			
1393.	7983	*Gnaphalium indutum (Tiny Cudweed)*			
1394.	7991	*Gnephosis drummondii*			
1395.	8003	*Gnephosis tridens*			
1396.	6587	*Gomphocarpus fruticosus (Narrowleaf Cottonbush)*	Y		
1397.	3946	*Gompholobium baxteri*			
1398.	10909	*Gompholobium confertum*			
1399.	3950	*Gompholobium knightianum*			
1400.	3951	*Gompholobium marginatum*			
1401.	3954	*Gompholobium polymorphum*			
1402.	11083	*Gompholobium scabrum*			
1403.	3957	*Gompholobium tomentosum (Hairy Yellow Pea)*			
1404.	6163	*Gonocarpus pycnostachyus*		P3	
1405.	6165	*Gonocarpus scordioides*			
1406.	7488	*Goodenia affinis (Silver Goodenia)*			
1407.	7499	*Goodenia concinna (Elegant Goodenia)*			
1408.	7503	*Goodenia decursiva*			
1409.	7517	*Goodenia incana (Hoary Goodenia)*			
1410.	12551	*Goodenia micrantha*			
1411.	7537	*Goodenia pterigosperma*			
1412.	19051	*Goodenia scapigera subsp. scapigera*			
1413.	23461	*Goodenia turleyae*		P1	
1414.	7562	*Goodenia viscida (Viscid Goodenia)*			
1415.	26868	*Gracilaria cliftonii*			
1416.	1961	*Grevillea baxteri (Cape Arid Grevillea)*		P4	
1417.	1991	*Grevillea disjuncta*			
1418.	2018	*Grevillea huegelii*			
1419.	2053	*Grevillea oligantha*			
1420.	2061	*Grevillea pectinata (Comb-leaved Grevillea)*			
1421.	19491	*Grevillea plurijuga subsp. superba*			
1422.	26883	*Griffithsia monilis*			
1423.	26886	*Griffithsia teges*			
1424.	32386	*Grimmia laevigata*			
1425.	5011	*Guichenotia ledifolia*			
1426.	5013	*Guichenotia micrantha (Small Flowered Guichenotia)*			
1427.	2804	*Gunniopsis glabra*			
1428.	2787	*Gyrostemon sheathii*			
1429.	1464	*Haemodorum brevisepalum*			
1430.	1475	*Haemodorum spicatum (Mardja)*			
1431.	2126	*Hakea adnata*			
1432.	2139	*Hakea cinerea (Ashy Hakea)*			
1433.	2141	*Hakea clavata (Coastal Hakea)*			
1434.	2145	*Hakea corymbosa (Cauliflower Hakea)*			
1435.	12226	*Hakea denticulata*			
1436.	12227	*Hakea drupacea*			
1437.	2160	*Hakea ferruginea*			
1438.	2171	*Hakea laurina (Pincushion Hakea, Kodjet)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1439.	2175	*Hakea lissocarpha (Honey Bush)*			
1440.	2187	*Hakea nitida (Frog Hakea)*			
1441.	2188	*Hakea obliqua (Needles and Corks)*			
1442.	13335	*Hakea obliqua subsp. obliqua*			
1443.	2193	*Hakea pandanicarpa*			
1444.	16910	*Hakea pandanicarpa subsp. pandanicarpa*			
1445.	2197	*Hakea prostrata (Harsh Hakea)*			
1446.	2203	*Hakea ruscifolia (Candle Hakea)*			
1447.	2212	*Hakea sulcata (Furrowed Hakea)*			
1448.	2214	*Hakea trifurcata (Two-leaf Hakea)*			
1449.	2216	*Hakea varia (Variable-leaved Hakea)*			
1450.	2218	*Hakea victoria (Royal Hakea, Dalyongurd)*			
1451.	6684	*Halgania andromedifolia*			
1452.	161	*Halophila australis*			
1453.	26900	*Haloplegma preissii*			
1454.	6171	*Haloragis digyna*			
1455.	26903	*Halydictyon arachnoideum*			
1456.	48666	*Halymenia harveyana*			
1457.	8008	*Helianthus annuus (Sunflower, Common Sunflower)*	Y		
1458.	3016	*Heliophila pusilla*	Y		
1459.	6707	*Heliotropium curassavicum (Smooth Heliotrope)*			
1460.	6710	*Heliotropium europaeum (Common Heliotrope)*	Y		
1461.	26913	*Helminthora australis*			
1462.	439	*Hemarthria uncinata (Matgrass)*			
1463.	11451	*Hemarthria uncinata var. uncinata*			
1464.	2689	*Hemichroa pentandra (Trailing Jointweed)*			
1465.	26915	*Hennedya crispa*			
1466.	26933	*Heterosiphonia gunniana*			
1467.	26936	*Heterosiphonia muelleri*			
1468.	26938	*Heterosiphonia wrangelioides*			
1469.	5108	*Hibbertia acerosa (Needle Leaved Guinea Flower)*			
1470.	5110	*Hibbertia andrewsiana*			
1471.	5117	*Hibbertia cuneiformis (Cutleaf Hibbertia)*			
1472.	5122	*Hibbertia eatoniae*			
1473.	5131	*Hibbertia gracilipes*			
1474.	20059	*Hibbertia hemignosta*			
1475.	20049	*Hibbertia hibbertioides var. meridionalis*			
1476.	5143	*Hibbertia lineata*			
1477.	20417	*Hibbertia oligantha*			
1478.	20349	*Hibbertia psilocarpa*			
1479.	5162	*Hibbertia racemosa (Stalked Guinea Flower)*			
1480.		*Hibbertia sp.*			
1481.	5173	*Hibbertia subvaginata*			
1482.	20036	*Hibbertia turleyana*		P2	Y
1483.	19433	*Hibbertia ulicifolia*			
1484.	13773	*Hopkinsia adscendens*		P3	
1485.	3966	*Hovea pungens (Devil's Pins, Puyenak)*			
1486.	3968	*Hovea trisperma (Common Hovea)*			
1487.	12742	*Hyalosperma demissum*			
1488.	5220	*Hybanthus epacroides (Spiny Hybanthus)*			
1489.	6223	*Hydrocotyle alata*			
1490.	48770	*Hydrocotyle asterocarpa (Starry Pennywort)*		P2	
1491.	6234	*Hydrocotyle medicaginoides (Trefoil Pennywort)*			
1492.	49013	*Hydrocotyle tuberculata (Bumpy-fruited Pennywort)*		P2	
1493.	26959	*Hymenena multipartita*			
1494.	26962	*Hymenocladia dactyloides*			
1495.	26965	*Hymenocladia usnea*			
1496.	452	*Hyparrhenia hirta (Tambookie Grass)*	Y		
1497.	26971	*Hypnea ramentacea*			
1498.	26973	*Hypnea valentiae*			
1499.	5827	*Hypocalymma strictum*			
1500.	8086	*Hypochaeris glabra (Smooth Catsear)*	Y		
1501.	9352	*Hypochaeris radicata (Flat Weed, Cats-ear)*	Y		
1502.	1070	*Hypolaena exsulca*			
1503.	1071	*Hypolaena fastigiata*			
1504.	17844	*Hypolaena humilis*			
1505.	910	*Isolepis cernua (Nodding Club-rush)*			
1506.	912	*Isolepis cyperoides*			
1507.	917	*Isolepis marginata (Coarse Club-rush)*			
1508.	2220	*Isopogon alcicornis (Elkhorn Coneflower)*		P3	

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1509.	2225	*Isopogon buxifolius*			
1510.	16880	*Isopogon formosus subsp. formosus*			
1511.	2234	*Isopogon polycephalus (Clustered Coneflower)*			
1512.	2240	*Isopogon trilobus (Barrel Coneflower)*			
1513.	7399	*Isotoma scapigera (Long-scaped Isotome)*			
1514.	3992	*Isotropis cuneifolia (Granny Bonnets)*			
1515.	3993	*Isotropis drummondii (Lamb Poison)*			
1516.	3997	*Jacksonia alata*			
1517.	4002	*Jacksonia capitata*			
1518.	4005	*Jacksonia condensata*			
1519.	4028	*Jacksonia spinosa*			
1520.	14741	*Jacksonia venosa*			
1521.	14777	*Jacksonia viscosa*			
1522.	36141	*Jania pulchella*			
1523.	1295	*Johnsonia acaulis*			
1524.	1175	*Juncus acutus (Spiny Rush)*	Y		
1525.	20454	*Juncus acutus subsp. acutus*	Y		
1526.	1178	*Juncus bufonius (Toad Rush)*	Y		
1527.	1179	*Juncus caespiticius (Grassy Rush)*			
1528.	1180	*Juncus capitatus (Capitate Rush)*	Y		
1529.	11922	*Juncus kraussii subsp. australiensis*			
1530.	1188	*Juncus pallidus (Pale Rush)*			
1531.	1194	*Juncus radula*			
1532.	4035	*Kennedia beckxiana (Cape Arid Kennedia)*		P4	
1533.	4037	*Kennedia coccinea (Coral Vine)*			
1534.	37961	*Kennedia coccinea subsp. esotera*			
1535.	4042	*Kennedia nigricans (Black Kennedia)*			
1536.	4044	*Kennedia prostrata (Scarlet Runner)*			
1537.	42680	*Kennedia sp. South coast (T.R. Lally 1576 & I.P. Lally)*			
1538.	26995	*Kuetzingia canaliculata*			
1539.	5830	*Kunzea affinis*			
1540.	5831	*Kunzea baxteri (Baxter's Kunzea)*			
1541.	5839	*Kunzea preissiana*			
1542.	38222	*Kunzea salina*		P3	
1543.	11528	*Labichea lanceolata subsp. brevifolia*			
1544.	467	*Lagurus ovatus (Hare's Tail Grass)*	Y		
1545.	13647	*Lambertia echinata subsp. echinata*		T	
1546.	2248	*Lambertia inermis (Chittick, Djidiok)*			
1547.	16870	*Lambertia inermis var. drummondii*			
1548.	16871	*Lambertia inermis var. inermis*			
1549.	5030	*Lasiopetalum discolor*			
1550.	5035	*Lasiopetalum indutum*			
1551.	5047	*Lasiopetalum rosmarinifolium*			
1552.	35642	*Lasiopetalum sp. Mt Ragged (T.E.H. Aplin 4349)*			
1553.	26997	*Laurencia arbuscula*			
1554.	26998	*Laurencia brongniartii*			
1555.	48408	*Laurencia dendroidea*			
1556.	27000	*Laurencia elata*			
1557.	27001	*Laurencia filiformis*			
1558.	27002	*Laurencia forsteri*			
1559.	4954	*Lawrencia diffusa*			
1560.	4955	*Lawrencia glomerata*			
1561.	4958	*Lawrencia spicata*			
1562.	4959	*Lawrencia squamata*			
1563.	1301	*Laxmannia brachyphylla (Stilted Paper-lily)*			
1564.	1304	*Laxmannia minor*			
1565.	1305	*Laxmannia omnifertilis*			
1566.	1306	*Laxmannia paleacea*			
1567.	1307	*Laxmannia ramosa (Branching Lily)*			
1568.	12029	*Laxmannia ramosa subsp. deflexa*			
1569.	7575	*Lechenaultia formosa (Red Leschenaultia)*			
1570.	7590	*Lechenaultia tubiflora (Heath Leschenaultia)*			
1571.	1051	*Lemna disperma (Duckweed)*			
1572.	35864	*Lenormandia muelleri*			
1573.	27013	*Lenormandia spectabilis*			
1574.	8099	*Leontodon saxatilis (Hairy Hawkbit)*	Y		
1575.	3018	*Lepidium africanum (Rubble Peppercress)*	Y		
1576.	3021	*Lepidium bonariense (Peppercress)*	Y		
1577.	3026	*Lepidium fasciculatum (Bundled Peppercress)*		P3	
1578.	3044	*Lepidium rotundum (Veined Peppercress)*			

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1579.	1073	*Lepidobolus chaetocephalus (Bristle-headed Chaff Rush)*			
1580.	1075	*Lepidobolus preissianus*			
1581.	929	*Lepidosperma carphoides (Black Rapier Sedge)*			
1582.	45756	*Lepidosperma fairallianum (Fairalls' Sword Sedge)*			
1583.	933	*Lepidosperma gladiatum (Coast Sword-sedge, Kerbin)*			
1584.	936	*Lepidosperma leptostachyum*			
1585.	939	*Lepidosperma pruinosum*			
1586.		*Lepidosperma sp.*			
1587.	945	*Lepidosperma squamatum*			
1588.	947	*Lepidosperma tenue*			
1589.	949	*Lepidosperma tuberculatum*			
1590.	1653	*Leporella fimbriata (Hare Orchid)*			
1591.	1078	*Leptocarpus coangustatus*			
1592.	46381	*Leptocarpus crebriculmis*			
1593.	2349	*Leptomeria pachyclada*			
1594.	2350	*Leptomeria pauciflora (Sparse-flowered Currant Bush)*			
1595.	5849	*Leptospermum incanum*			
1596.	5850	*Leptospermum laevigatum (Coast Teatree)*	Y		
1597.	5851	*Leptospermum maxwellii*			
1598.	5853	*Leptospermum oligandrum*			
1599.	5856	*Leptospermum sericeum (Silver Teatree)*			
1600.	5857	*Leptospermum spinescens*			
1601.	1088	*Lepyrodia macra (Large Scale Rush)*			
1602.	16449	*Leucophyta brownii*			
1603.	6358	*Leucopogon assimilis*			
1604.	34768	*Leucopogon canaliculatus*			
1605.	6368	*Leucopogon carinatus*			
1606.	6373	*Leucopogon concinnus*			
1607.	6374	*Leucopogon conostephioides*			
1608.	44222	*Leucopogon corymbiformis*		P2	
1609.	6383	*Leucopogon cuneifolius*			
1610.	6386	*Leucopogon dielsianus*			
1611.	6406	*Leucopogon interruptus*		P3	
1612.	40940	*Leucopogon obovatus subsp. obovatus*			
1613.	6419	*Leucopogon obtusatus*			
1614.	6427	*Leucopogon parviflorus (Coast Beard-heath)*			
1615.	6442	*Leucopogon rotundifolius*		P3	
1616.	14637	*Leucopogon sp. Coujinup (M.A. Burgman 1085)*			
1617.	41769	*Leucopogon sp. Lake Magenta (K.R. Newbey 3387)*		P1	
1618.	14205	*Leucopogon sp. Mount Heywood (M.A. Burgman 1211)*			
1619.	34163	*Leucopogon sp. Newdegate (M. Hislop 3585)*			
1620.	6455	*Leucopogon woodsii (Nodding Beard-heath)*			
1621.	7673	*Levenhookia pauciflora (Deceptive Stylewort)*			
1622.	27023	*Liagora harveyana*			
1623.	4362	*Linum marginale (Wild Flax)*			
1624.	20647	*Lissanthe rubicunda*			
1625.	9289	*Lobelia anceps (Angled Lobelia)*			
1626.	36862	*Lobelia archeri*		P1	Y
1627.	7402	*Lobelia gibbosa (Tall Lobelia)*			
1628.	7403	*Lobelia heterophylla (Wing-seeded Lobelia)*			
1629.	7405	*Lobelia rarifolia*			
1630.	3048	*Lobularia maritima (Sweet Alyssum)*	Y		
1631.	6504	*Logania buxifolia*			
1632.	6507	*Logania fasciculata*			
1633.	6509	*Logania micrantha*			
1634.	13129	*Logania perryana*			
1635.	6513	*Logania stenophylla*			
1636.	6515	*Logania vaginalis (White Spray)*			
1637.	478	*Lolium rigidum (Wimmera Ryegrass)*	Y		
1638.		*Lolium sp.*			
1639.	11384	*Lolium temulentum forma temulentum*	Y		
1640.	1224	*Lomandra collina (Pale Mat Rush)*			
1641.	1227	*Lomandra hastilis*			
1642.	14542	*Lomandra micrantha subsp. micrantha*			
1643.	14543	*Lomandra micrantha subsp. teretifolia*			
1644.	1233	*Lomandra mucronata*			
1645.	1234	*Lomandra nigricans*			
1646.	1241	*Lomandra rigida (Stiff Mat Rush)*			
1647.	6968	*Lycium ferocissimum (African Boxthorn)*	Y		
1648.	1097	*Lyginia barbata*			

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1649.	18049	*Lyginia imberbis*			
1650.	6456	*Lysinema ciliatum (Curry Flower)*			
1651.	34736	*Lysinema pentapetalum*			
1652.	5281	*Lythrum hyssopifolia (Lesser Loosestrife)*	Y		
1653.	2838	*Macarthuria apetala*			
1654.	27053	*Macrothamnion pellucidum*			
1655.	14366	*Macrozamia dyeri*			
1656.	2542	*Maireana erioclada*			
1657.	2553	*Maireana oppositifolia*			
1658.	36480	*Malva arborea (Tree Mallow)*	Y		
1659.	19421	*Marianthus bicolor (Painted Marianthus)*			
1660.		*Marsilea sp.*			
1661.	4076	*Medicago lupulina (Black Medic)*	Y		
1662.	4079	*Medicago polymorpha (Burr Medic)*	Y		
1663.	4080	*Medicago sativa (Alfalfa)*	Y		
1664.	4083	*Medicago truncatula (Barrel Medic)*	Y		
1665.	5881	*Melaleuca brevifolia*			
1666.	5885	*Melaleuca calycina*			
1667.	17982	*Melaleuca carrii*			
1668.	5900	*Melaleuca cuticularis (Saltwater Paperbark)*			
1669.	15693	*Melaleuca dempta*		P3	
1670.	13269	*Melaleuca fissurata*		P4	
1671.	15603	*Melaleuca fulgens subsp. fulgens*			
1672.	5913	*Melaleuca glaberrima*			
1673.	5918	*Melaleuca haplantha*			
1674.	18274	*Melaleuca hnatiukii*			
1675.	13272	*Melaleuca incana subsp. tenella*			
1676.	5922	*Melaleuca lanceolata (Rottnest Teatree, Moonah)*			
1677.	19080	*Melaleuca linguiformis*			
1678.	5948	*Melaleuca pentagona*			
1679.	11686	*Melaleuca pentagona var. latifolia*			
1680.	15993	*Melaleuca pentagona var. pentagona*			
1681.	19609	*Melaleuca plumea*			
1682.	5955	*Melaleuca pulchella (Claw Flower)*			
1683.	5960	*Melaleuca rigidifolia*			
1684.	5961	*Melaleuca scabra (Rough Honeymyrtle, Wurru Bush)*			
1685.	18165	*Melaleuca societatis*			
1686.	5971	*Melaleuca striata*			
1687.	5973	*Melaleuca suberosa (Corky Honeymyrtle)*			
1688.	5974	*Melaleuca subfalcata*			
1689.	19399	*Melaleuca thapsina*			
1690.	5980	*Melaleuca thymoides*			
1691.	5981	*Melaleuca thyoides*			
1692.	5982	*Melaleuca torquata*			
1693.	18126	*Melaleuca tuberculata var. macrophylla*			
1694.	5985	*Melaleuca undulata (Hidden Honey-myrtle)*			
1695.	4084	*Melilotus albus*	Y		
1696.	4085	*Melilotus indicus*	Y		
1697.	6883	*Mentha pulegium (Pennyroyal)*	Y		
1698.	2813	*Mesembryanthemum crystallinum (Iceplant)*	Y		
1699.	956	*Mesomelaena stygia*			
1700.	11473	*Mesomelaena stygia subsp. stygia*			
1701.	957	*Mesomelaena tetragona (Semaphore Sedge)*			
1702.	27069	*Metagoniolithon stelliferum*			
1703.	27070	*Metamastophora flabellata*			
1704.	6887	*Microcorys barbata*			
1705.	6893	*Microcorys glabra*			
1706.	6902	*Microcorys subcanescens*			
1707.	4488	*Microcybe pauciflora (Yellow Microcybe)*			
1708.	13785	*Microcybe pauciflora subsp. pauciflora*			
1709.	5993	*Micromyrtus elobata*			
1710.	20543	*Micromyrtus elobata subsp. elobata*			
1711.	5998	*Micromyrtus imbricata*			
1712.	34158	*Microtis alboviridis*			
1713.	1658	*Microtis atrata (Swamp Mignonette Orchid)*			
1714.	8814	*Microtis brownii*			
1715.	12199	*Microtis familiaris*			
1716.	10954	*Microtis media (Tall Mignonette Orchid)*			
1717.	15419	*Microtis media subsp. media*			
1718.	1660	*Microtis orbicularis (Dark Mignonette Orchid)*			

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1719.	8106	*Millotia tenuifolia (Soft Millotia)*			
1720.	14344	*Millotia tenuifolia var. tenuifolia (Soft Millotia)*			
1721.	4090	*Mirbelia dilatata (Holly-leaved Mirbelia)*			
1722.	4096	*Mirbelia ovata*			
1723.	29418	*Monoculus monstrosus*	Y		
1724.	4667	*Monotaxis paxii*			
1725.	19179	*Moraea flaccida (One-leaf Cape Tulip)*	Y		
1726.	2412	*Muehlenbeckia adpressa (Climbing Lignum)*			
1727.	27077	*Mychodea aciculare*			
1728.	27079	*Mychodea carnosa*			
1729.	27080	*Mychodea disticha*			
1730.	7291	*Myoporum insulare (Blueberry Tree, boobialla)*			
1731.	7295	*Myoporum tetrandrum (Boobialla)*			
1732.	27095	*Myriogramme gunniana*			
1733.	6196	*Myriophyllum muelleri (Hooded Water Milfoil)*		P1	
1734.	6464	*Needhamiella pumilio*			
1735.	4492	*Nematolepis phebalioides*			
1736.	492	*Neurachne alopecuroidea (Foxtail Mulga Grass)*			
1737.	4366	*Nitraria billardierei (Nitre Bush)*			
1738.	2401	*Nuytsia floribunda (Christmas Tree, Mudja)*			
1739.	6138	*Oenothera drummondii (Beach Evening Primrose)*	Y		
1740.	14292	*Oenothera stricta subsp. stricta*	Y		
1741.	2365	*Olax benthamiana*			
1742.	2366	*Olax phyllanthi*			
1743.	8127	*Olearia axillaris (Coastal Daisybush)*			
1744.	8131	*Olearia ciliata (Fringed Daisy Bush)*			
1745.	8137	*Olearia imbricata (Imbricate Daisy Bush)*			
1746.	44401	*Olearia sp. Eremicola (Diels & Pritzel s.n. PERTH 00449628)*			
1747.	6465	*Oligarrhena micrantha*			
1748.	20661	*Oncosiphon suffruticosum (Calomba Daisy)*	Y		
1749.	7348	*Opercularia hispidula (Hispid Stinkweed)*			
1750.	18256	*Opercularia spermacocea*			
1751.	18255	*Opercularia vaginata (Dog Weed)*			
1752.	46217	*Orianthera callosa*			
1753.	46255	*Orianthera campanulata*			
1754.	46316	*Orianthera serpyllifolia subsp. angustifolia*			
1755.	36181	*Ornduffia parnassifolia*			
1756.	4113	*Ornithopus compressus (Yellow Serradella)*	Y		
1757.	4115	*Ornithopus sativus (French Serradella)*	Y		
1758.	7122	*Orobanche minor (Lesser Broomrape)*	Y		
1759.	1539	*Orthrosanthus multiflorus (Morning Iris)*			
1760.	27107	*Osmundaria prolifera*			
1761.	27108	*Osmundaria spiralis*			
1762.	30375	*Oxalis exilis*			
1763.	4355	*Oxalis perennans*			
1764.	34841	*Oxymyrrhine gracilis*			
1765.	12645	*Ozothamnus lepidophyllus*			
1766.	502	*Panicum capillare (Witchgrass)*	Y		
1767.	2964	*Papaver hybridum (Rough Poppy)*	Y		
1768.	1667	*Paracaleana nigrita (Flying Duck Orchid)*			
1769.	23499	*Paracaleana parvula*		P2	
1770.	516	*Parapholis incurva (Coast Barbgrass)*	Y		
1771.	1762	*Parietaria debilis (Pellitory)*			
1772.	527	*Paspalum dilatatum*	Y		
1773.	1545	*Patersonia inaequalis (Unequal Bract Patersonia)*		P2	
1774.	1546	*Patersonia juncea (Rush Leaved Patersonia)*			
1775.	19670	*Patersonia lanata forma calvata*			
1776.	19669	*Patersonia lanata forma lanata*			
1777.	1549	*Patersonia maxwellii*			
1778.	1550	*Patersonia occidentalis (Purple Flag, Koma)*			
1779.	30472	*Patersonia occidentalis var. occidentalis*			
1780.	1552	*Patersonia rudis (Hairy Flag)*			
1781.	4343	*Pelargonium capitatum (Rose Pelargonium)*	Y		
1782.	4344	*Pelargonium drummondii*			
1783.	4346	*Pelargonium littorale*			
1784.	40423	*Pentameris airoides (False Hairgrass)*	Y		
1785.	11052	*Persicaria prostrata*			
1786.	15136	*Persoonia cymbifolia*		P3	
1787.	2275	*Persoonia scabra*		P3	
1788.	2279	*Persoonia teretifolia*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1789.	2296	*Petrophile fastigiata*			
1790.	2311	*Petrophile squamata*			
1791.	20053	*Petrophile squamata subsp. northern (J. Monks 40)*			
1792.	2313	*Petrophile teretifolia*			
1793.	27129	*Peyssonnelia novae-hollandiae*			
1794.	551	*Phalaris minor (Lesser Canary Grass)*	Y		
1795.	4501	*Phebalium lepidotum*			
1796.	18536	*Philotheca fitzgeraldii*			
1797.	18532	*Philotheca nodiflora subsp. lasiocalyx*			
1798.	1173	*Philydrella pygmaea (Butterfly Flowers)*			
1799.	555	*Phragmites australis (Common Reed)*	Y		
1800.	16825	*Phyllangium divergens*			
1801.	4675	*Phyllanthus calycinus (False Boronia)*			
1802.	4685	*Phyllanthus scaber*			
1803.	4	*Phylloglossum drummondii (Pigmy Clubmoss)*			
1804.	6007	*Phymatocarpus maxwellii*			
1805.	5231	*Pimelea angustifolia (Narrow-leaved Pimelea)*			
1806.	5232	*Pimelea argentea (Silvery Leaved Pimelea)*			
1807.	5234	*Pimelea brachyphylla*			
1808.	11282	*Pimelea brevifolia subsp. brevifolia*			
1809.	5239	*Pimelea clavata*			
1810.	5241	*Pimelea drummondii*			
1811.	5242	*Pimelea erecta*			
1812.	5243	*Pimelea ferruginea*			
1813.	11402	*Pimelea imbricata var. piligera*			
1814.	12701	*Pimelea pelinos*		P1	
1815.	5267	*Pimelea subvillifera*			
1816.	6804	*Pityrodia chrysocalyx*		P3	
1817.	7299	*Plantago debilis*			
1818.	7301	*Plantago exilis*			
1819.	6249	*Platysace compressa (Tapeworm Plant)*			
1820.	6252	*Platysace effusa*			
1821.	27150	*Platysiphonia victoriae*			
1822.	27154	*Plocamium angustum*			
1823.	27156	*Plocamium mertensii*			
1824.	27157	*Plocamium preissianum*			
1825.	577	*Poa poiformis (Coastal Poa)*			
1826.	8180	*Podolepis rugata (Pleated Podolepis)*			
1827.	8182	*Podotheca angustifolia (Sticky Longheads)*			
1828.	27162	*Pollexfenia pedicellata*			
1829.	2419	*Polygonum aviculare (Wireweed)*	Y		
1830.	582	*Polypogon monspeliensis (Annual Beardgrass)*	Y		
1831.	27173	*Polysiphonia decipiens*			
1832.	27177	*Polysiphonia mollis*			Y
1833.	14547	*Pomaderris brevifolia*			
1834.	4818	*Pomaderris myrtilloides*			
1835.	16191	*Pomaderris rotundifolia*			
1836.	122	*Posidonia angustifolia*			
1837.	123	*Posidonia australis (Fibreball Weed)*			
1838.	106	*Posidonia denhartogii*			
1839.	107	*Posidonia kirkmanii*			
1840.	124	*Posidonia ostenfeldii*			
1841.	108	*Posidonia robertsoniae*			
1842.	125	*Posidonia sinuosa*			
1843.	110	*Potamogeton drummondii*			
1844.	15424	*Praecoxanthus aphyllus*			
1845.	15425	*Prasophyllum calcicola*			
1846.	1671	*Prasophyllum elatum (Tall Leek Orchid)*			
1847.	1672	*Prasophyllum fimbria (Fringed Leek Orchid)*			
1848.	1674	*Prasophyllum giganteum (Bronze Leek Orchid)*			
1849.	1677	*Prasophyllum macrostachyum (Laughing Leek Orchid)*			
1850.	17650	*Prasophyllum odoratissimum*			
1851.	1680	*Prasophyllum parvifolium (Autumn Leek Orchid)*			
1852.	1682	*Prasophyllum sargentii*			
1853.	6911	*Prostanthera baxteri*			
1854.	8189	*Pseudognaphalium luteoalbum (Jersey Cudweed)*			
1855.	13255	*Pterochaeta paniculata*			
1856.	1687	*Pterostylis dilatata*			
1857.	1693	*Pterostylis recurva (Jug Orchid)*			
1858.	1694	*Pterostylis rogersii (Curled-tongue Shell Orchid)*			

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1859.	18652	*Pterostylis sp. robust (W. Jackson BJ294)*			
1860.	10998	*Pterostylis turfosa (Bird Orchid)*			
1861.	1698	*Pterostylis vittata (Banded Greenhood)*			
1862.	27203	*Ptilocladia pulchra*			
1863.	27204	*Ptilocladia vestita*			
1864.	32417	*Ptychostomum angustifolium*			
1865.	31672	*Puccinellia longior*			
1866.	592	*Puccinellia stricta (Marsh Grass)*			
1867.	4172	*Pultenaea ericifolia*			
1868.	28286	*Pultenaea heterochila*			
1869.	20785	*Pultenaea indira subsp. indira*			
1870.	20790	*Pultenaea purpurea*			
1871.	4184	*Pultenaea spinulosa*			
1872.	4186	*Pultenaea tenuifolia*			
1873.	4187	*Pultenaea verruculosa*			
1874.	16367	*Pyrorchis nigricans (Red beaks, Elephants ears)*			
1875.	8195	*Quinetia urvillei*			
1876.	3061	*Raphanus raphanistrum (Wild Radish)*	Y		
1877.	3063	*Rapistrum rugosum (Turnip Weed)*	Y		
1878.	6014	*Regelia inops*			
1879.	27211	*Rhabdonia coccinea*			
1880.	2578	*Rhagodia baccata (Berry Saltbush)*			
1881.	11341	*Rhagodia baccata subsp. baccata*			
1882.	2580	*Rhagodia crassifolia (Fleshy Saltbush)*			
1883.	2584	*Rhagodia preissii*			
1884.	27215	*Rhipiliopsis peltata*			
1885.	13300	*Rhodanthe citrina*			
1886.	27220	*Rhodopeltis australis*			
1887.	31911	*Ricinocarpos megalocarpus*			
1888.	11096	*Rinzia dimorphandra (Esperance Rinzia)*			
1889.	48269	*Rinzia icosandra (Recherche Mainland Rinzia)*			
1890.	48887	*Roepera billardierei*			
1891.	1556	*Romulea rosea (Guildford Grass)*	Y		
1892.	10970	*Rostraria cristata*	Y		
1893.	32426	*Rosulabryum campylothecium*			
1894.	32429	*Rosulabryum torquescens*			
1895.	20496	*Rubus laudatus*	Y		
1896.	2429	*Rumex acetosella (Sorrel)*	Y		
1897.	2430	*Rumex brownii (Swamp Dock)*	Y		
1898.	46434	*Rumex hypogaeus*	Y		
1899.	115	*Ruppia megacarpa*			
1900.	116	*Ruppia polycarpa*			
1901.	117	*Ruppia tuberosa*			
1902.	40431	*Rytidosperma acerosum*			
1903.	48433	*Salicornia blackiana*			
1904.	48430	*Salicornia quinqueflora*			
1905.	48431	*Salicornia quinqueflora subsp. quinqueflora (Beaded Glasswort)*			
1906.	6928	*Salvia reflexa (Mintweed)*	Y		
1907.	6483	*Samolus junceus*			
1908.	6484	*Samolus repens (Creeping Brookweed)*			
1909.	27229	*Sarcomenia delesserioides*			
1910.	27232	*Sarcotrichia tenera*			
1911.	2817	*Sarcozona praecox (Sarcozona)*			
1912.	7606	*Scaevola crassifolia (Thick-leaved Fan-flower)*			
1913.	7607	*Scaevola cuneiformis (Wedge-leaved Scaevola)*			
1914.	7614	*Scaevola globulifera*			
1915.	13151	*Scaevola thesioides subsp. filifolia*			
1916.	41660	*Schenkia australis*			
1917.	976	*Schoenus breviculmis*			
1918.	978	*Schoenus brevisetis*			
1919.	979	*Schoenus caespititius*			
1920.	984	*Schoenus curvifolius*			
1921.	992	*Schoenus grandiflorus (Large Flowered Bogrush)*			
1922.	994	*Schoenus humilis*			
1923.	996	*Schoenus laevigatus*			
1924.	1004	*Schoenus nitens (Shiny Bog-rush)*			
1925.	1005	*Schoenus obtusifolius*			
1926.	1006	*Schoenus odontocarpus*			
1927.	1009	*Schoenus pleiostemoneus*			
1928.	17614	*Schoenus plumosus*			

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1929.	16089	*Schoenus racemosus*			
1930.	14626	*Schoenus sp. A1 Boorabbin (K.L. Wilson 2581)*			
1931.	16273	*Schoenus sp. Grey Rhizome (K.L. Wilson 2922)*		P1	
1932.	1016	*Schoenus subbarbatus (Bearded Bog-rush)*			
1933.	1018	*Schoenus subfascicularis*			
1934.	1019	*Schoenus subflavus (Yellow Bog-rush)*			
1935.	16251	*Schoenus subflavus subsp. long leaves (K.L. Wilson 2865)*			
1936.	1022	*Schoenus submicrostachyus*			
1937.	6544	*Sebaea ovata (Yellow Sebaea)*			
1938.	32433	*Sematophyllum homomallum*			
1939.	8207	*Senecio glossanthus (Slender Groundsel)*			
1940.	8216	*Senecio picridioides*			
1941.	25882	*Senecio pinnatifolius var. maritimus (Coastal Groundsel)*			
1942.	25883	*Senecio pinnatifolius var. pinnatifolius*			
1943.	7362	*Sherardia arvensis (Field Madder)*	Y		
1944.	4823	*Siegfriedia darwinioides*			
1945.	8224	*Siloxerus filifolius*			
1946.	8225	*Siloxerus humifusus (Procumbent Siloxerus)*			
1947.	14583	*Siloxerus multiflorus*			
1948.	3072	*Sisymbrium orientale (Indian Hedge Mustard)*	Y		
1949.	7017	*Solanum laciniatum (Kangaroo Apple)*	Y		
1950.	7022	*Solanum nigrum (Black Berry Nightshade)*	Y		
1951.	7033	*Solanum rostratum (Buffalo Burr)*	Y		
1952.	7037	*Solanum symonii*			
1953.	45036	*Solidago chilensis*	Y		
1954.	8230	*Sonchus asper (Rough Sowthistle)*	Y		
1955.	9367	*Sonchus hydrophilus (Native Sowthistle)*			
1956.	8231	*Sonchus oleraceus (Common Sowthistle)*	Y		
1957.	44731	*Sonderophycus capensis*			
1958.	614	*Sorghastrum nutans*	Y		Y
1959.	617	*Sorghum halepense (Johnson Grass)*	Y		
1960.	1560	*Sparaxis pillansii (Harlequin Flower)*	Y		
1961.	8900	*Spergularia marina*			
1962.	4201	*Sphaerolobium daviesioides (Prickly Globe-pea)*			
1963.	17551	*Sphaerolobium drummondii*			
1964.	4205	*Sphaerolobium linophyllum*			
1965.	4206	*Sphaerolobium macranthum*			
1966.	4211	*Sphaerolobium vimineum (Leafless Globe Pea)*			
1967.	624	*Spinifex hirsutus (Hairy Spinifex)*			
1968.	635	*Sporobolus virginicus (Marine Couch)*			
1969.	27309	*Spyridia dasyoides*			
1970.	27310	*Spyridia filamentosa*			
1971.	4828	*Spyridium globulosum (Basket Bush)*			
1972.	4830	*Spyridium microcephalum (Small-headed Spyridium)*			
1973.	14243	*Spyridium minutum*			
1974.	14795	*Spyridium mucronatum subsp. multiflorum*		P2	
1975.	15140	*Spyridium polycephalum*			
1976.	31916	*Spyridium sp. Jerdacuttup (A. Williams 332)*			
1977.	4715	*Stachystemon polyandrus*			
1978.	20540	*Stachystemon vinosus*		P4	
1979.	20537	*Stachystemon virgatus*			
1980.	4733	*Stackhousia monogyna*			
1981.	4734	*Stackhousia muricata*			
1982.	9070	*Stackhousia pubescens (Downy Stackhousia)*			
1983.	43662	*Stackhousia sp. Thick sepals (A.E. Orchard 1547)*			
1984.	1315	*Stawellia gymnocephala*			
1985.	2918	*Stellaria media (Chickweed)*	Y		
1986.	15065	*Stenanthemum notiale subsp. notiale*			
1987.	16375	*Stirlingia anethifolia*			
1988.	2317	*Stirlingia simplex*			
1989.	27318	*Struvea plumosa*			
1990.	7678	*Stylidium adnatum (Common Beaked Triggerplant)*			
1991.	7682	*Stylidium albomontis*			
1992.	7687	*Stylidium assimile (Bronze-leaved Triggerplant)*			
1993.	7692	*Stylidium breviscapum (Boomerang Triggerplant)*			
1994.	12057	*Stylidium corymbosum var. corymbosum*			
1995.	7741	*Stylidium insensitivum (Insensitive Trigger Plant)*			
1996.	7758	*Stylidium macranthum (Crab Claws)*			
1997.	7772	*Stylidium perpusillum (Tiny Triggerplant)*			
1998.	7774	*Stylidium piliferum (Common Butterfly Triggerplant)*			

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1999.	7775	*Stylidium pilosum (Silky Triggerplant)*			
2000.	7777	*Stylidium preissii (Lizard Triggerplant)*			
2001.	7785	*Stylidium repens (Matted Triggerplant)*			
2002.	7794	*Stylidium rupestre (Rock Triggerplant)*			
2003.		*Stylidium sp.*			
2004.	20599	*Stylidium turleyae*			
2005.	1260	*Stypandra glauca (Blind Grass)*			
2006.	6473	*Styphelia intertexta*			
2007.	48618	*Styphelia sp. South Coast (J.M. Powell 3374)*			
2008.	2639	*Suaeda australis (Seablite)*			
2009.	2640	*Suaeda baccifera*	Y		
2010.	25902	*Symphyotrichum squamatum (Bushy Starwort)*	Y		
2011.	16860	*Synaphea media*			
2012.	12911	*Synaphea obtusata*			
2013.	16772	*Synaphea oligantha*			
2014.	2324	*Synaphea petiolaris (Synaphea)*			
2015.	16864	*Synaphea petiolaris subsp. petiolaris*			
2016.	2329	*Synaphea spinulosa*			
2017.	15534	*Synaphea spinulosa subsp. major*			
2018.	32437	*Syntrichia antarctica*			
2019.	20102	*Taxandria callistachys*			
2020.	20134	*Taxandria marginata*			
2021.	20103	*Taxandria spathulata*			
2022.	31552	*Tecticornia arbuscula*			
2023.	33236	*Tecticornia halocnemoides (Shrubby Samphire)*			
2024.	31873	*Tecticornia indefessa*		P2	
2025.	33319	*Tecticornia indica subsp. bidens*			
2026.	31718	*Tecticornia lepidosperma*			
2027.	31675	*Tecticornia lylei*			
2028.	33297	*Tecticornia pergranulata subsp. pergranulata (Blackseed Samphire)*			
2029.	31716	*Tecticornia syncarpa*			
2030.	4256	*Templetonia retusa (Cockies Tongues)*			
2031.	35842	*Templetonia rossii*			
2032.	2823	*Tetragonia implexicoma (Bower Spinach)*			
2033.	1034	*Tetraria capillaris (Hair Sedge)*			
2034.	35582	*Tetraria sp. Mt Madden (C.D. Turley 40 BP/897)*			
2035.	1701	*Thelymitra antennifera (Vanilla Orchid)*			
2036.	10856	*Thelymitra benthamiana (Leopard Orchid)*			
2037.	1705	*Thelymitra crinita (Blue Lady Orchid)*			
2038.	11143	*Thelymitra graminea*			
2039.	18248	*Thelymitra granitora*			
2040.	20730	*Thelymitra paludosa*			
2041.	20732	*Thelymitra petrophila*			
2042.		*Thelymitra sp.*			
2043.	20735	*Thelymitra speciosa*			
2044.	1716	*Thelymitra tigrina (Tiger Orchid)*			
2045.	1718	*Thelymitra villosa (Custard Orchid)*			
2046.	20731	*Thelymitra vulgaris*			
2047.	5075	*Thomasia angustifolia (Narrow Leaved Thomasia)*			
2048.	5077	*Thomasia cognata*			
2049.	5086	*Thomasia macrocalyx*			
2050.	5093	*Thomasia petalocalyx (Paper Flower)*			
2051.	5094	*Thomasia purpurea*			
2052.	5105	*Thomasia triphylla*			
2053.	2644	*Threlkeldia diffusa (Coast Bonefruit)*			
2054.	19698	*Thryptomene australis subsp. australis*			
2055.	6065	*Thryptomene saxicola (Rock Thryptomene)*			
2056.	27330	*Thuretia australasica*			Y
2057.	27331	*Thuretia quercifolia*			
2058.	1328	*Thysanotus dichotomus (Branching Fringe Lily)*			
2059.	1338	*Thysanotus manglesianus (Fringed Lily)*			
2060.	1341	*Thysanotus nudicaulis*			
2061.	1343	*Thysanotus patersonii*			
2062.	1351	*Thysanotus sparteus*			
2063.	1358	*Thysanotus triandrus*			
2064.	32444	*Tortula atrovirens*			
2065.	1368	*Trachyandra divaricata*	Y		
2066.	6268	*Trachymene cyanopetala*			
2067.	6280	*Trachymene pilosa (Native Parsnip)*			
2068.	11112	*Tribolium uniolae*	Y		

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2069.	1485	*Tribonanthes violacea (Violet Tiurndin)*			
2070.	32449	*Trichostomum brachydontium*			
2071.	32450	*Trichostomum eckelianum*			
2072.	1361	*Tricoryne elatior (Yellow Autumn Lily)*			
2073.	41648	*Tricostularia aphylla*			
2074.	1037	*Tricostularia compressa*			
2075.	4289	*Trifolium angustifolium (Narrowleaf Clover)*	Y		
2076.	17542	*Trifolium arvense var. arvense*	Y		
2077.	4292	*Trifolium campestre (Hop Clover)*	Y		
2078.	4296	*Trifolium fragiferum (Strawberry Clover)*	Y		
2079.	4312	*Trifolium striatum (Knotted Clover)*	Y		
2080.	33276	*Triglochin isingiana*			
2081.	146	*Triglochin minutissima*			
2082.	147	*Triglochin mucronata*			
2083.	151	*Triglochin striata*			
2084.	152	*Triglochin trichophora*			
2085.	4737	*Tripterococcus brunonis (Winged Stackhousia)*			
2086.	32451	*Triquetrella papillata*			
2087.	1139	*Trithuria bibracteata*			
2088.	13479	*Trymalium ledifolium var. rosmarinifolium*			
2089.	15757	*Trymalium spatulatum*			
2090.	27347	*Tylotus obtusatus*			
2091.	98	*Typha domingensis (Bulrush, Djandjid)*			
2092.	35260	*Ulva compressa*			
2093.	38388	*Ursinia anthemoides subsp. anthemoides*	Y		
2094.	1766	*Urtica incisa (Scrub Nettle)*			
2095.	7145	*Utricularia menziesii (Redcoats)*			
2096.	7148	*Utricularia multifida*			
2097.	7153	*Utricularia tenella*			
2098.	13160	*Velleia exigua*		P2	
2099.	7665	*Velleia trinervis*			
2100.	6072	*Verticordia brownii*			
2101.	6073	*Verticordia chrysantha*			
2102.	6076	*Verticordia densiflora (Compacted Featherflower)*			
2103.	15432	*Verticordia densiflora var. densiflora*			
2104.	6079	*Verticordia fastigiata (Mouse Featherflower)*			
2105.	6090	*Verticordia humilis*			
2106.	12432	*Verticordia inclusa*			
2107.	6096	*Verticordia minutiflora*			
2108.	12450	*Verticordia plumosa var. grandiflora*			
2109.	14718	*Verticordia sieberi var. sieberi*			
2110.	12470	*Verticordia vicinella*			
2111.	11474	*Vicia sativa subsp. nigra*	Y		
2112.	27360	*Vidalia spiralis*			
2113.	4325	*Viminaria juncea (Swishbush, Koweda)*			
2114.	8266	*Vittadinia gracilis*			
2115.	12052	*Vulpia myuros forma megalura*	Y		
2116.	33101	*Vulpia myuros forma myuros*	Y		
2117.		*Vulpia sp.*			
2118.	7384	*Wahlenbergia capensis (Cape Bluebell)*	Y		
2119.	7389	*Wahlenbergia preissii*			
2120.	18108	*Watsonia meriana var. bulbillifera*	Y		
2121.	27362	*Webervanbossea splachnoides*			
2122.	6939	*Westringia dampieri*			
2123.	6658	*Wilsonia backhousei (Narrow-leaf Wilsonia)*			
2124.	6659	*Wilsonia humilis (Silky Wilsonia)*			
2125.	6660	*Wilsonia rotundifolia (Round-leaf Wilsonia)*			
2126.	27364	*Wollastoniella myriophylloides*			
2127.	27369	*Wrangelia velutina*			
2128.	1389	*Wurmbea cernua*			
2129.	1394	*Wurmbea dioica (Early Nancy)*			
2130.	1255	*Xanthorrhoea platyphylla*			
2131.	6289	*Xanthosia huegelii*			
2132.	16992	*Yucca aloifolia*	Y		

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

Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area

4 - Priority 4
5 - Priority 5

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

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.

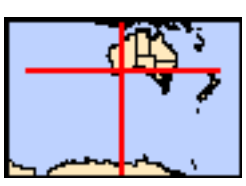
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 21/09/21 15:45:43

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

Coordinates
Buffer: 30.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	48
Listed Migratory Species:	52

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	82
Whales and Other Cetaceans:	14
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	16
Regional Forest Agreements:	None
Invasive Species:	14
Nationally Important Wetlands:	3
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Lake gore	Within 10km of Ramsar
Lake warden system	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
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Name	Status	Type of Presence
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Mammals		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat likely to occur within area
Phascogale calura Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat may occur within area
Plants		
Anigozanthos bicolor subsp. minor Little Kangaroo Paw, Two-coloured Kangaroo Paw, Small Two-colour Kangaroo Paw [21241]	Endangered	Species or species habitat known to occur within area
Eremophila glabra subsp. Scaddan (C. Turley s.n. 10/11/2005) [89454]	Critically Endangered	Species or species habitat known to occur within area
Eucalyptus insularis Twin Peak Island Mallee [3057]	Endangered	Species or species habitat likely to occur within area
Eucalyptus merrickiae Goblet Mallee [13119]	Vulnerable	Species or species habitat known to occur within area
Kennedia glabrata Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat likely to occur within area
Lambertia echinata subsp. echinata Prickly Honeysuckle [56729]	Endangered	Species or species habitat likely to occur within area
Ricinocarpos trichophorus Barrens Wedding Bush [19931]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

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

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

Name	Threatened	Type of Presence
Albatross [64459] Thalassarche melanophris		habitat may occur within area
Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis		
Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Caperea marginata		
Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharhinus longimanus		
Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Lagenorhynchus obscurus		
Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus		
Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae		
Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		

Name	Threatened	Type of Presence
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa nebularia 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
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Roosting known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
Larus novaehollandiae Silver Gull [810]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur

Name	Threatened	Type of Presence
		within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area
Pterodroma macroptera Great-winged Petrel [1035]		Breeding likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Breeding known to occur within area
Puffinus griseus Sooty Shearwater [1024]		Species or species habitat may occur within area
Puffinus tenuirostris Short-tailed Shearwater [1029]		Breeding known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area
Sterna anaethetus Bridled Tern [814]		Foraging, feeding or related behaviour likely to occur within area
Sterna caspia Caspian Tern [59467]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Urocampus carinirostris		
Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer		
Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi		
Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus		
Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri		
Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat likely to occur within area
Neophoca cinerea		
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Caperea marginata		
Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis		
Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Breeding known to occur within area

Name	Status	Type of Presence
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Dalyup	WA
Esperance 827 and Part 373 & 826	WA
Helms Arboretum	WA
Lake Mortijinup	WA
Lake Warden	WA
Mullet Lake	WA
Recherche Archipelago	WA
Shark Lake	WA
Speddingup East	WA
Unnamed WA04182	WA
Unnamed WA24511	WA
Unnamed WA24953	WA
Unnamed WA31313	WA
Unnamed WA32259	WA
Unnamed WA42379	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 Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
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

Name	Status	Type of Presence
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
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
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

Nationally Important Wetlands	[Resource Information]
Name	State
Lake Warden System	WA
Mortijinup Lake System	WA
Pink Lake	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

-33.72046 121.85735

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

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

Please feel free to provide feedback via the Contact Us page.

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