



Natural Area
CONSULTING MANAGEMENT SERVICES

Baigup Wetland Interest Group

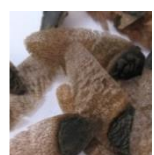
Baigup Wetland Reserve Fauna Survey Report

April 2018



GOVERNMENT OF
WESTERN AUSTRALIA

natural resource
management program



Disclaimer

Natural Area Holdings Pty Ltd, trading as Natural Area Consulting Management Services (Natural Area), has prepared this report for the sole use of the Client and for the purposes as stated in the agreement between the Client and Natural Area under which this work was completed. This report may not be relied upon by any other party without the express written agreement of Natural Area.

Natural Area has exercised due and customary care in the preparation of this document and has not, unless specifically stated, independently verified information provided by others. No other warranty, expressed or implied, is made in relation to the contents of this report. Therefore, Natural Area assumes no liability for any loss resulting from errors, omission or misrepresentations made by others. This document has been made at the request of the Client. The use of this document by unauthorised third parties without written permission from Natural Area shall be at their own risk, and we accept no duty of care to any such third party.

Any recommendations, opinions or findings stated in this report are based on circumstances and facts as they existed at the time Natural Area performed the work. Any changes in such circumstances and facts upon which this document is based may adversely affect any recommendations, opinions or findings contained in this document.

No part of this document may be copied, duplicated or disclosed without the express written permission of the Client and Natural Area. Natural Area hereby authorise Baigup Wetland Interest Group to publish this document.

Document Title	2017 06 15 BWIG REPT Baigup Wetland Fauna Survey Report.docx				
Location	\\10.0.0.210\DropBox\Drop Box\Client Folders - NAC\Baigup Wetland Interest Group\NA Working Documents\				
Draft/Version No.	Date	Changes	Prepared by	Approved by	Status
D1	February 2018	New Document	SH	SB	Draft
D2	19 April 2018	Updates to discussion and recommendations	SH	LS	Draft
D3	20/04/2018	Revisions and amendments, incorporation of feedback	SH	LS	Draft
D4	23/04/2018	Minor changes	LS	LS	Draft
D5	10/05/2018	Minor edits	CW	LS	Draft
V1	30/05/2018	Final Review	CW	LS	Released

Natural Area Holdings Pty Ltd
99C Lord Street, Whiteman, WA, 6076
Ph: (08) 9209 2767
info@naturalarea.com.au
www.naturalarea.com.au

*This project is supported by funding from the Western Australian Government’s State NRM Program. The investigation described in this report was funded by a State Natural Resources Management **Community Action Grant** to Baigup Wetland Interest Group: **Project A16045: Maximizing Fauna Diversity in Baigup Restoration Management**. Baigup Wetland Interest Group wishes to thank partner organisations shown below for their contributions to the larger project and BirdLife Western Australia (BLWA) in particular for its contribution to this report; BLWA provided the bird data used in this study. The Department of Planning, Lands and Heritage was also a partner organisation.*



Eastern Great Egret (Ardea modesta) eating a Western Glossy Swamp Skink (Lissolepis luctuosa). Image: John Baas

Executive Summary

Natural Area Consulting Management Services (Natural Area) was contracted by the Baigup Wetland Interest Group (BWIG) to undertake a level 2 fauna survey within Baigup Wetland. The survey provides baseline data of fauna species (native and non-native) present, fauna habitat and the occurrence of significant fauna on site. Baigup Wetland Reserve is part of Bush Forever Site 313 (Government of Western Australia, 2000) and contains the threatened ecological community – Subtropical and Temperate Coastal Saltmarsh listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (Department of the Environment and Energy (DEE), 2018).

This survey is to supplement previous studies undertaken within Baigup Wetland Reserve to increase knowledge of fauna and fauna habitat present, to assist with future planning and management strategies for the reserve to protect fauna species and enhance fauna habitat. Previous studies include:

- BirdLife Western Australia (BLWA) surveys have been undertaken in 2003 and undertaken regularly since 2012, surveys are ongoing within the reserve.
- A study undertaken by Adriaan Haasbroek in 2015 detailed in the report *Hydrogeological Investigation at Baigup Reserve* noted the decline *Melaleuca raphiophylla* most likely related to extensive waterlogging and high salinity levels within the reserve (Haasbroek A., 2016), which in turn affects fauna habitat on site.
- A fauna study undertaken in 1991 by Siemon *et al.*
- A fauna survey was also undertaken in 1994 in preparation for the 1994-1999 Management Plan (Regeneration Technology 1994) which summarises all previous fauna records for Baigup Wetland.

The fauna surveys within Baigup Wetland confirmed:

- the presence of 4 mammal, 9 reptile, 6 amphibian, 91 terrestrial invertebrate, 15 aquatic invertebrate and 3 fish species
- no bats recorded on site and no evidence of bat box use recorded
- no owls or evidence of owls recorded
- significant bird species including the White-browed Scrubwren, which had not been recorded at Baigup Wetland previously although it was subsequently recorded in the January 2018 BLWA survey, and the nationally protected Eastern Great Egret
- the presence of good quality habitat for both vertebrates and invertebrates, but a lack of tree hollows for large nesting birds and bats.

The most effective way to protect native fauna is to control invasive predators and enhance their habitat, recommendations include:

- control of foxes using soft-jaw traps to reduce impact of predation on native fauna
- enforcement of the *Cat Act 2011* (WA) and the *Cat Local Law 2016* and enforce restricted zones, sterilisation and collar requirements to reduce predation of native fauna by the City of Bayswater
- removal of the Morning Glory in the south-west of the site to increase access to bat boxes and roosting habitat for birds
- assessing suitability of current bat box locations and orientations, and the addition of further bat boxes and bird nesting boxes in appropriate locations
- undertaking weed control within the Wetland to enhance native vegetation (habitat)

- continuing revegetation/rehabilitation with native flora species within the Wetland, with salt tolerant plants to be used in salt scald areas and monitored to ensure success
- revegetation should take into consideration fauna habitat requirements, particularly of the conservation significant birds recorded by BLWA
- fire and weed control actions should take into consideration requirements for leaf litter and logs to be left for reptiles, amphibians and invertebrate species
- controlling visitor access to areas of the wetland through temporary or permanent fencing and encouraging all dog walkers to keep their dogs on leash to protect existing habitat, revegetation activities, fauna and ground nesting sites (e.g. turtle nests)
- comprehensive fauna surveys should be undertaken regularly (e.g. every 5 years) to create baseline data and allow comparison over time in native species diversity and abundance and feral fauna abundance within the reserve
- opportunistic removal of introduced fauna species captured during future surveying events
- fauna survey outcomes should be taken into consideration when undertaking planning future management strategies for the reserve.

Contents

Executive Summary	3
1.0 Introduction.....	7
1.1 Location	7
1.2 Scope	7
2.0 Site Characteristics	9
2.1 Regional Context	9
2.2 Climate.....	9
2.3 Topography and Soils	9
2.4 Hydrology	9
2.5 Fauna Habitat	10
3.0 Methodology	12
3.1 Desktop and Literature Review	12
3.2 Community Engagement	12
3.3 Fauna On-Ground Methodology	12
3.4 Weather Conditions During Survey	16
3.5 Limitations.....	16
4.0 Results	17
4.1 Desktop Survey Results	17
4.1.1 NatureMap and Protected Matters Search Tool.....	17
4.1.2 Department of Biodiversity, Conservation and Attractions	18
4.1.3 WALGA Environmental Planning Tool	18
4.1.4 BirdLife Western Australia.....	18
4.2 Community Engagement Program	19
4.3 Fauna Field Survey Results	20
4.3.1 Habitat Values	20
4.3.2 Mammals.....	21
4.3.3 Birds, Owls and Bats	23
4.3.4 Reptiles	24
4.3.5 Amphibians.....	26
4.3.6 Terrestrial Invertebrates.....	26
4.3.7 Aquatic Invertebrates.....	29
4.3.8 Fish.....	30

5.0	Discussion	32
5.1	Mammals	32
5.2	Reptiles	32
5.3	Amphibians	32
5.4	Invertebrates	32
5.5	Fish	33
5.6	BLWA Bird Surveys	33
5.7	Bats and Owls	33
5.8	Habitat	33
6.0	Recommended Management Strategies	34
6.1	Introduced Fauna Management	34
6.1.1	Foxes	34
6.1.2	Cats	34
6.1.3	Domestic Dogs	35
6.1.4	Fish and Invertebrates	35
6.2	Habitat Enhancement	35
6.2.1	Enhancement of Vegetation (Habitat)	35
6.2.2	Birds, Bats and Owl Habitat Enhancement	35
6.2.3	Fauna Habitat Protection During Wetland Management	36
6.3	Fauna Surveys	36
6.4	Visitor Management	36
7.0	References	37
	Appendix 1: Weather Conditions during survey period	40
	Appendix 2: Conservation Codes	41
	Appendix 3: NatureMap Report	43
	Appendix 4: Protected Matters Search Tool	48
	Appendix 5: BirdLife Western Australia Bird Species List	61
	Appendix 6: Baigup Wetland Fauna Species List	64
	Appendix 7: Bat Box Locations	68
	Appendix 8: Historically Recorded Fauna	73

1.0 Introduction

Natural Area Consulting Management Services (Natural Area) was contracted by the Baigup Wetland Interest Group (BWIG) to undertake a level 2 fauna survey within Baigup Wetland, within the City of Bayswater. Baigup Wetland Reserve is listed a Bush Forever Site 313 (Government of Western Australia, 2000) and is known to contain the threatened ecological community Subtropical and Temperate Saltmarsh (Department of Environment and Energy, 2018). The major objectives of the survey were to:

- Identify terrestrial vertebrate fauna species (native and non-native) on site, including mammals, reptiles and amphibians (excluding birds).
- Undertake a targeted search for significant fauna species listed under the *Wildlife Conservation Act 1950* (WA) that have been historically recorded at the site including the Water Rat or Rakali (*Hydromys chrysogaster*) and the Quenda or Southern Brown Bandicoot (*Isoodon obesulus fusciventer*).
- Determine use of the existing bat boxes by bats, and presence of local insectivorous bats.
- Recommend strategies for conservation of native fauna on site and managing feral fauna predators.
- Compile survey outcomes with previous survey data and prepare report, which will focus on implications for adaptive management of Baigup Wetland to maximise ecological functionality for species present.
- Review the diversity of terrestrial and aquatic macroinvertebrates.
- Identify freshwater crustaceans observed in channels during weeding activities.
- Undertake fish sampling activities in key freshwater locations.
- Assess the presence of owls.

1.1 Location

Baigup Wetland is located approximately 5 km north-east of the Perth Central Business District, in the suburbs of Bayswater and Maylands situated in the City of Bayswater. The site is bound to the south-east by the Swan River, to the north-east by Garratt Road, and to the south-west and north-west by residential housing and local roads (Figure 1).

1.2 Scope

Activities associated with the fauna survey included:

- desktop literature review, including documents available from BWIG, the Department of Biodiversity, Conservation and Attractions (DBCA, formerly the Department of Parks and Wildlife (DPAW)) threatened and priority fauna database and other public available databases
- undertaking a preliminary on ground workshop on fauna monitoring, with local residents and members of the BWIG attending, this also included an indigenous welcome to country and information about traditional uses of fauna in riverside locations
- undertaking a level 2 fauna survey, with assistance from BWIG members
- recording outcomes and management recommendations in this survey report.



Figure 1:
Site Location
Baigup Wetland,



Client: Baigup Wetland Interest Group
Project: Baigup Wetland Fauna Survey Report
Image Source: NearMap, 2017
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50



2.0 Site Characteristics

2.1 Regional Context

Perth is located within the Swan Coastal Plain region of the Interim Biogeographical Regionalisation of Australia (IBRA). The Swan Coastal Plain comprises of two major divisions, namely Swan Coastal Plain 1 – Dandaragan Plateau and Swan Coastal Plain 2 – Perth Coastal Plain. The site is in the Perth subregion, which is broadly characterised as including areas of Jarrah and Banksia woodlands on sandy soils in a series of sand dunes, along with wetland areas, often within the interdunal swales (Mitchell, Williams and Desmond, 2002). According to Mitchell, Williams and Desmond (2002) the Perth metropolitan area comprises approximately 20% of the Swan Coastal Plain Subregion and was the subject of a comprehensive assessment to determine reservation status and protection requirements as part of Bush Forever.

2.2 Climate

The climate experienced in the area is Mediterranean, with dry, hot summers and cool, wet winters. The Bureau of Meteorology (2017) describes the climate at the Perth Airport (ID: 009021) as:

- average rainfall is 771.6 mm pa, with the majority falling between May and August
- average maximum temperature ranges from 17.9 °C in winter to 31.9 °C in summer, with the highest recorded maximum being 46.7 °C
- average minimum temperatures range from 8.0 °C in winter to 17.5 °C in summer, with the lowest recorded minimum being -1.3 °C
- predominant wind directions include morning easterlies and westerly sea breezes during summer months, with an average wind speed of 23.8 km/h and gusts of more than 100 km/h, particularly during storm events.

2.3 Topography and Soils

Site contours within the Baigup Wetland range from 1 – 8 m Australian Height Datum (AHD) with the higher areas primarily toward the north and north-west and the lower areas occurring towards the Swan River in the south-east (Department of Agriculture and Food (WA), 2017). The site occurs primarily on Pinjarra Plain soils, which consists of alluvial soils deposited within a low-lying floodplain adjacent the Swan River (Government of Western Australia, 2000). One soil type Env Geol Ms4 Phase soil (213PjSWMs4) occurs on site. This soil type is described as sandy silt that is light yellow to brown in colour, mottled, fine to medium grained sand, which is softer when moist and has a variable clay content (Department of Agriculture and Food (WA), 2017).

The current Management Plan states that porous grey sands occur in higher elevations, peat near the river and in the swamps, silty clay of low plasticity is found along the east of the site and clay is located at the northern boundary (GHD, 2015).

2.4 Hydrology

Baigup Wetland Reserve contains permanent waterbodies, seasonally waterlogged wetlands and tidal wetlands associated with the Swan River, which provide habitat to a range of aquatic and semi-aquatic fauna species. The wetlands present are classified as conservation category and multiple use wetlands according to

the Department of Biodiversity, Conservation and Attractions (DBCA) *Geomorphic Wetlands of the Swan Coastal Plain* dataset (DBCA, 2017a) (Figure 2).

The eastern side of the reserve is more affected by tides and waterlogging due to topography and geology of the area. Poor drainage particularly in the north-east area has also lead to higher salinity levels. Waterlogging was referred to as persistent in Baigup Wetland due to only a small portion of water entering the area being required for waterlogging to occur (Haasbroek A., 2016).

2.5 Fauna Habitat

The variable vegetation on site provides dryland and wetland habitat to a range of fauna species including food sources for two threatened black cockatoo species; Carnaby's Cockatoo (*Calyptrorhynchus latirostris*) and Forest Red-tailed Black Cockatoo (*C. banksii naso*). Vegetation condition assessments undertaken by GHD in 2015 indicate that approximately half the fauna habitat on site is in 'good' condition. The reserve contains 'good' condition fauna habitat and is a part of a significant regional ecological linkage (GHD, 2015).

Certain vegetation types were recorded as declining in the hydrogeological study undertaken by Adriaan Haasbroek in Baigup Wetland in 2015. The *Melaleuca raphiophylla* trees have been declining on site with areas of dead and stressed vegetation recorded where waterlogging occurs in Baigup Wetland. Stressed and dying trees in the north-west and north-east were found to be waterlogged for over 9 months of the year which is the typical amount of time this species can tolerate waterlogging (Haasbroek A., 2016).



Figure 2:
Wetlands
Baigup Wetland Reserve, Bayswater



Client: Baigup Wetland Interest Group
Project: Baigup Wetland Reserve Fauna Survey Report
Image Source: NearMap, 2017
Prepared by: Sharon Hynes
Datum: GDA 94, Zone 50



3.0 Methodology

Natural Area personnel Sharon Hynes (Biologist) and assistant Biologists undertook a level 2 fauna survey within Baigup Wetland with the assistance of BWIG members and local community members.

3.1 Desktop and Literature Review

The desktop survey included reviewing online databases to determine preliminary site characteristics, including:

- SLIP NRM Portal to determine soil types and contours
- NatureMap to indicate the fauna species (native and introduced) including priority and threatened species that could potentially occur
- Protected Matters Search Tool to determine if any matters of national environmental significance were likely to occur on site
- West Australian Local Government Association (WALGA) Environmental Planning Tool to determine if significant fauna or their habitat could occur on site.

3.2 Community Engagement

A half day fauna trapping workshop was undertaken on 17 September 2017 to engage the community in the fauna survey; BWIG members and community members were invited to assist in the fauna trapping activities (excluding animal handling).

3.3 Fauna On-Ground Methodology

The main objective of the fauna survey was to document baseline habitat conditions and fauna species present, so that fauna outcomes can be considered during the planning for Years 4-10 of the current site Management Plan (GHD 2015). Accordingly, the purposes of the survey were to identify:

- species (native and non-native) of owls, bats, mammals, reptiles, amphibians, terrestrial and aquatic invertebrates and fish present
- the different vegetation types or habitat present.

A target survey of bird species (other than owls) was not undertaken due to the information being available from BirdLife Western Australia (BLWA) surveys.

Fauna survey activities were undertaken in accordance with Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (Environmental Protection Authority, 2010). The survey activities were carried out over a six day period between 30 October and 6 November 2017, activities included:

- setting up 7 trap lines with funnel and pitfall traps (BWTL1-7) and 3 trap lines (BWTL7-10) with funnel traps but no pitfall traps due to the high water table and tidal variation occurring in this area; cover/habitat was placed in pitfalls and over funnel traps to provide protection from the elements (Figure 3, Figure 4; Figure 5)
- setting up 10 Elliott traps and 7 cage traps (BWTL1-7), which were set up in the immediate vicinity of the trap lines under vegetation, covered with a hessian bag, with shredded newspaper inside and baited with peanut butter and rolled oats (Figure 4; Figure 5)

- setting up seven fish traps (bait nets) baited with ocean tuna flavoured dry cat food in different habitat types and water depths, left out overnight for 2 nights and checked each morning. Fish were also netted and recorded through direct observation
- recording all trap and trap line locations using a hand-held GPS and marked with flagging tape
- checking traps within 3 hours of sun rise, with species recorded and released on site
- undertaking a dusk survey to observe nocturnal species such as bats and owls and using an Anabat to record bat calls to be analysed to determine species, bat boxes installed on site were also assessed for signs of use by bats including bats present, droppings below and scratches on boxes
- targeted searches for conservation significant species including the Quenda and Water Rat/Rakali
- traversing the site to record evidence of fauna presence including:
 - scats
 - tracks
 - pellets (owls)
 - calls
 - feeding platforms and food carcasses (Water Rat/Rakali)
 - dens, warrens and burrows
 - skeletal material
 - diggings
 - looking under rocks and logs
 - opportunistic sightings.
- setting out 10 motion activated cameras to target fauna that are difficult to capture in traps such as Water Rats/Rakali and foxes. A second period of camera trapping was undertaken in January/February 2018
- sampling of aquatic macroinvertebrate via three 10 metre sweeps with 250 µm nets in different habitat types
- sampling terrestrial macroinvertebrates via active searching and netting for flying insects, as well as incidental captures in pitfall and funnel traps
- photographing (where possible) species captured or observed within the site
- identifying invertebrates using a range of resources including:
 - A Guide to the Spiders of Australia (Framenau, Baehr and Zborowski 2014)
 - A Field Guide to Insects in Australia (Zborowski and Storey, 2010)
 - Guide to Wildlife of the Perth Region (Knowles and White, 2005)
 - Macroinvertebrate Herpetofauna of the Canning Catchment (SERCUL, 2012)
 - Australian Dragonfly Identification Key (Ritcher 2018)
 - various CSIRO insect identification resources (CSIRO 2018)
- recording the outcomes of the trapping and observation activities.

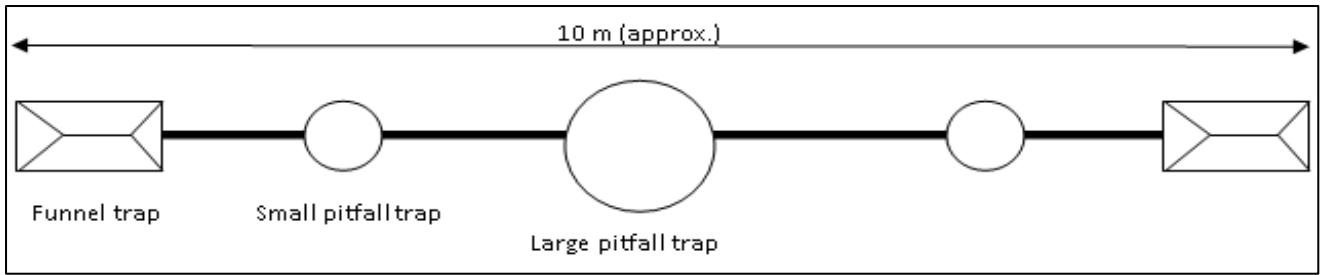


Figure 3: Trap line layout



Large pitfall trap

Cage Trap

Figure 4: Examples of traps used during the survey period



Figure 5:
Trap Locations
Baigup Wetland Reserve, Bayswater



Client: Baigup Wetland Interest Group
 Project: Baigup Wetland Reserve Fauna Survey Report
 Image Source: NearMap, 2017
 Prepared by: Sharon Hynes
 Datum: GDA 94, Zone 50



3.4 Weather Conditions During Survey

The weather conditions for the fauna trapping period were ideal, with warm days and mild nights (BOM, 2018). 5 mm of rainfall was recorded in the week leading up to the trapping period, although this is not likely to have reduce capture rates. The second motion activated camera trap event in January/February 2018 also had warm days and mild nights but had a significant rainfall event (82.6 mm) which flooded two cameras (Figure 6), destroying the cameras and associated recorded data. The flooding did not appear to influence mammal activity, with foxes captured walking through flooded areas, and may have been better conditions to observe a Water Rat/Rakali. The full list of weather conditions are located in Appendix 1.



Figure 6: Change in water level in the north-east from the significant rainfall event in January 2018 (Camera Location CT03)

3.5 Limitations

Several limitations associated with both desktop and on-site fauna surveys remain, including:

- database searches only provide an indication of what fauna species that may be present, with on-ground surveys required to confirm those present
- the differing databases are reliant on information submitted via various reporting mechanisms, so all records of a particular species within a particular area may not be complete
- information on fauna species provided on some databases include out-of-date species names, meaning that names need to be checked for currency
- some fauna species are highly mobile and may utilise the site as part of their range but may not be present on site at the time of the survey
- certain fauna species are trap shy or difficult to trap and may not be captured/observed even though they are present on site.
- certain fauna individuals may become 'trap happy' (caught on numerous nights during the trapping period) which reduces the probability of trapping other fauna species even if they are present in the area
- certain fauna groups (in particular invertebrates) are poorly described or require microscopes to identify. As the invertebrates are being released after capture microscope analysis cannot be performed.
- Fish trapping locations were selected to avoid disturbing nesting birds and were limited in some areas by water depth; active searching was undertaken in water bodies where trapping didn't occur.

4.0 Results

4.1 Desktop Survey Results

4.1.1 NatureMap and Protected Matters Search Tool

A review of NatureMap 2014 with a 2 km buffer around the site indicated that 15 Priority and Threatened species have the potential to occur within the site, with 6 fauna species and 9 flora species listed (DBCA 2017b). Of these, 9 were listed as Threatened, 1 was listed as protected under International Agreement and 5 were listed as Priority species under the *Wildlife Conservation Act 1950* (WA) (Table 1). A guide to the conservation codes is provided in Appendix 2, and the NatureMap report is provided in Appendix 3.

A review of the Protected Matters Search Tool (PMST) with a 2 km buffer around the site indicated 18 threatened species, including 2 mammals and 16 birds (Department of Environment and Energy (DEE), 2017b). Of these species 5 birds were deemed to have suitable habitat within the site and may occur, including 2 Critically Endangered, 2 Endangered and 1 Vulnerable species, (Table 1). The PMST report is provided in Appendix 4.

Table 1: Threatened and Priority species listed by NatureMap and Protected Matters Search Tool

Species Name	Life form	Conservation Code	NM	PMST	Likelihood to occur on site
<i>Actitis hypoleucos</i>	Bird	IA	X		Habitat suitable
<i>Anous tenuirostris melanops</i>	Bird	T/Vu		X	Habitat unsuitable
<i>Apus pacificus</i>	Bird	IA	X		Habitat suitable
<i>Ardea ibis</i>	Bird	IA	X		Habitat suitable
<i>Ardea modesta</i>	Bird	IA	X		Habitat suitable
<i>Calidris ferruginea</i>	Bird	T/CR	X	X	Habitat suitable
<i>Calidris melanotos</i>	Bird	IA	X		Habitat suitable
<i>Calyptorhynchus banksii naso</i>	Bird	T/Vu	X	X	Habitat suitable
<i>Calyptorhynchus baudinii</i>	Bird	T/Vu	X		Habitat suitable
<i>Calyptorhynchus latirostris</i>	Bird	T/En	X	X	Habitat suitable
<i>Dasyurus geoffroii</i>	Mammal	VU		X	Habitat unsuitable
<i>Diomedea exulans</i>	Bird	Vu		X	Habitat unsuitable
<i>Diomedea sanfordi</i>	Bird	En		X	Habitat unsuitable
<i>Falco peregrinus</i>	Bird	S	X		Habitat suitable
<i>Hydromys chrysogaster</i>	Mammal	P4	X		Habitat suitable
<i>Isoodon obesulus fusciventer</i>	Mammal	P5	X		Habitat suitable
<i>Leipoa ocellata</i>	Bird	Vu		X	Habitat unsuitable
<i>Macronectes giganteus</i>	Bird	EN		X	Habitat unsuitable

Species Name	Life form	Conservation Code	NM	PMST	Likelihood to occur on site
<i>Macronectes halli</i>	Bird	VU		X	Habitat unsuitable
<i>Merops ornatus</i>	Bird	IA	X		Habitat suitable
<i>Neelaps calonotus</i>	Reptile	P3	X		Habitat unsuitable
<i>Numenius madagascariensis</i>	Bird	CR		X	Habitat suitable
<i>Oxyura australis</i>	Bird	P4	X		Habitat suitable
<i>Pachyptila turtur subantarctica</i>	Bird	VU		X	Habitat unsuitable
<i>Pseudocheirus occidentalis</i>	Mammal	VU		X	Habitat unsuitable
<i>Rostratula australis</i>	Bird	EN		X	Habitat suitable
<i>Sterna nereis subsp. nereis</i>	Bird	T	X		Habitat unsuitable
<i>Thalassarche cauta cauta</i>	Bird	VU		X	Habitat unsuitable
<i>Thalassarche cauta steadi</i>	Bird	VU		X	Habitat unsuitable
<i>Thalassarche impavida</i>	Bird	VU		X	Habitat unsuitable
<i>Thalassarche melanophris</i>	Bird	VU		X	Habitat unsuitable
<i>Tringa nebularia</i>	Bird	IA	X		Habitat suitable

(Source: DBCA, 2017b; DEE, 2017b)

4.1.2 Department of Biodiversity, Conservation and Attractions

A search of the DBCA threatened and priority fauna database identified 1 significant fauna species that has previously been recorded within the Wetland, the Great Egret (*Ardea modesta*). The Great Egret is protected under section s248 and s209(3) of the *Environmental Protections and Biodiversity Conservation Act 1999* (Cwlth).

4.1.3 WALGA Environmental Planning Tool

A review of information available via the Environmental Planning Tool indicated that the site occurs in a confirmed roosting area and a potential feeding area of the Carnaby's Cockatoo (*Calyptorhynchus latirostris*). It indicated the potential for habitat of the Southern Brown Bandicoot or Quenda (*Isodon obesulus fusciventer*) to occur on site, which is listed as a Priority 4 species under the *Biodiversity Conservation Act 2016* (WA) (WALGA, 2017).

4.1.4 BirdLife Western Australia

Surveys were conducted by BLWA at Baigup in 2003 as part of a Perth Biodiversity and Birds Australia project (Gole 2004). Regular surveys were initiated by BLWA in mid 2012 with 96 species recorded in Baigup Wetland and nearby environs, including the relevant section of the Swan River between 2012 and January 2018. (Appendix 5). Of the 96 bird species recorded, 5 were listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) this included:

- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) – Endangered
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) – Vulnerable

- Eastern Great Egret (*Ardea alba modesta*) – Threatened Migratory
- Rainbow Bee-eater (*Merops ornatus*) – Threatened Migratory
- Common Sandpiper (*Actitis hypoleucos*) – Threatened Migratory.

Two species were listed under the *Biodiversity Conservation Act 2016* (WA), including:

- Blue-billed Duck (*Oxyura australis*) – Priority 4
- Peregrine Falcon (*Falco peregrinus*) – Specially Protected

Seven species are listed as locally significant species with reduced populations on the Swan Coastal Plain in *Bush Forever Volume 2* (Government of Western Australia, 2000), including:

- Hardhead (*Aythya australis*)
- Brown Goshawk (*Accipter fasciatus*)
- Yellow-rumped Thornbill (*Acanthiza chrysorhoa*)
- New Holland Honeyeater (*Phylidonyris novaehollandiae*)
- White-cheeked Honeyeater (*Phylidonyris niger*)
- Weebill (*Smicrornis brevirostris*)
- White-browed Scrubwren (*Sericornis frontalis*).

4.2 Community Engagement Program

The fauna trapping presentation led by Environmental Scientist Sharon Hynes was offered as the second part of a community education workshop organised by Baigup Wetland Interest Group on 17 September 2017. The morning session featured a Welcome to Country and introduction to traditional knowledge of the ecology and significance of riverside locations by Whadjuk Noongar elders Dr Noel Nannup and Mrs Marie Taylor. Members of BWIG subsequently helped Natural Area set up traplines and record data during daily checking of traps throughout the survey period. For safety and regulatory reasons, community members did not handle animals during fauna trapping works.



Environmental Scientist Sharon Hynes presenting the fauna trapping workshop.

Baigup Wetland Interest Group member Giorgia Johnson assisting with data recording



Baigup Wetland Interest Group member assisting with data recording during fauna trapping.

Figure 7: Community Engagement through Fauna Workshop and Trapping.

4.3 Fauna Field Survey Results

A compiled list of species recorded in the 2017 survey is provided in Appendix 6.

4.3.1 Habitat Values

Habitat was assessed during the fauna survey, with the majority of the site in good condition in terms of habitat presence, suitability, levels of overstorey, mid storey and understorey and general vegetation

condition. The dense sedgelands were identified as quality habitat for native vertebrate species including mammals, birds and amphibians. Overstorey species were of good quality to provide roosting location for larger species, however there were no natural hollows noted during the survey.

A recent hydrogeological study of Baigup Wetland (Haasbroek 2015) found that surface water salinity was higher in the dry months and lower in the wet months when some flushing and dilution occurs. At the time of the survey, Fish Traps 1-5 were in fresh water and Traps 6 and 7 were in brackish water (Figure 5).

4.3.2 Mammals

No mammal species were captured during the trapping event or opportunistically sighted during survey activities. All mammal records were from motion activated camera traps, which were set out from 31 October to 4 November 2017 (10 camera traps), and from 10 January to 02 February 2018 (8 camera traps). Two camera traps set out in January 2018 were flooded in a high rainfall event and the data could not be recovered. The camera traps recorded four species of mammals, all of which are introduced species (Table 2; Figure 8).

Significant Species

No individual Quenda (*Isoodon obesulus fusciventer*), or signs of the Quenda such as diggings or vegetation tunnels, were observed during 2017 survey activities. No individual Water Rats/Rakali were observed, although potential feeding platforms and potential burrows were recorded on the bank of the Swan River and near the secondary lake.

Introduced Species

Three sightings of Black Rats (*Rattus Rattus*) and two of dogs (*Canis lupus familiaris*; Figure 8) were recorded. A collared cat was caught on camera over three nights in January 2018 (*Felis catus*) (Figure 8). Red Foxes (*Vulpes vulpes*) were photographed at three of the ten camera traps in November 2017 and on five of the six traps that data was collected from in January 2018 (Figure 8). Over 500 photographs of Red Foxes were recorded during January 2018, with at least three separate individuals including a mother and two juveniles. Red Foxes are C3 Declared Pests under the *Biosecurity and Agricultural Management Act 2007* (WA), which is defined as: organisms that require management to alleviate the harmful impact of the organism, reduce the numbers or distribution of the organism or prevent or contain the spread of the organism.

Table 2: Mammal Species Recorded

Family	Species Name	Common Name	Comment
Canidae	* <i>Canis lupus familiaris</i>	Dog	Sighted on camera traps
Canidae	* <i>Vulpes vulpes</i>	Red Fox	Sighted on camera traps, scats observed
Felidae	* <i>Felis catus</i>	Cat	Sighted on camera traps
Rodentia	* <i>Rattus Rattus</i>	Black Rat	Sighted on camera traps

*Denotes introduced species



CT10 04/11/2017: Two Juvenile Red Foxes



CT02 19/01/2018. Red Fox marking territory



CT03 27/01/2018: Red Fox foraging



CT03 25/01/2018: Two Red Foxes



CT07 12/01/2018: Red Fox



CT07 18/01/2018: Black Rat



CT07 22/01/2018: Cat



CT07 19/01/2018: Dogs (collared but off leash)

Figure 8: Mammal species recorded within Baigup Wetland Reserve in November 2017 and January 2018.

4.3.3 Birds, Owls and Bats

A dusk survey targeting owls and bats was undertaken on 29 September 2017. No sightings, calls or signs such as pellets or droppings of owls were recorded. No sightings or calls of bats were recorded when the first survey was undertaken although calls could not be recorded due to a technical issue with the Anabat recorder. A subsequent survey visit with the Anabat recorder was undertaken on 01 October 2017, with no bats recorded whilst traversing the site. Thirteen of the 18 bat boxes (Appendix 7) installed by the City of Bayswater in Baigup were able to be located and were assessed for signs of use, including presence of bats, scratches and bat droppings beneath the boxes. There were no signs of bats at any of the boxes, with cobwebs and beehives obstructing the entrance of four boxes (Figure 9). Bat boxes at the Kelvin Street end of the site were overgrown with Morning Glory (*Ipomoea* sp.) and were unable to be assessed; they were unlikely to provide a roosting place for bats. Additionally, 5 of the 18 boxes could not be located.



Bat Box 3: Occupied by beehive

Bat Box 13: Spider webs over entrance

Figure 9: Example of unused bat boxes.

A targeted bird survey was not within the scope of the fauna survey due to recent comprehensive surveys by BLWA. However, birds sighted opportunistically were recorded, with the nationally protected Eastern Great Egret (*Ardea alba modesta*) sighted and one species of bird not recorded in previous surveys photographed on camera traps in 2017, the White-browed Scrubwren (*Sericornis frontalis*; Figure 10). This species is considered locally significant by the Bush Forever Vol. 2 (Government of Western Australia, 2000), and described as a habitat specialist with a reduced distribution on the Swan Coastal Plain. This species was also subsequently recorded during the January 2018 BLWA survey in Baigup.



Figure 10: White-browed Scrubwren (*Sericornis frontalis*) recorded (Camera Trap CT03) in 2017 (top) and the nationally protected Eastern Great Egret (*Ardea alba modesta*) opportunistically sighted.

4.3.4 Reptiles

Nine reptile species were recorded during the 2017 fauna survey, both caught in traps and opportunistically sighted (Table 3; Figure 11). In addition to smaller skink species caught in pit traps, a Dugite (*Pseudonaja affinis*) was caught in an Elliot trap, and one Fence Skink (*Cryptoblepharus buchananii*), one Bobtail (*Tiliqua rugosa rugosa*) and one Dugite sighted whilst traversing the site. Additionally, a turtle egg was found whilst foraging in the stream for aquatic invertebrates (Figure 11).

Table 3: Reptiles identified within Baigup Wetland Reserve

Family	Species Name	Common name	Notes
Chelidae	<i>Chelodina colliei</i>	Southwestern snake-neck turtle	Egg
Scincidae	<i>Acritoscincus trilineatus</i>	Western Three-Lined Skink	5 captures
	<i>Cryptoblepharus buchananii</i>	Fence Skink	1 opp. sighting
	<i>Hemiergis quadrilineata</i>	Two-toed Earless Skink	15 captures
	<i>Lerista luctuosa</i>	Elegant Slider	1 capture
	<i>Lissolepis luctuosa</i>	Western Glossy Swamp Skink	2 captures
	<i>Menetia greyii</i>	Common Dwarf Skink	3 captures
	<i>Tiliqua rugosa rugosa</i>	Bobtail	1 opp. sighting
	Elapidae	<i>Pseudonaja affinis</i>	Dugite



Southwestern snake-neck turtle (*Chelodina colliei*) egg Elegant Slider (*Lerista elegans*)



Western Three-lined Skink (*Acritoscincus trilineatus*) Common Dwarf Skink (*Menetia greyii*)



Two-toed Earless Skink (*Hemiergis quadrilineata*) Bobtail (*Tiliqua rugosa rugosa*)



Western Glossy Swamp Skink (*Lissolepis luctuosa*) Dugite (*Pseudonaja affinis*)

Figure 11: Examples of reptiles captured within Baigup Wetland Reserve

Whilst not captured or opportunistically sighted during the fauna survey works, the Western Tiger Snake (*Notechis scutatus*) was included in previous fauna lists (GHD 2015) based on Siemon et al (1991). Six residents on the border of Baigup reported seeing Tiger Snakes when they responded to the survey conducted by BWIG (Lee and Clarke 2018) as part of the State NRM project of which this study was also a part. Further anecdotal evidence of the presence of this species was provided informally when tiger snakes, both dead and alive, were seen during clearing at the east end of the reserve by DPLH in early 2017.

4.3.5 Amphibians

Six amphibian species were identified during the 2017 trapping period, including 2 species of tadpoles (Table 4; Figure 12). The majority of amphibians were caught in pitfall traps and funnel traps. The tadpoles were captured at fish trap 03, 05 and 06, which were placed in the freshwater pools (Figure 5). Frogs were captured in all the trap lines set out. Frogs were also heard calling during trapping works and the nocturnal survey activities.

Table 4: Amphibians identified within Baigup Wetland Reserve

Family	Species Name	Common name	Notes
Hylidae	<i>Litoria adelaidensis</i>	Slender Tree Frog	Opp. sighting, calls heard
	<i>Litoria moorei</i>	Motorbike Frog (inc. tadpoles)	13 captures, calls heard
Myobatrachidae	<i>Crinia georgiana</i>	Quacking Frog	8 captures, calls heard
	<i>Crinia glauerti</i>	Glauert's Froglet	1 capture, calls heard
	<i>Crinia insignifera</i>	Squelching Froglet	1 capture, calls heard
	<i>Crinia sp.</i>	Tadpoles	1 capture
	<i>Limnodynastes dorsalis</i>	Western Banjo Frog	4 captures, calls heard

4.3.6 Terrestrial Invertebrates

A total of 91 terrestrial invertebrate species were recorded during the survey period, including 64 insects (Insecta), 19 spiders (Arachnida), 3 land crustaceans (Malacostraca), 2 snails and slugs (Gastropoda), 2 worms (Clitellata), and 1 millipede (Diplopoda; Figure 13); species recorded are listed in Appendix 6. Over 800 individuals were captured in traps and during active searching (including netting) with 6 species identified as non-native. Many taxonomic groups of invertebrates require examination under microscopes to identify to species level. To preserve the life of the invertebrates captured samples were not taken, and therefore species requiring microscopic examinations were not able to be identified to species level. Additionally, many invertebrate groups are highly diverse and poorly described, with no dichotomous keys for identification or clear species distribution.



Motorbike Frog
(*Litoria moorei*)



Motorbike Frog
(*Litoria moorei*)



Motorbike Frog Tadpole
(*Litoria moorei*)



Western Banjo Frog
(*Limnodynastes dorsalis*)



Western Banjo Frog
(*Limnodynastes dorsalis*)



Crinia sp. Tadpole



Quacking Frog
(*Crinia georgiana*)



Glauert's Froglet
(*Crinia glauerti*)



Squelching Froglet
(*Crinia insignifera*)

Figure 12: Amphibians trapped within Baigup Wetland.



Common Bluetail
(*Ischnura heterosticta*)



Blue Banded Bee
(*Amegilla cingulate*)



Crane Fly
(*Gynoplistia* sp.)



Prowling Spider
(*Miturga* sp.)



Common Peacock Spider
(*Maratus pavonis*)



Flower Wasp
(*Ephutomorpha* sp.)



Long-nosed Weevil
(*Rhinotia hemisticta*)



Carabeetle
(*Notagonum submetallicum*)



Shield Bug No. 4
(*Poecilometis* sp.)

Figure 13: Terrestrial invertebrates captured or sighted within Baigup Wetland

4.3.7 Aquatic Invertebrates

A total of 15 aquatic invertebrate species were recorded during the trapping period, including 8 insects and insect larvae (Insecta), 4 Crustaceans (Malacostraca), and 3 snails (Gastropoda; Table 5; Figure 14).

Invertebrates were caught in fish traps and netting (e.g. Glass Shrimp), or from active searching (e.g. Water Snails). All the native aquatic invertebrates except the glass shrimp were restricted to the freshwater ponds, which at the time of the survey were found on the inland side of the central path.

Table 5: Aquatic invertebrates captured or sighted at Baigup Wetland

Class	Order	Family	Scientific name	Common Name
Gastropoda	Hygrophila	Physidae		Water Snail 1
	Littorinimorpha	Hydrobiidae		Water Snail 2
	Littorinimorpha	Pomatiopsidae		Water Snail 3
Insecta	Coleoptera	Distichidae		Water Beetle
	Diptera	Chironomidae		Midge larvae
	Hemiptera	Corixidae		Water Boatmen
	Odonata	Petaluridae		Dragonfly larvae 1
	Odonata	Petaluridae		Dragonfly larvae 2
	Odonata	Zygoptera (Suborder)		Damselfly larvae 1
	Odonata	Zygoptera (Suborder)		Damselfly larvae 2
		Trichoptera		Caddisfly larvae
	Malacostraca	Decapoda	Palaemonidae	<i>Palaemonetes australis</i>
Decapoda		Parastacidae	<i>Cherax quinquecarinatus</i>	Gilgie
Decapoda		Parastacidae	* <i>Cherax destructor</i>	Yabby
Isopoda		Isopoda (Order)		Water Slater

*Denotes introduced species

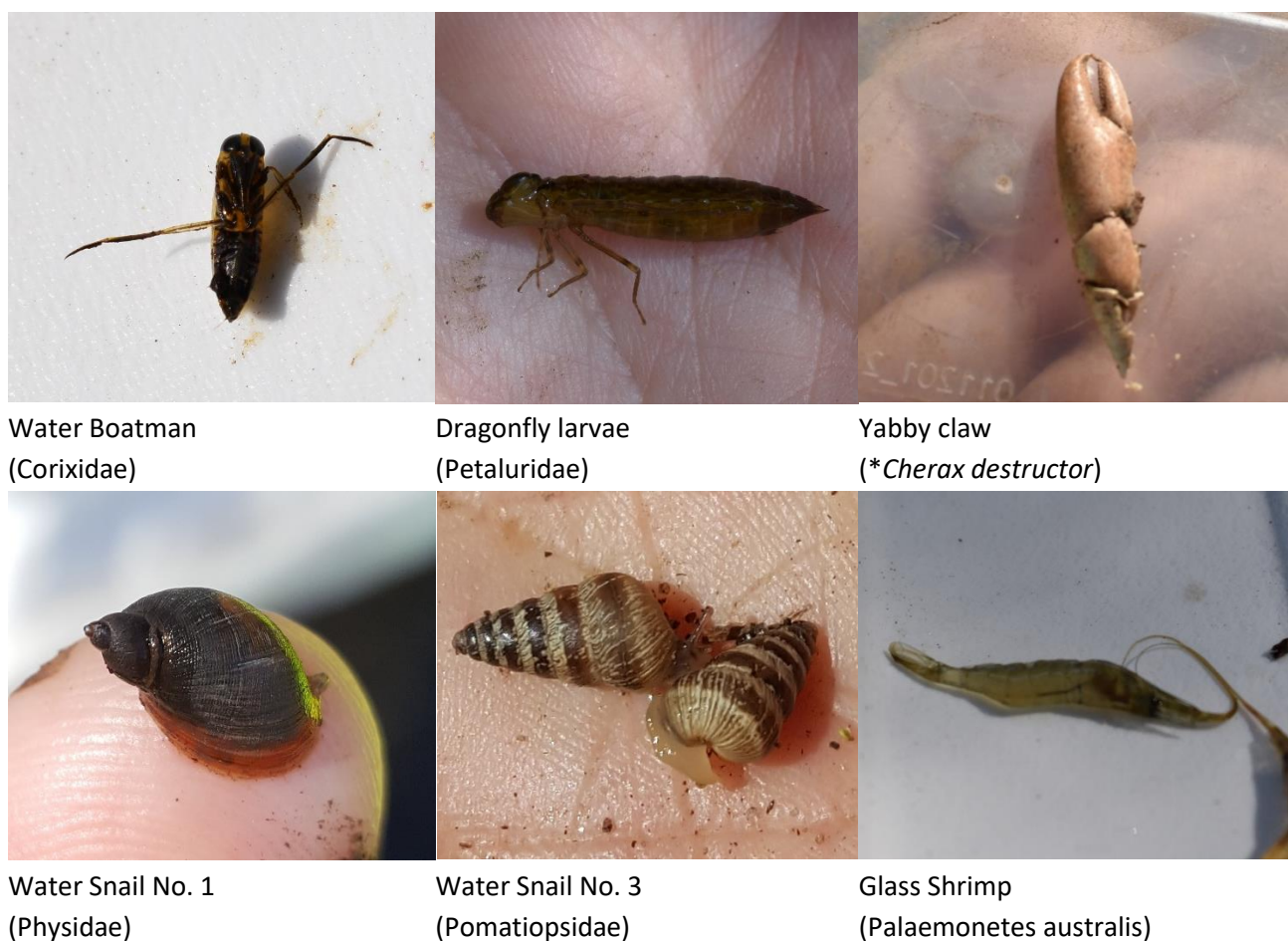


Figure 14: Aquatic invertebrates

4.3.8 Fish

Three fish species were recorded during the 2017 aquatic trapping period, including 1 native and 2 non-native species (Table 6, Figure 15). The most common fish, Mosquitofish, was caught on 7 occasions in traps over the 2 day trapping period, with the Swan River Goby and Carp caught on 1 occasion in the traps. The Swan River Goby and the Carp were located only in the freshwater ponds west of the main path (Fish Traps 3 and 5), whilst the Mosquitofish was in all freshwater and brackish water bodies across the site.

Table 6: Fish captured during the fauna survey at Baigup Wetland

Order	Family	Scientific name	Common Name
Cypriniformes	Cyprinidae	* <i>Cyprinus carpio</i>	Common Carp
Perciformes	Gobiidae	<i>Pseudogobius olorum</i>	Swan River Goby
Cyprinodontiformes	Poeciliidae	* <i>Gambusia holbrooki</i>	Mosquitofish

*Denotes introduced species



Mosquitofish (*Gambusia holbrooki*)

Swan River Goby (*Pseudogobius olorum*)

Figure 15: Fish captured during fauna survey at Baigup Wetland

5.0 Discussion

5.1 Mammals

A total of 4 introduced mammals were recorded during the 2017 survey compared to 6 from previous studies. The introduced Brown Rat and House Mouse were not recorded during 2017, however as this is an urban area it is highly likely these species are still present on site. The Priority 3 Water Rat/Rakali (*Hydromys chrysogaster*) is a discreet species and difficult to capture or observe; whilst not recorded in 2017 it was recorded by Siemon *et al.* in 1991. Potential feeding platforms (with mussel shells pile up) were observed on the bank of the Swan River in 2017, and the BWIG shared photos of possible Water Rat/Rakali burrows uncovered during clearing on the north bank of the primary lake. Although no direct observations, confirmed burrow or feeding platforms were found it is likely that this species is present within the reserve.

The Priority 5 Quenda (*Isodon obesulus fusciventer*) has historically been recorded on site but was not found in any previous fauna studies or management plans as currently occurring within Baigup. It is likely that fox predation, habitat fragmentation and increased waterlogging of the area has led to the absence of this species in Baigup Wetland Reserve.

5.2 Reptiles

Nine reptile species were recorded in the 2017 fauna survey; five had been recorded in previous surveys. Four historically recorded species were not located in 2017; Tiger Snake, King Skink, Red-legged Skink and Shrubland Snake-eyed Skink. However, local residents who participated in the Local Resident Survey Report 2017 (Lee & Clark 2018) undertaken by BWIG stated that they have seen Tiger Snakes within the Wetland recently. The other three species may have been absent due to changes in habitat (water logging), predation or maybe present but were not captured during the trapping event. The introduced Red-eared Slider was also previously recorded, but the one individual found was removed and was likely a pet that was released into the Wetland, which is why it has not been included in the data summary.

Four species were newly recorded in the reserve; Fence Skink, Elegant Slider, Common Dwarf Skink and Two-toed Earless Skink. All these species are common in urban bushland areas and may have increased in number due to disturbances at the site or may be due to a lack of extensive fauna surveys carried out previously in the reserve.

5.3 Amphibians

Six amphibian species were recorded during the 2017 survey which is the same number listed by GHD (2015). Previous studies did not record the Squelching Froglet (*Crinia insignifera*), which had calls recorded and 1 individual captured during the 2017 survey. The Moaning Frog (*Heleioporus eyrei*) previously recorded was not found during the 2017 survey, this may be due to the timing of the survey (spring/summer) falling outside the optimal time for recording this species (autumn/winter).

5.4 Invertebrates

A high diversity of invertebrate species was recorded during the 2017 survey (91 terrestrial invertebrates, 15 aquatic invertebrates) and in previous studies indicating a 'healthy' or 'good condition' wetland. Historically, few invertebrates have been located within the main storm water drain (GHD 2015) and in the 2017 survey

only Glass Shrimp were in this area. The current lack of invertebrates maybe due to high flow of water in this area and/or potentially lower water quality as a result of nutrients brought in by stormwater; water quality testing was not undertaken as part of the survey, so the nutrient levels in this area cannot be confirmed.

5.5 Fish

Three fish were recorded during the 2017 survey, with the native Swan River Goby found in the freshwater secondary lake and between the secondary lake and the central track. The introduced Mosquitofish was still widespread across the site and was the only species found in the primary lake and water bodies on the banks near the Swan River, which had higher salinity levels. The introduced Carp had not been previously recorded within the site but is a common invasive species within rivers and waterbodies in the Perth Region.

5.6 BLWA Bird Surveys

A total of 96 bird species are listed on the BLWA cumulative list (2012-2018); 7 recorded species were locally significant and described as habitat specialist with a reduced distribution on the Swan Coastal Plain. Six species listed are protected under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cwlth). Two of the species recorded are listed as protected under the Biodiversity Conservation Act 2016 (WA). Refer to Section 4.1.4 for the full list of conservation significant species recorded by BLWA and Appendix 5 for the full list of species.

5.7 Bats and Owls

No survey records have bats being recorded within Baigup Wetlands and no signs of bat presence were recorded during the current survey. Bats may be present within the reserve but there is no evidence they are utilising the bat boxes and were not detected with the Anabat recorded.

No owls were recorded during the 2017 survey; however, 37% of respondents surveyed on the border of Baigup Wetlands (Lee & Clarke 2018) said they had seen or heard owls, two mentioned the Boobook Owl (*Ninox boobook*) by name. This species is also included in the BLWA cumulative list

5.8 Habitat

A diverse array of habitats types was recorded on site with sedgelands, woodlands and open water found within the reserve. However, the decline of *Melaleuca raphiophylla* should be considered with suitable rehabilitation of these areas to be implemented to retain roosting and habitat particularly for bird species in this area. The Morning Glory in the south-west of the site both limits access to bat boxes and to roosting habitat for birds. The freshwater ponds were observed to contain native fish species and high proportion of aquatic invertebrate diversity. Non-native fish were predominantly located in the brackish pools on the Swan River side of cycle path, with a lower diversity of native aquatic invertebrates located in this water body.

The high diversity of fauna indicates a healthy and functional ecosystem overall, with sufficient habitat for native fauna species, though there are some unhealthy sections with high weed cover and declining native vegetation. Management actions that lead to the removal of understory species, leaf litter and logs from the habitat such as fire and weed control measures can reduce fauna habitat particularly for reptiles and invertebrates. The most effective way to protect fauna species is to protect and enhance their habitat and control introduced predators.

6.0 Recommended Management Strategies

The following management strategies have been provided to encourage fauna preservation in the Baigup Wetland.

6.1 Introduced Fauna Management

6.1.1 Foxes

Foxes were recorded on camera throughout the survey period and are one of the main predators of small mammals, reptiles and amphibians within the site. Foxes are also known to have recently killed several chickens in houses immediately adjacent the wetland (Personal communication). According to the *Animal Welfare (General) Regulations 2003 (WA)* for the use of soft-jaw traps and snare traps, trapping using soft-jaw traps can be undertaken to control problem foxes within an area, with captured animals required to be disposed of humanely (Department of Primary Industries and Regional Development (DPIRD) (WA), 2018). Permits to undertake soft-jaw trapping is required under *the Biosecurity and Agriculture Management Regulations 2007 (WA)* from DPIRD for use of these traps in built up/urban areas. This is the recommended method of control for foxes in Baigup Wetland. Further discussion about the use of this method with the City of Bayswater will need to occur as Natural Area's understanding is that soft-jaw trapping is currently against the City's policies and procedures. A targeted approach between the City and the Department of Planning, Lands and Heritage would be the best approach as they both manage a portion of Baigup Wetland Reserve.

Cage traps are not recommended as foxes tend to be trap shy and tend to be wary of entering cage traps, meaning that this method can be both costly and ineffective. If they are used, foxes must be habituated to go into the cage traps, which can take months and traps need to have cameras installed with each trap to observe when foxes enter traps.

The use of 1080 (sodium monofluoroacetate) baiting has proven to be the most effective and widespread method of fox control in Australia. However, 1080 is toxic to humans and domestic animals and there is no effective antidote (Department of Primary Industries and Regional Development (WA), 2018). Accordingly, there are restrictions on its use in built up areas and permission is unlikely to be granted to conduct baiting in Baigup Wetland due to the risks to park users and domestic pets.

Other potential methods for fox control include den fumigation, night shooting and fencing. Currently, the fumigate registered for fox control cannot be brought into WA (personal communication); additionally, no dens were noted during the survey, suggesting the area is used for travel and hunting only. Night shooting could be implemented if trapping produced insufficient results; however, it would be costly and labour intensive as all entrances to the reserve would need to be manned during the shooting for safety reasons and a permit for night shooting activities would be difficult to obtain. Fencing for fox exclusion is not recommended for Baigup Wetland, as it is likely that foxes could swim around any fence installed up to the edge of the river.

6.1.2 Cats

Cats pose a threat to native fauna such as small mammals, birds, reptiles and frogs, as they are very efficient hunters. The *City of Bayswater Keeping and Control of Cats Local Law 2016* requires cats to be "contained on

the premises unless under effective control of a person". There were three nights where cats were photographed on the camera traps. It is recommended that the City of Bayswater enforce the *Cat Act 2011* (WA) and the Cat Local Law 2016 and enforce restricted zones, sterilisation and collar requirements. If required, cat trapping could be undertaken at the reserve, with feral cats being euthanised and domestic cats impounded; however, cat trapping generally has a low success rate as cats tend to be trap shy. As with foxes, the probability of a successful capture can be increased through a free-feeding period and habituating the cats to the traps, but this can drive up project costs.

6.1.3 Domestic Dogs

Domestic dogs have been sighted off lead at Baigup Wetland (Figure 8) and have the potential to negatively impact fauna directly through attacks/disturbance of nests and indirectly through disturbance of habitat. Two turtle nests were destroyed by either dogs or foxes during the project (personal communication), both were adjacent to the sealed walkway/cycle path. Dogs are supposed to be on lead (*Dog Act 1976*) WA unless in a designated dog exercise area; the City of Bayswater is currently undertaking a review of existing and potential dog exercise areas. It is recommended that community members are encouraged to leave their dogs on lead when in the wetland reserve, which could be communicated via local publications, signs and newsletters, and that local rangers undertake periodic patrols of the area to ensure compliance.

6.1.4 Fish and Invertebrates

Given the interconnected nature of the site with the Swan River, complete control of introduced fish and invertebrate species will not be possible due to ongoing repopulation. Any introduced fish and invertebrates species located (e.g. during future fauna surveys) should be removed and euthanised where possible. Fish and invertebrates should only be removed and euthanised if correct identification of the species can be made in the field.

6.2 Habitat Enhancement

6.2.1 Enhancement of Vegetation (Habitat)

The City of Bayswater and the Baigup Wetland Interest Group have played an active role in weed control and revegetation within Baigup Wetland particularly over the last six years. Staged weed control and removal of invasive species is recommended to continue through the wetland, particularly near the houses on the north-west boundary and the western end of the reserve. This will reduce competition for resources with native vegetation and improve habitat for native species. A staged approach is recommended to ensure large sections of habitat are not disturbed at one time. It is recommended that revegetation activities consider fauna habitat requirements particularly resources for significant fauna, such as Carnaby's Cockatoos, Forest Red-tailed Black Cockatoo and Baudin's Cockatoo.

6.2.2 Birds, Bats and Owl Habitat Enhancement

The Morning Glory (*Ipomoea* sp.) at the south-west of the site is recommended for removal to increase access to bat boxes and roosting habitat for birds and owls; this is currently being undertaken as part of a Swan Alcoa Landcare Program (SALP) grant. Bats may not use bat boxes if they are too shaded or attached to thin poles or tree, with multiple chambered bat boxes being preferred to provide a range of internal temperature and increase surface area for bats to hold onto. The Australasian Bat Society recommends that bat boxes are installed in tree that have a diameter of at least 30cm at 6cm off the ground, with no branches

below the bat box to ensure the entry remains clear. The society also recommends installing a number of boxes with different orientations (primarily NE to SE facing) to provide a range of roosting sites suitable for the bats needs across the seasons.

Once Morning Glory removal has been completed bat boxes should be assessed for condition and suitability of location; repair, removal, relocations or maintenance of boxes should be undertaken as required to increase the appeal of roosts to bats. As there is currently no single compile of information of bat boxes at the reserve, it is recommended once weed control is completed an amalgamated record of all bat boxes in the wetland is created for use in future monitoring and management.

Bird boxes could also be installed in the Wetland to provide roosting habitat for cockatoos and owls; BirdLife Australia has released a publication detailing the recommended dimensions and designs for target species (BirdLife Australia, 2018).

The salt scald areas where *Melaleuca raphiophylla* are declining are recommended to be revegetated with salt tolerant species as described in the *Hydrogeological Investigation at Baigup Reserve* (Haasbroek A., 2015). It is recommended that monitoring of revegetation occur particularly in these areas to ensure successful rehabilitation of the area, with species that do not tolerate the conditions replaced with other suitable salt tolerant species.

6.2.3 Fauna Habitat Protection During Wetland Management

Fire and weed control management within Baigup Wetland Reserve should take into consideration reptile, amphibian and invertebrate habitat, and reduce the amount of vegetation, leaf litter and logs removed from the reserve. For example, when undertaking woody weed control there is a potential for logs to be left on site to provide habitat, and smaller limbs with foliage containing seed/flowers removed. A staged approach to both weed control and revegetation would reduce the impact to native fauna habitat, so that large areas are not left devoid of vegetation for extended periods.

6.3 Fauna Surveys

Comprehensive fauna surveys should occur every 5 years so that data can be compared to previous outcomes to monitor changes over time and to monitor the presence of feral species. Survey outcomes should be used to guide future planning for the management of the reserve.

6.4 Visitor Management

With areas to be opened to foot traffic through weed control activities and expected local populations increases, visitor management may have impacts on revegetation success and habitat management. Temporary or permanent fencing could be installed at the reserve to limit visitor access into the vegetation; this would also limit access to domestic dogs (dependent on size of dog and fence design). Fence design should consider fauna movement by either leaving a gap between the fence mesh and the ground of a suitable size for the native species present; or use a fence mesh with an aperture wide enough to allow animals to pass through without becoming stuck.

7.0 References

Animal Welfare (General) Regulations 2003 (WA)

Bender R. (2012) *Boxes for Bats*. Australasian Bat Society Inc., retrieved May 2018 from:
<http://ausbats.org.au/bat-boxes/4569171999>

Biodiversity Conservation Act 2016 (WA)

Biosecurity and Agriculture Management Act 2007 (WA)

BirdLife Australia (2018) *Nest Boxes – Technical Information*, retrieved May 2018 from
http://birdlife.org.au/images/uploads/education_sheets/INFO-Nestbox-technical.pdf

Bureau of Meteorology, (2018), *Climate Data Online*, retrieved February 2018 from:
<http://www.bom.gov.au/climate/data/>.

Cat Act 2011 (WA)

City of Bayswater Keeping and Control of Cats Local Law, (2016), retrieved February 2018 from:
<http://www.bayswater.wa.gov.au/cproot/5825/2/Cats-Local-Law.pdf>.

CSIRO (2018), *Insect Identification Resources Online*, retrieved in February 2018 from:
<https://www.csiro.au/en/Research/Collections/ANIC/ID-Resources>.

Department of Agriculture and Food (WA), (2017), *SLIP NRM Portal*, retrieved June 2017 from:
<http://maps.agric.wa.gov.au/nrminfo/>.

Department of Biodiversity, Conservation and Attractions, (2017a), *Geomorphic Wetlands of the Swan Coastal Plain*, retrieved June 2017 from : <https://catalogue.data.wa.gov.au/dataset/geomorphic-wetlands-swan-coastal-plain>.

Department of Biodiversity, Conservation and Attractions, (2017b), *NatureMap Report, 2 km search buffer area*, retrieved in February 2017 from <http://naturemap.dpaw.wa.gov.au/default.aspx>.

Department of the Environment and Energy, (2017a), *Categories of Threatened Species*, retrieved June 2017 from: <http://www.environment.gov.au/biodiversity/threatened/species.html>.

Department of the Environment and Energy, (2017b), *Protected Matters Search Tool Report*, retrieved June 2017 from: <http://www.environment.gov.au/epbc/pmst/>.

Department of the Environment and Energy, (2018), *Threatened species and ecological communities – Subtropical and Temperate Coastal Saltmarsh*, viewed March 2018 from:
<http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=118>.

Department of Parks and Wildlife, (2017), *Conservation Codes*, retrieved June 2017 from:
http://www.dpaw.wa.gov.au/images/documents/plants-animals/threatenedspecies/Listings/Conservation_code_definitions_18092013.pdf.

Department of Primary Industries and Regional Development, (2018), *Fox Control*, viewed March 2018 from:
<https://www.agric.wa.gov.au/chemicals/fox-control?page=0%2C1>.

Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)

Environmental Protection Authority, (2010), *Technical Guide – Terrestrial Vertebrate Fauna Survey for Environmental Impact Assessment* viewed October 2017 from:
http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Sampling-TV-fauna-Dec2016.pdf

Framenau, V.W., Baehr, B. C., Zborowski, P., (2014) *A Guide to the Spiders of Australia*, Reed and New Holland Publishers Pty Ltd, 1/66 Gibbes Street, Chatswood, NSW, Australia.

GHD, (2015), Baigup Wetland Reserve Management Plan 2014-2024, unpublished report prepared for the City of Bayswater.

Gole, C. A. 2004. *Bird surveys in selected Perth metropolitan reserves: Rounds 1 and 2 survey reports. Part A: Main Report*. Initiated by Perth Biodiversity Project and Birds Australia.
<http://pbp.walga.asn.au/Publications/BirdSurveys/BirdSurveysinSelectedPerthMetropolitanReservesRounds1and2SurveyReports.html>

Government of Western Australian, (2000), *Bush Forever, Volume 2*, Government of Western Australia, Perth, Western Australia.

Knowles, D., White, G., (2005), *Guide to Wildlife of the Perth Region: Invertebrates*, Simon Nevill Publications, Perth, WA, Australia.

Haasbroek A., (2016), *Hydrogeological Investigation at Baigup Reserve*, thesis paper.

Lee, P., Clarke, M. (2018) *Baigup Local Residents Fauna Survey Report. SNRM Community Action Grant: Project A16045*. (Unpublished report for State Natural Resources Management). Baigup Wetland Interest Group.

Mitchell, D., Williams, K., and Desmond, A., (2002), *Swan Coastal Plain 2 (SWA2 – Swan Coastal Plain Subregion)*, Retrieved November 2014 from <http://www.dpaw.wa.gov.au/about-us/science-and-research/biological-surveys/117-a-biodiversity-audit-of-wa>.

Regeneration Technology. 1994. *Baigup Wetland Reserve Draft Management Plan: M51 – Garratt Road foreshore (Hinds Reserve – Kelvin Street)*. (Principal consultant Dr. Kathy Meney). Unpublished report for M51 Management Plan Planning Committee, Department of Planning and Urban Development). [Note: Baigup forms the main part of the M51 reserve as described in the *System Six* report of 1983]

Ritcher R. (2018) *Australian Dragonfly Identification Key*, viewed October 2017 from: <http://rnr.id.au/cgi-bin/species/odonata>

SERCUL, (2012), *Macroinvertebrate Herpetofauna of the Canning Catchment*, SERCUL Inc., 69 Horley Road, Beckenham, WA, Australia.

Siemon, Nicole, Juliet Wege and Yann Toussaint. 1991. *The Garratt Road Wetland: A site assessment and recommendations for its future management*. Unpublished report for Environmental Management 304 course. November 1991. University of Western Australia.

Western Australian Local Government Association, (2017), *Environmental Planning Tool*, retrieved June 2017 from: http://lbp.asn.au/index_public.html.

Wildlife Conservation Act 1950 (WA)

Zborowski, P., Storey, R., (2010) *A Field Guide to Insects in Australia*, Reed and New Holland Publishers Pty Ltd, 1/66 Gibbes Street, Chatswood, NSW, Australia.

Appendix 1: Weather Conditions during survey period

Data taken from the Perth Airport (station 009021). Shaded areas are trapping periods.

Date	Min temp (°C)	Max temp (°C)	Rainfall (mm)	Max wind speed (km/h)	Max wind speed direction
26-10-17	13.3	20.9	1.2	67	WNW
27-10-17	8.4	19.3	2	44	WSW
28-10-17	14	20.5	1	52	WSW
29-10-17	12.6	20.6	0.8	54	SW
30-10-17	7.9	27.5	0	35	WSW
31-10-17	8.7	29.3	0	39	SW
01-11-17	15	30.5	0	44	SE
02-11-17	14.7	27.6	0	46	E
03-11-17	13.6	26.9	0	43	ESE
04-11-17	14.8	30.7	0	69	E
05-11-17	15.2	31.1	0	67	E
06-11-17	14.9	32.7	0	67	E
07-11-17	17.3	36.4	0	59	E
05-01-18	12.8	27	0	54	SW
06-01-18	11.3	28.6	0	43	SSE
07-01-18	13.1	32	0	44	WSW
08-01-18	16.9	34.5	0	56	SE
09-01-18	18.1	36	0	52	ESE
10-01-18	18.6	29.1	0	54	SW
11-01-18	17.1	24.4	0	57	SW
12-01-18	9.1	27.6	0	50	SW
13-01-18	18.9	37.7	0	52	ENE
14-01-18	20.7	38.2	0	56	E
15-01-18	20.3	26.8	0.6	74	ENE
16-01-18	18.5	32.3	82.6	72	E
17-01-18	21.2	27.1	0	37	SW
18-01-18	18.7	29.1	0.6	35	SSW
19-01-18	15.7	30.5	0	50	ESE
20-01-18	18.9	35.5	0	59	E
21-01-18	19.2	33.6	0	52	ESE
22-01-18	19.8	34.1	0	43	ESE
23-01-18	21.2	35	0	48	SE
24-01-18	19.3	34.5	0	54	SE
25-01-18	17.9	32.1	0	46	SW
26-01-18	15.7	32.3	0	39	WSW
27-01-18	17.9	28.6	0	56	SW
28-01-18	18.2	29	0	59	ESE
29-01-18	15.5	30.2	0	63	ESE
30-01-18	16	30.1	0	67	SE
31-01-18	16.9	31.1	0	57	E
01-02-18	18.6	32.3	0	43	E
02-02-18	23.5	32.4	0	50	ENE

(Source: Bureau of Meteorology, 2018)

Appendix 2: Conservation Codes

Western Australia

Conservation Code	Name	Description
T	Threatened	Flora or fauna that is rare or likely to become extinct (Schedule 1 of the <i>Wildlife Conservation Act 1950</i>) Taxa that have been adequately searched for and 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.
X	Presumed Extinct	Flora or fauna that is presumed to be extinct in the wild (Schedule 2 of the <i>Wildlife Conservation Act 1950</i>) Taxa which have been adequately searched for and there is no reasonable doubt that the last individual has died, and have been gazetted as such.
IA	International Agreement	Birds protected under international agreement (Schedule 3 of the <i>Wildlife Conservation Act 1950</i>) Birds that are subject to an agreement between governments of Australia and other countries relating to the protection of migratory birds and birds in danger of extinction
S	Specially Protected	Other specially protected fauna (Schedule 4 of the <i>Wildlife Conservation Act 1950</i>) Fauna that is in need of special protection, otherwise than for the reasons listed in other schedules of the <i>Wildlife Conservation Act 1950</i> .
<i>Schedule 1 species that are ranked by the DPaW according to their level of threat using IUCN Red List criteria</i>		
CR	Critically endangered	Species considered to be facing an extremely high risk of extinction within the wild
EN	Endangered	Species considered to be facing a very high risk of extinction within the wild
VU	Vulnerable	Species considered to be facing a high risk of extinction in the wild
<i>Taxa that have not been adequately surveyed for listing under Schedule 1 or 2 of the Wildlife Protection Act are added to the Priority Lists under priorities 1, 2 or 3, according to the priority for further survey and evaluation of their conservation status.</i>		
1	Priority One	Poorly known taxa Taxa which are known from one or a few collections or sight records (generally <5), on all lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease 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.

Conservation Code	Name	Description
2	Priority Two	Poorly known taxa Taxa which 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, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar. 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
3	Priority Three	Poorly known taxa Taxa that are known collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large 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.
4	Priority Four	Rare or near threatened and other taxa in need of monitoring Rare: Taxa which 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. 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. Taxa that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

(Source: Department of Parks and Wildlife 2017)

Commonwealth

Category	Description
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

(Source: Department of the Environment and Energy, 2017a)

Appendix 3: NatureMap Report

NatureMap Species Report

Created By Guest user on 20/02/2017

Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 54' 41" E, 31° 55' 56" S
Buffer 2km
Group By Species Group

Species Group	Species	Records
Alga	1	1
Amphibian	6	15
Bird	141	12562
Dicotyledon	45	56
Fish	27	30
Fungus	1	1
Gymnosperm	1	1
Hepatic (Liverwort)	1	1
Invertebrate	24	50
Mammal	4	9
Monocotyledon	17	21
Reptile	20	159
TOTAL	288	12906

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Alga				
1.	26876 <i>Gracilaria verrucosa</i>			
Amphibian				
2.	25399 <i>Crinia glauerti</i> (Clicking Frog)			
3.	25400 <i>Crinia insignifera</i> (Squelching Froglet)			
4.	25410 <i>Heleioporus eyrei</i> (Moaning Frog)			
5.	25415 <i>Limnodynastes dorsalis</i> (Western Banjo Frog)			
6.	25378 <i>Litoria adelaidensis</i> (Slender Tree Frog)			
7.	25388 <i>Litoria moorei</i> (Motorbike Frog)			
Bird				
8.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
9.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
10.	24262 <i>Acanthiza inornata</i> (Western Thornbill)			
11.	24560 <i>Acanthorhynchus superciliosus</i> (Western Spinebill)			
12.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
13.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
14.	24282 <i>Accipiter fasciatus</i> subsp. <i>fasciatus</i> (Brown Goshawk)			
15.	25755 <i>Acrocephalus australis</i> (Australian Reed Warbler)			
16.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
17.	24310 <i>Anas castanea</i> (Chestnut Teal)			
18.	24312 <i>Anas gracilis</i> (Grey Teal)			
19.	24313 <i>Anas platyrhynchos</i> (Mallard)			
20.	24315 <i>Anas rhynchotis</i> (Australasian Shoveler)			
21.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
22.	25553 <i>Anhinga melanogaster</i> (Darter)			
23.	<i>Anhinga novaehollandiae</i>			
24.	<i>Anser anser</i>			
25.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
26.	24562 <i>Anthochaera lunulata</i> (Western Little Wattlebird)			
27.	25554 <i>Apus pacificus</i> (Fork-tailed Swift)		IA	
28.	24337 <i>Ardea garzetta</i> subsp. <i>nigripes</i> (Little Egret)			
29.	25558 <i>Ardea ibis</i> (Cattle Egret)		IA	
30.	41324 <i>Ardea modesta</i> (Eastern Great Egret)		IA	
31.	24340 <i>Ardea novaehollandiae</i> (White-faced Heron)			
32.	24341 <i>Ardea pacifica</i> (White-necked Heron)			
33.	24318 <i>Aythya australis</i> (Hardhead)			
34.	<i>Barnardius zonarius</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
35.	24319 <i>Biziura lobata</i> (Musk Duck)			
36.	25716 <i>Cacatua sanguinea</i> (Little Corella)			
37.	24729 <i>Cacatua tenuirostris</i> (Eastern Long-billed Corella)	Y		
38.	25598 <i>Cacomantis flabelliformis</i> (Fan-tailed Cuckoo)			
39.	42307 <i>Cacomantis pallidus</i> (Pallid Cuckoo)			
40.	24784 <i>Calidris ferruginea</i> (Curllew Sandpiper)		T	
41.	24786 <i>Calidris melanotos</i> (Pectoral Sandpiper)		IA	
42.	25717 <i>Calyptorhynchus banksii</i> (Red-tailed Black-Cockatoo)			
43.	24731 <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> (Forest Red-tailed Black-Cockatoo)		T	
44.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo (short-billed black-cockatoo), Carnaby's Cockatoo)		T	
45.	25625 <i>Carduelis carduelis</i> (Goldfinch, European Goldfinch)	Y		
46.	24480 <i>Carduelis carduelis</i> subsp. <i>britannica</i> (Goldfinch)	Y		
47.	24373 <i>Charadrius melanops</i> (Black-fronted Dotterel)			
48.	24377 <i>Charadrius ruficapillus</i> (Red-capped Plover)			
49.	24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck)			
50.	<i>Cheramoeca leucosterna</i>			
51.	<i>Chroicocephalus novaehollandiae</i>			
52.	24288 <i>Circus approximans</i> (Swamp Harrier)			
53.	24774 <i>Cladorhynchus leucocephalus</i> (Banded Stilt)			
54.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
55.	24399 <i>Columba livia</i> (Domestic Pigeon)	Y		
56.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
57.	25592 <i>Corvus coronoides</i> (Australian Raven)			
58.	24671 <i>Coturnix pectoralis</i> (Stubble Quail)			
59.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
60.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
61.	24322 <i>Cygnus atratus</i> (Black Swan)			
62.	30901 <i>Dacelo novaeguineae</i> (Laughing Kookaburra)	Y		
63.	25607 <i>Dicaeum hirundinaceum</i> (Mistletoebird)			
64.	<i>Egretta garzetta</i>			
65.	<i>Egretta novaehollandiae</i>			
66.	<i>Elanus axillaris</i>			
67.	<i>Euseyornis melanops</i>			
68.	<i>Eolophus roseicapillus</i>			
69.	24567 <i>Epthianura albigrons</i> (White-fronted Chat)			
70.	24379 <i>Erythronys cinctus</i> (Red-kneed Dotterel)			
71.	25621 <i>Falco berigora</i> (Brown Falcon)			
72.	25622 <i>Falco cenchroides</i> (Australian Kestrel)			
73.	25623 <i>Falco longipennis</i> (Australian Hobby)			
74.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
75.	25727 <i>Fulica atra</i> (Eurasian Coot)			
76.	24761 <i>Fulica atra</i> subsp. <i>australis</i> (Eurasian Coot)			
77.	25729 <i>Gallinula tenebrosa</i> (Dusky Moorhen)			
78.	24763 <i>Gallinula tenebrosa</i> subsp. <i>tenebrosa</i> (Dusky Moorhen)			
79.	24764 <i>Gallinula ventralis</i> (Black-tailed Native-hen)			
80.	25730 <i>Gallirallus philippensis</i> (Buff-banded Rail)			
81.	42314 <i>Gavicalis virescens</i> (Singing Honeyeater)			
82.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
83.	30918 <i>Glossopsitta concinna</i> (Musk Lorikeet)	Y		
84.	24735 <i>Glossopsitta porphyrocephala</i> (Purple-crowned Lorikeet)			
85.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
86.	24487 <i>Haematopus longirostris</i> (Pied Oystercatcher)			
87.	24295 <i>Haliastur sphenurus</i> (Whistling Kite)			
88.	24689 <i>Halobaena caerulea</i> (Blue Petrel)			
89.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
90.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
91.	<i>Hydroprogne caspia</i>			
92.	<i>Ixobrychus dubius</i>			
93.	25659 <i>Lichenostomus leucotis</i> (White-eared Honeyeater)			
94.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
95.	24326 <i>Malacorhynchus membranaceus</i> (Pink-eared Duck)			
96.	25651 <i>Malurus lamberti</i> (Variegated Fairy-wren)			
97.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
98.	25758 <i>Megalurus gramineus</i> (Little Grassbird)			
99.	25663 <i>Melithreptus brevirostris</i> (Brown-headed Honeyeater)			
100.	24586 <i>Melithreptus brevirostris</i> subsp. <i>leucogenys</i> (Brown-headed Honeyeater)			
101.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)		IA	
102.	<i>Microcarbo melanoleucos</i>			
103.	25748 <i>Ninox novaeseelandiae</i> (Boobook Owl)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
104.	25564 <i>Nycticorax caledonicus</i> (Rufous Night Heron)			
105.	24328 <i>Oxyura australis</i> (Blue-billed Duck)		P4	
106.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
107.	<i>Pandion cristatus</i>			
108.	25543 <i>Pandion haliaetus</i> (Osprey)			
109.	25681 <i>Pardalotus punctatus</i> (Spotted Pardalote)			
110.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
111.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)			
112.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
113.	25698 <i>Phalacrocorax melanoleucos</i> (Little Pied Cormorant)			
114.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
115.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
116.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
117.	24596 <i>Phylidonyris novaehollandiae</i> (New Holland Honeyeater)			
118.	24841 <i>Platalea flavipes</i> (Yellow-billed Spoonbill)			
119.	24842 <i>Platalea regia</i> (Royal Spoonbill)			
120.	24747 <i>Platycercus spurius</i> (Red-capped Parrot)			
121.	24679 <i>Podargus strigoides</i> subsp. <i>brachypterus</i> (Tawny Frogmouth)			
122.	25704 <i>Podiceps cristatus</i> (Great Crested Grebe)			
123.	24681 <i>Poliiocephalus poliocephalus</i> (Hoary-headed Grebe)			
124.	25731 <i>Porphyrio porphyrio</i> (Purple Swamphen)			
125.	24767 <i>Porphyrio porphyrio</i> subsp. <i>bellus</i> (Purple Swamphen)			
126.	24769 <i>Porzana fluminea</i> (Australian Spotted Crane)			
127.	25732 <i>Porzana pusilla</i> (Baillon's Crane)			
128.	24771 <i>Porzana tabuensis</i> (Spotless Crane)			
129.	<i>Purpureicephalus spurius</i>			
130.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
131.	<i>Serinus canarius</i>			
132.	30948 <i>Smicrornis brevirostris</i> (Weebill)			
133.	24645 <i>Stagonopleura oculata</i> (Red-eared Firetail)			
134.	24530 <i>Sterna nereis</i> subsp. <i>nereis</i> (Fairy Tern)		T	
135.	24329 <i>Stictonetta naevosa</i> (Freckled Duck)			
136.	25597 <i>Strepera versicolor</i> (Grey Currawong)			
137.	25589 <i>Streptopelia chinensis</i> (Spotted Turtle-Dove)	Y		
138.	25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove)	Y		
139.	25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
140.	24682 <i>Tachybaptus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
141.	24331 <i>Tadorna tadornoides</i> (Australian Shelduck, Mountain Duck)			
142.	<i>Thalasseus bergii</i>			
143.	24844 <i>Threskiornis molucca</i> (Australian White Ibis)			
144.	24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
145.	25549 <i>Todiramphus sanctus</i> (Sacred Kingfisher)			
146.	25723 <i>Trichoglossus haematodus</i> (Rainbow Lorikeet)			
147.	24808 <i>Tringa nebularia</i> (Common Greenshank)		IA	
148.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silvereye)			

Dicotyledon

149.	19708 <i>Abutilon grandifolium</i>	Y		
150.	15481 <i>Acacia pulchella</i> var. <i>glaberrima</i>			
151.	30032 <i>Acacia saligna</i> subsp. <i>saligna</i>			
152.	2648 <i>Alternanthera denticulata</i> (Lesser Joyweed)			
153.	19713 <i>Campsis radicans</i>	Y		
154.	44535 <i>Campsis x tagliabuana</i>	Y		
155.	1742 <i>Casuarina obesa</i> (Swamp Sheoak, Kuli)			
156.	6214 <i>Centella asiatica</i>			
157.	7939 <i>Conyza bonariensis</i> (Flaxleaf Fleabane)	Y		
158.	7438 <i>Dampiera eriocephala</i> (Woolly-headed Dampiera)			
159.	5187 <i>Elatine gratioloides</i> (Waterwort)			
160.	14289 <i>Epilobium tetragonum</i> subsp. <i>tetragonum</i>	Y		
161.	5763 <i>Eucalyptus rudis</i> (Flooded Gum, Kulurda)			
162.	18085 <i>Eucalyptus utilis</i>			
163.	6587 <i>Gomphocarpus fruticosus</i> (Narrowleaf Cottonbush)	Y		
164.	11051 <i>Gomphocarpus physocarpus</i>	Y		
165.	2216 <i>Hakea varia</i> (Variable-leaved Hakea)			
166.	3961 <i>Hardenbergia comptoniana</i> (Native Wisteria)			
167.	4926 <i>Hibiscus diversifolius</i>	Y		
168.	6620 <i>Ipomoea cairica</i> (Coast Morning Glory)	Y		
169.	4010 <i>Jacksonia floribunda</i> (Holly Pea)			
170.	4044 <i>Kennedia prostrata</i> (Scarlet Runner)			
171.	4063 <i>Lotus uliginosus</i> (Greater Lotus)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
		Y		
172.	13280 <i>Melaleuca viminea</i> subsp. <i>viminea</i>			
173.	7289 <i>Myoporum caprarioides</i> (Slender Myoporum)			
174.	6185 <i>Myriophyllum aquaticum</i> (Brazilian Water Milfoil)	Y		
175.	3618 <i>Paraserianthes lophantha</i> (Albizia)			
176.	5225 <i>Passiflora filamentosa</i>	Y		
177.	13911 <i>Persicaria decipiens</i>			
178.	2938 <i>Ranunculus trilobus</i> (Buttercup)	Y		
179.	3061 <i>Raphanus raphanistrum</i> (Wild Radish)	Y		
180.	3062 <i>Raphanus sativus</i> (Radish)	Y		
181.	10931 <i>Rosa chinensis</i> x <i>moschata</i>	Y		
182.	20063 <i>Salix babylonica</i>	Y		
183.	44534 <i>Salix humboldtiana</i>	Y		
184.	6484 <i>Samolus repens</i> (Creeping Brookweed)			
185.	2593 <i>Sarcocornia quinqueflora</i> (Beaded Samphire)			
186.	45036 <i>Solidago chilensis</i>	Y		
187.	4716 <i>Stachystemon vermicularis</i>			
188.	2639 <i>Suaeda australis</i> (Seablite)			
189.	25902 <i>Symphotrichum squamatum</i> (Bushy Starwort)	Y		
190.	33236 <i>Tecticornia halocnemoides</i> (Shrubby Samphire)			
191.	33319 <i>Tecticornia indica</i> subsp. <i>bidens</i>			
192.	31718 <i>Tecticornia lepidosperma</i>			
193.	15725 <i>Verbesina encelioides</i>	Y		

Fish

194.	??			
195.	<i>Aldrichetta forsteri</i>			
196.	<i>Anoplocapros lenticularis</i>			
197.	<i>Apogon victoriae</i>			
198.	<i>Aracana aurita</i>			
199.	<i>Bostockia porosa</i>			
200.	<i>Cheilodactylus gibbosus</i>			
201.	<i>Chelmonops curiosus</i>			
202.	<i>Cnidoglanis macrocephalus</i>			
203.	<i>Coris auricularis</i>			
204.	<i>Diodon nichthemerus</i>			
205.	<i>Enoplosus armatus</i>			
206.	<i>Epinephelides armatus</i>			
207.	<i>Gerres subfasciatus</i>			
208.	<i>Microcanthus strigatus</i>			
209.	<i>Nannoperca vittata</i>			
210.	<i>Notolabrus parilus</i>			
211.	<i>Parma microlepis</i>			
212.	<i>Pempheris klunzingeri</i>			
213.	<i>Platax teira</i>			
214.	<i>Plotosus unicolor</i>			Y
215.	<i>Pseudocaranx dentex</i>			
216.	<i>Scorpis aequipinnis</i>			
217.	<i>Scorpis georgianus</i>			
218.	<i>Threpterus maculosus</i>			
219.	<i>Tilodon sexfasciatum</i>			
220.	<i>Trygonoptera ovalis</i>			

Fungus

221.	<i>Phytophthora cinnamomi</i>			
------	-------------------------------	--	--	--

Gymnosperm

222.	85 <i>Macrozamia riedlei</i> (<i>Zamia</i> , Djiridji)			
------	---	--	--	--

Hepatic (Liverwort)

223.	<i>Paracromastigum longiscyphum</i>			
------	-------------------------------------	--	--	--

Invertebrate

224.	<i>Austracantha minax</i>			
225.	<i>Cormocephalus aurantiipes</i>			
226.	<i>Cormocephalus turneri</i>			
227.	<i>Cyclosa trilobata</i>			
228.	<i>Eriophora biapicata</i>			
229.	<i>Ethmostigmus rubripes</i>			
230.	<i>Hogna immansueta</i>			
231.	<i>Holocnemus pluchei</i>			
232.	<i>Isopeda leishmanni</i>			
233.	<i>Lampona cylindrata</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
234.	<i>Latrodectus hasseltii</i>			
235.	<i>Lycidas michaelsoni</i>			
236.	<i>Lycosa godeffroyi</i>			
237.	<i>Maratus pavonis</i>			
238.	<i>Missulena granulosa</i>			
239.	<i>Missulena occatoria</i>			
240.	<i>Nephila edulis</i>			
241.	<i>Nicodamus mainae</i>			
242.	<i>Oecobius navus</i>			
243.	<i>Ostearius melanopygius</i>			
244.	<i>Pholcus phalangioides</i>			
245.	<i>Scolopendra morsitans</i>			
246.	<i>Urodacus novaehollandiae</i>			
247.	<i>Venatrix pullastra</i>			

Mammal

248.	24215	<i>Hydromys chrysogaster</i> (Water-rat)		P4
249.	24153	<i>Isoodon obesulus</i> subsp. <i>fusciventer</i> (Quenda, Southern Brown Bandicoot)		P5
250.	24207	<i>Tachyglossus aculeatus</i> (Short-beaked Echidna)		
251.	24158	<i>Trichosurus vulpecula</i> subsp. <i>vulpecula</i> (Common Brushtail Possum)		

Monocotyledon

252.	17659	<i>Alocasia brisbanensis</i>	Y	
253.	741	<i>Baumea articulata</i> (Jointed Rush)		
254.	1276	<i>Caesia micrantha</i> (Pale Grass Lily)		
255.	755	<i>Carex fascicularis</i> (Tassel Sedge)		
256.	32999	<i>Colocasia esculenta</i> var. <i>esculenta</i>	Y	
257.	283	<i>Cynodon dactylon</i> (Couch)	Y	
258.	806	<i>Cyperus polystachyos</i> (Bunchy Sedge)	Y	
259.	17838	<i>Dielsia stenostachya</i>		
260.	328	<i>Echinochloa colona</i> (Awnless Barnyard Grass)	Y	
261.	20216	<i>Ficinia nodosa</i> (Knotted Club Rush)		
262.	11922	<i>Juncus kraussii</i> subsp. <i>australiensis</i>		
263.	1188	<i>Juncus pallidus</i> (Pale Rush)		
264.	11911	<i>Laxmannia ramosa</i> subsp. <i>ramosa</i>		
265.	20774	<i>Musa acuminata</i>	Y	
266.	969	<i>Schoenoplectus validus</i> (Lake Club-rush)		
267.	17868	<i>Vallisneria nana</i>		
268.	1049	<i>Zantedeschia aethiopica</i> (Arum Lily)	Y	

Reptile

269.	24991	<i>Aprasia repens</i> (Sand-plain Worm-lizard)		
270.	42381	<i>Brachyurophis semifasciatus</i> (Southern Shovel-nosed Snake)		
271.	43380	<i>Chelodina colliei</i> (Oblong Turtle)		
272.	24980	<i>Christinus marmoratus</i> (Marbled Gecko)		
273.	30893	<i>Cryptoblepharus buechananii</i>		
274.	25020	<i>Cryptoblepharus plagiocephalus</i>		
275.	25027	<i>Ctenotus australis</i>		
276.	25047	<i>Ctenotus impar</i>		
277.	25251	<i>Echiopsis curta</i> (Bardick)		
278.	25165	<i>Lerista praepedita</i>		
279.	25005	<i>Lialis burtonis</i>		
280.	25184	<i>Menetia greyii</i>		
281.	25248	<i>Neelaps bimaculatus</i> (Black-naped Snake)		
282.	25249	<i>Neelaps calonotos</i> (Black-striped Snake)		P3
283.	25252	<i>Notechis scutatus</i> (Tiger Snake)		
284.	25511	<i>Pseudonaja affinis</i> (Dugite)		
285.	25259	<i>Pseudonaja affinis</i> subsp. <i>affinis</i> (Dugite)		
286.	25008	<i>Pygopus lepidopodus</i> (Common Scaly Foot)		
287.	25266	<i>Simoselaps bertholdi</i> (Jan's Banded Snake)		
288.	25203	<i>Tiliqua occipitalis</i> (Western Bluetongue)		

Conservation Codes

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

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

Appendix 4: Protected Matters Search Tool



EPBC Act Protected Matters Report

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

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

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

Report created: 09/03/17 19:08:46

[Summary](#)

[Details](#)

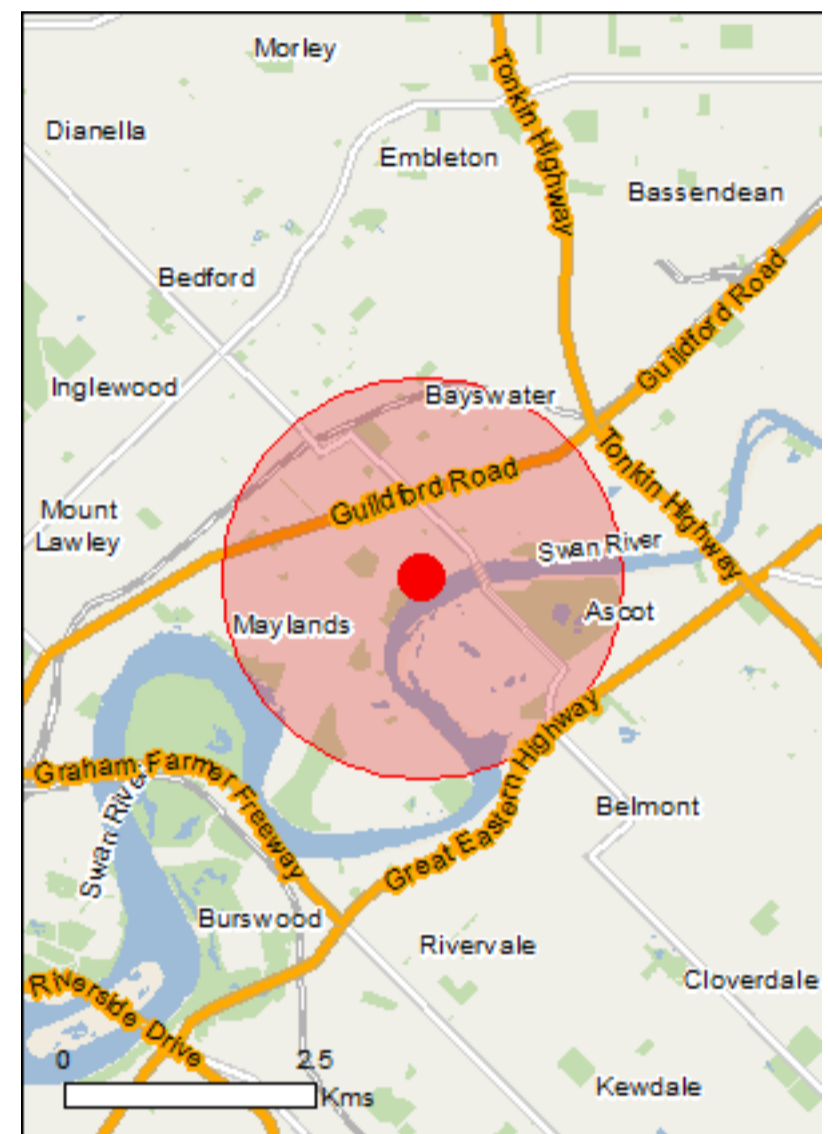
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

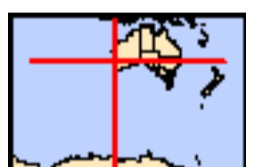
[Acknowledgements](#)



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

[Coordinates](#)

Buffer: 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](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	37
Listed Migratory Species:	19

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	27
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	41
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[[Resource Information](#)]

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

Name	Status	Type of Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species

[[Resource Information](#)]

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta steadi White-capped Albatross [82344]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Mammals		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Vulnerable	Species or species habitat likely to occur within area
Plants		
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Anigozanthos viridis subsp. terraspectans Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat may occur within area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat likely to occur within area
Calytrix breviseta subsp. breviseta Swamp Starflower [23879]	Endangered	Species or species habitat may occur within area
Conospermum undulatum Wavy-leaved Smokebush [24435]	Vulnerable	Species or species habitat likely to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat may occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area
Drakaea elastica Glossy-leaved Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur

Name	Status	Type of Presence within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat may occur within area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area
Lepidosperma rostratum Beaked Lepidosperma [14152]	Endangered	Species or species habitat likely to occur within area
Thelymitra dedmaniarum Cinnamon Sun Orchid [65105]	Endangered	Species or species habitat may occur within area
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat may occur within area

Reptiles

Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area

Listed Migratory Species

[[Resource Information](#)]

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

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

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

Name
Commonwealth Land -

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

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

Name	Threatened	Type of Presence
Birds		

Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
--	------------	--

Name	Threatened	Type of Presence
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within

Name	Threatened	Type of Presence area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area

Extra Information

Invasive Species [\[Resource Information \]](#)

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

Name	Status	Type of Presence
Birds		
<i>Acridotheres tristis</i> Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
<i>Anas platyrhynchos</i> Mallard [974]		Species or species habitat likely to occur within area
<i>Carduelis carduelis</i> European Goldfinch [403]		Species or species habitat likely to occur within area
<i>Columba livia</i> Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
<i>Passer domesticus</i> House Sparrow [405]		Species or species

Name	Status	Type of Presence
Passer montanus Eurasian Tree Sparrow [406]		habitat likely to occur within area Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		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		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus declinatus Bridal Veil, Bridal Veil Creeper, Pale Berry Asparagus Fern, Asparagus Fern, South African Creeper [66908]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Asparagus plumosus Climbing Asparagus-fern [48993]		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
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to 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 likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Protasparagus densiflorus Asparagus Fern, Plume Asparagus [5015]		Species or species habitat likely to occur within area
Protasparagus plumosus Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to 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 reichardtii 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
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat likely to occur within area
Nationally Important Wetlands		[Resource Information]
Name		State
Swan-Canning Estuary		WA

Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-31.93251 115.91092

Acknowledgements

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

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

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

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

Appendix 5: BirdLife Western Australia Bird Species List

The table below list the results from BirdLife Western Australia surveys undertaken within Baigup Wetland Reserve in 2003 and 2012 – 2018. It has been reproduced in the order in which it was provided.

Scientific Name	Common Name	BLA 2012-2018	BLA 2003
<i>Biziura lobata</i>	Musk Duck	X	
<i>Stictonetta naevosa</i>	Freckled Duck	X	
<i>Cygnus atratus</i>	Black Swan	X	X
<i>Tadorna tadornoides</i>	Australian Shelduck	X	X
<i>Chenonetta jubata</i>	Australian Wood Duck	X	
<i>Malacorhynchus membranaceus</i>	Pink-eared Duck	X	
<i>Anas rhynchotis</i>	Australasian Shoveler	X	X
<i>Anas gracilis</i>	Grey Teal	X	X
<i>Anas castanea</i>	Chestnut Teal	X	
	Domestic Duck	X	
<i>Anas superciliosa</i>	Pacific Black Duck	X	X
<i>Aythya australia</i>	Hardhead	X	X
<i>Tachybaptus novaehollandiae</i>	Australasian Grebe	X	X
<i>Podiceps cristatus</i>	Great Crested Grebe	X	
<i>Columba livia</i>	Rock Dove	X	
<i>Streptopelia senegalensis</i>	Laughing Dove	X	X
<i>Streptopelia chinensis</i>	Spotted Dove	X	X
<i>Ducula bicolor</i>	Pied Imperial-Pigeon	X	
<i>Anhinga melanogaster</i>	Darter	X	X
<i>Phalacrocorax melanoleucos</i>	Little Pied Cormorant	X	X
<i>Phalacrocorax carbo</i>	Great Cormorant	X	X
<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant	X	X
<i>Phalacrocorax varius</i>	Pied Cormorant	X	
<i>Pelecanus conspicillatus</i>	Australian Pelican	X	X
<i>Ardea alba modesta</i>	Eastern Great Egret	X	X
<i>Ardea novaehollandiae</i>	White-faced Heron	X	X
<i>Nycticorax caledonicus</i>	Nankeen Night-Heron	X	
<i>Threskiornis molucca</i>	Australian White Ibis	X	X
<i>Threskiornis spinicollis</i>	Straw-necked Ibis	X	
<i>Palateea flavipes</i>	Yellow-billed Spoonbill	X	X
<i>Pandion haliaetus</i>	Eastern Osprey	X	
<i>Elanus axillaris</i>	Black-shouldered Kite	X	X
<i>Haliastur sphenurus</i>	Whistling Kite	X	

Baigup Wetland Interest Group
Baigup Wetland Reserve Fauna Survey Report

Scientific Name	Common Name	BLA 2012-2018	BLA 2003
<i>Accipiter fasciatus</i>	Brown Goshawk	X	X
<i>Accipiter cirrhocephalus</i>	Collared Sparrowhawk	X	X
<i>Circus approximans</i>	Swamp Harrier	X	
<i>Hieraaetus morphnoides</i>	Little Eagle	X	
<i>Falco longipennis</i>	Australian Hobby	X	
<i>Falco peregrinus</i>	Peregrine Falcon	X	
<i>Porphyrio porphyrio bellus</i>	Purple Swampphen	X	X
<i>Gallirallus philippensis</i>	Buff-banded Rail	X	X
<i>Porzana tabuensis</i>	Spotless Crake	X	X
<i>Porzana fluminea</i>	Australian Spotted Crake	X	
<i>Gallinula tenebrosa</i>	Dusky Moorhen	X	X
<i>Fulica atra</i>	Eurasian Coot	X	X
<i>Cladorhynchus leucocephalus</i>	Banded Stilt	X	
<i>Eseyornis melanops</i>	Black-fronted Dotterel	X	X
<i>Stercorarius parasiticus</i>	Artic Jaeger	X	
<i>Sterna caspia</i>	Caspian Tern	X	X
<i>Sterna bergii</i>	Crested Tern	X	X
<i>Larus novachollandiae</i>	Silver Gull	X	X
<i>Calyptorhynchus banksii naso</i>	Red-tailed Black-Cockatoo	X	
<i>Calyptorhynchus latirostris</i>	Carnaby's Black-Cockatoo	X	
<i>Cacatua roseicapilla</i>	Galah	X	X
<i>Cacatua sanguinea westralensis</i>	Little Corella	X	
	Corella sp.	X	
<i>Trichoglossus haematodus</i>	Rainbow Lorikeet	X	X
<i>Barnardius zonarius</i>	Australian Ringneck	X	X
<i>Chrysococcyx basalis</i>	Horsfield's Bronze-Cuckoo	X	
<i>Chrysococcyx lucidus</i>	Shining Bronze Cuckoo	X	
<i>Ninox boobook</i>	Southern Boobook	X	
<i>Dacelo novaeguineae</i>	Laughing Kookaburra	X	X
<i>Todiramphus sanctus</i>	Sacred Kingfisher	X	X
<i>Merops ornatus</i>	Rainbow Bee-eater	X	X
<i>Malurus splendens</i>	Splendid Fairy-wren	X	
<i>Malurus lamberti</i>	Variegated Fairy-wren	X	
<i>Sericornis frontalis</i>	White-browed Scrubwren	X	
<i>Smicrornis brevirostris</i>	Weebill	X	
<i>Gerygone fusca</i>	Western Gerygone	X	X
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	X	
<i>Acanthiza apicalis</i>	Inland Thornbill	X	

Baigup Wetland Interest Group
Baigup Wetland Reserve Fauna Survey Report

Scientific Name	Common Name	BLA 2012-2018	BLA 2003
<i>Paradalotus</i>	Spotted Pardalote	X	
<i>Paradalotus striatus</i>	Striated Pardalote	X	X
<i>Lichenostomus virescens</i>	Singing Honeyeater	X	X
<i>Anthochaera carunculata</i>	Red Wattlebird	X	X
<i>Lichmera indistincta</i>	Brown Honeyeater	X	X
<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater	X	X
<i>Phylidonyris nigra gouldi</i>	White-cheeked Honeyeater	X	X
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	X	
<i>Pachycephala rufiventris</i>	Rufous Whistler	X	X
<i>Colluricincla harmonica rufiventris</i>	Grey Shrike-thrush	X	
<i>Cracticus torquatus</i>	Grey Butcherbird	X	
<i>Gymnorhina tibicen dorsalis</i>	Australian Magpie	X	X
<i>Rhipidura fuliginosa preissi</i>	Grey Fantail	X	X
<i>Rhipidura leucophrys</i>	Wille Wagtail	X	X
<i>Corvus coronoides</i>	Australian Raven	X	X
<i>Grallina cyanoleuca</i>	Magpie-lark	X	X
<i>Petroica goodenovii</i>	Red-capped Robin	X	
<i>Acrocephalus stentoreus</i>	Australian Reed-Warbler/Clamorous Reed-Warbler	X	X
<i>Megalurus gramineus</i>	Little Grassbird	X	X
<i>Zosterops lateralis chloronotus</i>	Silvereye	X	X
<i>Hirundo neoxena</i>	Welcome Swallow	X	X
<i>Hirundo nigricans neglecta</i>	Tree Martin	X	X
<i>Dicaeum hirundinaceum</i>	Mistletoebird	X	X
<i>Neochima</i>	Crimson Finch	X	
<i>Oxyura australis</i>	Blue-billed Duck		X
<i>Poliiocephalus poliocephalus</i>	Hoary-headed Grebe		X
<i>Porzana pusilla</i>	Baillon's Crake	X	X
<i>Actitis hypoleucos</i>	Common Sandpiper		X
<i>Erythrogonys cinctus</i>	Red-Kneed Dotterel		X
<i>Himantopus himantopus</i>	Black-winged Stilt		X
<i>Cacomantis flabelliformis</i>	Fan-Tailed Cuckoo		X
<i>Anthochaera lunulata</i>	Little Wattlebird (Western Wattlebird)		X
<i>Carduelis carduelis</i>	European Goldfinch		X

Appendix 6: Baigup Wetland Fauna Species List

*Denotes introduced species

Mammals:

Family	Species Name	Common Name	Comment
Canidae	* <i>Canis lupus familiaris</i>	Dog	Sighted on camera traps
Canidae	* <i>Vulpes vulpes</i>	Red Fox	Significant activity noted on camera traps
Felidae	* <i>Felis silvestris catus</i>	Cat	Sighted on camera traps
Rodentia	* <i>Rattus rattus</i>	Black Rat	Sighted in camera traps

Reptiles:

Family	Scientific name	Common Name
Chelidae	<i>Chelodina colliei</i>	Southwestern snake-neck turtle
Elapidae	<i>Pseudonaja affinis</i>	Dugite
Scincidae	<i>Acritoscincus trilineatus</i>	Western Three-lined Skink
Scincidae	<i>Cryptoblepharus pulcher</i>	Fence Skink
Scincidae	<i>Hemiergis quadrilineata</i>	Two-toed Earless Skink
Scincidae	<i>Lerista elegans</i>	Elegant Slider
Scincidae	<i>Lissolepis luctuosa</i>	Western Glossy Swamp Skink
Scincidae	<i>Menetia greyii</i>	Common Dwarf Skink
Scincidae	<i>Tiliqua ruosa rugosa</i>	Bobtail

Amphibians:

Family	Scientific name	Common Name
Hylidae	<i>Litoria moorei</i>	Motorbike Frog
Myobatrachidae	<i>Crinia georgiana</i>	Quacking Frog
Myobatrachidae	<i>Crinia glauerti</i>	Glauert's Froglet
Myobatrachidae	<i>Crinia insignifera</i>	Squelching Froglet
Myobatrachidae	<i>Limnodynastes dorsalis</i>	Western Banjo Frog

Terrestrial Invertebrates:

Order	Family	Species Name	Common name
Arachnids (Arachnida)			
Araneae	Deinopidae		Net-casting Spider
	Gnaphosidae		Ground Spider
	Lycosidae	<i>Artoriopsis expolita</i>	Wolf Spider
	Lycosidae		Wolf Spider
	Lycosidae	<i>Vanatrix sp.</i>	Wolf Spider 1
	Lycosidae	<i>Vanatrix sp.</i>	Wolf Spider 2
	Miturgidae	<i>Mituliodon tarantulus</i>	Prowling Spider
	Miturgidae		Prowling Spider 2
	Miturgidae	<i>Miturga sp.</i>	Prowling Spider 3
	Nephilidae	<i>Nephila edulis</i>	Golden Orb Spider

Order	Family	Species Name	Common name
	Pholcidae		Banded Daddy Long-legs 1
	Pholcidae		Daddy Long-legs 2
	Pisauridae	<i>Dolomedes sp.</i>	Fishing Spider sp. 1
	Pisauridae	<i>Dolomedes sp.</i>	Fishing Spider sp. 2
	Salticidae	<i>Maratus pavonis</i>	Common Peacock Spider
	Tetragnathidae	<i>Tetrantha sp.</i>	Long-jawed Spider
	Thomisidae	<i>Tharpyna campestrata</i>	Crab Spider
	Zodariidae		Ant-eating spiders
Araneae			Unidentified spider
Worms (Clitellata)			
Haplotaxida	Lumbricidae	<i>Aporrectodea caliginosa*</i>	Earthworm
Haplotaxida			Earthworm 2
Millipedes (Diplopoda)			
Julida	Julidae	<i>Ommatoiulus moreletii*</i>	Portuguese millipede
Snails and Slugs (Gastropoda)			
Limacoidea	Limacidae	<i>Ambigolimax valentianus*</i>	Three-band Gardenslug
Panpulmonata	Helicidae	<i>Cornu aspersum*</i>	Garden Snail
Insects (Insecta)			
Blattodea	Blattidae	<i>Cutilla nigra</i>	Black Bush Cockroach
Blattodea	Blattidae		Cockroach
Blattodea	Blattidae	<i>Drymapleneta semivitta</i>	Gisborne Coackroach
Coleoptera	Carabidae	<i>Notagonum submetallicum</i>	Carabeetle
Coleoptera	Carabidae	<i>Calosoma sp.</i>	Carab Beetle
Coleoptera	Coccinellidae		Lady Bug
Coleoptera	Curculionidae	<i>Rhinotia hemisticta</i>	Long-nosed Weevil
Coleoptera	Curculionidae		Weevil 1
Coleoptera	Curculionidae		Weevil 2
Coleoptera	Elateridae	<i>Conoderus sp.</i>	Click Beetle
Coleoptera	Heteroceridae		Mud-loving Beetle
Coleoptera	Scarabaeidae		Scarab beetle
Coleoptera	Staphylinidae	<i>Thyreocephalus chloropterus</i>	Glossy Swamp Rove Beetle
Coleoptera	Tenebrionidae	<i>Ecnolagria aeneoviolaceae</i>	Darkling Beetle
Coleoptera			Beetle
Dermaptera	Anisolabididae		Earwig
Diptera	Chiromidae		Midge
Diptera	Culicidae	<i>Aedes sp.</i>	Mosquito
Diptera	Muscidae	<i>Musca vetustisissima</i>	Australian Bush Fly
Diptera	Syrphidae	<i>Simosyrphus grandicornis</i>	Common Yellow Syrflly
Diptera	Tipulidae	<i>Gynoplista sp.</i>	Crane Fly
Hemiptera	Cicadellidae		Green Leaf Hopper
Hemiptera	Cicadellidae		Leaf Hopper 1
Hemiptera	Cicadellidae		Leaf Hopper 2
Hemiptera	Cicadidae		Cicada

Order	Family	Species Name	Common name
Hemiptera	Cydnidae	<i>Adrista sp.</i>	Burrowing Bug
Hemiptera	Miridae		Mirid Bug
Hemiptera	Pentatomidae		Shield Bug 1
Hemiptera	Pentatomidae		Shield Bug 2
Hemiptera	Pentatomidae		Shield Bug 3
Hemiptera	Pentatomidae	<i>Poecilometis sp.</i>	Shield Bug 4
Hemiptera	Phasmatodae		Stick Insect
Hymenoptera	Apidae	<i>Amegilla cingulata</i>	Blue-banded Bee
Hymenoptera	Apidae	<i>Apis mellifera*</i>	European Honey Bee
Hymenoptera	Formicidae	<i>Froggattella sp.</i>	Ant 1
Hymenoptera	Formicidae		Ant 2
Hymenoptera	Formicidae	<i>Camponotus sp.</i>	Carpenter ants
Hymenoptera	Formicidae		Flying Ant
Hymenoptera	Formicidae	<i>Rhytidoponera metallica</i>	Green-head Ant
Hymenoptera	Mutillidae	<i>Ephutomorpha sp.</i>	Flower Wasp
Hymenoptera	Pompilidae		Spider Wasp
Hymenoptera	Vespidae	<i>Polistes sp.</i>	Paper Wasp
Lepidoptera	Geometridae		Geomoth
Lepidoptera	Geometridae		Geomoth Caterpillar
Lepidoptera	Pieridae	<i>Pieris rapae</i>	Cabbage White Butterfly
Lepidoptera	Pieridae	<i>Delias aganippe</i>	Red-Spotted Jezebel
Lepidoptera			Moth
Lepidoptera			Unidentified black larvae
Lepidoptera			Unidentified green larvae
Neuroptera	Myrmeleontidae		Antlion Lacewing Larvae
Odonata	Aeshnidae	<i>Aeshna brevistyla</i>	Blue-spotted Hawker
Odonata	Coenagrionidae	<i>Ischnura aurora</i>	Aurora Bluetail
Odonata	Coenagrionidae	<i>Ischnura heterosticta</i>	Common Bluetail
Odonata	Coenagrionidae	<i>Austrolestes analis</i>	Slender Ringtail
Odonata	Coenagrionidae	<i>Austrothemis nigrescens</i>	Swamp Flat-Tail
Odonata	Hemicorduliidae	<i>Hemicordulia tau</i>	Tau Emerald Dragonfly
Odonata	Libellulidae	<i>Orthetrum caledonicum</i>	Blue Skimmer Dragonfly
Odonata			Dragonfly larvae 1
Odonata			Dragonfly larvae 2
Orthoptera	Acrididae		Cricket
Orthoptera	Acrididae	<i>Austracris guttulosa</i>	Spur-throated Locust
Orthoptera	Gryllidae	<i>Teleogryllus sp.</i>	Black Field Cricket
Orthoptera	Gryllotalpidae	<i>Gryllotalpa pluvialis</i>	Mole Cricket
Orthoptera	Pyrgomorphidae		Grasshopper
Crustaceans (Malacostraca)			
Amphipoda			Side Swimmer
Isopoda	Armadillidiidae	<i>Armadillidium vulgare*</i>	Introduced Rolling Slater
Isopoda	Porcellionidae	<i>Porcellio scaber</i>	Common Slater

Aquatic invertebrates:

Class	Order	Family	Scientific name	Common Name
Gastropoda	Hygrophila	Physidae		Water Snail 1
Gastropoda	Littorinimorpha	Hydrobiidae		Water Snail 2
Gastropoda	Littorinimorpha	Pomatiopsidae		Water Snail 3
Insecta	Coleoptera	Distichidae		Water Beetle
Insecta	Diptera	Chironomidae		Mideg Larvae
Insecta	Hemiptera	Corixidae		Water Boatmen
Insecta	Odonata	Petaluridae		Dragonfly Larvae 1
Insecta	Odonata	Petaluridae		Dragonfly Larvae 2
Insecta	Odonata	Zygoptera (Suborder)		Damselfly Larvae 1
Insecta	Odonata	Zygoptera (Suborder)		Damselfly Larvae 2
Insecta	Trichoptera			Caddisfly Larvae
Malacostraca	Decapoda	Palaemonidae	<i>Palaemonetes australis</i>	Glass Shrimp
Malacostraca	Decapoda	Parastacidae	<i>Cherax quinquecarinatus</i>	Gilgie
Malacostraca	Decapoda	Parastacidae	<i>Cherax destructor*</i>	Yabby
Malacostraca	Isopoda			Water Slater

Fish:

Order	Family	Scientific name	Common Name
Cypriniformes	Cyprinidae	<i>Cyprinus carpio*</i>	Common Carp
Cyprinodontiformes	Poeciliidae	<i>Gambusia holbrooki*</i>	Mosquitofish
Perciformes	Gobiidae	<i>Pseudogobius olorum</i>	Swan River Goby

Appendix 7: Bat Box Locations

No centralised record of bat boxes within Baigup Wetland exists; it is thought 18 boxes have been installed in the reserve, 10 by Joe Tonga in 2009 (grey with bat symbol), and 8 by Simon Cherriman around 2013 (green with simoncherriman.com stencilled on the side). GPS locations and a map of the 2005 bat boxes in provided below. In 2017, 13 boxes were located and recorded, the photo's and locations of these boxes are also provided below.

2009 Bat Boxes

Num	Name	Latitude	Longitude	Description
1	Maybat 002	-31.936090	115.908120	18-FEB-09 2:12:37PM
2	Maybat 009	-31.936080	115.908000	18-FEB-09 2:30:52PM
3	Maybat001	-31.936280	115.907920	18-FEB-09 2:21:40PM
4	Maybat003	-31.935510	115.908520	18-FEB-09 1:27:18PM
5	Maybat004	-31.935530	115.908500	18-FEB-09 1:35:32PM
6	Maybat005	-31.935360	115.908580	26-FEB-09 1:02:17PM
7	Maybat006	-31.935240	115.908690	18-FEB-09 1:13:53PM
8	Maybat007	-31.935770	115.908360	18-FEB-09 1:48:11PM
9	Maybat008	-31.935240	115.908680	18-FEB-09 1:17:32PM
10	Maybat010	-31.935900	115.908310	18-FEB-09 2:01:40PM















Figure 16: 2005 bat box locations

2017 Bat Box Record

Document provided by Mike Clarke 2017. Note GPS locations are of viewing points shown in left hand column. Boxes are as seen from these points. Cherriman boxes: 1-5 and 11-13. Tonga boxes: 6-10. Five Tonga boxes not located, likely obscured by vines in S-W corner of reserve.

Box	Location Image	Box Image
1		
	Lat: 31; 55; 52.7804 – Long: 115; 54; 55.41369	Facing NW
2		
	Lat: 31; 55; 53.15609 – long: 115; 54; 55.4306	Facing West
3		
	Walk West from Box 2 and on to the boardwalk	Looking West from the boardwalk

Box	Location Image	Box Image
4		
Lat: 31; 55; 58.53579 – Long: 115; 54; 40.3584		Facing East
5		
Lat: 31; 55; 58.4517 – Long: 115; 54; 40.29039		Facing West
6 And 7		
Lat: 31; 56; 5.5074 – Long: 115; 54; 30.00939		Looking towards the river

Box	Location Image	Box Image
8 And 9 And 10		
Lat: 31; 55; 59.44999 – Long: 115; 54; 40.80489		Looking West towards Maylands along the river
8		
Lat: 31; 56; 7.30349 – Long: 115; 54; 28.05459		Looking towards the river
9 Or 10		
		Looking towards the river

Box	Location Image	Box Image
11		
	Lat: 31; 55; 56.78109	Looking towards the river
12		
	Lat: 31; 55; 54.43949 – Long: 115; 54; 37.73889	Looking towards the river
13		
	Lat: 31; 55; 54.35109 – Long 115; 54; 38.15879	Looking towards the river

Appendix 8: Historically Recorded Fauna

The following appendix outlines fauna historically recorded in Baigup Wetland, as listed in Baigup Wetland Reserve Management Plan 2014-2024 (GHD, 2015).

Table C.1 Fauna species listed recorded at Baigup Reserve (various sources)

Group	Family	Taxon	Common name	Status	Source			
					Birds Australia (as cited in Randall and Storer 2010)	Seimon 1991 (as cited in Regeneration Technology 1994)	Anecdotal (BWIG and comments/number of sightings)	
Amphibians	Hylidae	<i>Litoria adelaidensis</i>	Slender Tree Frog			x	x	Small population
Amphibians	Hylidae	<i>Litoria moorei</i>	Motorbike Frog			X	x	Dispersed, small population
Amphibians	Limnodynastidae	<i>Heleioporus eyrei</i>	Moaning frog			x		Not heard
Amphibians	Limnodynastidae	<i>Limnodynastes dorsalis</i>	Pobblebonk/Western Banjo Frog			x	x	Dispersed, small population
Amphibians	Myobatrachidae	<i>Crinia georgiana</i>	Quacking Frog			x	x	Strong population
Amphibians	Myobatrachidae	<i>Crinia glauteri</i>	Clicking Frog			x	x	Dispersed, large population
Birds	Acanthizidae	<i>Acanthiza apicalis</i>	Inland Thornbill			x	BLWA	1
Birds	Acanthizidae	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill			x	BLWA	1
Birds	Acanthizidae	<i>Acanthiza inornata</i>	Western Thornbill			x	-	
Birds	Acanthizidae	<i>Smicrornis brevirostris</i>	Weebill				BLWA	3
BLWA	Acanthizidae	<i>Gerygone fusca</i>	Western Gerygone		x	x	BLWA	1
Birds	Accipitridae	<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk		x	x	BLWA	1
Birds	Accipitridae	<i>Accipiter fasciatus</i>	Brown Goshawk		x		BLWA	1
Birds	Accipitridae	<i>Circus approximans</i>	Swamp Harrier				BLWA	2

Group	Family	Taxon	Common name	Status	Source			
					Birds Australia (as cited in Randall and Storer 2010)	Seimon 1991 (as cited in Regeneration Technology 1994)	Anecdotal (BWIG and comments/number of sightings)	
Birds	Accipitridae	<i>Circus assimilis</i>	Spotted Harrier			x	-	
Birds	Accipitridae	<i>Elanus caeruleus</i>	Black-shouldered kite		x	x	BLWA	1 - regular
Birds	Accipitridae	<i>Haliastur sphenurus</i>	Whistling Kite			x	BLWA	2 - regular
Birds	Anatidae	<i>Anas castanea</i>	Chestnut Teal				BLWA	1
Birds	Anatidae	<i>Anas gracilis</i>	Grey teal		x		BLWA	8 – breeding /always
Birds	Anatidae	<i>Anas rhynchotis</i>	Australasian shoveler		x		BLWA	1 - regular
Birds	Anatidae	<i>Anas superciliosa</i>	Pacific Black Duck		x	x	BLWA	8 – breeding /always
Birds	Anatidae	<i>Aythya australis</i>	Hardhead		x		BLWA	2 - regular
Birds	Anatidae	<i>Chenonetta jubata</i>	Australian Wood Duck				BLWA	1 – breeding /regular
Birds	Anatidae	<i>Cygnus atratus</i>	Black Swan		x	x	BLWA	3 – breeding /regular
Birds	Anatidae	<i>Malacorhynchus membranaceus</i>	Pink-eared Duck				BLWA	Breeding
Birds	Anatidae	<i>Oxyura australis</i>	Blue-billed Duck				-	
Birds	Anatidae	<i>Tadorna tasdornoides</i>	Australian Shelduck		x	x	BLWA	6, regular
Birds	Anhingidae	<i>Anhinga melanogaster</i>	Darter		x	x	BLWA	7, frequent
Birds	Ardeidae	<i>Ardea garzetta</i>	Little Egret			x	-	
Birds	Ardeidae	<i>Ardea modesta</i>	Eastern Great Egret	S3, Mi	x		BLWA	6, regular
Birds	Ardeidae	<i>Ardea novaehollandiae</i>	White-faced Heron		x	x	BLWA	7, frequent
Birds	Ardeidae	<i>Ardea pacifica</i>	White-necked Heron			x	x	

Group	Family	Taxon	Common name	Status	Source			
					Birds Australia (as cited in Randall and Storer 2010)	Seimon 1991 (as cited in Regeneration Technology 1994)	Anecdotal (BWIG and comments/number of sightings)	
Birds	Ardeidae	<i>Ardea sacra</i>	Eastern Reef Heron	S3, Mi		x		
Birds	Ardeidae	<i>Nycticorax caledonicus</i>	Rufous Night Heron (Nankeen Night heron)			x	x	4, frequent
Birds	Cacatuidae	<i>Cacatua galerita</i>	Sulphur-crested Cockatoo	*		x	-	
Birds	Cacatuidae	<i>Cacatua roseicapilla</i>	Galah			x	BLWA	4
Birds	Cacatuidae	<i>Cacatua sanguinea</i>	Little Corella			x	BLWA	4
Birds	Cacatuidae	<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black Cockatoo	T, Vu		x	BLWA	2
Birds	Cacatuidae	<i>Calyptorhynchus baudinii</i>	Baudin's Black Cockatoo	T, Vu		x	-	
Birds	Cacatuidae	<i>Calyptorhynchus latirostris</i>	Carnaby's Black Cockatoo	T, En			BLWA	2
Birds	Campephagidae	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike		x	x	BLWA	6
Birds	Campephagidae	<i>Lalage tricolor</i>	White-winged triller		x		-	
Birds	Charadriidae	<i>Charadrius melanops</i>	Black-fronted dotterel		x		BLWA	5
Birds	Charadriidae	<i>Erythronyx cinctus</i>	Red-kneed dotterel		x		-	
Birds	Columbidae	<i>Columba livia</i>	Feral Pigeon	*			BLWA	5
Birds	Columbidae	<i>Streptopelia chinensis</i>	Spotted turtle-dove	*	x	x	BLWA	7
Birds	Columbidae	<i>Streptopelia senegalensis</i>	Laughing turtle-dove	*	x	x	BLWA	7
Birds	Corvidae	<i>Corvus bennetti</i>	Little Crow			x	-	
Birds	Corvidae	<i>Corvus coronoides</i>	Australian raven		x	x	BLWA	7, frequent
Birds	Cracticidae	<i>Cracticus tibicen</i>	Australian magpie		x	x	BLWA	6

Group	Family	Taxon	Common name	Status	Source			
					Birds Australia (as cited in Randall and Storer 2010)	Seimon 1991 (as cited in Regeneration Technology 1994)	Anecdotal (BWIG and comments/number of sightings)	
Birds	Cracticidae	<i>Cracticus torquatus</i>	Grey Butcherbird			x	BLWA	2
Birds	Cuculidae	<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo		x	x	-	
Birds	Dicaeidae	<i>Dicaeum hirundinaceum</i>	Mistletoebird		x	x	BLWA	6
Birds	Estrildidae	<i>Lonchura castaneothorax</i>	Chestnut-breasted Mannikin	*		x	-	
Birds	Falconidae	<i>Falco berigora</i>	Brown Falcon			x	-	
Birds	Falconidae	<i>Falco cenchroides</i>	Australian kestrel			x	-	
Birds	Falconidae	<i>Falco longipennis</i>	Australian Hobby			x	BLWA	7
Birds	Falconidae	<i>Falco subniger</i>	Black Falcon			x	-	
Birds	Fringillidae	<i>Carduelis carduelis</i>	European goldfinch	*	x		-	
Birds	Halcyonidae	<i>Dacelo novaeguineae</i>	Laughing Kookaburra	*	x	x	BLWA	2
Birds	Halcyonidae	<i>Todiramphus sanctus</i>	Sacred kingfisher			x		1
Birds	Hirundinidae	<i>Hirundo neoxena</i>	Welcome swallow		x	x	BLWA	2
Birds	Hirundinidae	<i>Hirundo nigricans</i>	Tree martin		x		BLWA	2
Birds	Laridae	<i>Larus novaehollandiae</i>	Silver gull		x	x	BLWA	6
Birds	Laridae	<i>Sterna bergii</i>	Crested tern		x	x	BLWA	5
Birds	Laridae	<i>Sterna caspia</i>	Caspian tern	S3, Mi		x	BLWA	6
Birds	Locustellidae	<i>Megalurus gramineus</i>	Little grassbird				BLWA	5
Birds	Maluridae	<i>Malurus lamberti</i>	Variegated Fairy-wren				BLWA	2
Birds	Maluridae	<i>Malurus splendens</i>	Splendid Fairy-wren			x	-	
Birds	Meliphagidae	<i>Acanthorhynchus</i>	Western Spinebill			x	-	

Group	Family	Taxon	Common name	Status	Source			
					Birds Australia (as cited in Randall and Storer 2010)	Seimon 1991 (as cited in Regeneration Technology 1994)	Anecdotal (BWIG and comments/number of sightings)	
		<i>superciliosus</i>						
Birds	Meliphagidae	<i>Anthochaera carunculata</i>	Red wattlebird		x	x	BLWA	7
Birds	Meliphagidae	<i>Anthochaera lunulata</i>	Little wattlebird		x	x	-	
Birds	Meliphagidae	<i>Gavicalis virescens</i>	Singing honeyeater		x	x	BLWA	8
Birds	Meliphagidae	<i>Lichmera indistincta</i>	Brown honeyeater		x	x	BLWA	8
Birds	Meliphagidae	<i>Melithreptus lunatus chloropsis</i>	Western White-naped Honeyeater			x	-	
Birds	Meliphagidae	<i>Phylidonyris nigra</i>	White-cheeked honeyeater		x		BLWA	4
Birds	Meliphagidae	<i>Phylidonyris novaehollandiae</i>	New Holland honeyeater		x		BLWA	5
Birds	Meropidae	<i>Merops ornatus</i>	Rainbow bee-eater	S3, Mi	x	x	BLWA	4, every year – seasonal
Birds	Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark		x	x	BLWA	6
Birds	Motacillidae	<i>Anthus australis</i>	Australian Pipit			x	-	
Birds	Pachycephalidae	<i>Colluricincla harmonica</i>	Grey Shrike-thrush				BLWA	1
Birds	Pachycephalidae	<i>Pachycephala pectoralis</i>	Golden Whistler			x	-	
Birds	Pachycephalidae	<i>Pachycephala rufiventris</i>	Rufous whistler		x	x	BLWA	5
Birds	Pandionidae	<i>Pandion cristatus</i>	Eastern Osprey				BLWA	2
Birds	Pardalotidae	<i>Pardalotus striatus</i>	Striated pardalote			x	BLWA	4
Birds	Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian pelican		x	x	BLWA	7
Birds	Petroicidae	<i>Petroica multicolor</i>	Scarlet Robin			x	-	

Group	Family	Taxon	Common name	Status	Source		
					Birds Australia (as cited in Randall and Storer 2010)	Seimon 1991 (as cited in Regeneration Technology 1994)	Anecdotal (BWIG and comments/number of sightings)
Birds	Phalacrocoracidae	<i>Phalacrocorax carbo</i>	Great cormorant		x	x	BLWA 3
Birds	Phalacrocoracidae	<i>Phalacrocorax melanoleucos</i>	Little pied cormorant		x	x	BLWA 8, frequent
Birds	Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	Little black cormorant		x	x	BLWA 8
Birds	Podicipedidae	<i>Poliiocephalus poliocephalus</i>	Hoary-headed grebe		x		-
Birds	Podicipedidae	<i>Tachybaptus novaehollandiae</i>	Australasian grebe		x (breeding)		BLWA 8
Birds	Psittacidae	<i>Platycercus zonarius</i>	Australian ringneck		x	x	BLWA 2
Birds	Psittacidae	<i>Trichoglossus haematodus</i>	Rainbow lorikeet	*	x		BLWA 7
Birds	Rallidae	<i>Fulica atra</i>	Eurasian coot		x	x	BLWA 8
Birds	Rallidae	<i>Gallinula tenebrosa</i>	Dusky moorhen		x	x	BLWA 8
Birds	Rallidae	<i>Gallirallus philippensis</i>	Buff-banded rail (breeding)		x	x	BLWA 1
Birds	Rallidae	<i>Porphyrio porphyrio</i>	Purple swamphen		x	x	BLWA 8, always
Birds	Rallidae	<i>Porzana pusilla</i>	Baillon's crake		x	x	-
Birds	Rallidae	<i>Porzana tabuensis</i>	Spotless crake		x	x	BLWA 1
Birds	Rallidae	<i>Tribonyx ventralis</i>	Black-tailed Native-hen			x	-
Birds	Recurvirostridae	<i>Himantopus himantopus</i>	Black-winged stilt		x		-
Birds	Recurvirostridae	<i>Cladorhynchus leucocephalus</i>	Banded stilt				BLWA 1
Birds	Rhipiduridae	<i>Rhipidura fuliginosa</i>	Grey fantail		x	x	BLWA 3

Group	Family	Taxon	Common name	Status	Source			
					Birds Australia (as cited in Randall and Storer 2010)	Seimon 1991 (as cited in Regeneration Technology 1994)	Anecdotal (BWIG and comments/number of sightings)	
Birds	Rhipiduridae	<i>Rhipidura leucophrys</i>	Willie Wagtail		x	x	BLWA	8
Birds	Scolopacidae	<i>Tringa hypoleucos</i>	Common sandpiper	S3, Mi	x		-	
Birds	Stercorariidae	<i>Stercorarius parasiticus</i>	Arctic Jaeger/Arctic Skua				BLWA	7
Birds	Strigidae	<i>Ninox novaeseelandiae</i>	Boobook Owl			x	-	
Birds	Sylviidae	<i>Acrocephalus australis</i>	Australian Reed Warbler (Clamorous reed-warbler)		x	x	BLWA	8
Birds	Sylviidae	<i>Megalurus gramineus</i>	Little Grassbird		x	x	BLWA	5
Birds	Threskiornithidae	<i>Platalea flavipes</i>	Yellow-billed spoonbill		x	x	BLWA	7
Birds	Threskiornithidae	<i>Threskiornis molucca</i>	Australian white ibis		x	x	BLWA	8
Birds	Threskiornithidae	<i>Threskiornis spinicollis</i>	Straw-necked Ibis			x	BLWA	2
Birds	Tytonidae	<i>Tyto alba</i>	Barn Owl			x	-	
Birds	Zosteropidae	<i>Zosterops lateralis</i>	Grey-breasted White-eye (Silvereye)		x	x	BLWA	5
Mammals	Canidae	<i>Vulpes vulpes</i>	Fox	*		x	X	
Mammals	Felidae	<i>Felis catis</i>	Feral Cat				x	
Mammals	Muridae	<i>Hydromys chrysogaster</i>	Water rat	P4		x	x	
Mammals	Muridae	<i>Mus musculus</i>	House mouse	*		x		
Mammals	Muridae	<i>Rattus norvegicus</i>	Brown rat	*		x		
Mammals	Muridae	<i>Rattus rattus</i>	Black rat	*		x		
Reptiles	Cheluidae	<i>Chelodina colliei</i>	Oblong Turtle				x	
Reptiles	Egerniidae	<i>Egernia kingii</i>	King's skink			x		

Group	Family	Taxon	Common name	Status	Source			
					Birds Australia (as cited in Randall and Storer 2010)	Seimon 1991 (as cited in Regeneration Technology 1994)	Anecdotal (BWIG and comments/number of sightings)	
Reptiles	Egerniidae	<i>Lissolepis luctuosa</i>	Western Glossy Swamp Skink			x	x	
Reptiles	Elapidae	<i>Notechis scutatus</i>	Western tiger snake			x		
Reptiles	Elapidae	<i>Pseudonaja affinis</i>	Dugite			x	x	
Reptiles	Emydidae	<i>Trachemys scripta elegans</i>	Red-eared slider	*			x	Removed from site
Reptiles	Eugongylidae	<i>Acritoscincus trilineatum</i>	Western Three-lined Skink			x		
Reptiles	Eugongylidae	<i>Morethia obscura</i>	Shrubland Snake-eyed Skink			x		
Reptiles	Sphenomorphidae	<i>Ctenotus labillardieri</i>	Red Legged Skink			x		

BLWA Bird Life Western Australia surveys 2012-15