

Level 1 Fauna Assessment

Lot 9 Brookton Highway, Karragullen

Project No: EP20-040(04)

**Prepared for Vinci Gravel Supplies Pty Ltd
June 2020**



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Executive Summary

Vinci Gravel Supplies Pty Ltd (Vinci) intends to expand an existing gravel quarry within part of Lot 9 Brookton Highway in Karragullen (referred to as the 'site'). Emerge were engaged to conduct a 'level 1' fauna assessment to provide information on the fauna values within the site to inform the development.

As part of the assessment a desktop review of relevant background information was completed and a field survey was undertaken on 27 May and 2 June 2020. During the survey targeted searches for fauna species were conducted with a particular reference for conservation significant fauna species and an assessment was made on the type and conservation significance of fauna habitat across the site.

Outcomes of the survey include the following:

- The majority of the site (70.24%) contains remnant native vegetation with high fauna habitat values.
- A total of 25 native and three introduced fauna species were positively identified to occur within the site, including threatened (endangered) Baudin's cockatoo, (endangered) Carnaby's cockatoo and (vulnerable) forest red-tailed black cockatoo.
- The site contains foraging habitat for all three species of black cockatoo that occur in the south-west of Western Australia and may contain trees suitable as breeding and/or roosting habitat. A targeted black cockatoo assessment would be required to confirm the extent and suitability of potential black cockatoo habitat within the site.
- Additionally, 14 species of conservation significance not recorded during the field survey are also considered to have potential to occur within the site, including six bird, one insect, two reptile and five mammal species. Targeted surveys would need to be undertaken to confirm whether these species occur within the site.

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Abbreviation Tables

Table A1: Abbreviations – Organisations

Organisations	
EPA	Environmental Protection Authority
DBCA	Department of Biodiversity, Conservation and Attractions
DAWE	Department of Agriculture, Water and the Environment
WA Museum	Western Australian Museum

Table A2: Abbreviations – General terms

General terms	
EN	Endangered
EX	Extinct
VU	Vulnerable
MI	Migratory
P1	Priority 1
P2	Priority 2
P3	Priority 3
P4	Priority 4
P5	Priority 5

Table A3: Abbreviations – Legislation

Legislation	
BAM Act	<i>Biosecurity and Agriculture Management Act 2007</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
BC Act	<i>Biodiversity Conservation Act 2016</i>

Table A4: Abbreviations – planning

Planning terms	
MRS	Metropolitan Region Scheme
TPS	Town Planning Scheme

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Table A5: Abbreviations – units of measurement

Units of measurement	
ha	Hectare
km	Kilometre
m	Metre

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1 Introduction

1.1 Project background

Vinci Gravel Supplies Pty Ltd (Vinci) intends to expand an existing gravel quarry within part of Lot 9 Brookton Highway in Karragullen. This lot (referred to herein as the 'site') is located approximately 29 kilometres (km) south-east of the Perth Central Business District within the City of Armadale and is zoned 'rural' under the Metropolitan Region Scheme and 'general rural' under the City of Armadale *Town Planning Scheme No 4*.

The site is approximately 48.23 hectares (ha) in size and is bound by Midgegooroo National Park to the east, Korung National Park to the north and rural lots to the west and south. The location and extent of the site is shown in **Figure 1**.

1.2 Purpose and scope of work

Emerge Associates (Emerge) were engaged by Vinci Gravel Supplies Pty Ltd to provide environmental consultancy services to support the planning process for the site. The purpose of this assessment is to provide sufficient information on the fauna values within the site to inform this process.

The scope of work was specifically to conduct a fauna assessment to the standard required of a 'level 1' fauna survey in accordance with the Environmental Protection Authority's (EPA's) *Technical Guidance – Terrestrial fauna Surveys* (EPA 2016).

As part of this scope of work, the following tasks were undertaken:

- Desktop review of background information regarding fauna species relevant to the site and surrounds.
- Compilation of a list of fauna species opportunistically recorded as part of the field survey.
- Identification of potential habitat for conservation significant fauna species and likelihood of occurrence.
- Documentation of the desktop assessment, survey methodology and results into a report.

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2 Environmental Context

2.1 Significant fauna

2.1.1 Threatened fauna species

Certain fauna taxa that are considered to be rare or under threat warrant special protection under Commonwealth and/or State legislation. At a Commonwealth level, fauna taxa may be listed as 'threatened' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Any action likely to have a significant impact on a taxon listed under the EPBC Act requires approval from the Commonwealth Minister for the Environment and Energy.

In Western Australia fauna species may also be classed as 'threatened' under the *Biodiversity Conservation Act 2016* (BC Act). It is an offence to 'take' or 'disturb' threatened fauna without Ministerial approval.

Threatened fauna species listed under the EPBC Act and/or BC Act are assigned a conservation status according to attributes such as population size and geographic distribution. Further information on threatened species and their categories is provided in **Appendix A**.

2.1.2 Priority fauna species

Fauna species that do not currently meet the criteria for listing as threatened but are potentially rare or threatened may be added to the Department of Biodiversity, Conservation and Attractions (DBCA) *Priority Fauna List*. These species are classified into 'priority' levels based on threat. Whilst priority species are not under direct statutory protection, they are considered during State approval processes. Further information on priority species and their categories is provided in **Appendix A**.

2.1.3 Migratory fauna species

Migratory fauna species that migrate to Australia and its external territories, or pass through or over Australian waters during their annual migrations warrant special protection under Commonwealth and State legislation. At a Commonwealth level, migratory fauna taxa may be listed as 'migratory' under *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Any action likely to have a significant impact on a taxon listed under the EPBC Act requires approval from the Commonwealth Minister for the Environment and Energy.

In Western Australia migratory fauna taxa may be listed as 'specially protected species' and classed as 'migratory' under the *Biodiversity Conservation Act 2016* (BC Act). Further information on migratory species is provided in **Appendix A**.

2.1.4 Specially protected fauna species

In Western Australia, fauna species that are of special conservation interest, including migratory species, cetaceans, species subject to international agreement or species otherwise in need of special protection may be listed as 'specially protected' under the BC Act. Further information on specially protected species and their categories is provided in **Appendix A**.

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2.1.5 Pest fauna species

The term 'pest fauna' can refer to any animal that requires some form of action to reduce its effect on the economy, the environment, human health and amenity. Many non-native fauna species and some fauna species native to Australia but not Western Australia are considered to be pest fauna.

A particularly invasive or detrimental pest species may be listed as a 'declared pest' pursuant to Western Australia's *Biosecurity and Agriculture Management Act 2007* (BAM Act), indicating that it warrants special management to limit its spread. Further information on categories of declared pests is provided in **Appendix A**.

2.2 Bush Forever

The Government of Western Australia's *Bush Forever* policy is a strategic plan for conserving regionally significant bushland within the Swan Coastal Plain portion of the Perth Metropolitan Region. The objective of *Bush Forever* is to protect comprehensive representations of all original ecological communities by targeting a minimum of 10% of each vegetation complex for protection (Government of WA 2000). *Bush Forever* sites are representative of regional ecosystems and habitat and have a key role in the conservation of Perth's biodiversity.

No *Bush Forever* sites occur within 10 km of the site.

2.3 Ecological linkages

Ecological linkages are linear landscape elements that allow the movement of fauna, flora and genetic material between areas of remnant habitat. The movement of fauna and the exchange of genetic material between vegetation remnants improve the viability of those remnants by allowing greater access to breeding partners and food sources, refuge from disturbances such as fire and maintenance of genetic diversity of plant communities and populations. Ecological linkages are ideally continuous or near-continuous as the more fractured a linkage is, the less ease flora and fauna have in moving within the corridor (Alan Tingay and Associates 1998).

The Perth Biodiversity Project, supported by the Western Australia Local Government Association (WALGA), have identified and mapped regional ecological linkages within the Perth Metropolitan Region (WALGA and PBP 2004). This study was extended beyond the Perth Metropolitan Region through the South West Biodiversity Project, resulting in the identification and mapping of the South West regional ecological linkages (Molloy *et al.* 2009).

There are no mapped ecological linkages within the site. One regional ecological linkage (No. 141) occurs to the west of the site and extends beyond the site to the north and south. Multiple additional ecological linkages are located within the wider area of the site. The location of ecological linkages near the site is shown in **Figure 2**.

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2.4 DBCA managed or legislated lands

DBCA has tenure of or interests in numerous areas of land across the state for a range of purposes. Tenure categories include national parks, nature reserves, conservation parks, marine parks, marine nature reserves, marine management areas, section 5(1)(g) reserves, state forest and timber reserves. These areas are mapped within the *Legislated Lands and Waters* (DBCA 2017a) and *Lands of Interest* (DBCA 2017b) datasets. The *Legislated Lands and Waters* (DBCA 2017a) dataset includes lands subject to the following legislation; the *Conservation and Land Management Act 1984* (CALM Act 1984), *Swan and Canning Rivers Management Act 2006* (SCRM Act) and lands identified under the *Land Administration Act 1997* (LA Act). The *Lands of Interest* (DBCA 2017b) dataset includes all other lands of which DBCA is recognised as the manager but is not vested under any act. These lands comprise of crown land and freehold land which DBCA has been acknowledged by the Department of Lands as the responsible agency.

No DBCA legislated lands are mapped over the site but two are located adjacent to the site (DBCA 2017a). Korung National Park is located adjacent to the northern boundary of the site and extends to the north and west of the site. Midgegooroo National Park is located adjacent to the eastern boundary of the site and extends to the east and south of the site. Multiple additional DBCA legislated lands are located within the wider area of the site. The location of DBCA legislated lands near the site is shown in **Figure 2**.

2.5 Previous surveys

No previous fauna surveys are known to have been undertaken over the site.

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3 Methods

3.1 Desktop assessment

3.1.1 Database searches

A search was conducted for conservation significant fauna that may occur or have been recorded within a 10 km radius of the site using the *Protected Matters Search Tool* (DAWE 2020), *NatureMap* (DBCA 2020) and DBCA's threatened and priority fauna database (reference no. FAUNA#6347).

A total number of species with potential to occur within the site was calculated by adding the total count of non-conservation significant species provided by *NatureMap* to the combined number of conservation significant species provided by *NatureMap* and *Protected Matters Search Tool*.

3.1.2 Likelihood of occurrence

Information on habitat preferences and distribution of conservation significant fauna species identified to potentially occur within the site or wider area was reviewed. This was assessed against the general site conditions and fauna habitat types recorded during the field survey.

An assessment of the likelihood of occurrence of conservation significant fauna species within the site was undertaken and each was assigned to one of the following categories:

- Recorded: The species in question was positively identified as being present within the site during the field survey or from recent literature records.
- Likely: Potentially suitable habitat for the species in question was identified during the field survey and the site lies within the known distribution of the species.
- Possible: Potentially suitable habitat for the species in question was identified but of marginal quality and/or extent. The site lies within or close to the known distribution of the species.
- Unlikely: The site lies outside of the known distribution of the species in question and/or no suitable habitat was identified within the site.

3.2 Field survey

Two ecologists from Emerge visited the site on the 27 May and 2 June 2020 during the day to conduct the level 1 fauna survey.

3.2.1 Level 1 fauna

Transects were traversed across the site, during the day, and the characteristics of fauna habitat and presence of fauna species was recorded. Microhabitats such as logs, rocks and leaf litter were investigated and secondary evidence of species presence such as tracks, scats, skeletal remains, foraging evidence or calls was also noted.

An opportunistic fauna species list was compiled, and fauna habitat values were described, with particular reference to 'threatened' and 'priority' fauna species with potential to occur within the site. Taxonomy and nomenclature for vertebrate fauna species was taken from the *Western*

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Australian Museum Checklist of the Terrestrial Vertebrate Fauna of Western Australia (Western Australian Museum 2019). Literature listed in **Appendix A** represent the main publications used to identify fauna species and habitats within the site.

3.3 Data analysis, presentation mapping

3.3.1 Fauna habitat

Fauna habitats were described according to the dominant flora species and vegetation type present, as determined from observations made during the field survey and information provided in the *'Reconnaissance Flora and Vegetation Assessment'* (Emerge Associates 2020). The identified fauna habitats were mapped on aerial photography with the boundaries interpreted from aerial photography, previously identified plant communities (Emerge Associates 2020) and notes taken in the field.

Information on specific habitat requirements for conservation significant vertebrate fauna species with potential to occur within the site were compiled as part of the desktop assessment. This information was compared to the fauna habitats identified within the site to determine whether any conservation significant fauna species are considered to have potential to utilise the site.

3.4 Survey limitations

It is important to note the specific constraints imposed on surveys and the degree to which these may have limited survey outcomes. An evaluation of the survey methodology against standard constraints outlined in the EPA document *Technical Guidance – Terrestrial Fauna Surveys* (EPA 2016) is provided in **Table 1**.

Table 1: Evaluation of survey methodology against standard constraints outlined in EPA Technical Guidance - Terrestrial fauna Surveys

Constraint	Degree of limitation	Details
Level of survey	Minor limitation	A level 1 survey (desktop study and field survey) was considered adequate to determine whether conservation significant fauna species have the potential to occur within the site. Further targeted surveys would be required to confirm the status and habitat use of conservation significant species within the site.
Scope	No limitation	The survey focused on fauna and habitat values, with particular reference to conservation significant taxa with potential to occur within the site.
Proportion of fauna identified, recorded and/or collected.	No limitation	All observed vertebrate fauna were identified. It is likely that the detectability of some fauna was lowered due to cold and intermittently rainy weather conditions, especially during the survey on the 27 May. Ectothermic fauna such as reptiles are typically less active during such conditions. However, it is not considered of great importance given the level of the survey.
Sources of information e.g. previously available information (whether historic or recent) as distinct from new data.	No limitation	Adequate information was available from database searches.

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Table 2 (continued): Evaluation of survey methodology against standard constraints outlined in EPA Technical Guidance - Terrestrial fauna Surveys

Constraint	Degree of limitation	Details
The proportion of the task achieved and further work which might be needed.	No limitation	The task was achieved in its entirety.
Experience level of personnel	No limitation	This fauna assessment was undertaken by qualified ecologists with nine- and three-years' experience, respectively. Technical review was undertaken by a senior environmental consultant with 18 years' experience in environmental science in Western Australia.
Suitability of timing	Slight limitation	Survey timing is not considered to be of great importance for Level 1 assessments. Nonetheless, the cold seasonal conditions during the field survey likely reduced the detectability of some fauna classes such as reptiles.
Completeness	No limitation	The desktop assessment and field survey component of the survey were completed.
Spatial coverage and access	No limitation	Site coverage was comprehensive (track logged).
	No limitation	All parts of the site could be accessed as required.
Survey intensity	No limitation	The intensity of the survey was adequate considering the level of the survey.
Influence of disturbance	No limitation	Some areas of the site are highly modified due to historical disturbance, particularly near the existing quarry. However, no recent disturbance was noted that may have affected outcomes of the survey.
Adequacy of resources	No limitation	All resources required to perform the survey were available.

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4 Results

4.1 General site conditions

The site comprises a south-east to south-west facing slope with soils carrying from sandy and clay soils to granite outcrops. Two creeks and three waterbodies (dams) are located within the site. Both creeks and two of the waterbodies within the site were carrying water at the time of the field survey.

Native vegetation is located primarily within the central and eastern part of the site, with smaller areas nestled along the western boundary.

The site also comprises multiple disturbed areas, including an active gravel quarry, tracks and a farm shed, particularly within the western portion of the site.

4.2 Fauna habitat

The majority of the site comprises intact native vegetation. Approximately 14.36 ha of the site has been historically or recently disturbed and now supports cleared area, dominated by non-native and weed species with scattered or patches of native and non-native trees or planted native vegetation (revegetation).

A total of eight fauna habitats were identified within the site, including '**marri and jarrah forest**', '**shrubland**', '**sedgeland**', '**granite outcrop**', '**creepline**', '**waterbody**', '**revegetation**' and '**predominantly cleared area**'.

A description and the area of each habitat is provided in Table 2 and representative photographs of each are provided in **Plate 1** to **Plate 9**. The location of each habitat is shown on **Figure 3**.

The highest natural fauna habitat values within the site are associated with areas of remnant native vegetation and rocky outcrops, including **marri and jarrah forest**, **shrubland**, **sedgeland**, **granite outcrop** and **creepline**. In particular where this vegetation remains in good or better condition it supports a diverse canopy, shrub and ground cover layer and contains micro habitats such as rocky outcrops, rocks, logs and leaf litter.

Table 2: Fauna habitats identified within the site

Fauna habitat classification	Description	Area (ha)
Marri and jarrah forest	Open forest <i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> over tall shrubland <i>Bossiaea aquifolium</i> and shrubland <i>Xanthorrhoea preissii</i> over assorted native shrubs and forbs (Plate 1).	26.29
Shrubland	Closed shrubland <i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i> (P3) and <i>Grevillea manglesii</i> (Plate 2).	4.44
Sedgeland	Tall open shrubland <i>Taxandria linearifolia</i> over closed sedgeland <i>Baumea rubiginosa</i> (Plate 3).	0.05
Granite outcrop	Granite outcrop comprising bare rock surfaces, bryophytes and herbland dominated by <i>Borya</i> sp. (Plate 4).	3.02

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Table 2 (continued): Fauna habitats identified within the site

Fauna habitat classification	Description	Area (ha)
Creekline	Shallow creeks running off granite outcrops through marri and jarrah forest and sedgeland (Plate 5) .	0.08
Waterbody	Temporary or permanent waterbodies (dams) containing limited native and/or non-native (or absent) vegetation (Plate 6).	0.11
Revegetation	Shrubland <i>Calothamnus quadrifidus</i> , <i>Eucalyptus</i> sp. and other associated native species over non-native grassland or bare ground (Plate 7).	1.8
Non-native vegetation	Predominantly non-native vegetation, including <i>Eucalyptus botryoides</i> and <i>Eucalyptus camaldulensis</i> over non-native shrubs and/or bare ground with occasional native plant species (Plate 8).	0.15
Predominantly cleared area	Heavily disturbed areas containing primarily pasture and bare ground with isolated native and non-native trees and shrubs (Plate 9).	12.28



Plate 1: Marri and jarrah forest

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Plate 2: Shrubland



Plate 3: Sedgeland

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Plate 4: Granite outcrop



Plate 5: Creekline

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Plate 6: Waterbody



Plate 7: Revegetation

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Plate 8: Non-native vegetation



Plate 9: Predominantly cleared area

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4.3 Fauna

4.3.1 Desktop assessment

A total number of 396 fauna species were identified from database searches as occurring or potentially occurring within 10 km of the site¹ as listed in **Appendix B**.

Of these species 34 are conservation significant, including 15 threatened, nine priority, eight migratory fauna and two other specially protected species as listed in **Appendix C**.

4.3.2 Species inventory

A total of 25 native and three introduced fauna species, including three species of conservation significance (Baudin's cockatoo, Carnaby's cockatoo and forest red-tailed black cockatoo), were directly or indirectly recorded during the field survey. A complete species list is provided in **Appendix D**.

4.3.3 Conservation significant fauna

Forest red-tailed black cockatoos were observed foraging within the site and Baudin's cockatoos were observed adjacent to the site. Foraging evidence attributed to the two aforementioned species of black cockatoo and Carnaby's cockatoo was observed within the site. No signs of breeding or roosting were recorded during the field survey. The **jarrah and marri forest** and **shrubland** habitats support a range of food plants for these black cockatoo species. These habitats may also support trees suitable for breeding and roosting by black cockatoos.

Including the aforementioned species of black cockatoo, a total of 17 fauna species of conservation significance were considered to have potential to occur in the site, as shown in **Table 3**. This comprises the three recorded species of black cockatoo and 14 species that are considered 'possible' to occur.

The remainder of the conservation significant fauna species identified in the desktop assessment are not considered likely to occur in the site due to lack of suitable habitat or because the site lies outside of the species known distribution.

¹ Includes native and non-native species

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Table 3: Summary of conservation significant fauna species with have potential to occur within the site

Species	Common name	Level of significance		Habitat	Likelihood of occurrence within the site
		BC Act	EPBC Act		
Birds					
<i>Apus pacificus</i>	Pacific swift	MI	MI	Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities (Johnstone and Storr 1998).	Possible: May opportunistically forage in the air above the site or fly over on commute. This species does not breed in Australia.
<i>Calyptorhynchus banksii naso</i>	Forest red-tailed black cockatoo	VU	VU	Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding Corymbia calophylla, Eucalyptus marginata, introduced Melia azedarach and Eucalyptus spp. trees (Johnstone and Storr 1998).	Recorded: Potential foraging, roosting and breeding habitat present.
<i>Calyptorhynchus baudinii</i>	Baudin's cockatoo	EN	EN	Mainly eucalypt forests. Attracted to seeding Corymbia calophylla, Banksia spp., Hakea spp., and to fruiting apples and pears (Johnstone and Storr 1998).	Recorded: Potential foraging, roosting and breeding habitat present.
<i>Calyptorhynchus latirostris</i>	Carnaby's cockatoo	EN	EN	Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of Pinus spp. Attracted to seeding Banksia spp., Dryandra spp., Hakea spp., Eucalyptus spp., Corymbia calophylla, Grevillea spp., and Allocasuarina spp. (Johnstone and Storr 1998).	Recorded: Potential foraging, roosting and breeding habitat present.
<i>Falco peregrinus</i>	Peregrine falcon	OS	-	Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes (Johnstone and Storr 1998).	Possible: May opportunistically forage in or fly over the site on commute as part of a larger home range.

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Table 3 (continued): Summary of conservation significant fauna species deemed possible or likely to occur within the site

Species	Common name	Level of significance		Habitat	Likelihood of occurrence within the site
		WA	EPBC Act		
Birds					
<i>Motacilla cinerea</i>	Grey wagtail	MI	MI	Mainly banks and rocks in fast-running fresh water habitats: rivers, creeks, streams and around waterfalls, both in forest and open country; but occurs almost anywhere during migration.	Possible: Rarely occurs in south-western Australia but may occur opportunistically during migration.
<i>Oxyura australis</i>	Blue-billed duck	P4	-	Mainly deeper freshwater swamps and lakes; occasionally saltlakes and estuaries freshened by flood waters (Johnstone and Storr 1998).	Possible: May opportunistically utilise waterbodies within the site.
<i>Plegadis falcinellus</i>	Glossy Ibis	MI	MI	Shallow and adjacent flats of freshwater lakes and swamps, also river pools, flooded samphire and sewage ponds (Pizzey and Knight 2012).	Possible: May opportunistically utilise waterbodies and adjacent areas within the site.
<i>Tringa nebularia</i>	Common greenshank	MI	MI	Shallow fresh waters (claypans, lagoons, swamps, river pools, dams and sewage ponds) and salt waters (estuaries, mangrove creeks, lakes, samphire flats, reef flats and saltwork ponds) (Pizzey and Knight 2012).	Possible: May opportunistically utilise waterbodies and adjacent areas within the site.
Mammals					
<i>Dasyurus geoffroii</i>	Chuditch	VU	VU	Wide range of habitats from woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. Appears to utilise native vegetation along road sides in the wheatbelt (DEC 2012a).	Possible: May utilise remnant native vegetation within the site.
<i>Hydromys chrysogaster</i>	Rakali	P4	-	Areas with permanent water, fresh, brackish or marine. Likely to occur in all major rivers and most of the larger streams as well as bodies of permanent water in the lower south west (Christensen et al. 1985).	Possible: May opportunistically utilise waterbodies and creeks within the site.
<i>Isodon fusciventer</i>	Quenda	P4	-	Dense scrubby, often swampy, vegetation with dense cover up to one metre high (DEC 2012b).	Possible: May utilise remnant native vegetation within the site.

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Table 3 (continued): Summary of conservation significant fauna species deemed possible or likely to occur within the site

Species	Common name	Level of significance		Habitat	Likelihood of occurrence within the site
		WA	EPBC Act		
Mammals					
<i>Notamacropus irma</i>	Western brush wallaby	P4	-	Dry sclerophyll forest, Banksia spp. woodlands and shrublands, typically favouring dense low vegetation that provides dense cover (Christensen and Strahan 1984).	Possible: May utilise remnant native vegetation within the site.
<i>Phascogale tapoatafa wambenger</i>	South-western brush-tailed phascogale	CD	-	Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover (Triggs 2003).	Possible: May utilise remnant native vegetation within the site.
Reptiles					
<i>Acanthophis antarcticus</i>	Southern death adder	P3	-	Mostly in woodlands, grasslands and heaths. In the Darling Range this species is typically found within Eucalyptus marginata woodlands adjacent to granite outcrops and along densely vegetated creeks (Bush et al. 2007).	Possible: May utilise remnant native vegetation within the site.
<i>Ctenotus delli</i>	Dell's skink	P4	-	Jarrah and marri woodland with a shrub dominated understorey, sheltering in dense vegetation, inside grass trees and beneath rocks, sometimes in burrows (Nevill 2005).	Possible: May utilise remnant native vegetation within the site.
Invertebrates					
<i>Kawaniphila pachomai</i>	Grey vernal katydid	P1	-	Inhabits trees and shrubs and can be found mostly in heath or mixed woodland (Rentz 1993). The species occurs primarily in coastal SW Western Australia with records near Vasse, within the southern Perth metropolitan region and on the Darling scarp.	Possible: Species poorly understood. Potential habitat (heath) present within the site and historical record located approximately 7.5 km north-west of the site.

4.3.1 Declared pests

A total of two species, *Oryctolagus cuniculus* (rabbit) and *Vulpes vulpes* (fox) listed as a declared pests (C3) pursuant to the BAM Act, were identified from sightings and scats within the site.

Level 1 Fauna Assessment

Lot 9 Brookton Highway, Karragullen



5 Discussion

5.1 Fauna habitat values

The majority of the site (70.24%) supports native vegetation with high fauna habitat values, including **marri and jarrah forest, shrubland, granite outcrop, sedgeland and creek line**.

The **waterbody** habitats, although lacking native riparian vegetation and very limited in extent, also provide habitat for native fauna and make up 0.23% of the site. The **revegetation** and **non-native vegetation** habitats cover 4.06% of the site. These habitats provide varying value according to the plant species and density. However, the majority of the **revegetation** and **non-native vegetation** habitats lack understorey vegetation and would mainly provide habitat for common bird species. The remainder of the site (25.46%) provides **predominantly cleared area** including turf, bare ground, infrastructure and isolated trees and shrubs which provide low habitat values for native fauna.

The 25 native and three introduced fauna taxa recorded within the site are all generally common and widespread in the Jarrah Forest region, including the three species of black cockatoo.

5.2 Conservation significant fauna

All three species of black cockatoo were directly or indirectly (from foraging evidence) identified as occurring in the site. A record of these species within the site was anticipated as the wider local area contains extensive areas of habitat known to be utilized by the species.

The **marri and jarrah forest** and **shrubland** habitats contain multiple plant species known to be consumed by species of black cockatoo, including *Corymbia calophylla* (marri), *Eucalyptus marginata* (jarrah), *Banksia* spp. (banksia), *Grevillea* spp. (grevillea), *Hakea* spp. (hakea) and *Xanthorrhoea* spp. (grass tree). The site may also support trees suitable for breeding and roosting by black cockatoos, but a targeted assessment would need to be undertaken to confirm this.

An additional 14 species of conservation significance have potential to occur in the site. *Apus pacificus* (pacific swift) and *Falco peregrinus* (peregrine falcon) may opportunistically fly over or utilise habitat within the site as part of a much larger home range. The **creekline** and **water body** habitats provide potential habitat for *Motacilla cinerea* (grey wagtail), *Oxyura australis* (blue-billed duck), *Plegadis falcinellus* (glossy ibis) and *Tringa nebularia* (common greenshank). The **marri and jarrah forest** and shrubland habitats provide potential habitat for five mammal and two reptile and one insect species of conservation significance. Targeted surveys would need to be undertaken to confirm whether these fauna species occur within the site.

Level 1 Fauna Assessment

Lot 9 Brookton Highway, Karragullen



6 Conclusions

The majority of the site (70.24%) contains remnant native vegetation with high fauna habitat values.

A total of 25 native and three introduced fauna species were positively identified to occur within the site, including threatened (endangered) Baudin's cockatoo, (endangered) Carnaby's cockatoo and (vulnerable) forest red-tailed black cockatoo.

The site contains foraging habitat for all three species of black cockatoo that occur in the south-west of Western Australia and may contain trees suitable as breeding and/or roosting habitat. A targeted black cockatoo assessment would be required to confirm the extent and suitability of potential black cockatoo habitat within the site.

Additionally, 14 species of conservation significance not recorded during the field survey are also considered to have potential to occur within the site, including six bird, one insect, two reptile and five mammal species. Targeted surveys would need to be undertaken to confirm whether these species occur within the site.

Level 1 Fauna Assessment

Lot 9 Brookton Highway, Karragullen



7 References

7.1 General references

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Christensen, P. and Strahan, R. 1984, The Australian Museum Complete Book of Australian Mammals, Angus and Robertson Publishers, Sydney.

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Lot 9 Brookton Highway, Karragullen



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7.2 Online references

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Level 1 Fauna Assessment

Lot 9 Brookton Highway, Karragullen



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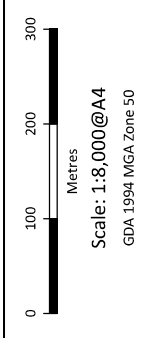
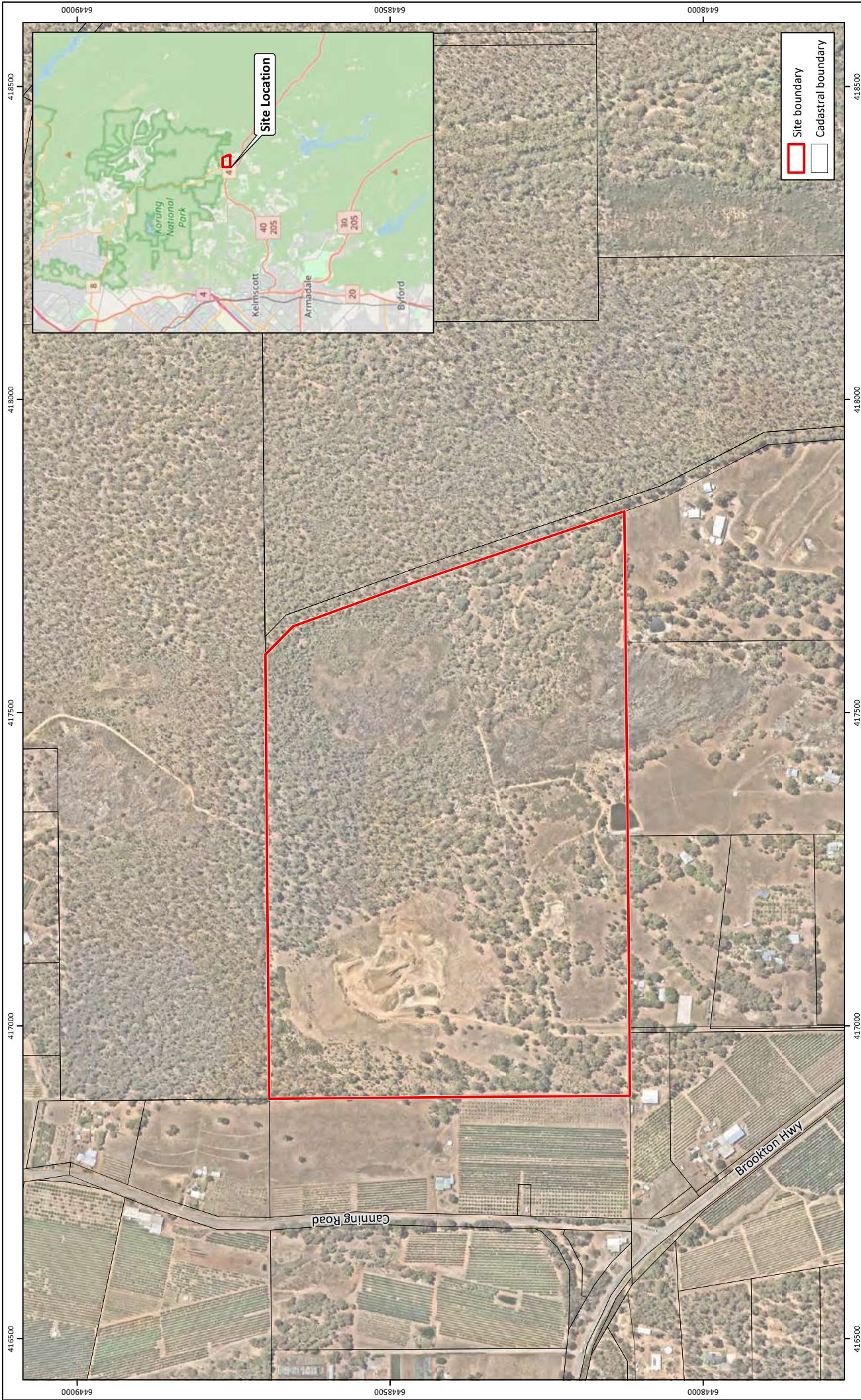
Figures



Figure 1: Site Location

Figure 2: Environmental Features

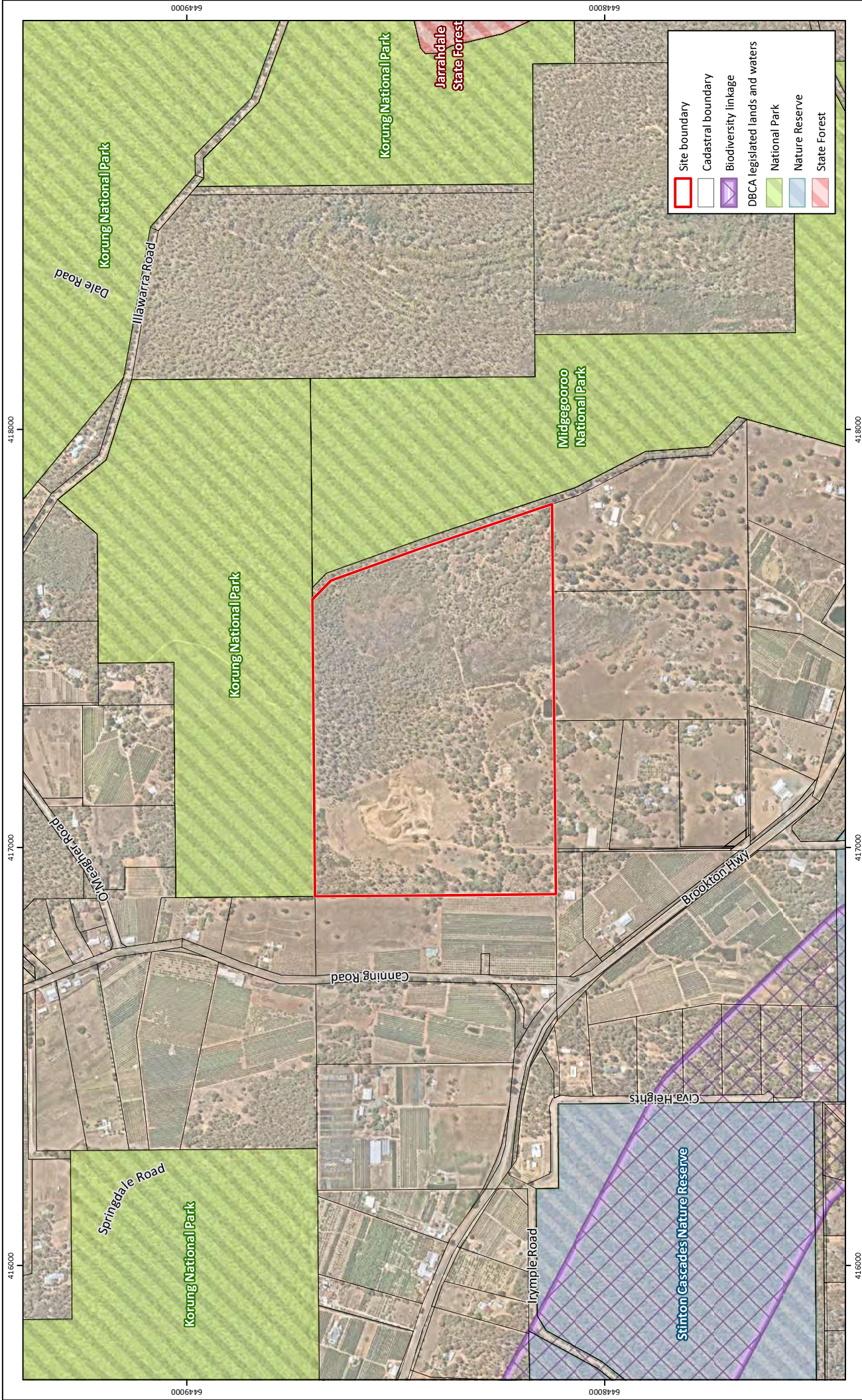
Figure 3: Fauna Habitat



Plan Number: EP20-040(04)-F09
Drawn: GAR
Date: 12/06/2020
Checked: MS
Approved: TAA
Date: 19/06/2020

Figure 1: Site Location
Project: Level 1 Fauna Assessment
 Lot 9 Brookton Highway, Karragullen
Client: Vncl Gravel Supplies Pty Ltd

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used



0 150 300 450
Metres
Scale: 1:12,000@A4
GDA 1994 MGA Zone 50

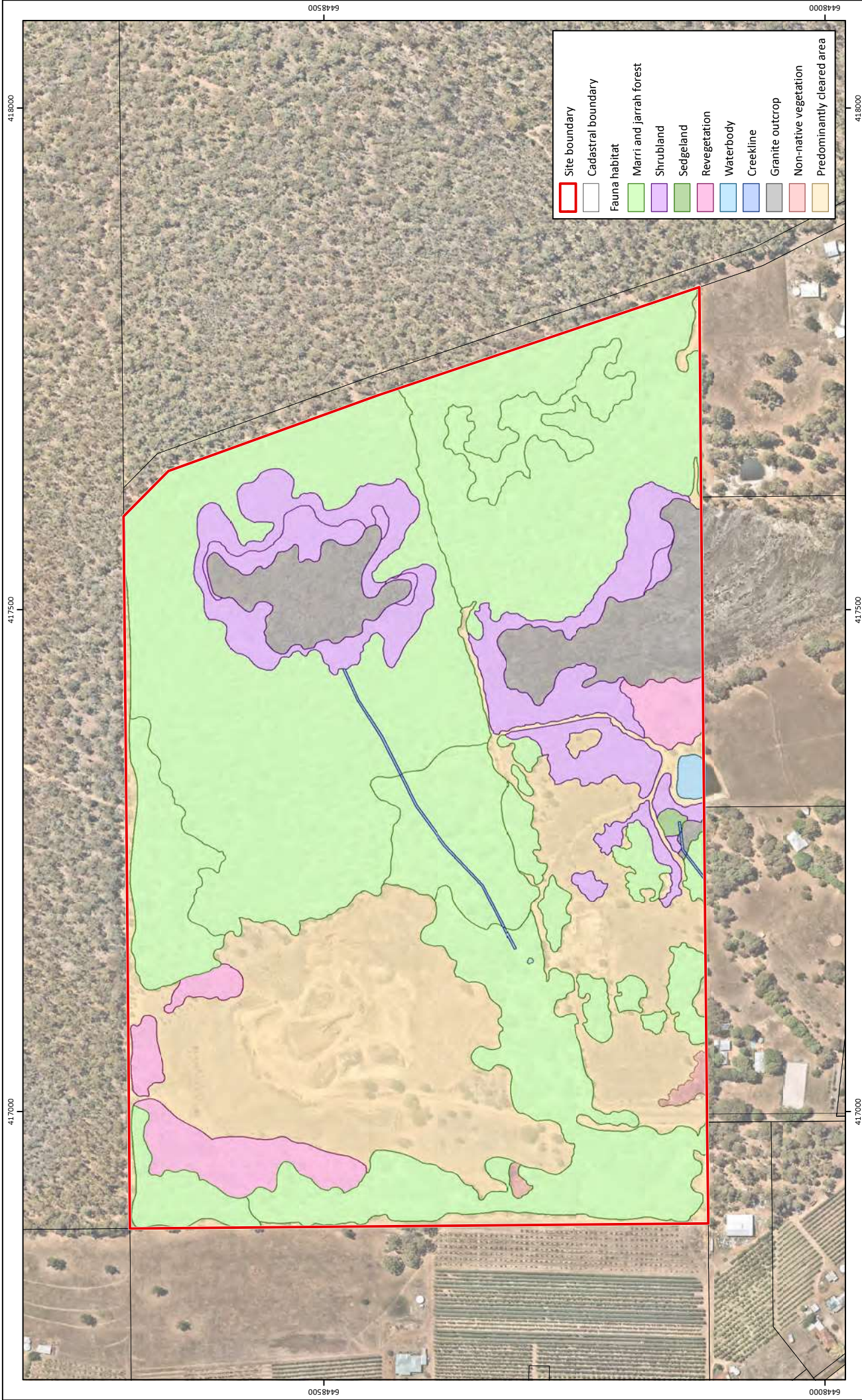


Plan Number: EP20-040(04)-F10
Drawn: GAR
Date: 12/06/2020
Checked: MS
Approved: TAA
Date: 19/06/2020

Figure 2: Environmental Features

Project: Level 1 Fauna Assessment
Lot 9 Brookton Highway, Karragullen
Client: Vmci Gravel Supplies Pty Ltd

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used



- Site boundary
- Cadastral boundary
- Fauna habitat
- Marri and jarrah forest
- Shrubland
- Sedgeland
- Revegetation
- Waterbody
- Creepline
- Granite outcrop
- Non-native vegetation
- Predominantly cleared area



0 100 200
Metres
Scale: 1:5,000@A4
GDA 1994 MGA Zone 50



Plan Number:
EP20-040(04)-F11
Drawn: GAR
Date: 12/06/2020
Checked: MS
Approved: TAA
Date: 19/06/2020

Figure 3: Fauna Habitat

Project: Level 1 Fauna Assessment
Lot 9 Brookton Highway, Karragullen
Client: Vncl Gravel Supplies Pty Ltd

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used

Appendix A

Additional Information



Conservation Significant Fauna

Threatened and priority fauna

Fauna species considered rare or under threat warrant special protection under Commonwealth and/or State legislation. At the Commonwealth level, fauna species can be listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Migratory birds may be recognised under international treaties including:

- *Japan Australia Migratory Bird Agreement 1981* (JAMBA)
- *China Australia Migratory Bird Agreement 1998* (CAMBA)
- *Republic of Korea-Australia Migratory Bird Agreement 2007* (ROKAMBA)
- *Bonn Convention 1979* (The Convention on the Conservation of Migratory Species of Wild Animals).

All migratory bird species listed in the annexes to these bilateral agreements are protected in Australia as ‘matters of national environmental significance’ (MNES) under the EPBC Act. Fauna species considered ‘threatened’ pursuant to Schedule 1 of the EPBC Act are assigned categories as outlined in **Table 1**.

Table 1: Definitions of conservation significant fauna species pursuant to the EPBC Act

Conservation Code	Category
X	Threatened Fauna –Extinct There is no reasonable doubt that the last member of the species has died.
EW [#]	Threatened Fauna –Extinct in the Wild Taxa which are known only to survive in cultivation, captivity or as a naturalised population outside its past range, or taxa which have not been recorded in its known and/or expected habitat despite appropriate exhaustive surveys.
CR [#]	Threatened Fauna – Critically Endangered Taxa which are considered to be facing an extremely high risk of extinction in the wild.
EN [#]	Threatened Fauna – Endangered Taxa which are considered to be facing a very high risk of extinction in the wild.
VU [#]	Threatened Fauna – Vulnerable Taxa which are considered to be facing a high risk of extinction in the wild.
Migratory [#]	Migratory Fauna 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 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.
Ma	Marine Fauna Species in the list established under s248 of the EPBC Act

[#]matters of national environmental significance (MNES) under the EPBC Act

Additional Background Information



In Western Australia, fauna taxa may be classed as ‘threatened’, ‘extinct’, or ‘specially protected’ under the *Biodiversity Conservation Act 2016* (BC Act), which is enforced by Department of Biodiversity Conservation and Attractions (DBCA) (DBCA 2019). The definitions of these categories are provided in **Table 2**.

Table 2: Definitions of specially protected fauna schedules under the BC Act (DBCA 2019)

Category	Conservation Code	Definition
Threatened	CR	Critically endangered Threatened species considered to be facing an extremely high risk of extinction in the wild in the immediate future.
	EN	Endangered Threatened species considered to be facing a very high risk of extinction in the wild in the near future.
	VU	Vulnerable Threatened species considered to be facing a high risk of extinction in the wild in the medium-term future.
Extinct	EX	Extinct Species where there is no reasonable doubt that the last member of the species has died.
	EW	Extinct in the wild Species that is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form. Note that no species are currently listed as EW.
Specially protected	MI	Migratory species Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth Includes birds that 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.
	CD	Species of special conservation interest (conservation dependent fauna) Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened.
	OS	Other specially protected species Fauna otherwise in need of special protection to ensure their conservation.

Additional Background Information



Fauna species that may be threatened or near threatened but lack sufficient information to be legislatively listed may be added to the DBCA's *Priority Fauna List* (DBCA 2018). Species listed under priorities 1-3 comprise possible threatened species that do not meet survey criteria or are otherwise data deficient. Species listed under priority 4 are those 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 (DBCA 2019).

Priority fauna species are considered during State approval processes. Priority fauna categories and definitions are listed in **Table 3** (DBCA 2019).

Table 3: Definitions of priority fauna categories on DBCA's Priority Fauna List (DBCA 2019)

Conservation Code	Category
P1	<p>Priority 1 – Poorly known</p> <p>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.</p>
P2	<p>Priority 2 – Poorly known</p> <p>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.</p>
P3	<p>Priority 3 – Poorly known</p> <p>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.</p>
P4	<p>(a) Priority 4 – Rare species</p> <p>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) Priority 4 – Near Threatened</p> <p>Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.</p> <p>(c) Priority 4 – Other</p> <p>Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>

Pest fauna

A number of legislative and policy documents exist in relation to pest fauna management at state and national levels. The *Biosecurity and Agriculture Management Act 2007* (BAM Act) is the principle legislation guiding pest fauna management in Western Australia and lists declared pest species.

Declared Pests

Part 2.3.23 of the BAM Act requires a person must not; “a) keep, breed or cultivate the declared pest; b) keep, breed or cultivate an animal, plant or other thing that is infected or infested with the declared pest; c) release into the environment the declared pest, or an animal, plant or other thing that is infected or infested with the declared pest; or d) intentionally infect or infest, or expose to infection or infestation, a plant, animal or other thing with a declared pest”.

Under the BAM Act, all declared pests are assigned a legal status, as described in **Table 4**. Species assigned to the ‘declared pest, prohibited - s12’ category are placed in one of three control categories, as described in

Table 5.

The *Biosecurity and Agriculture Management Regulations 2013* specify keeping categories for species assigned to the ‘declared pest - s22(2)’ category, which relate to the purposes of which species can be kept, as well as the entities that can keep them. The categories are described in **Table 6**.

The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the BAM Act (DAFWA 2016).

Table 4: Legal status of declared pest species listed under the BAM Act (DAFWA 2016)

Category	Description
Declared Pest Prohibited - s12	May only be imported and kept subject to permits. Permit conditions applicable to some species may only be appropriate or available to research organisations or similarly secure institutions.
Declared Pest s22(2)	Must satisfy any applicable import requirements when imported, and may be subject to an import permit if they are potential carriers of high-risk organisms. They may also be subject to control and keeping requirements once within Western Australia

Table 5: Control categories of declared pest species listed under the BAM Act (DAFWA 2016)

Category	Description
C1	Exclusion Not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.
C2	Eradication Present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.
C3	Management

Additional Background Information



Category	Description
	Established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.

Table 6: Keeping categories of declared pest species listed under the BAM Act (DAFWA 2016)

Category	Description
Prohibited	Can only be kept under a permit for public display and education purposes, and/or genuine scientific research, by entities approved by the state authority.
Exempt	No permit or conditions are required for keeping.
Restricted	Organisms which, relative to other species, have a low risk of becoming a problem for the environment, primary industry or public safety and can be kept under a permit by private individuals.

References

General references

Department of Biodiversity, Conservation and Attractions (DBCA) 2018, *Threatened and Priority Fauna List 15 February 2018*, Perth.

Department of Biodiversity Conservation and Attractions (DBCA) 2019, *Conservation Codes for Western Australian Flora and Fauna - last updated 3 January 2019*.

Literature

Table 1: Standard literature used for identifying fauna species and habitats.

Conservation Code	Category
Birds	Johnstone and Storr (1998b), Johnstone and Storr (1998a), Pizzey and Knight (2012), Slater <i>et al.</i> (2003)
Mammals	Menkhorst and Knight (2011), Triggs (2003)
Amphibia	Tyler and Doughty (2009), Bush <i>et al.</i> (2002)
Reptiles	Bush <i>et al.</i> (2002)

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Slater, P., Slater, P. and Slater, R. 2003, *The Slater Field Guide to Australian Birds*, Reed New Holland, Australia.

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Tyler, M. J. and Doughty, P. 2009, *Field Guide to Frogs of Western Australia*, Western Australian Museum, Perth, Western Australia.

Appendix B

Database Search Results



NatureMap Species Report

Created By Guest user on 09/06/2020

Kingdom Animalia

Current Names Only Yes

Core Datasets Only Yes

Method 'By Circle'

Centre 116° 07' 30" E, 32° 05' 49" S

Buffer 10km

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
1.	24559 <i>Acanthagenys rufogularis</i> (Spiny-cheeked Honeyeater)			
2.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
3.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
4.	24262 <i>Acanthiza inornata</i> (Western Thornbill)			
5.	25242 <i>Acanthophis antarcticus</i> (Southern Death Adder)		P3	
6.	24560 <i>Acanthorhynchus superciliosus</i> (Western Spinebill)			
7.	<i>Acariformes</i> sp.			
8.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
9.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
10.	42368 <i>Acritoscincus trilineatus</i> (Western Three-lined Skink)			
11.	25755 <i>Acrocephalus australis</i> (Australian Reed Warbler)			
12.	<i>Adversaeschna brevistyla</i>			
13.	25544 <i>Aegotheles cristatus</i> (Australian Owlet-nightjar)			
14.	<i>Akamptogonus novarae</i>			
15.	<i>Allotrochosina karri</i>			
16.	<i>Ambicodamus kochi</i>			
17.	<i>Amblyomma triguttatum</i>			
18.	<i>Aname mainae</i>			
19.	24312 <i>Anas gracilis</i> (Grey Teal)			
20.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
21.	47414 <i>Anhinga novaehollandiae</i> (Australasian Darter)			
22.	<i>Anisops</i> sp.			
23.	25241 <i>Antaresia stimsoni</i> subsp. <i>stimsoni</i> (Stimson's Python)			
24.	25449 <i>Antechinus flavipes</i> (Yellow-footed Antechinus)			
25.	24088 <i>Antechinus flavipes</i> subsp. <i>leucogaster</i> (Yellow-footed Antechinus, Mardo)			
26.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
27.	24562 <i>Anthochaera lunulata</i> (Western Little Wattlebird)			
28.	<i>Antiporus</i> sp.			
29.	24990 <i>Aprasia pulchella</i> (Granite Worm-lizard)			
30.	24991 <i>Aprasia repens</i> (Sand-plain Worm-lizard)			
31.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
32.	<i>Araneus senicaudatus</i>			
33.	<i>Archaeosynthemis occidentalis</i>			
34.	<i>Archargiolestes pusillus</i>			
35.	24340 <i>Ardea novaehollandiae</i> (White-faced Heron)			
36.	24341 <i>Ardea pacifica</i> (White-necked Heron)			
37.	<i>Arrenuridae</i> sp.			
38.	25566 <i>Artamus cinereus</i> (Black-faced Woodswallow)			
39.	24353 <i>Artamus cyanopterus</i> (Dusky Woodswallow)			
40.	<i>Aturidae</i> sp.			
41.	<i>Austracantha minax</i>			
42.	<i>Australomimetes ovidi</i>			
43.	<i>Austroagrion coeruleum</i>			
44.	<i>Austrochthonius muchmorei</i>			
45.	<i>Austrogomphus collaris</i>			
46.	<i>Austrolestes analis</i>			
47.	47713 <i>Austronomus australis</i> (White-striped Free-tailed Bat)			
48.	24318 <i>Aythya australis</i> (Hardhead)			
49.	<i>Backbourkia brounii</i>			
50.	<i>Baetidae</i> sp.			
51.	<i>Barnardius zonarius</i>			
52.	24162 <i>Bettongia penicillata</i> subsp. <i>ogilbyi</i> (Woylie, Brush-tailed Bettong)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
53.	<i>Bibulmena kadjina</i>			
54.	24319 <i>Biziura lobata</i> (Musk Duck)			
55.	24345 <i>Botaurus poiciloptilus</i> (Australasian Bittern)		T	
56.	25715 <i>Cacatua roseicapilla</i> (Galah)			
57.	25716 <i>Cacatua sanguinea</i> (Little Corella)			
58.	25598 <i>Cacomantis flabelliformis</i> (Fan-tailed Cuckoo)			
59.	42307 <i>Cacomantis pallidus</i> (Pallid Cuckoo)			
60.	<i>Calanoida</i> sp.			
61.	25717 <i>Calyptorhynchus banksii</i> (Red-tailed Black-Cockatoo)			
62.	24731 <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> (Forest Red-tailed Black Cockatoo)		T	
63.	24733 <i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo, White-tailed Long-billed Black Cockatoo)		T	
64.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)		T	
65.	48400 <i>Calyptorhynchus</i> sp. (white-tailed black cockatoo)		T	
66.	<i>Ceinidae</i> sp.			
67.	<i>Ceratopogonidae</i> sp.			
68.	24086 <i>Cercartetus concinnus</i> (Western Pygmy-possum, Mundarda)			
69.	<i>Cercophonius granulatus</i>			
70.	<i>Cercophonius sulcatus</i>			
71.	<i>Ceryerda cursitans</i>			
72.	24186 <i>Chalinolobus gouldii</i> (Gould's Wattled Bat)			
73.	43380 <i>Chelodina colliei</i> (South-western Snake-necked Turtle)			
74.	24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck)			
75.	33939 <i>Cherax cainii</i> (Marron)			
76.	<i>Cherax quinquecarinatus</i>			
77.	<i>Chironominae</i> sp.			
78.	<i>Chironomus</i> aff. <i>alternans</i> (V24) (CB)			
79.	<i>Chironomus tepperi</i>			
80.	24980 <i>Christinus marmoratus</i> (Marbled Gecko)			
81.	25601 <i>Chrysococcyx lucidus</i> (Shining Bronze Cuckoo)			
82.	24432 <i>Chrysococcyx lucidus</i> subsp. <i>plagosus</i> (Shining Bronze Cuckoo)			
83.	24288 <i>Circus approximans</i> (Swamp Harrier)			
84.	<i>Cladocera</i> (unident.)			
85.	<i>Cladopelma curtivalva</i>			
86.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
87.	24399 <i>Columba livia</i> (Domestic Pigeon)	Y		
88.	<i>Condocerus aptus</i>			
89.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
90.	<i>Corduliidae</i> sp.			
91.	<i>Cormocephalus aurantiipes</i>			
92.	<i>Cormocephalus turneri</i>			
93.	24416 <i>Corvus bennetti</i> (Little Crow)			
94.	25592 <i>Corvus coronoides</i> (Australian Raven)			
95.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
96.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
97.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
98.	24918 <i>Crenadactylus ocellatus</i> subsp. <i>ocellatus</i> (Clawless Gecko)			
99.	<i>Cricotopus 'parbicinctus'</i>			
100.	25398 <i>Crinia georgiana</i> (Quacking Frog)			
101.	25399 <i>Crinia glauerti</i> (Clicking Frog)			
102.	25401 <i>Crinia pseudinsignifera</i> (Bleating Froglet)			
103.	30893 <i>Cryptoblepharus buchananii</i>			
104.	24883 <i>Ctenophorus ornatus</i> (Ornate Crevice-Dragon)			
105.	25027 <i>Ctenotus australis</i>			
106.	25035 <i>Ctenotus delli</i> (Dell's skink, Darling Range southwest Ctenotus)		P4	
107.	25039 <i>Ctenotus fallens</i>			
108.	25049 <i>Ctenotus labillardieri</i>			
109.	<i>Culicidae</i> sp.			
110.	<i>Curculionidae</i> sp.			
111.	24322 <i>Cygnus atratus</i> (Black Swan)			
112.	<i>Cyrtophora pamasia</i>			
113.	30901 <i>Dacelo novaeguineae</i> (Laughing Kookaburra)	Y		
114.	25673 <i>Daphoenositta chrysoptera</i> (Varied Sittella)			
115.	24092 <i>Dasyurus geoffroi</i> (Chuditch, Western Quoll)		T	
116.	25766 <i>Delma fraseri</i> (Fraser's Legless Lizard)			
117.	25607 <i>Dicaeum hirundinaceum</i> (Mistletoebird)			
118.	<i>Dicrotendipes</i> sp. A (V47) (SAP)			
119.	<i>Dinocambala ingens</i>			
120.	44654 <i>Diplodactylus lateroides</i> (Speckled Stone Gecko)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
121.	24939 <i>Diplodactylus polyophthalmus</i>			
122.	24940 <i>Diplodactylus pulcher</i>			
123.	24470 <i>Dromaius novaehollandiae</i> (Emu)			
124.	<i>Dytiscidae</i> sp.			
125.	25096 <i>Egernia kingii</i> (King's Skink)			
126.	25100 <i>Egernia napoleonis</i>			
127.	<i>Egretta novaehollandiae</i>			
128.	<i>Elanus axillaris</i>			
129.	<i>Eolophus roseicapillus</i>			
130.	24651 <i>Eopsaltria australis</i> subsp. <i>griseogularis</i> (Western Yellow Robin)			
131.	24652 <i>Eopsaltria georgiana</i> (White-breasted Robin)			
132.	<i>Eriophora pustulosa</i>			
133.	<i>Eucyrtops latior</i>			
134.	24368 <i>Eurostopodus argus</i> (Spotted Nightjar)			
135.	<i>Exocelina ater</i>			
136.	<i>Eylaidae</i> sp.			
137.	25621 <i>Falco berigora</i> (Brown Falcon)			
138.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
139.	25623 <i>Falco longipennis</i> (Australian Hobby)			
140.	24474 <i>Falco longipennis</i> subsp. <i>longipennis</i> (Australian Hobby)			
141.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
142.	24041 <i>Felis catus</i> (Cat)	Y		
143.	25727 <i>Fulica atra</i> (Eurasian Coot)			
144.	24761 <i>Fulica atra</i> subsp. <i>australis</i> (Eurasian Coot)			
145.	34028 <i>Galaxias occidentalis</i> (Western Minnow)			
146.	24763 <i>Gallinula tenebrosa</i> subsp. <i>tenebrosa</i> (Dusky Moorhen)			
147.	24959 <i>Gehyra variegata</i>			
148.	25404 <i>Geocrinia leai</i> (Ticking Frog)			
149.	34030 <i>Geotria australis</i> (Pouched Lamprey)		P3	
150.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
151.	47962 <i>Glyciphila melanops</i> (Tawny-crowned Honeyeater)			
152.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
153.	<i>Gripopterygidae</i> sp.			
154.	<i>Gyrinidae</i> sp.			
155.	24295 <i>Haliastur sphenurus</i> (Whistling Kite)			
156.	24296 <i>Hamirostra isura</i> (Square-tailed Kite)			
157.	<i>Harrisius</i> sp. A (SAP)			
158.	<i>Harrisius</i> sp. B (SFM)			
159.	25409 <i>Heleioporus barycragus</i> (Hooting Frog)			
160.	25410 <i>Heleioporus eyrei</i> (Moaning Frog)			
161.	25411 <i>Heleioporus inornatus</i> (Whooping Frog)			
162.	<i>Helyethira litua</i>			
163.	<i>Helyethira</i> sp.			
164.	<i>Hemicordulia tau</i>			
165.	25474 <i>Hemiergis initialis</i>			
166.	25115 <i>Hemiergis initialis</i> subsp. <i>initialis</i>			
167.	25117 <i>Hemiergis peronii</i> subsp. <i>peronii</i>			
168.	25119 <i>Hemiergis quadrilineata</i>			
169.	47965 <i>Hieraaetus morphnoides</i> (Little Eagle)			
170.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
171.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
172.	<i>Hoggicosa storri</i>			
173.	<i>Hydrodromidae</i> sp.			
174.	24215 <i>Hydromys chrysogaster</i> (Water-rat, Rakali)		P4	
175.	<i>Hydrophilidae</i> sp.			
176.	<i>Hydryphantidae</i> sp.			
177.	<i>Idiommatia blackwalli</i>			
178.	48588 <i>Isodon fusciventer</i> (Quenda, southwestern brown bandicoot)		P4	
179.	<i>Isopeda leishmanni</i>			
180.	<i>Kangarosa properipes</i>			
181.	<i>Karaops ellenae</i>			
182.	33980 <i>Kawaniphila pachomai</i> (Grey Vernal Katydid (southwest), cricket)		P1	
183.	<i>Kiefferulus intertinctus</i>			
184.	<i>Kiefferulus martini</i>			
185.	<i>Lampona brevipes</i>			
186.	<i>Lampona cylindrata</i>			
187.	<i>Lancetes lanceolatus</i>			
188.	<i>Lancetes</i> sp.			
189.	24511 <i>Larus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Silver Gull)			
190.	<i>Latrodectus hasseltii</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
191.	<i>Leptoceridae sp.</i>			
192.	<i>Leptoperla australica</i>			
193.	<i>Leptophlebiidae sp.</i>			
194.	25131 <i>Lerista distinguenda</i>			
195.	25133 <i>Lerista elegans</i>			
196.	25147 <i>Lerista lineata</i> (Perth Slider, Lined Skink)		P3	
197.	25005 <i>Lialis burtonis</i>			
198.	25659 <i>Lichenostomus leucotis</i> (White-eared Honeyeater)			
199.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
200.	<i>Limbodessus inornatus</i>			
201.	<i>Limbodessus shuckhardi</i>			
202.	<i>Limnesiidae sp.</i>			
203.	<i>Limnoxenus sp.</i>			
204.	25378 <i>Litoria adelaidensis</i> (Slender Tree Frog)			
205.	<i>Lophoictinia isura</i>			
206.	<i>Macrogyrus angustatus</i>			
207.	24132 <i>Macropus fuliginosus</i> (Western Grey Kangaroo)			
208.	25650 <i>Malurus elegans</i> (Red-winged Fairy-wren)			
209.	25651 <i>Malurus lamberti</i> (Variegated Fairy-wren)			
210.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
211.	24552 <i>Malurus splendens subsp. splendens</i> (Splendid Fairy-wren)			
212.	<i>Maratus pavonis</i>			
213.	<i>Marsupiopos leporilli</i>			
214.	<i>Megapodagrionidae sp.</i>			
215.	<i>Megaporus solidus</i>			
216.	<i>Megaporus sp.</i>			
217.	25663 <i>Melithreptus brevirostris</i> (Brown-headed Honeyeater)			
218.	24587 <i>Melithreptus chloropsis</i> (Western White-naped Honeyeater)			
219.	24736 <i>Melopsittacus undulatus</i> (Budgerigar)			
220.	25184 <i>Menetia greyii</i>			
221.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)			
222.	<i>Microcarbo melanoleucos</i>			
223.	<i>Micronecta robusta</i>			
224.	<i>Micronecta sp.</i>			
225.	<i>Miniargiolestes minimus</i>			
226.	<i>Missulena granulosa</i>			
227.	<i>Missulena hoggi</i>			
228.	25240 <i>Morelia spilota subsp. imbricata</i> (Carpet Python)			
229.	25191 <i>Morethia lineocellata</i>			
230.	25192 <i>Morethia obscura</i>			
231.	24223 <i>Mus musculus</i> (House Mouse)	Y		
232.	25610 <i>Myiagra inquieta</i> (Restless Flycatcher)			
233.	24146 <i>Myrmecobius fasciatus</i> (Numbat, Walpurti)		T	
234.	<i>Naididae sp.</i>			
235.	<i>Nannoperca vittata</i>			
236.	<i>Necterosoma darwini</i>			
237.	<i>Necterosoma sp.</i>			
238.	<i>Nematoda sp.</i>			
239.	25686 <i>Neochmia temporalis</i> (Red-browed Finch)	Y		
240.	24738 <i>Neophema elegans</i> (Elegant Parrot)			
241.	<i>Nicodamus mainae</i>			
242.	<i>Notalina spira</i>			
243.	48022 <i>Notamacropus irma</i> (Western Brush Wallaby)		P4	
244.	25252 <i>Notechis scutatus</i> (Tiger Snake)			
245.	<i>Notonectidae sp.</i>			
246.	<i>Notoperata sp. AV1</i> (SFM)			
247.	<i>Nousia sp. AV16</i>			
248.	<i>Nunciella aspera</i>			
249.	25564 <i>Nycticorax caledonicus</i> (Rufous Night Heron)			
250.	24194 <i>Nyctophilus geoffroyi</i> (Lesser Long-eared Bat)			
251.	24195 <i>Nyctophilus gouldi</i> (Gould's Long-eared Bat)			
252.	41424 <i>Nyctophilus major</i> (Greater Long-eared Bat)			
253.	<i>Occiperipatoides gilesii</i>			
254.	24407 <i>Ocyphaps lophotes</i> (Crested Pigeon)			
255.	<i>Offadens soror</i> (ex genus 1 WA sp. 1)			
256.	<i>Oligochaeta sp.</i>			
257.	<i>Ommatoiulus moreleti</i>			
258.	<i>Opisthopora sp.</i>			
259.	<i>Oribatida sp.</i>			
260.	<i>Orthetrum caledonicum</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
261.	<i>Orthocladinae 'woodminer' (SAP)</i>			
262.	<i>Orthocladinae sp.</i>			
263.	24085 <i>Oryctolagus cuniculus (Rabbit)</i>	Y		
264.	<i>Ostracoda (unident.)</i>			
265.	<i>Oxidae sp.</i>			
266.	<i>Oxyethira sp.</i>			
267.	24328 <i>Oxyura australis (Blue-billed Duck)</i>		P4	
268.	<i>Ozarchaea harveyi</i>			
269.	25680 <i>Pachycephala rufiventris (Rufous Whistler)</i>			
270.	<i>Parachironomus sp. 1 (VSCL35) (SAP)</i>			
271.	<i>Paracladopelma M1 (SFM)</i>			
272.	<i>Parakiefferiella sp. S1</i>			
273.	<i>Paralimnophyes pullulus (V42)</i>			
274.	<i>Paramelitidae sp.</i>			
275.	<i>Paramerina levidensis</i>			
276.	<i>Parastacidae sp.</i>			
277.	25253 <i>Parasuta gouldii</i>			
278.	25255 <i>Parasuta nigriceps</i>			
279.	25681 <i>Pardalotus punctatus (Spotted Pardalote)</i>			
280.	24625 <i>Pardalotus punctatus subsp. punctatus (Spotted Pardalote)</i>			
281.	25682 <i>Pardalotus striatus (Striated Pardalote)</i>			
282.	24648 <i>Pelecanus conspicillatus (Australian Pelican)</i>			
283.	<i>Pentaneurini genus V20</i>			
284.	<i>Perthiidae sp.</i>			
285.	48061 <i>Petrochelidon nigricans (Tree Martin)</i>			
286.	48066 <i>Petroica boodang (Scarlet Robin)</i>			
287.	24659 <i>Petroica goodenovii (Red-capped Robin)</i>			
288.	25697 <i>Phalacrocorax carbo (Great Cormorant)</i>			
289.	25698 <i>Phalacrocorax melanoleucos (Little Pied Cormorant)</i>			
290.	24667 <i>Phalacrocorax sulcirostris (Little Black Cormorant)</i>			
291.	25699 <i>Phalacrocorax varius (Pied Cormorant)</i>			
292.	24409 <i>Phaps chalcoptera (Common Bronzewing)</i>			
293.	25587 <i>Phaps elegans (Brush Bronzewing)</i>			
294.	48070 <i>Phascogale tapoatafa subsp. wambenger (South-western Brush-tailed Phascogale, Wambenger)</i>		S	
295.	<i>Philopotamidae sp.</i>			
296.	<i>Phreodrilidae sp.</i>			
297.	48071 <i>Phylidonyris niger (White-cheeked Honeyeater)</i>			
298.	24596 <i>Phylidonyris novaehollandiae (New Holland Honeyeater)</i>			
299.	<i>Physidae sp.</i>			
300.	<i>Planorbidae sp.</i>			
301.	24841 <i>Platalea flavipes (Yellow-billed Spoonbill)</i>			
302.	25720 <i>Platycercus icterotis (Western Rosella)</i>			
303.	24747 <i>Platycercus spurius (Red-capped Parrot)</i>			
304.	25721 <i>Platycercus zonarius (Australian Ringneck, Ring-necked Parrot)</i>			
305.	24750 <i>Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)</i>			
306.	<i>Platynectes sp.</i>			
307.	25703 <i>Podargus strigoides (Tawny Frogmouth)</i>			
308.	25704 <i>Podiceps cristatus (Great Crested Grebe)</i>			
309.	25510 <i>Pogona minor (Dwarf Bearded Dragon)</i>			
310.	24907 <i>Pogona minor subsp. minor (Dwarf Bearded Dragon)</i>			
311.	24681 <i>Poliocephalus poliocephalus (Hoary-headed Grebe)</i>			
312.	<i>Polypedilum nr. convexum (SAP)</i>			
313.	<i>Polypedilum watsoni</i>			
314.	24683 <i>Pomatostomus superciliosus (White-browed Babbler)</i>			
315.	25731 <i>Porphyrio porphyrio (Purple Swamphen)</i>			
316.	24767 <i>Porphyrio porphyrio subsp. bellus (Purple Swamphen)</i>			
317.	24771 <i>Porzana tabuensis (Spotless Crane)</i>			
318.	<i>Procladius paludicola</i>			
319.	<i>Procladius villosimanus</i>			
320.	25259 <i>Pseudonaja affinis subsp. affinis (Dugite)</i>			
321.	25433 <i>Pseudophryne guentheri (Crawling Toadlet)</i>			
322.	<i>Purpureicephalus spurius</i>			
323.	24245 <i>Rattus rattus (Black Rat)</i>	Y		
324.	<i>Raveniella cirrata</i>			
325.	<i>Rhantus suturalis</i>			
326.	<i>Rheotanytarsus sp. (SFM)</i>			
327.	48096 <i>Rhipidura albiscapa (Grey Fantail)</i>			
328.	25614 <i>Rhipidura leucophrys (Willie Wagtail)</i>			
329.	<i>Riethia v4</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
330.	<i>Scirtidae</i> sp.			
331.	<i>Scolopendra laeta</i>			
332.	25534 <i>Sericornis frontalis</i> (White-browed Scrubwren)			
333.	24279 <i>Sericornis frontalis</i> subsp. <i>maculatus</i> (White-browed Scrubwren)			
334.	24145 <i>Setonix brachyurus</i> (Quokka)		T	
335.	<i>Simuliidae</i> sp.			
336.	30948 <i>Smicronis brevisrostris</i> (Weebill)			
337.	24111 <i>Sminthopsis gilberti</i> (Gilbert's Dunnart)			
338.	24645 <i>Stagonopleura oculata</i> (Red-eared Firetail)			
339.	<i>Sternopriscus browni</i>			
340.	<i>Sternopriscus marginatus</i>			
341.	<i>Sternopriscus</i> sp.			
342.	<i>Storena formosa</i>			
343.	25597 <i>Strepera versicolor</i> (Grey Currawong)			
344.	25589 <i>Streptopelia chinensis</i> (Spotted Turtle-Dove)	Y		
345.	25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove)	Y		
346.	24943 <i>Strophurus spinigerus</i> subsp. <i>inornatus</i>			
347.	<i>Synsphyronus magnus</i>			
348.	25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
349.	24682 <i>Tachybaptus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
350.	24207 <i>Tachyglossus aculeatus</i> (Short-beaked Echidna)			
351.	24331 <i>Tadorna tadornoides</i> (Australian Shelduck, Mountain Duck)			
352.	<i>Tanypodinae</i> sp.			
353.	<i>Tanytarsus aff manleyensis</i>			
354.	<i>Tanytarsus fuscithorax/semibarbitarsus</i>			
355.	<i>Tanytarsus</i> nr K5			
356.	<i>Tanytarsus palmatus</i>			
357.	<i>Tasmanicosa leuckartii</i>			
358.	<i>Tasmanocoenis tillyardi</i>			
359.	<i>Thereuopoda lesueurii</i>			
360.	<i>Thienemanniella</i> sp. (V19) (SAP)			
361.	24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
362.	25519 <i>Tiliqua rugosa</i>			
363.	25207 <i>Tiliqua rugosa</i> subsp. <i>rugosa</i>			
364.	<i>Tipulidae</i> sp.			
365.	25549 <i>Todiramphus sanctus</i> (Sacred Kingfisher)			
366.	24309 <i>Todiramphus sanctus</i> subsp. <i>sanctus</i> (Sacred Kingfisher)			
367.	25723 <i>Trichoglossus haematodus</i> (Rainbow Lorikeet)			
368.	25521 <i>Trichosurus vulpecula</i> (Common Brushtail Possum)			
369.	24158 <i>Trichosurus vulpecula</i> subsp. <i>vulpecula</i> (Common Brushtail Possum)			
370.	<i>Triplectides australis</i>			
371.	<i>Triplectides</i> sp. AV21 (SFM)			
372.	48147 <i>Turnix varius</i> (Painted Button-quail)			
373.	25764 <i>Tyto novaehollandiae</i> (Masked Owl)			
374.	24983 <i>Underwoodisaurus millii</i> (Barking Gecko)			
375.	<i>Urodacus novaehollandiae</i>			
376.	<i>Urodacus planimanus</i>			
377.	25218 <i>Varanus gouldii</i> (Bungarra or Sand Monitor)			
378.	25526 <i>Varanus tristis</i> (Racehorse Monitor)			
379.	24206 <i>Vespadelus regulus</i> (Southern Forest Bat)			
380.	24040 <i>Vulpes vulpes</i> (Red Fox)	Y		
381.	34113 <i>Westralunio carteri</i> (Carter's Freshwater Mussel)		T	
382.	<i>Zachria flavicoma</i>			
383.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silvereye)			

Conservation Codes

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

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



EPBC Act Protected Matters Report

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

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

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

Report created: 09/06/20 18:25:58

[Summary](#)

[Details](#)

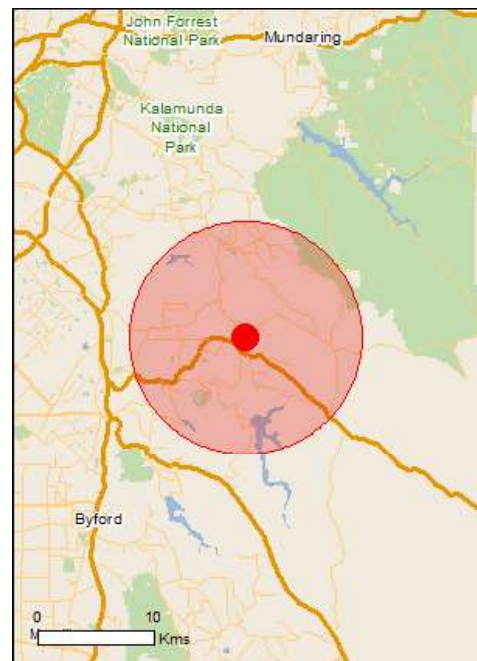
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are
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[Coordinates](#)

Buffer: 10.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	30
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	15
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	5
Regional Forest Agreements:	1
Invasive Species:	30
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Forrestdale and thomsons lakes	Within 10km of Ramsar

Listed Threatened Ecological Communities [Resource Information]

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

Name	Status	Type of Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
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Birds

Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calyptorhynchus banksii naso		
Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Calyptorhynchus baudinii		
Baudin's Cockatoo, Long-billed Black-Cockatoo [769]	Endangered	Breeding known to occur within area
Calyptorhynchus latirostris		
Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
Leipoa ocellata		
Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area

Mammals

Bettongia penicillata ogilbyi		
Woylie [66844]	Endangered	Species or species habitat known to occur within area
Dasyurus geoffroi		
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat may occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area
Other		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area
Plants		
Acacia anomala Grass Wattle, Chittering Grass Wattle [8153]	Vulnerable	Species or species habitat known to occur within area
Anthocercis gracilis Slender Tailflower [11103]	Vulnerable	Species or species habitat likely to occur within area
Conospermum undulatum Wavy-leaved Smokebush [24435]	Vulnerable	Species or species habitat may occur within area
Darwinia apiculata Scarp Darwinia [8763]	Endangered	Species or species habitat may occur within area
Diplolaena andrewsii [6601]	Endangered	Species or species habitat may occur within area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat known to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat known to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat may occur within area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus x balanites Cadda Road Mallee, Cadda Mallee [87816]	Endangered	Species or species habitat may occur within area
Goodenia arthrotricha [12448]	Endangered	Species or species habitat likely to occur within area
Lasiopetalum pterocarpum Wing-fruited Lasiopetalum [64922]	Endangered	Species or species habitat may occur within area
Synaphea sp. Fairbridge Farm (D. Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat likely to occur within area
Thelymitra dedmaniarum Cinnamon Sun Orchid [65105]	Endangered	Species or species habitat likely to occur

Name	Status	Type of Presence within area
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat known to occur within area
Verticordia fimbrialepis subsp. fimbrialepis Shy Featherflower [24631]	Endangered	Species or species habitat may occur within area

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

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

Name	Threatened	Type of Presence
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Migratory Marine Birds

Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
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Migratory Terrestrial Species

Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
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Migratory Wetlands Species

Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
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Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
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Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
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Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
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Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
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Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
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Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
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Other Matters Protected by the EPBC Act

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

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

Name		
Commonwealth Land -		

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

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

Name	Threatened	Type of Presence
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Birds

Actitis hypoleucos Common Sandpiper [59309]		Species or species
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Name	Threatened	Type of Presence
Apus pacificus Fork-tailed Swift [678]		habitat likely to occur within area Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Canning River	WA
Korung	WA
Midgegooroo	WA
Stinton Cascades	WA
Unnamed WA21569	WA

Regional Forest Agreements	[Resource Information]
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Note that all areas with completed RFAs have been included.

Name	State
South West WA RFA	Western Australia

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

Name	Status	Type of Presence
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Birds		
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Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area

Mammals		
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Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area

Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-32.09689 116.12508

Acknowledgements

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

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

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

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

Appendix C

Conservation Significant Species and
Likelihood of Occurrence Assessment



Species	Common name	Level of significance		Habitat	Likelihood of occurrence
		WA	EPBC Act		
Birds					
<i>Actitis hypoleucos</i>	Common sandpiper	MI	MI	Edge of sheltered waters salt or fresh, e.g. estuaries, mangrove creeks, rocky coasts, near-coastal saltlakes (including saltwork ponds), river pools, lagoons, claypans, drying swamps, flood waters, dams and sewage ponds. Preferring situations where low perches are available (Johnstone & Storr 1998).	Unlikely: No suitable habitat
<i>Apus pacificus</i>	Pacific swift	MI	MI	Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities (Pizzey & Knight 2012).	Possible: May opportunistically forage in the air above the site or fly over on commute. This species does not breed in Australia.
<i>Botaurus poiciloptilus</i>	Australasian bittern	EN	EN	In or over water, in tall reedbeds, sedges, rushes, cumbungi, lignum. Also occurs in ricefields, drains in tussocky paddocks and occasionally in saltmarshes and brackish wetlands (Pizzey & Knight 2012).	Unlikely: No suitable habitat

Species	Common name	Level of significance		Habitat	Likelihood of occurrence
		WA	EPBC Act		
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	MI	MI	Occurs in tidal mudflats, saltmarshes and mangroves, as well as, shallow fresh, brackish or saline inland wetlands. It is also known from floodwaters, irrigated pastures and crops, sewage ponds, saltfields (Pizzey & Knight 2012).	Unlikely: No suitable habitat
<i>Calidris ferruginea</i>	Curlew sandpiper	CR	CR (MI)	Mainly shallows of estuaries and near-coastal saltlakes (including saltwork ponds) and drying near-coastal freshwater lakes and swamps. Also beaches and near-coastal sewage ponds (Pizzey & Knight 2012).	Unlikely: No suitable habitat
<i>Calidris melanotos</i>	Pectoral sandpiper	MI	MI	Mainly fresh waters (swamps, lagoons, river pools, irrigation channels and sewage ponds); also samphire flats around estuaries and saltlakes (Johnstone & Storr 1998).	Unlikely: No suitable habitat
<i>Calyptorhynchus banksii naso</i>	Forest red-tailed black cockatoo	VU	VU	Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding Corymbia calophylla, Eucalyptus marginata, introduced Melia azedarach and Eucalyptus spp. trees (Johnstone and Storr 1998).	Recorded: Potential foraging, roosting and breeding habitat present.

Species	Common name	Level of significance		Habitat	Likelihood of occurrence
		WA	EPBC Act		
<i>Calyptorhynchus baudinii</i>	Baudin's cockatoo	EN	EN	Mainly eucalypt forests. Attracted to seeding <i>Corymbia calophylla</i> , <i>Banksia</i> spp., <i>Hakea</i> spp., and to fruiting apples and pears (Johnstone and Storr 1998).	Recorded: Potential foraging, roosting and breeding habitat present.
<i>Calyptorhynchus latirostris</i>	Carnaby's cockatoo	EN	EN	Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of <i>Pinus</i> spp. Attracted to seeding <i>Banksia</i> spp., <i>Dryandra</i> spp., <i>Hakea</i> spp., <i>Eucalyptus</i> spp., <i>Corymbia calophylla</i> , <i>Grevillea</i> spp., and <i>Allocasuarina</i> spp. (Johnstone and Storr 1998).	Recorded: Potential foraging, roosting and breeding habitat present.
<i>Falco peregrinus</i>	Peregrine falcon	OS	-	Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes (Johnstone and Storr 1998).	Possible: May opportunistically forage in or fly over the site on commute as part of a larger home range.
<i>Leipoa ocellata</i>	Mallefowl	VU	VU	Scrubs and thickets of <i>Eucalyptus</i> spp., <i>Melaleuca lanceolata</i> and <i>Acacia linophylla</i> ; also other dense litter-forming shrublands. Attracted to fallen wheat in stubbles and along roads (Johnstone and Storr 1998).	Unlikely: Locally extinct

Species	Common name	Level of significance		Habitat	Likelihood of occurrence
		WA	EPBC Act		
<i>Motacilla cinerea</i>	Grey wagtail	MI	MI	In Australia mostly near running water in disused quarries,, sandy and rocky strams in escarpments and rainforests, sewage ponds, ploughed fields and airfields (Pizzey & Knight 2012).	Possible: Rarely occurs in south-western Australia but may occur opportunistically during migration.
<i>Numenius madagascariensis</i>	Eastern curlew	CR	CR (MI)	Mainly tidal mudflats; also reef flats, sandy beaches and rarely near-coastal lakes (including saltwork ponds) (Johnstone and Storr 1998).	Unlikely: No suitable habitat
<i>Oxyura australis</i>	Blue-billed duck	P4	-	Mainly deeper freshwater swamps and lakes; occasionally saltlakes and estuaries freshened by flood waters (Johnstone and Storr 1998)	Possible: May opportunistically utilise waterbodies within the site.
<i>Pandion haliaetus</i>	Osprey	MI	MI	Coasts, estuaries, bays, inlets, islands, and surrounding waters; coral atolls, reefs, lagoons, rock cliffs, stacks (Pizzey & Knight 2012).	Unlikely: No suitable habitat
<i>Plegadis falcinellus</i>	Glossy Ibis	MI	MI	Well-vegetated wetlands, wet pasture, ricefields, floodwaters, floodplains, brackish or occasionally saline wetlands, mangroves, mudflats and occasionally dry grassland (Pizzey & Knight 2012).	Possible: May opportunistically utilise waterbodies and adjacent areas within the site.

Species	Common name	Level of significance		Habitat	Likelihood of occurrence
		WA	EPBC Act		
<i>Rostratula australis</i>	Australian painted snipe	EN	EN	Mainly shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans (Marchant and Higgins 1993).	Unlikely: No suitable habitat
<i>Rostratula benghalensis sensu lato</i>	Painted snipe	-	EN	Well vegetated shallows and margins of wetlands, dams, sewerage ponds, wet pastures, marshy areas, irrigation systems, lignum, tea tree scrub, open timber. Requires dense low cover (Morcombe 2004).	Unlikely: No suitable habitat
<i>Tringa nebularia</i>	Common greenshank	MI	MI	Mudflats, estuaries, saltmarshes, margins of lakes, wetlands, claypans (fresh and saline), commercial saltfields, sewage ponds (Pizzey & Knight 2012).	Possible: May opportunistically utilise waterbodies and adjacent areas within the site.
Fish					
<i>Geotria australis</i>	Pouched lamprey	P3	-	Marine, estuarine and coastal rivers and streams. Adults live in Southern Ocean and migrate upstream to spawn. Larvae live in muddy burrows in the upper reaches of streams (Bray and Gomon 2018).	Unlikely: No suitable habitat
Invertebrate					

Species	Common name	Level of significance		Habitat	Likelihood of occurrence
		WA	EPBC Act		
<i>Kawaniphila pachomai</i>	Grey vernal katydid	P1	-	Inhabits trees and shrubs and can be found mostly in heath or mixed woodland (Rentz 1993). The species occurs in coastal SW Western Australia with records near Vasse and within the southern Perth metropolitan region	Possible: Species poorly understood. Potential habitat (heath) present within the site and historical record located approximately 7.5 km north-west of the site.
<i>Westralunio carteri</i>	Carter's freshwater mussel	VU	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. Salinity tolerance quite low (Morgan et al. 2011).	Unlikely: No suitable habitat
Mammals					
<i>Bettongia penicillata ogilbyi</i>	Woylie	CR	EN	Woodlands and adjacent heaths with a dense understorey of shrubs, particularly <i>Gastrolobium</i> spp. (TSSC 2018).	Unlikely: Locally extinct
<i>Dasyurus geoffroii</i>	Chuditch	VU	VU	Wide range of habitats from woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. Appears to utilise native vegetation along road sides in the wheatbelt (DEC 2012b).	Possible: May utilise remnant native vegetation within the site.

Species	Common name	Level of significance		Habitat	Likelihood of occurrence
		WA	EPBC Act		
<i>Hydromys chrysogaster</i>	Rakali	P4	-	Areas with permanent water, fresh, brackish or marine. Likely to occur in all major rivers and most of the larger streams as well as bodies of permanent water in the lower south west (Christensen et al. 1985).	Possible: May utilise remnant native vegetation within the site.
<i>Isoodon fusciventer</i>	Quenda	P4	-	Dense scrubby, often swampy, vegetation with dense cover up to one metre high (DEC 2012)	Possible: May utilise remnant native vegetation within the site.
<i>Myrmecobius fasciatus</i>	Numbat	EN	EN	Generally dominated by Eucalyptus spp. that provide hollow logs and branches for shelter and termites for food (van Dyck & Strahan 2008).	Unlikely: Locally extinct
<i>Notamacropus irma</i>	Western brush wallaby	P4	-	Dry sclerophyll forest, Banksia spp. woodlands and shrublands, typically favouring dense low vegetation that provides dense cover (Christensen and Strahan 1983).	Possible: May utilise remnant native vegetation within the site.
<i>Phascogale tapoatafa wambenger</i>	South-western brush-tailed phascogale	CD	-	Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover (Triggs 2003).	Possible: May opportunistically utilise waterbodies and creeks within the site.
<i>Pseudocheirus occidentalis</i>	Western ringtail possum	CR	CR	On the Swan Coastal Plain in Agonis flexuosa woodlands and Agonis flexuosa/Eucalyptus gomphocephala forests. Also Eucalyptus marginata forests (DBCA 2017).	Unlikely: Locally extinct

Species	Common name	Level of significance		Habitat	Likelihood of occurrence
		WA	EPBC Act		
<i>Setonix brachyurus</i>	Quokka	VU	VU	On the mainland mostly dense streamside vegetation or shrubland and heath areas, particularly around swamps (Cronin 2007).	Unlikely: Locally extinct
Reptiles					
<i>Acanthopis antarcticus</i>	Southern death adder	P3	-	Mostly in woodlands, grasslands and heaths. In the Darling Range this species is typically found within Eucalyptus marginata woodlands adjacent to granite outcrops and along densely vegetated creeks (Bush et al. 2007).	Possible: May utilise remnant native vegetation within the site.
<i>Ctenotus delli</i>	Dell's skink	P4	-	Jarraah and marri woodland with a shrub dominated understorey, sheltering in dense vegetation, inside grass trees and beneath rocks, sometimes in burrows (Nevill 2005).	Possible: May utilise remnant native vegetation within the site.
<i>Lerista lineata</i>	Perth slider	P3	-	Sandy coastal heath and low scrubland. Banksia spp. woodland, Eucalyptus gomphocephala open woodland over deep sands, and coastal dunes immediately adjacent to the beach (Wilson and Swan 2017).	Unlikely: No suitable habitat
<p><i>Note: CE=critically endangered, EN=endangered, VU=vulnerable, CD=conservation dependent, MI=migratory, OS=other specially protected, P1=Priority 1, P2=Priority 2, P3=Priority 3, P4=Priority 4. Species recorded or considered to potentially occur within the site are shaded green.</i></p>					

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Appendix D

Species List



Class	Status	Species	Common name	Record type
Amphibia		<i>Limnodynastes dorsalis</i>	Western banjo frog	Call
		Squelching froglet	<i>Crinia insignifera</i>	Call
Birds		<i>Acanthiza apicalis</i>	Broad-tailed thornbill	Sight
		<i>Cacatua roseicapilla</i>	Galah	Sight
	VU	<i>Calyptorhynchus banksii naso</i>	Forest red-tailed black cockatoo	Sight, foraging evidence
	EN	<i>Calyptorhynchus Baudinii</i>	Baudin's cockatoo	Sight, call, foraging evidence
	EN	<i>Calyptorhynchus latirostris</i>	Carnaby's cockatoo	Foraging evidence
		<i>Climacteris rufus</i>	Rufous treecreeper	Sight
		<i>Coracina novaehollandiae</i>	Black-faced cuckoo shrike	Sight
		<i>Corvus coronoides</i>	Australian raven	Sight
		<i>Cracticus tibicen</i>	Australian magpie	Sight
	*	<i>Dacelo novaehollandiae</i>	Laughing kookaburra	Sight
		<i>Dromaius novaehollandiae</i>	Emu	Sight
		<i>Malurus elegans</i>	Red-winged fairy wren	Sight
		<i>Malurus splendens</i>	Splendid fairy-wren	Sight
		<i>Pachycephala occidentalis</i>	Western golden whistler	Sight
		<i>Petroica boodang</i>	Scarlet robin	Sight
		<i>Platyercus spurius</i>	Red-capped parrot	Sight
		<i>Platyercus zonarius</i>	Australian ringneck	Sight
		<i>Rhipidura albiscapa</i>	Grey fantail	Sight
		<i>Smicrornis brevirostris</i>	Weebill	Sight
		<i>Zosterops citrinella</i>	Grey-breasted white-eye (silvereeye)	Sight
Mammals		<i>Macropus fuliginosus melanops</i>	Western grey kangaroo	Sight
	* DP	<i>Oryctolagus cuniculus</i>	Rabbit	Scats
		<i>Trichosurus vulpecula</i>	Common brush-tailed possum	Scull
	* DP	<i>Vulpes vulpes</i>	Red fox	Sight

Class	Status	Species	Common name	Record type
Reptiles		<i>Egernia kingii</i>	King's skink	Dead individual
		<i>Pogona minor minor</i>	Western bearded dragon	Sight

Note: * denotes introduced fauna species, DP=declared pest under the BAM Act, EN = Endangered under the EPBC and BC Act, VU=Vulnerable under the EPBC Act and BC Act