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Flora and Fauna Significance Assessment

Margaret River Senior High School, Margaret River

18 November 2020

Prepared for:
RPS Australia West Pty Ltd
C/- RPS Australia West Pty Ltd



Limitations Statement

This report has been prepared in accordance with the Agreement between Ecosystem Solutions Pty Ltd and Margaret Senior High School C/- RPS Australia West Pty Ltd (“Client”). It has been solely prepared for a development application at Margaret River Senior High School, Margaret River (“Site”).

Information

In undertaking this work the authors have made every effort to ensure the accuracy of the information used. Unless otherwise stated in the report, Ecosystem Solutions Pty Ltd has not independently verified such information and cannot guarantee its accuracy or completeness.

Conclusions

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Document Control

Margaret River Senior High School, Margaret River

C/ - RPS Australia West Pty Ltd

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Introduction

Ecosystem Solutions were contracted by Margaret River Senior High School, C/RPS Australia West Pty Ltd, to survey an area in the northern portion of Margaret River High School (hereafter called the “Site”) (Figure 1) to document the presence and distribution of flora and fauna. The survey area as denoted in Figure 1 is indicative and intends to align with the ‘designated site area’ as denoted in the arborists report “Tree Survey Margaret River High School, October 2020”.

The fauna species targeted included the Western Ringtail Possum (*Pseudocheirus occidentale*) and signs or suitable habitat for Black Cockatoo Species (*Calyptorhynchus baudinii*, *C. latirostris* and *C. banksii subsp. naso*) and any other significant fauna likely to occur within the proposed area of disturbance.

The flora elements specifically targeted include Threatened and Priority species and Threatened or Priority Ecological Communities.

This flora and fauna assessment is limited to species observations at the time of survey in this area specifically.



Figure 1 Site Map for Margaret River Senior High School, Margaret River

Site Details

The Site consists of a portion of Reserve 22531 (Department of Education), within the north of the lot and is bounded by Wallcliffe Road in the north, Bussell Highway to the east, residences, and Station Road to the west and a parkland cleared area to the south. (Figure 1).

The surrounding landscape includes the southern portion of Reserve 22531 containing the Margaret River Senior High Agriculture School, an adjoining Department of Planning, Lands and Heritage (DPLH) Reserve (Memorial Site), residential areas and DPLH Reserve 51577 (Drainage Reserve) to the south west.

The Site is 0.95ha (9569m²) in area, the total Lot size of Reserve 22531 is 29.6ha (29 600m²). The Site lies at 90 m Australian Height Datum (AHD).

The Site, consists of remnant forest vegetation and planted species, including *Eucalyptus cornuta* (Yate), **Corymbia citriodora* (Lemon Scented Gum), *Agonis flexuosa* (Peppermint), *Corymbia calophylla* (Marri), *Eucalyptus patens* (Swan River Blackbutt) open forest over Peppermint, Yate low woodlands over introduced grasses (Figure 1).

2.1.1 Threatened and Priority Flora

Extracts from the Department of Biodiversity, Conservation and Attractions (DBCA) NatureMap Database (Appendix A) and the Commonwealth Environmental Protection and Biodiversity Conservation (EPBC) Protected Matters Search Tool (Appendix B) were obtained to determine if records of any rare or threatened flora are known within the boundary or in the vicinity of the Site. A reconnaissance survey across the Site was conducted, with targeted survey within the proposed areas of impact (in line with EPA, 2016).

Species of flora and fauna are protected as defined in Appendix C, and it has been determined that their populations are restricted geographically or threatened by local processes. DBCA recognizes these threats of extinction and consequently applies regulations towards population and species protection. Protected species are gazetted under the *Biodiversity Conservation Act (2016)* and therefore it is an offence to “take” or damage rare flora without Ministerial approval. The act defines “to take” as “... to gather, pick, cut, pull up, destroy, dig up, remove or injure the flora or to cause or permit the same to be done by any means” (Government of Western Australia, 2010).

Appendix C presents the definitions for conservation codes under the *Biodiversity Conservation Act (2016)* which was previously the *Wildlife Conservation Act 1950*.

2.1.2 Threatened and Priority Ecological Communities

An ecological community is a naturally occurring biological assemblage that occurs in a specific habitat type. A Threatened Ecological Community (TEC) is one which is found to fit into one of the following categories: Presumed Totally Destroyed; Critically Endangered; Endangered, or Vulnerable.

Possible TECs that do not meet survey criteria are added to the Department of Parks and Wildlife’s Priority Ecological Community Lists, under Priority 1, 2 and 3. These are ranked in order of priority for survey and/or the definition of the community and evaluation of its conservation status.

2.2 Field Survey

The Site was surveyed for flora on 10 November 2020 by Kelly Lamp (B.Sc Hons. Nat Rs Mgmt., SL012472) and Lorraine Duffy (B.Sc Env Biology, B.Arts Geo) from Ecosystem Solutions. The Site was walked in a systematic manner to cover the entire area. Zones with consistent vegetation structure and composition were noted and the main species in each of the strata were identified and recorded through a relevé (Figure 4, Appendix D). Vegetation condition based on Keighery (1994) was also recorded using a Global Positioning System (GPS).

The Site was also inspected for flora species of significance and Threatened Ecological Communities, based on the DBCA database records.

2.3 Results

The NatureMap Database (Appendix A) and Protected Matters Search Tool (Appendix B) identified 10 Threatened (T) and 17 Priority flora species which are likely to occur, or their habitat is likely to occur within a 10 km radius of the Site. These results are summarised in Table 2.

Table 1 Conservation significant flora species recorded within 10 km of the Site

Species	DBCA Conservation Code	EPBC Act Status	Life Form	Habitat	Likelihood of occurrence within the proposed development area
<i>Acacia inops</i>	P3		Shrub	Black peaty sand, clay, swamps, creeks. Grows along watercourses and swamps.	Unlikely as Site heavily grazed and no understorey present.
<i>Acacia tayloriana</i>	P4		Shrub	Grey or yellow/orange sandy soils, lateritic gravel, clay loam. Winter wet areas.	Unlikely as Site heavily grazed and no understorey present.
<i>Amperea micrantha</i>	P2		Herb	Black peaty sand, clay, swamps, creeks	Unlikely as Site heavily grazed and no understorey present.
<i>Banksia nivea subsp. uliginosa</i>		Endangered	Shrub	Red, sandy, shallow loams over ironstone in thick scrub, in winter wet southern and Scott ironstones.	Unlikely as Site heavily grazed and no understorey present.
<i>Banksia squarrosa subsp. argillacea</i>		Vulnerable	Shrub	White/grey sand, gravelly clay or loam. Winter -wet flats, clay flats.	Unlikely as Site heavily grazed and no understorey present.
<i>Caladenia excelsa</i>		Endangered	Herb	Located along the Leeuwin Naturaliste Ridge on hilltops, ridges, slopes, swales and low plains in deep pale yellow or grey sandy soils. Also known to occur on clay, loam, laterite, granite. Found among dense low shrubs in Banksia, Jarrah and Marri woodlands.	Unlikely as Site heavily grazed and no understorey present.
<i>Caladenia hoffmanii</i>		Endangered	Herb	Grows beneath dense heath in clay loams on hillslopes and near breakaways and beneath tall shrubs on and around granite outcrops.	Unlikely as Site heavily grazed and no understorey present.
<i>Caladenia huegelii</i>		Endangered	Herb	Deep grey or Brown sand, clay loam. Banksia, Jarrah and Marri woodlands.	Unlikely as Site heavily grazed and no understorey present.
<i>Caladenia lodgeana</i>		Critically Endangered	Herb	Clay soils. Growing in open, seasonally wet situations among low Melaleuca species.	Unlikely as Site heavily grazed and no understorey present.
<i>Calectasia cyanea</i>		Critically Endangered	Herb	Yellow sand or gravel over laterite in low heathland on a ridge to gentle slope.	Unlikely as Site heavily grazed and no understorey present.
<i>Dampiera heteroptera</i>	P3		Herb/Shrub	Sandy soils. Swampy areas	Unlikely as Site heavily grazed and no understorey present.
<i>Drakaea micrantha</i>		Vulnerable	Herb	White - Grey sand. Open, disturbed sandy areas in Banksia, Jarrah and or Common Sheoak (<i>Allocasuarina fraseriana</i>) forest or woodlands. Sometimes located under thickets of Spearwood (<i>Kunzea ericifolia</i>).	Unlikely as Site heavily grazed and no understorey present.

Species	DBCA Conservation Code	EPBC Act Status	Life Form	Habitat	Likelihood of occurrence within the proposed development area
<i>Eucalyptus marginata</i> x <i>megacarpa</i>	P4		Tree	Sandy loam. Interdunal areas.	Unlikely as Site heavily grazed and no understorey present.
<i>Franklandia triaristata</i> (Lanoline Bush)	P4		Shrub	White or grey sand	Unlikely as Site heavily grazed and no understorey present.
<i>Gahnia sclerioides</i>	P4		Sedge	Loam, sandy soils, creeklines and winter wet areas. Moist shaded situations.	Unlikely as Site heavily grazed and no understorey present.
<i>Gastrolobium formosum</i>	P3		Shrub	Clay loams, along river backs or in swamps	Unlikely as Site heavily grazed and no understorey present.
<i>Gastrolobium papilio</i>		Endangered	Shrub	Sandy clay over ironstone and laterite in winter wet flats. Flat plains	Unlikely as Site heavily grazed and no understorey present.
<i>Grevillea brachystylis</i> subsp. <i>brachystylis</i>	P3		Shrub	Gravelly clay, sand clay and sand on road verges, swamps and creek banks.	Unlikely as Site heavily grazed and no understorey present.
<i>Grevillea manglesioides</i> subsp. <i>ferricola</i>	P3		Shrub	Red sandy clay over ironstone. Winter wet flats.	Unlikely as Site heavily grazed and no understorey present.
<i>Juncus meianthus</i>	P3		Tufted perennial herb	Black sand, sandy clay, loam, seepage areas. Can occur within dense sedgeland/herbland with <i>Baumea vaginalis</i> .	Unlikely as Site heavily grazed and no understorey present.
<i>Lambertia echinata</i> subsp. <i>occidentalis</i>		Endangered	Shrub	White sandy soils over laterite, orange/brown-red clay over ironstone. Flats to foothills, winter wet sites	Unlikely as Site heavily grazed and no understorey present.
<i>Pimelea ciliata</i> subsp. <i>longituba</i>	P3		Shrub	Grey sand over clay loam	Unlikely as Site heavily grazed and no understorey present.
<i>Pultenaea pinifolia</i>	P3		Shrub	Loams or clay, floodplains, swampy areas	Unlikely as Site heavily grazed and no understorey present.
<i>Styliidium lowreanum</i>	P3		Herb	Sand or sandy loam over limestone	Unlikely as Site heavily grazed and no understorey present.
<i>Synaphea macrophylla</i>	P1		Low Shrub	Gravelly loam.	Unlikely as Site heavily grazed and no understorey present.
<i>Synaphea</i> sp. <i>Redgate Road (J. Scott 16)</i>	P1		Low Shrub	Dry grey sands	Unlikely as Site heavily grazed and no understorey present.
<i>Xyris maxima</i>	P2		Tufted perennial herb	Black peaty sand, drainage flats	Unlikely as Site heavily grazed and no understorey present.

There were no Threatened or Priority flora species recorded during the field surveys.

2.3.1 Vegetation Communities

The Protected Matters Search Tool did not identify any Threatened Ecological Communities likely to occur within the area. During the field surveys, the area did not appear to have characteristics of any listed TEC.

A Relevé was completed within the Site, with locations noted in Figure 4 and data collected presented in Appendix D. During the Site assessment the remnant vegetation within the Site was assessed as a Yate, Lemon Scented Gum, Peppermint, Marri, Swan River Blackbutt open forest as described below in Table 3. Vegetation has been described according to Keighery (1994), adapted from Muir (1977) and Aplin (1979).

Table 2 Vegetation Descriptions

Vegetation Code	Vegetation
Vegetation A - Yate, Lemon Scented Gum, Peppermint, Marri, Swan River Blackbutt open forest over Peppermint and Yate low woodlands over introduced grasses (R01)	<i>Eucalyptus cornuta</i> , * <i>Corymbia citriodora</i> , <i>Agonis flexuosa</i> , <i>Corymbia calophylla</i> , <i>Eucalyptus patens</i> open forest over <i>Agonis flexuosa</i> , <i>Eucalyptus cornuta</i> low woodland over * <i>Cirsium vulgare</i> scattered shrubs over * <i>Cenchrus clandestinus</i> and introduced annual tussock grassland

Table 1 Structural Classification. (Keighery 1994, adapted from Muir 1977 and Aplin 1979)

Stratum	Canopy Cover				
	70%-100%	30%-70%	10%-30%	2%-10%	<2%
Trees > 30m	Tall Closed Forest	Tall Open Forest	Tall Woodland	Tall Open Woodland	Scattered Tall Trees
Trees 10-30m	Closed Forest	Open Forest	Woodland	Open Woodland	Scattered Trees
Trees < 10m	Low Closed Forest	Low Open Forest	Low Woodland	Low Open Woodland	Scattered Low Trees
Shrubs >2m	Tall Closed Scrub	Tall Open Scrub	Tall Shrubland	Tall Open Shrubland	Scattered Tall Shrubs
Shrubs 1-2m	Closed Heath	Open Heath	Shrubland	Open Shrubland	Scattered Shrubs
Shrubs <1m	Low Closed Heath	Low Open Heath	Low Shrubland	Low Open Shrubland	Scattered Low Shrubs
Hummock Grasses	Closed Hummock Grassland	Mid-Dense Hummock Grasslands	Hummock Grassland	Open Hummock Grassland	Scattered Hummock Grassland
Grasses, Sedges & Herbs	Closed Tussock Grassland/ Sedgeland/ Herbland	Tussock Grassland/ Sedgeland/ Herbland	Open Tussock Grassland/ Sedgeland/ Herbland	Very Open Tussock Grassland/ Sedgeland/ Herbland	Scattered Tussock Grassland/ Sedgeland/ Herbland

2.3.2 Vegetation Condition

Using the scale of condition developed by Keighery (1994, Table 4), areas of vegetation have been assessed. Remnant vegetation of the Site varied from Degraded to Completely Degraded (Figure 4).

Of the remnant vegetation, 54% (9569m²) is in a Degraded condition, retaining a very basic woodland vegetation canopy with an understorey of the non-native species *Cirsium vulgare*, an introduced thistle species and introduced grasses. These areas have been severely impacted by grazing and disturbance. The remaining area of vegetation (46% or 8170m²) is Completely Degraded, having almost no native overstorey and an understorey of introduced grasses only.

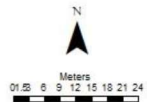
Table 2 Keighery Condition Scale (Keighery 1994)

Category	Description
Pristine	Pristine or nearly so, no obvious signs of destruction.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. For example, damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle track.
Very Good	Vegetation structure altered, No obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging, and grazing.
Good	Vegetation structure significantly altered by obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate to it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration, but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, Dieback, and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as “parkland cleared” with the flora composing weed or crop species with isolated native trees or shrubs.



Location details: Margaret River Senior High School
 Project: 20993
 Assessment date: November 2020
 Prepared by: L. Duffy
 Date aerial photo: Nov 2020

Vegetation Condition



- Completely degraded
- Degraded
- Lot Boundary
- Site Boundary
- Watercourses



Figure 2 Vegetation Condition Mapping for Margaret River Senior High School

Fauna

3.1 Desktop Analysis

The conservation status of fauna within Western Australia is determined by criteria outlined within two acts of legislation: Commonwealth EPBC Act 1999 and the State-based Western Australian *Biodiversity Conservation Act 2016* (WA). The conservation codes for fauna under the *Biodiversity Conservation Act (2016)* which was previously the *Wildlife Conservation Act 1950* are presented in Appendix C. These categories are consistent with the International Union for Conservation of Nature (IUCN) classifications and therefore link into a global ranking system for taxa at risk of extinction.

A desktop study and analysis of the records of NatureMap and the Protected Matters Search Tool (Appendix A & B) were made to determine the presence or likely presence of fauna or fauna assemblages within the Site. The analysis primarily targeted terrestrial threatened vertebrate species listed under the *Biodiversity Conservation Act 2016* (WA) and *Environmental Protection Biodiversity Conservation Act 1999* (Commonwealth). A list of fauna expected to occur within a 10-kilometre radius of the Site was compiled from searches conducted on the DBCA database (NatureMap) and the Commonwealth EPBC Protected Matters Search Tool (Table 5). Marine and freshwater species have been excluded due to the location of the Site.

The results of the native fauna database search for species likely to be within or utilising the Site are listed below (Table 5). Birds protected under international agreement, shorebirds, fish and invertebrates have not been included in the table below.

Table 3 Conservation significant fauna species recorded within 10 km of the Site

Species	Conservation Status		Preferred Habitat	Likelihood of occurrence within the proposed development area.
	DBC Conservation Code	EPBC Act Status		
<i>Botaurus poiciloptilus Australasian Bittern</i>	Threatened		Dense beds of sedges and rushes. Coastal and sub coastal areas.	Unlikely to occur as habitat not suitable.
<i>Atrichornis clamosus</i> Noisy Scrub-bird, Tjimiluk	Threatened	Endangered	Dense unburnt understorey vegetation of low forest, scrub thicket and occasionally heath that occurs in gullies, drainage lines and lowland areas	Unlikely to occur as habitat not suitable.
<i>Bettongia lesueur</i> subsp. <i>graii</i> Burrowing Bettong	Threatened	Endangered	Open Eucalypt woodlands with grass or shrub understorey to sand ridge desert. On the islands - shrubs, grasses and herbs.	Unlikely as extinct on mainland - occurs only on islands.
<i>Bettongia penicillata</i> subsp. <i>obilgyi</i> Woylie, Brush-tailed Bettong	Threatened	Endangered	Woodlands and adjacent heaths with a dense understorey of shrubs.	Unlikely as Site heavily grazed and no understorey present.
<i>Calyptorhynchus banksii naso</i> Forest Red-tailed Black Cockatoo	Threatened	Vulnerable	Dense Jarrah, Karri and Marri forests. Species nest in large hollows in these species	Likely to occur.
<i>Calyptorhynchus baudinii</i> Baudin's Cockatoo	Threatened	Endangered	Dense Jarrah, Karri and Marri forests. Species nest in large hollows in these species	Likely to occur.
<i>Calyptorhynchus latirostris</i>	Threatened	Endangered		Likely to occur.

Carnaby's Cockatoo	Dense Jarrah, Karri and Marri forests. Species nest in large hollows in these species				Unlikely as the Site lacks the dense understorey and large areas of remnant vegetation which the species requires.
<i>Dasyurus geoffroii</i>					
Chuditch	Variety, most dense in riparian jarrah forests. Require large, unfragmented habitats.	Vulnerable	Threatened		
<i>Dasyornis broadbenti</i> subsp. <i>litoralis</i>			Threatened		Will not occur - extinct.
Rufous Bristlebird	Shrubland habitat.	Extinct			
<i>Falco peregrinus macropus</i>					
Australian Pergrine Falcon	Wide variety. Prefers coastal and inland cliffs or open woodlands near water.	Specially Protected			Possibly occurs. Open woodland habitat within proximity to a creekline present on Site. Nearest Naturemap record in South Gracetown in 2014.
<i>Geocrinia alba</i>					
White-bellied frog	Broad drainage lines with riparian vegetation.	Critically Endangered	Threatened		Will not occur. Habitat not present.
<i>Hydromys chrysogaster</i>					
Rakali, WaterRat	Occurs in permanent fresh or brackish water, although it can also be found in marine environments.	P4			Unlikely, habitat not suitable.
<i>Isoodon fusciventer</i>					
Quenda, southwestern brown bandicoot	Forest, woodland, shrub, and heath, usually in sandy soils with dense healthy vegetation in lower stratum	P4			Unlikely as the Site lacks dense understorey.
<i>Leipoa ocellata</i>					
Malleefowl	Semi-arid to arid shrublands and low woodlands dominated by mallee and/or acacia	Threatened	Threatened		Unlikely to occur. NatureMap database shows only one possible record in the area since 1920.
<i>Macrotis lagotis</i>			Threatened		

Bilby, Dalgyte, Ninu	Open tussock grassland on uplands and hills, <i>Acacia aneura</i> (mulga) woodland/shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas		Will not occur, habitat not suitable. Nearby Naturemap records are historic. The species no longer occurs in the area.
<i>Myrmecobius fasciatus</i> Numbat, Walputri	Threatened Eucalyptus forest		Will not occur. Only one possible nearby record on NatureMap database, with identification uncertain.
<i>Notamacropus eugenii</i> <i>subsp derbianua</i> Tamar Wallaby	P4 Scrub and grassland.		Unlikely to occur, no understorey present.
<i>Notamacropus irma</i> Western Brush Wallaby	P4 Some areas of mallee and heathland and are uncommon in wet sclerophyll forests.		Unlikely to occur. Preferred habitat not present.
<i>Petrogale lateralis</i> subsp. <i>lateralis</i> Black flanked rock wallaby	Isolated ranges and rocky outcrops.		Will not occur. No longer occurs in south-west WA.
<i>Phascogale tapoatafa</i> <i>subsp. wambenger</i> South-western Brush-tailed Phascogale	S Highly arboreal, prefers open forest with sparse groundcover		Likely to occur. Suitable habitat present.
<i>Potorous gilbertii</i> (Gilberts Potoroo)	S Dense, long-unburt shrubland.		Will not occur. Known to occur in a restricted area of Two Peoples Bay Nature Reserve, near Albany.
<i>Potorous platyops</i> Broad-faced Potoroo	Extinct Extinct Unknown.		Will not occur - extinct.

<i>Pseudocheirus occidentalis</i>	Threatened	Critically Endangered	Coastal Areas of Peppermint woodland and peppermint woodland and peppermint / tuart associations.	Likely to occur, habitat present.
Western Ringtail Possum				
<i>Pseudomys shortridgei</i>			Heathlands. Dry heathland, and open woodland and forest habitats with a heath understorey.	Will not occur. No suitable habitat.
Heath Mouse				
<i>Psophodes nigrogularis</i> subsp. <i>nigrogularis</i>	Threatened		Heath-like thicket (2-3m tall) on coastal dunes and in low, dense mallee woodland or shrubland with understorey of dense, stunted shrubs.	Unlikely to occur. The only known population occurs in Two Peoples Bay, 40km east of Albany.
Western Whipbird (Western Heath)				
<i>Setonix brachyurus</i>	Threatened	Vulnerable	Mainly dense riparian vegetation, other areas with dense vegetated understorey near freshwater.	Will not occur. No suitable habitat, locally extinct.
Quokka				
<i>Tyto novaehollandiae</i> subsp. <i>novaehollandiae</i>	P3		Tall open eucalypt forest and woodlands. Preferred roosts are large hollows in standing trees.	Unlikely to be roosting in the area as the site contains only a single tree with two smaller hollows. Remnant vegetation in adjacent Lots may provide more suitable habitat.
Masked Owl (southwest)				

Analysis of the results of the database searches show that conservation significant fauna species likely to be within or utilising the Site include *Pseudocheirus occidentalis* (Western Ringtail Possum) and *Phascogale tapoatafa* subsp. *wambenger* (South-western Brush-tailed Phascogale).

The three Black Cockatoo species, *Calyptorhynchus banksii naso* (Forest Red-tailed Black Cockatoo), *Calyptorhynchus baudinii* (Baudin's Cockatoo) and *Calyptorhynchus latirostris* (Carnaby's Cockatoo) or species habitat are also likely to occur within the area.

Other fauna of conservation significance may use the site infrequently or as part of a larger patch, such as birds listed on International Agreements. Impacts to these species are considered negligible due to the small area of vegetation to be managed.

3.2 Field Survey

With these species in mind, a field study of the site was conducted. The approach adopted for this survey was:

- A Satellite Image of the Site was acquired.
- A daytime visual inspection of the property and adjoining vegetation for any signs of fauna (e.g. scats, diggings, dreys, nests, burrows, feeding signs) was conducted.
- Hollow bearing trees or trees suitable for Black Cockatoos were recorded.
- Direct observations of fauna and signs of fauna were recorded using a Trimble Global Positioning System (GPS) and ArcPad© (Version 8- ESRI).
- Two dawn and two dusk surveys were conducted to determine Black Cockatoo and Western Ringtail Possum activity. A 40 w LightForce hand-held spotlight was used with white light to observe nocturnal mammals. Observations were recorded using GPS and ArcPad©.
- Field observations were analysed and mapped with ArcGis (ArcMap V10.3©).

The Site was inspected thoroughly by foot and a physical inspection of trees was undertaken to identify hollows or signs of fauna use.

All trees with large hollows were inspected for any signs of use by cockatoos. These include wear around the hollow, chewing, scarring and scratch marks on the trunks or branches. Old or recent evidence of cockatoo's feeding or roosting sites (feathers, droppings etc.) were also searched for.

This type of survey has minimal impact on the fauna within the property and provides sufficient data on the presence and relative abundance and distribution of taxa. During the field surveys, the habitat at the site was assessed to determine its potential suitability to host any of the anticipated threatened or rare species. This approach is consistent with a Level 1 survey under the EPA's Technical Guidance: Sampling methods for Terrestrial vertebrate fauna (2016) which specifies a minimum requirement of a desktop study to gather information on the subject site and a reconnaissance survey to verify the accuracy of the background study and delineate fauna and faunal assemblages.

The survey's protocol is also consistent with the requirements outlined in the Development Planning Guidelines for Western Ringtail Possums (CALM 2003, now DBCA).

The draft referral guideline for the three threatened black cockatoo species (Department of Environment and Energy, 2017) outline requirements for appropriate level of surveys for these species. This survey's intensity and design comply with these guidelines.

3.3 Results

The daytime survey for fauna was completed on 10th November by Kelly Lamp and Lorraine Duffy, with additional surveys completed on the evening of the 10th, the 11th and 15th November 2020 by Gary McMahon (B.Sc. M. Env Mgmt) from Ecosystem Solutions. Dawn and dusk surveys were conducted to check for any sign of Black Cockatoos, Western Ringtail Possums and any other conservation listed species. Survey times and observations are detailed in Table 6.

During survey, no Black Cockatoos or Western Ringtail Possum were observed. Several dreys were observed (Figure 5) but no Western Ringtail Possums were observed.

Table 4 Fauna survey times and observations

Survey Type	Date and Time	Sunrise / Sunset Time	Observations
Day survey	10 November 2020 10am		Three WRP dreys were at three separate locations and WRP scats at an additional 2 locations were observed
Dawn	11 November 2020 4:00 am to 6:00 am	First Light 4:42 am Sunrise 5:09 am	No significant fauna was observed during this survey.
Dawn	15 November 2020 4:15 am to 6:15 am	First Light 4:39 am Sunrise 5:07 am	No significant fauna was observed during this survey.
Dusk / Nocturnal	10 November 2020 5:00 pm to 8:30 pm	Sunset 6:56 pm Last Light 7:23 pm	No significant fauna was observed during this survey.
Dusk / Nocturnal	15 November 2020 6:00 pm to 8:00 pm	Sunset 7:01 pm Last Light 7:29 pm	No significant fauna was observed during this survey.

Trees on site that had a breast height (DBH) over 500 mm and therefore meeting the federal government guidelines for potential and future habitat for Black Cockatoo species were recorded (Figure 4 and Appendix E).

A total of twenty-eight trees with a diameter at breast height (DBH) over 500 mm were observed. Of these, three trees were observed to have a hollows however given their narrow size (<150mm), they are unlikely to be suitable for nesting of Black Cockatoo species. Thirteen trees, one with hollows, are designated to be removed (Appendix F). No evidence of breeding, roosting, or foraging was observed at the time of survey and the hollow was too narrow for Black Cockatoos usage.

All local species of Black cockatoos can forage over extensive areas (up to 15-20 kms from their nesting sites (Saunders, 1980)) and given that there are large areas of habitat within their range, it could be assumed that Black Cockatoo species are not relying solely on the Site for habitat or food.

The vegetation canopy within the Site was thoroughly inspected during the day survey on 10 November 2020. Three Western Ringtail Possum dreys and scats at two additional locations were observed, indicating that Western Ringtail Possums are present on Site (Figure 3). No Western Ringtail Possums were observed during the dusk/nocturnal surveys.

While no other animals of significance were observed, either directly or through signs, the lack of this data should not be taken directly as an indication that those species are absent from the Site. No trapping or seasonal sampling was conducted.

Tables 5 and 6 discuss the likely presence and impact on Western Ringtail Possums and Black Cockatoos.



Location details: Margaret River Senior High School
 Project: 20993
 Assessment date: November 2020
 Prepared by: I. Duffy
 Date aerial photo: Nov 2020

Western Ringtail Possum Drey & Scat Locations



- Site Boundary
- Lot Boundary
- WRP DREY
- WRP SCAT/S


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Figure 3 Western Ringtail Possum Drey and Scat Locations for Margaret River Senior High School



Location details: Margaret River Senior High School
 Project: 20993
 Assessment date: November 2020
 Prepared by: L. Duffy
 Date aerial photo: Nov 2020

Significant Tree Locations



- Site Boundary
- Lot Boundary
- No Hollow
- Hollow
- Hollows
- ✕ Tree to be removed

 ecosystem solutions
 www.ecosystemolutions.com.au
 (00) 9750 1960

Figure 4 Significant Trees surveyed for Margaret River Senior High School

Survey Constraints

Field surveys were confined to a day flora/fauna survey, two dawn fauna surveys and two dusk / nocturnal fauna spotlight surveys conducted over non-consecutive nights. These were conducted to assess for Black Cockatoo and Western Ringtail Possum activity, along with any other conservation significant fauna. All surveys were conducted using an experienced ecologist, with a head torch and a single hand-held spotlight used for the nocturnal fauna surveys.

The site was traversed by foot in a systematic way, to cover the entire Site.

All large trees of suitable size were examined from the ground for the presence of hollows. Guidelines for the survey techniques for Black Cockatoo species (Commonwealth of Australia, 2017) state that all trees with a DBH of over 500 m should be inspected. It should be noted however, that all the prerequisites that determine the suitability of a hollow for use by cockatoos are difficult to assess. In addition to entrance size, the depth, floor, and orientation of the hollow are important factors. The presence of suitable hollows, even in breeding areas, does not make them available for breeding as hollows must be spatially, structurally, and temporally correct (Johnstone and Johnston, 2004). The listing of potential nesting hollows is therefore likely to be an over estimation of those suitable.

Western Ringtail Possums are arboreal nocturnal species (DBCA, 2017). They use up to 2-7 rest sites and up to 20 throughout the year. Rest sites can be within a tree hollow or drey, built in various tree canopies. In suburban areas, they may also rest in roof spaces and other dark cavities. Their home range is less than 5 ha. There are constraints in surveying Western Ringtail Possums due to the time they may arise from their rest site. Their home range may overlap the survey area, with a rest site being used outside the Site during the survey times.

There are constraints in monitoring flora which include some annual species that do not appear every season, with the survey limited to identifying only those flora that appear during the survey times.

The survey was completed in November, which is outside the predominate flowering time for many south-west flora species, limiting the ability to identify all flora within the Site. However, as this site has been heavily grazed and continues to be utilised by stock, vegetation is degraded to completely degraded and lacks a vegetated understorey. It is therefore very unlikely that conservation significant species are present.

Significance

Under the EPBC Act, an action that has, will have, or is likely to have, a significant impact on a matter of national environmental significance, requires approval from the Minister. A significant impact is defined as an impact which is important or of consequence, having regard for its context or intensity (Commonwealth of Australia, 2009).

Matters of environmental significance include listed threatened species and ecological communities. For this proposal, there is little potential for significant impact on threatened species. Significant Impact Guidelines 1.1 (Commonwealth of Australia, 2009) lists significant impact criteria for the assessment for activities which may impact on threatened species.

Table 5 and Table 6 discuss the referral triggers and the likely presence and impact on Black Cockatoos and Western Ringtail Possums. The Site map denotes the Site boundary and proposed area of potential environmental impact.

Table 5 Significant Impact Criteria for Key Protected Species

Significant Impact Criterion	Discussion	Meets Criterion
	Black Cockatoo Species	Western Ringtail Possum
Lead to a long-term decrease in the size of an important population ¹ of a species	<p>Cockatoos were not observed to be using the Site for roosting or breeding at the time of survey. There were no signs of feeding use within the site. Of these trees, thirteen trees, including one with hollows, are designated to be removed (Appendix E & F). The hollow was to narrow for use by Black Cockatoo species.</p> <p>It is unlikely that the species are relying on the site for habitat, roosting or food resources.</p> <p>Therefore, the long-term decrease of an important population of the species is unlikely.</p>	No
		<p>An extant population of Western Ringtail Possums are likely to reside within the Site with three dreys and scats at two locations sighted within the Site during the day survey. No possum activity was observed during nocturnal surveys.</p> <p>With the presence of an approved DBCA Fauna Handler during any vegetation modification the likelihood of a long-term decline in population in the Site is minimised as captured possums will be released within 200 m of capture point.</p>

¹ An 'important population' is a population that is necessary for a species' long-term survival and recovery.

Reduce the area of occupancy of an important population	There is no evidence that the site supports any population of any of the species. There will be a reduction in area occurring from any development within the Site boundary as thirteen trees, one with observed hollows, are to be removed within the development area. However, these trees are not being utilised by any of the Black Cockatoo species and therefore the reduction of occupancy for an important population will not occur with the removal of these trees.	A slight reduction in area of remnant vegetation will occur, reducing the area of occupancy. While a small extant population of WRP is likely to utilise the site, there are areas adjoining those trees removed to support this population. The use of a fauna monitor during any vegetation removal to relocate any animals will ensure that any impact on the population is minimised.	No
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Fragment an existing important population into two or more populations	Unlikely to fragment an existing population as similar remnant vegetation remains nearby.	The removal of the designated vegetation will not fragment the local population. There are sufficient habitat left, including opportunities for animals to move through the landscape over structures to ensure impact is minimised.. With the presence of an approved DBCA Fauna Handler during any vegetation modification the likelihood of a decline of the extant population in the Site is minimised as any captured animal will be released within 200 m of capture point.	No
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Adversely affect habitat critical to the survival of a species

This action has potential to adversely affect a relatively small area (<1ha) of mixed trees species. This habitat is not considered critical to the survival of the species as no evidence of utilisation of the site by any of the three BC species were identified.

This action has potential to adversely affect a relatively small area (<1ha) of mixed tree canopy habitat. There is sufficient adjacent habitat that will ensure the removal of the designated tree minimise any impact on the local population and these habitats are not considered critical to the survival of the species.

No

Disrupt the breeding cycle of an important population

Will not affect critical habitat as trees with observed or potential hollows were not being utilised as roosting or breeding habitats at the time of survey and the hollows were not considered suitable for black cockatoo breeding.

Western Ringtail Possums breed year-round with breeding peaks in April to July and September to November (Jones *et al.* 1994b).

A population of Western Ringtail Possums reside on the Site with three dreys and scats at two locations observed.

No

With the presence of an approved DBCA Fauna Handler during any vegetation modification the likelihood of a long-term decline in population in the Site is low as any captured animal will be released within 200 m of any capture point.

Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

A decrease in significant trees (up to 28 trees) above 500 mm DBH will occur as the proposed development area is implemented. There is no evidence that the species utilise any of these areas of habitat, therefore it is highly unlikely that the removal of any of this habitat will lead to a decline of the species.

A population of Western Ringtail Possums reside on the Site with dreys and scats observed. The removal of mature *Agonis flexuosa* trees, will reduce some habitat but from the lack of scats and direct observations it is likely possums are utilising other areas for foraging and it is highly unlikely that the removal of the designated trees will cause the species to decline.

No

Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat

No evidence of use by any of the three species were found in the site. Any invasive species introductions are likely to be plant species, which are highly unlikely to impact on the species. have a significant impact on the species.

No

Introduce disease that may cause the species to decline

Unlikely to occur.

Unlikely to occur.

No

Interfere substantially with the recovery of the species.

Development will not impact substantially on the recovery of the species.

Development will not impact substantially on the recovery of the species.

No

Using these criteria, the proposed development will not significantly impact on any significant species to a point where a referral is required under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Referral guidelines for the three threatened Black Cockatoo species (Commonwealth of Australia, 2017) uses a decision tree and a set of criteria to determine whether actions significantly impact on Black Cockatoos. These are set out in Table 8, based on the details of the development and the data obtained from the surveys. Notes on the flow chart follow.

Table 6 Assessment of Significant Impact to Black Cockatoo

Question	Answer
1. Could the impacts of your action occur within the modelled distribution of the Black Cockatoos?	Yes, action occurs within the distribution area of all three species. The total area of quality foraging habitat, that is, remnant vegetation of Degraded Condition within the Site is <1ha (9569m ²). Thirteen trees with a DBH of 500 mm or greater, one with hollows, are designated to be removed. A further 15 trees with a DBH of 500 mm or greater, two with hollows, were surveyed but are to be retained within the development area.
2. Could the impacts of your action affect any Black Cockatoo habitat or individuals?	Unlikely. While thirteen trees with a DBH of 500 mm or greater, one with hollows (but too small for black cockatoos), are designated to be removed. There is no evidence of utilisation of the site by any of the three black cockatoo species. A further 15 trees with a DBH of 500 mm or greater, two with hollows, were surveyed but are to be retained within the development area.
3. Have you surveyed for Black Cockatoos using the recommended methods?	Yes.

Question

Answer

4. Is Black Cockatoo habitat present?
- No. Thirteen trees with a DBH of 500 mm or greater, one with hollows, albeit not suitable for black cockatoos species, are designated to be removed. A further 15 trees with a DBH of 500 mm or greater, two with hollows, were surveyed but are to be retained within the development area. No observable signs of nesting or roosting activities were found within the Site. It is unlikely that any species are reliant on this Site.
5. Is your impact mitigation best practice so that it may reduce the significance of your impacts on Black Cockatoos?
- There is limited opportunity to reduce the impact due to the current proposal of development to utilise the area for playing fields. There is no evidence of utilisation of the site by any of the black cockatoo species and there are other areas within the broader landscape that are likely to be more suitable.
6. Could your action require a referral to the federal environmental Minister for significant impact on Black Cockatoos?
- No. Under Table 3: Referral guidelines of the currently endorsed Black Cockatoo Guidelines (2012), this proposal does not recommend a referral as the foraging habitat to be disturbed is of less than 1ha (9569m²) and does not contain observable breeding or night roosting trees.

Summary and Recommendations

Based on the results of the analysis of Site, the following conclusions and recommendations are made.

- The Site has been surveyed using the recommended methods from the guideline.
- There were no Threatened Flora identified in the Site.
- The development is within the area of modelled distribution of Black Cockatoo and Western Ringtail Possum species.
- A referral pursuant to the EPBC Act is not required for the components of the development within the Site, as actions are considered unlikely to have a significant impact on Black Cockatoos or Western Ringtail Possums. Discussion with assessment officers from the Federal Dept of Agriculture, Water and Environment confirm this analysis

Vegetation

- Of the remnant vegetation on the Site, 54% (9569m²) is in a Degraded condition, retaining a very basic woodland vegetation canopy with an understorey of introduced species. These areas have been severely impacted by grazing and disturbance. The remaining area of vegetation (46% or 8170m²) is Completely Degraded, having almost no native overstorey and an understorey of introduced grasses only.

Cockatoos

- Twenty-eight trees with sufficient diameter at breast height (DBH) to develop future hollows suitable for Black Cockatoos were observed. Three of these were observed to have existing hollows (Figure 4). Of these trees, thirteen are designated to be removed, one of which was observed to have hollows (Appendix F). these hollows however are not considered suitable for black cockatoo species and there was no observation or indication of utilisation of the site by any of the three species.
- No observable signs of nesting or roosting activities were observed within the Site. It is unlikely that any species are reliant on this Site. Black cockatoo species are highly mobile, and it is possible they utilise the Site opportunistically as a feeding Site within their range but are not currently reliant on the Site for habitat.
- Under Table 3: Referral guidelines of the currently endorsed Black Cockatoo Guidelines (2012), this proposal does not recommend a referral as the foraging habitat to be disturbed is of less than 1ha (9569m²) and does not contain observable breeding or night roosting trees.

Western Ringtail Possum

- Three Western Ringtail Possum dreys and scats at an additional two locations were observed within the Site.
- While no other animals of significance were observed, either directly or through signs, the lack of this data should not be taken directly as an indication that those species are absent from the Site. No trapping or seasonal sampling was conducted.
- A Fauna Spotter should be used to monitor any vegetation removal to ensure animals, particularly the Western Ringtail Possum are not present, at the time of vegetation modification and if they are captured and relocated safely.
- Under significant impact guidelines for threatened species, it is determined that there is a low risk of actions resulting in an impact upon Western Ringtail Possums.

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Appendix A NatureMap Extract

NatureMap Species Report

Created By Guest user on 16/11/2020

Kingdom Animalia
Conservation Status Conservation Taxon (T, X, IA, S, P1-P5)
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 04' 24" E, 33° 57' 17" S
Buffer 20km
Group By Species Group

Species Group	Species	Records
Amphibian	1	70
Bird	24	1033
Fish	3	12
Invertebrate	8	162
Mammal	22	466
Reptile	1	7
TOTAL	59	1750

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Amphibian				
1.	25403 <i>Geocrinia alba</i> (White-bellied Frog)		T	
Bird				
2.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
3.	41326 <i>Ardeanna carneipes</i> (Flesh-footed Shearwater, Fleishy-footed Shearwater)		T	
4.	24358 <i>Atrichornis clamosus</i> (Nolsy Scrub-bird, tjimiluk)		T	
5.	24780 <i>Calidris alba</i> (Sanderling)		IA	
6.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
7.	24731 <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> (Forest Red-tailed Black Cockatoo)		T	
8.	24733 <i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo, White-tailed Long-billed Black Cockatoo)		T	
9.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)		T	
10.	48400 <i>Calyptorhynchus</i> sp. (white-tailed black cockatoo)		T	
11.	25575 <i>Charadrius leschenaultii</i> (Greater Sand Plover)		T	
12.	24439 <i>Dasyornis broadbenti</i> subsp. <i>litoralis</i> (Rufous Bristlebird, Rufous Bristlebird (SW WA))		X	
13.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
14.	24475 <i>Falco peregrinus</i> subsp. <i>macropus</i> (Australian Peregrine Falcon)		S	
15.	48587 <i>Hydroprogne caspia</i> (Caspian Tern)		IA	
16.	24557 <i>Leipoa ocellata</i> (Malleefowl)		T	
17.	48591 <i>Pandion cristatus</i> (Osprey, Eastern Osprey)		IA	
18.	25579 <i>Psophodes nigrogularis</i> (Western Whipbird)		T	
19.	24388 <i>Psophodes nigrogularis</i> subsp. <i>nigrogularis</i> (Western Whipbird (western heath))		T	
20.	34135 <i>Thalassarche cauta</i> (Shy Albatross)		T	
21.	34007 <i>Thalassarche chlororhynchos</i> (Atlantic Yellow-nosed Albatross)		T	
22.	44607 <i>Thalassarche melanophris</i> (Black-browed Albatross)		T	
23.	48597 <i>Thalasseus bergii</i> (Crested Tern)		IA	
24.	48135 <i>Thimornis rubricollis</i> (Hooded Plover, Hooded Dotterel)		P4	
25.	24655 <i>Tyto novaehollandiae</i> subsp. <i>novaehollandiae</i> (Masked Owl (southwest))		P3	
Fish				
26.	34026 <i>Galaxiella munda</i> (mud minnow, western dwarf galaxias)		T	
27.	34030 <i>Geotria australis</i> (Pouched Lamprey)		P3	
28.	34033 <i>Nannatherina balstoni</i> (Balston's Pygmy Perch)		T	
Invertebrate				
29.	34110 <i>Austrossiminea lethra</i> (Cape Leeuwin Freshwater Snail)		T	
30.	47873 <i>Bertmainius opimus</i> (western pygmy trapdoor spider)		P3	
31.	33940 <i>Cherax tenuimanus</i> (Margaret River hairy marron, Margaret River Marron)		T	
32.	33945 <i>Engaewa pseudoreducta</i> (Margaret River Burrowing Crayfish)		T	

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
33.	33946 <i>Engaewa reducta</i> (Dunsborough Burrowing Crayfish)		T	
34.	33980 <i>Kawaniphila pachomai</i> (Grey Vernal Katydid (southwest), cricket)		P1	
35.	33995 <i>Trichosternus relictus</i> (a ground beetle (Margaret River), beetle)		P3	Y
36.	34113 <i>Westralunio carteri</i> (Carter's Freshwater Mussel)		T	
Mammal				
37.	24209 <i>Arctocephalus tropicalis</i> (Subantarctic fur-seal)		T	
38.	24049 <i>Balaenoptera musculus subsp. intermedia</i> (Antarctic Blue Whale)		T	
39.	24161 <i>Bettongia lesueur subsp. graii</i> (Boodie (inland), Burrowing Bettong (inland))		X	
40.	24162 <i>Bettongia penicillata subsp. ogilbyi</i> (Woylie, Brush-tailed Bettong)		T	
41.	24092 <i>Dasyurus geoffroii</i> (Chuditch, Western Quoll)		T	
42.	24189 <i>Falsistrellus mackenziei</i> (Western False Pipistrelle, Western Falsistrelle)		P4	
43.	24215 <i>Hydromys chrysogaster</i> (Water-rat, Rakali)		P4	
44.	48588 <i>Isodon fusciventer</i> (Quenda, southwestern brown bandicoot)		P4	
45.	24160 <i>Mecrotis lagotis</i> (Dilby, Dalgyte, Niniu)		T	
46.	24146 <i>Myrmecobius fasciatus</i> (Numbat, Walpurti)		T	
47.	48024 <i>Notamacropus eugenii subsp. derbianus</i> (Tamar Wallaby, Tamar)		P4	
48.	48022 <i>Notamacropus irma</i> (Western Brush Wallaby)		P4	
49.	24142 <i>Petrogale lateralis subsp. lateralis</i> (Black-flanked Rock-wallaby, Black-footed Rock-wallaby)		T	
50.	48401 <i>Petrogale sp. (rock wallaby)</i>		T	
51.	48070 <i>Phascogale tapoatafa subsp. wambenger</i> (South-western Brush-tailed Phascogale, Wambenger)		S	
52.	24073 <i>Physeter macrocephalus</i> (Sperm Whale)		T	
53.	24163 <i>Potorous gilbertii</i> (Gilbert's Potoroo)		T	
54.	24164 <i>Potorous platyops</i> (Broad-faced Potoroo)		X	
55.	24166 <i>Pseudocheirus occidentalis</i> (Western Ringtail Possum, ngwayir)		T	
56.	24236 <i>Pseudomys fletchi</i> (Shark Bay Mouse, Djongari)		T	
57.	24241 <i>Pseudomys shortridgei</i> (Heath Mouse, Heath Rat, Dayang)		T	
58.	24145 <i>Setonix brachyurus</i> (Quokka)		T	
Reptile				
59.	25335 <i>Caretta caretta</i> (Loggerhead Turtle)		T	

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.

NatureMap Species Report

Created By Guest user on 12/11/2020

Kingdom Plantae
Conservation Status Conservation Taxon (T, X, IA, S, P1-P5)
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 04' 24" E, 33° 57' 17" S
Buffer 10km
Group By Family

Family	Species	Records
Cyperaceae	1	3
Euphorbiaceae	1	1
Fabaceae	4	19
Goodeniaceae	1	1
Juncaceae	1	2
Myrtaceae	1	1
Orchidaceae	2	32
Proteaceae	5	6
Stylidiaceae	1	4
Thymelaeaceae	1	2
Xyridaceae	1	2
TOTAL	19	73

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Cyperaceae				
1.	17744 <i>Gahnia sclerioides</i>		P4	
Euphorbiaceae				
2.	4586 <i>Amperea micrantha</i>		P2	
Fabaceae				
3.	3386 <i>Acacia inops</i>		P3	
4.	3571 <i>Acacia tayloriana</i>		P4	
5.	20504 <i>Gastrolobium formosum</i>		P3	
6.	4179 <i>Pultenaea pinifolia</i>		P3	
Goodeniaceae				
7.	7446 <i>Dampiera heteroptera</i>		P3	
Juncaceae				
8.	14631 <i>Juncus meianthus</i>		P3	
Myrtaceae				
9.	16888 <i>Eucalyptus marginata x megacarpa</i>		P4	
Orchidaceae				
10.	13619 <i>Caladenia excelsa</i>		T	
11.	18037 <i>Caladenia lodgeana</i>		T	
Proteaceae				
12.	1945 <i>Franklandia triaristata (Lanoline Bush)</i>		P4	
13.	14011 <i>Grevillea brachystylis subsp. brachystylis</i>		P3	
14.	18436 <i>Grevillea manglesioides subsp. ferricola</i>		P3	
15.	17271 <i>Synaphea macrophylla</i>		P1	
16.	18591 <i>Synaphea sp. Redgate Road (J. Scott 16)</i>		P1	
Stylidiaceae				
17.	12590 <i>Stylidium lowrieianum (Lowrie's Triggerplant)</i>		P3	
Thymelaeaceae				
18.	12077 <i>Pithecia ciliata subsp. longituba</i>		P3	
Xyridaceae				
19.	17481 <i>Xyris maxima</i>		P2	

Name ID Species Name

Naturalised

Conservation Code

Endemic To Query Area

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

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

Appendix B Protected Matters Search Tool Extract



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: 16/11/20 14:53:09

[Summary](#)

[Details](#)

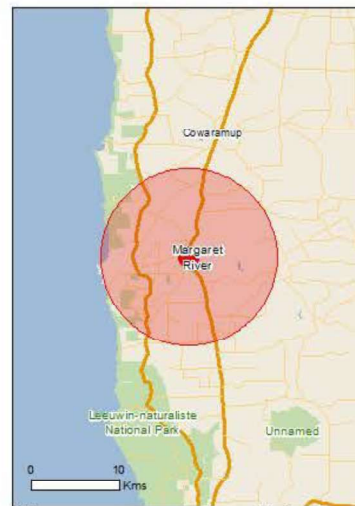
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

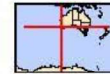
[Acknowledgements](#)



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:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	53
Listed Migratory Species:	43

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:	63
Whales and Other Cetaceans:	13
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:	6
Regional Forest Agreements:	1
Invasive Species:	24
Nationally Important Wetlands:	None
Key Ecological Features (Marine):	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to 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
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within

Name	Status	Type of Presence area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Crustaceans		
Cherax tenuimanus Hairy Marron, Margaret River Hairy Marron, Margaret River Marron [78931]	Critically Endangered	Species or species habitat may occur within area
Fish		
Nannatherina balstoni Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat may occur within area
Frogs		
Geocrinia alba White-bellied Frog, Creek Frog [26181]	Critically Endangered	Species or species habitat known to occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Dettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat known to occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Congregation or aggregation known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Vulnerable	Species or species habitat may occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat known to occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat likely 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		
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat may occur within area
Banksia squarrosa subsp. argillacea Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat may occur within area
Caladenia excelsa Giant Spider-orchid [56717]	Endangered	Species or species habitat likely to occur within area
Caladenia hoffmanii Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat may occur within area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat may occur within area
Caladenia lodgeana Lodge's Spider-orchid [68664]	Critically Endangered	Species or species habitat known to occur within area
Calectasia cyanea Blue Tinsel Lily [7669]	Critically Endangered	Species or species habitat may occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area
Gastrolobium papilio Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur

Name	Status	Type of Presence
Dermochelys coriacea		within area
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Sharks		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	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
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Diomedea amsterdamensis		
Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena		
Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora		
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans		
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi		
Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Hydroprogne caspia		
Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli		
Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus		
Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
Phoebastria fusca		
Sooty Albatross [1075]	Vulnerable	Species or species

Name	Threatened	Type of Presence
Thalassarche cauta Shy Albatross [89224]	Endangered	habitat may occur within area Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Congregation or aggregation known to occur within area

Name	Threatened	Type of Presence
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Other Matters Protected by the EPBC Act		
Commonwealth Land		[Resource Information]
The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.		
Name		
Commonwealth Land -		
Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		

Name	Threatened	Type of Presence
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		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 likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Flesh-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
Sterna anaethetus Bridled Tern [814]		Foraging, feeding or related behaviour likely to occur within area
Sterna caspia Caspian Tern [59467]		Foraging, feeding or related behaviour known to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Histiogampelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area

Name	Status	Type of Presence
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Congregation or aggregation known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Extra Information		
State and Territory Reserves		[Resource Information]
Name	State	
Bramley	WA	
Leeuwin-Naturaliste	WA	
NTWA Bushland covenant (0003)	WA	
NTWA Bushland covenant (0065A)	WA	
NTWA Bushland covenant (0065B)	WA	
NTWA Bushland covenant (0144)	WA	
Regional Forest Agreements		[Resource Information]
Note that all areas with completed RFAs have been included.		
Name	State	
South West WA RFA	Western Australia	
Invasive Species		[Resource Information]
Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.		
Name	Status	Type of Presence
Birds		
Anas platyrhynchos Mallard [974]		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
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

Name	Status	Type of Presence within area
Mammals		
<i>Bos taurus</i> Domestic Cattle [16]		Species or species habitat likely to occur within area
<i>Canis lupus familiaris</i> Domestic Dog [82654]		Species or species habitat likely to occur within area
<i>Felis catus</i> Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
<i>Mus musculus</i> House Mouse [120]		Species or species habitat likely to occur within area
<i>Oryctolagus cuniculus</i> Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
<i>Rattus rattus</i> Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
<i>Sus scrofa</i> Pig [6]		Species or species habitat likely to occur within area
<i>Vulpes vulpes</i> Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
<i>Asparagus asparagoides</i> Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
<i>Cenchrus ciliaris</i> Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i> Boneseed [16905]		Species or species habitat likely to occur within area
<i>Genista linifolia</i> Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
<i>Genista monspessulana</i> Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
<i>Genista</i> sp. X <i>Genista monspessulana</i> Broom [67538]		Species or species habitat may occur within area
<i>Lycium ferocissimum</i> African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
<i>Pinus radiata</i> Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
<i>Rubus fruticosus</i> aggregate Blackberry, European Blackberry [68406]		Species or species

Name	Status	Type of Presence
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		habitat likely to occur within area 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

-33.9547 115.0732

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.

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Appendix C Conservation Codes for Western Australian Flora and Fauna

CONSERVATION CODE	CATEGORY
<u>Threatened species (T)</u>	<p>Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under Section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the <i>Biodiversity Conservation Act 2016</i> (BC Act).</p> <p>Threatened fauna is that subset of ‘Specially Protected Fauna’ listed under Schedules 1 to 3 of the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i> for Threatened Fauna.</p> <p>Threatened flora is that subset of ‘Rare Flora’ listed under schedules 1 to 3 of the <i>Wildlife Conservation (Rare Flora) Notice 2018</i> for Threatened Flora.</p> <p>The Assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below</p>
Critically endangered species (CR)	<p>Threatened species considered to be “<i>facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the criteria set out in the ministerial guidelines</i>”.</p> <p>Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i> for critically endangered fauna or the <i>Wildlife Conservation (Rare Flora) Notice 2018</i> for critically endangered flora.</p>
Endangered species (EN)	<p>Threatened species considered to be “<i>facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines</i>”.</p> <p>Listed as endangered under Section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i> for endangered fauna or the <i>Wildlife Conservation (Rare Flora) Notice 2018</i> for endangered flora.</p>

CONSERVATION CODE	CATEGORY
Vulnerable species (VU)	<p>Threatened species considered to be <i>“facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines”</i>.</p> <p>Listed as endangered under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i> for vulnerable fauna or the <i>Wildlife Conservation (Rare Flora) Notice 2018</i> for vulnerable flora.</p>
Extinct species (EX)	<p>Species where <i>“there is no reasonable doubt that the last member of the species has died”</i>, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).</p> <p>Published as presumed extinct under schedule 4 of the <i>Wildlife Conservation (Specially Protected Fauna) Notice 2018</i> for extinct fauna or the <i>Wildlife Conservation (Rare Flora) Notice 2018</i> for extinct flora.</p>
Extinct in the wild species (EW)	<p>Species that <i>“is known only to survive in cultivation, captivity or as a naturalised population well outside its part 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”</i>, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).</p> <p>Currently there are no threatened fauna or flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.</p>
<u>Specially protected species</u>	<p>Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.</p> <p>Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.</p>

**CONSERVATION CATEGORY
CODE**

Migratory species (MI) 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; and listing is otherwise in accordance with the ministerial guidelines (Section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and the Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements of treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

Species of special conservation interest (conservation dependent fauna) (CD) Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

Other specially protected species (OS) Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

**CONSERVATION CATEGORY
CODE**

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

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

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

Priority 1 - Poorly-known species Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases, or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

Priority 2 - Poorly-known species 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.

CONSERVATION CATEGORY
CODE

Priority 3 - Poorly-known species 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 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 need further survey.

Priority 4 - Rare, Near Threatened and other species in need of monitoring

- (a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.
- (b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.
- (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Appendix D Relevé Field Sheets

STRUCTURAL VEGETATION, FLORA – Relevé		SITE_ID: R01
Date: 10/11/2020	GPS: E 322444	Structural comm. type Yate, Lemon scented gum, Peppermint, Marri & Blackbutt open Forest over Peppermint, Yate low woodland
	S 6240856	
Recorder: LD	Photo no. + direction:	
Location: Margaret River Senior High School, remnant forest-woodland to the south of the basketball courts		

Condition: Pristine Excellent Very Good Good Degraded Completely Degraded	
Aspect: N NE E SE S SW W NW FLAT	Slope: Flat Gentle Mod Steep
Geology: Gran Lat Lime Other	Rock: 0 <2 2-10 10-20 20-50 >50
Soil Colour: Grey Dark Brown Light Brown Orange/Brown Red/Brown White Yellow	Soil Type: C CL & CLAY CLS CS L LS S SCL SL SP ZCL ZL ZS
Litter (% cover & depth): 60%, 1cm	Bare Ground (% cover): 0% (100% leaf litter and grass cover)
Hydrology: Good drain Poor drain Wet all year Seas wet Winter/spring	Topographic position: Upland Wetland Rock Outcrop Drainage Depression Creekline Riparian Bank Gully Plain Slope Lower Slope Middle Slope Upper Valley Flat

Layer	Height (m)	Cover	Plant Species (Dominant 3 first)
Tree (T2)	10-30	30-70	<i>Eucalyptus cornuta</i> , * <i>Corymbia citriodora</i> , <i>Agonis flexuosa</i> , <i>Corymbia calophylla</i> , <i>Eucalyptus patens</i>
Tree (T3)	< 10	10 - 30	<i>Agonis flexuosa</i> , <i>Eucalyptus cornuta</i>
Shrub (S1)	> 2		
Shrub (S2)	1-2	<2	* <i>Cirsium vulgare</i>
Shrub (S3)	0-1		
Sedge/Rush (VR)			
Herb (H)			
Grass (G)		30-70	* <i>Cenchrus clandestinus</i> , introduced annual grasses
Other (climbers) (C)		<2	

Cover Codes: D >70% M 30-70% S 10-30% V 2-10% VV <2% E <5% Emergent * = Introduced

* Introduced species



Figure 5 R01



Figure 6 R01

Appendix E Significant Trees

Waypoint	DBH (cm)	Species	Height (m)	Eastings	Northing	Hollow presence	Tree designated to be removed?
292	78	Eucalyptus diversicolor	26.8	321878	6240852		No
293	128	Eucalyptus diversicolor	27.9	321870	6240855		Yes
294	119	Eucalyptus globulus	23.3	321895	6240900		No
300	51	Corymbia calophylla	12.6	321812	6240945		No
302	85	Corymbia calophylla	23.2	321797	6240956	Potential Hollow	No
305	78	Corymbia calophylla	23.7	321815	6240971		No
307	67	Corymbia calophylla	22.7	321818	6240969		No
308	56.5	Corymbia calophylla	21.6	321817	6240971		No
309	57	Corymbia calophylla	13.4	321818	6240975		No
310	53	Corymbia calophylla	18.3	321814	6240975		No
303	101	Corymbia calophylla	25.6	321795	6240947	Potential hollow @ 20m	No
311	54	Corymbia calophylla	16.2	321790	6240938		No
312	56	Corymbia calophylla	20.6	321785	6240926		No
313	52.5	Corymbia calophylla	17.4	321788	6240924		Yes

Waypoint	DBH (cm)	Species	Height (m)	Easting	Northing	Hollow presence	Tree designated to be removed?
314	57	Corymbia calophylla	20	321787	6240925		Yes
315	114	Corymbia calophylla	26.6	321758	6240913		No
316	94	Corymbia calophylla	22.3	321757	6240899		No
317	54	Corymbia calophylla	16	321754	6240886		No
319	106	Corymbia calophylla	26.4	321778	6240896		Yes
322	52	Corymbia calophylla	14.3	321783	6240880		Yes
320	53	Corymbia calophylla	14	321792	6240898		Yes
331	66	Corymbia calophylla	18.6	321802	6240907		Yes
321	56	Corymbia calophylla	17.8	321794	6240893		Yes
326	148	Eucalyptus diversicolor	30.9	321831	6240867	Potential hollows @ 8.5m & 13.5m	Yes
327	51	Corymbia calophylla	15.8	321836	6240866		Yes
330	51	Eucalyptus cornuta	21.2	321812	6240888		Yes
328	53	Eucalyptus cornuta	20.7	321817	6240893		Yes
329	58	Eucalyptus cornuta	21.9	321816	6240895		Yes