

# Fauna Assessment



## Lot 7 Runnymede Road

## Wellesley

November 2021

V1

***On behalf of:***

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## SUMMARY

This report details the results of a fauna assessment of an area of proposed clearing within Lot 7 Runnymede Road, Wellesley (the subject site) (Figure 1). The landowners (B & J Catalano Pty Ltd) are proposing to clear up to 9.9 ha of vegetation from within the subject site for the purpose of continuing sand extraction and will be applying to the Department of Water and Environmental Regulation (DWER) for a clearing permit pursuant to Section 51E of the *Environmental Protection Act 1986*.

It is anticipated that the information presented here will also be used by regulatory authorities to assess the potential impact of the proposal on fauna and fauna habitats at the site, during the project evaluation and clearing permit approval process

The fauna assessment has included a literature review and a field reconnaissance survey. The field component of the fauna assessment was carried out on 6 and 7 October 2021 by Greg Harewood (Zoologist).

### Key Findings

- The survey area has a total extent of about 9.9 ha and is comprised of two separate zones (Figure 2). The larger (7.9 ha) area contains an open woodland of marri and jarrah over a low open woodland. This area has been subject to historical logging with many of the trees being relatively young in age. The north west section of this area is characterised by an absence of a shrub layer which is present in varying densities in other sections of this zone. The smaller (2.0 ha) area contains a low open woodland of peppermint over an open grassland. This area appears to be largely regrowth from an historical clearing event.
- With respect to fauna habitat values, the majority of the vegetation (in the larger southern zone) appears to be in good to very good condition and would therefore have the capacity to support a wide range native fauna species known to frequent the wider area. Other sections of the survey area been subject to more intense historical and ongoing disturbance (e.g. livestock grazing, firewood collecting, logging and/or clearing) and as a consequence contain vegetation/habitat of a lower quality relative to other areas.
- Despite the history of disturbance, the areas of more coherent remnant vegetation are still likely to be utilised in some fashion by a reasonably wide range of species though most would be relatively common and widespread bird species. Exceptions to this generalised statement include black cockatoos, which may utilise the area for foraging and possibly breeding.
- The subject site was found to contain 91 potential “black cockatoo breeding habitat trees” (DBH >50cm). Two trees appear to contain at least one hollow considered potentially suitable for black cockatoos to use for nesting purposes. One of these trees contains a large hollow that has chew marks that have been attributed to black cockatoo activity. The other hollow has rub marks which may indicate activity by other fauna such as common brushtail possums.



- Quality black cockatoo foraging habitat within the survey area can mainly be defined as the areas containing marri, jarrah and banksia dominated vegetation which makes up most of the southern zone. This vegetation type has a total extent of about 7.9 ha. No existing roosting trees (trees used at night by black cockatoos to rest) were positively identified during the survey.
- In summary one vertebrate fauna species of conservation significance were positively identified as utilising the survey area:
  - Forest Red-tailed Black Cockatoo – Vulnerable (WA/Federal);
  - Carnaby's Black Cockatoo – Endangered (WA/Federal);
- Several additional species of conservation significance may also utilise the survey area, though, as no evidence of their presence was identified during the field survey, their status in the area remains uncertain:
  - Swan Coastal Plain Shield-backed Trapdoor Spider - Priority 3 (DBCA Priority Species);
  - Coastal Plains Skink – Priority 3 (DBCA Priority Species);
  - Perth Lined Skink - Priority 3 (DBCA Priority Species);
  - Peregrine Falcon – Schedule 7 (WA);
  - Masked Owl – Priority 3 (DBCA Priority Species);
  - Baudin's Black Cockatoo – Endangered (WA/Federal);
  - Quenda – Priority 4 (DBCA Priority Species);
  - South-western Brush-tailed Phascogale - Schedule 6 (WA);
  - Western Ringtail Possum – Critically Endangered (WA/Federal);
  - Western Brush Wallaby - Priority 4 (DBCA Priority Species);
  - Western False Pipistrelle – Priority 4 (DBCA Priority Species).
- Under the assumption that the entire survey area will be cleared the following conclusions have been drawn on likely impacts based on observations made. In cases where some habitat is present and available information indicates at least some probability of the species occurrence, likely impacts are anticipated to be low primarily due to likely low population densities and the relatively small total area of vegetation/habitat present (i.e. only a small number of individuals, if any will be affected).
- No overall change in the conservation status of any fauna species currently utilising the survey area is therefore anticipated. While some small, localised residual loss of fauna

habitat may occur for some species, regional impacts on the status of any one species are anticipated to be negligible/non-existent.

- In this instance impacts are most likely to be related to the loss of habitat and the potential for some species to be killed or injured during clearing, including the possible presence of breeding black cockatoos in at least one hollow at certain times of the year.
- If approval for the project is obtained it is recommended that a fauna relocation program be implemented prior to and during clearing works to ensure direct impact on fauna most likely to be encountered, are minimised

## 1. INTRODUCTION

This report details the results of a fauna assessment over sections of Lot 7 Runnymede Road, Wellesley (the survey area) (Figure 1). The survey area is approximately 9.9 hectares (ha) in size and mostly covered with remnant native vegetation with some partly cleared land (Figure 2).

The landowners (B & J Catalano Pty Ltd) are proposing to clear up to 9.9 ha of vegetation from within the subject site for the purpose of continuing sand extraction and will be applying to the Department of Water and Environmental Regulation (DWER) for a clearing permit pursuant to Section 51E of the *Environmental Protection Act 1986*.

The information presented here will be used by regulatory authorities to assess the potential impact of the proposal on fauna and fauna habitats at the site, during the project evaluation and clearing permit approval process.

Information obtained as part of this fauna assessment report will also be used in conjunction with other environmental investigations to guide project planning and for the formulation of management plans, which will aim to minimise potential environmental impacts.

## 2. SCOPE OF WORKS

The scope of works was to conduct a “basic” fauna assessment and carry out a targeted survey for black cockatoo habitat. The assessment has therefore involved:

1. A basic (Level 1) Fauna Assessment (EPA 2020);
2. Targeted searches for black cockatoo habitat/site use (habitat trees, existing and potential nest hollows, foraging and roosting habitat); and
3. Report for summarising methods and results.

Note: For the purposes of this proposal the term black cockatoo is in reference to Baudin's black cockatoo *Zanda baudinii*, Carnaby's black cockatoo *Zanda latirostris* and the forest red-tailed black cockatoo *Calyptorhynchus banksii naso*.

## 3. METHODS

### 3.1 LITERATURE REVIEW – FAUNA SPECIES OF CONSERVATION SIGNIFICANCE

A list of conservation significant fauna recorded or likely to occur within the survey area has been compiled by a review of available databases and literature including, but not limited to the following data sources:

- Department of Biodiversity, Conservation and Attractions (DBCAs) Threatened Fauna Database (NatureMap) (DBCAs 2021). A 20 km buffer around the survey area was applied to capture previous fauna records within the immediate vicinity;
- *EPBC Act* Protected Matters database for fauna of national environmental significance (DAWE 2021). The minimum buffer (0 km) was applied to this search as the databases contains distribution data (areas) and not actual fauna records; and
- Literature search and review of other fauna surveys in the vicinity.

The conservation status of each species has been based on current lists produced under Federal and State Acts (*EPBC Act* and the *Biodiversity Conservation Act 2016 (BC Act)*), those species recognised under international treaties (CAMBA, JAMBA and the Bonn Convention) and Priority Fauna (as listed by the DBCAs).

## **3.2 FIELD SURVEYS**

The field component of the fauna assessment was carried out on 6 and 7 October 2021 by Greg Harewood (Zoologist) and consisted of a series of daytime reconnaissance surveys as described in the sections below.

### **3.2.1 FAUNA HABITAT ASSESSMENT**

Vegetation units, landforms and soils observed during the site reconnaissance survey have been used to define broad fauna habitat types across the survey area.

The main objective of the assessment was to determine if it were likely that species of conservation significance would utilise the habitats identified as occurring within the survey area based on their documented habitat preference and current known distribution.

### **3.2.2 FAUNA OBSERVATIONS**

Evidence of the presence or likely presence of fauna species of conservation significance (or suitable habitat) was searched for and recorded concurrent with other site surveys. Opportunistic observations of all fauna species were made during all field survey work and recorded where positive species identifications were made.

This aspect of the assessment included but was not limited to:

- Undertaking a series of transects across the survey area.
- Searching for evidence (i.e. individuals, tracks, scats, calls) of potential conservation significant species under logs, rocks and leaf litter.
- Observing bird species with binoculars.



### 3.2.3 BLACK COCKATOO HABITAT ASSESSMENT

The following methods were employed to comply with the defined scope of works and are based on Commonwealth of Australia (2012) guidelines which state that surveys for Carnaby's, Baudin's and forest red-tailed black cockatoo habitat should:

- be done by a suitably qualified person with experience in vegetation or cockatoo surveys, depending on the type of survey being undertaken;
- maximise the chance of detecting the species' habitat and/or signs of use;
- determine the context of the site within the broader landscape—for example, the amount and quality of habitat nearby and in the local region (for example, within 10 km);
- account for uncertainty and error (false presence and absences); and
- include collation of existing data on known locations of breeding and feeding birds and night roost locations.

The Commonwealth of Australia (2012) places habitats used by black cockatoos into the following three categories:

- Breeding Habitat;
- Foraging Habitat; and
- Night Roosting Habitat.

#### 3.2.3.1 Breeding Habitat Assessment

The black cockatoo breeding habitat assessment identified all suitable breeding tree species within the survey area that have a diameter at breast height (DBH) equal to or greater than 50cm. The DBH of each tree was estimated using a pre-made "caliper".

Target tree species included marri, jarrah, tuart and flooded gum and any other *Corymbia/Eucalyptus* species of a suitable size that was present. Peppermints, *Banksia*, sheoak and *Melaleuca* tree species (for example) were not assessed as they typically do not develop hollows used by black cockatoos.

The location of each tree identified as being over the threshold DBH will be recorded with a GPS and details on tree species, number and size of hollows (if any) noted. Trees observed to contain hollows (of any size/type) will be marked with "H" using spray paint.

Hollow/potential hollows were placed into one of four categories, based on the size of the apparent hollow entrance, these being:

- Small = ~<5cm diameter (i.e. entrance too small for a black cockatoo);
- Medium = ~5cm-10cm diameter (i.e. entrance too small for a black cockatoo);

- Large = ~>10cm diameter (entrance large enough for a black cockatoo but hollow appears unsuitable for nesting i.e. wrong orientation, appears too small, too low or too shallow); or
- Large (cockatoo) = ~>10cm diameter (entrance and apparent hollow appears big enough and suitably sized/orientated for a black cockatoo to use for nesting).

Based on this assessment, trees present within the survey area were placed into one of four categories:

- Tree <50cm DBH or an unsuitable species (these were not assessed/recorded);
- Tree  $\geq$ 50cm DBH, no hollows seen;
- Tree  $\geq$ 50cm DBH, one or more hollows seen, none of which were considered suitable for black cockatoos to use for nesting; or
- Tree  $\geq$ 50cm DBH, one or more hollows seen, with at least one considered suitable for black cockatoos to use for nesting.

For the purposes of this assessment, a tree containing a potential black cockatoo nest hollow was defined as:

*Generally, any tree which is alive or dead that contains one or more visible hollows (cavities within the trunk or branches) or possible hollows suitable for occupation by black cockatoo for the purpose of nesting/breeding. Hollows that had an entrance greater than about 10cm in diameter and would allow the entry of a black cockatoo into a suitably orientated and sized branch/trunk, were recorded as a “potential nest hollow”.*

Identified hollows were examined using binoculars for evidence of actual use by black cockatoos (e.g. chewing around hollow entrance, scarring and scratch marks on trunks and branches). Details recorded included hollow size, height, type, orientation, comments on suitability and any evidence of use

Trees with possible nest hollows were also scratched and raked with a large stick in attempt to flush any sitting birds from hollows and calls of chicks were listened for. Where the assessment was inconclusive, and if possible, trees identified as having potential nest hollows were subsequently examined and photographed using a drone (DJI Mavic Air).

A review of available literature was carried out to determine the location/extent of any known/likely black cockatoo breeding habitat areas in the vicinity of the survey area.

### **3.2.3.2 Foraging Habitat Assessment**

The location and nature of black cockatoo foraging evidence (e.g. chewed fruits around base of trees) observed during the field survey was recorded. The nature and extent of potential foraging habitat present was also documented irrespective of the presence of any actual foraging evidence. Foraging habitat is represented by plant species that are

known to provide a food source for black cockatoos. This can be in the form of seeds, flowers and also boring grubs that are extracted from some plant species.

A review of available literature was carried out to determine the location/extent of any known/likely black cockatoo foraging habitat areas in the vicinity.

### **3.2.3.3 Night Roosting Habitat Assessment**

Direct and indirect evidence of black cockatoos roosting within trees on site was noted where observed (e.g. branch clippings, droppings or moulted feathers).

A review of available literature was carried out to determine the location/extent of any known/likely black cockatoo roosting habitat areas in the vicinity.

## **4. SURVEY LIMITATIONS**

No seasonal sampling was carried out as part of this fauna assessment. The conclusions presented are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of the field assessments. It should be recognised that site conditions can change with time.

Lack of observational data on some species should also not necessarily be taken as an indication that a species is absent from the site or does not utilise it for some purpose at times.

During the survey, habitat trees with hollows were searched for. It should be noted that identifying hollows suitable for fauna species from ground level has limitations. Generally, the full characteristics of any hollow seen are not fully evident (e.g. internal dimensions). It is also difficult to locate all hollows within all trees as some are not observable from ground level.

The location of observations was recorded using a handheld GPS. The accuracy of the GPS cannot be guaranteed above a level of about 5 to 10 metres, though it should be noted that in some circumstance the accuracy can increase or decrease beyond this range.

## **5. RESULTS**

### **5.1 LITERATURE REVIEW – FAUNA SPECIES OF CONSERVATION SIGNIFICANCE**

The literature review identified multiple fauna species of conservation significance as potentially occurring in the general area as listed in Table 1. The NatureMap (DBCA 2021) and Protected Matter Search Tool (DAWE 2021) results, used as a primary source for compiling this listing, are held within Appendix B.

Because of the proximity of the survey area to the ocean a number of conservation significant marine species have appeared in database searches (Appendix B). These species have been excluded from the assessment as they would not under normal circumstances occur within the survey area.

**Table 1: Conservation significant fauna previously recorded or potentially occurring within the general vicinity of survey area.**

Species	Conservation Status <sup>1</sup>	
	BC Act/ DBCA Priority	EPBC Act
Carter's Freshwater Mussel <i>Westralunio carteri</i>	S3	VU
Black stripe Minnow <i>Galaxiella nigrostriata</i>	EN	EN
Swan Coastal Plain Shield-backed Trapdoor Spider <i>Idiosoma sigillatum</i>	P3	-
Pouched Lamprey <i>Geotria australis</i>	P3	-
Coastal Plains Skink <i>Ctenotus ora</i>	P3	-
Lined Skink <i>Lerista lineata</i>	P3	-
Malleefowl <i>Leipoa ocellata</i>	S3	VU
Australasian Bittern <i>Botaurus poiciloptilus</i>	S2	EN
Australian Little Bittern <i>Ixobrychus dubius</i>	P4	-
Migratory Shorebirds/Wetland Species	Various	Various
Eastern Osprey <i>Pandion cristatus</i>	S5	Mig, Ma
Peregrine Falcon <i>Falco peregrinus</i>	S7	-
Masked Owl <i>Tyto novaehollandiae novaehollandiae</i>	P3	-
Blue-billed Duck <i>Oxyura australis</i>	P4	-
Hooded Plover <i>Thinornis rubricollis</i>	P4	-
Carnaby`s Black Cockatoo <i>Zanda latirostris</i>	S2	EN
Baudin`s Black Cockatoo <i>Zanda baudinii</i>	S2	EN
Forest Red-tailed Black Cockatoo <i>Calyptorhynchus banksii naso</i>	S3	VU

<sup>1</sup> See Appendix A for conservation status codes



Species	Conservation Status <sup>1</sup>	
	BC Act/ DBCA Priority	EPBC Act
Fork-tailed Swift <i>Apus pacificus</i>	S5	Mig
Grey Wagtail <i>Motacilla cinerea</i>	S5	Mig
Chuditch <i>Dasyurus geoffroi</i>	S3	VU
Quenda <i>Isoodon fusciventer</i>	P4	-
South-western Brush-tailed Phascogale <i>Phascogale tapoatafa wambenger</i>	S6	-
Numbat <i>Myrmecobius fasciatus</i>	EN	EN
Western Ringtail Possum <i>Pseudocheirus occidentalis</i>	S1	CE
Quokka <i>Setonix brachyurus</i>	S3	VU
Woylie <i>Bettongia penicillata. ogilbyi</i>	S1	EN
Western Brush Wallaby <i>Notamacropus irma</i>	P4	-
Water Rat <i>Hydromys chrysogaster</i>	P4	-
Western False Pipistrelle <i>Falsistrellus mackenziei</i>	P4	-

## 5.2 FIELD SURVEYS

### 5.2.1 FAUNA HABITAT ASSESSMENT

The survey area has a total extent of about 9.9 ha and is comprised of two separate zones (Figure 2). The larger (7.9 ha) area contains an open woodland of marri and jarrah over a low open woodland. This area has been subject to historical logging with many of the trees being relatively young in age. The north west section of this area is characterised by an absence of a shrub layer which is present in varying densities in other sections of this zone.


The smaller (2.0 ha) area contains a low open woodland of peppermint over an open grassland. This area appears to be largely regrowth from an historical clearing event.


Example images of the various fauna habitats present are provided in Table 2.

With respect to fauna habitat values, the majority of the vegetation (in the larger southern zone) appears to be in good to very good condition and would therefore have the capacity to support a wide range native fauna species known to frequent the wider area. Other sections of the survey area been subject to more intense historical and ongoing disturbance (e.g. livestock grazing, firewood collecting, logging and/or clearing) and as a consequence contain vegetation/habitat of a lower quality relative to other areas.

Despite the history of disturbance, the areas of more coherent remnant vegetation are still likely to be utilised in some fashion by a reasonably wide range of species though most would be relatively common and widespread bird species. Exceptions to this generalised statement include black cockatoos, which may utilise the area for foraging and possibly breeding (see section 5.2.3).

**Table 2: Example images of the fauna habitats within the survey area**

Fauna Habitat Description	Example Image
<p>Low open woodland of Peppermint with occasional Jarrah over open grassland on dune crest with grey to light grey/white sands (grading to yellow at depth).</p>	 <p>The first photograph (top) shows a wide view of a grassy field with scattered trees under a blue sky with clouds. The second photograph (bottom) shows a closer view of the trees and sandy ground.</p> <p>Geographic coordinates for the top image: 133°SE (M) ● 50S 383803 6332593 ±16 m</p> <p>Geographic coordinates for the bottom image: 81°E (M) ● 50S 383902 6332587 ±12 m</p> <p>Both images include a 'Zootopia' watermark and a timestamp: '06 Oct 2021, 12:24:03'.</p>

Fauna Habitat Description	Example Image
<p>Open woodland of Marri and Jarrah over a low open woodland of <i>Banksia</i> and occasional Peppermint over an open shrubland or heath (absent in north west) on dune crest and slope with grey to light grey/white sands (grading to yellow at depth).</p>	

### 5.2.2 FAUNA OBSERVATIONS

Seventeen fauna species (mainly common bird species) were observed or secondary evidence of their presence recorded during the field survey. A full listing of the species observed is held on Appendix C.

Evidence of the forest red-tailed black cockatoo and Carnaby’s black cockatoo was detected during the day survey in the form of a chewed marri and jarrah fruits (see Section 5.2.3). Several individuals of both species were also heard calling and flying overhead during the field survey.

No evidence of any other fauna species of conservation significance was observed. However, this does not eliminate the potential for some species to still occur, if only infrequently.



## 5.2.3 BLACK COCKATOO HABITAT ASSESSMENT

### 5.2.3.1 Breeding Habitat Assessment

Trees considered potentially suitable for black cockatoos to use as nesting habitat (subject to a suitable hollow being present and other factors) found within the survey area comprised the following species:

- Marri – *Corymbia calophylla*;
- Jarrah – *Eucalyptus marginata*; and
- Dead Unidentified - *Eucalyptus* spp.

A summary of the habitat trees observed is provided in Table 3. The locations of habitat trees are shown in Figure 4.

**Table 3: Summary of potential habitat trees (DBH  $\geq$ 50cm) within the survey area**

Total Number of Habitat Trees (DBH > 50cm)	Number of Habitat Trees with <u>No Hollows Observed</u>	Number of Habitat Trees with <u>Possible Hollows</u> considered <u>Unsuitable</u> for Black Cockatoos	Number of Habitat Trees with <u>Possible Hollows</u> considered <u>Potentially suitable</u> for Black Cockatoos	Tree Species		
				Marri	Jarrah	Dead Unidentified
91	72	17	2	43	41	7

The assessment identified 91 trees within the survey area with a DBH of  $\geq$ 50cm. Most of these trees (72) appeared to not contain hollows of any size. Seventeen (17) trees contained apparent or obvious hollows, all of which were assessed as being unlikely to be suitable for black cockatoos to currently use for nesting purposes, due to the hollows apparent small size, unsuitable orientation and/or low height above ground level.

Two trees (2) appear to contain at least one hollow considered potentially suitable for black cockatoos to use for nesting purposes. One of these trees (ID: wpt 017) contains a large hollow that has chew marks that have been attributed to black cockatoo activity. The other hollow has rub marks which may indicate activity by other fauna such as common brushtail possums. Pictures of these hollows and additional details on each habitat tree observed can be found in Appendix D.

Based on available mapping, there is approximately 12,000 ha of remnant native vegetation within 12 km of the survey area (DPIRD 2021). Much of this is likely to contain “potential” breeding habitat as defined by DAWE (i.e. suitable tree species with a DBH  $\geq$ 50cm).



### 5.2.3.2 Foraging Habitat Assessment


The following flora species are known to be or are potentially used as a direct food source (e.g. seeds, flowers, nectar, bark or grubs) by one or more species of black cockatoo were recorded within the survey area:



- Marri – *Corymbia calophylla*;
- Jarrah – *Eucalyptus marginata*;
- Slender Banksia - *Banksia attenuata*;
- Bull Banksia - *Banksia grandis*;
- Grey Stinkwood - *Jacksonia furcellata*; and
- Peppermint – *Agonis flexuosa*.

It should be noted that some of the above-mentioned species (e.g. grey stinkwood and peppermint) while foraged upon on occasions would make up only a small proportion of any one bird’s diet relative to more favoured plant species such as marri and banksia. .

Evidence of black cockatoos foraging was observed during the field survey at a number of locations. The evidence was in all cases in the form of chewed fruits from marri and jarrah trees and banksia cones. The foraging activity was attributed to either the forest red-tailed black cockatoo or Carnaby’s black cockatoo. Examples of the foraging debris observed and the species attributed to the activity are provided in Table 4.

**Table 4: Foraging Evidence Examples**

Foraging Evidence Description	Example Image
<p>Jarrah fruits – foraging activity attributed to either the Forest Red-tailed Black Cockatoo or Carnaby’s Black Cockatoo.</p>	

Foraging Evidence Description	Example Image
Banksia Cone – foraging activity attributed to Carnaby’s Black Cockatoo.	
Marri fruits – foraging activity attributed to the Forest Red-tailed Black Cockatoo.	

Quality foraging habitat within the survey area can mainly be defined as the areas containing marri, jarrah and banksia dominated vegetation which makes up most of the southern zone. This vegetation type has a total extent of about 7.9 ha.

Based on available mapping there is about 12,000 ha of remnant native vegetation within 12 km of the survey area (DPIRD 2021). Much of this is likely to represent black cockatoo foraging habitat of some type.

### 5.2.3.3 Night Roosting Habitat Assessment

No evidence of black cockatoos roosting within trees located within the survey area was observed during the survey period. It is difficult to determine if trees or groves of trees within the survey area represent potential roosting habitat as a range of factors, not all of which can be observed, determine suitability. Some of the larger trees (including non-endemics) may be suitable for roosting but as indicated no actual evidence of use was seen.

A review of the 2019 Great Cocky Count database shows no documented roost sites within the survey area. Three documented roost sites occur within 12 km of the survey area, however none were active or monitored at the time of the April 2019 survey.

## 6. CONSERVATION SIGNIFICANT FAUNA SPECIES

Based on the information gathered during the site reconnaissance survey and the documented distribution and habitat preferences of the species of conservation significance identified as potentially being present in the general area, their likelihood of occurrence has been assessed. A summary of this assessment is presented in Table 5.

Some comments on the possible impacts of any proposed development are also provided under that assumption that all of the survey area (9.9 ha) will be cleared.

Two fauna species of conservation significance (listed as State or Federal threatened/migratory species or as DBCA priority species) were positively identified as utilising the survey area for some purpose during the survey period:

- Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso* – S3 (BC Act), Vulnerable (EPBC Act).  
 Foraging evidence and individuals observed. The survey area contains areas of potential black cockatoo breeding habitat (trees with a DBH >50cm) with one tree showing signs of actual use by black cockatoos (but not necessarily by this species). The majority of the native vegetation within the survey area represents foraging habitat for this species. No evidence of roosting observed.
- Carnaby's Black-Cockatoo *Zanda latirostris* – S2 (BC Act), Endangered (EPBC Act).  
 Foraging evidence and individuals observed. The survey area contains areas of potential black cockatoo breeding habitat (trees with a DBH >50cm) with one tree showing signs of actual use by black cockatoos (but not necessarily by this species). The majority of the native vegetation within the survey area represents foraging habitat for this species. No evidence of roosting observed.

**Table 5: Likelihood of Occurrence – Fauna Species of Conservation Significance**

Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Comments/Possible Impacts
	BC Act/ DBCA Priority	EPBC Act				
Carter's Freshwater Mussel <i>Westralunio carteri</i>	S3	VU	Occurs in greatest abundance in slower flowing streams with stable sediments that are soft enough for burrowing amongst woody debris and exposed tree roots.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Black stripe Minnow <i>Galaxiella nigrostriata</i>	EN	EN	Permanent or ephemeral pools, roadside ditches and small creeks in sandy, thickly vegetated wetland areas. Water is usually darkly tannin stained and acidic (pH 4.6 – 6.5)	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Pouched Lamprey <i>Geotria australis</i>	P3	-	This species lives in mud burrows in the upper reaches of coastal streams for the first four years of life until migrating to the sea. Adults migrate up to 60km upstream during spawning.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Swan Coastal Plain Shield-backed Trapdoor Spider <i>Idiosoma sigillatum</i>	P3	-	Burrows of this species usually found in <i>Banksia</i> woodland and heathland on sandy soils.	Yes	Possibly Occurs.	May occur though there are no records of this species in this area, possibly due to a lack of surveys. Loss/modification of small areas of habitat. Negligible impact on species status anticipated given small area involved.
Coastal Plains Skink <i>Ctenotus ora</i>	P3	-	Sandy substrates with low vegetation (including heath) in open <i>Eucalyptus/Corymbia</i> woodland over <i>Banksia</i> .	Yes	Possibly Occurs.	May occur – recorded in nearby areas (e.g. Kemerton). Loss/modification of small areas of habitat. Negligible impact on species status anticipated given small area involved.
Lined Skink <i>Lerista lineata</i>	P3	-	Inhabits loose white sands and leaf litter under areas of shrubs and heath particularly in association with banksias.	Yes	Possibly Occurs.	May occur – recorded in nearby areas (e.g. Kemerton). Loss/modification of small areas of habitat. Negligible impact on species status anticipated given small area involved.
Malleefowl <i>Leipoa ocellata</i>	S3	VU	Mainly scrubs and thickets of mallee <i>Eucalyptus</i> spp., boree <i>Melaleuca lanceolata</i> and bowgada <i>Acacia linophylla</i> , also dense litter forming shrublands.	No	Would Not Occur.	Regionally extinct. This species has not been recorded on the coastal plain for over 60 years.
Australasian Bittern <i>Botaurus poiciloptilus</i>	S1	EN	Freshwater wetlands, occasionally estuarine; prefers heavy vegetation such as beds of tall dense <i>Typha</i> , <i>Baumea</i> and sedges in freshwater swamps.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.



Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Comments/Possible Impacts
	BC Act/ DBCA Priority	EPBC Act				
Australian Little Bittern <i>Ixobrychus dubius</i>	P4	-	Dense vegetation surrounding/within freshwater pools, swamps and lagoons, well screened with trees. Shelters in dense beds of <i>Typha</i> , <i>Baurnea</i> and tall rushes in freshwater swamps around lakes and along rivers.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Migratory Shorebirds/Wetland Species/Marine Species (various reptiles, birds and mammals)	S5, Various	Ma, Mig, Various	Varies between species but includes open ocean, beaches and permanent/temporary wetlands varying from billabongs, swamps, lakes, floodplains, sewerage farms, saltwork ponds, estuaries, lagoons, mudflats sandbars, pastures, airfields, sports fields and lawns.	No	Would Not Occur.	No suitable habitat. No impact on this range of species will occur.
Hooded Plover <i>Thinornis rubricollis</i>	P4	-	Broad sandy ocean beaches and bays, coastal and inland salt lakes.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Eastern Osprey <i>Pandion haliaetus</i>	S5	Ma, Mig	Coasts, estuaries, bays, inlets, islands, and surrounding waters, coral atolls, reefs, lagoons, rock cliffs and stacks. Ascends larger rivers.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Peregrine Falcon <i>Falco peregrinus</i>	S7	-	Diverse from rainforest to arid shrublands, from coastal heath to alpine. Mainly about cliffs along coasts, rivers and ranges and about wooded watercourses and lakes.	Yes	Possibly Occurs.	This species is uncommon but the survey area may represent part of a larger home range used by individuals of this species. No significant impact on this species anticipated given small area involved.
Masked Owl (SW population) <i>Tyto n. novaehollandiae</i>	P3	-	Roosts and nests in heavy forest, hunts over open woodlands and farmlands.	Yes	Possibly Occurs.	This species is uncommon but may occur, if only occasionally. No significant impact on this species anticipated given small area involved.
Blue-billed Duck <i>Oxyura australis</i>	P4	-	Well vegetated freshwater swamps, large dams and lakes, winters on more open water. Occasionally salt lakes and estuaries freshened by floodwaters.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Carnaby's Black Cockatoo <i>Calyptorhynchus latirostris</i>	S2	EN	Forests, woodlands, heathlands, farms; feeds on <i>Banksia</i> , <i>Hakea</i> and <i>Marri</i> .	Yes	Known to Occur	Loss/modification of small areas of habitat including potential nest sites. No significant impact on this species anticipated given small area involved.
Baudin's Black Cockatoo <i>Calyptorhynchus baudinii</i>	S2	EN	Mainly eucalypt forests where it feeds primarily on the marri seeds.	Yes	Possibly Occurs.	Loss/modification of small areas of habitat including potential nest sites. No significant impact on this species anticipated given small area involved.

Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Comments/Possible Impacts
	BC Act/ DBCA Priority	EPBC Act				
Forest Red-tailed Black Cockatoo <i>Calyptorhynchus banksii naso</i>	S3	VU	Eucalypt forests, feeds on marri, jarrah, blackbutt, karri, sheoak and snottygobble.	Yes	Known to Occur	Loss/modification of small areas of habitat including potential nest sites. No significant impact on this species anticipated given small area involved.
Fork-tailed Swift <i>Apus pacificus</i>	S5	Ma, Mig	Low to very high airspace over varied habitat from rainforest to semi desert.	Yes	Unlikely to Occur. Flyover only on very rare occasions.	May occur very occasionally for brief periods. Entirely aerial. No impact on this species will occur.
Grey Wagtail <i>Motacilla cinerea</i>	S5	Mig, Ma	In Australia, near running water in disused quarries, sandy, rocky streams in escarpments and rainforest, sewerage ponds, ploughed fields and airfields.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Chuditch <i>Dasyurus geoffroi</i>	S3	VU	Forest, mallee shrublands, woodland and desert. The densest populations have been found in riparian jarrah forest.	Yes	Unlikely to Occur	Locally extinct. Very rarely recorded on the coastal plain. Occasional transients only.
Quenda <i>Isoodon fusciventer</i>	P4	-	Dense scrubby, often swampy, vegetation with dense cover.	Yes	Possibly Occurs.	Loss/modification of small areas of habitat. No significant impact on this species anticipated given small area involved.
South-west Brush-tailed Phascogale <i>Phascogale tapoatafa wambenger</i>	S6	-	Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover.	Yes	Possibly Occurs.	Loss/modification of very small areas of habitat. No significant impact on this species anticipated given small area involved.
Numbat <i>Myrmecobius fasciatus</i>	S3	VU	Generally found in habitats dominated by eucalypts that provide hollow logs and branches for shelter and termites for food.	No	Would Not Occur.	Locally extinct. No impact on this species will occur.
Western Ringtail Possum <i>Pseudocheirus occidentalis</i>	S1	CE	Coastal peppermint, coastal peppermint-tuart, jarrah-marri associations, sheoak woodland, and eucalypt woodland and mallee.	Yes/Marginal	Possibly Occurs.	No evidence of this species observe suggesting it is absent or only occurs in low densities. Loss/modification of small areas of habitat. No significant impact on this species anticipated given small area involved.
Quokka <i>Setonix brachyurus</i>	S3	VU	Currently restricted to densely vegetated coastal heaths, swamps, riverine habitats including tea-tree thickets on sandy soils along creek systems.	No	Would Not Occur.	This species is locally extinct/no suitable habitat. No impact on this species will occur.
Woylie <i>Bettongia penicillata ogibyi</i>	S1	EN	Open sclerophyll forest and woodland with a low, dense, understorey of tussock grasses or woody scrub.	No	Would Not Occur.	This species is locally extinct/no suitable habitat. No impact on this species will occur.
Western Brush Wallaby <i>Macropus irma</i>	P4	-	Open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets.	Yes	Possibly Occurs.	Loss/modification of small areas of habitat. Negligible impact on species status anticipated given small area involved.

Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Comments/Possible Impacts
	BC Act/ DBCA Priority	EPBC Act				
Western False Pipistrelle <i>Falsistrellus mackenziei</i>	P4	-	Wet sclerophyll forest dominated by karri and in high rainfall zones of the jarrah and marri forest.	Yes	Possibly Occurs.	Loss/modification of small areas of habitat. Negligible impact on species status anticipated given small area involved.
Water Rat <i>Hydromys chrysogaster</i>	P4	-	Permanent water, fresh, brackish or marine.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.

See Appendix A for conservation status codes

Several additional species of conservation significance may utilise the survey area for some purpose at times, but their status on-site and/or in the general area is difficult to determine because they were not sighted during the field survey, or evidence of use was not observed:

- Swan Coastal Plain Shield-backed Trapdoor Spider *Idiosoma sigillatum* - P3 (DBCA Priority Species)  
 Status of this species within the survey area is difficult to determine without a detailed survey, however, given the location within its documented range, some recent nearby records and the presence of habitat that appears suitable it must be assumed to be present. Listed as a potential species based on available information.
- Coastal Plains Skink *Ctenotus ora* – P3 (DBCA Priority Species)  
 Status of this species within the survey area is difficult to determine without a detailed survey, however, given the location within its documented range, some recent nearby records and the presence of habitat that appears suitable it must be assumed to be present. Listed as a potential species based on available information.
- Perth Lined Skink *Lerista lineata* - P3 (DBCA Priority Species)  
 Status of this species within the survey area is difficult to determine without a detailed survey, however, given the location within its documented range, some recent nearby records and the presence of habitat that appears suitable it must be assumed to be present. Listed as a potential species based on available information.
- Peregrine Falcon *Falco peregrinus* – S7 (BC Act)  
 This species potentially utilises some sections of the survey area as part of a much larger home range though it is only likely to occur infrequently. All areas represent potential foraging habitat for this species. Listed as a potential species based on available information. Listed as a potential species based on available information.
- Baudin's Black-Cockatoo *Zanda baudinii* – S2 (BC Act), Endangered (EPBC Act).  
 No evidence of this species recorded. The survey area contains areas of potential black cockatoo breeding habitat (trees with a DBH >50cm) with one tree showing signs of actual use by black cockatoos (but not necessarily by this species). The majority of the native vegetation within the survey area represents foraging habitat for this species. No evidence of roosting observed.
- Masked Owl *Tyto novaehollandae* – P3 (DBCA Priority Species)  
 Status in the general area is difficult to determine. May utilise woodland areas within and near the survey area for roosting and may forage in more open areas. Probably only present occasionally and for short periods. Some of the identified hollow bearing trees represent possible nest sites. Listed as a potential species based on available information.

- Quenda *Isoodon fusciventer* – P4 (DBCA Priority Species)  
Habitat is generally marginal for this species given the sparse nature of groundcover but it may occur in some areas where the densest vegetation occurs. Listed as a potential species based on available information.
- South-western Brush-tailed Phascogale *Phascogale tapoatafa wambenger* – S6 (BC Act)  
Status of this species within the subject site is difficult to determine without a detailed survey, however, given the location within its documented range, some recent nearby records and the presence of habitat that appears suitable it must be assumed to be present. Listed as a potential species based on available information.
- Western Ringtail Possum *Pseudocheirus occidentalis* – Critically Endangered (BC Act), Critically Endangered (EPBC Act)  
No evidence of this species recorded during the survey period but known to occur in the general area though it appears to be more commonly encountered west of Forrest Highway. Listed as a potential species based on available information.
- Western Brush Wallaby *Notamacropus irma* - P4 (DBCA Priority Species)  
Known to occur in the Kemerton area and given the presence of suitable habitat it must be assumed to be present, though probably only occasionally and in low numbers. Listed as a potential species based on available information.
- Western False Pipistrelle *Falsistrellus mackenziei* – P4 (DBCA Priority Species)  
Status of this species within the survey area is difficult to determine, however, given the location is within its documented range, some recent nearby records and the presence of habitat that appears suitable it must be assumed to be present. All sections of the survey area represent potential foraging habitat for this species and any hollow bearing trees represent possible day time roost sites. Listed as a potential species based on available information.

A number of other species of conservation significance (as listed in Table 5), while possibly present in the larger bush remnants in the wider area (e.g. Yalgorup/Kemerton/Darling Range) are not listed as potentially occurring within the survey area primarily due to a complete lack of suitable habitat (quality and extent) and/or known local/regional extinction.

Under the assumption that the entire survey area will be cleared the following conclusions have been drawn on likely impacts based on observations made. In cases where some habitat is present and available information indicates at least some probability of the species occurrence, likely impacts are anticipated to be low primarily due to likely low population densities and the relatively small total area of vegetation/habitat present (i.e. only a small number of individuals, if any will be affected).

No overall change in the conservation status of any fauna species currently utilising the survey area is therefore anticipated. While some small, localised residual loss of fauna habitat may occur for some species, regional impacts on the status of any one species are anticipated to be negligible/non-existent.



In this instance impacts are most likely to be related to the loss of habitat and the potential for some species to be killed or injured during clearing, including the possible presence of breeding black cockatoos in at least one hollow at certain times of the year.

## 7. CONCLUSION

The fauna assessment within the survey area was primarily undertaken to document black cockatoo habitat and to determine the possible presence other conservation significant fauna species and/or their habitat.

The subject site was found to contain 91 potential “black cockatoo breeding habitat trees” (DBH  $\geq$ 50cm). Two trees appear to contain at least one hollow considered potentially suitable for black cockatoos to use for nesting purposes. One of these trees contains a large hollow that has chew marks that have been attributed to black cockatoo activity. The other hollow has rub marks which may indicate activity by other fauna such as common brushtail possums.

Quality black cockatoo foraging habitat within the survey area can mainly be defined as the areas containing marri, jarrah and banksia dominated vegetation which makes up most of the southern zone. This vegetation type has a total extent of about 7.9 ha. No existing roosting trees (trees used at night by black cockatoos to rest) were positively identified during the survey.

Two fauna species of conservation significance (listed as State or Federal threatened/migratory species or as DBCA priority species) were positively identified as utilising the survey area for some purpose during the survey period (two species of black cockatoos). Several additional species of conservation significance may also utilise the survey area for some purpose at times, but their status on-site and/or in the general area is difficult to determine because they were not sighted during the field survey, or evidence of use was not observed:

Under the assumption that the entire survey area will be cleared the following conclusions have been drawn on likely impacts based on observations made. In cases where some habitat is present and available information indicates at least some probability of the species occurrence, likely impacts are anticipated to be low primarily due to likely low population densities and the relatively small total area of vegetation/habitat present (i.e. only a small number of individuals, if any will be affected).

No overall change in the conservation status of any fauna species currently utilising the survey area is therefore anticipated. While some small, localised residual loss of fauna habitat may occur for some species, regional impacts on the status of any one species are anticipated to be negligible/non-existent.

If approval for the project is obtained it is recommended that a fauna relocation program be implemented prior to and during clearing works to ensure direct impact on fauna most likely to be encountered, are minimised.

## 8. REFERENCES

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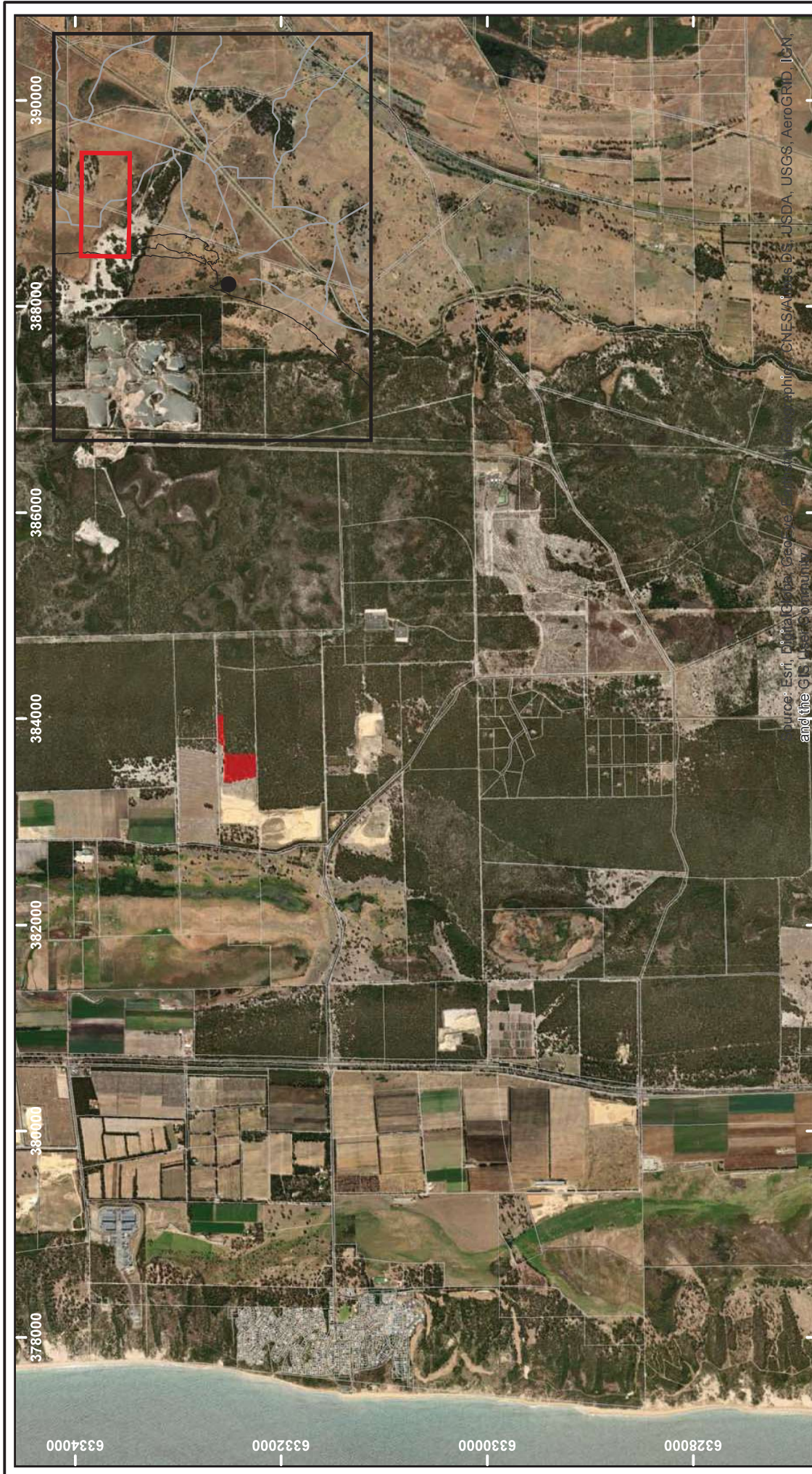
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# FIGURES





Source: Esri, DigitalGlobe, GeoEye, Earthstar (United States), CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



**Fauna Survey**  
 Drawn: G Harewood  
 Date: 22-Nov-21  
 Scale: 1:50,000

Lot 7 Runnymede Road  
 Wellesley

# Survey Area and Surrounds

## Legend

 Survey Area







Drawn: G Harewood  
 Date: 22-Nov-21  
 Scale: 1:2,750

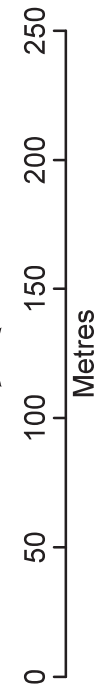
Projection/Coordinate System: UTM/MGA Zone 50

Lot 7 Runnymede Road  
 Wellesley

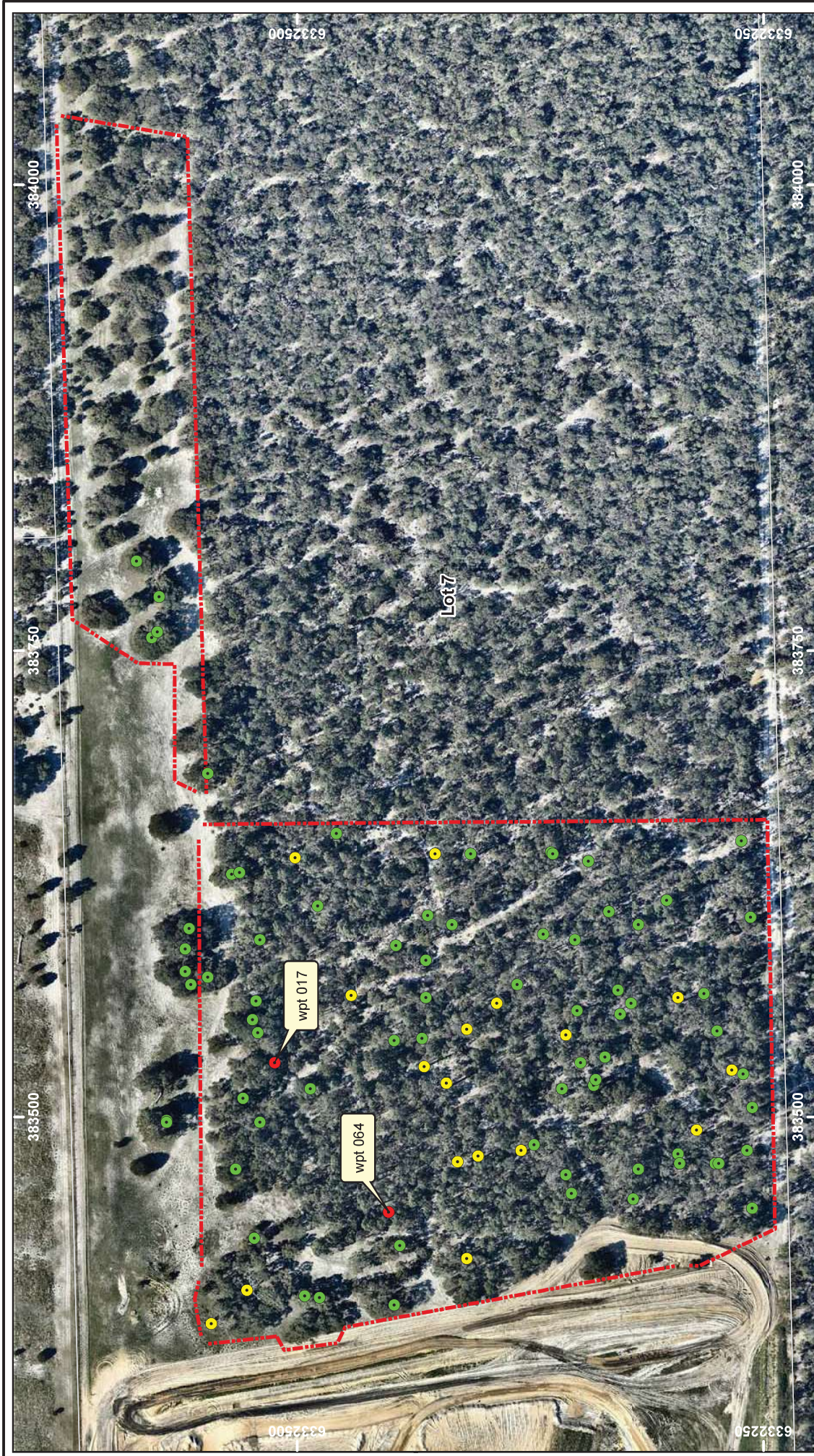
# Survey Area Aerial Photograph

## Legend

--- Survey Area







**Lot 7 Runnymede Road  
Wellesley**

**Habitat Trees  
(DBH >50cm)**

Drawn: G Harewood  
Date: 28-Nov-21  
Scale: 1:2,750

Projection/Coordinate System: UTM/MGA Zone 50

Figure: 3

**Legend**

- Survey Area
- Habitat Tree - One or more large hollows possibly suitable for black cockatoos
- Habitat Tree - One or more possible small/medium hollows
- Habitat Tree - No hollows seen

Metres

0 50 100 150 200 250



# **APPENDIX A**

## **CONSERVATION CATEGORIES**

## EPBC Act (1999) Threatened Fauna Categories

Threatened fauna may be listed under Section 178 of the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* in any one of the following categories:

Category	Code	Description
Extinct	E	There is no reasonable doubt that the last member of the species has died.
*Extinct in the wild	EW	A species (a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or (b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
*Critically Endangered	CE	A species is facing an extremely high risk of extinction in the wild in the immediate future.
*Endangered	EN	A species: (a) is not critically endangered; and (b) is facing a very high risk of extinction in the wild in the near future.
*Vulnerable	VU	A species (a) is not critically endangered or endangered; and (b) is facing a high risk of extinction in the wild in the medium-term future.
Conservation Dependent	CD	A species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered
*Migratory	Migratory	(a) all migratory species that are: (i) native species; and (ii) from time to time included in the appendices to the Bonn Convention; and (b) all migratory species from time to time included in annexes established under JAMBA, CAMBA and ROKAMBA; and (c) all native species from time to time identified in a list established under, or an instrument made under, an international agreement approved by the Minister.
Marine	Ma	Species in the list established under s248 of the <i>EPBC Act</i>

Note: Only species in those categories marked with an asterisk are matters of national environmental significance (NES) under the *EPBC Act*.

## Wildlife Conservation (Specially Protected Fauna) Notice 2018 Categories

Published as Specially Protected under the *Wildlife Conservation Act 1950*, and listed under Schedules 1 to 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

Category	Code	Description
Schedule 1 (S1) Critically Endangered species	CR	Threatened species considered to be facing an extremely high risk of extinction in the wild in the immediate future.
Schedule 2 (S2) Endangered species	EN	Threatened species considered to be facing a very high risk of extinction in the wild in the near future.
Schedule 3 (S3) Vulnerable species	VU	Threatened species considered to be facing a high risk of extinction in the wild in the medium-term future.
Schedule 4 (S4) Presumed extinct species	EX	Species which have been adequately searched for and there is no reasonable doubt that the last member of the species has died.
Schedule 5 (S5) Migratory birds protected under an international agreement	MI	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds.
Schedule 6 (S6) Fauna that is of special conservation need as conservation dependent fauna	CD	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened.
Schedule 7 (S7) Other specially protected fauna.	OS	Fauna otherwise in need of special protection to ensure their conservation.

## Western Australian DBCA Priority Fauna Categories

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened flora or fauna.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

Category	Code	Description
Priority 1 (P1) Poorly Known Species.	P1	Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
Priority 2 (P2) Poorly Known Species.	P2	Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
Priority 3 (P3) Poorly Known Species.	P3	Species that are known from several locations and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
Priority 4 (P4) Rare, Near Threatened and other species in need of monitoring.	P4	<p>(a) Rare: Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.</p> <p>(b) Near Threatened: Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.</p> <p>(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>

\*Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).



## ***IUCN Red List Threatened Species Categories***

The *IUCN Red List of Threatened Species*<sup>™</sup> is a checklist of taxa that have undergone an extinction risk assessment using the *IUCN Red List Categories and Criteria*.

Categories are summarized below.

<b>Category</b>	<b>Code</b>	<b>Description</b>
Extinct	EX	Taxa for which there is no reasonable doubt that the last individual has died.
Extinct in the Wild	EW	Taxa which is known only to survive in cultivation, in captivity or and as a naturalised population well outside its past range and it has not been recorded in known or expected habitat despite exhaustive survey over a time frame appropriate to its life cycle and form.
Critically Endangered	CR	Taxa facing an extremely high risk of extinction in the wild.
Endangered	EN	Taxa facing a very high risk of extinction in the wild.
Vulnerable	VU	Taxa facing a high risk of extinction in the wild.
Near Threatened	NT	Taxa which has been evaluated but does not qualify for CR, EN or VU now but is close to qualifying or likely to qualify in the near future.
Least Concern	LC	Taxa which has been evaluated but does not qualify for CR, EN, VU, or NT but is likely to qualify for NT in the near future.
Data Deficient	DD	Taxa for which there is inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status.
Not Evaluated	NE	Taxa which has not been evaluated.

A full list of categories and their meanings are available at:

<http://www.iucnredlist.org/technical-documents/categories-and-criteria/2001-categories-criteria>

**APPENDIX B**  
NATUREMAP DATABASE SEARCH  
AND  
PROTECTED MATTERS SEARCH TOOL RESULTS

# NatureMap - Runnymede

Created By Greg Harewood on 22/11/2021

<b>Kingdom</b>	Animalia
<b>Current Names Only</b>	Yes
<b>Core Datasets Only</b>	Yes
<b>Method</b>	'By Circle'
<b>Centre</b>	115° 45' 05" E, 33° 08' 27" S
<b>Buffer</b>	20km
<b>Group By</b>	Species Group

Species Group	Species	Records
Amphibian	11	249
Bird	196	7362
Fish	16	102
Invertebrate	105	377
Mammal	34	1461
Reptile	42	872
<b>TOTAL</b>	<b>404</b>	<b>10423</b>

Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
<b>Amphibian</b>				
1.	25398 <i>Crinia georgiana</i> (Quacking Frog)			
2.	25399 <i>Crinia glauerti</i> (Clicking Frog)			
3.	25400 <i>Crinia insignifera</i> (Squelching Froglet)			
4.	25401 <i>Crinia pseudinsignifera</i> (Bleating Froglet)			
5.	25404 <i>Geocrinia leai</i> (Ticking Frog)			
6.	25408 <i>Heleioporus albopunctatus</i> (Western Spotted Frog)			
7.	25410 <i>Heleioporus eyrei</i> (Moaning Frog)			
8.	25415 <i>Limnodynastes dorsalis</i> (Western Banjo Frog)			
9.	25378 <i>Litoria adelaidensis</i> (Slender Tree Frog)			
10.	25388 <i>Litoria moorei</i> (Motorbike Frog)			
11.	25433 <i>Pseudophryne guentheri</i> (Crawling Toadlet)			
<b>Bird</b>				
12.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
13.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
14.	24262 <i>Acanthiza inornata</i> (Western Thornbill)			
15.	24560 <i>Acanthorhynchus superciliosus</i> (Western Spinebill)			
16.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
17.	24281 <i>Accipiter cirrocephalus</i> subsp. <i>cirrocephalus</i> (Collared Sparrowhawk)			
18.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
19.	25755 <i>Acrocephalus australis</i> (Australian Reed Warbler)			
20.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
21.	25544 <i>Aegotheles cristatus</i> (Australian Owllet-nightjar)			
22.	24310 <i>Anas castanea</i> (Chestnut Teal)			
23.	24312 <i>Anas gracilis</i> (Grey Teal)			
24.	24313 <i>Anas platyrhynchos</i> (Mallard)			
25.	24315 <i>Anas rhynchotis</i> (Australasian Shoveler)			
26.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
27.	47414 <i>Anhinga novaehollandiae</i> (Australasian Darter)			
28.	24506 <i>Anous tenuirostris</i> subsp. <i>melanops</i> (Australian Lesser Noddy)		T	
29.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
30.	24562 <i>Anthochaera lunulata</i> (Western Little Wattlebird)			
31.	25670 <i>Anthus australis</i> (Australian Pipit)			
32.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
33.	25558 <i>Ardea ibis</i> (Cattle Egret)			
34.	41324 <i>Ardea modesta</i> (great egret, white egret)			
35.	24340 <i>Ardea novaehollandiae</i> (White-faced Heron)			
36.	24341 <i>Ardea pacifica</i> (White-necked Heron)			
37.	24610 <i>Ardeotis australis</i> (Australian Bustard)			
38.	25736 <i>Arenaria interpres</i> (Ruddy Turnstone)		IA	
39.	25566 <i>Artamus cinereus</i> (Black-faced Woodswallow)			

Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
40.	24353 <i>Artamus cyanopterus</i> (Dusky Woodswallow)			
41.	24318 <i>Aythya australis</i> (Hardhead)			
42.	<i>Barnardius zonarius</i>			
43.	24319 <i>Biziura lobata</i> (Musk Duck)			
44.	24345 <i>Botaurus poiciloptilus</i> (Australasian Bittern)		T	
45.	24721 <i>Cacatua galerita</i> subsp. <i>galerita</i> (Sulphur-crested Cockatoo)	Y		
46.	25714 <i>Cacatua pastinator</i> (Western Long-billed Corella)			
47.	25715 <i>Cacatua roseicapilla</i> (Galah)			
48.	25716 <i>Cacatua sanguinea</i> (Little Corella)			
49.	25598 <i>Cacomantis flabelliformis</i> (Fan-tailed Cuckoo)			
50.	42307 <i>Cacomantis pallidus</i> (Pallid Cuckoo)			
51.	24779 <i>Calidris acuminata</i> (Sharp-tailed Sandpiper)		IA	
52.	25738 <i>Calidris canutus</i> (Red Knot, knot)		IA	
53.	24784 <i>Calidris ferruginea</i> (Curlew Sandpiper)		T	
54.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
55.	24790 <i>Calidris tenuirostris</i> (Great Knot)		T	
56.	25717 <i>Calyptorhynchus banksii</i> (Red-tailed Black-Cockatoo)			
57.	24731 <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> (Forest Red-tailed Black Cockatoo)		T	
58.	24733 <i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo, White-tailed Long-billed Black Cockatoo)		T	
59.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)		T	
60.	48400 <i>Calyptorhynchus</i> sp. (white-tailed black cockatoo)		T	
61.	25575 <i>Charadrius leschenaultii</i> (Greater Sand Plover)		T	
62.	24377 <i>Charadrius ruficapillus</i> (Red-capped Plover)			
63.	24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck)			
64.	<i>Chroicocephalus novaehollandiae</i>			
65.	25601 <i>Chrysococcyx lucidus</i> (Shining Bronze Cuckoo)			
66.	24432 <i>Chrysococcyx lucidus</i> subsp. <i>plagosus</i> (Shining Bronze Cuckoo)			
67.	24288 <i>Circus approximans</i> (Swamp Harrier)			
68.	24774 <i>Cladorhynchus leucocephalus</i> (Banded Stilt)			
69.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
70.	24399 <i>Columba livia</i> (Domestic Pigeon)	Y		
71.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
72.	25592 <i>Corvus coronoides</i> (Australian Raven)			
73.	24417 <i>Corvus coronoides</i> subsp. <i>perplexus</i> (Australian Raven)			
74.	24671 <i>Coturnix pectoralis</i> (Stubble Quail)			
75.	25701 <i>Coturnix ypsilophora</i> (Brown Quail)			
76.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
77.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
78.	24422 <i>Cracticus tibicen</i> subsp. <i>dorsalis</i> (White-backed Magpie)			
79.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
80.	24322 <i>Cygnus atratus</i> (Black Swan)			
81.	30901 <i>Dacelo novaeguineae</i> (Laughing Kookaburra)	Y		
82.	25673 <i>Daphoenositta chrysoptera</i> (Varied Sittella)			
83.	25607 <i>Dicaeum hirundinaceum</i> (Mistletoebird)			
84.	24470 <i>Dromaius novaehollandiae</i> (Emu)			
85.	<i>Egretta garzetta</i>			
86.	<i>Egretta novaehollandiae</i>			
87.	<i>Elanus axillaris</i>			
88.	47937 <i>Elsyornis melanops</i> (Black-fronted Dotterel)			
89.	<i>Eolophus roseicapillus</i>			
90.	24651 <i>Eopsaltria australis</i> subsp. <i>griseogularis</i> (Western Yellow Robin)			
91.	24567 <i>Epthianura albifrons</i> (White-fronted Chat)			
92.	24379 <i>Erythronyctes cinctus</i> (Red-kneed Dotterel)			
93.	25746 <i>Eudyptula minor</i> (Little Penguin)			
94.	24818 <i>Eudyptula minor</i> subsp. <i>novaehollandiae</i> (Little Penguin)			
95.	25621 <i>Falco berigora</i> (Brown Falcon)			
96.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
97.	24472 <i>Falco cenchroides</i> subsp. <i>cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
98.	25623 <i>Falco longipennis</i> (Australian Hobby)			
99.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
100.	25727 <i>Fulica atra</i> (Eurasian Coot)			
101.	24761 <i>Fulica atra</i> subsp. <i>australis</i> (Eurasian Coot)			
102.	25729 <i>Gallinula tenebrosa</i> (Dusky Moorhen)			
103.	24763 <i>Gallinula tenebrosa</i> subsp. <i>tenebrosa</i> (Dusky Moorhen)			
104.	25730 <i>Gallirallus philippensis</i> (Buff-banded Rail)			
105.	24765 <i>Gallirallus philippensis</i> subsp. <i>mellori</i> (Buff-banded Rail)			
106.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
107.	24481 <i>Glareola maldivarum</i> (Oriental Pratincole)		IA	

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108.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
109.	24487 <i>Haematopus longirostris</i> (Pied Oystercatcher)			
110.	24293 <i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)			
111.	24295 <i>Haliastur sphenurus</i> (Whistling Kite)			
112.	24296 <i>Hamirostra isura</i> (Square-tailed Kite)			
113.	47965 <i>Hieraaetus morphnoides</i> (Little Eagle)			
114.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
115.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
116.	48587 <i>Hydroprogne caspia</i> (Caspian Tern)		IA	
117.	47975 <i>Ixobrychus dubius</i> (Australian Little Bittern)		□4	
118.	24511 <i>Larus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Silver Gull)			
119.	25638 <i>Larus pacificus</i> (Pacific Gull)			
120.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
121.	30932 <i>Limosa lapponica</i> (Bar-tailed Godwit)		IA	
122.	24690 <i>Macronectes giganteus</i> (Southern Giant Petrel)		IA	
123.	24326 <i>Malacorhynchus membranaceus</i> (Pink-eared Duck)			
124.	25650 <i>Malurus elegans</i> (Red-winged Fairy-wren)			
125.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
126.	25758 <i>Megalurus gramineus</i> (Little Grassbird)			
127.	24587 <i>Melithreptus chloropsis</i> (Western White-naped Honeyeater)			
128.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)			
129.	<i>Microcarbo melanoleucos</i>			
130.	48008 <i>Morus serrator</i> (Australasian Gannet)			
131.	25610 <i>Myiagra inquieta</i> (Restless Flycatcher)			
132.	24738 <i>Neophema elegans</i> (Elegant Parrot)			
133.	24739 <i>Neophema petrophila</i> (Rock Parrot)			
134.	24798 <i>Numenius madagascariensis</i> (Eastern Curlew)		T	
135.	25742 <i>Numenius phaeopus</i> (Whimbrel)		IA	
136.	25564 <i>Nycticorax caledonicus</i> (Rufous Night Heron)			
137.	24407 <i>Ocyphaps lophotes</i> (Crested Pigeon)			
138.	24328 <i>Oxyura australis</i> (Blue-billed Duck)		□4	
139.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
140.	24624 <i>Pachycephala rufiventris</i> subsp. <i>rufiventris</i> (Rufous Whistler)			
141.	24693 <i>Pachyptila desolata</i> (Antarctic Prion)			
142.	48591 <i>Pandion cristatus</i> (Osprey, Eastern Osprey)		IA	
143.	25681 <i>Pardalotus punctatus</i> (Spotted Pardalote)			
144.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
145.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)			
146.	48061 <i>Petrochelidon nigricans</i> (Tree Martin)			
147.	48066 <i>Petroica boodang</i> (Scarlet Robin)			
148.	24659 <i>Petroica goodenovii</i> (Red-capped Robin)			
149.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
150.	24664 <i>Phalacrocorax carbo</i> subsp. <i>novaehollandiae</i> (Great Cormorant)			
151.	24665 <i>Phalacrocorax fuscescens</i> (Black-faced Cormorant)			
152.	25698 <i>Phalacrocorax melanoleucos</i> (Little Pied Cormorant)			
153.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
154.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
155.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
156.	25587 <i>Phaps elegans</i> (Brush Bronzewing)			
157.	48071 <i>Phylidonyris niger</i> (White-cheeked Honeyeater)			
158.	24596 <i>Phylidonyris novaehollandiae</i> (New Holland Honeyeater)			
159.	24841 <i>Platalea flavipes</i> (Yellow-billed Spoonbill)			
160.	25720 <i>Platycercus icterotis</i> (Western Rosella)			
161.	24747 <i>Platycercus spurius</i> (Red-capped Parrot)			
162.	25721 <i>Platycercus zonarius</i> (Australian Ringneck, Ring-necked Parrot)			
163.	24750 <i>Platycercus zonarius</i> subsp. <i>semitorquatus</i> (Twenty-eight Parrot)			
164.	24843 <i>Plegadis falcinellus</i> (Glossy Ibis)		IA	
165.	24382 <i>Pluvialis fulva</i> (Pacific Golden Plover)		IA	
166.	24383 <i>Pluvialis squatarola</i> (Grey Plover)		IA	
167.	25703 <i>Podargus strigoides</i> (Tawny Frogmouth)			
168.	24679 <i>Podargus strigoides</i> subsp. <i>brachypterus</i> (Tawny Frogmouth)			
169.	25704 <i>Podiceps cristatus</i> (Great Crested Grebe)			
170.	24681 <i>Poliiocephalus poliocephalus</i> (Hoary-headed Grebe)			
171.	25722 <i>Polytelis anthopeplus</i> (Regent Parrot)			
172.	25731 <i>Porphyrio porphyrio</i> (Purple Swamphen)			
173.	24767 <i>Porphyrio porphyrio</i> subsp. <i>bellus</i> (Purple Swamphen)			
174.	24769 <i>Porzana fluminea</i> (Australian Spotted Crane)			
175.	25732 <i>Porzana pusilla</i> (Baillon's Crane)			
176.	24771 <i>Porzana tabuensis</i> (Spotless Crane)			
177.	<i>Purpureicephalus spurius</i>			



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178.	24776 <i>Recurvirostra novaehollandiae</i> (Red-necked Avocet)			
179.	48096 <i>Rhipidura albiscapa</i> (Grey Fantail)			
180.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
181.	25534 <i>Sericornis frontalis</i> (White-browed Scrubwren)			
182.	30948 <i>Smicromis brevirostris</i> (Weebill)			
183.	24522 <i>Sterna bergii</i> (Crested Tern)			
184.	48594 <i>Stemula nereis</i> (Fairy Tern)			
185.	24329 <i>Stictonetta naevosa</i> (Freckled Duck)			
186.	25597 <i>Strepera versicolor</i> (Grey Currawong)			
187.	25589 <i>Streptopelia chinensis</i> (Spotted Turtle-Dove)	Y		
188.	25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove)	Y		
189.	25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
190.	24682 <i>Tachybaptus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
191.	24331 <i>Tadorna tadornoides</i> (Australian Shelduck, Mountain Duck)			
192.	48597 <i>Thalasseus bergii</i> (Crested Tern)		IA	
193.	48135 <i>Thinornis rubricollis</i> (Hooded Plover, Hooded Dotterel)		□4	
194.	24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
195.	25549 <i>Todiramphus sanctus</i> (Sacred Kingfisher)			
196.	48141 <i>Tribonyx ventralis</i> (Black-tailed Native-hen)			
197.	24803 <i>Tringa brevipes</i> (Grey-tailed Tattler)		□4	
198.	24806 <i>Tringa glareola</i> (Wood Sandpiper)		IA	
199.	24808 <i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
200.	24809 <i>Tringa stagnatilis</i> (Marsh Sandpiper, little greenshank)		IA	
201.	48147 <i>Turnix varius</i> (Painted Button-quail)			
202.	24852 <i>Tyto alba</i> subsp. <i>delicatula</i> (Barn Owl)			
203.	24855 <i>Tyto novaehollandiae</i> subsp. <i>novaehollandiae</i> (Masked Owl (southwest))		□3	
204.	25577 <i>Vanellus miles</i> (Masked Lapwing)			
205.	24386 <i>Vanellus tricolor</i> (Banded Lapwing)			
206.	41351 <i>Xenus cinereus</i> (Terek Sandpiper)		IA	
207.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silvereve)			

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208.	<i>Carassius auratus</i>			
209.	34031 <i>Carcharodon carcharias</i> (Great White Shark)		T	
210.	<i>Edelia vittata</i>			
211.	<i>Elops hawaiiensis</i>			
212.	34028 <i>Galaxias occidentalis</i> (Western Minnow)			
213.	34027 <i>Galaxiella nigrostriata</i> (Black-stripe Minnow, black-striped dwarf galaxias)		T	
214.	<i>Gambusia affinis</i>			
215.	34030 <i>Geotria australis</i> (Pouched Lamprey)		□3	
216.	<i>Macroramphosus scolopax</i>			
217.	<i>Muraenichthys tasmaniensis</i>			
218.	<i>Nannoperca vittata</i>			
219.	<i>Ophisurus serpens</i>			
220.	<i>Parablennius postoculomaculatus</i>			
221.	<i>Pseudogobius olorum</i>			
222.	<i>Rachycentron canadum</i>			
223.	<i>Scobinichthys granulatus</i>			

**Invertebrate**

224.	<i>Acariformes</i> sp.			
225.	<i>Aeshnidae</i> sp.			
226.	<i>Amblyomma triguttatum</i>			
227.	<i>Aname mainae</i>			
228.	<i>Aname tepperi</i>			
229.	<i>Arachnura higginsii</i>			
230.	<i>Araneus cyphoxis</i>			
231.	<i>Araneus eburneiventris</i>			
232.	<i>Araneus senicaudatus</i>			
233.	<i>Araneus senicaudatus</i> subsp. <i>simplex</i>			Y
234.	<i>Argiope protensa</i>			
235.	<i>Argiope trifasciata</i>			
236.	<i>Austracantha minax</i>			
237.	<i>Backobourkia brounii</i>			
238.	<i>Backobourkia heroine</i>			
239.	<i>Badumna insignis</i>			
240.	<i>Baetidae</i> sp.			
241.	<i>Caenidae</i> sp.			
242.	<i>Calamoecia clitellata</i>			
243.	<i>Ceratopogonidae</i> sp.			

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244.	33939 <i>Cherax cainii</i> (Marron)			
245.	<i>Cherax destructor</i>			
246.	<i>Cherax quinquecarinatus</i>			
247.	<i>Chironominae</i> sp.			
248.	<i>Coenagrionidae</i> sp.			
249.	<i>Corduliidae</i> sp.			
250.	<i>Corixidae</i> sp.			
251.	<i>Cormocephalus aurantiipes</i>			
252.	<i>Cormocephalus strigosus</i>			
253.	<i>Culicidae</i> sp.			
254.	<i>Dolichopodidae</i> sp.			
255.	<i>Dugesidae</i> sp.			
256.	<i>Dytiscidae</i> sp.			
257.	<i>Ecnomidae</i> sp.			
258.	<i>Ephyridae</i> sp.			
259.	<i>Eriophora biapicata</i>			
260.	<i>Erpobdellidae</i> sp.			
261.	<i>Gomphidae</i> sp.			
262.	<i>Gripopterygidae</i> sp.			
263.	<i>Gyrinidae</i> sp.			
264.	<i>Hemicorduliidae</i> sp.			
265.	<i>Henicops dentatus</i>			
266.	<i>Hogna crispipes</i>			
267.	<i>Hydrobiosidae</i> sp.			
268.	<i>Hydrophilidae</i> sp.			
269.	<i>Hydropsychidae</i> sp.			
270.	<i>Hydroptilidae</i> sp.			
271.	<i>Hypsimetopodidae</i> sp.			
272.	<i>Hyriidae</i> sp.			
273.	48935 <i>Idiosoma sigillatum</i> (Swan Coastal Plain shield-backed trapdoor spider)		□3	
274.	<i>Isopeda leishmanni</i>			
275.	<i>Ixodes australiensis</i>			
276.	<i>Kangarosa properipes</i>			
277.	<i>Laetesia mollita</i>			
278.	<i>Lampona cylindrata</i>			
279.	<i>Latrodectus hasseltii</i>			
280.	<i>Leptoceridae</i> sp.			
281.	<i>Leptophlebiidae</i> sp.			
282.	<i>Libellulidae</i> sp.			
283.	<i>Lymnaeidae</i> sp.			
284.	<i>Maratus pavonis</i>			
285.	<i>Mesoveliidae</i> sp.			
286.	<i>Missulena granulosa</i>			
287.	<i>Missulena occatoria</i>			
288.	<i>Mituliodon tarantulinus</i>			
289.	<i>Nephila edulis</i>			
290.	<i>Nicodamus mainae</i>			
291.	<i>Notonectidae</i> sp.			
292.	<i>Nunciella aspera</i>			
293.	<i>Oecobius navus</i>			
294.	<i>Oligochaeta</i> sp.			
295.	<i>Oniscidae</i> sp.			
296.	<i>Oniscigastridae</i> sp.			
297.	<i>Orthocladinae</i> sp.			
298.	<i>Palaemonidae</i> sp.			
299.	<i>Parastacidae</i> sp.			
300.	<i>Pentastemon intermedium</i>			
301.	<i>Perthiidae</i> sp.			
302.	<i>Phryganoporus candidus</i>			
303.	<i>Physidae</i> sp.			
304.	<i>Raveniella arenacea</i>			
305.	<i>Raveniella peckorum</i>			
306.	<i>Scirtidae</i> sp.			
307.	<i>Scolopendra laeta</i>			
308.	<i>Simuliidae</i> sp.			
309.	<i>Sphaeriidae</i> sp.			
310.	<i>Steatoda capensis</i>			
311.	<i>Steatoda grossa</i>			
312.	<i>Styloniscidae</i> sp.			
313.	<i>Supunna picta</i>			

Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
314.	<i>Synsphyronus magnus</i>			
315.	<i>Synthemistidae sp.</i>			
316.	<i>Talitridae sp.</i>			
317.	<i>Tanypodinae sp.</i>			
318.	<i>Tasmanicosa leuckartii</i>			
319.	<i>Telephlebiidae sp.</i>			
320.	<i>Temnocephalidea sp.</i>			
321.	<i>Tetralycosa oraria</i>			
322.	<i>Tipulidae sp.</i>			
323.	<i>Trachycosmus sculptilis</i>			
324.	<i>Urodacus similis</i>			
325.	<i>Veliidae sp.</i>			
326.	<i>Venator immansueta</i>			
327.	<i>Venatrix pullastra</i>			
328.	34113 <i>Westralunio carteri</i> (Carter's Freshwater Mussel)		T	
<b>Mammal</b>				
329.	24088 <i>Antechinus flavipes subsp. leucogaster</i> (Yellow-footed Antechinus, Mardo)			
330.	24208 <i>Arctocepalus forsteri</i> (New Zealand Fur Seal, long-nosed fur-seal)		S	
331.	24209 <i>Arctocepalus tropicalis</i> (Subantarctic fur-seal)		T	
332.	24162 <i>Bettongia penicillata subsp. ogilbyi</i> (Woylie, Brush-tailed Bettong)		T	
333.	24086 <i>Cercartetus concinnus</i> (Western Pygmy-possum, Mundarda)			
334.	24186 <i>Chalinolobus gouldii</i> (Gould's Wattled Bat)			
335.	24092 <i>Dasyurus geoffroyi</i> (Chuditch, Western Quoll)		T	
336.	24043 <i>Eubalaena australis</i> (Southern Right Whale)		T	
337.	24189 <i>Falsistrellus mackenziei</i> (Western False Pipistrelle, Western Falsistrelle)		□4	
338.	24041 <i>Felis catus</i> (Cat)	Y		
339.	24215 <i>Hydromys chrysogaster</i> (Water-rat, Rakali)		□4	
340.	48588 <i>Isoodon fusciventer</i> (Quenda, southwestern brown bandicoot)		□4	
341.	24071 <i>Kogia sima</i> (Dwarf Sperm Whale)			Y
342.	24132 <i>Macropus fuliginosus</i> (Western Grey Kangaroo)			
343.	24051 <i>Megaptera novaeangliae</i> (Humpback Whale)		S	
344.	24213 <i>Mirounga leonina</i> (Southern Elephant Seal)			
345.	24223 <i>Mus musculus</i> (House Mouse)	Y		
346.	24146 <i>Myrmecobius fasciatus</i> (Numbat, Walpurti)		T	
347.	24210 <i>Neophoca cinerea</i> (Australian Sea-lion)		T	
348.	24194 <i>Nyctophilus geoffroyi</i> (Lesser Long-eared Bat)			
349.	24195 <i>Nyctophilus gouldi</i> (Gould's Long-eared Bat)			
350.	24085 <i>Oryctolagus cuniculus</i> (Rabbit)	Y		
351.	48070 <i>Phascogale tapoatafa subsp. wambenger</i> (South-western Brush-tailed Phascogale, Wambenger)		S	
352.	24166 <i>Pseudocheirus occidentalis</i> (Western Ringtail Possum, ngwayir)		T	
353.	24245 <i>Rattus rattus</i> (Black Rat)	Y		
354.	24145 <i>Setonix brachyurus</i> (Quokka)		T	
355.	24111 <i>Sminthopsis gilberti</i> (Gilbert's Dunnart)			
356.	<i>Sminthopsis murina</i>			
357.	24259 <i>Sus scrofa</i> (Pig)	Y		
358.	24158 <i>Trichosurus vulpecula subsp. vulpecula</i> (Common Brushtail Possum)			
359.	30954 <i>Tursiops aduncus</i> (Indo-Pacific Bottlenose Dolphin)			
360.	24069 <i>Tursiops truncatus</i> (Bottlenose Dolphin)			
361.	24206 <i>Vespadelus regulus</i> (Southern Forest Bat)			
362.	24040 <i>Vulpes vulpes</i> (Red Fox)	Y		
<b>Reptile</b>				
363.	42368 <i>Acritoscincus trilineatus</i> (Western Three-lined Skink)			
364.	24990 <i>Aprasia pulchella</i> (Granite Worm-lizard)			
365.	25335 <i>Caretta caretta</i> (Loggerhead Turtle)		T	
366.	43380 <i>Chelodina colliei</i> (South-western Snake-necked Turtle)			
367.	24980 <i>Christinus marmoratus</i> (Marbled Gecko)			
368.	30893 <i>Cryptoblepharus buchananii</i>			
369.	25027 <i>Ctenotus australis</i>			
370.	25039 <i>Ctenotus fallens</i>			
371.	25047 <i>Ctenotus impar</i>			
372.	25049 <i>Ctenotus labillardieri</i>			
373.	41641 <i>Ctenotus ora</i> (Coastal Plains Skink)		□3	
374.	25296 <i>Demansia psammophis subsp. reticulata</i> (Yellow-faced Whipsnake)			
375.	24939 <i>Diplodactylus polyophthalmus</i>			
376.	25251 <i>Echiopsis curta</i> (Bardick)			
377.	25096 <i>Egernia kingii</i> (King's Skink)			
378.	25100 <i>Egernia napoleonis</i>			
379.	25250 <i>Elapognathus coronatus</i> (Crowned Snake)			

Name ID	Species Name	Naturalised	Conservation Code	<sup>1</sup> Endemic To Query Area
380.	25115 <i>Hemiergis initialis</i> subsp. <i>initialis</i>			
381.	25117 <i>Hemiergis peronii</i> subsp. <i>peronii</i>			
382.	25119 <i>Hemiergis quadrilineata</i>			
383.	43384 <i>Hydrophis platurus</i> (Yellow-bellied Seasnake)			
384.	25131 <i>Lerista distinguenda</i>			
385.	25133 <i>Lerista elegans</i>			
386.	25147 <i>Lerista lineata</i> (Perth Slider, Lined Skink)		□3	
387.	25005 <i>Lialis burtonis</i>			
388.	25184 <i>Menetia greyii</i>			
389.	25240 <i>Morelia spilota</i> subsp. <i>imbricata</i> (Carpet Python)			
390.	25191 <i>Morethia lineocellata</i>			
391.	25192 <i>Morethia obscura</i>			
392.	25248 <i>Neelaps bimaculatus</i> (Black-naped Snake)			
393.	25252 <i>Notechis scutatus</i> (Tiger Snake)			
394.	25253 <i>Parasuta gouldii</i>			
395.	25510 <i>Pogona minor</i> (Dwarf Bearded Dragon)			
396.	24907 <i>Pogona minor</i> subsp. <i>minor</i> (Dwarf Bearded Dragon)			
397.	25511 <i>Pseudonaja affinis</i> (Dugite)			
398.	25259 <i>Pseudonaja affinis</i> subsp. <i>affinis</i> (Dugite)			
399.	25266 <i>Simoselaps bertholdi</i> (Jan's Banded Snake)			
400.	25519 <i>Tiliqua rugosa</i>			
401.	25207 <i>Tiliqua rugosa</i> subsp. <i>rugosa</i>			
402.	24983 <i>Underwoodisaurus milii</i> (Barking Gecko)			
403.	25218 <i>Varanus gouldii</i> (Bungarra or Sand Monitor)			
404.	25225 <i>Varanus rosenbergi</i> (Heath Monitor)			

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

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





# EBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created 21 Nov 2021

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

# Summary

## Matters of National Environmental Significance

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

<a href="#">World Heritage Properties</a>	None
<a href="#">National Heritage Places</a>	None
<a href="#">Wetlands of International Importance (Ramsar)</a>	1
<a href="#">Great Barrier Reef Marine Park</a>	None
<a href="#">Commonwealth Marine Area</a>	None
<a href="#">Listed Threatened Ecological Communities</a>	2
<a href="#">Listed Threatened Species</a>	26
<a href="#">Listed Migratory Species</a>	10

## Other Matters Protected by the EBC 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

The EBC 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 EBC Act protect the Commonwealth heritage values of a Commonwealth heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

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

<a href="#">Commonwealth Lands</a>	None
<a href="#">Commonwealth Heritage Places</a>	None
<a href="#">Listed Marine Species</a>	14
<a href="#">Whales and Other Cetaceans</a>	None
<a href="#">Critical Habitats</a>	None
<a href="#">Commonwealth Reserves Terrestrial</a>	None
<a href="#">Australian Marine Parks</a>	None
<a href="#">Habitat Critical to the Survival of Marine Turtles</a>	None

## Extra Information

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

<a href="#">State and Territory Reserves</a>	1
<a href="#">Regional Forest Agreements</a>	None
<a href="#">Nationally Important Wetlands</a>	None
<a href="#">EBC Act Referrals</a>	11
<a href="#">Key Ecological Features (Marine)</a>	None
<a href="#">Biologically Important Areas</a>	None
<a href="#">Bioregional Assessments</a>	None
<a href="#">Geological and Bioregional Assessments</a>	None

# Details

## Matters of National Environmental Significance

### Wetlands of International Importance (Ramsar Wetlands) [Resource Information](#)

Ramsar Site Name	Proximity
<a href="#">Eel/yal/lorup system</a>	Within 10km of Ramsar site

### Listed Threatened Ecological Communities [Resource Information](#)

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

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EBC Act.

Community Name	Threatened Category	Presence Text
<a href="#">Banksia Woodlands of the Swan Coastal Plain ecological community</a>	Endangered	Community likely to occur within area
<a href="#">Tuart Eucalyptus Comphocephala Woodlands and Forests of the Swan Coastal Plain ecological community</a>	Critically Endangered	Community likely to occur within area

### Listed Threatened Species [Resource Information](#)

Status of Conservation Dependent and Extinct are not MNES under the EBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
<b>BIRD</b>		
<a href="#">Botaurus poiciloptilus</a>		
Australasian Bittern 1001	Endangered	Species or species habitat may occur within area
<a href="#">Calidris canutus</a>		
Red-tailed Blackcockatoo, 855	Endangered	Species or species habitat may occur within area
<a href="#">Calidris ferruginea</a>		
Curlew Sandpiper 856	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Calyptorhynchus banksii naso</a>		
Forest Red-tailed Blackcockatoo, 67034	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Test
<a href="#">Charadrius leschenaultii</a> Greater Sandplover, Large Sandplover 1877	Vulnerable	Species or species habitat may occur within area
<a href="#">Falco hypoleucos</a> Grey Falcon 1929	Vulnerable	Species or species habitat may occur within area
<a href="#">Leipoa ocellata</a> Malleefowl 1934	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew 1847	Critically Endangered	Species or species habitat may occur within area
<a href="#">Rostratula australis</a> Australian Painted Snipe 177037	Endangered	Species or species habitat likely to occur within area
<a href="#">Sternula nereis nereis</a> Australian Fairy Tern 182950	Vulnerable	Species or species habitat may occur within area
<a href="#">Zanda baudinii listed as Calyptorhynchus baudinii</a> Baudin's Black Cockatoo, Mon-billed Black Cockatoo 187736	Endangered	Breeding likely to occur within area
<a href="#">Zanda latirostris listed as Calyptorhynchus latirostris</a> Carnaby's Black Cockatoo, Short-billed Black Cockatoo 187737	Endangered	Breeding likely to occur within area
<b>FISH</b>		
<a href="#">Galaxella nirostriata</a> Blackstriped Dwarf Galaxias, Black stripe Minnow 188677	Endangered	Species or species habitat likely to occur within area
<b>MAMMALS</b>		
<a href="#">Dasyurus leoffroii</a> Chuditch, Western Quoll 1330	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Pseudocheirus occidentalis</a> Western Ringtail Possum, Noisy, Womp, Woder, Noor, Noolanit 125911	Critically Endangered	Species or species habitat likely to occur within area
<b>PLANT</b>		



Scientific Name	Threatened Category	Presence Test
<a href="#">Andersonia gracilis</a> Slender Andersonia 14470	Endangered	Species or species habitat may occur within area
<a href="#">Austrostipa bronnei</a> 87808	Endangered	Species or species habitat may occur within area
<a href="#">Caladenia huebneri</a> Thin Spiderorchid, Grand Spiderorchid, Rusty Spiderorchid 7309	Endangered	Species or species habitat likely to occur within area
<a href="#">Caladenia procera</a> Carbunup Thin Spider orchid 68679	Critically Endangered	Species or species habitat may occur within area
<a href="#">Diuris drummondii</a> Tall Donkey orchid 4365	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Diuris micrantha</a> Dark Beeorchid 55082	Vulnerable	Species or species habitat known to occur within area
<a href="#">Diuris purdiei</a> Purdie's Donkeyorchid 12950	Endangered	Species or species habitat likely to occur within area
<a href="#">Drakaea elastica</a> Glossy-leaved Hammer orchid, Glossy-leaved Hammer orchid, Warty Hammer orchid 16753	Endangered	Species or species habitat known to occur within area
<a href="#">Drakaea micrantha</a> Dark Hammerorchid 56755	Vulnerable	Species or species habitat known to occur within area
<a href="#">Synaphea sp. Fairbridge Farm (D. Capenfus 696)</a> Selena's Synaphea 82881	Critically Endangered	Species or species habitat may occur within area
<a href="#">Synaphea sp. Serpentine (G.R. Brand 103)</a> 86879	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<b>Migratory Marine Birds</b>		
<a href="#">Apus pacificus</a> Forktailed Swift 678		Species or species habitat likely to occur within area
<b>Migratory Terrestrial Species</b>		
<a href="#">Motacilla cinerea</a> Grey Wattle 642		Species or species habitat may occur within area
<b>Migratory Wetlands Species</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper 59309		Species or species habitat likely to occur within area
<a href="#">Calidris acuminata</a> Sharptailed Sandpiper 874		Species or species habitat likely to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot 855	Endangered	Species or species habitat may occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper 856	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Calidris melanotos</a> Spectacular Sandpiper 858		Species or species habitat may occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sandplover, Large Sandplover Vulnerable 877		Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew 847	Critically Endangered	Species or species habitat may occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank 832		Species or species habitat likely to occur within area

Listed Marine Species		Resource Information
Scientific Name	Threatened Category	Presence Text
Bird		
<a href="#">Actitis hypoleucos</a> Common Sandpiper 59309		Species or species habitat likely to occur within area
<a href="#">Apus pacificus</a> Forktailed Skift 678		Species or species habitat likely to occur within area overfly marine area
<a href="#">Bubulcus ibis as Ardea ibis</a> Cattle Egret 66521		Species or species habitat may occur within area overfly marine area
<a href="#">Calidris acuminata</a> Sharptailed Sandpiper 874		Species or species habitat likely to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot 855	Endangered	Species or species habitat may occur within area overfly marine area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper 856	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
<a href="#">Calidris melanotos</a> Sectoral Sandpiper 858		Species or species habitat may occur within area overfly marine area
<a href="#">Charadrius leschenaultii</a> Greater Sandplover, Barne Sandplover Vulnerable 877		Species or species habitat may occur within area
<a href="#">Haliaeetus leucogaster</a> Whitebellied SeaEagle 943		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Test
<a href="#">Merops ornatus</a> Rainbow Bee-eater (670)		Species or species habitat may occur within area overfly marine area
<a href="#">Motacilla cinerea</a> Grey Warbler (642)		Species or species habitat may occur within area overfly marine area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew (847)	Critically Endangered	Species or species habitat may occur within area
<a href="#">Rostratula australis</a> as <a href="#">Rostratula benhalensis</a> (sensu lato) Australian Painted Snipe (77037)	Endangered	Species or species habitat likely to occur within area overfly marine area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank (832)		Species or species habitat likely to occur within area overfly marine area

## Extra Information

State and Territory Reserves		Resource Information
Protected Area Name	Reserve Type	State
NTWA Bushland covenant (0095)	Conservation Covenant	WA

Environmental Act Referrals				Resource Information
Title of referral	Reference	Referral Outcome	Assessment Status	
<a href="#">Controlled action</a>				
<a href="#">Clear 2.86 ha of native vegetation for the purpose of horticulture</a>	2010(5655)	Controlled Action	Post-Approval	
<a href="#">Plot 4 Runnymede Road, Wellesley Proposed Sand Extraction</a>	2020(8862)	Controlled Action	Assessment Approach	
<a href="#">Sand Extraction Project Plot 5 Wellesley Road, Wellesley Shire of Harvey</a>	2021(9034)	Controlled Action	Assessment Approach	
<a href="#">Sand Minion Plot 7 Runnymede Road</a>	2011(5996)	Controlled Action	Post-Approval	
<a href="#">WA Offshore Windfarm</a>	2021(8961)	Controlled Action	Assessment Approach	



Title of referral	Reference	Referral Outcome	Assessment Status
<b>Controlled action</b>			
<a href="#">Yarra-Traralgon Water Supply Development</a>	2005-2073	Controlled Action	Completed
<b>Not controlled action</b>			
<a href="#">Improving rabbit biocontrol releasing another strain of RHD, returning to thirds of Australia</a>	2015-17522	Not Controlled Action	Completed
<a href="#">INDIG - Central Submarine Telecommunications Cable</a>	2017-18127	Not Controlled Action	Completed
<a href="#">Emerton Traralgon Gas Pipeline Project</a>	2005-2388	Not Controlled Action	Completed
<b>Not controlled action - particular manner</b>			
<a href="#">Construct and operate a 132kV transmission line and upgrade Emerton Terminal Site</a>	2008-4484	Not Controlled Action - Particular Manner	Cost Approval
<a href="#">INDIG - Marine Cable Route Survey (INDIG)</a>	2017-17996	Not Controlled Action - Particular Manner	Cost Approval

# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of

- World and National Heritage properties
- Wetlands of International and National Importance
- Commonwealth and State/Territory reserves
- distribution of listed threatened, migratory and marine species
- listed threatened ecological communities and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under government law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

## 3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and 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

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, biology, elevation, aspect, terrain, etc.) or either point locations and described habitat or modelled IMAENT or BICIM habitat modelling using

Where little information is available for a species or large number of maps are required in a short timeframe, maps are derived either from 0.04 or 0.02 decimal degree cells by an automated process using polygon capture techniques (static 100 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, 100 or 250 map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report

- threatened species listed as extinct or considered variants
- some recently listed species and ecological communities
- some listed migratory and listed marine species, which are not listed as threatened species and
- migratory species that are very widespread, variant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group within the Resource Information link for the currency of the information.

# 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](#)
- [Wildlife 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.

# **APPENDIX C**

## **OBSERVED FAUNA LISTING**



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# Fauna Observed During Survey Period

Lot 7 Runnymede Road, Wellesley

Compiled by Greg Harewood - Nov 2021

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Class Family Species	Common Name	Conservation Status
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## Aves

### Psittacidae

Parrots

<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black-Cockatoo	S3 VU Bp
<i>Calyptorhynchus latirostris</i>	Carnaby's Black Cockatoo	S2 EN Bp EN
<i>Platycercus spurius</i>	Red-capped Parrot	LC
<i>Platycercus zonarius</i>	Australian Ringneck	LC

### Halcyonidae

Tree Kingfishers

<i>Dacelo novaeguineae</i>	Laughing Kookaburra	Introduced
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### Acanthizidae

Thornbills, Geryones, Fieldwrens & Whitefaces

<i>Acanthiza apicalis</i>	Broad-tailed Thornbill	Bh LC
<i>Gerygone fusca</i>	Western Gerygone	LC
<i>Smicromnis brevirostris</i>	Weebill	Bh LC

### Pardalotidae

Pardalotes

<i>Pardalotus striatus</i>	Striated Pardalote	LC
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### Meliphagidae

Honeyeaters, Chats

<i>Anthochaera carunculata</i>	Red Wattlebird	LC
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### Pachycephalidae

Crested Shrike-tit, Crested Bellbird, Shrike Thrushes, Whistlers

<i>Pachycephala rufiventris</i>	Rufous Whistler	LC
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### Dicruridae

Monarchs, Magpie Lark, Flycatchers, Fantails, Drongo

<i>Rhipidura fuliginosa</i>	Grey Fantail	LC
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BC Act Status - S1 to S7, EPBC Act Status - CR = Critically Endangered, EN = Endangered, VU = Vulnerable, EX = Extinct, DBCA Priority Status - P1 to P4, Bush Forever Decreaser Species - Bh = habitat specialists, Bp = wide ranging species, Be = extinct in Perth Coastal Plain Region, Int. Agmts - CA = CAMBA, JA = JAMBA, RK = ROKAMBA, IUCN Red List Category Definitions LC = Least Concern - see <http://www.iucnredlist.org/technical-documents/categories-and-criteria/2001-categories-criteria> for others.

Class Family Species	Common Name	Conservation Status
<b>Campephagidae</b> Cuckoo-shrikes, Trillers		
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	LC
<b>Cracticidae</b> Currawongs, Magpies & Butcherbirds		
<i>Cracticus tibicen</i>	Australian Magpie	LC
<i>Cracticus torquatus</i>	Grey Butcherbird	LC
<b>Mammalia</b>		
<b>Phalangeridae</b> Brush-tail Possums, Cuscuses		
<i>Trichosurus vulpecula</i>	Common Brushtail Possum	LC
<b>Macropodidae</b> Kangaroos, Wallabies		
<i>Macropus fuliginosus</i>	Western Grey Kangaroo	LC




BC Act Status - S1 to S7, EPBC Act Status - CR = Critically Endangered, EN = Endangered, VU = Vulnerable, EX = Extinct, DBCA Priority Status - P1 to P4, Bush Forever Decreaser Species - Bh = habitat specialists, Bp = wide ranging species, Be = extinct in Perth Coastal Plain Region, Int. Agmts - CA = CAMBA, JA = JAMBA, RK = ROKAMBA, IUCN Red List Category Definitions LC = Least Concern - see <http://www.iucnredlist.org/technical-documents/categories-and-criteria/2001-categories-criteria> for others.

# **APPENDIX D**

## **HABITAT TREE DETAILS**

WPT	Coordinates (MGA 94/Z50)	383529 mE	6332512mN	Tree Species	Dead Unknown	Survey Date	7/10/2021
17	Comments	<p>Dead tree with several spout type hollows and one large hollow in the fork of two branches. This hollow shows significant chew marks along one edge (upper rim of hollow shown in photograph below). This is suggestive of the hollow having been used by black cockatoos for breeding in the past.</p>				Classification	Chewed Hollow.



WPT	Coordinates (MGA 94/Z50)	383449 mE	6332451 mN	Tree Species	Marri	Survey Date	07/10/2021				
<b>64</b>	<b>Comments</b>	Marri with one large side entry hollow. Appears to have rub marks around base of hollow entrance which suggest use by fauna such as possums.									
											
<b>Classification</b>							Unused Hollow.				

Habitat Trees  
DBH >50cm  
Datum - GDA94

Entrance Size Ranges - Small = >5cm, Medium = 5 to 10cm, Large = >10cm

Waypoint Number	Zone	mE	mN	Tree Species	DBH (cm)	Tree Height (m)	Number of Hollows	Estimated Hollow Entrance Size Range (cm)	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt001	50	383757	6332578	Marri	>50	15-20	0					
wpt002	50	383779	6332574	Marri	>50	15-20	0					
wpt003	50	383798	6332586	Marri	>50	15-20	0					
wpt004	50	383760	6332575	Marri	>50	15-20	0					
wpt006	50	383684	6332548	Marri	>50	15-20	0					
wpt007	50	383630	6332535	Marri	>50	15-20	0					
wpt008	50	383631	6332531	Marri	>50	15-20	0					
wpt009	50	383601	6332558	Marri	>50	15-20	0					
wpt010	50	383590	6332560	Marri	>50	15-20	0					
wpt011	50	383578	6332560	Marri	>50	15-20	0					
wpt012	50	383571	6332557	Marri	>50	15-20	0					
wpt013	50	383575	6332548	Marri	>50	15-20	0					
wpt014	50	383562	6332522	Marri	>50	15-20	0					
wpt015	50	383552	6332524	Jarraah	>50	15-20	0					
wpt016	50	383545	6332521	Marri	>50	15-20	0					
wpt017	50	383529	6332512	Dead Unknown	>50	10-15	2+	Large (Cockatoo)	No Signs	Cockatoos	Yes	Examined with drone - Several spouts and chimney - evidence of chewing around chimney
wpt018	50	383510	6332529	Marri	>50	15-20	0					
wpt019	50	383497	6332520	Dead Unknown	>50	10-15	0					
wpt020	50	383498	6332570	Marri	>50	10-15	0					
wpt021	50	383497	6332570	Jarraah	>50	20+	0					
wpt022	50	383472	6332533	Marri	>50	15-20	0					
wpt023	50	383435	6332523	Marri	>50	15-20	0					
wpt024	50	383407	6332527	Dead Marri	>50	15-20	2+	Small-Medium	No Signs	No Signs	No	
wpt025	50	383389	6332546	Marri	>50	20+	2+	Small	No Signs	No Signs	No	
wpt026	50	383404	6332496	Marri	>50	15-20	0					
wpt027	50	383403	6332488	Marri	>50	15-20	0					
wpt028	50	383399	6332448	Marri	>50	15-20	0					
wpt029	50	383431	6332445	Jarraah	>50	15-20	0					
wpt030	50	383424	6332409	Dead Unknown	>50	0-5	1	Large	No Signs	No Signs	No	Too shallow
wpt031	50	383469	6332356	Marri	>50	15-20	0					
wpt032	50	383459	6332353	Jarraah	>50	5-10	0					
wpt033	50	383456	6332320	Jarraah	>50	15-20	0					
wpt034	50	383472	6332317	Marri	>50	15-20	0					
wpt035	50	383480	6332296	Jarraah	>50	10-15	0					Examined with drone - Possible hollows too shallow/non existent
wpt036	50	383475	6332295	Marri	>50	10-15	0					
wpt037	50	383475	6332276	Jarraah	>50	0-5	0					
wpt038	50	383493	6332286	Jarraah	>50	15-20	2+	Small	No Signs	No Signs	No	
wpt039	50	383475	6332274	Jarraah	>50	0-5	0					

Waypoint Number	Zone	mE	mN	Tree Species	DBH (cm)	Tree Height (m)	Number of Hollows	Estimated Hollow Entrance Size Range (cm)	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt040	50	383451	6332256	Jarra	>50	5-10	0					Examined with drone - Possible hollow too shallow/non existent
wpt041	50	383482	6332259	Jarra	>50	10-15	0					
wpt042	50	383505	6332256	Jarra	>50	20+	0					
wpt043	50	383525	6332267	Jarra	>50	15-20	2+	Small-Medium	No Signs	No Signs	No	
wpt044	50	383523	6332261	Jarra	>50	10-15	0					
wpt045	50	383546	6332275	Dead Unknown	>50	0-5	0					
wpt046	50	383564	6332296	Marri	>50	15-20	2+	Small-Medium	No Signs	No Signs	No	
wpt047	50	383566	6332282	Jarra	>50	10-15	0					
wpt048	50	383607	6332257	Marri	>50	15-20	0					
wpt049	50	383648	6332262	Jarra	>50	15-20	0					
wpt050	50	383616	6332202	Marri	>50	15-20	0					
wpt051	50	383603	6332317	Jarra	>50	15-20	0					
wpt052	50	383610	6332333	Jarra	>50	10-15	0					
wpt053	50	383637	6332344	Jarra	>50	10-15	0					
wpt054	50	383642	6332364	Jarra	>50	10-15	0					
wpt055	50	383641	6332363	Jarra	>50	10-15	0					
wpt056	50	383641	6332407	Jarra	>50	15-20	0					
wpt057	50	383641	6332426	Jarra	>50	10-15	2+	Small	No Signs	No Signs	No	
wpt058	50	383652	6332479	Jarra	>50	15-20	0					
wpt059	50	383639	6332501	Jarra	>50	5-10	1	Large	No Signs	No Signs	No	Too low and shallow
wpt060	50	383613	6332489	Jarra	>50	10-15	0					
wpt061	50	383595	6332520	Marri	>50	15-20	0					
wpt062	50	383565	6332471	Jarra	>50	5-10	1	Large	No Signs	No Signs	No	Examined with drone - Possible hollows too shallow/non existent
wpt063	50	383515	6332493	Marri	>50	15-20	0					
wpt064	50	383449	6332451	Marri	>50	15-20	2+	Large (cockatoo)	No Signs	No Signs	Yes	Examined with drone - large side entry - some rub marks
wpt065	50	383476	6332414	Marri	>50	10-15	1	Large	No Signs	No Signs	No	Examined with drone - Chimney type hollow too shallow
wpt066	50	383479	6332403	Marri	>50	20+	2+	Small-Medium	No Signs	No Signs	No	
wpt067	50	383482	6332380	Dead Marri	>50	15-20	2+	Large	No Signs	No Signs	No	Examined with drone - Side entry and chimney type hollow too shallow
wpt068	50	383485	6332373	Jarra	>50	15-20	0					
wpt069	50	383517	6332341	Marri	>50	15-20	0					
wpt070	50	383520	6332340	Marri	>50	15-20	0					
wpt071	50	383532	6332335	Marri	>50	15-20	0					
wpt072	50	383529	6332348	Jarra	>50	15-20	0					
wpt073	50	383555	6332327	Dead Marri	>50	15-20	0					
wpt074	50	383561	6332321	Dead Marri	>50	15-20	0					
wpt075	50	383557	6332350	Jarra	>50	15-20	0					
wpt076	50	383544	6332356	Jarra	>50	10-15	2+	Small-Medium	No Signs	No Signs	No	
wpt077	50	383515	6332358	Jarra	>50	15-20	0					
wpt078	50	383568	6332328	Dead Unknown	>50	0-5	0					
wpt079	50	383595	6332351	Marri	>50	15-20	0					
wpt080	50	383598	6332368	Jarra	>50	15-20	0					



Waypoint Number	Zone	mE	mN	Tree Species	DBH (cm)	Tree Height (m)	Number of Hollows	Estimated Hollow Entrance Size Range (cm)	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt081	50	383603	6332417	Dead Unknown	>50	10-15	0					
wpt082	50	383608	6332430	Jarra	>50	15-20	0					
wpt083	50	383592	6332447	Jarra	>50	15-20	0					
wpt084	50	383584	6332431	Jarra	>50	15-20	0					
wpt085	50	383564	6332431	Jarra	>50	15-20	0					
wpt086	50	383542	6332433	Jarra	>50	15-20	0					
wpt087	50	383541	6332448	Jarra	>50	15-20	0					
wpt088	50	383527	6332432	Dead Marri	>50	15-20	2+	Large	Bees	No Signs	No	Examined with drone - Possible side entry obstructed and appears small internally
wpt089	50	383518	6332420	Marri	>50	20+	2+	Small-Medium	No Signs	No Signs	No	
wpt090	50	383547	6332409	Jarra	>50	20+	2+	Small-Medium	No Signs	No Signs	No	
wpt091	50	383561	6332393	Dead Unknown	>50	15-20	2+	Small-Medium	No Signs	No Signs	No	
wpt092	50	383571	6332382	Jarra	>50	15-20	0					

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