FLORA AND FAUNA SURVEY REPORT

Lots 1, 53 and 55 North Lake Road, Lot 54 Poletti Road and Lots 54, 804 and 9504 Beeliar Drive, Cockburn Central





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Disclaimer

SUMMARY

Structure planning is occurring over the Western Australian Planning Commission (WAPC) vested land; Lots 1, 53 and 55 North Lake Road, Lot 54 Poletti Road and Lots 54, 804 and 9504 Beeliar Drive, Cockburn Central (project area) and is shown in Figure 1. The project area is 35.01 hectares.

LandCorp commissioned RPS Environment and Planning Pty Ltd (RPS) to undertake a Level 2 flora and vegetation survey and a Level 1 fauna habitat assessment of the project area. The survey was conducted in September and October 2011. The purpose of this report is to provide information to inform structure planning and assist in seeking environmental approvals.

The findings of the flora and vegetation survey and fauna assessment are summarised below:

Flora and Vegetation Survey Summary

- The vegetation of the project area is considered to be representative of the Bassendean Complex – Central and South (Heddle et al. 1980). According to the Environmental Protection Authority (EPA) (2006), the vegetation of the Bassendean Complex – Central and South is classified as "Vulnerable" with respect to the extent of the vegetation units remaining compared to pre-European conditions.

- Eight vegetation units were recorded during the flora and vegetation survey of the project area.

- The vegetation condition within the project area ranged from Excellent to Completely Degraded according to the Bush Forever scale (Government of Western Australia 2000). However, approximately 60% of the project area is considered Completely Degraded and is characterised by isolated native shrubs and trees over weed species over grassland of **Ehrharta calycina*, and cleared areas.

- No Threatened Ecological Communities (TEC) or Priority Ecological Communities (PEC) were recorded, from the database searches, for the project area and no TECs or PECs were identified on site during the survey.

- The results of the flora and vegetation survey indicate that portions of the project area display a moderately high degree of biodiversity in terms of floristic composition. A total of 183 plant taxa (including subspecies and varieties) representing 129 genera and 48 plant families were recorded in the project area. This total is comprised of 147 native species and 36 introduced (exotic) species.

- No Threatened Rare Flora listed by the Department of Environment and Conservation (DEC) or species listed as matters of National Environmental Significance (NES) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded within the project area during the survey.

- One Priority Flora species (P4) was recorded; *Caladenia speciosa*. One specimen was recorded at location 391393, 6445115 (GDA datum).

- A total of 36 introduced species (weeds) were recorded during the flora and vegetation survey.

- *Zantedeschia aethiopica* (arum lily) was recorded at three locations in the project area and approximately 60 individuals were recorded. *Z. aethiopica* is listed as a category P1 Declared Plant species under Section 37 of the *Agricultural and Related Resources Protection Act 1*976. The movement of P1 Declared Plants, contaminated machinery and produce (including livestock and fodder) are prohibited within the state.

- According to the Geomorphic Wetlands Swan Coastal Plain Dataset (DEC (2011a) there are two wetlands located within the project area. The wetland assigned Unique Feature Identifier (UFI) 6659 is classified as a Resource Enhancement Wetland and an Environmental Protection Policy (EPP) wetland (Swan Coastal Plain Lakes Policy). Wetland UFI 6652 is classified as Multiple Use.

- A search of the DEC's Native Vegetation Viewer indicates that an Environmentally Sensitive Area (ESA) is located in the project area. This ESA is associated with Resource Enhancement wetland UFI 6659.

- The proposed development has been assessed against the DEC's Ten Clearing Principles (DEC 2004). Principle B states "Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous Western Australia". Clearing of the southern extent of remnant bushland within the project area may be at variance with the Clearing Principle B as this area provides habitat for Carnaby's Black-Cockatoo and the forest red-tailed black cockatoo, both of which are protected under the EPBC Act. The significance of this habitat to the listed species will be assessed through the Environmental Protection and Biodiversity Conservation Act process. Principle F may also be at variance due to the proposed modications to the RE wetland.

- The *Banksia* woodland located in the southern portion of the project area is considered to be in Excellent to Very Good condition.

Fauna Survey Summary

The objective of the Level 1 fauna survey is to investigate the potential for the proposed development to impact on matters of NES. A total of 273 species comprised of recorded fauna during fauna survey and known to potentially occur within the survey area. Of these, 194 are birds, 24 are mammals, 37 are reptiles, 10 are amphibians and eight are invertebrates. A total of 24 species (or evidence of species presence) were recorded during the site visit.

The project area was found to support a number of important fauna habitats, which include:

- an EPP lake and Resource Enhancement management category wetland area
- black cockatoo feeding habitat

- potential Graceful Sun Moth habitat (presence of *Lomandra hermaphrodita)*
- dense *Banksia* woodland to the south of the wetland (vegetation types V6 and V7).

The following points summarise the fauna survey and provide management recommendations:

- The *Banksia* woodland located in the southern portion of the project area is considered to be in Excellent to Very Good condition.

- No TRF, TECs, or PECs where located within the project area during the survey.

- The project areas contains potential habitat for black cockatoos. It is recommended to retain as much of this potential habitat or provide additional feeding habitat through landscape and streetscapes within the structure plan area to maintain potential feeding areas.

- During the site visit undertaken by RPS, only one of the conservation significant species, the rainbow bee-eater (*Merops ornatus*), was recorded on site. It is currently unknown whether this species is breeding within the project area. No nests were observed during the survey.

- Due to the presence of *Lomandra hermaphrodita,* a plant species on which the Graceful Sun Moth breeds, it is recommended to undertake a Graceful Sun Moth Survey during the flying season (March) to determine if the Graceful Sun Moth is located within the project area.

- The Resource Enhancement management category wetland at the site was cleared prior to 1965. Although mostly degraded, it contains a variety of habitats due to wetland vegetation assemblage regrowth.

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1.0 INTRODUCTION

1.1 Background and Purpose

Structure planning is occurring over the WAPC vested land: Lots 1, 53 and 55 North Lake Road, Lot 54 Poletti Road and Lots 54, 804 and 9504 Beeliar Drive, Cockburn Central (project area). The project boundary is shown in Figure 1. The project area is 35.01 hectares.

LandCorp commissioned RPS Environment and Planning Pty Ltd (RPS) to undertake a Level 1 flora and vegetation survey and a Level 1 fauna habitat assessment of the project area. The survey was conducted in September and October 2011.The purpose of this report is to provide information to inform structure planning and assist in seeking environmental approvals.

1.2 Scope of Works

1.2.1 Flora and Vegetation Survey Scope of Works

The scope of works for the flora and vegetation survey are as follows:

- to provide a description and map of the vegetation units and vegetation condition using the Bush Forever condition rating scale, using a combination of interpretation of recent aerial photography and site survey
- to provide a list of all native and non-native plant species recorded from quadrats within representative vegetation types identified within the project area
- to provide the location of any conservation significant species protected by State or Commonwealth legislation within the project area
- to conduct provide information on of floristic communities, vegetation complexes and all state and Commonwealth conservation significant species to determine areas within the project area that are constrained
- to assess and provide comment on potential flora ecological impacts from the proposed structure plan and potential constraints within the area proposed for development
- to conduct an assessment of proposed clearing against the DECs 10 Clearing Principles, which form part of the DEC's Clearing Regulations as prescribed in the Environment Protection (Clearing of Native Vegetation) Regulations 2004. .

1.2.2 Fauna Survey Scope of Works

The objectives of the Level 1 fauna survey is to provide an preliminary investigation into the potential of the proposed development to impact on species protected under state and Commonwealth legislation.

The scope of works for the fauna survey are as follows:

- to undertake a comprehensive fauna database search and literature review to compile background information relevant to the project area
- to provide an inventory of vertebrate fauna potentially occurring in the project area
- to identify vertebrate fauna of conservation significance potentially occurring in the project area
- to identify broad and sensitive fauna habitats that may potentially occur over the project area (based on vegetation mapping and field survey); particularly habitat for black cockatoo species and Graceful Sun Moth
- to provide an opportunistic terrestrial fauna reconnaissance survey of project area and a search for tracks, scats, bones, diggings and feeding areas
- to provide recommendations for general management measures to minimise impacts of the proposed development program on terrestrial fauna and habitat in the project area.

2.0 EXISTING ENVIRONMENT

2.1 Project Area

The project area is bound by North Lake Road to the north and east, Beeliar Drive to the south and Poletti Road to the west. The project area consists of Lots 1, 53 and 55 North Lake Road, Lot 54 Poletti Road and Lots 54, 804 and 9504 Beeliar Drive, Cockburn in the City of Cockburn. The project area is 35.01 hectares.

2.2 Climate

The project area experiences a Mediterranean climate, which is described as cool, wet winters and dry, hot summers. The nearest meteorological station is located at Jandakot Airport. A summary of the recorded climatic data from Jandakot Aero (station no. 009172) is presented in Table 1.

Table 1: Climatic Data for Jandakot Airport

Weather Type	Information
Mean Annual Maximum Temperature Range:	31.5 °C (February) and 17.8 °C (July)
Mean Annual Minimum Temperature Range:	17.0 °C (February) and 6.8 °C (July)
Mean Annual Rainfall:	829 mm
Mean Annual Rain days per year:	84.1

The rainfall for the Perth Metropolitan Area in 2011 has been higher than the historical average. The historical average annual rainfall at Jandakot Airport for the months of April to October is 749.0 mm (1972–2011). The project area received a total of 813.6 mm of rainfall during these months in 2011. Annual evaporation exceeds rainfall by as much as 2,500 mm per year (BOM 2011).

2.3 Topography, Soils and Geology

2.3.1 Topography

The project area lies between 25 and 40 metres above sea level, with the highest point on the site occurring on the southern boundary. The lowest elevation occurs in the north-east of the project area.

2.3.2 Soils

The project area lies within the Bassendean Sands landform and soil complex of the Swan Coastal Plain, characterised by sand dunes and sandplains with flats and swamps (sandy alluvium over sedimentary rocks). The wetlands area lies on soils described by the Department of Agriculture and Food (2002) as:

- 212Bs_B3 – Moderately deep, bleached sands with an iron-organic pan, or clay subsoil. Surfaces are dark grey sand or sandy loam.

The remainder of the project area is described as:

- 212Bs_B1 – Deep bleached grey sands, sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than two metres.

2.3.3 Geology

The project area is located on the Swan Coastal Plain, which may be divided into four physiographic units; an alluvial plain that has developed west of the Darling Scarp and three sets of stabilised dunes that are generally orientated parallel to the coast. The project areas lies within the alluvial plain and is comprised of Bassendean Sands.

2.4 Hydrology

2.4.1 Groundwater

The groundwater underlying the project area is at a depth ranging from approximately 21.5–23 metres below the surface. Groundwater flow is generally in a westerly direction but is also influenced by Lake Yangebup and Kogalup Lake to the north and south of Beeliar Drive. Drainage is essentially through on-site infiltration through porous sand (DoW 2011).

2.4.2 Wetlands

In Western Australia, wetlands are classified by the DEC according to management categories and include "Conservation Category", "Resource Enhancement" and "Multiple Use" Wetlands. The location of wetlands within the project area was determined using the DEC (2011a) Geomorphic Wetlands Swan Coastal Plain dataset.

Conservation Category Wetlands (CCW) are classified as highest priority wetlands, which support a high level of ecological attributes and functions (EPA 2005). The EPA state that no development or clearing is considered appropriate and any activity that may lead to further loss or degradation is inappropriate. Schemes and proposals that are likely to lead to a significant adverse impact on these wetlands are likely to be formally assessed by the EPA.

Resource Enhancement (RE) Wetlands are wetlands which may have been partially modified but still support substantial ecological attributes and functions. The EPA considers these wetlands as Priority wetlands with the potential to be restored to conservation category status.

Multiple Use (MU) Wetlands are wetlands with few important ecological attributes and functions remaining. The EPA (2005) states that all reasonable measures should be taken to retain the wetland's hydrological functions (including on-site water infiltration and flood detention) and, where possible, other wetland functions.

According to the Geomorphic Wetlands Swan Coastal Plain dataset there are two wetlands located within the project area;

- UFI 6659 which is listed by the EPA as an EPP lake and classified as a Resource Enhancement Wetland
- UFI 6652 which is classified as Multiple Use.

The location of these wetlands is shown in Figure 2.

There are no Bush Forever sites located in the project area. Two Bush Forever sites are located within a 2 km radius of the project area (Government of Western Australia 2000), these are:

- Bush Forever Site No. 256:_Yangebup and Little Rush Lakes, Yangebup
- Bush Forever Site No. 391: Thomson Lake Nature Reserve and adjacent bushland, Beeliar.

2.5 Environmentally Sensitive Areas

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

A search of the DEC's Native Vegetation Viewer indicated that an ESA is located in the project area. This ESA is associated with Resource Enhancement Wetland UFI 6659.

2.6 Conservation Areas

2.6.1 Conservation Reserves

Thomsons Lake Nature Reserve and Beeliar Regional Park are located approximately one kilometre to the west of the project area. Thomsons Lake within the Thomsons Lake Nature Reserve is protected under the EPBC Act as a Ramsar wetland.

Thomsons Lake Nature Reserve and Beeliar Regional Park are registered on the Interim List of the Register of National Estate.

2.6.2 Bush Forever

Bush Forever is a ten year strategic plan which formally commenced in 2000 to protect approximately 51,200 ha of regionally significant bushland within 290 Bush Forever Sites. A target of at least 10% of each of the original 26 vegetation complexes of the Swan Coastal Plain portion of the Perth Metropolitan Region should be conserved (Government of Western Australia 2000).

2.7 Biological Context of the Project Area

2.7.1 Bioregional Context

Western Australia supports 53 biogeographical subregions (Thackway and Cresswell 1995). The project area is located in the Perth Subregion of the Swan Coastal Plain Bioregion. The Swan Coastal Plain Bioregion is a low-lying coastal plain, mainly covered with woodlands. It is dominated by banksia speices (*Banksia* sp.) or tuart (*Eucalyptus gomphocephala*) on sandy soils, swamp sheoak (*Casuarina obesa*) on outwash plains and paperbark (*Melaleuca* sp.) in swampy areas.

The Perth Subregion is composed of colluvial and Aeolian sands, alluvial river flats and coastal limestone. The vegetation is dominated by heath and/or tuart (*Eucalyptus gomphocephala*) woodlands on limestone, banksia (*Banksia* sp.) and jarrah (*Eucalyptus marginata*) woodlands on quaternary marine dunes of various ages and marri (*Corymbia calophylla*) on colluvials and alluvials.

The Perth Subregion includes a complex series of seasonal wetlands and also includes the many islands found offshore from Perth. The subregional area is 1,333,901 ha in size (McKenzie et al. 2002).

2.7.2 Beard Mapping

According to Beard (1990) the vegetation of the project area is located within the Drummond Botanical Subdistrict of the Swan Coastal Plain Subregion. The Drummond Botanical Subdistrict is mainly comprised of *Banksia* sp. low woodland on leached sands with melaleuca (*Melaleuca* sp.) swamps where ill-drained; woodland of tuart (*Eucalyptus gomphocephala*), jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) on less leached soils.

2.8 Vegetation

2.8.1 Vegetation Complexes

According to mapping by Heddle et al. (1980) the vegetation of the project area is considered to be representative of the Bassendean Complex - Central and South:

- **Bassendean Complex – Central and South** – vegetation ranges from woodland of *Eucalyptus marginata – Allocasuarina fraseriana, Banksia* spp. to low woodland of *Melaleuca* spp., and sedgelands on moister sites.

2.8.2 Native Vegetation and Extent

A vegetation type is considered underrepresented if there is less than 30% of its original distribution remaining. There are several key criteria now being applied to vegetation clearing, purely from a biodiversity perspective and do not take into account any other land degradation issues (EPA 2000). These are:

- the "threshold level" below which species loss appears to accelerate exponentially within an ecosystem level is regarded as being at a level of 30% (of the pre-European (pre-1750) extent of the vegetation type)
- a level of 10% of the original extent is regarded as being a level representing *Endangered*
- clearing which would reclass the threat level to Presumed Extinct, Endangered, or Vulnerable should be avoided.

These Conservation Status classifications are detailed in Table 2 below:

Table 2: Conservation Status Classifications

Conservation Status	Description
Presumed Extinct	Probably no longer present in the bioregion
*Endangered**	<10% of pre-European extent remains
*Vulnerable**	10-30% of pre-European extent exists
*Depleted**	>30% and up to 50% of pre-European extent exists
Least Concern	>50% pre-European extent exists and subject to little or no degradation over a majority of this area

* or a combination of depletion, loss of quality, current threats and rarity gives a comparable status

Vegetation extents of the pre-European vegetation complex (Heddle et al. 1980) within the project area and the remaining percent of vegetation in this complex within the System 6 region and the Swan Coastal Plain portion of the System 1 region, as recorded by the EPA (EPA 2006), is shown in Table 3.

Table 3: Vegetation Extent, Type and Status

Vegetation Association Number	Vegetation Name	Pre-European Extent (Ha)	Current Extent (1997–1998 in System 6 (Ha)	% Remaining	% Pre-European Extent in Secure Tenure (2002)
44	Bassendean Complex–Central and South	87,477	23, 624	27.0	0.7

According to EPA (2006), the vegetation of the Bassendean Complex-Central and South is classified as "Vulnerable" in terms of extent of vegetation remaining compared to pre-European extents. However, it is noted that the site is largely degraded.

3.0 FLORA AND VEGETATION SURVEY METHODOLOGY

3.1 Flora Desktop Assessment

A desktop assessment was carried out prior to the field survey in order to consider all biological constraints in or adjoining the project area. The desktop assessment for flora and vegetation included:

- a review of the potential for Threatened Rare and Threatened Flora to be present within the project area. This included a review of Threatened Flora species listed under the EPBC Act, the *Wildlife Conservation Act 1950 (Rare Flora Notice 2008)* and Priority Flora listed by the DEC
- a review of EPBC Act listed Threatened Ecological Communities (TECs); the DEC's Threatened Ecological Communities (TEC) and Priority Ecological Communities (PEC) databases to determine the potential for TECs or PECs to be present within the project area
- a review of the Department of Environment and Conservation (DEC 2011a) geomorphic wetland dataset
- a review of Conservation Estates and Reserves including ESAs occurring within the project area.

3.2 Field Survey

RPS conducted a Level 2 flora and vegetation survey of the project area on 30 September and 6 October, 2011. The survey was undertaken to provide a description of the dominant vegetation types present, vegetation condition and flora species present at the time of the survey. Additionally, the survey was also conducted to determine whether any of the significant species identified on the DEC Threatened Rare and Priority Flora list for the general area occur or are likely to occur on the project area.

The field assessment methodology involved a combination of sampling within permanent quadrats of 10 m × 10 m dimension located in representative vegetation types as well as traversing the project area to record plant species present (visible) at the time of the survey. This method complies with RPS interpretation of the EPA's guidelines for flora surveys as outlined in Guidance Statement No. 51 *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* (EPA 2004), and *Terrestrial Biological Surveys as an Element of Biodiversity Protection,* Position Statement No. 3 (EPA 2002).

A Toughbook Tablet with built in GPS and ArcGIS software was utilised during the flora survey. The tablet has aerial photography and all available shape file layers of the project area and allowed for accurate navigation and site selection within the project area.

3.2.1 Site and Relevè Selection

Quadrat locations were selected to ensure that an adequate representation of the major vegetation types and flora present within the project area was sampled. This was done using colour aerial photography, targeting different landforms and by ground-truthing on foot. Nine quadrats located within representative vegetation types were selected and all plant species and floristic data recorded, including height for each species within each quadrat. The location of all quadrats, relevès, and any Threatened Rare or Priority listed flora was recorded using a hand-held Global Positioning System (GPS).

Relevès are often used in flora and vegetation surveys to ascertain vegetation types and boundaries by recording the dominant plant species present including height and percentage and then comparing this floristic data to data recorded in established quadrats. Relevès are also utilised to map discreet pockets of vegetation which are either limited in spatial distribution, absent or poorly represented in the remaining survey area or alternatively, cannot be sampled using quadrats due to topographical constraints. Four relevè sites were also selected within the project area.

The following information was recorded for each quadrat:

- Location: Coordinates recorded in GDA 94 datum using a hand-held global positioning system (GPS) tool and PDA (Trimble Nomad), to accuracy usually within 5 m and 2 m respectively, taken for the north-east corner of the quadrat.

- Physical Features: Aspect, soil attributes. Percentage surface cover by: rocks, logs and branches, leaf litter, bare ground.

- Vegetation Classifications: Based on Keighery (1994), adapted from Muir (1977) and Aplin (1979). Data sheets include field based description, modified following flora identification.

- Disturbance: Level and nature of disturbances (e.g. weed presence, fire and time since last fire, impacts from grazing, exploration activities).

- Flora: List of flora observed and recorded within the quadrat. Measure of plant heights and percentage foliar cover.

3.2.2 Targeted Search for Orchid Species

RPS received written advice from Andrew Brown (DEC), an authority on orchid species in Western Australia, regarding the optimal time to survey for *Caladenia huegelii* (TRF). This correspondence is found in Appendix 1.

A targeted search for this species including other conservation significant species identified from the DEC database searches was conducted on 30 September 2011. The search effort concentrated on the southern and western extents of the project area. The floristic composition of the vegetation in these areas was considered to potentially support *Caladenia huegelii* (TRF). The bush land was also relatively undisturbed and mostly intact.

3.2.3 Flora Identification

All plant species collected during the field program were dried and fumigated in accordance with the requirements of the Western Australian Herbarium. Species that were not able to be identified in the field were later identified using local and regional flora keys and by comparison with the named species held at the Western Australian Herbarium. Plant taxonomists who are considered to be an authority on a particular plant group were consulted, when necessary.

The conservation status of all recorded flora was compared against the current lists available on *FloraBase* (DEC 2011b) and the EPBC Act Threatened species database provided by SEWPaC (2011a).

3.3 Flora and Vegetation Survey Limitations

Complete flora and vegetation surveys can require multiple surveys, at different times of year, and over a period of a number of years, to enable observation of all species present. Some flora species, such as annuals and orchids, are only available for collection at certain times of the year, and others are only identifiable at certain times (such as when they are flowering). Furthermore, climatic and stochastic events such as fire may affect the presence of certain plant species or the timing of flowering.

Flora composition can change over time, with flora species having specific growing periods, especially annuals and ephemerals. Therefore the results of future botanical surveys in this location may differ from the results of this survey. As the survey was conducted in one season, rather than several times over the course of a year one annual, ephemeral condition-specific species may be present that were not recorded in the survey.

The project area covers 35.01 hectares. The small scale of this project meant that sampling was conducted using quadrats, relevès and targeted searches by intensively traversing the site. The majority of species would have been identified using these techniques however it is possible that species with a low abundance in the project area were not observed.

The limitations of the 2011 flora and vegetation survey are detailed in Table 4.

Table 4: Limitations and Constraints Associated with the 2011 Survey

Variable	Impact on Survey Outcomes
Access Problems	No access problems were encountered during the survey.
Experience levels	The botanist who executed this survey was a practitioner suitably qualified in his respective field, having completed numerous flora and vegetation surveys on the Swan Coastal Plain (SCP). Coordinating Botanist: Baden Sadlo (Environmental Scientist/Botanist). Field Staff: Baden Sadlo and Emma Bryce Taxonomy: Baden Sadlo Data Interpretation: Baden Sadlo
Timing, weather, season.	The timing of the flora survey and the rainfall during the preceding months was considered optimal for the identification of all annual and ephemeral species, including any Threatened Rare or Priority listed species that may have been present. The project area received a total of 813.6 mm of rainfall during the months of April to October, which is 64.6 mm above the historical average annual rainfall (1972–2011). Flora composition changes over time, with flora species having specific growing periods, especially annuals and ephemerals (some plants lasting for a markedly brief time, some only a day or two). Therefore the results of future botanical surveys in this location may differ from the results of this survey.
Completeness	As the survey was conducted only once rather than several times over the course of a year some annual, ephemeral condition specific species may be present that were not recorded in the survey. All plant specimens collected during the field survey were identified to the species level.
Determination	This survey makes inferences about vegetation types that have the potential to be TECs or PECs. However, a decision as to the presence or absence of TECs and PECs at the project area remains the responsibility of the DEC's Species & Communities Branch. The taxonomy and conservation status of the Western Australian flora are dynamic. This report was prepared in reliance on taxonomy and conservation current at the time, but it should be noted this may change.

4.0 FAUNA SURVEY METHODOLOGY

4.1 Overview

This fauna survey and report preparation was carried out in accordance with the following guidance statements:

- Guidance Statement No. 56 - *Guidance for the Assessment of Environmental Factors: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia* (EPA 2004)
- Technical Guide – *Terrestrial Vertebrates Fauna Surveys for Environmental Impact Assessment* (EPA and DEC 2010)
- Position Statement No. 3 - *Terrestrial Biological Surveys as an Element of Biodiversity Protection* (EPA 2002).

The report synthesises the results of the desktop review and reconnaissance survey that comprise a Level 1 Survey as stated in the above-mentioned EPA publications.

4.1.1 Licences and Permits

No licences or permits were required for the site inspection and preparation of the current report. No fauna trapping was undertaken.

4.2 Desktop Survey

A search of the databases listed in Table 5 was undertaken to establish which fauna of conservation significance would be expected to occur within the survey area and immediate surroundings. The results from the Threatened and Priority Fauna Database search (DEC), EPBC Protected Matters search (SEWPaC) and NatureMap Database search (DEC and WA Museum) are all located within Appendix 2.

Table 5: Databases Searched as Part of Desktop Study

Database (Governing Organisation)	Type of Records Held	Areas Searched
Threatened and Priority Fauna Database (DEC)	Information and records on Threatened and Priority fauna species in Western Australia	Polygon search of survey area; 2 km buffer area.
Environment Protection and Biodiversity Conservation (EPBC) *Act 1999* database - EPBC Protected Matters Search Tool (DSEWPC)	Records on matters protected under the *EPBC Act*, including threatened species and conservation estate.	Polygon search of survey area; 2 km buffer area.

Database (Governing Organisation)	Type of Records Held	Areas Searched
NatureMap Database (DEC and WA Museum)	Records on all fauna species, based on location (area) or species.	Circle search within a 2 km radius of 31°58”00” S, 115°46”5”.
Species Profile and Threats (SPRAT) Database (DSEWPC 2011d)	Information and records on all federally protected species.	Search conducted by species, not area.

A number of species present on regional species lists rely on specific habitat requirements. Whilst these habitats were present within the broader region, they were not present within the project area. As such, these species were excluded from discussion. The general patterns of distribution of species known to potentially occur within the study area were further augmented with information derived from the following texts and resources:

- Birds (Pizzey and Knight 2007)
- Reptiles (Storr et al. 1981, 1983, 1990)
- Conservation Significant Species (SPRAT Database) (DSEWPC 2011d).

4.2.1 Previous Fauna Studies in the Region

Other studies were reviewed in order to gain an understanding of the regional representation of fauna species that inhabit the survey area and provide insight into the fauna and fauna habitat of the region in general. These include:

- Vertebrate Fauna Survey for the Roe Highway Extension project (Phoenix Environmental Sciences 2011) – a Level 2 fauna survey and Level 1 fauna survey were undertaken for the area encompassing the proposed project area and an extension to the project area of the proposed Roe Highway Extension Project. A total of 128 vertebrate fauna species were recorded during the Level 2 fauna survey.

- Biodiversity Assessment of the Swan Coastal Plain (ANRA 2009) – the ANRA website presents a Biodiversity Assessment of the Swan Coastal Plain bioregion, outlining the natural values of the region, including wetlands, vegetation and flora, fauna, threats to species and ecosystems, and management responses.

4.2.2 Field Reconnaissance Survey

RPS undertook the fauna survey on 6 October 2011, beginning at 8.00 am. At this time the temperature on site was approximately 18 C. The maximum temperature reached during the day was 23.4 °C. The intention of the site inspection was to familiarise the consultant with the environment and fauna habitats of the project area. During the inspection the following was undertaken:

- The entire site was traversed on foot.
- Notes were made on habitats and opportunistic observations were made of fauna.

- Observations were made of active birds.
- The ground was examined for scats, tracks, bones or signs of foraging.
- A hollow assessment for cockatoo and other avifauna habitat was conducted.

4.2.3 Limitations

The EPA Guidance Statement 56 (EPA 2004) outlines a number of limitations that may arise during fauna surveys. These survey limitations are listed in Table 6.

Table 6: Fauna Survey Limitations

Limitation	Comment
Level of survey.	Level 1 (desktop study, reconnaissance survey), as specified by local government authority.
Competency/experience of the consultant(s) carrying out the survey.	The author has sufficient experience in conducting Level 1 Fauna Surveys.
Scope. (What faunal groups were sampled, and were some sampling methods not able to be employed because of constraints?)	All terrestrial vertebrate and short range endemic invertebrate fauna were considered.
Proportion of fauna identified, recorded and/or collected.	All fauna observed were identified to species level.
Sources of information e.g. previously available information (whether historic or recent) as distinct from new data.	Sources include: databases (DEC, WAM, EPBC).
The proportion of the task achieved and further work which might be needed.	Desktop review and site inspection completed, further work not required at this stage.
Timing/weather/season/cycle.	Site inspection conducted in October 2011; 8.00 am, temperature ~18 °C, clear.
Disturbances (e.g. fire, flood, accidental human intervention) which affected results of survey.	No disturbance other than general human intervention was evident on site.
Intensity. (In retrospect, was the intensity adequate?)	Survey intensity was adequate for a Level 1 Survey.
Completeness (e.g. was relevant area fully surveyed?)	Site inspection encompassed entire project area.
Resources (e.g. degree of expertise available in animal identification to taxon level).	All fauna observed were identified to species level.
Remoteness and/or access problems.	None.
Availability of contextual (e.g. biogeographic) information on the region.	Regional (e.g. Swan Coastal Plain) information was available and was consulted.

The fauna assessment undertaken was a reconnaissance survey only and therefore only sampled those species that can be easily seen, heard or have distinctive signs, such as tracks, scats and diggings. Many cryptic and nocturnal species would not have been identified during a reconnaissance survey. Extensive detailed fauna surveys, involving trapping surveys, are required to obtain a more comprehensive list of fauna species that may utilise the project area.

This survey was carried out during only one season, and in one year. Complete faunal surveys often require multiple surveys, at different times of year, and over a period of a number of years, to enable full survey of all species present.

A level 2 Fauna survey was not undertaken as the site is partially cleared and over 50% of the vegetation is degraded.

5.0 VEGETATION RESULTS

5.1 Vegetation Types

The vegetation in the project areas has been classified into the following groups:

- Mixed *Banksia* spp. woodlands
- *Melaleuca preissii* and *Banksia littoralis* low open forest
- *Melaleuca rhaphiophylla* low open forest
- Remnant native tree and shrub species over grassland weeds
- Scattered *Melaleuca preisssiana* over closed tall scrub of *Astartea scoparia* and sedges
- *Banksia* woodlands over shrubland
- *Eucalyptus marginata* and *Banksia menziesii* low open forest/open woodlands
- *Leptospermum laevigatum* (weed) closed tall shrub.

Eight vegetation types were recorded during the survey of the project area and are described in Table 7 and mapped on Figure 3.

The vegetation types were described using Keighery's (1994) vegetation structural classes, adapted from Muir (1977) and Aplin (1979) in Government of Western Australia 2000.

Table 7: Vegetation Types Recorded in the Project Area

No.	Vegetation Type	Vegetation Description	Site Photo	Quadrat/Releve/Photo Point
V1	Mixed *Banksia* spp. woodlands	Low Woodland of *Banksia attenuata*, *B. ilicifolia* and *B. menziesii* over Tall Open Shrubland of *Adenanthos cygnorum* subsp. *cygnorum* over Grassland of **Briza maxima*, **Ehrharta longiflora* and **E. calycina* over Very Open Herbland of **Sonchus oleraceus*, *Trachymene pilosa* and *Burchardia congesta* over Very Open Shrubland of *Lyginia barbata*.		Q1
V2	*Melaleuca preissii* and *Banksia littoralis* low open forest	Low Open Forest of *Melaleuca rhaphiophylla* over Tall Shrubland of *Kunzea glabrescens*, **Chamaecytisus palmensis* and **Acacia longifolia* over Grassland of **Stenotaphrum secundatum*, **Avena barbata*, **Briza maxima* and * *Ehrharta calycina* over Very Open Herbland of *Centella asiatica* over Very Open Sedgeland of *Juncus pallidus*.		Q2
V3	*Melaleuca rhaphiophylla* low open forest	Low Open Forest of *Melaleuca rhaphiophylla* over Tall Shrubland of *Kunzea glabrescens*, **Chamaecytisus palmensis* and **Acacia longifolia* over Grassland of **Stenotaphrum secundatum*, **Avena barbata*, **Briza maxima* and * *Ehrharta calycina* over Very Open Herbland of *Centella asiatica* over Very Open Sedgeland of *Juncus pallidus*.		R3

No.	Vegetation Type	Vegetation Description	Site Photo	Quadrat/Releve/Photo Point
V4	Remnant native tree and shrub species over grassland weeds	Remnant *Banksia attenuata*, *B. menziesii*, *Eucalyptus marginata* and *Nuytsia floribunda* with Tall Open Scrub of *Adenanthos cygnorum* and **Leptospermum laevigatum* or *Kunzea glabrescens* over Grassland of **Ehrharta calycina*		R1
V5	Scattered *Melaleuca preisssiana* over closed tall scrub of *Astartea scoparia* and sedges	Scattered *Melaleuca preisssiana* over Closed Tall Scrub of *Astartea scoparia* over Open Grassland of **Cynodon dactylon* over Open Herbland of *Centella asiatica* and **Ornithopus compressus* over Very Open to Open Sedgeland of *Baumea articulata* with Open Sedgeland/Herbland of **Typha orientalis* and *Triglochin linearis* in standing water.		Q8, R4
V6	*Banksia* woodlands over shrubland	Low to Low Open Woodland of *Banksia attenuata* and *Banksia menziesii* over Shrubland to Open Shrubland of *Allocasuarina humilis*, *Stirlingia latifolia*, *Persoonia saccata* over Low to Low Open Shrubland of *Eremaea pauciflora* subsp. *pauciflora*, *Hibbertia hypericoides*, *Scholtzia involucrata* and *Leucopogon constephioides* over Very Open Grassland of **Briza maxima* and **Ehrharta* spp. over Very Open Herbland of *Patersonia occidentalis*, *Conostylis aculeata* and *Phlebocarya ciliata* over Very Open Sedgeland of *Lepidosperma squamatum* and *Lyginia barbata*		Q3, Q4, Q5, Q6, R2

No.	Vegetation Type	Vegetation Description	Site Photo	Quadrat/Releve/Photo Point
V7	*Eucalyptus marginata* and *Banksia menziesii* low open forest/open woodlands	Low Open Forest to Open Woodland of *Eucalyptus marginata* and *Banksia attenuata* over Open Shrubland of *Jacksonia furcellata* over Low Shrubland of *Hibbertia subvaginata*, *Leucopogon constephioides*, *Constephium pendulum*, *Bossiaea eriocarpa* and *Hibbertia hypericoides* over Open to Very Open Grassland of **Briza maxima* and **Ehrharta* spp. over Very Open Herbland of *Phlebocarya ciliata*, *Conostylis aculeata* and *Dasypogon bromeliifolius* over Very Open Sedgeland of *Desmocladus flexuosus.*		Q3, Q4, Q5, Q6, R2
V8	**Leptospermum laevigatum* closed tall shrub	Closed Tall Scrub of **Leptospermum laevigatum* over weed species.		photo point

5.2 Vegetation Condition

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

- completeness of structural levels.
- extent of weed invasion.
- historical disturbance from tracks and other clearing or dumping.
- the potential for natural or assisted regeneration.

The scale consists of six rating levels as outlined in Table 8.

Table 8: Vegetation Condition Rating Scale

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

(Keighery 1994)

Applying the Keighery vegetation condition rating scale, the vegetation within the project area ranged from Excellent to Completely Degraded (Figure 4).

The majority of the project area is characterised by isolated native shrubs and or trees over weed species, areas consisting of remnant tree and or tall shrub species over grassland of **Ehrharta calycina*, and cleared areas. These areas were rated Completely Degraded because the vegetation had no structure, was no longer intact and high densities of weed species were present. There are numerous historical sand tracks dissecting the project area which are cleared and almost devoid of vegetation or show limited signs of regeneration from natural recruitment of endemic species.

The western extent of the project area has been previously disturbed by earthwork activities during the construction of overhead electrical transmission lines. Vegetation structure in this section of the project area was observed to be fragmented with the exception of an area of *Banksia* low woodland which was structurally intact and in

Excellent condition. The *Banksia* woodlands (vegetation type V6) located in the southern portion of the project area were also considered to be in Excellent to Very Good condition. Weed species were generally in low densities and the diversity of native species was moderately high. It appears the southern area was also recently disturbed by fire (perhaps two to five years ago). Rejuvenation and recruitment of native species has been strong however several isolated tree deaths in this area may suggest the potential presence of dieback.

The condition of the riparian vegetation surrounding the RE wetland was considered Disturbed. Weed densities were relatively high at some locations and aggressive exotic (weed) tall shrubs such as **Acacia longifolia* and **Leptospermum laevigatum* were recorded.

GIS spatial analysis of the vegetation condition mapping was undertaken to determine the percentage area of each vegetation condition type that is represented in the Project area. The calculations indicate that approximately 60% of vegetation in the project area is in a Completely Degraded condition, 11% is Degraded, 11% Good, 5% Very Good, 8% Excellent to Very Good and 4% rated as Excellent".

5.3 Threatened Ecological Communities

Ecological communities are defined as "naturally occurring biological assemblages that occur in a particular type of habitat" (English and Blythe 1997). TECs are ecological communities that have been assessed and assigned to one of four categories related to the status of the threat to the community, i.e. Presumed Totally Destroyed, Critically Endangered, Endangered, and Vulnerable.

Some TECs are protected under the EPBC Act. Although TECs are not formally protected under the state *Wildlife Conservation Act 1950,* the loss of, or disturbance to, some TECs triggers the EPBC Act. The EPA's position on TECs states that proposals that result in the direct loss of TECs are likely to require formal assessment.

Possible TECs that do not meet survey criteria are added to the DEC's Priority Ecological Community (PEC) Lists under Priorities 1, 2 and 3. These are ecological communities that are adequately known; are rare but not threatened, or meet criteria for Near Threatened. PECs that have been recently removed from the threatened list are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.

A search of the DEC's TEC database indicated that no TECs or PECs have been recorded within the project area.

No Threatened Ecological or Priority Ecological Communities (TECs and PECs) as defined by the EPBC Act 1999 (SEWPaC 2011b) or the DEC (2011c/d) were recorded from the project area.

5.4 Conservation Significance of theVegetation

Based on the results of the 2011 Level 2 flora and vegetation survey, when compared on a presence/absence basis with the complete dataset from the *Floristic Survey of the Southern Swan Coastal Plain* (Gibson et al. 1994), it was found that the floristic communities located within the project area most closely resembled Floristic Community Types (FCT) 11, 12, 21a, 23a and 28. A description of these floristic communities is described below:

- FCT 11 – Wet forests and woodlands
- FCT 12 – *Melaleuca teretifolia* and/or *Astartea* aff. *fascicularis* shrublands
- FCT 21a – Central *Banksia attenuata – Eucalyptus marginata* woodlands
- FCT 23a – Central *Banksia attenuata – Banksia menziesii* woodlands
- FCT 28 – Spearwood *Banksia attenuata* or *Banksia attenuata – Eucalyptus* woodlands.

None of the floristic communities recorded in the project area are listed as PECs or TECs as defined by the EPBC Act 1999 or by the DEC (2011c/d).

5.4.1 Commonwealth Significance

Some flora species are protected under both state and Commonwealth legislation. activities that are deemed to have a significant impact on protected species that under the EPBC Act and the *Wildlife Conservation Act 1950* can trigger referral to SEWPaC and/or the EPA.

A search of the EPBC Act Protected Matters Search Tool (SEWPaC 2011c) identified a number of federally protected flora species within a two kilometre radial buffer of the project area. These species are listed in Table 9.

Table 9: Threatened Flora Present within a 2 km Radial Buffer of the Project Area

Genus	Species	Common Name	Conservation Category
Andersonia	*gracilis*	Slender Andersonia	Endangered
Caladenia	*huegelii*	King spider-orchid	Endangered
Centrolepis	*caespitosa*		Endangered
Darwinia	*foetida*	Muchea bell	Critically Endangered
Drakea	*elastica*	Glossy leaved Hammer orchid	Endangered
Lepidosperma	*rostratum*	Beaked lepidosperma	Endangered

Descriptions of Conservation Categories delineated under the EPBC Act are detailed in Appendix 3. These are applicable to threatened flora species.

5.4.2 State Significance

In addition to the EPBC Act, significant flora in Western Australia is protected by the *Wildlife Conservation Act 1950*. The *Wildlife Conservation Act 1950* is administered by the DEC and protects TRF species. The DEC also maintains a list of Priority listed flora species. Conservation codes for flora species are assigned by the DEC to define the level of conservation significance.

Priority Flora are not currently protected under the *Wildlife Conservation Act 1950*. Priority Flora may be rare or threatened, but cannot be considered for declaration as rare flora until adequate surveys have been undertaken of known sites and the degree of threat to these populations clarified. Special consideration is often given to sites that contain Priority Flora, despite them not having formal statutory protection. A description of the DEC's Conservation Codes that relate to flora species is provided in Appendix 3.

Prior to conducting the field survey, a search of the DEC Threatened Rare and Priority Listed Flora database was undertaken to identify significant flora that could potentially occur in the project area. This investigation used a search buffer of two kilometres from the project area boundary and encompassed a review of the following databases:

- the Department's *"Threatened Rare and Priority Flora List"*, which contains species that are Declared Rare (Conservation Code R or X for those presumed to be extinct), poorly known (Conservation Codes 1, 2 or 3), or require monitoring (Conservation Code 4)

- the *Western Australian Herbarium Specimen* database.

A search of the DEC's Threatened Flora Databases and the Western Australian Herbarium indicates that 15 Priority Flora and two Threatened Rare Flora species may potentially occur in the project area (Table 10).

Table 10: Conservation Significant Flora Species Recorded in the Vicinity of the Project Area

Species	Conservation Category Code
Acacia lasiocarpa var. *bracteolata* long peduncle variant (G.J. Keighery 5026)	P1
Byblis gigantea	P3
Caladenia huegelii	T
Cyathochaeta teretifolia	P3
Dodonaea hackettiana	P4

Species	Conservation Category Code
Eryngium pinnatifidum subsp. *palustre* ms	P3
Grevillea thelmanniana subsp. *thelmanniana*	P4
Jacksonia gracillima	P3
Lepidosperma rostratum	T
Microtis quadrata	P4
Ornduffia submersa	P4
Phlebocarya pilosissima subsp. *pilosissima*	P3
Stylidium longitubum	P3
Thelymitra variegata	P3
Thysanotus glaucus	P4
Tripterococcus paniculatus ms	P4
Verticordia lindleyi subsp. *lindleyi*	P4

5.5 Field Survey Results

A total of 183 plant taxa (including subspecies and varieties) representing 129 genera and 48 plant families were recorded in the project area. This total is comprised of 147 native species and 36 introduced (exotic) species. The results of the flora and vegetation survey indicate that portions of the project area display a moderately high degree of biodiversity in terms of floristic composition. Quadrat and releve data and a species inventory are presented in Appendix 4 and Appendix 5 respectively.

A total of four taxa in the collection could not be identified to species level due to the absence of adequate flowering parts and/or fruiting bodies. None of these taxa resembled any of the conservation significant species identified from the database searches. All specimens collected in the field were compared to the conservation significant species identified from the desktop TRF and Priority flora searches and contained within the morphological types held by the Western Australian Herbarium.

No Threatened Rare Flora listed by the DEC (2011b) or species of national conservation significance listed under the EPBC Act were recorded from the project area during the 2011 survey.

One Priority Flora species was recorded from the project area; *Caladenia speciosa* (P4). One specimen was recorded at location 391393, 6445115 (GDA datum). A photo was taken of the specimen and later confirmed by Andrew Brown, a recognised authority on orchid species of Western Australia.

Plate 1: ***Caladenia speciosa*** **(P4)**

5.5.1 Introduced Flora

A total 36 introduced species (weeds) were recorded during the flora survey. One weed species, *Zantedeschia aethiopica* (arum lily) is listed as a category P1 Declared Plant species pursuant to section 37 of the *Agricultural and Related Resources Protection Act 1976* (WA). The movement of P1 Declared Plants or contaminated machinery and produce including livestock and fodder are prohibited within the state.

Zantedeschia aethiopica was recorded at three locations in the project area and approximately 60 plants were recorded. The location of this species has been mapped on Figure 2.

6.0 FAUNA RESULTS

6.1 Recorded Vertebrate Fauna and Habitat

The following bird species were identified during the project area visit:

- *Lichmera indistincta* (brown honeyeater)
- *Anas gracilis* (grey teal)
- *Fulica atra (*Eurasian coot)
- *Phylidonyris novaehollandiae* (New Holland honeyeater)
- *Streptopelia senegalensis (*laughing turtledove)
- *Trichoglossus haematodus* (rainbow lorikeet)
- *Cracticus torquatus (*grey butcherbird (female))
- *Artamus personatus* (masked woodswallow)
- *Merops ornatus (*rainbow bee-eater)
- *Hirundo neoxena* (welcome swallow)
- *Dacelo novaeguineae (*laughing kookaburra)
- *Coracina novaehollandiae* (black-faced cuckoo-shrike)
- *Corvus coronoides* (Australian raven)
- *Corvus sp.* (crow)
- *Rhipidura leucophrys* (willie wagtail)
- *Barnardius zonarius* (Australian ringneck parrot)
- *Threskiornis molucca* (Australian white ibis)
- *Eolophus roseicapilla* (galah).

The following reptile species were recorded during the project area visit:

- *Tiliqua rugosa (*western bobtail)
- *Cryptoblepharus plagiocephalus* (fence skink)
- *Hemiergis quadrilineata (*two-toed earless skink).

During the site visit, two long-necked turtle (*Chelodina oblonga*) shells were discovered in the fringing vegetation of the wetland. This is illustrated in Plate 2.

Plate 2: Shell of *Chelodina oblonga*

The project area supports a number of notable fauna habitats, which are discussed in Sections 6.1.1 to 6.1.2.

6.1.1 EPP / Resource Enhancement Wetland

The EPP and RE category wetland (UFI 6659) is located towards the eastern boundary of the project area (Figure 2). This shallow, freshwater wetland provides habitat for a number of waterbirds, amphibians and reptiles. During the reconnaissance survey, a number of species were recorded utilising or recently present within this habitat area, including:

- *Anas gracilis* (grey teal)
- *Fulica atra (*Eurasian coot)
- *Rhipidura leucophrys* (willie wagtail)
- *Crinia* sp. (frog)
- *Hemiergis quadrilineata (*two-toed earless skink)
- *Chelodina oblonga (*long-necked turtle (shell)).

It is suspected that a number of other waterbird species utilise the project area, and there is the potential for quenda (*Isoodon obelesus fusciventer*) to inhabit the fringing vegetation.

An image of wetland is provided in Plate 3 showing the current health of the wetland.

Plate 3: RE Category and EPP Listed Wetland within the Project Area

6.1.2 Black Cockatoo Habitat Trees

A number of trees within the project area were identified as suitable foraging and breeding trees for Carnaby's Black-Cockatoo and forest red-tailed black cockatoo. Potential breeding habitat trees are those that have a diameter at breast height (DBH) of greater than 500 mm and may form hollows. A list of these trees observed on site and details regarding their suitability as fauna habitat is provided in Table 11. Figure 2 also provides the specific locations within the project area.

Table 11: Potential Black Cockatoo Habitat Trees within Project Area

ID No.	Species	Location		DBH (mm)	Height (m)	Comments
		Eastings	Northings			
1	*Eucalyptus marginata*	391461	6445230	>500	8	Half burnt
2	*Eucalyptus marginata*	391583	6445060	>500	10+	Half burnt; contains hollows
3	*Eucalyptus marginata*	391598	6445071	>500	8	
4	*Eucalyptus marginata*	391546	6445037	>500	10	Hollow down centre of trunk
5	*Eucalyptus marginata*	391542	6445015	>500	6	Massive hollow in trunk; burnt
6	*Eucalyptus marginata*	391492	6444952	>500	7	Contains hollows
7	*Eucalyptus marginata*	391489	6444953	>500	8	Contains hollows
8	*Eucalyptus todtiana*	391506	6444986	>500	8	Contains hollows

Eucalyptus todtiana (coastal blackbutt) is not commonly recognised as a cockatoo breeding tree (though it is a known foraging tree), however this particular tree appeared to contain large hollows considered to potentially sufficient for cockatoo breeding habitat.

Towards the northern boundary of the project area, some pine trees (*Pinus pinaster*) were noted. Despite being a non-native species, these trees provide feeding habitat for black cockatoos.

6.1.3 Potential Graceful Sun Moth Habitat

The Graceful Sun Moth is currently known to breed on two native flora species; *Lomandra hermaphrodita* and *Lomandra maritima. Lomandra maritima* is a plant species associated with the coastal dune systems on the Swan Coastal Plain and *Lomandra hermaphrodita* is typically associated with Banksia Woodlands.

Lomandra hermaphrodita was recorded during the flora survey of the project area, and as such there is potential for the Graceful Sun Moth to inhabit the area. It was recorded within vegetation types V6 and V7 (*Banskia* woodland) (Figure 3), and was recorded in five locations (Appendix 4).

6.1.4 Dense *Banksia* Woodland Vegetation South of Wetland

Banksia woodland in the southern corner of the project area (vegetation types V6 and V7) (Figure 3) is thought to provide potential habitat for small mammals and reptiles, with relatively dense undergrowth in comparison to other areas of the project area. These vegetation types are described as:

- V6 – Low to Low Open Woodland of *Banksia attenuata* and *Banksia menziesii* over Shrubland to Open Shrubland of *Allocasuarina humilis*, *Stirlingia latifolia*, *Persoonia saccata* over Low to Low Open Shrubland of *Eremaea pauciflora* subsp. *pauciflora*, *Hibbertia hypericoides*, *Scholtzia involucrata* and *Leucopogon constephioides* over Very Open Grassland of **Briza maxima* and **Ehrharta* spp. over Very Open Herbland of *Patersonia occidentalis*, *Conostylis aculeata* and *Phlebocarya ciliata* over Very Open Sedgeland of *Lepidosperma squamatum* and *Lyginia barbata*

- V7 – Low Open Forest to Open Woodland of *Eucalyptus marginata* and *Banksia attenuata* over Open Shrubland of *Jacksonia furcellata* over Low Shrubland of *Hibbertia subvaginata*, *Leucopogon constephioides*, *Constephium pendulum*, *Bossiaea eriocarpa* and *Hibbertia hypericoides* over Open to Very Open Grassland of **Briza maxima* and **Ehrharta* spp. over Very Open Herbland of *Phlebocarya ciliata*, *Conostylis aculeata* and *Dasypogon bromeliifolius* over Very Open Sedgeland of *Desmocladus flexuosus*

These areas may provide habitat for conservation significant species such as the quenda, which relies on thick understorey for protection and through which to form runnels linking burrows to the wetland as a potential foraging area.

6.2 Conservation Significance

Conservation significant vertebrate fauna with the potential to occur within the study area are presented in Table 12. These results have been sourced from the databases listed in Table 4 (Appendix 2) and are based on known species distributions. An description of conservation significance categories of fauna is provided in Appendix 6.

Table 12: Conservation Significant Vertebrate Fauna Species with Potential to occur within the Project Area

Species	Common Name	Conservation Status (State)	Conservation Status (EPBC)
Birds			
Apus pacificus	Fork-tailed swift		Migratory; Marine
Ardea alba	Great egret		Migratory; Marine
Ardea ibis	Cattle egret		Migratory; Marine
Botaurus poiciloptilus	Australasian bittern	S1	Endangered
Calidris acuminate	Sharp-tailed sandpiper		Migratory; Marine
Calidris canutus	Red knot		Migratory; Marine
Calidris ferruginea	Curlew sandpiper		Migratory; Marine
Calidris melanotos	Pectoral sandpiper		Migratory; Marine
Calidris ruficollis	Red-necked stint		Migratory; Marine
Calidris subminuta	Long-toed stint		Marine
Calyptorynchus banksii naso	Forest red-tailed black cockatoo	S1	Vulnerable
Calyptorhynchus latirostris	Carnaby's Black-Cockatoo	S1	Endangered
Charadrius dubius	Little ringed plover		Migratory; Marine
Charadrius ruficapillus	Red-capped plover		Marine
Falco peregrinus	Peregrine falcon	S4	
Haliaeetus leucogaster	White-bellied sea eagle		Migratory; Marine
Himantopus himantopus	Black-winged stilt		Marine
Ixobrychus minutus	Little bittern	P4	
Limosa lapponica	Bar-tailed godwit		Migratory; Marine
Limosa limosa	Black-tailed godwit		Migratory; Marine
Merops ornatus	Rainbow bee-eater		Migratory; Marine
Philomachus pugnax	Ruff		Migratory; Marine
Recurvirostra novaehollandiae	Red-necked avocet		Marine
Sternula nereis	Fairy tern		Vulnerable

Species	Common Name	Conservation Status (State)	Conservation Status (EPBC)
Thinornis rubricollis	Hooded plover	P4	Marine
Tringa glareola	Wood sandpiper		Migratory; Marine
Tringa stagnatilis	Marsh sandpiper		Migratory; Marine
Reptiles			
Lerista lineata	Lined skink	P3	
Neelaps calonotos	Black-striped snake	P3	
Mammals			
Dasyurus geoffroii	Chuditch	S1	Vulnerable
Falsistrellus mackenziei	Western false pipistrelle	P4	
Isoodon obesulus subsp. fusciventer	Quenda	P5	
Macropus eugenii derbianus	Tammar wallaby	P5	
Macropus irma	Western brush wallaby	P4	
Myrmecobius fasciatus	Numbat	S1	Vulnerable
Phascogale calura	Red-tailed phascogale		
Setonix brachyurus	Quokka	S1	Vulnerable
Invertebrates			
Synemon gratiosa	Graceful Sun Moth		Endangered
Throscodectes xiphos		P1	

A list of potential and recorded species within and surrounding the survey area is provided in Appendix 7. This information has been collected from a number of sources, including the DEC Threatened Species database, DEC NatureMap, EPBC Protected Matters Search Tool database, other studies / reports and the opportunistic field survey. The results from each of the database searches are included in Appendix 2.

A total of 273 known or previously recorded fauna species potentially occur within the survey area. Of these, 194 are birds, 24 are mammals, 37 are reptiles, 10 are amphibians and eight are invertebrates (Appendix 5 and 6).

A description of each of the conservation significant fauna in the region is given in Section 6.2.1 of this report. The fauna observed during the reconnaissance survey is also provided.

6.2.1 Birds

6.2.1.1 *Apus pacificus* (Fork-tailed Swift)

The fork-tailed swift is listed as Marine and Migratory under the EPBC Act and is listed under the JAMBA, CAMBA and the ROKAMBA. The fork-tailed swift breeds in Siberia and the Himalayas and migrates to Australia in October, before returning to its breeding

grounds by May or June. Movements within Australia are in response to weather patterns, with this species often following thunderstorms. This species occurs mostly over inland plains, but also tend to be found flying above coastal areas and cliffs. It mostly occurs over dry and open habitats, and can be found in settled areas (DSEWPC 2011d). This species may occur within or near the project area, though it would only be expected in a transitory nature and would be unlikely to be impacted by development of the project area.

6.2.1.2 *Ardea alba* (Great Egret)

The great egret is listed as Migratory under the EPBC Act due to its listing under the JAMBA and the CAMBA. It is widespread in southern and eastern Asia and Australasia and is highly mobile, rendering it less susceptible to population fragmentation. The great egret been reported to occur in a wide range of wetland habitats, retreating to permanent wetlands in the summer months or when other suitable wetlands are dry. In south-western Australia breeding colonies nest predominantly in *Melaleuca* swamps in November and December, although breeding is dependent to some extent on rainfall (DSEWPC 2011d). The great egret may utilise the wetland within the project area, however there are larger and more suitable wetland habitats within the Beeliar Chain in the nearby vicinity that it would be more likely to inhabit (such as Yangebup and Kogalup Lakes).

6.2.1.3 *Ardea ibis* (Cattle Egret)

The cattle egret is listed as Migratory (CAMBA, JAMBA) and Marine under the EPBC Act. It is a widespread, common species in Australia, and is also found throughout South America, Central America, USA and Canada. It is a partial migrant, with some of the population in Australia migrating to New Zealand and some migrating locally. Within Australia, this species breeds in colonies on the central-east coast, major inland wetlands in New South Wales and between Wyndham in Western Australia and Arnhem Land in the Northern Territory. The cattle egret occurs in grasslands, woodlands and terrestrial wetlands, preferring habitat consisting of low-lying, poorly-drained pastures with an abundance of high grass. Cattle egrets often forage behind livestock, to feed on insects disturbed by the trampling movement of the animals (DSEWPC 2011d). There is a lack of suitable habitat within the project area for this species, though it may utilise the wetland area and fringing surrounds in a transitory capacity.

6.2.1.4 *Botaurus poiciloptilus* (Australasian Bittern)

The Australasian bittern has suffered major global habitat loss, and as such is listed as Endangered under the EPBC Act and "rare and likely to become extinct" (Schedule 1) under the *Wildlife Conservation Act 1950*. It occurs in Australia, New Zealand and New Caledonia, with an estimate of only 500 birds occurring in south-western Australia. It generally inhabits densely vegetated freshwater and occasionally estuaries and tidal wetlands, breeding in vegetated areas of swamps and pools (DSEWPC 2011d). There is no suitable, densely-vegetated habitat for this species within the survey area and as such it is highly unlikely that the species would ever occur within the project area.

6.2.1.5 *Calidris acuminata* (Sharp-tailed Sandpiper)

The sharp-tailed sandpiper is listed as Migratory (JAMBA, CAMBA, ROKAMBA, Bonn) and Marine under the EPBC Act. The sharp-tailed sandpiper migrates from its breeding range in Siberia and to inhabit tidal mudflats, saltmarshes, mangrove swamps, inland wetlands and flood plains in Australia over summer months. The sharp-tailed sandpiper widespread across coastal Australia during this time (Pizzey and Knight 2007). The sharp-tailed sandpiper may occur within the project area, but the larger wetland habitats nearby would prevent major impact to this species if the project area is developed.

6.2.1.6 *Calidris canutus* (Red Knot)

The red knot is listed as Migratory (JAMBA, CAMBA, ROKAMBA, Bonn) and Marine under the EPBC Act. The red knot breeds in North America, Russia, Greenland, Alaska and other far-northern countries, migrating as a non-breeding visitor to most continents. In Western Australia, the red knot is commonly observed on the Kimberley coast, Ningaloo and Barrow Island. The red knot less common in south-western Australia, but still numerous, preferring intertidal mudflats, sand flats, estuaries, inlets and sheltered beaches or bays and rarely inhabiting inland freshwater lakes or swamps (DSEWPC 2011d). There is no suitable foraging habitat for this species within the project area and as such, it is highly unlikely to be impacted by development.

6.2.1.7 *Calidris ferruginea* (Curlew Sandpiper)

The curlew sandpiper is listed as Migratory (JAMBA, CAMBA, ROKAMBA, Bonn) and Marine under the EPBC Act. It breeds in Siberia and migrates south during the winter. In Australia during the non-breeding season, this species is widespread across the coast but is also common at inland sites. The curlew sandpiper mainly occurs on intertidal mudflats in sheltered coastal areas, such as estuaries, inlets, bays, as well as on swamps and lakes. The curlew sandpiper requires bare areas of mud or sand for foraging (DSEWPC 2011d). There is no suitable foraging habitat for this species within the project area and as such, it is highly unlikely to be impacted by development.

6.2.1.8 *Calidris melanotos* (Pectoral Sandpiper)

The pectoral sandpiper is listed as Migratory (JAMBA, ROKAMBA, Bonn) and Marine under the EPBC Act. The pectoral sandpiper breeds in Siberia and the American Arctic, migrating to South America, Japan and Australasia between the months of August and May. In Australia, the pectoral sandpiper inhabits shallow freshwater wetlands with vegetated margins, swamp and occasionally tidal areas and salt marshes. The Peel Inlet is considered significant habitat for this species in Western Australia (Pizzey and Knight 2007). The project area does not provide ideal habitat for this species, given the degraded nature of the wetland vegetation. The pectoral sandpiper may occasionally occur within the project area, but the more suitable nearby wetland habitats would prevent major impact to this species if the project area is developed.

6.2.1.9 *Calidris ruficollis* (Red-necked Stint)

The red-necked stint is a very small, migratory waterbird that is listed as Migratory (JAMBA, CAMBA, ROKAMBA, Bonn) and Marine under the EPBC Act. This species breeds in Siberia and Alaska, arriving in Australia, New Zealand and New Guinea as a migrant in winter. The red-necked stint distributed along most of the Australian coastline, and is found inland in all Australian states when the habitat conditions are favourable. The Peel Inlet and Alfred Cove Nature Reserve are both significant sites for the red-necked stint in south-western Australia. Habitat for this species is generally found in coastal areas, including sheltered inlets, bays and estuaries, with mud- or sandflats for foraging (Pizzey and Knight 1997). The red-necked stint is unlikely to occur on the project area, as the wetland is freshwater and relatively small.

6.2.1.10 *Calidris subminuta* (Long-toed Stint)

The long-toed stint is a small, migratory waterbird that is listed as Migratory (JAMBA, CAMBA, ROKAMBA, Bonn) and Marine under the EPBC Act. It has two distinct eastern and western populations in Siberia, where it breeds, before migrating south to South East Asia and Australia (arriving in Australia from August). In Australia, this species disperses between temporary wetlands, moving from the northern areas of the country to anywhere between the Pilbara and the coast of South Australia. It is noted that these birds tend to congregate around drying wetlands in Western Australia during late summer. Most birds depart south-western Australia by February–March. In Australia, the long-toed stint inhabits shallow wetlands, streams and sewage ponds. They are commonly found on the muddy fringes of drying ephemeral lakes and wetlands (DSEWPC 2011d). There is potential habitat for this species within the project area, and it may occur here, though surrounding wetlands of the Beeliar Chain of a less degraded nature may provide more desirable habitat.

6.2.1.11 *Calyptorynchus banksii naso* (Forest Red-tailed Black Cockatoo)

The forest red-tailed black cockatoo is listed as Vulnerable under the EPBC Act and "rare and likely to become extinct" (Schedule 1) under the *Wildlife Conservation Act 1950* (WA). It is known to occur on the Swan Coastal Plain in small populations. Like the Carnaby's Black-Cockatoo, it inhabits remnant native eucalypt woodlands. The forest red-tailed black cockatoo nests in tall eucalypts with hollows for breeding, and this habitat requirement is the limiting factor to the range of the species. The forest red-tailed black cockatoo feeds on seeds, nectar and fruit, particularly of *Banksia*, *Eucalyptus* and *Corymbia calophylla*. Chewed fruits from marri trees can often be found at the base of trees within habitat areas of this species (DSEWPC 2011d). Nearby observations of this species have been recorded in the localities of Jandakot and Bibra Lake.

There is the potential for the forest red-tailed black cockatoo to occur within the project area, given that jarrah trees were identified during the habitat tree survey of greater than 500 mm diameter at breast height (DBH) that have the potential to provide nesting hollows for this species. The location of these potential habitat trees is provided in Figure 2, and Table 13 in Section 5.3.1 provides the details of the trees.

6.2.1.12 *Calyptorynchus latirostris* (Carnaby's Black-Cockatoo)

Listed as Endangered under the EPBC Act and "rare and likely to become extinct" (Schedule 1) under the *Wildlife Conservation Act 1950*. Carnaby's Black-Cockatoo has declined significantly in number since European settlement and now occurs in subpopulations across the south-west of Western Australia, between the Murchison River (near Kalbarri) and Cape Arid National Park (east of Esperance). Carnaby's Black-Cockatoo tends to be residential in high-rainfall areas, but where it occurs in drier, eastern areas, it migrates to coastal areas where rainfall is higher after the breeding season (winter to spring). The species inhabits remnant native eucalypt woodlands, and is a seasonal visitor to pine plantations where it feeds on pine seeds. It nests in tall eucalypts with hollows for breeding, and this habitat requirement is the limiting factor to the range of the species. It feeds on seeds, nectar and fruit, particularly of *Banksia*, *Dryandra*, *Pinus*, *Eucalyptus* and *Corymbia calophylla* (DSEWPC 2011d). Often in Carnaby's Black-Cockatoo habitat areas, fruit can be found surrounding the base of trees that appear to have been chewed and detached from the tree.

Carnaby's Black-Cockatoo has been recorded nearby at Kogolup Lake, Thomson's Lake, Bibra Lake, South Lake, Yangebup Lake, Jandakot and Little Rush Lake. There is the potential for this species to occur within the project area, given that Jarrah trees were identified during the habitat tree survey of greater than 500 mm diameter at breast height (DBH) that have the potential to provide nesting hollows for this species. The location of these potential habitat trees is provided in Figure 2, and Table 13 in Section 5.3.1 provides the details of the trees.

6.2.1.13 *Charadrius dubius* (Little Ringed Plover)

The little ringed plover is listed as Migratory (CAMBA, ROKAMBA) and Marine under the EPBC Act. It occurs in Australia as a migrant between September and March, after spending breeding months across Eurasia. The little ringed plover generally occurs in singles or pairs, usually on the water's edge or muddy shore. In Australia it tends to occupy open muddy or sandy shores or fringes of lakes, swamps, estuaries and inlets (Pizzey and Knight 1997). There is little suitable habitat within the project area for this species and as such, it is unlikely to be impacted upon by development of the project area. More suitable habitat is likely to be found closer to the coast.

6.2.1.14 *Charadrius ruficapillus* (Red-capped Plover)

The red-capped plover is a Marine species listed under the EPBC Act. Favourable habitat for this species includes sandy and shelly beaches, open and bare margins of saline wetland and lakes, salt marshes, tidal mud- and sandflats. This species is not known to occur in freshwater habitats. The red-capped plover is widespread across Australia, occurring across the continent where there is suitable habitat (both coastal and inland). This species breeds between July and January in southern Australia, laying eggs in scrapes on sandy beaches (Pizzey and Knight 1997). The red-capped plover is unlikely to occur on the project area, as the wetland is freshwater and relatively small.

6.2.1.15 *Falco peregrinus* (Peregrine Falcon)

The peregrine falcon is listed as "other specially protected fauna" (Schedule 4) under the *Wildlife Conservation Act 1950*. It currently occurs in a widespread distribution across much of Australia, but is uncommon. It occupies a range of habitats, including woodlands, watercourses, grasslands and coastal cliffs, preferring tall structures on which to perch and nest (DSEWPC 2011d). The distribution of the peregrine falcon is often tied to the abundance of prey as this species predates heavily on other birds. The peregrine falcon lays its eggs in recesses of cliff faces, tree hollows or in large abandoned nests of other birds (Birds Australia 2008). The peregrine falcon is a wide-ranging bird of prey that may be an occasional visitor to the project area, but due to the lack of preferable nesting habitat, it is unlikely to be impacted by development of the project area.

6.2.1.16 *Haliaeetus leucogaster* (White-bellied Sea Eagle)

Listed as Marine and Migratory under the EPBC Act (CAMBA) and also listed under Appendix II of the CITES, the white-bellied sea eagle is not globally threatened, but has been subject to population decline within Australia and South East Asia. In Australia, it is distributed along the coastline, and is restricted to a narrow band of coastline in south-western Australia. The population residing within Australia is estimated at 500 mating pairs. The sea eagle is found in coastal habitats and tends to occupy dunes, tidal flats, woodlands, forests and grasslands (generally in areas associated with large bodies of water). When not migrating, the home range of the white-bellied sea eagle can be up to 100 km^2, although breeding adult birds are generally sedentary (breeding season runs from June to January). The nests of these birds are large and conspicuous, generally constructed in large trees, cliffs, rocky outcrops, mangroves, caves or on artificial structures (DSEWPC 2011d). There is minimal suitable nesting habitat within the project area, though there is potential for the species to overfly the project area.

6.2.1.17 *Himantopus himantopus* (Black-winged Stilt)

The black-winged stilt is a Marine species listed under the EPBC Act. It inhabits freshwater swamps, marshes and wetlands, shallow lake and river margins, flood plains, claypans, dams, tidal estuaries and sand- and mudflats. This species is well-distributed across Australia, occurring in all areas containing suitable habitat. It breeds between August and December, building nests of water plants and weeds, often on low hummocks in water, dead bushes or in a depression on dry ground (Pizzey and Knight 1997). The black-winged stilt may occur within the project area but there is more suitable feeding habitat (wide lake edges and mudflats) at nearby wetlands of the Beeliar Chain and within the Peel-Harvey Inlet. Hence the development of the project area is likely to have little impact on this species.

6.2.1.18 *Ixobrychus minutus* (Little Bittern)

The little bittern is listed as a Priority 4 species ("rare, near threatened and other taxa in need of monitoring") under the *Wildlife Conservation Act 1950*. The little bittern inhabits vegetated freshwater wetlands, swamps, lakes and rivers, forming nests in fringing rushes usually over water. The little bittern breeds from October to January (Pizzey and Knight 2007). This species has the potential to occur within the project area.

6.2.1.19 *Limosa lapponica* (Bar-tailed Godwit)

The bar-tailed godwit is listed as Migratory (JAMBA, CAMBA, ROKAMBA, Bonn) and Marine under the EPBC Act. It breeds in the northern hemisphere (Alaska and Siberia), migrating south to non-breeding habitat areas in Southeast Asia, New Zealand and Australia. The bar-tailed godwit generally does not migrate between north-east and south-west Australia once settled in suitable habitat areas. Many bar-tailed godwit remain in the non-breeding range within Australia over one or more winters. Favourable habitat for this species includes intertidal mudflats, sandflats, banks, estuaries, inlets, harbours, coral reef-flats, brackish coastal wetlands and protected beaches and bays. Beds of seagrass are often utilised for foraging (and roosting habitat), as well as sandy or muddy edges of water bodies and shallow water (DSEWPC 2011d). There is no suitable habitat for this species within the project area and as such it is unlikely to be impacted by development in this location.

6.2.1.20 *Limosa limosa* (Black-tailed Godwit)

This large wader is listed as Migratory (JAMBA, CAMBA, ROKAMBA, Bonn) and Marine under the EPBC Act. It occurs across most of Australia with a preference for coastal habitat. It inhabits bays, estuaries, tidal mud- and sandflats, or inland on large, fresh or brackish wetlands (Pizzey and Knight 1997). Like the bar-tailed godwit, it utilises sandy or muddy edges of water bodies and shallow water for feeding. There is no suitable habitat for this species within the project area and as such it is unlikely to be impacted by development in this location.

6.2.1.21 *Merops ornatus* (Rainbow Bee-eater)

The rainbow bee-eater is listed as Migratory (JAMBA) and Marine under the EPBC Act. The population size of this species within Australia is not known, but is assumed to be quite large. It is known to occur across the majority of the mainland. It migrates between Australia, Eastern Indonesia and Japan, and has formed a colony on Rottnest Island. The bee-eater tends to occupy open forests and woodlands, including cleared or semi-cleared areas and farmland, and prefers timbered landscapes, often in close proximity to water. Their nests consist of an enlarged chamber at the end of a long burrow that is excavated by both the female and male bird from flat or loping ground, cliff faces or mounds of gravel. They generally remain unlined (DSEWPC 2011d). A group of seven to eight rainbow bee-eaters were recorded within the project area during the reconnaissance survey. It is currently unknown whether this species is breeding within the project area, though no nests were observed during the survey.

6.2.1.22 *Philomachus pugnax* (Ruff)

The ruff is listed as Migratory (JAMBA, CAMBA, ROKAMBA, Bonn) and Marine under the EPBC Act. The ruff breeds in Europe from northern Russia to north-eastern Kazakhstan, migrating south to Africa, India, southern Europe and in some cases as far as Australasia. Within Australia, it has a patchy distribution, occurring in the south-west and Kimberley coast in Western Australia. The ruff is a rare but regular visitor to Australia, where it inhabits fresh, brackish or saline wetlands with exposed mudflats at their edges as well as bays, beaches and estuaries, and roosts amongst short, riparian vegetation (DSEWPC 2011d). The ruff may occur within the project area but there is more suitable feeding habitat at nearby wetlands of the Beeliar Chain and within the Peel-Harvey Inlet. Hence the development of the project area is likely to have little impact on this species.

6.2.1.23 *Recurvirostra novaehollandiae* (Red-necked Avocet)

The red-necked avocet is listed as Marine under the EPBC Act. It is widespread but occurs irregularly across most states of Australia, breeding at inland locations and moving coast-ward during the summer when inland ephemeral wetlands begin to dry up. Preferred habitat includes estuaries, tidal mudflats, swamps, lakes, claypans and sewage ponds (Pizzey and Knight 2007). The red-necked avocet may utilise the project area, though it tends to prefer larger expanses of open water, such as Bibra Lake and North Lake which both provide preferable habitat.

6.2.1.24 *Sternula nereis* (Fairy Tern)

The fairy tern is listed as Marine under the EPBC Act and occurs along the Australian coast from north of Broome in WA to Botany Bay, NSW, along the south coast. It is locally abundant on the Pilbara coast. It breeds from September to January on beaches, islands and rock platforms. Habitat for this species includes coastal waters, bays, inlets, saline/brackish lakes, salt fields and sewage ponds near the coast. The project area provides no appropriate habitat for this species, which is highly unlikely to be impacted by the proposed development.

6.2.1.25 *Thinornis rubricollis* (Hooded Plover)

The hooded plover is a Marine species listed under the EPBC Act. The range of this species in Western Australia occurs from Israelite Bay west to Jurien Bay in the north, confined to suitable coastal habitat. The hooded plover inhabits broad sandy beaches, occurring occasionally on tidal flats. The hooded plover generally requires plentiful seaweed and adjacent dunes. The breeding season occurs from September to January, and nests (scrapes) are created on sandy beaches. There is no suitable habitat for this species within the project area and as such it is highly unlikely to be impacted by its development.

6.2.1.26 *Tringa glareola* (Wood Sandpiper)

The wood sandpiper is listed as Migratory (JAMBA, CAMBA, ROKAMBA, Bonn) and Marine under the EPBC Act. It breeds in Eurasia, largely in Scandinavia and Russia (DSEWPC 2011d). The wood sandpiper migrates south after breeding, and is a regular summer migrant to Australia in September to April. In Australia, these birds tend to disperse across the northern part of the country, with visitations to the southern regions less common. It occurs inland where there is suitable habitat. Habitat for the wood sandpiper consists of well-vegetated, shallow, freshwater wetlands, typically with emergent or submerged vegetation. They tend to feed in muddy flats on the margins of such wetlands. This species may occur within the project area, but larger wetlands with wider margins of sand or mud are more suitable for feeding, and it there is more suitable habitat nearby within the Beeliar Chain (such as Yangebup Lake).

6.2.1.27 *Tringa stagnatilis* (Marsh Sandpiper)

The marsh sandpiper is listed as Migratory (JAMBA, CAMBA, ROKAMBA, Bonn) and Marine under the EPBC Act. This species is found on coastal and inland wetlands throughout most of Australia. It migrates to Australia after the breeding season during which is occurs from eastern Europe to eastern Siberia. The marsh sandpiper has a scattered distribution in Western Australia and is largely confined to coastal areas. It occurs on saline, brackish or freshwater wetlands, estuaries, inlets, commercial salt fields and sewage ponds. The Peel Inlet is a national site of importance for this species (DSEWPC 2011d). There is no suitable habitat for this species within the project area and as such it is unlikely to be impacted by development in this location.

6.2.2 Mammals

According to the Australian Natural Resources Atlas (ANRA) (2009), 40 mammal species have been recorded within the Swan Coastal Plain bioregion. Of this number, 14 species are exotic.

6.2.2.1 *Dasyurus geoffroii* (Chuditch)

Listed as Vulnerable under the EPBC Act and "rare and likely to become extinct" (Schedule 1) under the *Wildlife Conservation Act 1950*, the chuditch is thought to occupy less than 5% of its original pre-European settlement range. This species can travel large distances, and is thought to occur within a range from Cape Arid National Park (southern coast of Western Australia) to Kalbarri National Park in the north. It is only known to occur in Western Australia and is generally restricted to the south-west. The wide travelling range of the chuditch suggests that it is able to utilise a large variety of habitats, including dry sclerophyll forest, beaches and arid areas. However, most occur within wooded habitats, in particular eucalypt forests (especially jarrah), dry woodland and mallee shrubland. They utilise fallen hollow logs and burrows for dens in wooded habitats (DSEWPC 2011d). Given the degraded nature of the project area, fragmentation of habitat and the lack of dense understorey vegetation, it is highly unlikely that the chuditch would occur within the project area.

6.2.2.2 *Falsistrellus mackenziei* (Western False Pipistrelle)

The western false pipistrelle is listed as "in need of monitoring" (Priority 4) under the *Wildlife Conservation Act 1950*. This small bat species is thought to occur from the western margin of the Wheatbelt north to Perth, occupying the forested corner of the south-west of WA. It inhabits wet sclerophyll forests dominated by karri trees in the southern-most extent of its range, as well as jarrah and tuart forests further north. Sheoak and peppermint trees are also often associated with the habitat of the western false pipistrelle (DSEWPC 2011d). They roost in the hollows of old trees, branches and stumps, in small colonies. This bat feeds on flying-insects between the canopy and understorey of forest vegetation (WAM 2011). The project area does not contain habitat suitable to support this species, and as such it is highly unlikely that this species would occur within the project area.

6.2.2.3 *Isoodon obesulus* subsp. *fusciventer* (Quenda)

The quenda is listed as "in need of monitoring – conservation dependent" (Priority 5) under the *Wildlife Conservation Act 1950* (WA). The species has declined as a result of fragmentation and habitat loss, as well as predation by foxes and other introduced carnivores. It occurs widely in the south-west of Western Australia, ranging from Guilderton in the north to east of Esperance. Quendas prefer areas with dense understorey vegetation, particularly near freshwater sources. They tend to build nests by piling ground litter over shallow depressions, concealed by fallen logs or mounds. Breeding occurs throughout the year, peaking in spring (DEC 2011e). There is the potential for this species to occur in the fringing wetland vegetation to the south of the CCW; however this habitat area is minimal and disconnected from similar habitat in surrounding areas due to fragmentation of the landscape. No evidence of any quenda occurring on site was observed during the project area visit.

6.2.2.4 *Macropus eugenii derbianus* (Tammar Wallaby)

The tammar wallaby is listed as "in need of monitoring – conservation dependent" (Priority 5) under the *Wildlife Conservation Act 1950* (WA). In Western Australia, this species is distributed throughout most of the south-west of the state, from Kalbarri to Cape Arid National Park on the southern coast near Esperance, and extending into some parts of the Wheatbelt. It inhabits coastal scrub, eucalypt woodland and mallee forest/thickets, utilising low, dense vegetation for shelter. This species usually occupies open grasslands when feeding, and is nocturnal (DEC 2011e). It is unlikely that this species occurs within the project area, given the lack of suitable habitat. No evidence of this species was observed during the project area visit.

6.2.2.5 *Macropus irma* (Western Brush Wallaby)

The western brush wallaby is listed as "in need of monitoring – conservation dependent" (Priority 5) under the *Wildlife Conservation Act 1950* (WA). Its habitat ranges from Kalbarri in the north-west to Cape Arid National Park in the south-east. It prefers open forest and woodlands as habitat, and has been known to occur on seasonally wet

flats with open thickets containing dense undergrowth for coverage. It conducts diurnal behaviour, and is more active during the early evening and late afternoon than at other times of the day (DEC 2011e). It is unlikely that this species occurs within the project area, given the lack of suitable habitat. No evidence of this species was observed during the project area visit.

6.2.2.6 *Myrmecobius fasciatus* (Numbat)

The numbat is listed as Vulnerable under the EPBC Act and "rare and likely to become extinct" (Schedule 1) under the *Wildlife Conservation Act 1950* (WA). It was previously widespread across southern Australia, however there are few remaining populations in the wild. They inhabit eucalypts forests and woodlands, particularly those dominated by jarrah, marri, *Banksia* and wandoo. Nesting takes place in hollow logs or burrows, and an abundance of termites is essential given that this supplies their entire diet. They tend to be solitary or occur in pairs, often with densities of only one pair of adults per 50 hectares (DSEWPC 2011d). The landscape is severely fragmented and there is not enough dense vegetation on site to support this sensitive species, making it highly unlikely to occur on site.

6.2.2.7 *Phascogale calura* (Red-tailed Phascogale)

The red-tailed phascogale is listed as Endangered under the EPBC Act. It has been recorded within remnant vegetation throughout the wheatbelt of the south-west of WA, and from Perth to Fitzgerald River National Park on the southern coast of the state. Preferred habitat for this arboreal species includes *Allocasuarina* woodlands containing hollow-bearing *Eucalyptus* species and *Gastrolobium sp*. A continuous canopy is necessary for cover in their arboreal habitat, nesting in high hollows. This species is unlikely to occur within the project area due to its degraded nature and lack of suitable habitat (DSEWPC 2011d).

6.2.2.8 *Setonix brachyurus* (Quokka)

The quokka is listed as Vulnerable under the EPBC Act, and is located on Rottnest Island, Bald Island and at a few sites within south-western Australia. Habitat for mainland populations includes dense, streamside vegetation, heaths, shrublands, swamps and jarrah / karri forest regrowth areas. This species prefers young vegetation communities that have been burnt in the previous ten years, and also requires low, dense vegetation. It feeds on the leaves and stems of low shrubs (DSEWPC 2011d). There is little suitable habitat within the project area, hence it is unlikely that the quokka would occur or be impacted by development.

6.2.3 Reptiles

6.2.3.1 *Lerista lineata* (Perth Lined Skink)

The lined skink is listed as "taxa with several, poorly known populations, some on conservation lands" (Priority 3) under the *Wildlife Conservation Act 1950* (WA). It requires sandy substrates for it to inhabit an area. The Lined Skink has been recorded at

nearby sites (Phoenix Environmental Sciences 2011) and as such, is likely to occur within the project area and could potentially be impacted by development if not removed prior to clearing.

6.2.3.2 *Neelaps calonotos* (Black-striped Snake)

The black-striped snake is listed as "taxa with several, poorly known populations, some on conservation lands" (Priority 3) under the *Wildlife Conservation Act 1950* (WA). It is endemic to Western Australia, occurring along the lower west coast from Lancelin to Mandurah, extending inland to Bullsbrook, Caversham and Riverton (Storr et al. 1986). This species typically inhabits sand plains, often in association with *Banksia* species. It may occur within the project area and could potentially be impacted by development if not removed prior to clearing.

6.2.4 Amphibians

No amphibian species of conservation significance are expected to occur within the project area.

During the reconnaissance survey, four small frogs (suspected to be *Crinia sp*.) were observed in the muddy fringes of the wetland.

6.2.5 Invertebrates

6.2.5.1 *Synemon gratiosa* (Graceful Sun Moth)

The Graceful Sun Moth is listed as Endangered under the EPBC Act. It is a small, diurnal flying sun moth that occurs as far north as Kalbarri and as far south as Binningup.

The Graceful Sun Moth lays its eggs two known native plant species; *Lomandra maritima* and *L. hermaphrodita*. *L. maritima* is abundant in coastal heathland vegetation, whilst *L. hermaphrodita* tends to be found in woodlands dominated by *Banksia* and eucalypts (Spearwood and Bassendean dunes) (DSEWPC 2011d). Given that *L. hermaphrodita* was recorded within the project area, there is potential for this species to inhabit the project area.

6.2.5.2 *Throscodectes xiphos* (Bush Cricket)

The bush cricket is a cricket species that is listed as "taxa with few, poorly known populations on threatened lands" (Priority 1) under the *Wildlife Conservation Act 1950* (WA). It is endemic to Australia, and is known to occur on the Swan Coastal Plain. Little is known about this species, and as such, there is potential for it to occur on site.

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7.0 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

Any clearing of native vegetation will require a permit under Part V Division 2 of the *Environmental Protection Act 1986* except where an exemption applies under Schedule 6 of the *Environmental Protection Act 1986* or is prescribed by regulation in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004, and it is not in an Environmentally Sensitive Area (ESA).

Table 13 below provides an assessment of the proposed project against the "10 Clearing Principles" as outlined in Schedule 5 of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 to determine whether the proposed development contravenes the Principles. These Principles aim to ensure that all potential impacts resulting from removal of native vegetation can be assessed in an integrated way.

The proposed development may be at variance with principle (b) of the Ten Clearing Principles. Comparison of significance of habitat within the regional context will be undertaken through the Environmental Protection and Biodiversity Conservation Act referral process requirements.

Table 13: Assessment against the Ten Clearing Principles

Principle Number	Principle	Assessment	Outcome
(a)	Native vegetation should not be cleared if it comprises a high level of biological diversity	The project area may be considered to be of higher biodiversity than the surrounding areas. A total of 183 plant taxa representing 129 genera and 48 plant families including 147 native species were recorded in the Project area. A total of 140 and 199 flora species respectively have been recorded within Bush Forever sites no. 256 and 391 which are located within two kilometres to the west of the Project area. The proposed clearing is unlikely to have any significant impact on the biodiversity of the region.	The proposal is unlikely to be at variance with the Principle
(b)	Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous Western Australia.	The habitat type present within the project area occurs within the surrounding area. Additionally, a large majority of the Project area has been subject to a number of disturbances, particularly invasion from weed species, all of which would have impacted on the use of the area by native fauna. The area proposed for clearing does not provide important linkage to any adjacent bushland. The majority of the Project area consists of cleared road verge and what remnant vegetation remains is not considered to comprise habitat necessary for the maintenance of significant fauna. However, the site contains limited foraging and roosting habitat for the EPBC Act listed Carnaby's Black-Cockatoo (Endangered, S1) and the forest red-tailed black cockatoo (Vulnerable, S1).	The proposal may be at variance with the Principle

Principle Number	Principle	Assessment	Outcome
(c)	Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	No TRF flora species were recorded within the Project area.	The proposal is not at variance with the Principle
(d)	Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community	The results of this survey indicate that there are no TECs or PECs located within the Project area.	The proposal is not at variance with the Principle.
(e)	Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared	The Project area is approximately 30 hectares and the majority of this has previously been cleared or is highly disturbed. The vegetation of the Project area is considered to be representative of the Bassendean Complex-Central and South. This complex is classified as "Vunerable" in terms of extent of vegetation, with 27% remaining compared to pre-European extents. Clearing native vegetation within the Project areas will not significantly reduce the known extent from pre-European extents.	The proposal is not at variance with the Principle.
(f)	Native vegetation should not be cleared if it is growing in or in association with a watercourse or wetland.	A Resource Enhancement wetland is situated in the Project area however historical photography suggests the wetland has been significantly altered and heavy weed infestation reduces current ecological values.	The proposal may be at variance with the Principle
(g)	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	Land degradation can be caused or exacerbated by uncontrolled run-off and wind or water erosion. The proposal will create additional runoff but drainage design and suitable controls during construction will minimise potential degradation. A review of acid sulfate soils risk mapping of the Project area indicates that an area associated with the RE wetland is considered to have a high to moderate acid sulfate soil disturbance risk. Clearing of native vegetation in close proximity to the wetland will not generate acid sulfate soils however excavation works may.	The proposal is unlikely to be at variance with the Principle.
(h)	Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	The area immediately adjacent to the Project area has already been cleared. Thomson Lake Nature Reserve and Beeliar Regional National Park are located approximately 0.8 and 1.2 km to the west of the Project area. Development of the Project area and the subsequent elimination of weed species may potentially minimise and even reduce the introduction of weed species or rate of weed incursion into the surrounding bushland, including Bush Forever site no. 256 and 391.	The proposal is not at variance with the Principle.

Principle Number	Principle	Assessment	Outcome
(i)	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water	The Project area does not occur adjacent to any significant surface water flows, but there is one RE wetland within the Project area. This wetland may have the potential to generate acid sulfate soils if disturbed. The clearing of native vegetation is not considered likely to significantly alter the quality of surface or ground waters within the Project area. Erosion may occur following any potential clearing. Erosion can be mitigated by the use of appropriate stabilisation and surface water management and rehabilitation techniques for longer term protection.	The proposal is unlikely to be at variance with the Principle
(j)	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the intensity of flooding.	The clearing of native vegetation will not cause, or exacerbate the incidence or intensity of flooding due to increased runoff in localised areas.	The proposal is not at variance with the Principle.

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8.0 RECOMMENDATIONS AND CONCLUSIONS

The following conclusions and recommendations are provided for both the flora and fauna surveys:

8.1 Flora Conclusions

The vegetation units V6, V6d and V7 contain *Banksia* woodland. Of these vegetation units that contain banksia woodland in the southern portion, a total of 6 ha is considered to be in Excellent to Very Good condition. Banksia Woodland is also found in vegetation units V4 and V1. Therefore, in total there are 6.11 ha of Banksia Woodland in Very Good to Excellent condition within the site. It is recommended that LandCorp, as part of the proposed Cockburn Central West Structure Plan, consider retaining some of these trees within the development fabric where possible.

No TRF, TECs, or PECs where located within the project area during the survey.

8.2 Fauna Conclusions

The project areas contains potential habitat for Carnaby's Black-Cockatoos and forest red-tailed black cockatoos. The significance of the potential habitat for black cockatoos will be assessed against the *environmental protection and biodiversity conservation act* requirements to assist in determining if the proposed project requires Commonwealth environmental approval.

During the site visit undertaken by RPS, only one of the conservation significant species, the rainbow bee-eater (*Merops ornatus*), was recorded on site. It is currently unknown whether this species is breeding within the project area. No nests were observed during the survey.

Due to the presence of *Lomandra hermaphrodita,* a plant species on which the Graceful Sun Moth breeds, it is recommended to undertake a Graceful Sun Moth Survey during the flying season (March) to determine if the Graceful Sun Moth is located within the project area.

The Resource Enhancement management category wetland at the site was cleared prior to 1965. Although mostly degraded, it contains a variety of habitats due to wetland vegetation assemblage regrowth.

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FIGURES

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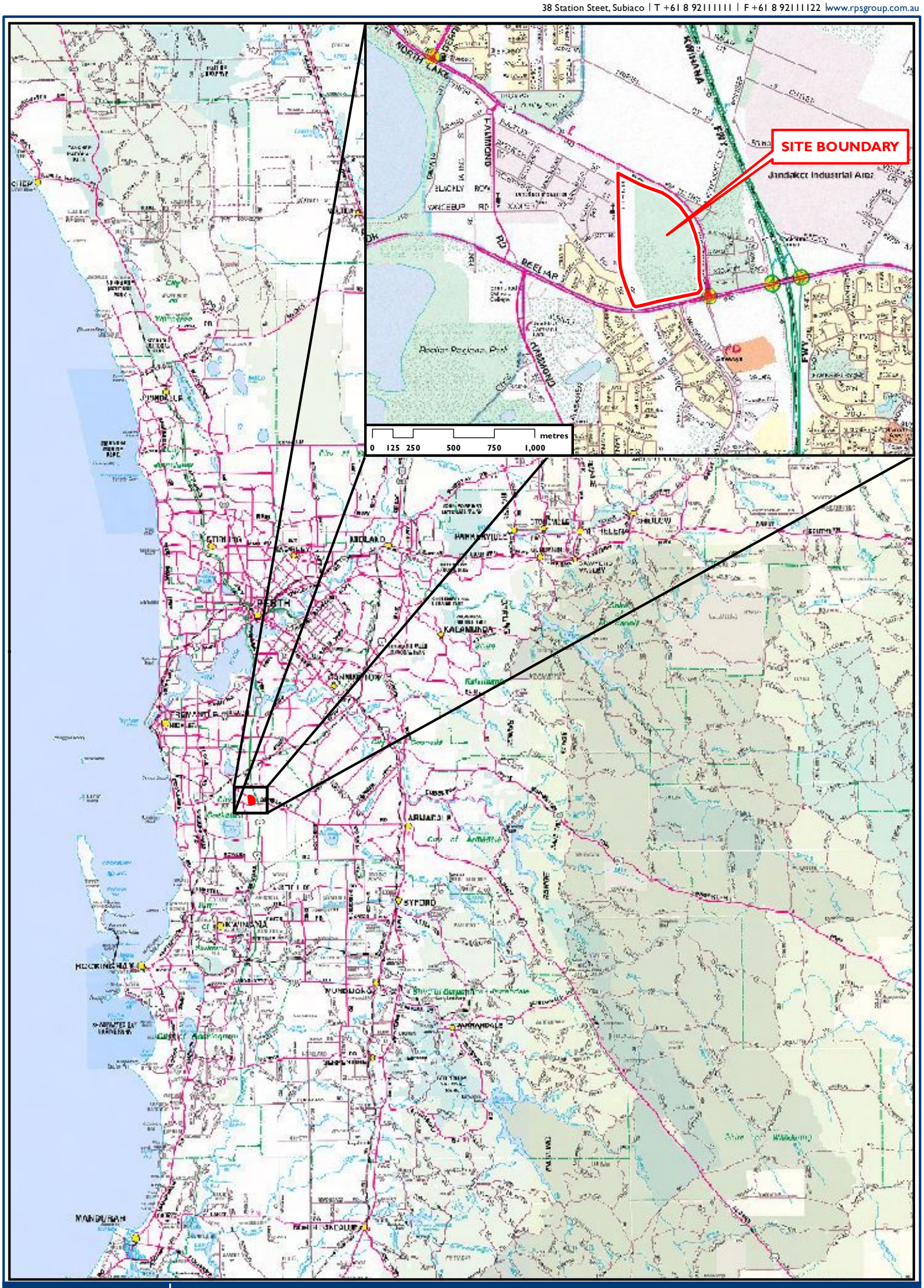

RPS

Job Number: L11316
Date: 11.11.11
Scale: Map - 1:500000 @ A4 Inset 1:30000 @ A4
Version: A
Drafted by: MA
Source: Landgate, 2008

Figure 1

Site Location

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LEGEND

Site Boundary

TEC/PEC Buffer

TEC/PEC (DEC)

Northern Spearwood shrublands and woodlands

Threatened Rare and Priority Flora (DEC)

T

Priority Flora (RPS)

Caladenia speciosa (P4)

Declared Plants

*Zantedeschia aethiopica

**Zantedeschia aethiopica*, Completely Degraded

Significant Tree Species

Eucalyptus todtiana

Eucalyptus marginata

Geomorphic Wetland Management Category (DEC, 30.12.2010)

Conservation

Resource Enhancement

Multiple Use

Not Applicable

Job Number: L11316
Date: 11.11.11
Scale: 1:2500 @ A3
Version: A
Drafted by: MA
Source: Cadastre - Landgate, 2011 Orthophoto - Landgate, 2011

0 50 100 200 300 400 metres

Figure 2

Environmental Contraints

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LEGEND

Site Boundary

Cadastre

C* - Cleared areas or pastoral weeds with occational native species

(d) - Degraded and highly modified vegetation community

Vegetation Type

V1 Low Woodland of *Banksia attenuata, B. ilicifolia* and *B. menziesii* over Tall Open Shrubland of *Adenanthos cygnorum* subsp. *cygnorum* over Grassland of **Briza maxima, *Ehrharta longiflora* and **E. calycina* over Very Open Herbland of **Sonchus oleraceus, Trachymene pilosa* and *Burchardia congesta* over Very Open Shrubland of *Lyginia barbata.*

V2 Low Open Forest of *Melaleuca preissiana* and *Banksia littoralis* over Tall Open Scrub of *Kunzea glabrescens* and **Acacia longifolia* over Open Shrubland of *Astartea scoparia* over Very Open Herbland of *Centella asiatica* and **Solanum nigrum* over Very Open Sedgeland of *Baumea juncea.*

V3 Low Open Forest of *Melaleuca rhaphiophylla* over Tall Shrubland of *Kunzea glabrescens, *Chamaecytisus palmensis* and *Acacia longifolia* over Grassland of **Stenotaphrum secundatum, *Avena barbata, *Briza maxima* and * *Ehrharta calycina* over Very Open Herbland of *Centella asiatica* over Very Open Sedgeland of *Juncus pallidus.*

V4 Remnant *Banksia attenuata, B. menziesii, Eucalyptus marginata* and *Nuytsia floribunda* with Tall Open Scrub of *Adenanthos cygnorum* and **Leptospermum laevigatum* or *Kunzea glabrescens* over Grassland of **Ehrharta calycina.*

V5 Scattered *Melaleuca preisssiana* over Closed Tall Scrub of *Astartea scoparia* over Open Grassland of **Cynodon dactylon* over Open Herbland of *Centella asiatica* and **Ornithopus compressus* over Very Open to Open Sedgeland of *Baumea articulata* with Open Sedgeland/Herbland of **Typha orientalis* and *Triglochin linearis* in standing water.

V6 Low to Low Open Woodland of *Banksia attenuata* and *Banksia menziesii* over Shrubland to Open Shrubland of *Allocasuarina humilis, Stirlingia latifolia, Persoonia saccata* over Low to Low Open Shrubland of *Eremaea pauciflora* subsp. *pauciflora, Hibbertia hypericoides, Scholtzia involucrata* and *Leucopogon constephioides* over Very Open Grassland of **Briza maxima* and **Ehrharta spp.* over Very Open Herbland of *Patersonia occidentalis, Conostylis aculeata* and *Phlebocarya ciliata* over Very Open Sedgeland of *Lepidosperma squamatum* and *Lyginia barbata.*

V6(d)

V7 Low Open Forest to Open Woodland of *Eucalyptus marginata* and *Banksia attenuata* over Open Shrubland of *Jacksonia furcellata* over Low Shrubland of *Hibbertia subvaginata, Leucopogon constephioides, Constephium pendulum, Bossiaea eriocarpa* and *Hibbertia hypericoides* over Open to Very Open Grassland of **Briza maxima* and **Ehrharta spp.* over Very Open Herbland of *Phlebocarya ciliata, Conostylis aculeata* and *Dasypogon bromeliifolius* over Very Open Sedgeland of *Desmocladus flexuosus.*

V8 Closed Tall Scrub of **Leptospermum laevigatum* over weed species

NORTH LAKE RD
TEA TREE CL
KENTUCKY CT
POLETTI RD
SLEEPER L
SIGNAL TCE
MIDGEGOOROO AV
STOCKTON BEND
BUFFER L
LINKAGE AV
BEELIAR DR
RIDGE RD
SEABROOK PL
MICHIGAN HTS
WENTWORTH RISE
SHOALHAVEN WISE

Job Number: L11316
Date: 11.11.11
Scale: Not to Scale @ A3
Version: A
Drafted by: HT
Source: Cadastre - Landgate, 2011 Orthophoto - Landgate, 2011

0 15 30 60 90 120 metres

Figure 3

Vegetation Type

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LEGEND

Cadastre

Vegetation Condition

- 2 - Excellent
- 2-3 - Excellent to Very Good
- 3 - Very Good
- 4 - Good
- 5 - Degraded
- 6 - Completely Degraded

Job Number: L11316
Date: 11.11.11
Scale: 1:2500 @ A3
Version: A
Drafted by: HT
Source: Cadastre - Landgate, 2011 Orthophoto - Landgate, 2011

0 12.5 25 50 75 100 metres

Figure 4

Vegetation Condition

APPENDIX I

Email from DEC regarding *Caladenia huegelii*

Doris Clarke

From: Brown, Andrew <Andrew.Brown@dec.wa.gov.au>
Sent: Monday, 12 September 2011 9:39 AM
To: Baden Sadlo
Subject: RE: 2011 Timing for Caladenia huegelii

Dear Baden

They are beginning to flower now and you will have a two or three week period to see them.

Cheers

Cheers

Andrew Brown
Coordinator – Threatened Flora
Species and Communities Branch
Department of Environment and Conservation (DEC)

T: (08) 9334 0122 | F: (08) 9334 0300 | E: andrew.brown@dec.wa.gov.au
17 Dick Perry Ave KENSINGTON | Locked Bag 104 Bentley DC WA 6983 | www.naturebase.net

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From: Baden Sadlo [mailto:Baden.Sadlo@rpsgroup.com.au]
Sent: Monday, 5 September 2011 11:26 AM
To: Brown, Andrew
Cc: John Halleen; Ben Hollyock
Subject: 2011 Timing for Caladenia huegelii

Hi Andrew,

I was seeking advice from you regarding the best time to survey for *Caladenia huegelii* this spring.

Kind regards

Baden Sadlo
Supervising Scientist (Botanist)
Australia Asia Pacific
http://rpsgroup.com.au
Baden.Sadlo@rpsgroup.com.au

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APPENDIX 2

Fauna Database Search Results

DEC Fauna Database Search Results – October 2011

NAME	SOURCE_CODE	VERNACULAR	CONSERVATION_CODE	CLASS	DAY	MONTH	YEAR	SITE_NAME	LOCALITY_NAME
Calyptorhynchus banksii subsp. naso	FAUNASURVEY	Forest Red-tailed Black-Cockatoo	T	BIRD	28	03	2010	BIBRA LAKE	4
Calyptorhynchus banksii subsp. naso	FAUNASURVEY	Forest Red-tailed Black-Cockatoo	T	BIRD	27	03	2010	BIBRA LAKE	4
Calyptorhynchus banksii subsp. naso	FAUNASURVEY	Forest Red-tailed Black-Cockatoo	T	BIRD	27	03	2010	JANDAKOT	6
Calyptorhynchus banksii subsp. naso	FAUNASURVEY	Forest Red-tailed Black-Cockatoo	T	BIRD	28	03	2010	JANDAKOT	6
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	10	04	2008	BEELIAR	Kogolup Swamp
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	25	01	2008	BEELIAR	Kogolup Lake south eye
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	30	12	2001	WATTLEUP	Thomsons Lake, Beeliar
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	30	12	2001	WATTLEUP	Thompsons Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	05	09	1998	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	15	02	2006	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	12	03	2005	BIBRA LAKE	Bibra Lake
Calyptorhynchus	BIRDATLAS2	Carnaby's	T	BIRD	09	03	2007	BIBRA LAKE	Bibra Lake

latirostris		Cockatoo							
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	25	02	2006	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	10	09	2002	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	10	01	2007	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	11	05	2006	BIBRA LAKE	Bibra lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	15	04	2006	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	16	05	2008	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	21	12	2002	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	TFAUNA	Carnaby's Cockatoo	T	BIRD	12	04	2005	BIBRA LAKE	South Lake (next to Bibra Lake)
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	13	09	2004	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	15	10	2004	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	10	11	2005	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	12	07	2007	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	09	01	2008	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	05	07	2006	BIBRA LAKE	Bibra Lake
Calyptorhynchus	BIRDATLAS2	Carnaby's	T	BIRD	19	05	2002	BIBRA LAKE	Bibra Lake

latirostris		Cockatoo							
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	28	04	2008	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	14	04	2005	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	09	02	2007	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	TFAUNA	Carnaby's Cockatoo	T	BIRD	19	05	2002	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	FAUNASURVEY	Carnaby's Cockatoo	T	BIRD	27	03	2010	BIBRA LAKE	4
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	19	03	2002	BIBRA LAKE	Bibra Lake
Calyptorhynchus latirostris	FAUNASURVEY	Carnaby's Cockatoo	T	BIRD	28	03	2010	JANDAKOT	6
Calyptorhynchus latirostris	FAUNASURVEY	Carnaby's Cockatoo	T	BIRD	12	06	2009	JANDAKOT	Site 6
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	19	03	2005	SOUTH LAKE	South Lake 6164
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	04	10	2004	YANGEBUP	Yangebup Lake west
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	01	05	2004	YANGEBUP	Yangebup Lake general
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	18	06	2008	YANGEBUP	Little Rush Lake south
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	12	03	2008	YANGEBUP	Yangebup Lake
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	06	06	2006	YANGEBUP	Yangebup Lake west
Calyptorhynchus	BIRDATLAS2	Carnaby's	T	BIRD	13	04	2006	YANGEBUP	Yangebup Lake

latirostris		Cockatoo							west
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	20	06	2008	YANGEBUP	Yangebup Lake general
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	27	01	2008	YANGEBUP	Yangebup Lake Spit
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	28	03	2008	YANGEBUP	Yangebup Lake general
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	27	03	2005	YANGEBUP	Yangebup Lake west
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	18	06	2008	YANGEBUP	Little Rush Lake, Yangebup
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	05	03	2007	YANGEBUP	Little Rush Lake, Yangebup
Calyptorhynchus latirostris	BIRDATLAS2	Carnaby's Cockatoo	T	BIRD	05	02	2008	YANGEBUP	Little Rush Lake, Yangebup
Myrmecobius fasciatus	TFAUNA	Numbat	T	MAMMAL	03	10	1984	BEELIAR	Thomsons Lake Reserve
Myrmecobius fasciatus	TFAUNA	Numbat	T	MAMMAL	01	12	1989	JANDAKOT	Jandakot Airport
Myrmecobius fasciatus	TFAUNA	Numbat	T	MAMMAL	01	12	1982	COCKBURN CENTRAL	Forrest Rd, east of Prinsep Rd
Synemon gratiosa	FAUNASURVEY	Graceful Sunmoth	T	INVERT	02	03	2011	JANDAKOT	Jandakot Airport
Synemon gratiosa	FAUNASURVEY	Graceful Sunmoth	T	INVERT	07	03	2011	JANDAKOT	Jandakot Airport
Synemon gratiosa	FAUNASURVEY	Graceful Sunmoth	T	INVERT	07	03	2011	JANDAKOT	Jandakot Airport
Falco peregrinus	BIRDATLAS2	Peregrine Falcon	S	BIRD	25	10	2007	BEELIAR	Thomsons Lake NE
Falco peregrinus	BIRDATLAS2	Peregrine	S	BIRD	28	09	2002	BEELIAR	Thomson Lake

Falco peregrinus	BIRDATLAS2	Falcon Peregrine Falcon	S	BIRD	09	01	2006	BEELIAR	Thomsons Lake
Falco peregrinus	BIRDATLAS2	Peregrine Falcon	S	BIRD	01	03	2008	BIBRA LAKE	south lake nw corner
Falco peregrinus	BIRDATLAS2	Peregrine Falcon	S	BIRD	19	05	2002	BIBRA LAKE	Bibra Lake
Falco peregrinus	BIRDATLAS2	Peregrine Falcon	S	BIRD	03	02	2007	YANGEBUP	Little Rush Lake, Yangebup
Falco peregrinus	BIRDATLAS2	Peregrine Falcon	S	BIRD	13	01	2007	YANGEBUP	Little Rush Lake, Yangebup
Falco peregrinus subsp. macropus	TFAUNA		S	BIRD	19	05	2002	BIBRA LAKE	Bibra Lake
Falco peregrinus subsp. macropus	TFAUNA		S	BIRD	01	04	1998	YANGEBUP	Lake Yangebup, City of Cockburn
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	17	04	2011	BEELIAR	Harry Waring Marsupial Reserve
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	24	08	2009	BEELIAR	Thomsons Lake
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	24	08	2009	BEELIAR	Lake Kogolup
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	18	11	2009	WATTLEUP	FranklandAve
Isoodon	FAUNASURVEY	Southern	5	MAMMAL	17	11	2009	WATTLEUP	FranklandAve

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	16	11	2009	WATTLEUP	FranklandAve
obesulus subsp. fusciventer Isoodon	TFAUNA	Brown Bandicoot Southern	5	MAMMAL	01	02	2006	BANJUP	Armadale Rd - near Fraser Rd
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	27	03	2010	BIBRA LAKE	4
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	07	2010	BIBRA LAKE	MT4
obesulus subsp. fusciventer Isoodon	TFAUNA	Brown Bandicoot Southern	5	MAMMAL	13	04	1994	BIBRA LAKE	Bibra Lake, Beeliar Regional Park
obesulus subsp. fusciventer Isoodon	TFAUNA	Brown Bandicoot Southern	5	MAMMAL	25	07	1999	BIBRA LAKE	Bibra Lake, Beeliar RP
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	27	05	2010	BIBRA LAKE	Spearwood Avenue
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	24	05	2010	BIBRA LAKE	Spearwood Avenue
obesulus subsp. fusciventer	FAUNASURVEY	Brown Bandicoot	5	MAMMAL	30	03	2010	BIBRA LAKE	4
Isoodon	FAUNASURVEY	Southern	5	MAMMAL	30	03	2010	BIBRA LAKE	4

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	WAMSPECIMENS	Brown Bandicoot Southern	5	MAMMAL	16	10	1993	BIBRA LAKE	FORREST ROAD
obesulus subsp. fusciventer Isoodon	TFAUNA	Brown Bandicoot Southern	5	MAMMAL	20	02	2005	BIBRA LAKE	Bibra Lake
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	12	2009	BIBRA LAKE	Site 4
obesulus subsp. fusciventer Isoodon	TFAUNA	Brown Bandicoot Southern	5	MAMMAL				BIBRA LAKE	east side of Bibra Lake
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	25	03	2010	BIBRA LAKE	4
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	31	03	2010	BIBRA LAKE	4
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	27	07	2009	BIBRA LAKE	Bibra lake
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	27	03	2010	BIBRA LAKE	4
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	09	12	2009	BIBRA LAKE	Site 4
	FAUNASURVEY		5	MAMMAL	29	03	2010	BIBRA LAKE	4

obesulus subsp. fusciventer		Brown Bandicoot							
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	06	12	2009	BIBRA LAKE	Site 4
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	25	05	2010	BIBRA LAKE	Spearwood Avenue
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	31	05	2010	JANDAKOT	6
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	07	12	2009	JANDAKOT	Site 6
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	02	12	2010	JANDAKOT	6
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	03	10	2010	JANDAKOT	6
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	30	11	2010	JANDAKOT	6
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	04	06	2010	JANDAKOT	6
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	29	09	2010	JANDAKOT	6
Isoodon	FAUNASURVEY	Southern	5	MAMMAL	07	05	2010	JANDAKOT	6

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	25	03	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	TFAUNA	Brown Bandicoot Southern	5	MAMMAL	01	11	2003	JANDAKOT	Princep Rd, Jandakot. PR5.
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	06	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	31	03	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	08	05	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	27	03	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	30	11	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	06	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	04	05	2010	JANDAKOT	6

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	31	03	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	09	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	03	06	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	06	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	TFAUNA	Brown Bandicoot Southern	5	MAMMAL	01	12	1989	JANDAKOT	Jandakot Airport.
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	12	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	09	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	27	03	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	30	03	2010	JANDAKOT	6
	TFAUNA		5	MAMMAL	01	01	2003	JANDAKOT	Jandakot Airport

obesulus subsp. fusciventer		Brown Bandicoot							
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	01	12	2010	JANDAKOT	6
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	03	06	2010	JANDAKOT	6
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	01	12	2010	JANDAKOT	6
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	25	03	2010	JANDAKOT	6
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	02	10	2010	JANDAKOT	6
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	30	03	2010	JANDAKOT	6
Isoodon obesulus subsp. fusciventer	TFAUNA	Southern Brown Bandicoot	5	MAMMAL	01	11	2003	JANDAKOT	Princep Rd, Jandakot (PR1)
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	01	06	2010	JANDAKOT	6
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	29	03	2010	JANDAKOT	6
Isoodon	FAUNASURVEY	Southern	5	MAMMAL	09	12	2009	JANDAKOT	Site 6

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	TFAUNA	Brown Bandicoot Southern	5	MAMMAL	01	11	2003	JANDAKOT	Princep Rd, Jandakot (PR2)
obesulus subsp. fusciventer Isoodon	TFAUNA	Brown Bandicoot Southern	5	MAMMAL	29	07	1997	JANDAKOT	south of railway overpass, Jandakot
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	06	05	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	09	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	04	06	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	27	03	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	30	09	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	12	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	03	2010	JANDAKOT	6
	FAUNASURVEY		5	MAMMAL	02	12	2010	JANDAKOT	6

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	06	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	11	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	06	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	06	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	06	12	2009	JANDAKOT	Site 6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	30	11	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	12	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	06	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	09	2010	JANDAKOT	6
	FAUNASURVEY		5	MAMMAL	29	03	2010	JANDAKOT	6

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	03	06	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	03	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	30	03	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	30	09	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	07	05	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	03	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	06	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	08	05	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	11	2010	JANDAKOT	6
	FAUNASURVEY		5	MAMMAL	28	03	2010	JANDAKOT	6

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	05	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	03	10	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	12	2010	JANDAKOT	6
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	10	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	04	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	05	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	10	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	05	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	06	2010	LEEMING	5
	FAUNASURVEY		5	MAMMAL	06	05	2010	LEEMING	5

obesulus subsp. fusciventer		Brown Bandicoot							
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	02	10	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	01	12	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	TFAUNA	Southern Brown Bandicoot	5	MAMMAL	08	12	2004	LEEMING	Between Karel Ave and Kwinana Fwy
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	29	09	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	TFAUNA	Southern Brown Bandicoot	5	MAMMAL	07	12	2004	LEEMING	Between Karel Ave and Kwinana Fwy
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	01	12	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	03	06	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	29	11	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	03	10	2010	LEEMING	5
Isoodon	FAUNASURVEY	Southern	5	MAMMAL	01	10	2010	LEEMING	5

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	30	09	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	30	11	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	12	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	10	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	04	05	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	03	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	07	05	2010	LEEMING	5
	FAUNASURVEY		5	MAMMAL	06	05	2010	LEEMING	5

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	08	05	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	11	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	11	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	30	09	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	09	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	TFAUNA	Brown Bandicoot Southern	5	MAMMAL	10	12	2004	LEEMING	Between Karel Ave and Kwinana Fwy
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	05	2010	LEEMING	5
	FAUNASURVEY		5	MAMMAL	08	05	2010	LEEMING	5

obesulus subsp. fusciventer		Brown Bandicoot							
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	01	06	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	TFAUNA	Southern Brown Bandicoot	5	MAMMAL	09	12	2004	LEEMING	Between Karel Ave and Kwinana Fwy
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	07	05	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	01	06	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	02	12	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	06	05	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	05	05	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	01	10	2010	LEEMING	5
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	05	06	2010	LEEMING	5
Isoodon	FAUNASURVEY	Southern	5	MAMMAL	02	06	2010	LEEMING	5

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	04	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	05	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	30	11	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	12	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	03	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	10	2010	LEEMING	5
obesulus subsp. fusciventer	FAUNASURVEY	Brown Bandicoot	5	MAMMAL	07	05	2010	LEEMING	5
Isoodon	FAUNASURVEY	Southern	5	MAMMAL	01	12	2010	LEEMING	5

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	07	05	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	04	05	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	29	11	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	04	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	12	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	04	05	2010	LEEMING	5
	FAUNASURVEY		5	MAMMAL	30	09	2010	LEEMING	5

obesulus subsp. fusciventer Isoodon		Brown Bandicoot Southern							
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	30	09	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	05	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	01	12	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	03	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	03	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	02	10	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	04	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	04	06	2010	LEEMING	5
obesulus subsp. fusciventer Isoodon	FAUNASURVEY	Brown Bandicoot Southern	5	MAMMAL	03	10	2010	LEEMING	5
	FAUNASURVEY		5	MAMMAL	30	03	2010	AUBIN	Gibbs Road

obesulus subsp. fusciventer		Brown Bandicoot						GROVE	
Isoodon obesulus subsp. fusciventer	TFAUNA	Southern Brown Bandicoot	5	MAMMAL	01	02	2002	COCKBURN CENTRAL	Ti-Tree Close
Isoodon obesulus subsp. fusciventer	TFAUNA	Southern Brown Bandicoot	5	MAMMAL	07	12	2005	YANGEBUP	Jandakot
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	03	08	2009	YANGEBUP	Little Rush Lake
Isoodon obesulus subsp. fusciventer	FAUNASURVEY	Southern Brown Bandicoot	5	MAMMAL	03	08	2009	YANGEBUP	Lake Yangebup
Isoodon obesulus subsp. fusciventer	WAMSPECIMENS	Southern Brown Bandicoot	5	MAMMAL	07	12	2005	YANGEBUP	BERRIGAN DRIVE
Macropus eugenii subsp. derbianus	TFAUNA	Tammar	5	MAMMAL	01	01	1971	WATTLEUP	Harry Waring Marsupial Reserve
Charadrius rubricollis	TFAUNA	Hooded Plover	4	BIRD	17	04	2005	BIBRA LAKE	Bibra Lake
Falsistrellus mackenziei	TFAUNA	Western False Pipistrelle	4	MAMMAL	29	01	1993	WATTLEUP	Harry Waring Marsupial Reserve, Jandakot.
Macropus irma	FAUNASURVEY	Western Brush Wallaby	4	MAMMAL	19	04	2011	JANDAKOT	Jandakot Airport
Macropus irma	FAUNASURVEY	Western	4	MAMMAL	21	04	2011	JANDAKOT	Jandakot Airport

Macropus irma	TFAUNA	Brush Wallaby Western Brush Wallaby	4	MAMMAL	01	01	2003	JANDAKOT	Jandakot Airport
Lerista lineata	WAMSPECIMENS		3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		12	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		02	1978	BEELIAR	JANDAKOT
Lerista lineata	TFAUNA		3	REPTILE	01	02	1978	BEELIAR	Jandakot
Lerista lineata	WAMSPECIMENS		3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS		3	REPTILE		10	1978	BEELIAR	JANDAKOT

Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT

Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	20	11	1979	BEELIAR	THOMSON LAKE
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT

Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	03	1978	BEELIAR	JANDAKOT

Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		11	1978	BEELIAR	JANDAKOT
Lerista lineata	TFAUNA	3	REPTILE	20	11	1979	BEELIAR	Thomsons Lake Nature Reserve, Beeliar
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		01	1979	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE		03	1978	BEELIAR	JANDAKOT
Lerista lineata	WAMSPECIMENS	3	REPTILE	06	01	2003	BIBRA LAKE	COCOS RESERVE
Lerista lineata	FAUNASURVEY	3	REPTILE	04	12	2009	BIBRA LAKE	Site 4
Lerista lineata	WAMSPECIMENS	3	REPTILE	01	01	2003	BIBRA LAKE	COCOS RESERVE
Lerista lineata	WAMSPECIMENS	3	REPTILE	16	11	2001	JANDAKOT	JANDAKOT AIRPORT
Lerista lineata	WAMSPECIMENS	3	REPTILE	27	11	2001	JANDAKOT	JANDAKOT AIRPORT

Lerista lineata	FAUNASURVEY		3	REPTILE	05	12	2009	JANDAKOT	Site 6
Lerista lineata	TFAUNA		3	REPTILE	01	03	1978	JANDAKOT	Jandakot Airpot
Lerista lineata	TFAUNA		3	REPTILE	27	09	2000	JANDAKOT	Jandakot Airport
Lerista lineata	TFAUNA		3	REPTILE	16	11	2001	JANDAKOT	Jandakot Airport
Lerista lineata	FAUNASURVEY		3	REPTILE	30	03	2010	JANDAKOT	6
Lerista lineata	TFAUNA		3	REPTILE	27	11	2001	JANDAKOT	Jandakot Airport
Lerista lineata	WAMSPECIMENS		3	REPTILE	01	12	2004	YANGEBUP	YANGEBUP LAKE
Lerista lineata	WAMSPECIMENS		3	REPTILE				YANGEBUP	YANGEBUP LAKE
Lerista lineata	WAMSPECIMENS		3	REPTILE	01	12	2004	YANGEBUP	YANGEBUP LAKE
Neelaps calonotos	TFAUNA	Black-striped Snake	3	REPTILE	01	10	1978	BEELIAR	Jandakot
Neelaps calonotos	WAMSPECIMENS	Black-striped Snake	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Neelaps calonotos	WAMSPECIMENS	Black-striped Snake	3	REPTILE		03	1978	BEELIAR	JANDAKOT PERTH
Neelaps calonotos	TFAUNA	Black-striped Snake	3	REPTILE	01	03	1978	BEELIAR	Jandakot
Neelaps calonotos	WAMSPECIMENS	Black-striped Snake	3	REPTILE		10	1978	BEELIAR	JANDAKOT
Throscodectes xiphos	TFAUNA	cricket	1	INVERT	18	01	1983	JANDAKOT	Cutler Road, Jandakot
Throscodectes xiphos	TFAUNA	cricket	1	INVERT	29	04	1981	JANDAKOT	Cutler Road, Jandakot
Throscodectes xiphos	TFAUNA	cricket	1	INVERT	01	01	1999	JANDAKOT	golf course, Jandakot
Throscodectes xiphos	TFAUNA	cricket	1	INVERT	24	03	1975	JANDAKOT	Cutler Road, Jandakot

Australian Government
Department of Sustainability, Environment, Water, Population and Communities

EPBC Act Protected Matters Report: Coordinates

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 about the EPBC Act including significance guidelines, forms and application process details can be found at http://www.environment.gov.au/epbc/assessmentsapprovals/index.html

Report created: 07/10/11 13:20:38

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Coordinates

Buffer: 2.0Km

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 - see http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Significance (Ramsar Wetlands):	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communitites:	None
Threatened Species:	13
Migratory Species:	15

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 and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage/index.html

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

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. Information on EPBC Act permit requirements and application forms can be found at http://www.environment.gov.au/epbc/permits/index.html.

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	21
Whales and Other Cetaceans:	None

Critical Habitats:	None
Commonwealth Reserves:	None

Report Summary for Extra Information

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

Place on the RNE:	1
State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	16
Nationally Important Wetlands:	1

Details

Matters of National Environmental Significance

Wetlands of International Significance (RAMSAR Sites)		**[Resource Information]**
Name	Proximity	
Peel-yalgorup system	Upstream from Ramsar site	
Forrestdale & thomsons lakes	Within 10km of Ramsar site	

Threatened Species		**[Resource Information]**
Name	Status	Type of Presence
BIRDS		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo [67034]	Vulnerable	Species or species habitat may occur within area
Calyptorhynchus latirostris Carnaby's Black-Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat likely to occur within area
INSECTS		
Synemon gratiosa Graceful Sun Moth [66757]	Endangered	Species or species habitat may occur within area
MAMMALS		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Phascogale calura Red-tailed Phascogale [316]	Endangered	Species or species habitat may occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat may occur within area
PLANTS		
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Caladenia huegelii		

King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat likely to occur within area
Centrolepis caespitosa [6393]	Endangered	Species or species habitat likely to occur within area
Darwinia foetida Muchea Bell [83190]	Critically Endangered	Species or species habitat likely to occur within area
Drakaea elastica Glossy-leaved Hammer-orchid, Praying Virgin [16753]	Endangered	Species or species habitat likely to occur within area
Lepidosperma rostratum Beaked Lepidosperma [14152]	Endangered	Species or species habitat likely to occur within area

Migratory Species [Resource Information]

Name	Status	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Migratory Terrestrial Species		
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa		

Black-tailed Godwit [845]	Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]	Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands **[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.

Commonwealth Land -

Listed Marine Species **[Resource Information]**

Name	Status	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]		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]		Species or species habitat known to occur within area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area
Charadrius dubius Little Ringed Plover [896]		Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Haliaeetus leucogaster		

White-bellied Sea-Eagle [943]	Species or species habitat likely to occur within area
Himantopus himantopus Black-winged Stilt [870]	Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]	Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]	Species or species habitat may occur within area
Philomachus pugnax Ruff (Reeve) [850]	Species or species habitat known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]	Species or species habitat known to occur within area
Thinornis rubricollis Hooded Plover [59510]	Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]	Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]	Species or species habitat known to occur within area

Extra Information

Places on the RNE [Resource Information]

Note that not all Indigenous sites may be listed.

Name	Status
Natural	
Beeliar Regional Park and Adjacent Areas WA	Interim List

State and Territory Reserves [Resource Information]

Thomsons 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
Mammals		
Felis catus Cat, House Cat, Domestic Cat [19]		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
Brachiaria mutica	
Para Grass [5879]	Species or species habitat may occur within area
Cenchrus ciliaris	
Buffel-grass, Black Buffel-grass [20213]	Species or species habitat may occur within area
Chrysanthemoides monilifera	
Bitou Bush, Boneseed [18983]	Species or species habitat may occur within area
Genista sp. X Genista monspessulana	
Broom [67538]	Species or species habitat may occur within area
Lantana camara	
Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]	Species or species habitat likely to occur within area
Lycium ferocissimum	
African Boxthorn, Boxthorn [19235]	Species or species habitat may occur within area
Olea europaea	
Olive, Common Olive [9160]	Species or species habitat may occur within area
Pinus radiata	
Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]	Species or species habitat may occur within area
Rubus fruticosus aggregate	
Blackberry, European Blackberry [68406]	Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtiji	
Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]	Species or species habitat likely to occur within area
Salvinia molesta	
Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]	Species or species habitat likely to occur within area
Tamarix aphylla	
Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]	Species or species habitat likely to occur within area
Nationally Important Wetlands	**[Resource Information]**

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 Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

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

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

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

Only selected species covered by the following provisions of the EPBC Act have been mapped:
- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:
- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:
- non-threatened seabirds which have only been mapped for recorded breeding sites;
- seals which have only been mapped for breeding sites near the Australian continent.

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

Coordinates

-32.12549 115.85104

Acknowledgements

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

-Department of Environment, Climate Change and Water, New South Wales

-Department of Sustainability and Environment, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment and Natural Resources, South Australia
-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
-Environmental and Resource Management, Queensland
-Department of Environment and Conservation, Western Australia
-Department of the Environment, Climate Change, Energy and Water
-Birds Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-SA Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-State Forests of NSW
-Other groups and individuals

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

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

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NatureMap Species Report

Created By Guest user on 17/10/2011

Method 'By Circle'
Centre 115°51' 05" E,32°07' 32" S
Buffer 5km
Group By Species Group

Species Group	Species	Records
Amphibian	8	262
Bird	194	13746
Bryopsid (Moss)	4	6
Dicotyledon	298	685
Fungus	32	39
Gymnosperm	2	2
Hepatic (Liverwort)	2	2
Invertebrate	8	19
Lichen	1	2
Mammal	20	229
Monocotyledon	175	314
Pteridophyte (Fern)	4	5
Reptile	36	863
Slime Mould	67	97
TOTAL	**851**	**16271**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Amphibian					
1.	25399	*Crinia glauerti (Clicking Frog)*			
2.	25400	*Crinia insignifera (Squelching Froglet)*			
3.	25410	*Heleioporus eyrei (Moaning Frog)*			
4.	25415	*Limnodynastes dorsalis (Western Banjo Frog)*			
5.	25378	*Litoria adelaidensis (Slender Tree Frog)*			
6.	25388	*Litoria moorei (Motorbike Frog)*			
7.	25420	*Myobatrachus gouldii (Turtle Frog)*			
8.	25433	*Pseudophryne guentheri (Crawling Toadlet)*			
Bird					
9.	24260	*Acanthiza apicalis (Broad-tailed Thornbill)*			
10.	24261	*Acanthiza chrysorrhoa (Yellow-rumped Thornbill)*			
11.	24262	*Acanthiza inornata (Western Thornbill)*			
12.	24560	*Acanthorhynchus superciliosus (Western Spinebill)*			
13.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
14.	25536	*Accipiter fasciatus (Brown Goshawk)*			
15.	24282	*Accipiter fasciatus subsp. fasciatus*			
16.	25755	*Acrocephalus australis (Australian Reed Warbler)*			
17.	24831	*Acrocephalus australis subsp. gouldi*			
18.	-329	*Actitis hypoleucos*			
19.	24310	*Anas castanea (Chestnut Teal)*			
20.	24312	*Anas gracilis (Grey Teal)*			
21.	24313	*Anas platyrhynchos (Mallard)*			
22.	24315	*Anas rhynchotis (Australasian Shoveler)*			
23.	-450	*Anas sp.*			
24.	24316	*Anas superciliosa (Pacific Black Duck)*			
25.	-344	*Anhinga novaehollandiae*			
26.	-454	*Anser anser*			
27.	-446	*Anser sp.*			
28.	24561	*Anthochaera carunculata (Red Wattlebird)*			
29.	24562	*Anthochaera lunulata (Western Little Wattlebird)*			
30.	-365	*Anthus novaeseelandiae*			
31.	24285	*Aquila audax (Wedge-tailed Eagle)*			
32.	-331	*Ardea modesta*			
33.	24341	*Ardea pacifica (White-necked Heron)*			
34.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
35.	24353	*Artamus cyanopterus (Dusky Woodswallow)*			
36.	24318	*Aythya australis (Hardhead)*			
37.	-386	*Barnardius zonarius*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
38.	24319	*Biziura lobata (Musk Duck)*			
39.	25714	*Cacatua pastinator (Western Long-billed Corella)*			
40.	25715	*Cacatua roseicapilla (Galah)*			
41.	25716	*Cacatua sanguinea (Little Corella)*			
42.	-439	*Cacatua sp.*			
43.	24729	*Cacatua tenuirostris (Eastern Long-billed Corella)*			
44.	25598	*Cacomantis flabelliformis (Fan-tailed Cuckoo)*			
45.	-343	*Cacomantis pallidus*			
46.	-457	*Cairina moschata*			
47.	24779	*Calidris acuminata (Sharp-tailed Sandpiper)*			
48.	24784	*Calidris ferruginea (Curlew Sandpiper)*			
49.	24786	*Calidris melanotos (Pectoral Sandpiper)*			
50.	24788	*Calidris ruficollis (Red-necked Stint)*			
51.	24789	*Calidris subminuta (Long-toed Stint)*			
52.	25717	*Calyptorhynchus banksii (Red-tailed Black-Cockatoo)*			
53.	24731	*Calyptorhynchus banksii subsp. naso (Forest Red-tailed Black-Cockatoo)*		T	
54.	24734	*Calyptorhynchus latirostris (Carnaby's Cockatoo)*		T	
55.	-453	*Calyptorhynchus sp.*			
56.	-377	*Chalcites basalis*			
57.	-334	*Chalcites lucidus*			
58.	25574	*Charadrius dubius (Little Ringed Plover)*			
59.	24373	*Charadrius melanops (Black-fronted Dotterel)*			
60.	24376	*Charadrius rubricollis (Hooded Plover)*		P4	
61.	24377	*Charadrius ruficapillus (Red-capped Plover)*			
62.	24321	*Chenonetta jubata (Australian Wood Duck)*			
63.	-355	*Cheramoeca leucosterna*			
64.	-332	*Chlidonias hybrida*			
65.	-401	*Chlidonias leucopterus*			
66.	-390	*Chroicocephalus novaehollandiae*			
67.	25601	*Chrysococcyx lucidus (Shining Bronze Cuckoo)*			
68.	24288	*Circus approximans (Swamp Harrier)*			
69.	24774	*Cladorhynchus leucocephalus (Banded Stilt)*			
70.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
71.	24399	*Columba livia (Domestic Pigeon)*			
72.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
73.	25592	*Corvus coronoides (Australian Raven)*			
74.	-419	*Corvus sp.*			
75.	25701	*Coturnix ypsilophora (Brown Quail)*			
76.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
77.	25595	*Cracticus tibicen (Australian Magpie)*			
78.	24422	*Cracticus tibicen subsp. dorsalis (White-backed Magpie)*			
79.	25596	*Cracticus torquatus (Grey Butcherbird)*			
80.	24322	*Cygnus atratus (Black Swan)*			
81.	30901	*Dacelo novaeguineae (Laughing Kookaburra)*			
82.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
83.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
84.	-376	*Egretta garzetta*			
85.	-330	*Egretta novaehollandiae*			
86.	-353	*Elanus axillaris*			
87.	-326	*Elseyornis melanops*			
88.	-322	*Eolophus roseicapillus*			
89.	24567	*Epthianura albifrons (White-fronted Chat)*			
90.	24379	*Erythrogonys cinctus (Red-kneed Dotterel)*			
91.	25621	*Falco berigora (Brown Falcon)*			
92.	25622	*Falco cenchroides (Australian Kestrel)*			
93.	25623	*Falco longipennis (Australian Hobby)*			
94.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
95.	24475	*Falco peregrinus subsp. macropus*		S	
96.	25727	*Fulica atra (Eurasian Coot)*			
97.	24761	*Fulica atra subsp. australis*			
98.	25729	*Gallinula tenebrosa (Dusky Moorhen)*			
99.	24763	*Gallinula tenebrosa subsp. tenebrosa*			
100.	25730	*Gallirallus philippensis (Buff-banded Rail)*			
101.	-367	*Gelochelidon nilotica*			
102.	-437	*Genus sp.*			
103.	25530	*Gerygone fusca (Western Gerygone)*			
104.	24735	*Glossopsitta porphyrocephala (Purple-crowned Lorikeet)*			
105.	-349	*Glyciphila melanops*			
106.	24443	*Grallina cyanoleuca (Magpie-lark)*			
107.	24293	*Haliaeetus leucogaster (White-bellied Sea-Eagle)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
108.	24295	*Haliastur sphenurus (Whistling Kite)*			
109.	-354	*Hieraaetus morphnoides*			
110.	25734	*Himantopus himantopus (Black-winged Stilt)*			
111.	24775	*Himantopus himantopus subsp. leucocephalus*			
112.	24491	*Hirundo neoxena (Welcome Swallow)*			
113.	25629	*Hirundo nigricans (Tree Martin)*			
114.	-385	*Ixobrychus dubius*			
115.	-394	*Lalage sueurii*			
116.	24581	*Lichenostomus virescens (Singing Honeyeater)*			
117.	25661	*Lichmera indistincta (Brown Honeyeater)*			
118.	24582	*Lichmera indistincta subsp. indistincta*			
119.	25741	*Limosa limosa (Black-tailed Godwit)*			
120.	25683	*Lonchura castaneothorax (Chestnut-breasted Mannikin)*			
121.	24326	*Malacorhynchus membranaceus (Pink-eared Duck)*			
122.	25651	*Malurus lamberti (Variegated Fairy-wren)*			
123.	25654	*Malurus splendens (Splendid Fairy-wren)*			
124.	25758	*Megalurus gramineus (Little Grassbird)*			
125.	-323	*Melanodryas cucullata*			
126.	25663	*Melithreptus brevirostris (Brown-headed Honeyeater)*			
127.	24587	*Melithreptus chloropsis (Western White-naped Honeyeater)*			
128.	-402	*Melithreptus lunatus*			
129.	24598	*Merops ornatus (Rainbow Bee-eater)*			
130.	-389	*Microcarbo melanoleucos*			
131.	25542	*Milvus migrans (Black Kite)*			
132.	24738	*Neophema elegans (Elegant Parrot)*			
133.	25747	*Ninox connivens (Barking Owl)*			
134.	25748	*Ninox novaeseelandiae (Boobook Owl)*			
135.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
136.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
137.	24328	*Oxyura australis (Blue-billed Duck)*			
138.	25679	*Pachycephala pectoralis (Golden Whistler)*			
139.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
140.	24299	*Pandion haliaetus subsp. cristatus*			
141.	25681	*Pardalotus punctatus (Spotted Pardalote)*			
142.	25682	*Pardalotus striatus (Striated Pardalote)*			
143.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
144.	-393	*Petrochelidon nigricans*			
145.	-403	*Petroica boodang*			
146.	24659	*Petroica goodenovii (Red-capped Robin)*			
147.	25697	*Phalacrocorax carbo (Great Cormorant)*			
148.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
149.	25699	*Phalacrocorax varius (Pied Cormorant)*			
150.	24409	*Phaps chalcoptera (Common Bronzewing)*			
151.	25587	*Phaps elegans (Brush Bronzewing)*			
152.	-396	*Phylidonyris niger*			
153.	25669	*Phylidonyris nigra (White-cheeked Honeyeater)*			
154.	24596	*Phylidonyris novaehollandiae (New Holland Honeyeater)*			
155.	24841	*Platalea flavipes (Yellow-billed Spoonbill)*			
156.	25720	*Platycercus icterotis (Western Rosella)*			
157.	24747	*Platycercus spurius (Red-capped Parrot)*			
158.	25721	*Platycercus zonarius (Australian Ringneck)*			
159.	24750	*Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)*			
160.	24843	*Plegadis falcinellus (Glossy Ibis)*			
161.	24382	*Pluvialis fulva (Pacific Golden Plover)*			
162.	24383	*Pluvialis squatarola (Grey Plover)*			
163.	25703	*Podargus strigoides (Tawny Frogmouth)*			
164.	25704	*Podiceps cristatus (Great Crested Grebe)*			
165.	24681	*Poliocephalus poliocephalus (Hoary-headed Grebe)*			
166.	25722	*Polytelis anthopeplus (Regent Parrot)*			
167.	25731	*Porphyrio porphyrio (Purple Swamphen)*			
168.	24767	*Porphyrio porphyrio subsp. bellus*			
169.	24769	*Porzana fluminea (Australian Spotted Crake)*			
170.	25732	*Porzana pusilla (Baillon's Crake)*			
171.	24771	*Porzana tabuensis (Spotless Crake)*			
172.	-333	*Purpureicephalus spurius*			
173.	24776	*Recurvirostra novaehollandiae (Red-necked Avocet)*			
174.	-407	*Rhipidura albiscapa*			
175.	25613	*Rhipidura fuliginosa (Grey Fantail)*			
176.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
177.	25534	*Sericornis frontalis (White-browed Scrubwren)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
178.	30948	*Smicrornis brevirostris (Weebill)*			
179.	24528	*Sterna hybrida subsp. javanica*			
180.	-352	*Sternula nereis*			
181.	24329	*Stictonetta naevosa (Freckled Duck)*			
182.	25597	*Strepera versicolor (Grey Currawong)*			
183.	25589	*Streptopelia chinensis (Spotted Turtle-Dove)*			
184.	25590	*Streptopelia senegalensis (Laughing Turtle-Dove)*			
185.	25705	*Tachybaptus novaehollandiae (Australasian Grebe)*			
186.	24682	*Tachybaptus novaehollandiae subsp. novaehollandiae*			
187.	24331	*Tadorna tadornoides (Australian Shelduck)*			
188.	-374	*Thinornis rubricollis*			
189.	24844	*Threskiornis molucca (Australian White Ibis)*			
190.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
191.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
192.	24309	*Todiramphus sanctus subsp. sanctus*			
193.	-370	*Tribonyx ventralis*			
194.	25723	*Trichoglossus haematodus (Rainbow Lorikeet)*			
195.	24806	*Tringa glareola (Wood Sandpaper)*			
196.	24807	*Tringa hypoleucos (Common Sandpiper)*			
197.	24808	*Tringa nebularia (Common Greenshank)*			
198.	24809	*Tringa stagnatilis (Marsh Sandpiper)*			
199.	24852	*Tyto alba subsp. delicatula*			
200.	-379	*Tyto javanica*			
201.	24386	*Vanellus tricolor (Banded Lapwing)*			
202.	25765	*Zosterops lateralis (Grey-breasted White-eye)*			
Bryopsid (Moss)					
203.	32338	*Campylopus introflexus*	Y		
204.	32344	*Dicranoloma diaphanoneuron*			
205.	32345	*Didymodon australasiae*			
206.	32425	*Rosulabryum billarderi*			
Dicotyledon					
207.	15466	*Acacia applanata*			
208.	11731	*Acacia browniana var. browniana*			
209.	3262	*Acacia cochlearis (Rigid Wattle)*			
210.	3282	*Acacia cyclops (Coastal Wattle)*			
211.	3307	*Acacia divergens*			
212.	3374	*Acacia huegelii*			
213.	14932	*Acacia lasiocarpa var. bracteolata long peduncle variant (G.J. Keighery 5026)*		P1	
214.	17861	*Acacia longifolia*	Y		
215.	15481	*Acacia pulchella var. glaberrima*			
216.	30032	*Acacia saligna subsp. saligna*			
217.	3557	*Acacia stenoptera (Narrow Winged Wattle)*			
218.	3602	*Acacia willdenowiana (Grass Wattle)*			
219.	17774	*Acetosella vulgaris*	Y		
220.	11837	*Adenanthos cygnorum subsp. cygnorum (Common Woollybush)*			
221.	1791	*Adenanthos obovatus (Basket Flower)*			
222.	17202	*Agonis flexuosa var. flexuosa*			
223.	1732	*Allocasuarina humilis (Dwarf Sheoak)*			
224.	2652	*Alternanthera nodiflora (Common Joyweed)*			
225.	2665	*Amaranthus lividus*	Y		
226.	-12517	*Amaranthus sp.*			
227.	7833	*Angianthus preissianus*			
228.	12724	*Anthotium junciforme*			
229.	3686	*Aotus cordifolia*			
230.	3688	*Aotus gracillima*			
231.	3692	*Aotus procumbens*			
232.	7838	*Arctotheca calendula (Cape Weed)*	Y		
233.	20283	*Astartea scoparia*			
234.	7851	*Asteridea pulverulenta (Common Bristle Daisy)*			
235.	6334	*Astroloma pallidum (Kick Bush)*			
236.	6339	*Astroloma xerophyllum*			
237.	36441	*Babingtonia camphorosmae (Camphor Myrtle)*			
238.	1800	*Banksia attenuata (Slender Banksia)*			
239.	32580	*Banksia dallanneyi var. dallanneyi*			
240.	1819	*Banksia grandis (Bull Banksia)*			
241.	1822	*Banksia ilicifolia (Holly-leaved Banksia)*			
242.	1830	*Banksia littoralis (Swamp Banksia)*			
243.	-4	*Banksia menz_bronze*			
244.	-10	*Banksia menz_yellow*			

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245.	1834	*Banksia menziesii (Firewood Banksia)*			
246.	32077	*Banksia sessilis var. cygnorum*			
247.	1852	*Banksia telmatiaea (Swamp Fox Banksia)*			
248.	15037	*Bartsia trixago*	Y		
249.	5382	*Beaufortia elegans*			
250.	25788	*Billardiera fraseri (Elegant Pronaya)*			
251.	16636	*Boronia crenulata subsp. viminea*			
252.	11503	*Boronia crenulata var. crenulata*			
253.	11976	*Boronia crenulata var. gracilis*			Y
254.	4417	*Boronia dichotoma*			
255.	4420	*Boronia fastigiata (Bushy Boronia)*			
256.	3710	*Bossiaea eriocarpa (Common Brown Pea)*			
257.	30131	*Brachyloma preissii subsp. lanceolatum*			
258.	30142	*Brachyloma preissii subsp. obtusifolium*			
259.	30136	*Brachyloma preissii subsp. preissii*			
260.	18431	*Brachyscome ciliaris var. ciliaris*			
261.	2848	*Calandrinia corrigioloides (Strap Purslane)*			
262.	2856	*Calandrinia liniflora (Parakeelya)*			
263.	5411	*Calothamnus hirsutus*			
264.	5415	*Calothamnus lateralis*			
265.	5429	*Calothamnus sanguineus (Silky-leaved Blood flower)*			
266.	5439	*Calytrix angulata (Yellow Starflower)*			
267.	5458	*Calytrix flavescens (Summer Starflower)*			
268.	-8510	*Calytrix flavescens x fraseri*			Y
269.	5460	*Calytrix fraseri (Pink Summer Calytrix)*			
270.	18555	*Cardamine sp. Jandakot (P. Luff s.n. 4/7/1969)*	Y		
271.	2794	*Carpobrotus aequilaterus (Angular Pigface)*	Y		
272.	2795	*Carpobrotus edulis (Hottentot Fig)*	Y		
273.	2957	*Cassytha racemosa (Dodder Laurel)*			
274.	1742	*Casuarina obesa (Swamp Sheoak)*			
275.	6542	*Centaurium tenuiflorum*	Y		
276.	6214	*Centella asiatica*			
277.	2889	*Cerastium glomeratum (Mouse Ear Chickweed)*	Y		
278.	18156	*Chamaecytisus palmensis (Tagasaste)*	Y		
279.	2483	*Chenopodium album (Fat Hen)*	Y		
280.	7925	*Chondrilla juncea (Skeleton Weed)*	Y		
281.	8971	*Chorizema cordatum*			
282.	7937	*Cirsium vulgare (Spear Thistle)*	Y		
283.	1858	*Conospermum amoenum (Blue Smokebush)*			
284.	6348	*Conostephium pendulum (Pearl Flower)*			
285.	6349	*Conostephium preissii*			
286.	7939	*Conyza bonariensis (Flaxleaf Fleabane)*	Y		
287.	20074	*Conyza sumatrensis*	Y		
288.	17104	*Corymbia calophylla (Marri)*			
289.	7945	*Cotula coronopifolia (Waterbuttons)*	Y		
290.	3139	*Crassula exserta*			
291.	13527	*Croninia kingiana*			
292.	6663	*Cuscuta epithymum (Lesser Dodder)*	Y		
293.	7454	*Dampiera linearis (Common Dampiera)*			
294.	7462	*Dampiera pedunculata*			
295.	18560	*Daviesia divaricata subsp. divaricata*			
296.	3832	*Daviesia physodes*			
297.	3845	*Daviesia triflora*			
298.	4763	*Dodonaea hackettiana (Hackett's Hopbush)*		P4	
299.	15453	*Drosera gigantea subsp. gigantea*			
300.	3118	*Drosera pallida (Pale Rainbow)*			
301.	3133	*Drosera subhirtella (Sunny Rainbow)*			
302.	3135	*Drosera zonaria (Painted Sundew)*			
303.	33500	*Dysphania ambrosioides (Mexican Tea)*	Y		
304.	6133	*Epilobium hirtigerum (Hairy Willow Herb)*			
305.	5541	*Eremaea pauciflora*			
306.	14104	*Eremaea pauciflora var. pauciflora*			
307.	4476	*Eriostemon spicatus (Pepper and Salt)*			
308.	6219	*Eryngium pinnatifidum (Blue Devils)*			
309.	13536	*Eucalyptus decipiens subsp. decipiens*			
310.	5708	*Eucalyptus marginata (Jarrah)*			
311.	13547	*Eucalyptus marginata subsp. marginata (Jarrah)*			
312.	5739	*Eucalyptus patens (Swan River Blackbutt)*			
313.	5763	*Eucalyptus rudis (Flooded Gum)*			
314.	13511	*Eucalyptus rudis subsp. rudis*			

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315.	5790	*Eucalyptus todtiana (Coastal Blackbutt)*			
316.	3872	*Euchilopsis linearis (Swamp Pea)*			
317.	4627	*Euphorbia helioscopia (Sun Spurge)*	Y		
318.	4648	*Euphorbia terracina (Geraldton Carnation Weed)*	Y		
319.	3880	*Eutaxia virgata*			
320.	1747	*Ficus carica (Common Fig)*	Y		
321.	2969	*Fumaria capreolata (Whiteflower Fumitory)*	Y		
322.	20475	*Gastrolobium capitatum*			
323.	20483	*Gastrolobium linearifolium*			
324.	6587	*Gomphocarpus fruticosus (Narrowleaf Cottonbush)*	Y		
325.	10909	*Gompholobium confertum*			
326.	3957	*Gompholobium tomentosum (Hairy Yellow Pea)*			
327.	6161	*Gonocarpus pithyoides*			
328.	-5011	*Goodenia sp.*			
329.	37500	*Grammatotheca bergiana var. bergiana*	Y		
330.	14282	*Gratiola pubescens*			
331.	2128	*Hakea amplexicaulis (Prickly Hakea)*			
332.	2197	*Hakea prostrata (Harsh Hakea)*			
333.	2216	*Hakea varia (Variable-leaved Hakea)*			
334.	3961	*Hardenbergia comptoniana (Native Wisteria)*			
335.	28253	*Hedypnois rhagadioloides subsp. cretica*	Y		
336.	29594	*Helichrysum luteoalbum (Jersey Cudweed)*			
337.	6710	*Heliotropium europaeum (Common Heliotrope)*	Y		
338.	6838	*Hemiandra linearis (Speckled Snakebush)*			
339.	6839	*Hemiandra pungens (Snakebush)*			
340.	-9436	*Hemiandra sp.*			
341.	5134	*Hibbertia huegelii*			
342.	5135	*Hibbertia hypericoides (Yellow Buttercups)*			
343.	5162	*Hibbertia racemosa (Stalked Guinea Flower)*			
344.	5173	*Hibbertia subvaginata*			
345.	6222	*Homalosciadium homalocarpum*			
346.	3966	*Hovea pungens (Devil's Pins)*			
347.	3968	*Hovea trisperma (Common Hovea)*			
348.	5216	*Hybanthus calycinus (Wild Violet)*			
349.	6240	*Hydrocotyle scutellifera*			
350.	35070	*Hypocalymma angustifolium subsp. Swan Coastal Plain (G.J. Keighery 16777)*			
351.	5825	*Hypocalymma robustum (Swan River Myrtle)*			
352.	8086	*Hypochaeris glabra (Smooth Catsear)*	Y		
353.	9352	*Hypochaeris radicata (Flat Weed)*	Y		
354.	8092	*Ixiolaena viscosa (Sticky Ixiolaena)*			
355.	4012	*Jacksonia furcellata (Grey Stinkwood)*			
356.	20462	*Jacksonia gracillima*		P3	
357.	4029	*Jacksonia sternbergiana (Stinkwood)*			
358.	4044	*Kennedia prostrata (Scarlet Runner)*			
359.	15498	*Kunzea glabrescens (Spearwood)*			
360.	6777	*Lachnostachys albicans*			
361.	18585	*Lagenophora huegelii*			
362.	4052	*Latrobea tenella*			
363.	7572	*Lechenaultia expansa*			
364.	7574	*Lechenaultia floribunda (Free-flowering Leschenaultia)*			
365.	-5094	*Lechenaultia sp.*			
366.	8099	*Leontodon saxatilis (Hairy Hawkbit)*	Y		
367.	2344	*Leptomeria empetriformis*			
368.	2350	*Leptomeria pauciflora (Sparse-flowered Currant Bush)*			
369.	5847	*Leptospermum erubescens (Roadside Teatree)*			
370.	5850	*Leptospermum laevigatum (Coast Teatree)*	Y		
371.	6360	*Leucopogon australis (Spiked Beard-heath)*			
372.	6374	*Leucopogon conostephioides*			
373.	6425	*Leucopogon oxycedrus*			
374.	6427	*Leucopogon parviflorus (Coast Beard-heath)*			
375.	6434	*Leucopogon polymorphus*			
376.	6436	*Leucopogon propinquus*			
377.	19579	*Leucopogon sp. Murdoch (M. Hislop 1037)*			
378.	6451	*Leucopogon tenuis*			
379.	36179	*Liparophyllum violifolium*			
380.	9289	*Lobelia anceps (Angled Lobelia)*			
381.	7408	*Lobelia tenuior (Slender Lobelia)*			
382.	6515	*Logania vaginalis (White Spray)*			
383.	8564	*Lotus subbiflorus*	Y		
384.	4063	*Lotus uliginosus (Greater Lotus)*	Y		

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385.	4066	*Lupinus cosentinii*	Y		
386.	36375	*Lysimachia arvensis (Pimpernel)*	Y		
387.	6458	*Lysinema elegans*			
388.	34736	*Lysinema pentapetalum*			
389.	5281	*Lythrum hyssopifolia (Lesser Loosestrife)*	Y		
390.	2838	*Macarthuria apetala*			
391.	2839	*Macarthuria australis*			
392.	4079	*Medicago polymorpha (Burr Medic)*	Y		
393.	34676	*Meionectes brownii (Swamp Raspwort)*			
394.	5900	*Melaleuca cuticularis (Saltwater Paperbark)*			
395.	13271	*Melaleuca huegelii subsp. huegelii*			
396.	13273	*Melaleuca incana subsp. incana*			
397.	5926	*Melaleuca lateritia (Robin Redbreast Bush)*			
398.	-12141	*Melaleuca lateritia x teretifolia*			Y
399.	5952	*Melaleuca preissiana (Moonah)*			
400.	5959	*Melaleuca rhaphiophylla (Swamp Paperbark)*			
401.	5964	*Melaleuca seriata*			
402.	-3184	*Melaleuca sp.*			
403.	18598	*Melaleuca systena*			
404.	5978	*Melaleuca teretifolia (Banbar)*			
405.	5980	*Melaleuca thymoides*			
406.	5987	*Melaleuca viminea (Mohan)*			
407.	4085	*Melilotus indicus*	Y		
408.	6884	*Mentha spicata (Spearmint)*	Y		
409.	7410	*Monopsis debilis*	Y		
410.	4666	*Monotaxis occidentalis*			
411.	2412	*Muehlenbeckia adpressa (Climbing Lignum)*			
412.	7291	*Myoporum insulare (Blueberry Tree)*			
413.	14187	*Myriocephalus occidentalis*			
414.	6199	*Myriophyllum tillaeoides*			
415.	6974	*Nicotiana glauca (Tree Tobacco)*	Y		
416.	2401	*Nuytsia floribunda (Christmas Tree)*			
417.	14293	*Oenothera indecora subsp. bonariensis*	Y		
418.	20052	*Oenothera jamesii*	Y		
419.	16347	*Oenothera laciniata*	Y		
420.	6140	*Oenothera mollissima*	Y		
421.	36177	*Ornduffia albiflora*			
422.	12643	*Ozothamnus cordatus*			
423.	7090	*Parentucellia viscosa (Sticky Bartsia)*	Y		
424.	4343	*Pelargonium capitatum (Rose Pelargonium)*	Y		
425.	16477	*Pericalymma ellipticum var. ellipticum*			
426.	13911	*Persicaria decipiens*			
427.	2273	*Persoonia saccata (Snottygobble)*			
428.	2299	*Petrophile linearis (Pixie Mops)*			
429.	19825	*Petrorhagia dubia*	Y		
430.	2895	*Petrorhagia velutina (Velvet Pink)*	Y		
431.	18529	*Philotheca spicata (Pepper and Salt)*			
432.	4675	*Phyllanthus calycinus (False Boronia)*			
433.	4141	*Phyllota gracilis*			
434.	2793	*Phytolacca octandra (Red Ink Plant)*	Y		
435.	5237	*Pimelea calcicola*			
436.	5243	*Pimelea ferruginea*			
437.	11402	*Pimelea imbricata var. piligera*			
438.	5254	*Pimelea leucantha*			
439.	18117	*Pimelea rosea subsp. rosea*			
440.	12041	*Pimelea suaveolens subsp. suaveolens*			
441.	-11377	*Pithocarpa pulchella var. melanostigma / pulchella*			
442.	18353	*Pithocarpa pulchella var. pulchella*			
443.	6253	*Platysace filiformis*			
444.	4524	*Platytheca galioides*			
445.	8175	*Podolepis gracilis (Slender Podolepis)*			
446.	8183	*Podotheca chrysantha (Yellow Podotheca)*			
447.	8184	*Podotheca gnaphalioides (Golden Long-heads)*			
448.	2718	*Ptilotus drummondii (Narrowleaf Mulla Mulla)*			
449.	2751	*Ptilotus polystachyus (Prince of Wales Feather)*			
450.	4177	*Pultenaea ochreata*			
451.	4181	*Pultenaea reticulata*			
452.	6012	*Regelia ciliata*			
453.	6014	*Regelia inops*			
454.	4822	*Rhamnus alaternus (Buckthorn)*	Y		

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455.	2433	*Rumex crispus (Curled Dock)*	Y		
456.	11647	*Samolus repens var. repens*			
457.	7603	*Scaevola canescens (Grey Scaevola)*			
458.	6033	*Scholtzia involucrata (Spiked Scholtzia)*			
459.	25878	*Senecio condylus*			
460.	20663	*Senecio multicaulis subsp. multicaulis*			
461.	15972	*Silene gallica var. gallica*	Y		
462.	8225	*Siloxerus humifusus (Procumbent Siloxerus)*			
463.	6988	*Solanum americanum (Glossy Nightshade)*	Y		
464.	7020	*Solanum linnaeanum*	Y		
465.	7022	*Solanum nigrum (Black Berry Nightshade)*	Y		
466.	7037	*Solanum symonii*			
467.	8228	*Solidago canadensis (Goldenrod)*	Y		
468.	8231	*Sonchus oleraceus (Common Sowthistle)*	Y		
469.	4205	*Sphaerolobium linophyllum*			
470.	4211	*Sphaerolobium vimineum (Leafless Globe Pea)*			
471.	4828	*Spyridium globulosum (Basket Bush)*			
472.	4733	*Stackhousia monogyna*			
473.	2316	*Stirlingia latifolia (Blueboy)*			
474.	25831	*Stylidium araeophyllum*			
475.	25801	*Stylidium hesperium*			
476.	7756	*Stylidium longitubum (Jumping Jacks)*		P3	
477.	7774	*Stylidium piliferum (Common Butterfly Triggerplant)*			
478.	7777	*Stylidium preissii (Lizard Triggerplant)*			
479.	7785	*Stylidium repens (Matted Triggerplant)*			
480.	25806	*Stylidium scariosum*			
481.	7798	*Stylidium schoenoides (Cow Kicks)*			
482.	25830	*Stylidium sp. Darling Range (H. Bowler 371)*			
483.	25902	*Symphyotrichum squamatum (Bushy Starwort)*	Y		
484.	15532	*Synaphea spinulosa subsp. spinulosa*			
485.	4535	*Tetratheca hirsuta (Black Eyed Susan)*			
486.	6280	*Trachymene pilosa (Native Parsnip)*			
487.	4383	*Tribulus terrestris (Caltrop)*	Y		
488.	4289	*Trifolium angustifolium (Narrowleaf Clover)*	Y		
489.	17145	*Trifolium angustifolium var. angustifolium*	Y		
490.	4292	*Trifolium campestre (Hop Clover)*	Y		
491.	14738	*Trifolium resupinatum var. resupinatum*	Y		
492.	4309	*Trifolium scabrum (Rough Clover)*	Y		
493.	16998	*Tripterococcus paniculatus*		P4	
494.	14228	*Tripterococcus sp. (A.S. George 14234)*			
495.	4360	*Tropaeolum majus (Garden Nasturtium)*	Y		
496.	38388	*Ursinia anthemoides subsp. anthemoides*	Y		
497.	15432	*Verticordia densiflora var. densiflora*			
498.	6077	*Verticordia drummondii (Drummond's Featherflower)*			
499.	11474	*Vicia sativa subsp. nigra*	Y		
500.	4325	*Viminaria juncea (Swishbush)*			
501.	7384	*Wahlenbergia capensis (Cape Bluebell)*	Y		
502.	7389	*Wahlenbergia preissii*			
503.	6289	*Xanthosia huegelii*			
504.	2331	*Xylomelum occidentale (Woody Pear)*			
Fungus					
505.	-11397	*Albugo candida*			
506.	-3832	*Amanita grisea*			
507.	-7655	*Calocera cornea*			Y
508.	-5916	*Clavulinopsis sp.*			
509.	-12023	*Clitocybe sp.*			
510.	-9375	*Clitopilus sp.*			
511.	-7619	*Cortinarius sp.*			
512.	-4258	*Dermocybe clelandii*			
513.	-13037	*Dermocybe sp.*			
514.	-8854	*Descolea maculata*			
515.	-12293	*Gymnopilus purpuratus*			
516.	-11121	*Gymnopilus sp.*			
517.	-7652	*Hebeloma sp.*			
518.	-4297	*Henningsomyces candidus*			
519.	38795	*Hygrocybe conica*			
520.	-8849	*Hypocrea sp.*			
521.	-6425	*Inocybe sp.*			
522.	-5554	*Lopharia sp.*			Y
523.	-12218	*Megalocystidium sp.*			

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524.	-6363	*Merulius corium*			
525.	-12053	*Mycena sp.*			
526.	-7950	*Mycenastrum corium*			
527.	-10999	*Nidula niveo-tomentosa*			
528.	-7765	*Nidularia deformis*			Y
529.	-4344	*Peronospora farinosa*			Y
530.	-6434	*Peziza sp.*			
531.	-6344	*Phellinus gilvus*			
532.	-4725	*Pycnoporus coccineus*			
533.	-9944	*Ramaria sp.*			
534.	-10282	*Rhizopogon sp.*			
535.	-7193	*Tomentella sp.*			
536.	-5127	*Uromyces transversalis*			
Gymnosperm					
537.	36600	*Callitris pyramidalis (Swamp Cypress)*			
538.	85	*Macrozamia riedlei (Zamia)*			
Hepatic (Liverwort)					
539.	-6515	*Chiloscyphus semiteres var. semiteres*			
540.	-7487	*Marchantia berteroana*			
Invertebrate					
541.		*Iphiaulex rubriceps*			
542.		*Mesodina cyanophracta*			
543.		*Opilo congruus*			
544.		*Perthida glyphopa*			
545.		*Phoracantha impavida*			
546.		*Phoracantha semipunctata*			
547.	33992	*Synemon gratiosa (Graceful Sunmoth)*		T	
548.	33994	*Throscodectes xiphos (cricket)*		P1	Y
Lichen					
549.	27748	*Flavoparmelia rutidota*			
Mammal					
550.	24186	*Chalinolobus gouldii (Gould's Wattled Bat)*			
551.	24041	*Felis catus (Cat)*			
552.	24153	*Isoodon obesulus subsp. fusciventer (Southern Brown Bandicoot)*		P5	
553.	24131	*Macropus eugenii subsp. derbianus (Tammar)*		P5	
554.	24132	*Macropus fuliginosus (Western Grey Kangaroo)*			
555.	24133	*Macropus irma (Western Brush Wallaby)*		P4	
556.	24223	*Mus musculus (House Mouse)*			
557.	24146	*Myrmecobius fasciatus (Numbat)*		T	
558.	24194	*Nyctophilus geoffroyi (Lesser Long-eared Bat)*			
559.	25501	*Nyctophilus timoriensis*			Y
560.	24196	*Nyctophilus timoriensis subsp. timoriensis (Greater Long-eared Bat)*			
561.	24085	*Oryctolagus cuniculus (Rabbit)*			
562.	25504	*Perameles bougainville (Western Barred Bandicoot)*		T	
563.	24243	*Rattus fuscipes (Western Bush Rat)*			
564.	24245	*Rattus rattus (Black Rat)*			
565.	24145	*Setonix brachyurus (Quokka)*		T	
566.	24167	*Tarsipes rostratus (Honey Possum)*			
567.	25521	*Trichosurus vulpecula*			
568.	24206	*Vespadelus regulus (Southern Forest Bat)*			
569.	24040	*Vulpes vulpes (Red Fox)*			
Monocotyledon					
570.	20184	*Amphipogon laguroides subsp. laguroides*			
571.	200	*Amphipogon turbinatus*			
572.	11434	*Anigozanthos humilis subsp. humilis*			
573.	1411	*Anigozanthos manglesii (Mangles Kangaroo Paw)*			
574.	1264	*Arnocrinum preissii*			
575.	8779	*Asparagus asparagoides (Bridal Creeper)*	Y		
576.	1364	*Asphodelus fistulosus (Onion Weed)*	Y		
577.	17950	*Austrodanthonia caespitosa*			
578.	17234	*Austrostipa compressa*			
579.	17240	*Austrostipa flavescens*			
580.	233	*Avena barbata (Bearded Oat)*	Y		
581.	741	*Baumea articulata (Jointed Rush)*			
582.	743	*Baumea juncea (Bare Twigrush)*			
583.	15837	*Baumea preissii subsp. laxa*			
584.	15836	*Baumea preissii subsp. preissii*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
585.	748	*Baumea vaginalis (Sheath Twigrush)*			
586.	749	*Bolboschoenus caldwellii (Marsh Club-rush)*			
587.	244	*Briza maxima (Blowfly Grass)*	Y		
588.	245	*Briza minor (Shivery Grass)*	Y		
589.	249	*Bromus diandrus (Great Brome)*	Y		
590.	12770	*Burchardia congesta*			
591.	1387	*Burchardia umbellata (Milkmaids)*			
592.	1276	*Caesia micrantha (Pale Grass-lily)*			
593.	-11368	*Caladenia arenicola x huegelii*			
594.	1584	*Caladenia deformis (Blue Fairy Orchid)*			
595.	1586	*Caladenia discoidea (Dancing Orchid)*			
596.	1591	*Caladenia filamentosa (Red Spider Orchid)*			
597.	1592	*Caladenia flava (Cowslip Orchid)*			
598.	15348	*Caladenia flava subsp. flava*			
599.	15502	*Caladenia footeana*			
600.	1593	*Caladenia gemmata (Blue China Orchid)*			
601.	15352	*Caladenia georgei*			
602.	-480	*Caladenia grandis*			
603.	1596	*Caladenia huegelii (Grand Spider Orchid)*		T	
604.	1599	*Caladenia latifolia (Pink Fairy Orchid)*			
605.	1602	*Caladenia longicauda (Common White Spider Orchid)*			
606.	1605	*Caladenia marginata (White Fairy Orchid)*			
607.	17589	*Caladenia occidentalis*			
608.	15503	*Caladenia paludosa*			
609.	19309	*Calectasia narragara*			
610.	1162	*Cartonema philydroides*			
611.	1125	*Centrolepis drummondiana*			
612.	1134	*Centrolepis polygyna (Wiry Centrolepis)*			
613.	17685	*Chaetanthus aristatus*			
614.	1280	*Chamaescilla corymbosa (Blue Squill)*			
615.	17706	*Chordifex sinuosus*			
616.	1418	*Conostylis aculeata (Prickly Conostylis)*			
617.	11826	*Conostylis aculeata subsp. aculeata*			
618.	1427	*Conostylis candicans (Grey Cottonhead)*			
619.	11438	*Conostylis candicans subsp. candicans*			
620.	1436	*Conostylis juncea*			
621.	1453	*Conostylis serrulata*			
622.	11597	*Conostylis setigera subsp. setigera*			
623.	1455	*Conostylis setosa (White Cottonhead)*			
624.	277	*Cortaderia selloana (Pampas Grass)*	Y		
625.	1285	*Corynotheca micrantha (Sand Lily)*			
626.	1627	*Cryptostylis ovata (Slipper Orchid)*			
627.	16245	*Cyathochaeta teretifolia*		P3	
628.	283	*Cynodon dactylon (Couch)*	Y		
629.	783	*Cyperus congestus (Dense Flat-sedge)*	Y		
630.	816	*Cyperus tenuiflorus (Scaly Sedge)*	Y		
631.	1218	*Dasypogon bromeliifolius (Pineapple Bush)*			
632.	16595	*Desmocladus flexuosus*			
633.	299	*Deyeuxia quadriseta (Reed Bentgrass)*			
634.	1259	*Dianella revoluta (Blueberry Lily)*			
635.	11636	*Dianella revoluta var. divaricata*			
636.	1287	*Dichopogon capillipes*			
637.	17838	*Dielsia stenostachya*			
638.	19649	*Disa bracteata*	Y		
639.	1632	*Diuris emarginata (Tall Donkey Orchid)*			
640.	1635	*Diuris longifolia (Common Donkey Orchid)*			
641.	11105	*Echinochloa crus-galli (Barnyard Grass)*	Y		
642.	347	*Ehrharta calycina (Perennial Veldt Grass)*	Y		
643.	349	*Ehrharta longiflora (Annual Veldt Grass)*	Y		
644.	1643	*Elythranthera brunonis (Purple Enamel Orchid)*			
645.	1644	*Elythranthera emarginata (Pink Enamel Orchid)*			
646.	376	*Eragrostis curvula (African Lovegrass)*	Y		
647.	15412	*Eriochilus dilatatus subsp. multiflorus*			
648.	15414	*Eriochilus helonomos*			
649.	15415	*Eriochilus scaber subsp. scaber*			
650.	18392	*Freesia alba x leichtlinii*	Y		
651.	1520	*Gladiolus caryophyllaceus (Wild Gladiolus)*	Y		
652.	1470	*Haemodorum paniculatum (Mardja)*			
653.	1475	*Haemodorum spicatum (Mardja)*			
654.	1293	*Hensmania turbinata*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
655.	444	*Holcus lanatus (Yorkshire Fog)*	Y		
656.	449	*Hordeum leporinum (Barley Grass)*	Y		
657.	1070	*Hypolaena exsulca*			
658.	17841	*Hypolaena pubescens*			
659.	20200	*Isolepis cernua var. setiformis*			
660.	917	*Isolepis marginata (Coarse Club-rush)*	Y		
661.	10831	*Isolepis prolifera (Budding Club-rush)*	Y		
662.	1178	*Juncus bufonius (Toad Rush)*	Y		
663.	1186	*Juncus microcephalus*	Y		
664.	1188	*Juncus pallidus (Pale Rush)*			
665.	1190	*Juncus planifolius (Broadleaf Rush)*			
666.	1370	*Lachenalia reflexa*	Y		
667.	20019	*Lachnagrostis filiformis*			
668.	467	*Lagurus ovatus (Hare's Tail Grass)*	Y		
669.	11911	*Laxmannia ramosa subsp. ramosa*			
670.	1309	*Laxmannia squarrosa*			
671.	1051	*Lemna disperma (Duckweed)*			
672.	925	*Lepidosperma angustatum*			
673.	937	*Lepidosperma longitudinale (Pithy Sword-sedge)*			
674.	940	*Lepidosperma pubisquameum*			
675.	944	*Lepidosperma scabrum*			
676.	945	*Lepidosperma squamatum*			
677.	-10368	*Lepilaena sp.*			
678.	1653	*Leporella fimbriata (Hare Orchid)*			
679.	15418	*Leptoceras menziesii*			
680.	10957	*Lolium perenne x rigidum*	Y		
681.	478	*Lolium rigidum (Wimmera Ryegrass)*	Y		
682.	1228	*Lomandra hermaphrodita*			
683.	1234	*Lomandra nigricans*			
684.	1239	*Lomandra preissii*			
685.	1094	*Loxocarya flexuosa*			
686.	1097	*Lyginia barbata*			
687.	18049	*Lyginia imberbis*			
688.	17683	*Meeboldina cana*			
689.	17747	*Meeboldina decipiens*			
690.	17843	*Meeboldina tephrina*			
691.	955	*Mesomelaena pseudostygia*			
692.	8814	*Microtis brownii*			
693.	31713	*Microtis cupularis*			
694.	10954	*Microtis media (Tall Mignonette Orchid)*			
695.	15419	*Microtis media subsp. media*			
696.	33742	*Microtis quadrata*		P4	
697.	1664	*Microtis unifolia (Common Mignonette Orchid)*			
698.	168	*Ottelia ovalifolia (Swamp Lily)*			
699.	527	*Paspalum dilatatum*	Y		
700.	532	*Paspalum urvillei (Vasey Grass)*	Y		
701.	1550	*Patersonia occidentalis (Purple Flag)*			
702.	30471	*Patersonia occidentalis var. angustifolia*			
703.	541	*Pennisetum setaceum (Fountain Grass)*	Y		
704.	1478	*Phlebocarya ciliata*			
705.	1479	*Phlebocarya filifolia*			
706.	11557	*Phlebocarya pilosissima subsp. pilosissima*		P3	
707.	578	*Poa porphyroclados*			
708.	582	*Polypogon monspeliensis (Annual Beardgrass)*	Y		
709.	112	*Potamogeton pectinatus (Fennel Pondweed)*			
710.	1670	*Prasophyllum drummondii (Swamp Leek Orchid)*			
711.	1672	*Prasophyllum fimbria (Fringed Leek Orchid)*			
712.	1673	*Prasophyllum gibbosum (Humped Leek Orchid)*			
713.	1677	*Prasophyllum macrostachyum (Laughing Leek Orchid)*			
714.	1679	*Prasophyllum ovale (Little Leek Orchid)*			
715.	1680	*Prasophyllum parvifolium (Autumn Leek Orchid)*			
716.	10853	*Prasophyllum plumiforme*			
717.	1681	*Prasophyllum regium (King Leek Orchid)*			
718.	-4741	*Prasophyllum regium x drummondii*			Y
719.	15426	*Pterostylis aspera*			
720.	16367	*Pyrorchis nigricans (Red beaks)*			
721.	14485	*Romulea flava var. minor*	Y		
722.	14924	*Romulea rosea var. communis*	Y		
723.	979	*Schoenus caespititius*			
724.	982	*Schoenus clandestinus*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
725.	984	*Schoenus curvifolius*			
726.	992	*Schoenus grandiflorus (Large Flowered Bogrush)*			
727.	1260	*Stypandra glauca (Blind Grass)*			
728.	1702	*Thelymitra campanulata (Shirt Orchid)*			
729.	-4912	*Thelymitra flexuosa x vulgaris*			
730.	1710	*Thelymitra mucida (Plum Orchid)*			
731.	1716	*Thelymitra tigrina (Tiger Orchid)*			
732.	1717	*Thelymitra variegata (Queen of Sheba)*		P3	
733.	1318	*Thysanotus arbuscula*			
734.	1319	*Thysanotus arenarius*			
735.	1338	*Thysanotus manglesianus (Fringed Lily)*			
736.	-3646	*Thysanotus sp. manglesianus/patersonii scps*			
737.	1351	*Thysanotus sparteus*			
738.	1358	*Thysanotus triandrus*			
739.	1361	*Tricoryne elatior (Yellow Autumn Lily)*			
740.	12048	*Tricostularia neesii var. neesii*			
741.	15821	*Triglochin huegelii*			
742.	98	*Typha domingensis (Bulrush)*			
743.	1567	*Watsonia meriana (Bulbil Watsonia)*	Y		
744.	1256	*Xanthorrhoea preissii (Grass tree)*			
Pteridophyte (Fern)					
745.	80	*Azolla filiculoides (Pacific Azolla)*			
746.	17737	*Azolla pinnata*			
747.	4	*Phylloglossum drummondii (Pigmy Clubmoss)*			
748.	6	*Selaginella gracillima (Tiny Clubmoss)*			
Reptile					
749.	25011	*Acritoscincus trilineatum*			
750.	24991	*Aprasia repens*			
751.	25245	*Brachyurophis semifasciata*			
752.	24980	*Christinus marmoratus (Marbled Gecko)*			
753.	30893	*Cryptoblepharus buchananii*			
754.	25020	*Cryptoblepharus plagiocephalus*			
755.	30899	*Ctenophorus adelaidensis (Southern Heath Dragons)*			
756.	25027	*Ctenotus australis*			
757.	25039	*Ctenotus fallens*			
758.	25040	*Ctenotus gemmula*			
759.	25766	*Delma fraseri*			
760.	25296	*Demansia psammophis subsp. reticulata*			
761.	25100	*Egernia napoleonis*			
762.	25250	*Elapognathus coronatus (Crowned Snake)*			
763.	25119	*Hemiergis quadrilineata*			
764.	25133	*Lerista elegans*			
765.	25147	*Lerista lineata*		P3	
766.	25005	*Lialis burtonis*			
767.	25184	*Menetia greyii*			
768.	25191	*Morethia lineoocellata*			
769.	25192	*Morethia obscura*			
770.	25249	*Neelaps calonotos (Black-striped Snake)*		P3	
771.	25252	*Notechis scutatus (Tiger Snake)*			
772.	25253	*Parasuta gouldii*			
773.	25509	*Pletholax gracilis (Keeled Legless Lizard)*			
774.	25007	*Pletholax gracilis subsp. gracilis*			
775.	25510	*Pogona minor*			
776.	24907	*Pogona minor subsp. minor*			
777.	25511	*Pseudonaja affinis (Dugite)*			
778.	25259	*Pseudonaja affinis subsp. affinis (Dugite)*			
779.	25008	*Pygopus lepidopodus (Common Scaly Foot)*			
780.	25271	*Ramphotyphlops australis*			
781.	25266	*Simoselaps bertholdi (Jan's Banded Snake)*			
782.	25203	*Tiliqua occipitalis (Western Bluetongue)*			
783.	25207	*Tiliqua rugosa subsp. rugosa*			
784.	25218	*Varanus gouldii (Bungarra or Sand Monitor)*			
Slime Mould					
785.	38963	*Arcyria affinis*			Y
786.	38964	*Arcyria cinerea*			
787.	38965	*Arcyria denudata*			
788.	38966	*Arcyria ferruginea*			
789.	38967	*Arcyria incarnata*			
790.	38968	*Arcyria insignis*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
791.	38970	*Arcyria obvelata*			
792.	38973	*Arcyria pomiformis*			
793.	38974	*Arcyria stipata*			Y
794.	38975	*Badhamia capsulifera*			Y
795.	38976	*Badhamia foliicola*			
796.	38977	*Badhamia goniospora*			Y
797.	-10418	*Badhamia sp.*			
798.	38981	*Calomyxa metallica*			Y
799.	38982	*Ceratiomyxa fruticulosa*			
800.	38983	*Clastoderma debaryanum*			
801.	38986	*Comatricha elegans*			
802.	38988	*Comatricha laxa*			
803.	38990	*Comatricha nigra*			
804.	38991	*Comatricha pulchella*			
805.	38997	*Craterium leucocephalum*			
806.	38998	*Craterium minutum*			
807.	39001	*Cribraria cancellata*			
808.	39002	*Cribraria microcarpa*			
809.	39003	*Cribraria minutissima*			
810.	39006	*Cribraria tenella*			
811.	39011	*Diderma asteroides*			
812.	-11035	*Diderma sp.*			Y
813.	39017	*Didymium anellus*			Y
814.	39023	*Didymium perforatum*			Y
815.	39024	*Didymium serpula*			
816.	39025	*Didymium squamulosum*			
817.	39029	*Echinostelium minutum*			
818.	39030	*Enerthenema papillatum*			
819.	39033	*Fuligo septica*			
820.	-7281	*Lamproderma sp.*			Y
821.	39042	*Licea minima*			
822.	39046	*Licea rufocuprea*			Y
823.	-11667	*Licea sp.*			
824.	39048	*Lycogala epidendrum*			
825.	39054	*Oligonema schweinitzii*			
826.	39057	*Perichaena corticalis*			
827.	39058	*Perichaena depressa*			
828.	39061	*Physarum bitectum*			
829.	39062	*Physarum bivalve*			Y
830.	39063	*Physarum cinereum*			
831.	39064	*Physarum citrinum*			Y
832.	39065	*Physarum compressum*			
833.	39069	*Physarum famintzinii*			Y
834.	39072	*Physarum melleum*			
835.	39074	*Physarum pusillum*			
836.	39076	*Physarum sessile*			
837.	-12797	*Physarum sp.*			
838.	39079	*Physarum viride*			
839.	39083	*Stemonitis fusca*			
840.	39088	*Stemonitis virginiensis*			
841.	39090	*Stemonitopsis gracilis*			
842.	39094	*Trichia affinis*			
843.	39095	*Trichia botrytis*			
844.	39096	*Trichia contorta*			
845.	39097	*Trichia decipiens*			
846.	39100	*Trichia persimilis*			
847.	-11940	*Trichia sp.*			
848.	39101	*Trichia varia*			
849.	39102	*Trichia verrucosa*			
850.	39103	*Tubifera ferruginosa*			
851.	39104	*Willkommlangea reticulata*			

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

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

APPENDIX 3

Flora Conservation Codes

APPENDIX 3: Flora Conservation Codes

Conservation Categories And Definitions For EPBC Act Listed Flora Species

Conservation Category	Definition
Extinct	Taxa not definitely located in the wild during the past 50 years
Extinct in the Wild	Taxa known to survive only in captivity
Critically Endangered	Taxa facing an extremely high risk of extinction in the wild in the immediate future
Endangered	Taxa facing a very high risk of extinction in the wild in the near future
Vulnerable	Taxa facing a high risk of extinction in the wild in the medium-term
Near Threatened	Taxa that risk becoming Vulnerable in the wild
Conservation Dependent	Taxa whose survival depends upon ongoing conservation measures. Without these measures, a conservation dependent taxon would be classified as Vulnerable or more severely threatened.
Data Deficient (Insufficiently Known)	Taxa suspected of being Rare, Vulnerable or Endangered, but whose true status cannot be determined without more information.
Least Concern	Taxa that are not considered Threatened

Conservation Codes and Descriptions for DEC Threatened Rare and Priority Flora Species

Conservation Code	Description
T: (Declared Rare Flora – Extant)	Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such.
P1: Priority One – Poorly Known Taxa	Taxa that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, Westrail and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Taxa may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes
P2: Priority Two – Poorly Known Taxa	Taxa that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, state forest, vacant Crown land, water reserves. Taxa may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes
P3: Priority Three – Poorly Known Taxa	Taxa that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Taxa may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.

Conservation Code	Description
P4: Priority Four – Rare, Near Threatened and other taxa in need of monitoring	1. **Rare.** Taxa that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands. 2. **Near Threatened**. Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. 3. Taxa that have been removed from the list of threatened species during the past five years for reasons other than taxonomy
P5: Priority Five: Conservation Dependent Taxa	Taxa that are not threatened but are subject to a specific conservation program, the cessation of which would result in the taxon becoming threatened within five years

APPENDIX 4

Flora and Vegetation Survey
Quadrat Data

Cockburn Central: Site Q1

Described by: Baden Sadlo **Date**: 6/10/2011 **Type:** quadrat - 10 m x 10 m

MGA Zone: 50 391818 **mE** 6444854 **mN**

Habitat: Banksia woodland

Soil: grey to light brown sand

Vegetation: Low Woodland of *Banksia attenuata*, *B. ilicifolia* and *B. menziesii* over Tall Open Shrubland of *Adenanthos cygnorum* subsp. *cygnorum* over Grassland of **Briza maxima*, **Ehrharta longiflora* and **E. calycina* over Very Open Herbland of **Sonchus oleraceus*, *Trachymene pilosa* and *Burchardia congesta* over Very Open Shrubland of *Lyginia barbata*.

Vegetation Condition: Good to Degraded

Fire Age: 5-20 years

Notes: Disturbance: high weed density
Bare ground: 2.0%
Litter cover: 3.0% logs, 2.0% twigs and 30.0%

Species List	Cover (%)	Height (m)
**Acacia longifolia*	<1	0.5
Adenanthos cygnorum subsp. *cygnorum*	6.0	3.0
Astroloma pallidum	<1	0.2
**Avena barbata*	<1	0.7
Banksia attenuata	10	6.5
Banksia ilicifolia	25	5.0

Banksia menziesii	25	5.0
Bossiaea eriocarpa	<1	0.3
**Briza maxima*	30.0	0.4
Burchardia congesta	1.0	0.9
Caladenia flava subsp. *flava*	<1	0.1
Conostylis aculeata	<1	0.3
Desmocladus fasciculatus	<1	0.1
Desmocladus flexuosus	<1	0.1
Dianella revoluta	1.0	0.7
**Ehrharta calycina*	7.0	1.0
**Ehrharta longiflora*	25.0	0.8
**Gladiolus caryophyllaceus*	<1	0.9
Hibbertia vaginata	<1	0.2
Hovea pungens	<1	0.7
Lyginia barbata	1.0	0.5
Philotheca spicata	<1	0.5
Phlebocarya ciliata	<1	0.4
Scholtzia involucrata	<1	0.1
**Solanum nigrum*	1.0	0.7
**Sonchus oleraceus*	1.5	0.1
Trachymene pilosa	1.0	0.05
**Zantedeschia aethiopica*	<1	0.3

Cockburn Central Site Q2

Described by: BS **Date**: 6/10/2011 **Type:** quadrat - 10 m x 10 m

MGA Zone:50 391835 **mE** 6444898 **mN**

Habitat: Riparian vegetation adjacent to lake

Soil: brown-black peat

Vegetation: *Low Open Forest of Melaleuca preissiana and Banksia littoralis over Tall Open Scrub of Kunzea glabrescens and *Acacia longifolia over Open Shrubland of Astartea scoparia over Very Open Herbland of Centella asiatica and *Solanum nigrum over Very Open Sedgeland of Baumea juncea*.

Vegetation Condition: Good to Degraded

Fire Age: >20 years

Notes: Disturbance: some weed species.
Bare ground: 5.0%
Litter cover: 4.0% logs, 35.0% twigs and 50.0% leaves.

Species List	Cover (%)	Height (m)
**Acacia longifolia*	6.0	2.5
Astartea scoparia	6.0	1.5
Banksia littoralis	3.0	5.0
Baumea juncea	2.0	1.0
Centella asiatica	4.0	0.05
**Ehrharta longiflora*	<1	0.5
Homalanthus novo-guineensis	1.5	3.0

Kunzea glabrescens	40.0	3.5
Melaleuca preissiana	40.0	6.0
**Solanum nigrum*	1.0	0.2
**Sonchus oleraceus*	<1	0.2
**Zantedeschia aethiopica*	<1	0.3

Cockburn Central Site Q3

Described by: BS **Date**: 6/10/2011 **Type:** quadrat - 10 m x 10 m

MGA Zone: 50 391841 **mE** 6444793 **mN**

Habitat: Open Banksia woodland

Soil: white-grey sand

Vegetation: *Low Woodland of Banksia menziesii over Open Shrubland of Stirlingia latifolia and Persoonia saccata over Low Shrubland of Eremaea pauciflora subsp. pauciflora, Hibbertia hypericoides and Scholtzia involucrata over Very Open Grassland of *Briza maxima and *Ehrharta spp. over Very Open Herbland of Cassytha flava, Gladiolus caryophyllaceus, Patersonia occidentalis and Phlebocarya ciliata over Very Open Sedgeland of Lepidosperma squamatum and Lyginia barbata.*

Vegetation Condition: Excellent

Fire Age: 5-20 years

Notes: Disturbance: some weeds and ? dieback.
Bare ground: 5.0%
Litter cover: 0.5% logs, 2.0% twigs and 60.0% leaves.

Species List	Cover (%)	Height (m)
Acacia stenoptera	<1	0.2
Amphipogon turbinatus	<1	0.4
Arnocrinum preissii	<1	0.4
Banksia menziesii	15.0	4.0
Bossiaea eriocarpa	1.0	0.4

Brachyloma preissii	0.5	0.7
**Briza maxima*	1.0	0.4
Burchardia congesta	0.5	0.5
Caladenia flava subsp. *flava*	<1	0.1
Calandrinia corrigioloides	<1	0.02
Calytrix flavescens	<1	0.5
Cassytha flava	1.5	climbing
Conostephium pendulum	2.0	0.3
Conostylis aculeata	<1	0.3
Dampiera linearis	<1	0.1
Daviesia triflora	<1	0.4
Desmocladus fasciculatus	<1	0.1
Desmocladus flexuosus	3.0	0.1
Diuris sp.	<1	0.4
Drosera menziesii subsp. *penicillaris*	<1	climbing
**Ehrharta calycina*	<1	0.6
**Ehrharta longiflora*	<1	0.6
Eremaea pauciflora var. *pauciflora*	8.0	0.7
**Freesia* sp.	<1	0.2
Gastrolobium capitatum	<1	0.4
**Gladiolus caryophyllaceus*	1.0	1.1
Gompholobium tomentosum	1.0	0.4

Hemiandra pungens	<1	creeping
Hibbertia hypericoides	12.0	0.7
Hibbertia subvaginata	0.5	0.3
Hyalosperma cotula	<1	0.05
Hypocalymma robustum	<1	1.2
**Hypochaeris glabra*	<1	0.05
Hypolaena exsulca	<1	0.3
Lepidosperma leptostachyum	<1	0.4
Lepidosperma pubisquameum	<1	0.4
Lepidosperma squamatum	1.0	0.5
Leucopogon conostephioides	1.0	0.5
Lomandra caespitosa	<1	0.35
Lomandra preissii	<1	0.25
Lomandra hermaphrodita	<1	0.2
Lyginia barbata	1.0	0.4
Microtis media subsp. *media*	<1	0.3
Patersonia occidentalis	1.0	0.6
Persoonia saccata	2.5	1.1
Petrophile linearis	<1	0.4
Philotheca spicata	<1	0.2
Phlebocarya ciliata	1.0	0.5
Phyllangium paradoxum	<1	0.05
Scholtzia involucrata	6.0	0.5
**Sonchus oleraceus*	<1	0.1
Stirlingia latifolia	6.0	1.5
Thysanotus manglesianus	<1	climbing
Thysanotus patersonii	<1	climbing
Trachymene pilosa	0.5	0.05
**Ursinia anthemoides*	<1	0.35
Xanthorrhoea sp.	<1	1.0

Cockburn Central Site: Q4

Described by: BS **Date**: 6/10/2011 **Type:** quadrat - 10 m x 10 m

MGA Zone: 50 391638 **mE** 6444748 **mN**

Habitat: Open Banksia woodland

Soil: white grey sand

Vegetation: *Low Woodland of Banksia attenuata and B. menziesii over Shrubland of Allocasuarina humilis and Stirlingia latifolia over Low Open Shrubland of Hibbertia hypericoides, Eremaea pauciflora subsp. pauciflora, Leucopogon constephioides and Conostephium pendulum over Very Open Herbland/Sedgeland of Patersonia occidentalis, Conostylis aculeata and Schoenus curvifolius*.

Vegetation Condition: Excellent

Fire Age: <5 years

Notes: Disturbance: grazing of vegetation by rabbits, weed.

Species List	Cover (%)	Height (m)
Acacia pulchella	<1	0.4
Acacia stenoptera	<1	0.4
Allocasuarina humilis	12.0	1.2
Amphipogon turbinatus	<1	0.4
Anigozanthos humilis subsp. *humilis*	<1	0.2
Austrostipa compressa	<1	0.2
Banksia attenuata	8.0	4.5
Banksia menziesii	3.5	4.0

**Briza maxima*	<1	0.3
Burchardia congesta	<1	0.7
Caladenia flava subsp. *flava*	<1	0.5
Calandrinia corrigioloides	<1	prostrate
Calectasia narragara	<1	0.1
Conostephium pendulum	3.0	0.3
Conostylis aculeata	1.0	0.3
Daviesia triflora	<1	0.4
Desmocladus flexuosus	<1	0.15
Drosera pallida	<1	climbing
Drosera sp.	<1	0.05
**Ehrharta calycina*	<1	1.0
Eremaea pauciflora var. *pauciflora*	5.0	0.8
Gastrolobium capitatum	0.5	0.6
**Gladiolus caryophyllaceus*	<1	1.0
Gompholobium tomentosum	<1	1.0
Hibbertia hypericoides	7.0	1.0
Hibbertia subvaginata	<1	0.4
Hyalosperma cotula	<1	0.05
**Hypochaeris glabra*	<1	0.1
Jacksonia furcellata	<1	2.0
Laxmannia squarrosa	<1	0.1

Lepidosperma sp.	<1	0.3
Leucopogon conostephioides	4.0	0.5
Lomandra hermaphrodita	<1	0.2
Lyginia barbata	<1	0.5
Melaleuca seriata	1.5	0.5
Patersonia occidentalis	1.5	0.5
Schoenus curvifolius	1.0	0.3
Scholtzia involucrata	1.0	0.2
Stirlingia latifolia	5.0	1.2
Stylidium repens	<1	0.05
Trachymene pilosa	<1	0.1
**Ursinia anthemoides*	<1	0.3

Cockburn Central Site: Q5

Described by: BS **Date**: 6/10/2011 **Type:** quadrat - 10 m x 10 m

MGA Zone: 50 391449 **mE** 6444816 **mN**

Habitat: Low to medium shrubland

Soil: grey/brown to white sands

Vegetation: *Tall Open Shrubland of Adenanthos cygnorum subsp. cygnorum over Low Shrubland of Eremaea pauciflora var. pauciflora, Bossiaea eriocarpa and Lechenaultia floribunda over Very Open Grassland of *Ehrharta calycina and *Briza maxima over Very Open Herbland of Phlebocarya ciliata, Cassytha flava, *Ursinia anthemoides, *Freesia sp. and *Hypochaeris glabra over Very Open Sedgeland of Lyginia barbata*.

Vegetation Condition: Good

Fire Age: <5 years

Notes: Disturbances: previously cleared for overhead electrical lines, close to road, weeds.
Bare ground: 40.0%
Litter cover: 2.0% twigs and 5.0% logs
Opportunistic collections outside of quadrat but in same vegetation type: *Nuytsia floribunda* (<1%), *Banksia attenuata* (2.0%) and *Eucalyptus marginata* (<1%).

Species List	Cover (%)	Height (m)
Adenanthos cygnorum subsp. *cygnorum*	8.0	2.5
Amphipogon turbinatus	<1	0.3
Arnocrinum preissii	<1	0.5
Bossiaea eriocarpa	2.0	0.5

**Briza maxima*	0.5	0.2
Burchardia congesta	<1	0.8
Calandrinia granulifera	<1	0.01
Calytrix flavescens	<1	0.15
Cassytha flava	3.0	prostrate
Corynotheca micrantha	<1	0.4
Crassula colorata	<1	0.05
**Ehrharta calycina*	2.0	1.1
Eremaea pauciflora var. *pauciflora*	12.0	0.5
**Freesia* sp.	1.0	0.1
**Gladiolus caryophyllaceus*	<1	0.9
Gompholobium tomentosum	<1	0.4
Hemiandra pungens	<1	0.05
Hibbertia hypericoides	<1	0.4
Hibbertia subvaginata	<1	0.3
**Hypochaeris glabra*	1.0	0.1
Hypolaena exsulca	<1	0.4
Jacksonia furcellata	<1	2.5
Laxmannia squarrosa	<1	0.15
Lechenaultia floribunda	1.5	0.3
Lomandra caespitosa	<1	0.15
Lyginia barbata	2.0	0.5
Patersonia occidentalis	<1	0.6
**Petrorhagia dubia*	<1	0.3
Phlebocarya ciliata	3.5	0.5
**Ursinia anthemoides*	1.0	0.35
Xanthorrhoea sp.	<1	1.3

Cockburn Central Site: Q6

Described by: BS **Date**: 6/10/2011 **Type:** quadrat - 10 m x 10 m

MGA Zone: 50 391417 **mE** 6445149 **mN**

Habitat: Open woodland over mixed shrubland

Soil: off white/light brown sand

Vegetation: *Low Woodland of Banksia menziesii over Tall Open Shrubland of Regelia ciliata over Shrubland of Allocasuarina humilis, Acacia pulchella subsp. glaberrima and Stirlingia latifolia over Low Open Shrubland of Bossiaea eriocarpa, Gompholobium tomentosum, Hibbertia hypericoides and Conostephium pendulum over Very Open Grassland of *Briza maxima over Very Open Herbland of Patersonia occidentalis, Laxmannia squarrosa and Conostylis aculeata over Very Open Sedgeland of Desmocladus flexuosus, Mesomelaena pseudostygia and Lepidosperma pubisquameum.*

Vegetation Condition: Excellent

Fire Age: 5-20 years

Notes: Disturbance: low to medium; near road and adjacent to powerlines
Bare ground: 2.0%
Litter cover: 1.0% logs, 10.0% twigs and 40.0% leaves.

Species List	Cover (%)	Height (m)
Acacia pulchella var. *glaberrima*	5.0	1.5
Acacia stenoptera	<1	0.3
Allocasuarina humilis	18.0	1.3
Amphipogon turbinatus	<1	0.15

Austrostipa compressa	<1	0.25
Banksia menziesii	18.0	5.0
Bossiaea eriocarpa	3.0	0.4
Brachyloma preissii	<1	0.5
**Briza maxima*	1.0	0.3
Burchardia congesta	<1	0.5
Caladenia discoidea	<1	0.25
Caladenia flava subsp. *flava*	<1	0.1
Calandrinia granulifera	<	0.02
Calectasia narragara	<1	0.5
Calytrix flavescens	<1	0.4
Chamaescilla corymbosa	<1	0.15
Conostephium pendulum	1.0	0.6
Conostylis aculeata	1.5	0.4
Dampiera linearis	<1	0.05
Daviesia triflora	0.5	0.5
Desmocladus flexuosus	2.5	0.2
Dianella revoluta	<1	0.3
Drosera macrantha	<1	climbing
**Ehrharta calycina*	<1	0.9
Eucalyptus marginata	0.5	2.5
**Freesia* sp.	<1	0.1
**Gladiolus caryophyllaceus*	<1	0.3
Gompholobium tomentosum	1.5	0.4
Hardenbergia comptoniana	<1	0.1
Hemiandra pungens	<1	0.15
Hibbertia hypericoides	1.0	0.6
**Hypochaeris glabra*	<1	prostrate
Jacksonia furcellata	<1	2.0
Laxmannia ramosa	<1	creeping
Laxmannia squarrosa	2.0	0.1
Lepidosperma pubisquameum	1.0	0.2
Leucopogon constephioides	<1	0.5
Lomandra caespitosa	<1	0.3
Lomandra hermaphrodita	<1	0.25
Lomandra micrantha subsp. *micrantha*	<1	0.25
Mesomelaena pseudostygia	1.5	0.5
Patersonia occidentalis	3.0	0.5
Persoonia saccata	1.0	1.1
Petrophile linearis	<1	0.35
Regelia ciliata	1.0	2.0
**Romulea rosea*	<1	0.1
Scholtzia involucrata	1.0	0.2
**Sonchus oleraceus*	<1	0.15
Stirlingia latifolia	2.5	1.2
Stylidium brunonianum	<1	0.5
Stylidium piliferum	<1	0.4
Thysanotus patersonii/manglesianus	<1	climbing
Trachymene pilosa	<1	0.05
Tricoryne elatior	<1	0.2
**Ursinia anthemoides*	<1	0.25
Xanthorrhoea sp.	<1	1.0

Cockburn Central Site: Q7

Described by: BS **Date**: 6/10/2011 **Type:** quadrat - 10 m x 10m

MGA Zone: 50 391511 **mE** 6445239 **mN**

Habitat: *Eucalyptus* woodland over shrubland

Soil: white to light brown sand

Vegetation: *Open Woodland of Eucalyptus marginata over Open Shrubland of Stirlingia latifolia, Xanthorroea preissii and Daviesia physodes over Low Shrubland of Constephium pendulum, Bossiaea eriocarpa, Acacia pulchella subsp. glaberrima and Hibbertia hypericoides over Very Open Grassland of *Ehrharta calycina and *Briza maxima over Very Open Herbland of Opercularia vaginata and Conostylis aculeata over Very Open Sedgeland of Desmocladus flexuosus and Lepidosperma pubisquameum.*

Vegetation Condition: Excellent to Very Good

Fire Age: 5-20 years

Notes: No photo recorded
Disturbance: medium
Bare ground: 10%
Litter cover: 20% Twigs and 40% leaves.

Species List	Cover (%)	Height (m)
Acacia pulchella var. *glaberrima*	4.0	0.9
Anigozanthos humilis subsp. *humilis*	<1	0.25
Anigozanthos manglesii	1.0	0.7
Astroloma xerophyllum	1.0	0.5
Bossiaea eriocarpa	4.5	0.4
**Briza maxima*	2.0	0.25
Burchardia congesta	<1	0.7
Calandrinia granulifera	<1	0.03
Calectasia narragara	<1	0.3
Centrolepis mutica	<1	0.05
Conostephium pendulum	4.5	0.4
Conostylis aculeata	2.0	0.25
Crassula colorata	<1	0.05
Dampiera linearis	<1	0.15
Daviesia physodes	1.0	1.2
Desmocladus flexuosus	2.5	0.2
Drosera macrantha	<1	climbing
**Ehrharta calycina*	3.0	1.3
Eucalyptus marginata	20.0	5.0
**Gladiolus caryophyllaceus*	1.0	1.0
Gompholobium tomentosum	<1	0.2
Hibbertia hypericoides	4.0	0.5
Hypocalymma robustum	2.5	0.5
**Hypochaeris glabra*	<1	0.1
Isotropis cuneifolia subsp. *cuneifolia*	<1	0.1
Jacksonia furcellata	0.5	0.4

Laxmannia squarrosa	<1	0.15
Lepidosperma pubisquameum	1.5	0.4
Lomandra caespitosa	<1	0.2
Lomandra hermaphrodita	<1	0.2
Opercularia vaginata	3.5	0.3
Petrophile linearis	<1	0.3
**Petrorhagia dubia*	<1	0.4
Philotheca spicata	1.0	0.8
Schoenus curvifolius	<1	0.2
Scholtzia involucrata	<1	0.25
Siloxerus humifusus	<1	0.02
**Sonchus oleraceus*	<1	0.1
Stirlingia latifolia	3.0	1.2
Thysanotus patersonii/manglesianus	<1	0.5
Trachymene pilosa	<1	0.1
Tricoryne elatior	<1	0.4
**Ursinia anthemoides*	1.0	0.3
Xanthorrhoea preissii	1.5	1.2

Cockburn Central Site: Q8

Described by: BS **Date**: 6/10/2011 **Type:** quadrat - 10 m x 10 m

MGA Zone: 50 391766 **mE** 6445052 **mN**

Habitat: Riparian vegetation surrounding lake

Soil: black peat

Vegetation: *Closed Tall Scrub of Astartea scoparia over Open Grassland of *Cynodon dactylon over Open Herbland of Centella asiatica and *Ornithopus compressus over Very Open Sedgeland of Baumea articulata.*

Vegetation Condition: Degraded

Fire Age: 20+ years

Notes: Disturbance: high; weed species and low floristic diversity
Bare ground: 5.0%
Litter cover: 1.0% leaves.

Species List	Cover (%)	Height (m)
Astartea scoparia	95.0	2.2
Baumea articulata	1.0	1.4
Centella asiatica	10.0	prostrate
**Cynodon dactylon*	10.0	0.05
**Hypochaeris glabra*	<1.0	prostrate
**Ornithopus compressus*	5.0	prostrate
Triglochin linearis	<1.0	0.5

Cockburn Central Site: Q9

Described by: BS **Date:** 6/10/2011 **Type:** quadrat - 10 m x 10 m

MGA Zone: 50 391677 **mE** 6444848 **mN**

Habitat: *Eucalyptus* woodland over shrubland

Soil: grey to brown sand

Vegetation: *Low Open Forest of Eucalyptus marginata and Banksia attenuata over Open Shrubland of Jacksonia furcellata over Low Shrubland of Hibbertia subvaginata, Leucopogon constephioides and Hovea pungens over Open Grassland of *Briza maxima and *Ehrharta spp. over Very Open Herbland of Phlebocarya ciliata, Conostylis aculeata and Dasypogon bromeliifolius.*

Vegetation Condition: Good

Fire Age: 5-20 years

Notes: No photo recorded
Disturbance: high; weed species in high densities.
Bare ground: 3%
Litter cover: 1% logs, 6% twigs and 45% leaves.

Species List	Cover (%)	Height (m)
**Avena barbata*	<1	1.0
Banksia attenuata	35.0	5.0
Bossiaea eriocarpa	<1	0.4
**Briza maxima*	10.0	0.3
Burchardia congesta	<1	0.5
Caladenia flava subsp. *flava*	<1	0.1
Conostephium pendulum	<1	0.4
Conostylis aculeata	1.5	0.3
Dasypogon bromeliifolius	1.5	0.5
Desmocladus flexuosus	1.0	0.2
**Ehrharta calycina*	1.0	1.2
**Ehrharta longiflora*	2.0	0.3
Eucalyptus marginata	14.0	5.5
**Gladiolus caryophyllaceus*	<1	0.9
Gompholobium tomentosum	1.0	0.6
Hibbertia hypericoides	3.0	0.5
Hibbertia subvaginata	5.0	0.3
Hovea pungens	1.5	0.9
Hypocalymma robustum	<1	0.3
**Hypochaeris glabra*	<1	0.05
**Hypochaeris radicata*	<1	0.05
Jacksonia furcellata	2.0	1.6
Leucopogon conostephioides	4.0	0.5
Lyginia barbata	<1	0.5
Petrophile linearis	<1	0.15
Phlebocarya ciliata	4.0	0.4
**Sonchus oleraceus*	<1	0.05
Thysanotus patersonii/manglesianus	<1	climbing
**Ursinia anthemoides*	<1	0.3

Cockburn Central Site R1

Described by: BS **Date**: 6/10/2011 **Type:** Releve

MGA Zone: 50 391411 **mE** 6445307 **mN**

Soil: yellow sand

Vegetation: *Remnant Banksia attenuata, B. menziesii, Eucalyptus marginata and Nuytsia floribunda with Tall Open Scrub of Adenanthos cygnorum and *Leptospermum laevigatum over Grassland of *Ehrharta calycina.*

Vegetation Condition: Completely Degraded

Species List	Cover (%)	Height (m)
Adenanthos cygnorum	2.0	2.5
Banksia attenuata	<1	5.0
Banksia menziesii	<1	4.0
**Ehrharta calycina*	40.0	1.0
Eucalyptus marginata	<1	4.0
**Freesia* sp.	1.0	0.1
Hibbertia hypericoides	<1	0.6
Jacksonia furcellata	<1	1.8
Leptospermum laevigatum	2.0	2.5
Macrozamia riedlei	<1	1.5
Nuytsia floribunda	<1	3.0
**Pelargonium capitatum*	3.0	0.25

Cockburn Central Site R2

Described by: BS **Date**: 6/10/2011 **Type:** Releve

MGA Zone: 50 391546 **mE** 6445086 **mN**

Vegetation: *Low Open Woodlland of Eucalyptus marginata and Banksia menziesii over Tall Open Shrubland of Jacksonia furcellata over Shrubland of Allocasuarina humilis and Stirlingia latifolia over Low Open Shrubland of Hibbertia hypericoides, Conostephium pendulum and Bossiaea eriocarpa over Very Open Grassland of *Ehrharta calycina and *Briza maxima over Vey Open Herbland of Phlebocarya ciliata over Very Open Sedgeland of Mesomelaena pseudostygia.*

Vegetation Condition: Very Good

Species List	Cover (%)	Height (m)
Allocasuarina fraseriana	<1	7.0
Allocasuarina humilis	10.0	1.5
Banksia attenuata	<1	5.0
Banksia menziesii	3.0	5.0
Bossiaea eriocarpa	1.5	0.6
**Briza maxima*	1.0	0.3
Conostephium pendulum	2.0	0.7
Daviesia triflora	<1	0.7
**Ehrharta calycina*	3.0	1.1
Eucalyptus marginata	5.0	7.0
Eucalyptus todtiana	<1	4.0
Gompholobium tomentosum	0.5	0.7

Hibbertia hypericoides	3.0	0.7
Jacksonia furcellata	2.0	3.0
Mesomelaena pseudostygia	5.0	0.6
Phlebocarya ciliata	3.0	0.4
Stirlingia latifolia	1.0	1.2

Cockburn Central Site R3

Described by: BS **Date**: 6/10/2011 **Type:** Releve

MGA Zone: 50 391767 **mE** 6445233 **mN**

Soil: Black peaty sands

Vegetation: *Low Open Forest of Melaleuca rhaphiophylla over Tall Shrubland of Kunzea glabrescens, *Chamaecytisus palmensis and *Acacia longifolia over Grassland of *Stenotaphrum secundatum, *Avena barbata, *Briza maxima and * Ehrharta calycina over Very Open Herbland of Centella asiatica over Very Open Sedgeland of Juncus pallidus.*

Vegetation Condition: Completely Degraded

Fire Age: 5-20 years

Notes: Disturbance details: high weed density, dumped rubbish.

Species List	Cover (%)	Height (m)
**Acacia longifolia*	1.0	3.0
Astartea scoparia	2.0	4.0
**Avena barbata*	10.0	0.6
**Briza maxima*	2.0	0.5
Centella asiatica	5.0	prostrate
**Chamaecytisus palmensis*	3.0	3.0
**Ehrharta calycina*	2.0	1.0
Juncus pallidus	7.0	1.2
Kunzea glabrescens	10.0	3.0

Melaleuca rhaphiophylla	40.0	5.5
**Stenotaphrum secundatum*	40.0	0.4

Cockburn Central Site R4

Described by: BS **Date**: 6/10/2011 **Type:** Releve

MGA Zone: 50 391726 **mE** 6445004 **mN**

Vegetation: *Emergent Melaleuca preissiana over Closed Tall Scrub of Astartea scoparia over Herbland of Centella asiatica and Triglochin linearis over Open Sedgeland of *Typha orientalis and Baumea articulata.*

Vegetation Condition: Good

Species List	Cover (%)	Height (m)
Astartea scoparia	70.0	2.1
Baumea articulata	10.0	2.4
Centella asiatica	30.0	0.05
Melaleuca preissiana	1.0	6.0
Triglochin linearis	2.0	0.4
**Typha orientalis*	5.0	1.8

APPENDIX 5

Flora Species List

APPENDIX 5: Flora Species List

Family	Species
Aizoaceae	**Carpobrotus edulis*
Apiaceae	*Centella asiatica*
Apiaceae	*Platysace filiformis*
Apiaceae	*Trachymene pilosa*
Araceae	**Zantedeschia aethiopica*
Asparagaceae	*Chamaescilla corymbosa*
Asparagaceae	*Laxmannia ramosa*
Asparagaceae	*Laxmannia squarrosa*
Asparagaceae	*Lomandra caespitosa*
Asparagaceae	*Lomandra drummondii*
Asparagaceae	*Lomandra hermaphrodita*
Asparagaceae	*Lomandra micrantha* subsp. *micrantha*
Asparagaceae	*Lomandra preissii*
Asparagaceae	*Lomandra suaveolens*
Asparagaceae	*Sowerbaea laxiflora*
Asparagaceae	*Thysanotus manglesianus*
Asparagaceae	*Thysanotus patersonii*
Asparagaceae	*Thysanotus patersonii/manglesianus*
Asteraceae	**Arctotheca calendula*
Asteraceae	**Dimorphotheca ecklonis*
Asteraceae	**Hypochaeris glabra*
Asteraceae	**Hypochaeris radicata*
Asteraceae	**Monoculus monstrosus*
Asteraceae	**Sonchus oleraceus*
Asteraceae	**Ursinia anthemoides*
Asteraceae	*Hyalosperma cotula*
Asteraceae	*Millotia tenuifolia* var. *tenuifolia*
Asteraceae	*Olearia axillaris*
Asteraceae	*Podotheca gnaphalioides*
Asteraceae	*Siloxerus humifusus*
Brassicaceae	**Brassica tournefortii*
Campanulaceae	**Wahlenbergia capensis*
Caryophyllaceae	**Petrorhagia dubia*
Caryophyllaceae	*Silene gallica*
Casuarinaceae	*Allocasuarina fraseriana*
Casuarinaceae	*Allocasuarina humilis*
Centrolepidaceae	*Centrolepis mutica*
Colchicaceae	*Burchardia congesta*
Crassulaceae	*Crassula colorata*
Cyperaceae	*Baumea articulata*
Cyperaceae	*Baumea juncea*
Cyperaceae	*Lepidosperma leptostachyum*
Cyperaceae	*Lepidosperma pubisquameum*

Family	Species
Cyperaceae	*Lepidosperma squamatum*
Cyperaceae	*Mesomelaena pseudostygia*
Cyperaceae	*Schoenus curvifolius*
Dasypogonaceae	*Calectasia narragara*
Dasypogonaceae	*Dasypogon bromeliifolius*
Dilleniaceae	*Hibbertia hypericoides*
Dilleniaceae	*Hibbertia subvaginata*
Dilleniaceae	*Hibbertia vaginata*
Droseraceae	*Drosera erythrorhiza*
Droseraceae	*Drosera macrantha*
Droseraceae	*Drosera macrantha* subsp. *macrantha*
Droseraceae	*Drosera menziesii* subsp. *penicillaris*
Droseraceae	*Drosera pallida*
Droseraceae	*Drosera* sp.
Ericaceae	*Astroloma pallidum*
Ericaceae	*Astroloma xerophyllum*
Ericaceae	*Brachyloma preissii*
Ericaceae	*Conostephium pendulum*
Ericaceae	*Leucopogon conostephioides*
Ericaceae	*Leucopogon propinquus*
Ericaceae	*Lysinema ciliatum*
Euphorbiaceae	*Euphorbia terracina*
Euphorbiaceae	*Homalanthus novo-guineensis*
Fabaceae	**Acacia longifolia*
Fabaceae	**Chamaecytisus palmensis*
Fabaceae	**Medicago polymorpha*
Fabaceae	**Ornithopus compressus*
Fabaceae	**Trifolium campestre* var. *campestre*
Fabaceae	*Acacia huegelii*
Fabaceae	*Acacia pulchella*
Fabaceae	*Acacia pulchella* var. *glaberrima*
Fabaceae	*Acacia stenoptera*
Fabaceae	*Aotus procumbens*
Fabaceae	*Bossiaea eriocarpa*
Fabaceae	*Daviesia divaricata* subsp. *divaricata* ms
Fabaceae	*Daviesia physodes*
Fabaceae	*Daviesia triflora*
Fabaceae	*Gastrolobium capitatum*
Fabaceae	*Gompholobium tomentosum*
Fabaceae	*Hardenbergia comptoniana*
Fabaceae	*Hovea pungens*
Fabaceae	*Isotropis cuneifolia* subsp. *cuneifolia*
Fabaceae	*Jacksonia furcellata*
Fabaceae	*Kennedia prostrata*
Geraniaceae	**Pelargonium capitatum*
Goodeniaceae	*Dampiera linearis*

Family	Species
Goodeniaceae	*Lechenaultia floribunda*
Haemodoraceae	*Anigozanthos humilis* subsp. *humilis*
Haemodoraceae	*Anigozanthos manglesii*
Haemodoraceae	*Conostylis aculeata*
Haemodoraceae	*Phlebocarya ciliata*
Hemerocallidaceae	*Arnocrinum preissii*
Hemerocallidaceae	*Corynotheca micrantha*
Hemerocallidaceae	*Dianella revoluta*
Hemerocallidaceae	*Tricoryne elatior*
Iridaceae	**Freesia* sp.
Iridaceae	**Gladiolus caryophyllaceus*
Iridaceae	**Romulea rosea*
Iridaceae	**Watsonia meriana*
Iridaceae	*Patersonia occidentalis*
Juncaceae	*Juncus caespiticius*
Juncaceae	*Juncus pallidus*
Juncaginaceae	*Triglochin linearis*
Lamiaceae	*Hemiandra pungens*
Lauraceae	*Cassytha flava*
Loganiaceae	*Phyllangium paradoxum*
Loranthaceae	*Nuytsia floribunda*
Myrtaceae	*Astartea scoparia*
Myrtaceae	*Calothamnus quadrifidus*
Myrtaceae	*Calytrix angulata*
Myrtaceae	*Calytrix flavescens*
Myrtaceae	*Chamelaucium uncinatum*
Myrtaceae	*Eremaea asterocarpa* subsp. *asterocarpa*
Myrtaceae	*Eremaea pauciflora* var. *pauciflora*
Myrtaceae	*Eucalyptus marginata*
Myrtaceae	*Eucalyptus todtiana*
Myrtaceae	*Hypocalymma robustum*
Myrtaceae	*Kunzea glabrescens*
Myrtaceae	*Leptospermum laevigatum*
Myrtaceae	*Melaleuca preissiana*
Myrtaceae	*Melaleuca rhaphiophylla*
Myrtaceae	*Melaleuca seriata*
Myrtaceae	*Melaleuca thymoides*
Myrtaceae	*Regelia ciliata*
Myrtaceae	*Regelia inops*
Myrtaceae	*Scholtzia involucrata*
Orchidaceae	*Caladenia arenicola*
Orchidaceae	*Caladenia discoidea*
Orchidaceae	*Caladenia flava* subsp. *flava*
Orchidaceae	*Caladenia longicauda* subsp. *longicauda*
Orchidaceae	*Caladenia speciosa* (P4)
Orchidaceae	*Diuris corymbosa*

Family	Species
Orchidaceae	*Diuris* sp.
Orchidaceae	*Microtis media* subsp. *media*
Orchidaceae	*Pterostylis vittata*
Orchidaceae	*Thelymitra campanulata*
Oxalidaceae	**Oxalis pes-caprae*
Papaveraceae	**Fumaria capreolata*
Pinaceae	**Pinus pinaster*
Poaceae	*Austrostipa compressa*
Poaceae	**Avena barbata*
Poaceae	**Briza maxima*
Poaceae	**Bromus diandrus*
Poaceae	**Cynodon dactylon*
Poaceae	**Ehrharta calycina*
Poaceae	**Ehrharta longiflora*
Poaceae	**Stenotaphrum secundatum*
Poaceae	*Amphipogon turbinatus*
Portulacaceae	*Calandrinia corrigioloides*
Portulacaceae	*Calandrinia granulifera*
Primulaceae	**Lysimachia arvensis*
Proteaceae	*Adenanthos cygnorum*
Proteaceae	*Adenanthos cygnorum* subsp. *cygnorum*
Proteaceae	*Banksia attenuata*
Proteaceae	*Banksia ilicifolia*
Proteaceae	*Banksia littoralis*
Proteaceae	*Banksia menziesii*
Proteaceae	*Persoonia saccata*
Proteaceae	*Petrophile linearis*
Proteaceae	*Stirlingia latifolia*
Proteaceae	*Synaphea spinulosa* subsp. *spinulosa*
Restionaceae	*Alexgeorgea nitens*
Restionaceae	*Desmocladus fasciculatus*
Restionaceae	*Desmocladus flexuosus*
Restionaceae	*Hypolaena exsulca*
Restionaceae	*Lyginia barbata*
Restionaceae	*Lyginia imberbis*
Rubiaceae	*Opercularia vaginata*
Rutaceae	*Philotheca spicata*
Solanaceae	**Solanum nigrum*
Stylidiaceae	*Levenhookia stipitata*
Stylidiaceae	*Stylidium brunonianum*
Stylidiaceae	*Stylidium piliferum*
Stylidiaceae	*Stylidium repens*
Thymelaeaceae	*Pimelea rosea*
Typhaceae	**Typha orientalis*
Xanthorrhoeaceae	*Xanthorrhoea brunonis*
Xanthorrhoeaceae	*Xanthorrhoea preissii*
Xanthorrhoeaceae	*Xanthorrhoea* sp.
Zamiaceae	*Macrozamia riedlei*

APPENDIX 6

Assessment of Conservation Significance of Fauna

APPENDIX 6: Assessment of Conservation Significance of Fauna

The conservation status of fauna species is assessed at a federal level under the *Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, and at a state level under the Western Australian *Wildlife Conservation Act 1950*. The significance levels for fauna listed on the EPBC Act List are those recommended by the International Union for the Conservation of Nature and Natural Resources (IUCN 2001) (Table 6-1). The *Wildlife Conservation Act 1950* uses a set of Schedules (Table 6-2) but also classifies species using some of the IUCN categories.

The EPBC Act 1999 has a list of migratory species that are recognised under international treaties such as the China-Australia Migratory Bird Agreement (CAMBA), the Japan–Australia Migratory Bird Agreement (JAMBA), and the Bonn Convention (the Convention on the Conservation of Migratory Species of Wild Animals). Most of these migratory species are also listed under the Republic of Korea–Australia Migratory Bird Agreement (ROKAMBA).

In Western Australia, the Department of Environment and Conservation (DEC) recognises a list of Priority Fauna – species that are not considered Threatened under the *Wildlife Conservation Act 1950,* but are cause for concern. Some Priority species however, are also assigned to the IUCN Conservation Dependent category. Levels of Priority are described in Table 6-3. Assessments in this report are based on the most recent version of the DEC priority list (August 2010).

In addition to those species categorised by the IUCN, EPBC Act, and the DEC as conservation significant, species that are at the limit of their distribution, those that have a very restricted range and those that occur in breeding colonies, such as some waterbirds, are also considered of conservation significance, although this level of significance has no legislative or published recognition and is based on interpretation of distribution information.

Table 6-1: IUCN Categories (based on Review by Mace and Stuart, 1994) as used for the *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999* and the *WA Wildlife Conservation Act 1950*

Conservation Category	Definition
Extinct	Taxa not definitely located in the wild during the past 50 years.
Extinct in the Wild	Taxa known to survive only in captivity.
Critically Endangered	Taxa facing an extremely high risk of extinction in the wild in the immediate future.
Endangered	Taxa facing a very high risk of extinction in the wild in the near future.
Vulnerable	Taxa facing a high risk of extinction in the wild in the medium term future.
Near Threatened	Taxa that risk becoming Vulnerable in the wild.
Conservation Dependent	Taxa whose survival depends upon ongoing conservation measures. Without these measures, a conservation dependent taxon would be classed as Vulnerable or more severely threatened.
Data Deficient (insufficiently Known)	Taxa suspected of being Rare, Vulnerable or Endangered, but whose true status cannot be determined without more information.
Least Concern	Taxa that are not Threatened.

Table 6-2: Schedules used in *WA Wildlife Conservation Act 1950*

Conservation Category	Definition
Schedule 1 (S1)	Rare and Likely to become Extinct.
Schedule 2 (S2)	Extinct
Schedule 3 (S3)	Migratory species listed under international treaties.
Schedule 4 (S4)	Other Specially Protected Fauna.

Table 6-3: WA Department of Environment and Conservation Priority Species (Species not Listed under the *WA Wildlife Conservation Act 1950*, but for which there is some concern) (DEC 2010)

Conservation Category	Definition
Priority 1 (P1)	Taxa with few, poorly known populations on threatened lands.
Priority 2 (P2)	Taxa with few, poorly known populations on conservation lands; or taxa with several, poorly known populations not on conservation lands.
Priority 3 (P3)	Taxa with several, poorly known populations, some on conservation lands.
Priority 4 (P4)	Taxa in need of monitoring. Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change.
Priority 5 (P5)	Taxa in need of monitoring. Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years (IUCN Conservation Dependent).

APPENDIX 7

Fauna Species List

APPENDIX 7: Species List and Information Sources

A = recorded on site
B = DEC Threatened Fauna Database
C = EPBC Protected Matters Search Tool
D = Other reports / literature
E = DEC NatureMap Species Database

Species	Common Name	Conservation Status (State)	Conservation Status (EPBC)	Source (indicated by X)				
				A	B	C	D	E
Birds								
Acanthiza apicalis	Inland thornbill						X	X
Acanthiza chrysorrhoa	Yellow-rumped thornbill						X	X
Acanthiza inornata	Western thornbill						X	X
Acanthorhynchus superciliosus	Western spinebill						X	X
Accipiter cirrocephalus	Collared sparrowhawk							X
Accipiter fasciatus	Brown goshawk						X	X
Accipiter fasciatus fasciatus								X
Acrocephalus australis	Australian reed warbler						X	X
Acrocephalus australis gouldii								X
Aegotheles cristatus	Australian owlet-nightjar						X	
Anas castanea	Chestnut teal						X	X
Anas gracilis	Grey teal			X			X	X
Anas platyrhynchos	Mallard							X
Anas rhynchotis	Australasian shoveler						X	X
Anas superciliosa	Pacific black duck						X	X
Anas sp.								X
Anhinga novaehollandiae	Australasian darter						X	X
Anser anser	Greylag goose							X
Anser sp.								X
Anthochaera carunculata	Red wattlebird						X	X
Anthochaera lunulata	Western little wattlebird						X	X
Anthus novaeseelandiae	Australasian pipit							X
Apus pacificus	Fork-tailed swift		Migratory; Marine			X		
Aquila audax	Wedge-tailed eagle						X	X
Ardea alba	Great egret		Migratory; Marine			X	X	
Ardea ibis	Cattle egret		Migratory; Marine			X		
Ardea pacifica	White-necked heron							X
Artamus cinereus	Black-faced woodswallow							X
Artamus cyanopterus	Dusky woodswallow						X	X

Species	Common Name	Conservation Status (State)	Conservation Status (EPBC)	Source (indicated by X)				
				A	B	C	D	E
Artamus personatus	Masked woodswallow			X				
Aythya australis	Hardhead							X
Barnardius zonarius	Australian ringneck parrot			X			X	X
Biziura lobata	Musk duck						X	X
Botaurus poiciloptilus	Australasian bittern	S1	Endangered		X	X		
Cacatua pastinator	Western long-billed corella							X
Cacatua roseicapilla	Galah						X	X
Cacatua sanguinea	Little corella						X	X
Cacatua sp.							X	X
Cacatua tenuirostris	Eastern long-billed corella							X
Cacomantis flabelliformis	Fan-tailed cuckoo							X
Cacomantis pallidus	Pallid cuckoo							X
Cairina moschata	Muscovy duck							X
Calidris acuminata	Sharp-tailed sandpiper		Migratory; Marine			X		X
Calidris canutus	Red knot		Migratory; Marine			X		
Calidris ferruginea	Curlew sandpiper		Migratory; Marine			X		X
Calidris melanotos	Pectoral sandpiper		Marine			X		X
Calidris ruficollis	Red-necked stint		Migratory; Marine			X		X
Calidris subminuta	Long-toed stint		Marine			X		X
Calyptorynchus banksii naso	Forest red-tailed black cockatoo	S1	Vulnerable		X	X	X	
Calyptorhynchus latirostris	Carnaby's Black-Cockatoo	S1	Endangered		X	X	X	X
Calyptorhynchus sp.	Black cockatoo							X
Chalcites basalis	Horsfield's bronze cuckoo							X
Chalcites lucidus	Shining bronze cuckoo						X	X
Charadrius dubius	Little ringed plover		Marine			X		X
Charadrius melanops	Black-fronted dotterel						X	X
Charadrius ruficapillus	Red-capped plover		Marine			X		X
Chenonetta jubata	Australian wood duck							X
Cheramoeca leucosterna	White-backed swallow							X
Chlidonias hybrida	Whiskered tern							X
Chroicocephalus novaehollandiae	Silver gull						X	X
Circus approximans	Swamp harrier						X	X
Cladorhynchus leucocephalus	Banded stilt							X
Colluricincla harmonica	Grey shrike-thrush						X	X
Columba livia	Domestic pigeon						X	X

Species	Common Name	Conservation Status (State)	Conservation Status (EPBC)	Source (indicated by X)				
				A	B	C	D	E
Coracina novaehollandiae	Black-faced cuckoo-shrike			X			X	X
Corvus coronoides	Australian raven			X			X	X
Corvus sp.	Crow			X				X
Coturnix ypsilophora	Brown quail							X
Cracticus nigrogularis	Pied butcherbird							X
Cracticus tibicen	Australian magpie						X	X
Cracticus tibicen dorsalis	White-backed magpie							X
Cracticus torquatus	Grey butcherbird			X			X	X
Cygnus atratus	Black swan						X	X
Dacelo novaeguineae	Laughing kookaburra			X			X	X
Daphoenositta chrysoptera	Varied sittella						X	X
Dicaeum hirundinaceum	Mistletoebird							X
Egretta garzetta	Little egret							X
Egretta novaehollandiae	White-faced heron						X	X
Elanus axillaris	Australian black-shouldered kite							X
Elanus notatus	Black-shouldered kite						X	
Elseyornis melanops	Black-fronted dotterel							X
Eolophus roseicapilla	Galah			X				X
Epthianura albifrons	White-fronted chat							X
Erythrogonys cinctus	Red-kneed dotterel							X
Falco berigora	Brown falcon							X
Falco cenchroides	Australian kestrel						X	X
Falco longipennis	Australian hobby						X	X
Falco peregrinus	Peregrine falcon	S4			X			X
Falco peregrinus macropus	Peregrine falcon	S4			X			X
Fulica atra	Eurasian coot			X			X	X
Fulica atra australis								X
Gallinula tenebrosa	Dusky moorhen						X	X
Gallinula tenebrosa tenebrosa								X
Gallinula ventralis	Black-tailed native hen						X	
Gallirallus philippensis	Buff-banded rail							X
Gelochelidon nilotica	Gull-billed tern							X
Gerygone fusca	Western gerygone						X	X
Glossopsitta porphyrocephala	Purple-crowned lorikeet							X
Glyciphila melanops	Tawny-crowned honeyeater							X
Grallina cyanoleuca	Magpie-lark						X	X
Haliaeetus leucogaster	White-bellied sea eagle		Migratory; Marine			X		X

Species	Common Name	Conservation Status (State)	Conservation Status (EPBC)	Source (indicated by X)				
				A	B	C	D	E
Haliastur sphenurus	Whistling kite						X	X
Hieraaetus morphnoides	Little eagle							X
Himantopus himantopus	Black-winged stilt		Marine			X	X	X
Himantopus himantopus leucocephalus								X
Hirundo neoxena	Welcome swallow			X			X	X
Hirundo nigricans	Tree martin						X	X
Ixobrychus dubius	Little bittern	P4			X			X
Lalage sueurii	White-winged triller							X
Lichenostomus virescens	Singing honeyeater						X	X
Lichmera indistincta	Brown honeyeater			X			X	X
Lichmera indistincta indistincta								X
Limosa lapponica	Bar-tailed godwit		Migratory; Marine			X		
Limosa limosa	Black-tailed godwit		Migratory; Marine			X		X
Lonchura castaneothorax	Chestnut-breasted mannikin							X
Malacorhynchus membranaceus	Pink-eared duck						X	X
Malurus lamberti	Variegated fairy-wren							X
Malurus splendens	Splendid fairy-wren						X	X
Megalurus gramineus	Little grassbird							X
Melanodryas cucullata	Hooded robin							X
Melithreptus brevirostris	Brown-headed honeyeater							X
Melithreptus chloropsis	Western white-naped honeyeater							X
Melithreptus lunatus	White-naped honeyeater							X
Merops ornatus	Rainbow bee-eater		Migratory; Marine	X		X	X	X
Microcarbo melanoleucos	Little pied cormorant							X
Milvus migrans	Black kite							X
Neophema elegans	Elegant parrot						X	X
Ninox connivens	Barking owl							X
Ninox novaeseelandiae	Boobook owl						X	X
Nycticorax caledonicus	Rufous night heron						X	X
Ocyphaps lophotes	Crested pigeon						X	X
Oxyura australis	Blue-billed duck						X	X
Pachycephala pectoralis	Golden whistler							X
Pachycephala rufiventris	Rufous whistler						X	X

Species	Common Name	Conservation Status (State)	Conservation Status (EPBC)	Source (indicated by X)				
				A	B	C	D	E
Pandion haliaetus subsp. cristatus	Osprey						X	X
Pardalotus punctatus	Spotted pardalote						X	X
Pardalotus striatus	Striated pardalote						X	X
Pelecanus conspicillatus	Australian pelican						X	X
Petroica boodang	Scarlet robin							X
Petroica goodenovii	Red-capped robin							X
Phalacrocorax carbo	Great cormorant						X	X
Phalacrocorax melanoleucos	Little pied cormorant						X	
Phalacrocorax sulcirostris	Little black cormorant							X
Phalacrocorax varius	Pied cormorant							X
Phaps chalcoptera	Common bronzewing							X
Philomachus pugnax	Ruff		Marine			X		
Phylidonyris nigra	White-cheeked honeyeater						X	X
Phylidonyris novaehollandiae	New holland honeyeater			X			X	X
Platalea flavipes	Yellow-billed spoonbill						X	X
Platycercus icterotis	Western rosella							X
Platycercus spurius	Red-capped parrot							X
Plegadis falcinellus	Glossy ibis						X	X
Pluvialis fulva	Pacific golden plover							X
Pluvialis squatarola	Grey plover							X
Podargus strigoides	Tawny frogmouth							X
Podiceps cristatus	Great crested grebe							X
Poliocephalus poliocephalus	Hoary-headed grebe						X	X
Polytelis anthopeplus	Regent parrot							X
Porphyrio porphyrio	Purple swamphen						X	X
Porphyrio porphyrio bellus								X
Porzana fluminea	Australian spotted crake							X
Porzana pusilla	Baillon's crake							X
Porzana tabuensis	Spotless crake							X
Purpureicephalus spurius	Red-capped parrot						X	
Recurvirostra novaehollandiae	Red-necked avocet		Marine			X	X	X
Rhipidura albiscapa	Grey fantail						X	X
Rhipidura leucophrys	Willie wagtail			X			X	X
Sericornis frontalis	White-browed scrubwren						X	X
Smicrornis brevirostris	Weebill						X	X
Sterna hybrida javanica	Javan whiskered tern							X

Species	Common Name	Conservation Status (State)	Conservation Status (EPBC)	Source (indicated by X)				
				A	B	C	D	E
Sternula nereis	Fairy tern		Vulnerable			X		X
Stictonetta naevosa	Freckled duck							X
Strepera versicolor	Grey currawong							X
Streptopelia chinensis	Spotted turtle-dove						X	X
Streptopelia senegalensis	Laughing turtle-dove			X			X	X
Tachybaptus novaehollandiae	Black-throated grebe							X
Tachybaptus novaehollandiae novaehollandiae								X
Tadorna radjah	Radjah shelduck						X	
Tadorna tadornoides	Australian shelduck						X	X
Thinornis rubricollis	Hooded plover	P4	Marine		X	X		X
Threskiornis molucca	Australian white ibis			X			X	X
Threskiornis spinicollis	Straw-necked ibis						X	X
Todiramphus sanctus	Sacred kingfisher						X	X
Todiramphus sanctus sanctus								X
Tribonyx ventralis	Black-tailed native hen							X
Trichoglossus haematodus	Rainbow lorikeet			X			X	X
Tringa glareola	Wood sandpiper		Migratory; Marine			X		X
Tringa hypoleucos	Common sandpiper							X
Tringa nebularia	Common greenshank							X
Tringa stagnatilis	Marsh sandpiper		Migratory; Marine			X		X
Tyto alba subsp. delicatula	Barn owl							X
Tyto javanica	Eastern barn owl							X
Vanellus tricolor	Banded lapwing							X
Zosterops lateralis	Grey-breasted white-eye (silvereye)						X	X
Mammals								
Chalinolobus gouldii	Gould's wattled bat						X	X
Dasyurus geoffroii	Chuditch	S1	Vulnerable		X	X		
Falsistrellus mackenziei	Western false pipistrelle	P4			X			
*Felis catus**	Domestic cat					X	X	X
Isoodon obesulus subsp. fusciventer	Quenda	P5			X		X	X
Macropus eugenii derbianus	Tammar wallaby	P5			X			X
Macropus fuliginosus	Western grey kangaroo						X	X
Macropus irma	Western brush wallaby	P4			X			X
Mormopterus sp.	South-western free-tailed bat						X	

Species	Common Name	Conservation Status (State)	Conservation Status (EPBC)	Source (indicated by X)				
				A	B	C	D	E
Mus musculus	House mouse						X	X
Myrmecobius fasciatus	Numbat	S1			X			X
Nyctophilus geoffroyi	Lesser long-eared bat						X	X
Nyctophilus timoriensis	Greater long-eared bat							X
Nyctophilus timoriensis timoriensis	Greater long-eared bat							X
*Oryctolagus cuniculus**	European rabbit					X	X	X
Phascogale calura	Red-tailed phascogale		Endangered			X		
Rattus fuscipes	Western bush rat							X
Rattus rattus	Black rat						X	X
Setonix brachyurus	Quokka	S1	Vulnerable		X	X		X
Tadarida australis	White-striped free-tailed bat						X	
Tarsipe rostratus	Honey possum							X
Trichosurus vulpecula	Common brushtail possum						X	X
Vespadelus regulus	Southern forest bat						X	X
*Vulpes vulpes**	Red fox					X	X	X
Reptiles								
Acritoscincus trilineatum	Western three-lined skink						X	X
Aprasia repens	Sand-plain worm-lizard						X	X
Brachyurophis semifasciata	Southern shovel-nosed snake							X
Chelodina oblonga	Long-necked turtle			X*			X	
Christinus marmoratus	Marbled gecko						X	X
Cryptoblepharus buchananii	Buchanan's snake-eyed skink						X	X
Cryptoblepharus plagiocephalus	Fence skink			X				X
Ctenophorus adelaidensis	Southern heath dragons							X
Ctenotus australis	Western limestone ctenotus						X	X
Ctenotus fallens	West-coast laterite ctenotus						X	X
Ctenotus gemmula	Jewelled south-west ctenotus							X
Delma fraseri	Fraser's delma							X
Demansia psammophis reticulata	Yellow-faced whipsnake							X
Egernia napoleonis	South-western crevice skink						X	X
Elapognathus coronatus	Crowned snake							X
Hemiergis quadrilineata	Two-toed earless skink			X			X	X
Lerista elegans	Elegant slider						X	X
Lerista lineata	Perth slider	P3			X		X	X
Lialis burtonis	Burton's legless lizard						X	X

Species	Common Name	Conservation Status (State)	Conservation Status (EPBC)	Source (indicated by X)				
				A	B	C	D	E
Menetia greyii	Common dwarf skink						X	X
Morethia lineoocellata	Western pale-flecked skink						X	X
Morethia obscura	Shrubland morethia skink						X	X
Neelaps calonotos	Black-striped snake	P3			X			X
Notechis scutatus	Tiger snake						X	X
Parasuta gouldii	Gould's hooded snake							X
Pletholax gracilis	Keeled legless lizard							X
Pletholax gracilis gracilis	Keeled legless lizard						X	X
Pogona minor	Western bearded dragon						X	X
Pogona minor subsp. minor	Western bearded dragon							X
Pseudonaja affinis	Dugite						X	X
Pseudonaja affinis subsp. affinis	Dugite							X
Pygopus lepidopodus	Common scaly foot						X	X
Ramphotyphlops australis	Southern blind snake							X
Simoselaps bertholdi	Jan's banded snake							X
Tiliqua occipitalis	Western bluetongue							X
Tiliqua rugosa rugosa	Western bobtail			X			X	X
Varanus gouldii	Bungarra (sand monitor)							X
Amphibians								
Crinia georgiana	Quacking frog						X	
Crinia glauerti	Clicking frog						X	X
Crinia insignifera	Squelching froglet						X	X
Crinia sp.				X			X	
Heleioporus eyrei	Moaning frog						X	X
Limnodynastes dorsalis	Western banjo frog						X	X
Litoria adelaidensis	Slender tree frog						X	X
Litoria moorei	Motorbike frog						X	X
Myobatrachus gouldii	Turtle frog						X	X
Pseudophryne guentheri	Crawling toadlet							X
Invertebrates								
Iphiaulex rubriceps								X
Mesodina cyanophracta								X
Opilo congruus								X
Perthida glyphopa								X
Phoracantha impavida								X
Phoracantha semipunctata								X
Synemon gratiosa	Graceful sun moth	S1	Endangered		X	X		X
Throscodectes xiphos		P1			X			X