

Fauna Assessment



Hairpin Road (SLK 2.88 to 7.01)

North Jindong

City of Busselton

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SUMMARY

This report details the results of a fauna assessment carried out over a section of the Hairpin Road between SLK 2.88 to SLK 7.01 (survey area), in the City of Busselton (CoB).

The CoB are proposing to upgrade sections of the road to improve safety and will soon be applying for a clearing permit from the Department of Water and Environmental Regulation (DWER) to allow for the removal of some vegetation bordering the existing road. The fauna survey reported on here has been carried out to support the application.

The assessment has included a literature review, a series of daytime reconnaissance surveys and nocturnal spotlighting surveys. Field work at the site was carried out on various days and two nights during November and December 2021 and January 2022. All survey work and reporting has been carried out by Greg Harewood (Zoologist).

Key Findings

The survey area has a total extent of about 8.3 ha, the majority of which consists of the existing road surface which is mostly bordered on either side by remnant native vegetation or grassland/and weeds.

Scattered native trees and groves of native trees consist of various densities of jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*), with a limited range and number of other tree species including peppermint (*Agonis flexuosa*). Almost the entire survey area is bordered by cleared farmland.

Overall, the fauna habitats present are highly degraded with all areas appearing to have been subject to considerable disturbance. Much of the vegetation appears to be regrowth from historical clearing, with most trees not containing hollows of any size due to their relatively young age.

Given the degree of disturbance the original fauna assemblage within the survey area is likely to be depauperate in many aspects, in particular with respect to ground dwelling species which rely on dense native understory (midstorey and ground cover) vegetation, which is almost entirely absent.

The survey area was found to contain three habitat trees (DBH \geq 50cm) with hollows initially assessed as being possibly suitable for black cockatoos to use for nesting purposes (ground level assessment). All three trees were subsequently inspected in closer detail using a drone.

One of the trees (wpt001) contains one large side entry hollow that appears to have characteristics making it suitable for black cockatoos to use for nesting purposes though no actual evidence of use was observed.

Evidence of black cockatoos foraging within the survey area was recorded during the field survey in the form of a chewed marri fruits, activity attributed to Baudin's black cockatoo. Most of the remnant native vegetation present represents potential black cockatoos foraging habitat

given the dominance of marri and to a lesser extent jarrah. No evidence black cockatoos roosting within the survey area was noted.

Evidence of western ringtail possums using the survey area was observed at one location in the form of scats, two dreys and one individual. The observations were made where a peppermint low woodland is present along a 50 metre stretch of the road (SLK 5.44). Habitat along the balance of the survey area appears marginal for the species given the absence of midstorey species favoured by WRP.

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

In summary two vertebrate fauna species of conservation significance (listed as State or Federal threatened/migratory species or as Department of Biodiversity Conservation and Attractions (DBCA) priority species) were positively identified as utilising the survey area for some purpose during the survey period. These species are

- Baudin's Black Cockatoo – Endangered (WA/Federal); and
- Western Ringtail Possum – Critically 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. These species are:

- Peregrine Falcon – Schedule 7 (WA);
- Masked Owl – Priority 3 (DBCA Priority Species);
- Forest Red-tailed Black Cockatoo – Vulnerable (WA/Federal);
- Carnaby's Black Cockatoo – Endangered (WA/Federal);
- Quenda – Priority 4 (DBCA Priority Species);
- South-western Brush-tailed Phascogale - Schedule 6 (WA);
- Western False Pipistrelle – Priority 4 (DBCA Priority Species).

While the actual extent of proposed clearing is yet to be finalised the following conclusions have been drawn on likely impacts based on observations made. In this instance impacts are most likely to be related to the localised loss of small areas of habitat and the potential for some species to be killed or injured during clearing.

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, the relatively small total area of vegetation/habitat present and the anticipated small amount of clearing likely to be undertaken.

No overall change in the conservation status of any fauna species currently utilising the survey area is therefore anticipated as a consequence of likely clearing. 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. Potential impacts on fauna should be reviewed as planning progresses.

1. INTRODUCTION

This report details the results of a fauna assessment carried out over a section of the Hairpin Road between SLK 2.88 to SLK 7.01 (survey area), in the City of Busselton (CoB) (Figure 1 and 2).

The CoB are proposing to upgrade sections of the road to improve safety and will soon be applying for a clearing permit from the Department of Water and Environmental Regulation (DWER) to allow for the removal of some vegetation bordering the existing road. The fauna survey reported on here has been carried out to support the application.

The actual extent of clearing that will be undertaken was at the time of the survey undefined. For the purpose of this assessment the survey area therefore included all areas within the road reserve boundary as defined by fence lines along property boundaries. This area totals 8.3 hectares (ha) in size (including the existing road surface). It should be noted that clearing will only be undertaken in certain sections of this total area.

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 and western ringtail possums. 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);
3. Targeted western ringtail possum (WRP) survey; and
4. 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 *Calyptorhynchus baudinii*, Carnaby's black cockatoo *Calyptorhynchus 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 (DBCA) Threatened Fauna Database (NatureMap) (DBCA 2021). A 20 km buffer around the survey area was applied to capture previous fauna records within the immediate vicinity;

- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* Protected Matters database for fauna of national environmental significance (Department of Agriculture, Water and the Environment (DAWE) 2021). The minimum buffer (1 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 various international treaties (CAMBA, JAMBA and the Bonn Convention) and Priority Fauna (as listed by the DBCA).

3.2 FIELD SURVEYS

The daytime field component of the fauna assessment was carried out on the 4 November 2021, 20 December 2021 and the 4 January 2022. A nocturnal survey was carried out on the 20 December 2021 and the 4 January 2022. All field work was carried out by Greg Harewood (Zoologist) using methods 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 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 12 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.

3.2.2.1 Breeding Habitat Assessment

The habitat tree assessment has involved the identification of all suitable breeding trees species within the subject site that had a DBH of equal to or over 50cm **and** that contain one or more hollows that are or appear suitable for black cockatoos to use for nesting purposes. The DBH of each tree was initially determined using a pre-made 50 cm “caliper”. Borderline trees (i.e. those of which the DBH is uncertain) were measured with a DBH tape.

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 fitting the required criteria was recorded with a GPS and details on tree species, number and size of hollows (if any) noted.

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

- Tree >50cm DBH, no hollows seen;
- Tree >50cm DBH, one or more hollows seen, none of which appeared suitable for black cockatoos to use for nesting/refuge; or
- Tree >50cm DBH, one or more hollows seen, with at least one considered possibly suitable for black cockatoos to use for nesting/refuge.

Identified hollows were examined using binoculars for evidence of actual use. Trees with possible nest hollows were also scratched and raked with a large stick/pole in attempt to flush any sitting birds from hollows and calls of chicks were also be listened for.

If considered necessary and if possible, hollows were inspected/photographed using a wireless camera and/or drone.

3.2.2.2 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.

3.2.2.3 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).

3.2.3 WESTERN RINGTAIL POSSUM ASSESSMENT

3.2.3.1 Daytime Survey

Diurnal surveys to locate and record dreys, obvious tree hollows, scats and individual WRPs was carried out during the course of the various day time field surveys and involved a series of traverses on foot within vegetated sections of the survey area.

3.2.3.2 Night Time Survey

Two night time surveys over different sections of the survey area to locate and record individual WRPs were carried out. This involved both on foot and car based spotlight surveys.

3.2.3.3 Habitat Assessment

Description and comments on the amount and quality of WRP habitat within the survey area are provided based on observations made during the site surveys.

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 ¹	
	BC Act/ DBCA Priority	EPBC Act
Cape Leeuwin Freshwater Snail <i>Austroassiminea lethra</i>	S3	-
Unnamed land snail <i>Helicarion castanea</i>	EX	-
Irvine's bothriembryontid land snail <i>Bothriembryon irvineanus</i>	P2	-
Margaret River Hairy Marron <i>Cherax tenuimanus</i>	S1	CR
Margaret River Burrowing Crayfish <i>Engaewa pseudoreducta</i>	S1	CR
Dunsborough Burrowing Crayfish <i>Engaewa reducta</i>	S2	CR
Carter's Freshwater Mussel <i>Westralunio carteri</i>	S3	VU
Vasse Pachysaga (cricket) <i>Pachysaga strobila</i>	P1	-
Mud Minnow <i>Galaxiella munda</i>	S2	-
Balston's Pygmy Perch <i>Nannatherina balstoni</i>	S2	VU
Salamanderfish <i>Lepidogalaxias salamandroides</i>	S2	-
Short-nosed Snake <i>Elapognathus minor</i>	P2	-
Coastal Plains Skink <i>Ctenotus ora</i>	P3	-
Malleefowl <i>Leipoa ocellata</i>	S3	VU
Australasian Bittern <i>Botaurus poiciloptilus</i>	S2	EN
Migratory Shorebirds/Wetland Species	Various	Various
Eastern Osprey <i>Pandion cristatus</i>	S5	Mig, Ma

¹ See Appendix A for conservation status codes

Species	Conservation Status ¹	
	BC Act/ DBCA Priority	EPBC Act
Peregrine Falcon <i>Falco peregrinus</i>	S7	-
Grey Falcon <i>Falco hypoleucos</i>	S3	VU
Masked Owl <i>Tyto novaehollandiae novaehollandiae</i>	P3	-
Blue-billed Duck <i>Oxyura australis</i>	P4	-
Hooded Plover <i>Thinornis rubricollis</i>	P4	-
Muir's Corella <i>Cacatua pastinator pastinator</i>	S6	-
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
Fork-tailed Swift <i>Apus pacificus</i>	S5	Mig
Grey Wagtail <i>Motacilla cinerea</i>	S5	Mig
Chuditch <i>Dasyurus geoffroii</i>	S3	VU
Quenda <i>Isoodon fusciventer</i>	P4	-
South-western Brush-tailed Phascogale <i>Phascogale tapoatafa wambenger</i>	S6	-
Bilby <i>Macrotis lagotis</i>	S2	VU
Western Ringtail Possum <i>Pseudocheirus occidentalis</i>	S1	CR
Quokka <i>Setonix brachyurus</i>	S3	VU
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 8.3 ha, the majority of which consists of the existing road surface which is mostly bordered on either side by remnant native vegetation or grassland/and weeds.

Scattered native trees and groves of native trees consist of various densities of jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*), with a limited range and number of other tree species including peppermint (*Agonis flexuosa*). Almost the entire survey area is bordered by cleared farmland.

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

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

Fauna Habitat Description	Example Image
<p>Jarrah and Marri Woodland over grassland and/or weeds.</p>	
<p>Jarrah and Marri Woodland over grassland and/or weeds with some areas devoid of trees.</p>	

Fauna Habitat Description	Example Image
<p>Jarrah and Marri Woodland over Peppermint low woodland over a grassland and/or weeds.</p>	

Overall, the fauna habitats present are highly degraded with all areas appearing to have been subject to considerable disturbance. Much of the vegetation appears to be regrowth from historical clearing with most trees not containing hollows of any size due to their relatively young age.

Given the degree of disturbance the original fauna assemblage within the survey area is likely to be depauperate in many aspects, in particular with respect to ground dwelling species which rely on dense native understory (midstorey and ground cover) vegetation, which is almost entirely absent.

5.2.2 BLACK COCKATOO HABITAT ASSESSMENT

5.2.2.1 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 unidentifiable species.

The survey area was found to contain three habitat trees (DBH \geq 50cm) with hollows initially assessed as being possibly suitable for black cockatoos to use for nesting purposes (ground level assessment). Both these trees were subsequently inspected in detail using a drone.

A summary of the observations made of the habitat trees inspected is provided in Table 3. The locations of the trees inspected are shown in Figure 3. Additional details including photographs can be found in Appendix A.

Table 3: Summary of Tree Observations

Wpt	SLK	Side of Road	Number of Possible Hollows	Status	Comments
1	6.71	Nth	2+	1 large hollow	Dead jarrah with one large side entry hollow possibly suitable for black cockatoos, no signs of use. Several possible small hollows.
2	6.51	Nth	2+	Small/medium hollows only	Dead tree with several possible hollows which were found to be non-existent or too small for black cockatoos.
3	4.42	Sth	2+	Small/medium hollows only	Dead tree with several possible hollows which were found to be too small for black cockatoos.

As indicated, one tree (wpt 001) contains one large side entry hollow that appears to have characteristics making it suitable for black cockatoos to use for nesting purposes though no actual evidence of use was observed.

Based on available mapping, there is approximately 9,500 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).

5.2.2.2 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*; and
- Jarrah – *Eucalyptus marginata*.

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 trees. The foraging activity was attributed to Baudin’s black cockatoo based on the nature of the chew marks.

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
Marri fruits – foraging activity attributed to Baudin’s Black Cockatoo.	

Based on available mapping there is about 9,500 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.

5.2.2.3 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 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. The 2019 Great Cocky Count recorded the closest active roost, approximately 2.5 kilometres northeast of the survey area (Site ID: BUSJINR001). This roost was being used by 34 white-tailed black cockatoos during the April 2019 survey (Peck *et al.* 2019). Another six documented roost sites (but not necessarily in current use) occur within 12 km of the survey area.

5.2.3 WESTERN RINGTAIL POSSUM ASSESSMENT

5.2.3.1 Daytime Survey

Evidence of western ringtail possums using the survey area was observed during the day time survey at one location in the form of scats, two dreys. The observations were made where a peppermint low woodland is present along a 50 metre stretch of the road (SLK 5.44) (Figure 4).

5.2.3.2 Night Time Survey

During the nocturnal spotlight survey a single western ringtail possum was observed at the same location the day observations were made (i.e. SLK 5.44) (Figure 4).

5.2.3.3 Habitat Assessment

All evidence of WRPs were limited to a small area of peppermint low woodland along a 50 metre stretch of the road (SLK 5.44). Habitat along the balance of the survey area appears marginal for the species given the absence of midstorey species favoured by WRP. This conclusion is supported by the lack of observations of the species during the day and night surveys in these other areas.

6. CONSERVATION SIGNIFICANT FAUNA SPECIES

Based on the information gathered during the site reconnaissance surveys 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.

Possible impacts of any proposed clearing are also provided though the full extent of clearing is not at this stage known and so these are preliminary comments that should be reviewed as planning progresses. It is assumed that clearing will be kept to a minimum and therefore is unlikely to result in the removal of a significant amount of the vegetation present.

Two vertebrate 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. These species are

- Baudin's Black-Cockatoo *Zanda baudinii* – S2 (BC Act), Endangered (EPBC Act).
Foraging evidence attributed to this species recorded at several locations. The survey area contains areas of potential black cockatoo breeding habitat (trees with a DBH ≥ 50 cm) with one tree containing a potentially suitable hollow. The majority of the native vegetation within the survey area represents quality foraging habitat for this species given the presence of marri. No evidence of roosting observed.
- Western Ringtail Possum *Pseudocheirus occidentalis* – Critically Endangered (BC Act), Critically Endangered (EPBC Act)
This species was identified as occupying a small grove of peppermints in the central section of the survey area. Habitat in other areas appears marginal but transient individuals may occur occasionally.

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. These species are:

- Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso* – S3 (BC Act), Vulnerable (EPBC Act). No evidence of this species recorded. The survey area contains areas of potential black cockatoo breeding habitat (trees with a DBH ≥ 50 cm) with one tree containing a potentially suitable hollow. The majority of the native vegetation within the survey area represents quality foraging habitat for this species given the presence of marri. No evidence of roosting observed. Listed as a potential species based on available information.

- Carnaby's Black-Cockatoo *Zanda latirostris* – 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 containing a potentially suitable hollow. The majority of the native vegetation within the survey area represents quality foraging habitat for this species given the presence of marri. No evidence of roosting observed. 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.
- Masked Owl *Tyto novaehollandiae* – 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. Large hollow bearing tree may represent suitable nest site. Listed as a potential species based on available information.
- Quenda *Isoodon fusciventer* – P4 (DBCA Priority Species)
Potentially utilises areas within the survey area with dense groundcover. Listed as a potential species based on available information.
- South-western Brush-tailed Phascogale *Phascogale tapoatafa wambenger* – S6 (BC Act)
No evidence of this species was observed. Habitat appears marginal but transient individuals may occur occasionally. 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 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. Paucity of hollow bearing trees suggest it is unlikely to roost onsite. 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. national parks/state forests/reserves) 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.

While the actual extent of proposed clearing is yet to be finalised the following conclusions have been drawn on likely impacts based on observations made. In this instance impacts are most likely to be related to the localised loss of small areas of habitat and the potential for some species to be killed or injured during clearing.

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, the relatively small total area of vegetation/habitat present and the anticipated small amount of clearing likely to be undertaken.

No overall change in the conservation status of any fauna species currently utilising the survey area is therefore anticipated as a consequence of likely clearing. 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. Potential impacts on fauna should be reviewed as planning progresses

Table 4: 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				
Cape Leeuwin Freshwater Snail <i>Austroassiminea lethra</i>	S3	-	Natural seepages from limestone or lime sands.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Unnamed land snail <i>Helicarion castanea</i>	EX	-	Poorly documented	?	Would Not Occur.	This species is extinct. No impact on this species will occur.
Irvine's bothriembryontid land snail <i>Bothriembryon irvineanus</i>	P2	-	Poorly documented	?	Unlikely to Occur.	Habitat too degraded. No impact on this species anticipated.
Margaret River Hairy Marron <i>Cherax tenuimanus</i>	S1	CR	Upper reaches of Margaret River.	No	Would Not Occur.	Outside of documented distribution. No suitable habitat. No impact on this species will occur.
Margaret River Burrowing Crayfish <i>Engaewa pseudoreducta</i>	S1	CR	Narrow creek tributaries of the Margaret River which are densely vegetated on heavy grey/yellow clay soils.	No	Would Not Occur.	Outside of documented distribution. No suitable habitat. No impact on this species will occur.
Dunsborough Burrowing Crayfish <i>Engaewa reducta</i>	S2	CR	Vegetated surface seepages, swamp plains and shallow swampy headwater tributaries.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
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.
Vasse Pachysaga (cricket) <i>Pachysaga strobila</i>	P1	-	Prefers heath or mixed woodland.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Mud Minnow <i>Galaxiella munda</i>	S2	-	Typically found in small flowing streams near submerged vegetation, occasionally in still water of ponds, swamps and roadside drains. Water is usually darkly tannin stained and acidic.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Balston's Pygmy Perch <i>Nannatherina balstoni</i>	S2	VU	Acidic, tannin stained freshwater pools, streams and lakes within 30km of the coast, typically situated amongst peat flats. Prefers shallow water and is commonly found in association with tall sedge thickets	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Salamanderfish <i>Lepidogalaxias salamandroides</i>	S2	-	Primarily found in highly acidic, shallow, temporary (dry out in summer) pools and swamps in coastal heathland.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Short-nosed Snake <i>Elapognathus minor</i>	P2	-	Restricted to the humid coastal plains of the deep south west. Inhabits heaths edging swamps though also known to inhabit wet sclerophyll forest. Shelters in low dense vegetation such as tussocks and sedges.	No/Marginal	Unlikely to Occur.	Habitat too degraded. No impact on this species anticipated.

Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Comments/Possible Impacts
	BC Act/ DBCA Priority	EPBC Act				
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> .	No/Marginal	Unlikely to Occur.	Degraded state of habitat within the survey area suggests this species is unlikely to persist. No impact on this species anticipated.
Malleefowl <i>Leipoa ocellata</i>	P3	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.	Locally extinct. No impact on this species will occur.
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.
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.
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.
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 suitable nest sites observed. Negligible impact on species status anticipated.
Grey Falcon <i>Falco hypoleucos</i>	S3	VU	Lightly treed plains, gibber deserts, sand ridges, pastoral lands, timbered water courses but seldom in driest deserts	No	Would Not Occur.	Rarely if ever recorded in the lower south west. No impact on this species will occur.
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. Negligible impact on species status anticipated.

Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Comments/Possible Impacts
	BC Act/ DBCA Priority	EPBC Act				
Muir's Corella <i>Cacatua pastinator pastinator</i>	S6	-	Now restricted to wheat and sheep farming country with remnant forest/woodland, scrub and heath in Boyup Brook area.	Yes	Would Not Occur.	This species is locally extinct. No impact on this species will occur.
Carnaby's Black Cockatoo <i>Zanda latirostris</i>	S2	EN	Forests, woodlands, heathlands, farms; feeds on <i>Banksia</i> , <i>Hakea</i> and Marri.	Yes	Possibly Occurs.	Loss/modification of very small areas of habitat. Negligible impact on species status anticipated.
Baudin's Black Cockatoo <i>Zanda baudinii</i>	S2	EN	Mainly eucalypt forests where it feeds primarily on the marri seeds.	Yes	Known to Occur.	Loss/modification of very small areas of habitat. Negligible impact on species status anticipated.
Forest Red-tailed Black Cockatoo <i>Calyptorhynchus banksii naso</i>	S3	VU	Eucalypt forests, feeds on marri, jarrah, blackbutt, karri, sheoak and snottygobble.	Yes	Possibly Occurs.	Loss/modification of very small areas of habitat. Negligible impact on species status anticipated.
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	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.	No	Would Not Occur.	Fragmented and degraded state of habitat within and around the survey area suggests this species is unlikely to persist. No impact on this species will occur.
Quenda <i>Isoodon fusciventer</i>	P4	-	Dense scrubby, often swampy, vegetation with dense cover.	Yes/Marginal	Possibly Occurs.	Loss/modification of small areas of degraded habitat. Negligible impact on species status anticipated.
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 small areas of degraded habitat. Negligible impact on species status anticipated.
Bilby <i>Macrotis lagotis</i>	S3	VU	Acacia shrublands, spinifex and hummock grassland. Mitchell grass and stony downs country if cracking clay, also desert sand plains and dune fields sometimes with spinifex hummock grassland and acacia shrubland.	No	Would Not Occur.	Regionally 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	Known to Occur.	Loss/modification of very small areas of habitat. Negligible impact on species status anticipated.

Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Comments/Possible Impacts
	BC Act/ DBCA Priority	EPBC Act				
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 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.	No	Would Not Occur.	Fragmented and degraded state of habitat within and around the survey area suggests this species is unlikely to persist. No impact on this species will occur.
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 very small areas of degraded habitat. Negligible impact on species status anticipated.
Water Rat <i>Hydromys chrysogaster</i>	P4	-	Permanent water, fresh, brackish or marine.	No	Would Not Occur.	Habitat (small perennial creek line) too degraded. No impact on this species anticipated.

See Appendix A for conservation status codes

7. CONCLUSION

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

Overall, the fauna habitats present are highly degraded with all areas appearing to have been subject to considerable disturbance. Much of the vegetation appears to be regrowth from historical clearing with most trees not containing hollows of any size due to their relatively young age.

Given the degree of disturbance the original fauna assemblage within the survey area is likely to be depauperate in many aspects, in particular with respect to ground dwelling species which rely on dense native understory (midstorey and ground cover) vegetation, which is almost entirely absent.

The survey area was found to contain three habitat trees (DBH \geq 50cm) with hollows initially assessed as being possibly suitable for black cockatoos to use for nesting purposes (ground level assessment). Both these trees were subsequently inspected in detail using a drone.

One of the trees (wpt001) contains one large side entry hollow that appears to have characteristics making it suitable for black cockatoos to use for nesting purposes though no actual evidence of use was observed.

Evidence of black cockatoos foraging within the survey area was recorded during the field survey in the form of a chewed marri fruits, activity attributed to Baudin's black cockatoo. Most of the remnant native vegetation present represents potential black cockatoos foraging habitat given the dominance of marri and to a lesser extent jarrah. No evidence black cockatoos roosting within the survey area was noted.

Evidence of western ringtail possums using the survey area was observed at one location in the form of scats, two dreys and one individual. The observations were made where a peppermint low woodland is present along a 50 metre stretch of the road (SLK 5.44). Habitat along the balance of the survey area appears marginal for the species given the absence of midstorey species favoured by WRP.

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

In summary two vertebrate fauna species of conservation significance (listed as State or Federal threatened/migratory species or as Department of Biodiversity Conservation and Attractions (DBCAs) priority species) were positively identified as utilising the survey area for some purpose during the survey period. These species are

- Baudin's Black Cockatoo – Endangered (WA/Federal); and

- Western Ringtail Possum – Critically 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. These species are:

- Peregrine Falcon – Schedule 7 (WA);
- Masked Owl – Priority 3 (DBCA Priority Species);
- Forest Red-tailed Black Cockatoo – Vulnerable (WA/Federal);
- Carnaby's Black Cockatoo – Endangered (WA/Federal);
- Quenda – Priority 4 (DBCA Priority Species);
- South-western Brush-tailed Phascogale - Schedule 6 (WA);
- Western False Pipistrelle – Priority 4 (DBCA Priority Species).

While the actual extent of proposed clearing is yet to be finalised the following conclusions have been drawn on likely impacts based on observations made. In this instance impacts are most likely to be related to the localised loss of small areas of habitat and the potential for some species to be killed or injured during clearing.

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, the relatively small total area of vegetation/habitat present and the anticipated small amount of clearing likely to be undertaken.

No overall change in the conservation status of any fauna species currently utilising the survey area is therefore anticipated as a consequence of likely clearing. 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. Potential impacts on fauna should be reviewed as planning progresses.

8. REFERENCES

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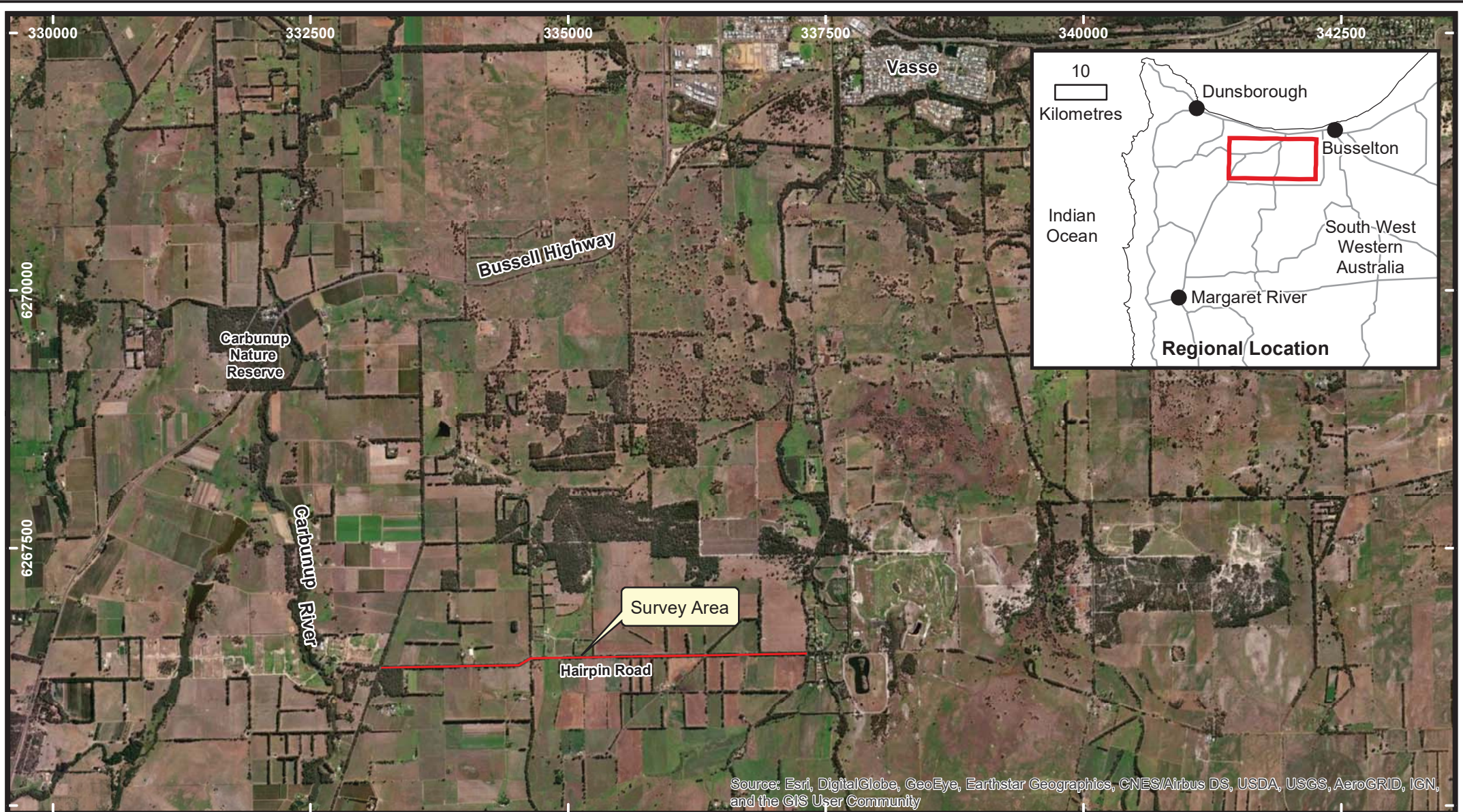
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FIGURES



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

Legend

 Survey Area



Drawn: G Harewood
Date: 05-Jan-22
Scale: 1:50,000

Hairpin Road (SLK 2.88 - SLK 7.01)
North Jindong


**Survey Area
and
Surrounds**

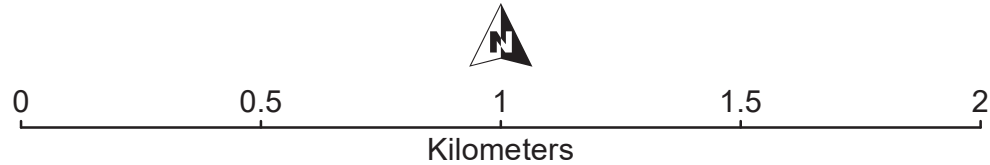
Projection/Coordinate System: UTM/MGA Zone 50 | Figure: 1



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

Legend

 Survey Area



Drawn: G Harewood
Date: 05-Jan-22
Scale: 1:15,750

Hairpin Road (SLK 2.88 - SLK 7.01)
North Jindong

**Survey Area
Aerial Photograph**

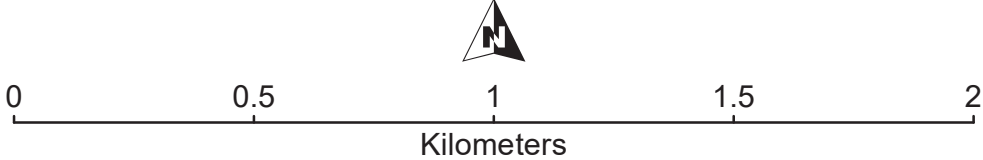
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

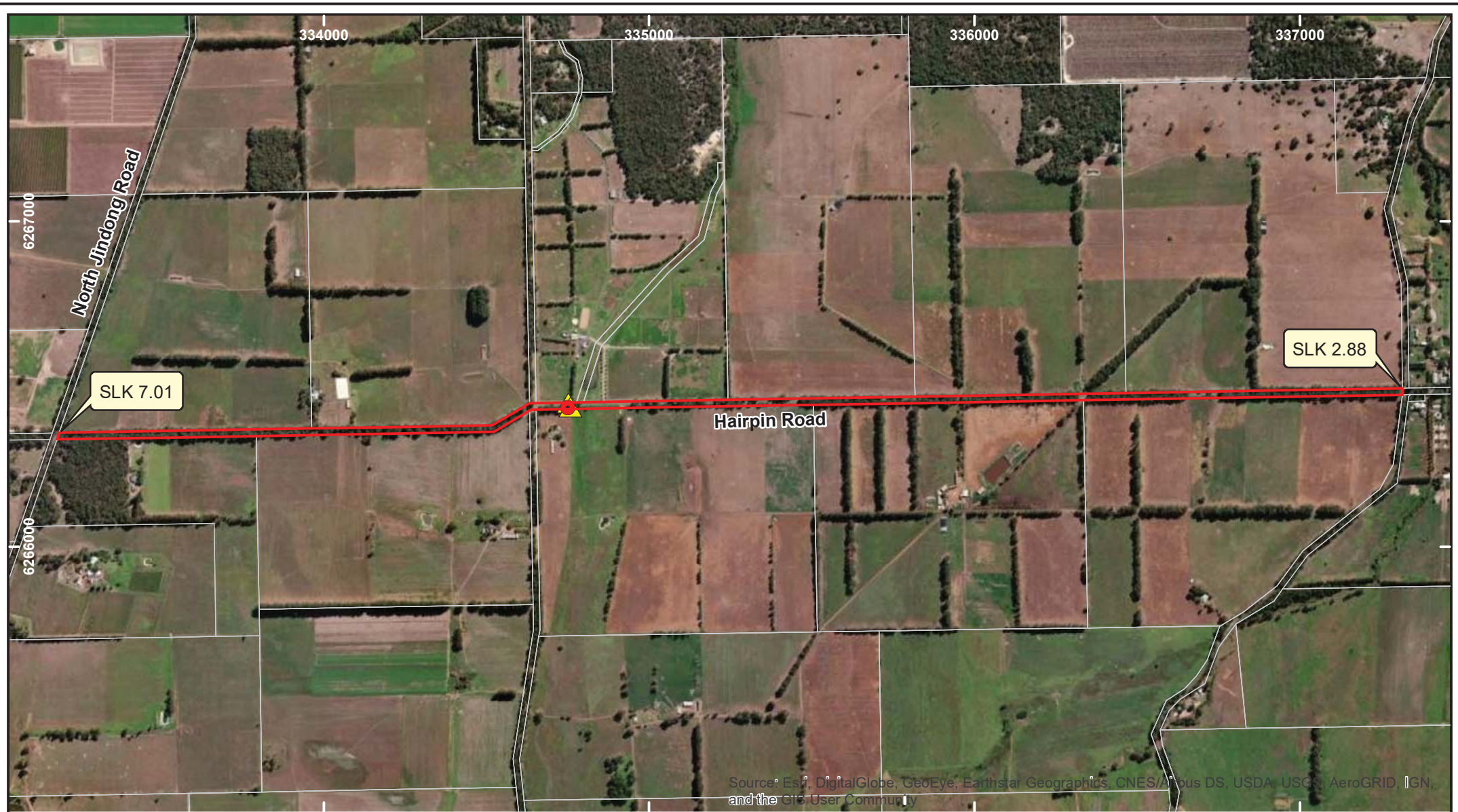
- Survey Area
- Habitat Trees Inspected



Drawn: G Harewood
Date: 05-Jan-22
Scale: 1:15,750

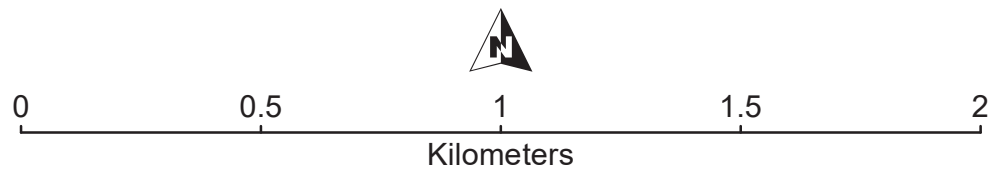
Hairpin Road (SLK 2.88 - SLK 7.01)
North Jindong

Habitat Trees Inspected



Legend

- Survey Area
- Western Ringtail Possum
- ▲ Drey



Drawn: G Harewood
Date: 05-Jan-22
Scale: 1:15,750

Hairpin Road (SLK 2.88 - SLK 7.01)
North Jindong

Possum Observations

Projection/Coordinate System: UTM/MGA Zone 50 Figure: 4

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*[™] is a checklist of taxa that have undergone an extinction risk assessment using the *IUCN Red List Categories and Criteria*.

Categories are summarized below.

Category	Code	Description
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 - Hairpin Rd

Created By Greg Harewood on 14/12/2021

Kingdom Animalia
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 12' 13" E, 33° 43' 48" S
Buffer 20km
Group By Species Group

Species Group	Species	Records
Amphibian	12	340
Bird	222	16799
Fish	155	318
Invertebrate	108	1067
Mammal	48	7487
Reptile	48	885
TOTAL	593	26896

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Amphibian				
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.	25410 <i>Heleioporus eyrei</i> (Moaning Frog)			
6.	25412 <i>Heleioporus psammophilus</i> (Sand Frog)			
7.	25415 <i>Limnodynastes dorsalis</i> (Western Banjo Frog)			
8.	25378 <i>Litoria adelaidensis</i> (Slender Tree Frog)			
9.	25388 <i>Litoria moorei</i> (Motorbike Frog)			
10.	25420 <i>Myobatrachus gouldii</i> (Turtle Frog)			
11.	25425 <i>Neobatrachus kunapalari</i> (Kunapalari Frog)			
12.	25433 <i>Pseudophryne guentheri</i> (Crawling Toadlet)			
Bird				
13.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
14.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
15.	24262 <i>Acanthiza inornata</i> (Western Thornbill)			
16.	24560 <i>Acanthorhynchus superciliosus</i> (Western Spinebill)			
17.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
18.	24281 <i>Accipiter cirrocephalus</i> subsp. <i>cirrocephalus</i> (Collared Sparrowhawk)			
19.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
20.	25755 <i>Acrocephalus australis</i> (Australian Reed Warbler)			
21.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
22.	25544 <i>Aegotheles cristatus</i> (Australian Owllet-nightjar)			
23.	24310 <i>Anas castanea</i> (Chestnut Teal)			
24.	24312 <i>Anas gracilis</i> (Grey Teal)			
25.	24313 <i>Anas platyrhynchos</i> (Mallard)			
26.	<i>Anas platyrhynchos</i> subsp. <i>domesticus</i>			
27.	24315 <i>Anas rhynchotis</i> (Australasian Shoveler)			
28.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
29.	47414 <i>Anhinga novaehollandiae</i> (Australasian Darter)			
30.	24505 <i>Anous stolidus</i> subsp. <i>pileatus</i> (Common Noddy)		IA	
31.	24506 <i>Anous tenuirostris</i> subsp. <i>melanops</i> (Australian Lesser Noddy)		T	
32.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
33.	24562 <i>Anthochaera lunulata</i> (Western Little Wattlebird)			
34.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
35.	25558 <i>Ardea ibis</i> (Cattle Egret)			
36.	41324 <i>Ardea modesta</i> (great egret, white egret)			
37.	24341 <i>Ardea pacifica</i> (White-necked Heron)			
38.	41326 <i>Ardeenna carneipes</i> (Flesh-footed Shearwater, Fleishy-footed Shearwater)		T	
39.	25566 <i>Artamus cinereus</i> (Black-faced Woodswallow)			

Name ID	Species Name	Naturalised	Conservation Code	¹ 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.	25714 <i>Cacatua pastinator</i> (Western Long-billed Corella)			
45.	24724 <i>Cacatua pastinator</i> subsp. <i>pastinator</i> (Muir's Corella, Muir's Corella (Western Corella SW WA))		S	
46.	25715 <i>Cacatua roseicapilla</i> (Galah)			
47.	25716 <i>Cacatua sanguinea</i> (Little Corella)			
48.	25598 <i>Cacomantis flabelliformis</i> (Fan-tailed Cuckoo)			
49.	42307 <i>Cacomantis pallidus</i> (Pallid Cuckoo)			
50.	24779 <i>Calidris acuminata</i> (Sharp-tailed Sandpiper)		IA	
51.	24780 <i>Calidris alba</i> (Sanderling)		IA	
52.	24784 <i>Calidris ferruginea</i> (Curlew Sandpiper)		T	
53.	24786 <i>Calidris melanotos</i> (Pectoral Sandpiper)		IA	
54.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
55.	24789 <i>Calidris subminuta</i> (Long-toed Stint)		IA	
56.	24790 <i>Calidris tenuirostris</i> (Great Knot)		T	
57.	25717 <i>Calyptorhynchus banksii</i> (Red-tailed Black-Cockatoo)			
58.	24731 <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> (Forest Red-tailed Black Cockatoo)		T	
59.	24733 <i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo, White-tailed Long-billed Black Cockatoo)		T	
60.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)		T	
61.	48400 <i>Calyptorhynchus</i> sp. (white-tailed black cockatoo)		T	
62.	25575 <i>Charadrius leschenaultii</i> (Greater Sand Plover)		T	
63.	25576 <i>Charadrius mongolus</i> (Lesser Sand Plover)		T	
64.	24377 <i>Charadrius ruficapillus</i> (Red-capped Plover)			
65.	24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck)			
66.	47909 <i>Cheramoeca leucosterna</i> (White-backed Swallow)			
67.	<i>Chroicocephalus novaehollandiae</i>			
68.	24432 <i>Chrysococcyx lucidus</i> subsp. <i>plagiosus</i> (Shining Bronze Cuckoo)			
69.	24288 <i>Circus approximans</i> (Swamp Harrier)			
70.	24774 <i>Cladorhynchus leucocephalus</i> (Banded Stilt)			
71.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
72.	24399 <i>Columba livia</i> (Domestic Pigeon)	Y		
73.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
74.	25592 <i>Corvus coronoides</i> (Australian Raven)			
75.	24671 <i>Coturnix pectoralis</i> (Stubble Quail)			
76.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
77.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
78.	24423 <i>Cracticus tibicen</i> subsp. <i>tibicen</i> (Black-backed Magpie)			
79.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
80.	24424 <i>Cracticus torquatus</i> subsp. <i>torquatus</i> (Grey Butcherbird)			
81.	24322 <i>Cygnus atratus</i> (Black Swan)			
82.	25547 <i>Dacelo leachii</i> (Blue-winged Kookaburra)			
83.	30901 <i>Dacelo novaeguineae</i> (Laughing Kookaburra)	Y		
84.	30902 <i>Dacelo novaeguineae</i> subsp. <i>novaeguineae</i> (Laughing Kookaburra)	Y		
85.	25673 <i>Daphoenositta chrysoptera</i> (Varied Sittella)			
86.	24687 <i>Daption capense</i> (Cape Petrel)			
87.	25607 <i>Dicaeum hirundinaceum</i> (Mistletoebird)			
88.	25618 <i>Diomedea exulans</i> (Wandering Albatross)		T	
89.	30836 <i>Diomedea exulans</i> subsp. <i>exulans</i> (Snowy Albatross)		T	
90.	24470 <i>Dromaius novaehollandiae</i> (Emu)			
91.	<i>Egretta garzetta</i>			
92.	<i>Egretta novaehollandiae</i>			
93.	<i>Elanus axillaris</i>			
94.	24290 <i>Elanus caeruleus</i> subsp. <i>axillaris</i> (Australian Black-shouldered Kite)			
95.	47937 <i>Euseyornis melanops</i> (Black-fronted Dotterel)			
96.	<i>Eolophus roseicapillus</i>			
97.	24651 <i>Eopsaltria australis</i> subsp. <i>griseogularis</i> (Western Yellow Robin)			
98.	24652 <i>Eopsaltria georgiana</i> (White-breasted Robin)			
99.	24567 <i>Epthianura albifrons</i> (White-fronted Chat)			
100.	24379 <i>Erythronyx cinctus</i> (Red-kneed Dotterel)			
101.	24368 <i>Eurostopodus argus</i> (Spotted Nightjar)			
102.	25621 <i>Falco berigora</i> (Brown Falcon)			
103.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
104.	25623 <i>Falco longipennis</i> (Australian Hobby)			
105.	24474 <i>Falco longipennis</i> subsp. <i>longipennis</i> (Australian Hobby)			
106.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
107.	25727 <i>Fulica atra</i> (Eurasian Coot)			
108.	24688 <i>Fulmarus glacialisoides</i> (Southern Fulmar)			
109.	25729 <i>Gallinula tenebrosa</i> (Dusky Moorhen)			
110.	25730 <i>Gallirallus philippensis</i> (Buff-banded Rail)			
111.	24765 <i>Gallirallus philippensis</i> subsp. <i>mellori</i> (Buff-banded Rail)			
112.	42314 <i>Gavicalis virescens</i> (Singing Honeyeater)			
113.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
114.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
115.	25627 <i>Haematopus fuliginosus</i> (Sooty Oystercatcher)			
116.	24487 <i>Haematopus longirostris</i> (Pied Oystercatcher)			
117.	24293 <i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)			
118.	24295 <i>Haliastur sphenurus</i> (Whistling Kite)			
119.	24296 <i>Hamirostra isura</i> (Square-tailed Kite)			
120.	47965 <i>Hieraaetus morphnoides</i> (Little Eagle)			
121.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
122.	24775 <i>Himantopus himantopus</i> subsp. <i>leucocephalus</i> (Black-winged Stilt)			
123.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
124.	48587 <i>Hydroprogne caspia</i> (Caspian Tern)		IA	
125.	25638 <i>Larus pacificus</i> (Pacific Gull)			
126.	24557 <i>Leipoa ocellata</i> (Malleefowl)		T	
127.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
128.	24582 <i>Lichmera indistincta</i> subsp. <i>indistincta</i> (Brown Honeyeater)			
129.	30932 <i>Limosa lapponica</i> (Bar-tailed Godwit)		IA	
130.	<i>Lophoictinia isura</i>			
131.	24690 <i>Macronectes giganteus</i> (Southern Giant Petrel)		IA	
132.	24326 <i>Malacorhynchus membranaceus</i> (Pink-eared Duck)			
133.	25650 <i>Malurus elegans</i> (Red-winged Fairy-wren)			
134.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
135.	24552 <i>Malurus splendens</i> subsp. <i>splendens</i> (Splendid Fairy-wren)			
136.	25758 <i>Megalurus gramineus</i> (Little Grassbird)			
137.	25663 <i>Melithreptus brevirostris</i> (Brown-headed Honeyeater)			
138.	24587 <i>Melithreptus chloropsis</i> (Western White-naped Honeyeater)			
139.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)			
140.	<i>Microcarbo melanoleucos</i>			
141.	25542 <i>Milvus migrans</i> (Black Kite)			
142.	48008 <i>Morus serrator</i> (Australasian Gannet)			
143.	25610 <i>Myiagra inquieta</i> (Restless Flycatcher)			
144.	24738 <i>Neophema elegans</i> (Elegant Parrot)			
145.	24739 <i>Neophema petrophila</i> (Rock Parrot)			
146.	25747 <i>Ninox connivens</i> (Barking Owl)			
147.	24798 <i>Numenius madagascariensis</i> (Eastern Curlew)		T	
148.	25564 <i>Nycticorax caledonicus</i> (Rufous Night Heron)			
149.	24497 <i>Oceanites oceanicus</i> (Wilson's Storm-petrel)		IA	
150.	24407 <i>Ocyphaps lophotes</i> (Crested Pigeon)			
151.	41347 <i>Onychoprion anaethetus</i> (Bridled Tern)		IA	
152.	24328 <i>Oxyura australis</i> (Blue-billed Duck)		□4	
153.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
154.	24624 <i>Pachycephala rufiventris</i> subsp. <i>rufiventris</i> (Rufous Whistler)			
155.	24692 <i>Pachyptila belcheri</i> (Slender-billed Prion)			
156.	24693 <i>Pachyptila desolata</i> (Antarctic Prion)			
157.	25707 <i>Pachyptila salvini</i> (Salvin's Prion)			
158.	24695 <i>Pachyptila salvini</i> subsp. <i>macgillivrayi</i> (Salvin's Prion)			Y
159.	24696 <i>Pachyptila turtur</i> (Fairy Prion)			
160.	24697 <i>Pachyptila vittata</i> (Broad-billed Prion)			
161.	48591 <i>Pandion cristatus</i> (Osprey, Eastern Osprey)		IA	
162.	25681 <i>Pardalotus punctatus</i> (Spotted Pardalote)			
163.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
164.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)			
165.	48060 <i>Petrochelidon ariel</i> (Fairy Martin)			
166.	48061 <i>Petrochelidon nigricans</i> (Tree Martin)			
167.	48066 <i>Petroica boodang</i> (Scarlet Robin)			
168.	24663 <i>Phaethon rubricauda</i> (Red-tailed Tropicbird)		□4	
169.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
170.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
171.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
172.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
173.	25587 <i>Phaps elegans</i> (Brush Bronzewing)			
174.	24462 <i>Phoebastria fusca</i> (Sooty Albatross)		T	
175.	24463 <i>Phoebastria palpebrata</i> (Light-mantled Albatross)		□4	
176.	48071 <i>Phylidonyris niger</i> (White-cheeked Honeyeater)			

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177.	24596 <i>Phylidonyris novaehollandiae</i> (New Holland Honeyeater)			
178.	24841 <i>Platalea flavipes</i> (Yellow-billed Spoonbill)			
179.	24842 <i>Platalea regia</i> (Royal Spoonbill)			
180.	25720 <i>Platycercus icterotis</i> (Western Rosella)			
181.	24745 <i>Platycercus icterotis</i> subsp. <i>icterotis</i> (Western Rosella)			
182.	24747 <i>Platycercus spurius</i> (Red-capped Parrot)			
183.	25721 <i>Platycercus zonarius</i> (Australian Ringneck, Ring-necked Parrot)			
184.	24750 <i>Platycercus zonarius</i> subsp. <i>semitorquatus</i> (Twenty-eight Parrot)			
185.	24843 <i>Plegadis falcinellus</i> (Glossy Ibis)		IA	
186.	24382 <i>Pluvialis fulva</i> (Pacific Golden Plover)		IA	
187.	25703 <i>Podargus strigoides</i> (Tawny Frogmouth)			
188.	24679 <i>Podargus strigoides</i> subsp. <i>brachypterus</i> (Tawny Frogmouth)			
189.	24681 <i>Polycephalus polycephalus</i> (Hoary-headed Grebe)			
190.	25722 <i>Polytelis anthopeplus</i> (Regent Parrot)			
191.	30854 <i>Polytelis anthopeplus</i> subsp. <i>westralis</i> (Regent Parrot)			
192.	25731 <i>Porphyrio porphyrio</i> (Purple Swamphen)			
193.	24769 <i>Porzana fluminea</i> (Australian Spotted Crane)			
194.	24770 <i>Porzana pusilla</i> subsp. <i>palustris</i> (Baillon's Crane)			
195.	24771 <i>Porzana tabuensis</i> (Spotless Crane)			
196.	24703 <i>Pterodroma lessonii</i> (White-headed Petrel)			
197.	24706 <i>Pterodroma macroptera</i> subsp. <i>gouldi</i> (Great-winged Petrel)			
198.	<i>Pterodroma macroptera</i> subsp. <i>macroptera</i>			
199.	<i>Purpureicephalus spurius</i>			
200.	24776 <i>Recurvirostra novaehollandiae</i> (Red-necked Avocet)			
201.	48096 <i>Rhipidura albiscapa</i> (Grey Fantail)			
202.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
203.	25534 <i>Sericornis frontalis</i> (White-browed Scrubwren)			
204.	24279 <i>Sericornis frontalis</i> subsp. <i>maculatus</i> (White-browed Scrubwren)			
205.	30948 <i>Smicronis brevirostris</i> (Weebill)			
206.	24645 <i>Stagonopleura oculata</i> (Red-eared Firetail)			
207.	48116 <i>Stercorarius antarcticus</i> (Brown Skua)		□4	
208.	24536 <i>Sterna vittata</i> (Antarctic Tern)			Y
209.	48594 <i>Sternula nereis</i> (Fairy Tern)			
210.	24329 <i>Stictonetta naevosa</i> (Freckled Duck)			
211.	25655 <i>Stipiturus malachurus</i> (Southern Emu-wren)			
212.	24554 <i>Stipiturus malachurus</i> subsp. <i>westernensis</i> (Southern Emu-wren)			
213.	25597 <i>Strepera versicolor</i> (Grey Currawong)			
214.	25589 <i>Streptopelia chinensis</i> (Spotted Turtle-Dove)	Y		
215.	25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove)	Y		
216.	25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
217.	24331 <i>Tadorna tadornoides</i> (Australian Shelduck, Mountain Duck)			
218.	34134 <i>Thalassarche carteri</i> (Indian Yellow-nosed Albatross)		T	
219.	34007 <i>Thalassarche chlororhynchos</i> (Atlantic Yellow-nosed Albatross)		T	
220.	44607 <i>Thalassarche melanophris</i> (Black-browed Albatross)		T	
221.	48597 <i>Thalasseus bergii</i> (Crested Tern)		IA	
222.	48135 <i>Thinornis rubricollis</i> (Hooded Plover, Hooded Dotterel)		□4	
223.	24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
224.	25549 <i>Todiramphus sanctus</i> (Sacred Kingfisher)			
225.	48141 <i>Tribonyx ventralis</i> (Black-tailed Native-hen)			
226.	25723 <i>Trichoglossus haematodus</i> (Rainbow Lorikeet)			
227.	24806 <i>Tringa glareola</i> (Wood Sandpiper)		IA	
228.	24808 <i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
229.	24809 <i>Tringa stagnatilis</i> (Marsh Sandpiper, little greenshank)		IA	
230.	48147 <i>Turnix varius</i> (Painted Button-quail)			
231.	24855 <i>Tyto novaehollandiae</i> subsp. <i>novaehollandiae</i> (Masked Owl (southwest))		□3	
232.	25577 <i>Vanellus miles</i> (Masked Lapwing)			
233.	24386 <i>Vanellus tricolor</i> (Banded Lapwing)			
234.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silveryeye)			

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235.	??			
236.	<i>Acanthaluteres brownii</i>			
237.	<i>Acanthaluteres spilomelanurus</i>			
238.	<i>Acanthaluteres vittiger</i>			
239.	<i>Acanthistius serratus</i>			
240.	<i>Aetapcus maculatus</i>			
241.	<i>Alectis ciliaris</i>			
242.	<i>Allenichthys glauerti</i>			
243.	<i>Amniataba caudavittata</i>			
244.	<i>Anoplocapros lenticularis</i>			
245.	<i>Anoplocapros robustus</i>			

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246.	<i>Aplodactylus westralis</i>			
247.	<i>Aracana aurita</i>			
248.	<i>Aracana</i> sp.			Y
249.	<i>Atherinason?</i> sp.			Y
250.	<i>Aulohalaelurus labiosus</i>			
251.	<i>Austrolabrus maculatus</i>			
252.	<i>Bodianus frenchii</i>			
253.	<i>Bodianus vulpinus</i>			
254.	<i>Brachaluteres jacksonianus</i>			
255.	<i>Brama brama</i>			
256.	<i>Callogobius depressus</i>			
257.	<i>Callogobius mucosus</i>			
258.	<i>Caprichthys gymnura</i>			
259.	<i>Carcharhinus brevipinna</i>			
260.	34031 <i>Carcharodon carcharias</i> (Great White Shark)		T	
261.	<i>Cetorhinus maximus</i>			
262.	<i>Chaetodermis penicilligera</i>			
263.	<i>Cheilodactylus gibbosus</i>			
264.	<i>Chelidonichthys kumu</i>			
265.	<i>Chelmonops curiosus</i>			
266.	<i>Chromis klunzingeri</i>			
267.	<i>Cirrhimuraena calamus</i>			
268.	<i>Cleidopus gloriamaris</i>			
269.	<i>Cnidoglanis macrocephalus</i>			
270.	<i>Cochleoceps spatula</i>			
271.	<i>Conger wilsoni</i>			
272.	<i>Contusus brevicaudus</i>			
273.	<i>Cristiceps aurantiacus</i>			
274.	<i>Cristiceps australis</i>			
275.	<i>Dinolestes lewini</i>			
276.	<i>Diodon nichthemerus</i>			
277.	<i>Dotalabrus alleni</i>			
278.	<i>Dotalabrus aurantiacus</i>			
279.	<i>Echeneis naucrates</i>			
280.	<i>Elops hawaiiensis</i>			
281.	<i>Enoplosus armatus</i>			
282.	<i>Epinephelides armatus</i>			
283.	<i>Eviota bimaculata</i>			
284.	<i>Filicampus tigris</i>			
285.	34028 <i>Galaxias occidentalis</i> (Western Minnow)			
286.	34026 <i>Galaxiella munda</i> (mud minnow, western dwarf galaxias)		T	
287.	<i>Genypterus blacodes</i>			
288.	<i>Genypterus tigerinus</i>			
289.	<i>Gnathanodon speciosus</i>			
290.	<i>Gnathophis longicaudatus</i>			
291.	<i>Gonorynchus greyi</i>			
292.	<i>Gymnapistes marmoratus</i>			
293.	<i>Gymnothorax prasinus</i>			
294.	<i>Haletta semifasciata</i>			
295.	<i>Halichoeres brownfieldi</i>			
296.	<i>Helcogramma decurrens</i>			
297.	<i>Heteroclinus roseus</i>			
298.	<i>Heteroclinus</i> sp.			
299.	<i>Heterodontus portusjacksoni</i>			
300.	<i>Histiogamphelus cristatus</i>			
301.	<i>Histiophryne cryptacanthus</i>			
302.	<i>Hypnos monopterygium</i>			
303.	<i>Hypoplectrodes annulata</i>			
304.	<i>Hypoplectrodes nigroruber</i>			
305.	<i>Hypoplectrodes wilsoni</i>			
306.	<i>Ichthyoscopus barbatus</i>			
307.	<i>Lactoria cornuta</i>			
308.	<i>Lagocephalus sceleratus</i>			
309.	<i>Lepidoblennius marmoratus</i>			
310.	47983 <i>Lepidogalaxias salamandroides</i> (Salamanderfish)		T	
311.	<i>Lepidotrigla papilio</i>			
312.	<i>Leviprora inops</i>			
313.	<i>Limnichthys fasciatus</i>			
314.	<i>Lissocampus</i> sp.			
315.	<i>Lotella rhacinus</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
316.	<i>Maroubra perserrata</i>			
317.	<i>Maxillicosta scabriceps</i>			
318.	<i>Meuschenia flavolineata</i>			
319.	<i>Meuschenia freycineti</i>			
320.	<i>Meuschenia galii</i>			
321.	<i>Meuschenia hippocrepis</i>			
322.	<i>Muraenichthys tasmaniensis</i> subsp. <i>smithi</i>			
323.	34033 <i>Nannatherina balstoni</i> (<i>Balston's Pygmy Perch</i>)		T	
324.	<i>Nannoperca vittata</i>			
325.	<i>Nelusetta ayraudi</i>			
326.	<i>Nemadactylus valenciennesi</i>			
327.	<i>Neoodax</i> sp.			
328.	<i>Nesogobius</i> sp.			
329.	<i>Notolabrus parilus</i>			
330.	<i>Odax acroptilus</i>			
331.	<i>Omegophora cyanopunctata</i>			
332.	<i>Ophichthus melanochir</i>			
333.	<i>Ophiclinus gracilis</i>			
334.	<i>Ophisurus serpens</i>			
335.	<i>Ophthalmolepis lineolatus</i>			
336.	<i>Othos dentex</i>			
337.	<i>Pagrus auratus</i>			
338.	<i>Parablennius postoculomaculatus</i>			
339.	<i>Parablennius</i> sp.			
340.	<i>Parapercis haackei</i>			
341.	<i>Paraplesiops meleagris</i>			
342.	<i>Parascyllium variolatum</i>			
343.	<i>Paripterus labiosus</i>			
344.	<i>Parma victoriae</i>			
345.	<i>Phyllophryne scortea</i>			
346.	<i>Phyllopteryx taeniolatus</i>			
347.	<i>Pictilabrus laticlavus</i>			
348.	<i>Platycephalus chauliodus</i>			
349.	<i>Platycephalus chauliodus</i>			Y
350.	<i>Platycephalus</i> sp.			
351.	<i>Platycephalus speculator</i>			
352.	<i>Polyspina piosae</i>			
353.	<i>Pristiophorus cirratus</i>			
354.	<i>Pristiophorus nudipinnis</i>			
355.	<i>Pseudolabrus biserialis</i>			
356.	<i>Pseudolabrus</i> sp.			
357.	<i>Pterygotrigla polyommata</i>			
358.	<i>Pterygotrigla</i> sp.			
359.	<i>Rachycentron canadum</i>			
360.	<i>Ranzania laevis</i>			
361.	<i>Regalecus glesne</i>			
362.	<i>Sarda orientalis</i>			
363.	<i>Saurida grandisquamis</i>			
364.	<i>Scobinichthys granulatus</i>			
365.	<i>Scorpaena</i> n. sp. A			
366.	<i>Sillaginodes punctata</i>			
367.	<i>Sillago bassensis</i>			
368.	<i>Siphamia cephalotes</i>			
369.	<i>Siphonognathus argyrophanes</i>			
370.	<i>Siphonognathus radiatus</i>			
371.	<i>Sphyraena novaehollandiae</i>			
372.	<i>Squatina australis</i>			
373.	<i>Stigmatopora argus</i>			
374.	<i>Strongylura leiura</i>			
375.	<i>Tetrapturus audax</i>			Y
376.	<i>Thunnus alalunga</i>			
377.	<i>Thunnus maccoyii</i>			
378.	<i>Torquigener vicinus</i>			
379.	<i>Trachichthys australis</i>			
380.	<i>Trachinops brauni</i>			
381.	<i>Trachinops noarlungae</i>			
382.	<i>Trinorfolkia incisa</i>			
383.	<i>Trygonoptera ovalis</i>			
384.	<i>Vanacampus philipi</i>			
385.	<i>Vanacampus poecilolaemus</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
386.	<i>Vincentia badia</i>			
387.	<i>Vincentia punctata</i>			
388.	<i>Vincentia</i> sp.			
389.	<i>Zephyrichthys barryi</i>			
Invertebrate				
390.	<i>Acariformes</i> sp.			
391.	<i>Aeshnidae</i> sp.			
392.	<i>Amphisopodidae</i> sp.			
393.	<i>Aname mainae</i>			
394.	<i>Aname tepperi</i>			
395.	<i>Ancylidae</i> sp.			
396.	<i>Arachnura higginsi</i>			
397.	<i>Arkys walckenaeri</i>			
398.	<i>Artoriopsis expolita</i>			
399.	<i>Austracantha minax</i>			
400.	<i>Australomimetes diabolicus</i>			
401.	<i>Australomimetes tasmaniensis</i>			
402.	<i>Australotiphys barmutai</i>			
403.	34110 <i>Austroassiminea lethra</i> (Cape Leeuwin Freshwater Snail)		T	
404.	33972 <i>Austromerope poultoni</i> (earwigfly (southwest), scorpionfly)			
405.	<i>Baetidae</i> sp.			
406.	<i>Baiami tegenarioides</i>			
407.	34056 <i>Bothriembryon irvineanus</i> (Irvine's bothriembryontid land snail (Cape Naturaliste))		□2	Y
408.	<i>Caenidae</i> sp.			
409.	<i>Ceinidae</i> sp.			
410.	<i>Ceratopogonidae</i> sp.			
411.	<i>Cercophonius sulcatus</i>			
412.	33939 <i>Cherax cainii</i> (Marron)			
413.	<i>Cherax destructor</i>			
414.	<i>Cherax quinquecarinatus</i>			
415.	<i>Cherax</i> sp.			
416.	33940 <i>Cherax tenuimanus</i> (Margaret River hairy marron, Margaret River Marron)		T	
417.	<i>Chironominae</i> sp.			
418.	<i>Coenagrionidae</i> sp.			
419.	<i>Corduliidae</i> sp.			
420.	<i>Corixidae</i> sp.			
421.	<i>Cormocephalus aurantiipes</i>			
422.	<i>Culicidae</i> sp.			
423.	<i>Curculionidae</i> sp.			
424.	<i>Cyclosa trilobata</i>			
425.	<i>Cytostethum tasmaniense</i>			Y
426.	<i>Dytiscidae</i> sp.			
427.	<i>Emertonella maga</i>			
428.	<i>Empididae</i> sp.			
429.	33945 <i>Engaewa pseudoreducta</i> (Margaret River Burrowing Crayfish)		T	Y
430.	33946 <i>Engaewa reducta</i> (Dunsborough Burrowing Crayfish)		T	
431.	<i>Eodelena lapidicola</i>			
432.	<i>Eriophora biapicata</i>			
433.	<i>Gelastocoridae</i> sp.			
434.	<i>Gomphidae</i> sp.			
435.	<i>Gripopterygidae</i> sp.			
436.	<i>Gyrinidae</i> sp.			
437.	34115 <i>Helicarion castanea</i> (a helicarionid land snail)		□	
438.	<i>Hemicorduliidae</i> sp.			
439.	<i>Henicops dentatus</i>			
440.	<i>Hydraenidae</i> sp.			
441.	<i>Hydrobiosidae</i> sp.			
442.	<i>Hydrometridae</i> sp.			
443.	<i>Hydrophilidae</i> sp.			
444.	<i>Hydroptilidae</i> sp.			
445.	<i>Hyriidae</i> sp.			
446.	<i>Isopeda leishmanni</i>			
447.	<i>Lampona cylindrata</i>			
448.	<i>Latrodectus hasseltii</i>			
449.	<i>Leptoceridae</i> sp.			
450.	<i>Leptophlebiidae</i> sp.			
451.	<i>Lestidae</i> sp.			
452.	<i>Libellulidae</i> sp.			
453.	<i>Lycosa gilberta</i>			
454.	<i>Megapodagrionidae</i> sp.			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
455.	<i>Missulena granulosa</i>			
456.	<i>Missulena hoggi</i>			
457.	<i>Missulena occatoria</i>			
458.	<i>Mituliodon tarantulinus</i>			
459.	<i>Neoniphargidae</i> sp.			
460.	<i>Nephila edulis</i>			
461.	<i>Notonectidae</i> sp.			
462.	<i>Nunciella aspera</i>			
463.	<i>Oecobius navus</i>			
464.	<i>Oligochaeta</i> sp.			
465.	<i>Orthoclaadiinae</i> sp.			
466.	<i>Oxidus gracilis</i>			
467.	33989 <i>Pachysaga strobila</i> (<i>Vasse Pachysaga</i> (<i>Busselton-Donnybrook</i>), cricket)		□1	
468.	<i>Palaemonidae</i> sp.			
469.	<i>Parastacidae</i> sp.			
470.	<i>Perthidae</i> sp.			
471.	<i>Physidae</i> sp.			
472.	<i>Planorbidae</i> sp.			
473.	<i>Prionosternum nitidiceps</i>			
474.	<i>Protochelifer cavernarum</i>			
475.	<i>Pyralidae</i> sp.			
476.	<i>Raveniella peckorum</i>			
477.	<i>Richardsonianidae</i> sp.			
478.	<i>Scirtidae</i> sp.			
479.	<i>Servaea spinibarbis</i>			
480.	<i>Simuliidae</i> sp.			
481.	<i>Staphylinidae</i> sp.			
482.	<i>Stratiomyidae</i> sp.			
483.	<i>Styloniscidae</i> sp.			
484.	<i>Synsphyronus magnus</i>			
485.	<i>Synthemistidae</i> sp.			
486.	<i>Tabanidae</i> sp.			
487.	<i>Talitridae</i> sp.			
488.	<i>Tanypodinae</i> sp.			
489.	<i>Tasmanicosa leuckartii</i>			
490.	<i>Telephlebiidae</i> sp.			
491.	<i>Temnocephalidea</i> sp.			
492.	<i>Tipulidae</i> sp.			
493.	<i>Urodacus novaehollandiae</i>			
494.	<i>Velliidae</i> sp.			
495.	<i>Venator immansueta</i>			
496.	<i>Venatrix pullastra</i>			
497.	34113 <i>Westralunio carteri</i> (<i>Carter's Freshwater Mussel</i>)		T	
Mammal				
498.	24088 <i>Antechinus flavipes</i> subsp. <i>leucogaster</i> (<i>Yellow-footed Antechinus</i> , <i>Mardo</i>)			
499.	24208 <i>Arctocephalus forsteri</i> (<i>New Zealand Fur Seal</i> , <i>long-nosed fur-seal</i>)		S	
500.	47713 <i>Austronomus australis</i> (<i>White-striped Free-tailed Bat</i>)			
501.	24046 <i>Balaenoptera borealis</i> (<i>Sei Whale</i>)		T	
502.	24048 <i>Balaenoptera musculus</i> subsp. <i>brevicauda</i> (<i>Pygmy Blue Whale</i>)		T	
503.	24049 <i>Balaenoptera musculus</i> subsp. <i>intermedia</i> (<i>Antarctic Blue Whale</i>)		T	
504.	24251 <i>Bos taurus</i> (<i>European Cattle</i>)	Y		
505.	24072 <i>Caperea marginata</i> (<i>Pygmy Right Whale</i>)			
506.	24086 <i>Cercartetus concinnus</i> (<i>Western Pygmy-possum</i> , <i>Mundarda</i>)			
507.	24186 <i>Chalinolobus gouldii</i> (<i>Gould's Wattled Bat</i>)			
508.	24187 <i>Chalinolobus morio</i> (<i>Chocolate Wattled Bat</i>)			
509.	24092 <i>Dasyurus geoffroyi</i> (<i>Chuditch</i> , <i>Western Quoll</i>)		T	
510.	24052 <i>Delphinus delphis</i> (<i>Common Dolphin</i>)			
511.	24043 <i>Eubalaena australis</i> (<i>Southern Right Whale</i>)		T	
512.	24189 <i>Falsistrellus mackenziei</i> (<i>Western False Pipistrelle</i> , <i>Western Falsistrelle</i>)		□4	
513.	24041 <i>Felis catus</i> (<i>Cat</i>)	Y		
514.	24055 <i>Globicephala melas</i> (<i>Long-finned Pilot Whale</i>)			
515.	24056 <i>Grampus griseus</i> (<i>Risso's Dolphin</i>)			
516.	24215 <i>Hydromys chrysogaster</i> (<i>Water-rat</i> , <i>Rakali</i>)		□4	
517.	48588 <i>Isoodon fusciventer</i> (<i>Quenda</i> , <i>southwestern brown bandicoot</i>)		□4	
518.	24132 <i>Macropus fuliginosus</i> (<i>Western Grey Kangaroo</i>)			
519.	24168 <i>Macrotis lagotis</i> (<i>Bilby</i> , <i>Dalgyte</i> , <i>Ninu</i>)		T	
520.	24051 <i>Megaptera novaeangliae</i> (<i>Humpback Whale</i>)		S	
521.	24078 <i>Mesoplodon grayi</i> (<i>Gray's Beaked Whale</i>)			
522.	24213 <i>Mirounga leonina</i> (<i>Southern Elephant Seal</i>)			
523.	24223 <i>Mus musculus</i> (<i>House Mouse</i>)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
		Y		
524.	48022 <i>Notamacropus irma</i> (Western Brush Wallaby)		□4	
525.	24194 <i>Nyctophilus geoffroyi</i> (Lesser Long-eared Bat)			
526.	24195 <i>Nyctophilus gouldi</i> (Gould's Long-eared Bat)			
527.	41424 <i>Nyctophilus major</i> (Greater Long-eared Bat)			
528.	24085 <i>Oryctolagus cuniculus</i> (Rabbit)	Y		
529.	48070 <i>Phascogale tapoatafa</i> subsp. <i>wambenger</i> (South-western Brush-tailed Phascogale, Wambenger)		S	
530.	24073 <i>Physeter macrocephalus</i> (Sperm Whale)		T	
531.	24166 <i>Pseudocheirus occidentalis</i> (Western Ringtail Possum, ngwayir)		T	
532.	24063 <i>Pseudorca crassidens</i> (False Killer Whale)			
533.	24243 <i>Rattus fuscipes</i> (Western Bush Rat)			
534.	24245 <i>Rattus rattus</i> (Black Rat)	Y		
535.	24145 <i>Setonix brachyurus</i> (Quokka)		T	
536.	24111 <i>Sminthopsis gilberti</i> (Gilbert's Dunnart)			
537.	48113 <i>Stenella coeruleoalba</i> (Striped Dolphin)			
538.	24207 <i>Tachyglossus aculeatus</i> (Short-beaked Echidna)			
539.	24167 <i>Tarsipes rostratus</i> (Honey Possum, Noolbenger)			
540.	25521 <i>Trichosurus vulpecula</i> (Common Brushtail Possum)			
541.	24158 <i>Trichosurus vulpecula</i> subsp. <i>vulpecula</i> (Common Brushtail Possum)			
542.	30954 <i>Tursiops aduncus</i> (Indo-Pacific Bottlenose Dolphin)			
543.	24069 <i>Tursiops truncatus</i> (Bottlenose Dolphin)			
544.	24206 <i>Vespadelus regulus</i> (Southern Forest Bat)			
545.	24040 <i>Vulpes vulpes</i> (Red Fox)	Y		
Reptile				
546.	42368 <i>Acritoscincus trilineatus</i> (Western Three-lined Skink)			
547.	44628 <i>Anilios ammodytes</i>			
548.	24990 <i>Aprasia pulchella</i> (Granite Worm-lizard)			
549.	24991 <i>Aprasia repens</i> (Sand-plain Worm-lizard)			
550.	25335 <i>Caretta caretta</i> (Loggerhead Turtle)		T	
551.	43380 <i>Chelodina colliei</i> (South-western Snake-necked Turtle)			
552.	25336 <i>Chelonia mydas</i> (Green Turtle)		T	
553.	24980 <i>Christinus marmoratus</i> (Marbled Gecko)			
554.	30893 <i>Cryptoblepharus buchananii</i>			
555.	25031 <i>Ctenotus catenifer</i>			
556.	25047 <i>Ctenotus impar</i>			
557.	25049 <i>Ctenotus labillardieri</i>			
558.	41641 <i>Ctenotus ora</i> (Coastal Plains Skink)		□3	
559.	25090 <i>Cyclodomorphus melanops</i> subsp. <i>melanops</i> (Slender Blue-tongue)			
560.	24995 <i>Delma australis</i>			
561.	25346 <i>Dermochelys coriacea</i> (Leatherback Turtle)		T	
562.	25251 <i>Echiopsis curta</i> (Bardick)			
563.	25096 <i>Egernia kingii</i> (King's Skink)			
564.	25100 <i>Egernia napoleonis</i>			
565.	25250 <i>Elapognathus coronatus</i> (Crowned Snake)			
566.	25290 <i>Elapognathus minor</i> (Short-nosed Snake)		□2	
567.	25475 <i>Hemiergis peronii</i>			
568.	25117 <i>Hemiergis peronii</i> subsp. <i>peronii</i>			
569.	25118 <i>Hemiergis peronii</i> subsp. <i>tridactyla</i>			
570.	25119 <i>Hemiergis quadrilineata</i>			
571.	25366 <i>Hydrophis elegans</i> (Elegant Seasnake, Bar-bellied Seasnake)			
572.	42410 <i>Hydrophis ornatus</i> (Ornate Reef Seasnake, Sea Snake)			
573.	43384 <i>Hydrophis platurus</i> (Yellow-bellied Seasnake)			
574.	25131 <i>Lerista distinguenda</i>			
575.	25133 <i>Lerista elegans</i>			
576.	25005 <i>Lialis burtonis</i>			
577.	41416 <i>Liopholis pulchra</i> subsp. <i>pulchra</i> (South-western Rock Skink, Spectacled Rock Skink)			
578.	25184 <i>Menetia greyii</i>			
579.	25240 <i>Morelia spilota</i> subsp. <i>imbricata</i> (Carpet Python)			
580.	25191 <i>Morethia lineocellata</i>			
581.	25192 <i>Morethia obscura</i>			
582.	25252 <i>Notechis scutatus</i> (Tiger Snake)			
583.	25255 <i>Parasuta nigriceps</i>			
584.	25510 <i>Pogona minor</i> (Dwarf Bearded Dragon)			
585.	24907 <i>Pogona minor</i> subsp. <i>minor</i> (Dwarf Bearded Dragon)			
586.	25511 <i>Pseudonaja affinis</i> (Dugite)			
587.	25259 <i>Pseudonaja affinis</i> subsp. <i>affinis</i> (Dugite)			
588.	25008 <i>Pygopus lepidopodus</i> (Common Scaly Foot)			
589.	30818 <i>Rhinoplocephalus bicolor</i> (Square-nosed Snake)			
590.	25519 <i>Tiliqua rugosa</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
591.	25207 <i>Tiliqua rugosa subsp. rugosa</i>			
592.	25520 <i>Tiliqua scincoides (Eastern Blue-tongue)</i>			
593.	25225 <i>Varanus rosenbergi (Heath Monitor)</i>			

Conservation Codes

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

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



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 14 Dec 2021

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[EBC 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](#).

World Heritage Properties	None
National Heritage Places	None
Wetlands of International Importance (Ramsar)	None
Great Barrier Reef Marine Park	None
Commonwealth Marine Area	None
Listed Threatened Ecological Communities	2
Listed Threatened Species	31
Listed Migratory Species	9

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.

Commonwealth Lands	None
Commonwealth Heritage Places	None
Listed Marine Species	12
Whales and Other Cetaceans	None
Critical Habitats	None
Commonwealth Reserves Terrestrial	None
Australian Marine Parks	None
Habitat Critical to the Survival of Marine Turtles	None

Extra Information

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

State and Territory Reserves	None
Regional Forest Agreements	1
Nationally Important Wetlands	None
EBC Act Referrals	3
Key Ecological Features (Marine)	None
Biologically Important Areas	None
Bioregional Assessments	None
Geological and Bioregional Assessments	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[Resource Information](#)

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, 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 Test
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Tuart Eucalyptus Gomphocephala Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community may 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 Test
BIRD		
Botaurus poiciloptilus Australasian Bittern 1001	Endangered	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot 855	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper 856	Critically Endangered	Species or species habitat may occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Barrak 67034	Vulnerable	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon 929	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Test
Numenius madaascariensis Eastern Curlew, Far Eastern Curlew 847	Critically Endangered	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern 82950	Vulnerable	Species or species habitat may occur within area
Landa baudinii listed as Calyptorhynchus baudinii Baudin's Black Cockatoo, Long-billed Black Cockatoo 87736	Endangered	Breeding likely to occur within area
Landa latirostris listed as Calyptorhynchus latirostris Carnaby's Black Cockatoo, Short-billed Black Cockatoo 87737	Endangered	Species or species habitat likely to occur within area
CRUSTACEAN		
Encaea reducta Dunsborough Burrowing Crayfish 82675	Critically Endangered	Species or species habitat known to occur within area
FISH		
Nannatherina balstoni Balston's Gummy perch 66698	Vulnerable	Species or species habitat may occur within area
MAMMAL		
Dasyurus geoffroii Chuditch, Western Quoll 330	Vulnerable	Species or species habitat likely to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Nuyir, Womp, Woder, Noor, Noolanit 25911	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
MOLLUSC		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel 86266	Vulnerable	Species or species habitat known to occur within area
PLANT		
Banksia nivea subsp. uliginosa Swamp Honeypot 82766	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Test
Banksia squarrosa subsp. arillacea Whicher Range Dryandra 82769	Vulnerable	Species or species habitat likely to occur within area
Brachyscias verecundus Ironstone Brachyscias 81321	Critically Endangered	Species or species habitat may occur within area
Caladenia busselliana Bussell's Spiderorchid 24369	Endangered	Species or species habitat likely to occur within area
Caladenia huerfelii Thin Spiderorchid, Grand Spiderorchid, Rusty Spiderorchid 7309	Endangered	Species or species habitat may occur within area
Caladenia procera Carbunup Thin Spider orchid 68679	Critically Endangered	Species or species habitat may occur within area
Chamelaucium sp. S coastal plain R.D.Royce 4872 Royce's Wattleflower 87814	Vulnerable	Species or species habitat may occur within area
Daviesia elongata subsp. elongata Longleaved Daviesia 64883	Vulnerable	Species or species habitat may occur within area
Diuris micrantha Dwarf Beeorchid 55082	Vulnerable	Species or species habitat may occur within area
Drakaea elastica Glossyleaved Hammer orchid, Glossyleaved Hammer orchid, Warty Hammer orchid 16753	Endangered	Species or species habitat may occur within area
Drakaea micrantha Dwarf Hammerorchid 56755	Vulnerable	Species or species habitat likely to occur within area
Gastrolobium papilio Butterflyleaved Gastrolobium 78415	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Type
Grevillea brachystylis subsp. grandis Barbed Short-styled Grevillea 85001	Critically Endangered	Species or species habitat likely to occur within area
Lambertia echinata subsp. occidentalis Western Wickly Honey-suckle 64528	Endangered	Species or species habitat may occur within area
Letrophile latericola Laterite Letrophile 64532	Endangered	Species or species habitat may occur within area
Lerticordia plumosa var. ananeotes Tufted Plumed Featherflower 23871	Endangered	Species or species habitat likely to occur within area
Lerticordia plumosa var. vassensis Classe Featherflower 55804	Endangered	Species or species habitat may occur within area

Listed Migratory Species

Resource Information

Scientific Name	Threatened Category	Presence Type
Migratory Marine Birds		
Apus pacificus Fork-tailed Sift 678		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey W-tail 642		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper 59309		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper 874		Species or species habitat may occur within area
Calidris canutus Red-not, not 855	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Term
Calidris ferruginosa Curlew Sandpiper 1856	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Spectacular Sandpiper 1858		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew 1847	Critically Endangered	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank 1832		Species or species habitat likely to occur within area

Other Matters Protected by the EBC Act

Listed Marine Species [Resource Information](#)

Scientific Name	Threatened Category	Presence Term
Bird		
Actitis hypoleucos Common Sandpiper 159309		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift 1678		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis Cattle Egret 166521		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper 1874		Species or species habitat may occur within area
Calidris canutus Red-tailed, Red 1855	Endangered	Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Tenure
Calidris ferruginea Curlew Sandpiper 1856	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Sectoral Sandpiper 1858		Species or species habitat may occur within area overfly marine area
Chroicocephalus leucostriatus Whitebellied Sea Eagle 1943		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater 1670		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wattail 1642		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew 1847	Critically Endangered	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank 1832		Species or species habitat likely to occur within area overfly marine area

Extra Information

Regional Forest Agreements [Resource Information](#)

Note that all areas with completed RFAs have been included.

RFA Name	State
South West WA RFA	Western Australia

EPBC Act Referrals [Resource Information](#)

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Improving rabbit biocontrol release of another strain of RDD	2015/7522	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
sthru tō thirds of Australia			
INDIG Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Not controlled action in particular manner			
INDIG Marine Cable Route Survey	2017/7996	Not Controlled Action in Particular Manner	Cost Approval
INDIG			

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 (the 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 (i.e. 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, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat or modelled (MARCANT or BICIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time frame, maps are derived either from 0.04 or 0.02 decimal degree cells by an automated process using polygon capture techniques (static two kilometre grid cells, alpha hull and convex hull) or captured manually or by using topographic features (national park boundaries, islands, etc.)

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 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 using 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](#)
- [Biodiversity Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- [Natural history museums of Australia](#)
- [Museum Victoria](#)
- [Australian Museum](#)
- [South Australian Museum](#)
- [Queensland Museum](#)
- [Online Zoological Collections of Australian Museums](#)
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Canberra](#)
- [University of New England](#)
- [Ocean Biogeographic Information System](#)
- [Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [Geoscience Australia](#)
- [CSIRO](#)
- [Australian Tropical Herbarium, Cairns](#)
- [eBird Australia](#)
- [Australian Government Australian Antarctic Data Centre](#)
- [Museum and Art Gallery of the Northern Territory](#)
- [Australian Government National Environmental Science Program](#)
- [Australian Institute of Marine Science](#)
- [Reef Life Survey Australia](#)
- [American Museum of Natural History](#)
- [Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

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

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

[Commonwealth of Australia](#)

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APPENDIX C

DETAILS OF TREES INSPECTED

Habitat Trees Inspected**Datum - GDA94****Entrance Size Ranges - Small = >5cm, Medium = 5 to 10cm, Large = >10cm**

Waypoint Number	SLK	Side of Road	Zone	mE	mN	Tree Species	DBH (cm)	Tree Height (m)	Number of Hollows	Estimated Hollow Entrance Size Range	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt001	6.71	North	50H	333479	6266353	Dead Jarrah	>50	15-20	2+	Small-Large (cockatoo)	No Signs	No Signs	Yes	Examined with drone - One large side entry hollow
wpt002	6.51	North	50H	333674	6266352	Dead Unknown	>50	15-20	2+	Small-Medium	No Signs	No Signs	No	Examined with drone - no suitable hollows
wpt003	4.42	South	50H	335778	6266447	Dead Jarrah	>50	15-20	2+	Large	No Signs	No Signs	No	Examined with drone - no suitable hollows

WPT	Coordinates (MGA 94/Z50)	333479 mE	6266353 mN	Tree Species	Jarrah (dead)t	Survey Date	04/11/2021 & 20/12/2021
1	Comments	Dead jarrah with a large side entry hollow. The hollow has a large entrance and be of a suitable internal diameter and therefore it must be considered potentially suitable for black cockatoos to use for nesting purposes. No evidence of use by fauna of any type			Classification	Unused Hollow.	



WPT	Coordinates (MGA 94/Z50)	333674 mE	6266352 mN	Tree Species	Dead (unknown)	Survey Date	04/11/2021 & 20/12/2021
2	Comments	Dead tree with several possible hollows all of which were found to be non-existent or too small for black cockatoos.			Classification	Unsuitable hollows.	



WPT	Coordinates (MGA 94/Z50)	335778 mE	6266447 mN	Tree Species	Jarrah (dead)	Survey Date	04/01/2022
3	Comments	Dead jarrah with two apparent large side entry hollows One hollow was found to have no depth while the other hollow appears too small internally for black cockatoos to use for nesting purposes. No evidence of use by fauna of any type.			Classification	Unsuitable hollows.	



DISCLAIMER

This fauna assessment report (“the report”) has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Greg Harewood (“the Author”). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints. In accordance with the scope of services, the Author has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

The conclusions 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 preparing the report. Also it should be recognised that site conditions, can change with time.

Within the limitations imposed by the scope of services, the field assessment and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

In preparing the report, the Author has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report (“the data”). Except as otherwise stated in the report, the Author has not verified the accuracy of completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report (“conclusions”) are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. The Author will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to the Author.

The report has been prepared for the benefit of the Client and no other party. The Author assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of the Author or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

The Author will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.