

Attachment 4 (RSD) -Appendix E

Desktop Assessment of Subterranean
Fauna

Desktop Assessment of Subterranean Fauna for a proposed wind farm in Scott River, Western Australia



Report by Invertebrate Solutions for
SynergyRED Pty Ltd

August 2024

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Prepared for: SynergyRED Pty Ltd

Frontispiece: The SynergyRED windfarm at Sandpatch, near Albany.

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Executive Summary

SynergyRED Pty Ltd (SynergyRED) are proposing to develop and construct an onshore wind farm in the Scott River Region (the Project). The subject site is approximately 15 km northeast of the town of Augusta within the South West region of Western Australia. SynergyRED proposes to construct up to 20 wind turbines (total maximum capacity of up to 100MW across the site). The indicative locations have been selected to maximise energy production whilst minimising impacts on the surrounding environment.

Turbine foundations vary in size dependent upon the imposed loading, ground conditions, construction methodology and drainage requirements of the subject site. It is anticipated that each turbine will require approximately 600 - 800m³ of buried reinforced concrete foundation. This will be confirmed through the detailed design phase as turbine manufacturers have individual foundation requirements that must be adhered to (considering geotechnical conditions and the turbine model).

The wind turbine sites are planned to be in existing farmland areas, and excavations up to five metres below ground level are anticipated for the turbine bases and associated temporary dewatering. Invertebrate Solutions Pty Ltd (Invertebrate Solutions) has been engaged by SynergyRED to undertake a desktop assessment for subterranean fauna (stygo fauna and troglo fauna) at the Project area.

The desktop assessment identified four (4) Threatened Ecological Communities (TEC) associated with subterranean fauna within 50 km of the Project, all located in caves that occur between 15.75 – 26.25 km to the west and northwest of the Project area on the opposite side of the Blackwood River to the Project.

No subterranean fauna is known from the Project area, and all subterranean fauna identified during the desktop searches were associated with the caves of the Leeuwin-Naturaliste Ridge (LNR). The Project area is located to the east of the Leeuwin Naturaliste Ridge, on the eastern side of the Blackwood River, thus completely hydrologically separated from the karstic Tamala Limestone of the LNR. The ground surface is largely covered in sandy loam that provides little interconnected void space based on geotechnical cores. The Project area contains no suitable habitat for subterranean fauna, with the upper unsaturated strata being sandy clay and loam providing no interconnected pore spaces for troglo fauna. Below the watertable, the strata consist of interbedded clay and sand with no interconnected pore spaces to provide habitat for stygo fauna.

No survey work for stygo fauna or troglo fauna is necessary in order to meet the Technical Guidance – Subterranean Fauna Surveys for Environmental Impact Assessment (EPA 2021).

1. Introduction

SynergyRED Pty Ltd (SynergyRED) are proposing to develop and construct an onshore wind farm in the Scott River Region. The subject site is approximately 15 km northeast of the town of Augusta within the South West region of Western Australia. SynergyRED proposes to construct up to 20 wind turbines (total maximum capacity of up to 100MW across the site). The indicative locations have been selected to maximise energy production whilst minimising impacts on the surrounding environment.

Turbine foundations vary in size dependent upon the imposed loading, ground conditions, construction methodology and drainage requirements of the subject site. It is anticipated that each turbine will require approximately 600 - 800m³ of buried reinforced concrete foundation. This will be confirmed through the detailed design phase as turbine manufacturers have individual foundation requirements that must be adhered to (considering geotechnical conditions and the turbine model).

The wind turbine sites are planned to be in existing farmland areas, and excavations up to five metres below ground level are anticipated for the turbine bases and associated temporary dewatering. Invertebrate Solutions Pty Ltd (Invertebrate Solutions) has been engaged by SynergyRED to undertake a desktop assessment for subterranean fauna (stygo fauna and troglo fauna) at the project area.

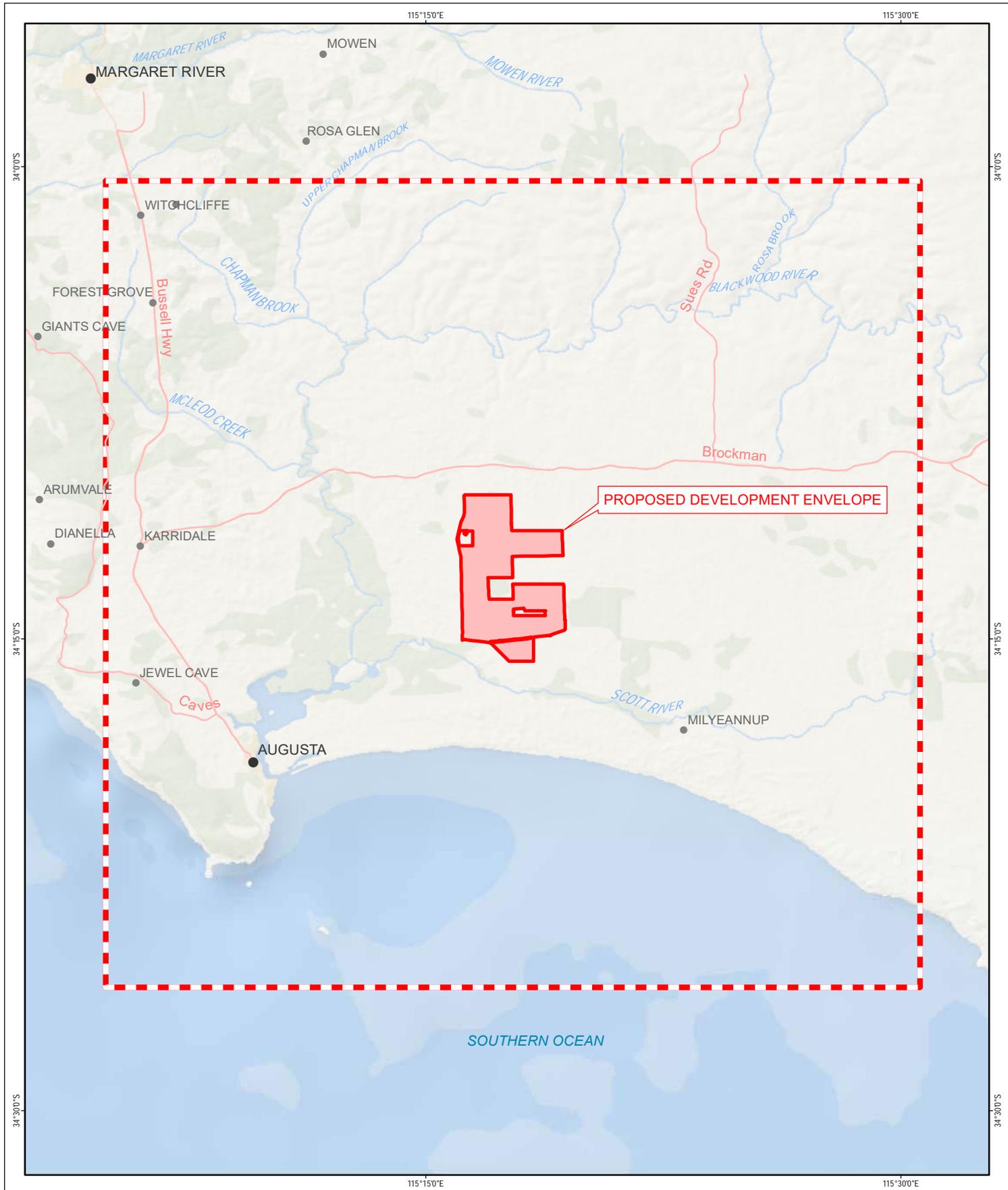
Subterranean fauna is comprised of stygo fauna (aquatic subterranean dependent species) and troglo fauna (air breathing subterranean dependent species). These are known in particular to form a subterranean faunal biodiversity hotspot on a worldwide scale in the Pilbara and Yilgarn cratons of Western Australia (Guzik et al. 2010). Many species of subterranean fauna have highly restricted ranges and can be considered short range endemics (*sensu* Harvey 2002), with sometimes highly restricted ranges due to habitat connectivity issues and evolutionary history.

The high degrees of local endemism and lack of habitat connectivity make subterranean fauna susceptible to localised impacts imposed by project development, particularly impacts to groundwater resources (Ponder & Colgan 2002), with the potential for species extinction likely if project planning phases do not adequately consider these risks.

1.1. Scope of Works

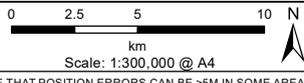
SynergyRED has requested Invertebrate Solutions to undertake the following scope of works for the Project, Western Australia:

- Undertake a desktop review for stygo fauna and troglo fauna presence.
- Undertake a risk assessment for impacts to stygo fauna and troglo fauna from the proposed development.
- Provide recommendations to minimise potential impacts and any suggested requirements for further work to comply with relevant legislation.
- Provide a written report containing the above items.



Legend

-  Desktop Study Area
-  Proposed Development Envelope



-NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



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HORIZONTAL DATUM & PROJECTION GDA2020		DATE 5/08/2024

PROJECT Scott River Wind Farm			
CREATED ENVIRONMAPS	CHECKED TM	APPROVED TM	REVISION 0

SynergyRED

Figure 1
 Proposed Scott River Windfarm
 Location and Desktop Study Area

1.2. Study Area and Background Environmental Information

The Project is located approximately 15 km northeast of Augusta, Western Australia (Figure 1). The desktop study area comprises approximately 100,000 ha rectangle bounded by the northwest corner (34.007°S, 115.08°E) and the southeast corner (34.435°S, 115.51°E), centred on the Project.

The Interim Biogeographic Regionalisation of Australia (IBRA) classifies Australia's landscapes into 89 large geographically distinct bioregions based on common climate, geology, landform, native vegetation, and species information (DCCEEW 2022). The Project is located within the Warren bioregion and a very small area in the north within the Southern Jarrah Forest subregion. The Development Envelope is predominantly comprised of dissected undulating country of the Leeuwin Complex and Albany Orogen with loamy soils supporting Karri forest, laterites supporting Jarrah-Marri forest, leached sandy soils in depressions and plains supporting paperbark/sedge swamps, and Holocene marine dunes with *Agonis flexuosa* woodlands. (Environment Australia 2000).

The land tenure for the Project area is private freehold, across various landowners. The localised climate is classified as moderate Mediterranean with an average annual rainfall of 948 mm recorded at the Bureau of Meteorology (BoM) Station 009518 at Cape Leeuwin (BoM, 2024), located 40 km south of the Project area. Annual rainfall is seasonal with most rainfall occurring during the winter months, linked to low pressure systems in the Southern Ocean (May to August) (Plate 1).

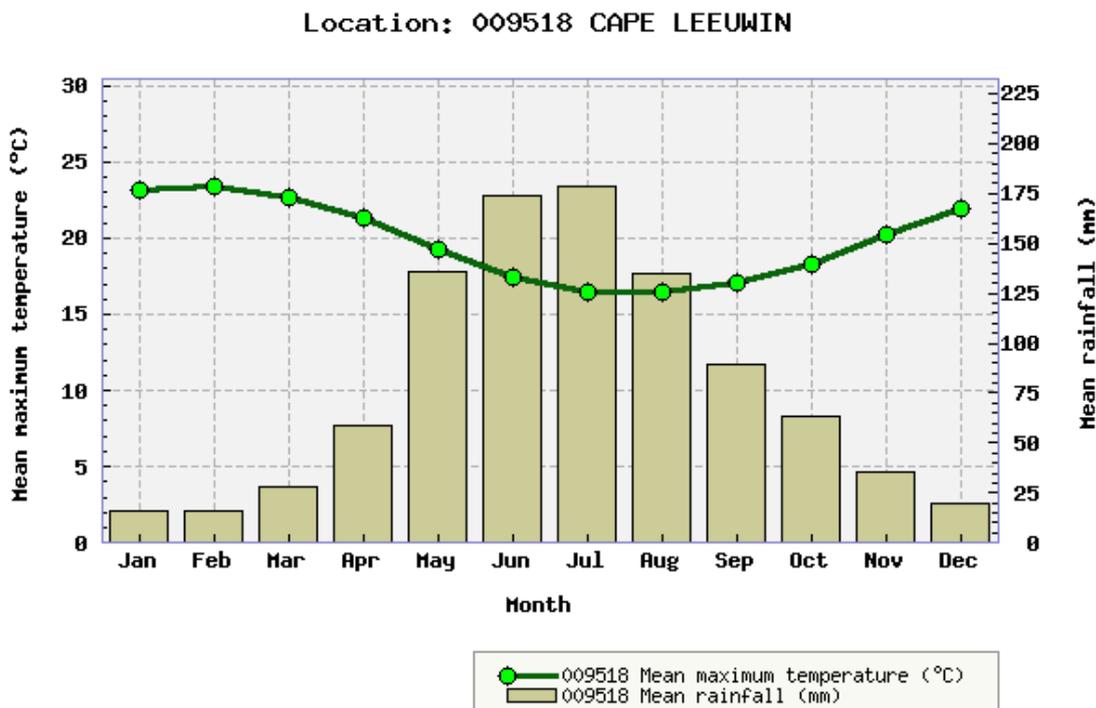


Plate 1 Cape Leeuwin long term climate data (After BOM.gov.au).

1.3. Document Review

The following documents have been examined in the compilation of this report, along with other referenced scientific papers used to provide general background:

- Eberhard, S. (2004). Ecology and hydrology of a threatened groundwater dependent ecosystem: The Jewel Cave karst system in Western Australia. Unpublished PhD thesis, Murdoch University, Western Australia, July 2005, 364p.
- Lowry, D.C., Horwitz, R.C. and Gemuts, I. (1967). Busselton and Augusta 1:250,000 1st Edition. Sheet SI 50-5 and SI 50-9 Geological Map, Geological Survey of Western Australia, Perth.

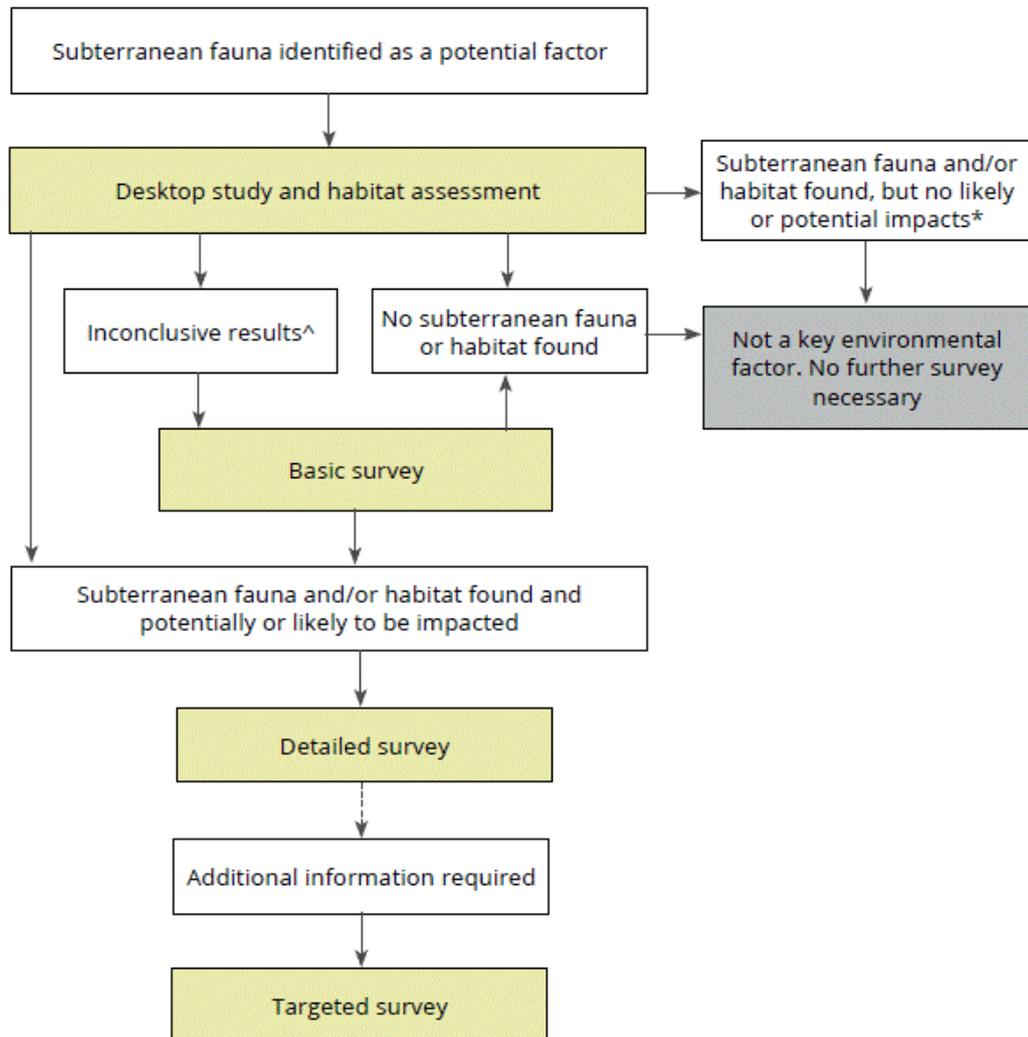
This report has been prepared with regard to the Technical Guidance – Subterranean Fauna Surveys for Environmental Impact Assessment (EPA 2021).

1.4. Conservation Legislation and Guidance Statements

Subterranean fauna is protected under state legislation via the *Biodiversity Conservation (BC) Act 2016* which came into force on 1st January 2019, replacing the *Wildlife Conservation Act 1950*. The BC Act is aligned with the Federal *Environment Protection and Biodiversity Conservation (EPBC) Act (1999)*. The assessment of subterranean fauna for environmental impact assessment (EIA) is undertaken in Western Australia with regard to the Technical Guidance – Subterranean Fauna Surveys for Environmental Impact Assessment (EPA 2021). A summary flowchart of the assessment process for subterranean fauna is shown in Plate 2.

Part 2 of the BC Act provides for the listings of species that have special protection under Act. Updates to the species list are gazetted periodically by the Minister for Environment. The current Threatened fauna list (October 2023) includes numerous subterranean species, primarily from the Cape Range and Pilbara regions. Included in the list are crustaceans, arachnids and myriapods that are considered to be “rare or likely to become extinct, as critically endangered fauna, or are declared to be fauna that is in need of special protection” (DBCA 2023). In addition to the specially protected fauna, DBCA also maintains a list of Priority fauna considered to be of conservation significance but do not meet the criteria for formal listing under the BC Act. The Priority fauna list is irregularly updated by DBCA and, although it offers no formal legislative protection, these species are generally considered in the EIA process.

The state BC Act also provides for the Minister for Environment to formally list Threatened Ecological Communities (TECs), along with relevant threatening processes. Several subterranean ecological communities are recognised as Threatened including stygal root mat communities in both the Yanchep and Margaret River regions, Bundera Cenote Anchialine community on Cape Range, Cameron’s Cave near the townsite of Exmouth on Cape Range, and stygobionts (aquatic subterranean organisms) in the Ethel Gorge aquifer in the Pilbara.



* Depending on the likely scale and nature of the proposal impacts

^ Go direct to Detailed survey if preferred

Plate 2 Flowchart of the process for undertaking subterranean fauna assessments for impact assessment in Western Australia (EPA 2021).

The EPBC Act (1999) provides federal protection to both species and ecological communities. Listings for subterranean fauna in WA include the Bundera Cenote on the western side of the Cape Range (>1000 km from the Project area), which contains a unique anchialine ecosystem including the stygal Cape Range Remipede *Kumonga exleyi* (Yager and Humphreys 1996), listed as Vulnerable. The Cape Range Gudgeon *Milyeringa veritas* and the Cape Range Blind Cave Eel *Ophisternon candidum* (Humphreys 2008) are also listed as Vulnerable species.

1.5. Subterranean Fauna Classification

Subterranean fauna is a collective term that refers to both troglofauna (terrestrial subterranean fauna inhabiting air voids) and stygofauna (aquatic subterranean fauna) (Humphreys 2000). Extensive amounts of jargon have historically been associated with subterranean fauna and multiple forms of classification have been used through time (Sket 2008). The most accepted classifications divide troglofauna into categories that describe a particular species' degree of dependence upon the

subterranean environment. Due to the reliance upon ecological information to determine if a species is a troglobite, the concept of troglomorphy (Christiansen 1962), specific morphological adaptations to the subterranean environment, is used to define obligate subterranean species. The term troglomorphy, initially confined to morphology, has since been used to describe both morphological or behavioural adaptations (Howarth 1973). This combination provides a practical system, easily applied in the field and requires minimal detailed ecological studies (Sket 2008). The level of subterranean dependency for different ecological groupings is described below:

- Troglobiont: animals that are obligate subterranean species, and mostly show morphological adaptation to subterranean habitats (troglomorphisms) including depigmentation, loss or reduction of eyes, elongation of appendages, flightlessness or wing reduction, and extra sensory hairs.
- Troglaphiles: animals that can complete their entire lifecycle within a cave but possess no specific adaptations to the cave environment. These species are capable of living outside caves in suitably dark and moist epigeal habitats.
- Troglonexes: animals that use the subterranean environment but require surface environments to complete part of their lifecycle (generally either feeding or breeding). Common troglonexes are cave dwelling bats, cave swiftlets and cave crickets that leave subterranean habitats to feed.

The terms above refer to stygofauna when the prefix is altered to 'stygo' (Humphreys 2000).

Species which inhabit the deep soil habitat (Edaphophiles) often exhibit convergent morphological adaptations to those animals found exclusively within caves, such as loss/reduction of eyes, body flattening, loss of pigmentation etc. Soil dwelling species typically lack restrictions in distribution, as these organisms have experienced relatively minimal isolation in evolutionary timeframes, thus, only true troglobitic animals are studied in subterranean fauna surveys. Taxa discussed in this study were assessed upon their combination of loss/reduction of eyes, and reduction in pigmentation, wing development, and elongation of appendages to assess if a taxon was an edaphophile or truly reliant upon the subterranean habitat (Troglobiont).

1.6. Report Limitations and Exclusions

This study was limited to the written scope provided to Eco Logical Australia Pty Ltd by Invertebrate Solutions (1st March 2024) and in Section 1.1. This study was limited to the extent of information made available to Invertebrate Solutions at the time of undertaking the work. Information not made available to this study, or which subsequently becomes available, may alter the conclusions made herein.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. Invertebrate Solutions has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by Invertebrate Solutions described in this report (this section and throughout this report). Invertebrate Solutions disclaims liability arising from any of the assumptions being incorrect.

Invertebrate Solutions has prepared this report on the basis of information provided by SynergyRED and Eco Logical Australia Pty Ltd and others (including Government authorities), which Invertebrate Solutions has not independently verified or checked beyond the agreed scope of work. Invertebrate Solutions does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

Site conditions may change after the date of this report. Invertebrate Solutions does not accept responsibility arising from, or in connection with, any change to the site conditions. Invertebrate Solutions is also not responsible for updating this report if the site conditions change.

1.6.1 Potential Survey Specific Limitations and Assumptions

Invertebrate Solutions has made the following assumptions in the writing of this report and its subsequent conclusions:

- No sustained impacts to the regional water table, from the Project activities as detailed in Section 1.0, are anticipated.

2. Methods

2.1. Desktop Methods

The subterranean fauna desktop review comprises:

- An assessment of the likelihood that subterranean species are present in the habitats located within the broader Desktop study area and the Project area within the Desktop Study area.

The likelihood of stygofauna and troglafauna species occurring in the study area was assessed using a combination of regional information, geological, hydrogeological and database searches including:

- Analysis of published and unpublished reports concerning subterranean fauna from the region.
- Available geological maps.
- Geological, geotechnical, and hydrogeological information available for the Study area.
- Results of a Protected Matters Search from the Australian Government's Department of Climate Change, Energy, Environment, and Water (DCCEEW) website.
- Records of fauna held by the Western Australian Museum.

Based on the analysis of all available information, the study area was assigned a level of likelihood to support subterranean fauna of either 'Low', 'Moderate', 'High', or 'Definite'.

3. Desktop Subterranean Fauna Review

3.1 Regional Information

The southwest of Western Australia contains karstic limestone in a thin coastal strip from north of Jurien Bay to Cape Leeuwin in the south. The primary habitat for subterranean fauna in this coastal limestone is within the Tamala Limestone that forms caves throughout the extent of the Tamala Limestone and is known to contain a moderately diverse assemblage of troglifauna (Moulds 2007) and stygofauna (Bennelongia 2016, Eberhard 2004, Invertebrate Solutions 2023) albeit in low abundance. Very limited stygofauna records are known from fractured rock aquifers in non-karstic lithologies to the east of the Tamala Limestone, predominately within the Darling Scarp east of Perth (Schmidt 2007). The southernmost extent of the Tamala Limestone occurs on the Leeuwin-Naturaliste Ridge (LNR) that is present on the western edge of the Desktop Study area for the Project.

3.1.1 Subterranean fauna of the Tamala Limestone in the northern Swan Coastal Plain

Stygofauna has been sampled within the superficial Gnangara Mound in the Perth region as part of regional stygofauna sampling (Bennelongia 2008). This sampling has shown that stygofauna do occur within the unconfined surficial aquifer, but with low species richness. A moderately extensive regional sampling program recorded 11 species from within the Gnangara Mound between Guilderton in the north, east to the Darling fault and south to the Swan River (Bennelongia 2008). Further repeated stygofauna sampling of 12 shallow bores in the central Perth suburb of Kensington recorded 21 species with 13 of these considered to be stygofaunal species comprising six copepods, three syncarids, three oligochaetes and one annelid species (Bennelongia 2016). All the species were recorded in very low abundances. These results are similar to those found by hoc basis sampling by WAM staff with only 11 species recorded. Sampling of the deeper confined Leederville and Yarragadee aquifers has also been undertaken by the WAM with no occurrence of stygofauna recorded to date.

Schmidt (2007) found relatively few species in groundwater associated with Marbling Brook on the eastern edge of the Darling Scarp in the Chittering catchment, 60 km north-east of Perth. The total yield from seven groundwater bores sampled 12 times was about 21 species, with most being copepods and only two of the 21 species were considered to be stygobionts. Other animals are either known, or likely to be, widespread.

The southern Swan Coastal Plain was sampled by GHD (2010) as part of a drainage and water management plan for the Murray River catchment for the then Western Australian Department of Water (now Department of Water and Environment Regulation (DWER)). The regional survey for stygofauna within the superficial aquifer in the Shire of Murray sampled 20 bores from five different wetland areas and recorded stygofauna from two bores during a single phase sampling survey. A single new species of cyclopoid copepod (*Mixocyclops* sp. nov.) and two species of parabathynellid? were recorded. The copepod specimens from near Pinjarra are closely related to species recorded from Yanchep National Park in the north of the Swan Coastal Plain (GHD 2010).

3.1.2 Subterranean fauna of the Leeuwin Naturaliste Ridge

The LNR was sampled for subterranean fauna by Eberhard (2004) as part of a research program into the Jewel Cave system and its hydrology. This study, focused on within cave sampling, where caves intersect the regional water table investigated the diversity of stygofauna associated with the threatened aquatic root mat communities (1 – 4) (DBCA 2023, DCCEEW 2024). The richness of aquatic cave fauna in the Leeuwin Naturaliste Ridge can be considered rich in total species diversity, however, most of the species recorded are considered to be stygoxenes or stygophiles and are present more widely in epigeal aquatic habitats in Western Australia (Eberhard 2004). Only four species represent stygobionts (one amphipod, two copepods and one ostracod) with the remaining taxa being stygophilic or stygoxenes (Eberhard 2004). The aquatic root mat communities show relatively low abundance of individual taxa in most cases, but there are common species from the Leeuwin Naturaliste ridge and the Yanchep root mat communities north of Perth (Jasinska and Knott 2000), although some of the exact taxonomy remains unresolved (Eberhard 2004).

3.1.3 Conservation Significant Fauna and Habitats

A list of conservation significant fauna subterranean invertebrate fauna for LNR was compiled from the DBCA Wildlife Conservation (Specially Protected Fauna – *Biodiversity Conservation Act 2016*) Notice 2023 (DBCA 2023) and the DCCEEW’s Protected Matters Search Tool (PMST) within 50 km of the Project area. No subterranean species that are listed under the BC Act and/or the EPBC Act and are likely to occur or have known habitat within the region (Leeuwin – Naturaliste Ridge).

The PMST results listed four (4) Threatened Ecological Communities (TEC) associated with subterranean fauna within 50 km of the Project (Table 1). All four of these TECs are located in caves that occur between 15.75 – 26.25 km to the west and northwest of the Project area, within the Tamala Limestone of the LNR on the western edge of the Desktop Study area. The occurrence of these TECs is well known throughout the LNR from the continued exploration of caves by various speleological groups over the previous 60 years and their locations and extent are well known at a regional scale.

The Project area is located to the east of the LNR, on the eastern side of the Blackwood River, thus completely hydrologically separated from the karstic Tamala Limestone of the LNR.

Table 1 Conservation significant subterranean communities potentially within the region.

Community Name	Description	Conservation listing (BC Act)	Conservation listing (EPBC)	Distance from Project
Aquatic Root Mat Community 1	Root mat communities based upon the rootlets and their associated microflora providing the primary food source for aquatic cavernicoles (cave animals) in these communities include crustaceans, mites, rotifers, microscopic worms, tardigrades, and insects and crustaceans. Some of the species appear to be endemic to these cave systems, and some to be confined to a single cave.	Critically Endangered	Endangered	15.75 km Jewel and Easter Cave
Aquatic Root Mat Community 2		Critically Endangered	Endangered	18.75 km Strongs Cave
Aquatic Root Mat Community 3		Critically Endangered	Endangered	22.4 km Kudjal Yolgah and Budjur Mar Caves
Aquatic Root Mat Community 4		Critically Endangered	Endangered	26.25 km Calgardup Cave

3.2 Subterranean Fauna Habitat of the Project Area

The Project area is located to the east of the LNR, on the eastern side of the Blackwood River, thus completely hydrologically separated from the karstic Tamala Limestone of the LNR. The ground surface contains little suitable habitat for troglifauna due to being largely covered in sandy loam (Figure 2) that provides little interconnected void space based on geotechnical cores (Plate 3, Stantec 2024). There are areas throughout the Development envelope that contain ferricrete at or immediately below the surface (Stantec 2024). Ferricrete, will contain some voids, although they are rarely interconnected and due to the adjacent dune sand, the voids will be filled by sand thus no habitat for subterranean fauna is present within ferricrete horizons.

The upper unsaturated strata consist of sandy clay and loam providing no interconnected pore spaces for troglifauna. Below the watertable, the strata consist of interbedded clay and sand with no interconnected pore spaces to provide habitat for stygofauna.

Based on the above no habitat is present for either troglifauna or stygofauna within the Project area.

Table 2 Geological units in the Proposed Scott River Windfarm Project and Subterranean fauna habitat potential.

Unit	Description / Remarks	Subterranean Fauna Suitability
Sand dunes	Dune sand altered to podzolic quartz sand, surface ferricrete.	Low for stygofauna and troglifauna.
Laterite and quartz sand	Laterite and associated quartz sand undifferentiated	Low for stygofauna if saturated Low for troglifauna.
Archean basement Gneiss	Granite gneiss and granulite basement rock	Nil for stygofauna and troglifauna unless highly fractured.

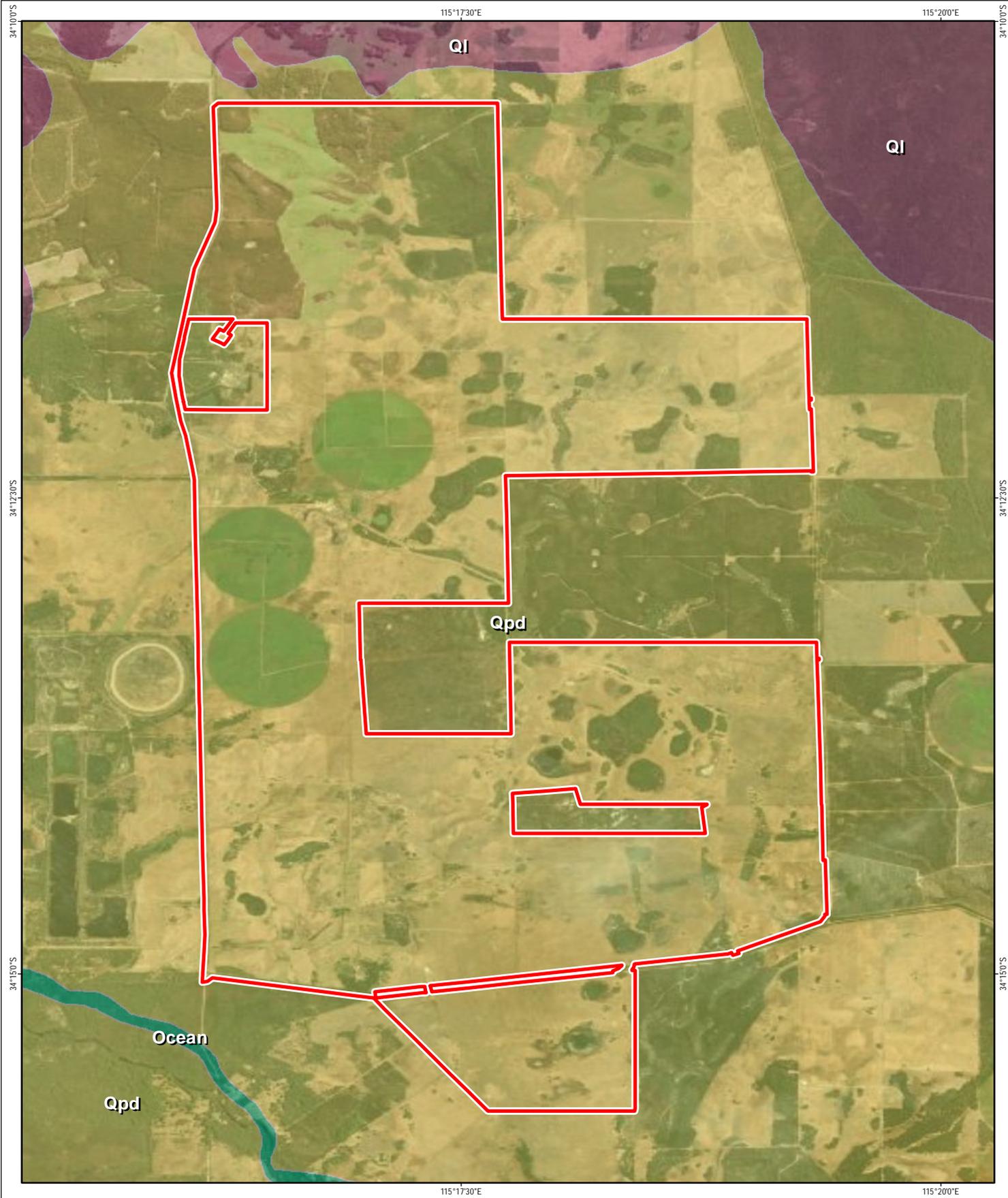


**WM01: 0 - 5m,
0.0 - 3.0m**



**WM01: 5 - 10m,
5.0 - 10.0 m**

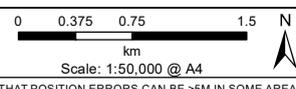
Plate 3 Core photos of the upper 10m of strata showing the sandy clay composition with no habitat for subterranean fauna present (Image after Stantec 2024).



Legend
 Proposed Development Envelope

Geology

-  Ql: Laterite and associated quartz sand (undifferentiated).
-  Qpd: Sand dunes - now altered to podzolic quartz sand with underlying ferruginous laterite.
-  Ocean



NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



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Figure 2
Geology

3.3 Likelihood of stygofauna presence

A search was undertaken of the Western Australian Museum databases for Crustaceans (WAM 2024a) and Arachnids/Myriapods (WAM 2024b) centred on the Project. These results, filtered for stygofauna species, are summarised in Table 3.

The only subterranean fauna recorded within the desktop study area are from the Tamala limestone LNR to the west of the Project area and all of the known stygofauna are associated with the four cave root mat TECs (Table 1), which is both geologically and hydrologically separated from the Project area.

Based on the stygofauna records within the desktop study area and the absence of potential habitat in the Project area no stygofauna is anticipated to occur within the Project area.

Table 3 Stygofauna recorded from the Desktop Study Area.

Higher Classification	Family	Genus and Species	Notes
Annelida			
Oligochaeta	Tubificidae	<i>Ainudrilus (WA14) sp. n.?</i>	Stygophile
		<i>Aktedrilus WA13</i>	Stygophile
		<i>Pristina longiseta</i>	Stygophile
	Phreodrilidae	<i>Phreodrilidae WA26</i>	Stygophile
Crustacea:			
Bathynellacea	Parabathynellidae	<i>Parabathynellidae indet.</i>	Stygobiont
Amphipoda	Perthiidae	<i>Perthia cf. acutitelson</i>	Stygophile
	Paramelitidae	<i>Uroctena n. sp.</i>	Stygobiont
Copepoda	Cyclopoidaa	<i>Diacyclops humphreysi</i>	Widespread stygobiont
		<i>Macrocyclops albidus</i>	Stygophile
		<i>Mesocyclops brooksi</i>	Widespread stygophile
		<i>Kinnecaris eberhardi</i>	Stygobiont
Ostracoda		<i>Acondona admiratio</i>	Stygobiont
		<i>Candonocypris cf. novaezelandiae</i>	Stygophile
		<i>Penthesilenula brasiliensis</i>	Stygophile
Arachnida			
Acarina	Oribatida	sp. 6	Stygophile
	Halacaridae	<i>Soldanellonyx monardi</i>	Stygophile

3.4 Likelihood of troglafauna presence

A search was undertaken of the Western Australian Museum databases for Crustaceans (WAM 2024a) and Arachnids/Myriapods (WAM 2024b) centred on the Project. The results of these filtered for subterranean troglafauna species and shown in Table 4. All troglafauna records from the Desktop Study area are associated with caves on the LNR and no troglobionts are known from the Project area or its immediate surrounds.

Based on the troglafauna records within the desktop study area and the absence of potential habitat within the Project area, no troglafauna is anticipated to occur within the Project area.

Table 4 Troglifauna in WAM databases recorded from within the Study Area.

Higher Classification	Family	Genus and Species	Notes
Arachnida			
Araneomorphae	Stiphidiidae	<i>Baiami tegenaroides</i>	Troglophile – Throughout the LNR
Opilionida	Neopilionidae	<i>Megalopsalis minima</i>	Troglophile – Throughout the LNR
Pseudoscorpionida	Cheliferidae	<i>Protochelifer cavernerum</i>	Troglophile – southern Australian distribution
	Pseudotyranochthonidae	<i>Pseudotyranochthonius giganteus</i>	Troglophile – Throughout the LNR

4. Discussion and Conclusions

The Project area contains no suitable habitat for subterranean fauna, with the upper unsaturated strata being sandy clay and loam providing no interconnected pore spaces for troglifauna. Below the watertable, the strata consist of interbedded clay and sand with no interconnected pore spaces to provide habitat for stygofauna.

No subterranean fauna is known from the Project area, and all subterranean fauna identified during the desktop searches were associated with the caves of the LNR. The Project area is located to the east of the Leeuwin Naturaliste Ridge, on the eastern side of the Blackwood River, thus completely hydrologically separated from the karstic Tamala Limestone of the LNR.

No further survey work for stygofauna or troglifauna is necessary in order to meet the Technical Guidance – Subterranean Fauna Surveys for Environmental Impact Assessment (EPA2021).

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Appendix 1

Department of Parks and Wildlife Conservation Codes

CONSERVATION CATEGORY DEFINITIONS

For Western Australian Fauna and Flora

Threatened, Extinct and Specially Protected fauna or flora¹ are species² which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such.

Categories of Threatened, Extinct and Specially Protected fauna and flora are:

T Threatened species

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 *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is the species of fauna that are listed as critically endangered, endangered or vulnerable threatened species.

Threatened flora is the species of flora that are listed as critically endangered, endangered or vulnerable threatened species.

The assessment of the conservation status of threatened species is in accordance with the BC Act listing criteria and the requirements of [Ministerial Guideline Number 1](#) and [Ministerial Guideline Number 2](#) that adopts the use of the International Union for Conservation of Nature (IUCN) [Red List of Threatened Species Categories and Criteria](#)³, and is based on the national distribution of the species.

CR **Critically endangered species**

Threatened species considered to be “*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*”.

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.

Examples of use:

- The western ringtail possum (*Pseudocheirus occidentalis*) is listed as a critically endangered threatened species under the *Biodiversity Conservation Act 2016*.
- Western ringtail possum is listed as critically endangered under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: CR.

EN **Endangered species**

Threatened species considered to be “*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*”.

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.

Examples of use:

- *Caladenia hopperiana* is listed as an endangered threatened species under the *Biodiversity Conservation Act 2016*.
- *Caladenia hopperiana* is listed as endangered under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: EN.

VU Vulnerable species

Threatened species considered to be “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”.

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.

Examples of use:

- The forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) is listed as a vulnerable threatened species under the *Biodiversity Conservation Act 2016*.
- Forest red-tailed black cockatoo is listed as vulnerable under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: VU.

Extinct species

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.

EX Extinct species

Species where “there is no reasonable doubt that the last member of the species has died”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Examples of use:

- *Acacia kingiana* is listed as an extinct species under the *Biodiversity Conservation Act 2016*.
- *Acacia kingiana* is listed as extinct under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: EX.

EW Extinct in the wild species

Species that “is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no fauna or flora species listed as extinct in the wild.

SP Specially protected species

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.

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.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Migratory species include birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA)⁴, China (CAMBA)⁵ or The Republic of Korea (ROKAMBA)⁶, and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention)⁷, 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 or treaties, excluding species that are listed as Threatened species.

Examples of use:

- The wedge-tailed shearwater (*Ardenna pacifica*) is listed as a specially protected migratory species under the *Biodiversity Conservation Act 2016*.
- Wedge-tailed shearwater is listed as migratory under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: MI.

CD Species of special conservation interest (conservation dependent)

Species of special conservation need that are 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).

Currently only fauna are listed as species of special conservation interest.

Examples of use:

- The wambenger, south-western brush-tailed phascogale (*Phascogale tapoatafa wambenger*) is listed as a specially protected species of special conservation interest under the *Biodiversity Conservation Act 2016*.
- Wambenger, south-western brush-tailed phascogale, is listed as conservation dependent under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: CD.

OS Species otherwise in need of special protection (other specially protected)

Species 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).

Currently only fauna are listed as species otherwise in need of special protection.

Examples of use:

- The dugong (*Dugong dugon*) is listed as a specially protected species otherwise in need of special protection under the *Biodiversity Conservation Act 2016*.
- Dugon is listed as other specially protected fauna under the *Biodiversity Conservation Act 2016*.
- Listing reference in a table: column heading: BC Act, row text: OS.

P Priority species

Priority is not a listing category under the BC Act. The Priority Flora and Fauna lists are maintained by the department and are published on the department's website.

All fauna and flora are protected in WA following the provisions in Part 10 of the BC Act. The protection applies even when a species is not listed as threatened or specially protected, and regardless of land tenure (State managed land (Crown land), private land, or Commonwealth land).

Species that may possibly be threatened species that do not meet the criteria for listing under the BC Act because of insufficient survey 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 prioritisation for survey and evaluation of conservation status so that consideration can be given to potential listing as threatened.

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

Assessment of priority status 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.

1 Priority 1: Poorly-known species - known from few locations, none on conservation lands

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, for example, 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 for threatened listing and appear to be under immediate threat from known threatening processes. These species are in urgent need of further survey.

Examples of use:

- *Borya stenophylla* is listed as a Priority 1 species by the Department of Biodiversity, Conservation and Attractions.
- *Borya stenophylla* is listed as Priority 1 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P1.

2 Priority 2: Poorly-known species - known from few locations, some on conservation lands

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, for example, 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 for threatened listing and appear to be under threat from known threatening processes. These species are in urgent need of further survey.

Examples of use:

- *Caladenia nivalis* is listed as a Priority 2 species by the Department of Biodiversity, Conservation and Attractions.
- *Caladenia nivalis* is listed as Priority 2 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P2.

3 Priority 3: Poorly-known species - known from several locations

Species that are known from several locations and the species does not appear to be under imminent threat or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat.

Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. These species need further survey.

Examples of use:

- *Acacia nitidula* is listed as a Priority 3 species by the Department of Biodiversity, Conservation and Attractions.
- *Acacia nitidula* is listed as Priority 3 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P3.

4 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 a conservation dependent specially protected species.

(c) Species that have been removed from the list of threatened species or lists of conservation dependent or other specially protected species, during the past five years for reasons other than taxonomy.

(d) Other species in need of monitoring.

Examples of use:

- *Banksia aculeata* is listed as a Priority 4 species by the Department of Biodiversity, Conservation and Attractions.
- *Banksia aculeata* is listed as Priority 4 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P4.

¹ The definition of flora includes algae, fungi, and lichens.

² Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

³ Western Australia has assigned species to threat categories using the *IUCN Red List of Threatened Species Categories and Criteria* since 1996 (referencing all criteria).

⁴ JAMBA - first included in the WA migratory species list in 1980.

⁵ CAMBA - first included in the WA migratory species list in 2010.

⁶ ROKAMBA - first included in the WA migratory species list in 2010.

⁷ Bonn Convention (Birds) - first included in the WA migratory species list in 2015.

Appendix 2

Protected Matters Search Results



Australian Government

Department of Climate Change, Energy,
the Environment and Water

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. Please see the caveat for interpretation of information provided here.

Report created: 11-Jun-2024

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar)	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	11
Listed Threatened Species:	104
Listed Migratory Species:	56

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 <https://www.dcceew.gov.au/parks-heritage/heritage>

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

Commonwealth Lands:	14
Commonwealth Heritage Places:	1
Listed Marine Species:	81
Whales and Other Cetaceans:	32
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	4
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	63
Regional Forest Agreements:	1
Nationally Important Wetlands:	3
EPBC Act Referrals:	46
Key Ecological Features (Marine):	3
Biologically Important Areas:	16
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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

Ramsar Site Name	Proximity	Buffer Status
Vasse-wonnerup system	Within 10km of Ramsar site	In buffer area only

Commonwealth Marine Area [[Resource Information](#)]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name	Buffer Status
Commonwealth Marine Areas (EPBC Act)	In buffer area only
Commonwealth Marine Areas (EPBC Act)	In buffer area only

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

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

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

Community Name	Threatened Category	Presence Text	Buffer Status
Aquatic Root Mat Community 1 in Caves of the Leeuwin Naturaliste Ridge	Endangered	Community known to occur within area	In buffer area only
Aquatic Root Mat Community 2 in Caves of the Leeuwin Naturaliste Ridge	Endangered	Community known to occur within area	In buffer area only
Aquatic Root Mat Community 3 in Caves of the Leeuwin Naturaliste Ridge	Endangered	Community known to occur within area	In buffer area only
Aquatic Root Mat Community 4 in Caves of the Leeuwin Naturaliste Ridge	Endangered	Community known to occur within area	In buffer area only
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In buffer area only
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area	In buffer area only
Empodisma peatlands of southwestern Australia	Endangered	Community likely to occur within area	In feature area

Community Name	Threatened Category	Presence Text	Buffer Status
Scott River Ironstone Association	Endangered	Community likely to occur within area	In feature area
Shrublands on southern Swan Coastal Plain ironstones	Endangered	Community likely to occur within area	In buffer area only
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only
Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	In buffer area only

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

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area	In buffer area only
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
Zanda baudinii listed as Calyptorhynchus baudinii Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area	In feature area
Zanda latirostris listed as Calyptorhynchus latirostris Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat known to occur within area	In feature area
CRUSTACEAN			
Cherax tenuimanus Hairy Marron, Margaret River Hairy Marron, Margaret River Marron [78931]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Engaewa pseudoreducta Margaret River Burrowing Crayfish [82674]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Engaewa reducta Dunsborough Burrowing Crayfish [82675]	Critically Endangered	Species or species habitat known to occur within area	In feature area
FISH			
Galaxiella nigrostriata Blackstriped Dwarf Galaxias, Black-stripe Minnow [88677]	Endangered	Species or species habitat known to occur within area	In feature area
Nannatherina balstoni Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat known to occur within area	In feature area
Nannoperca pygmaea Little Pygmy Perch [88315]	Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat known to occur within area	In buffer area only
FROG			
Anstisia alba listed as Geocrinia alba White-bellied Frog, Creek Frog [92544]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Anstisia vitellina listed as Geocrinia vitellina Orange-bellied Frog [92547]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
MAMMAL			
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat known to occur within area	In buffer area only
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Myrmecobius fasciatus Numbat [294]	Endangered	Species or species habitat known to occur within area	In feature area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area	In feature area
OTHER			
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area	In feature area
PLANT			
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat known to occur within area	In feature area
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat known to occur within area	In feature area
Banksia squarrosa subsp. argillacea Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat known to occur within area	In feature area
Boronia exilis Scott River Boronia [64844]	Endangered	Species or species habitat known to occur within area	In feature area
Brachyscias verecundus Ironstone Brachyscias [81321]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
Caladenia busselliana Bussell's Spider-orchid [24369]	Endangered	Species or species habitat known to occur within area	In buffer area only
Caladenia excelsa Giant Spider-orchid [56717]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Caladenia harringtoniae Harrington's Spider-orchid, Pink Spider-orchid [56786]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caladenia hoffmanii Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat likely to occur within area	In feature area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat may occur within area	In buffer area only
Caladenia lodgeana Lodge's Spider-orchid [68664]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Caladenia procera Carbunup King Spider Orchid [68679]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Caladenia viridescens Dunsborough Spider-orchid [56776]	Endangered	Species or species habitat may occur within area	In buffer area only
Calectasia cyanea Blue Tinsel Lily [7669]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Chamelaucium sp. S coastal plain (R.D.Royce 4872) Royce's Waxflower [87814]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Darwinia ferricola Scott River Darwinia [56706]	Endangered	Species or species habitat known to occur within area	In feature area
Darwinia whicherensis Abba Bell [83193]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Daviesia elongata subsp. elongata Long-leaved Daviesia [64883]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Drakaea elastica Glossy-leaved Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat known to occur within area	In buffer area only
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eucalyptus x phylacis Meelup Mallee [87817]	Endangered	Species or species habitat may occur within area	In buffer area only
Gastrolobium modestum Broad-leaved Gastrolobium [78361]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Gastrolobium papilio Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area	In feature area
Grevillea brachystylis subsp. australis [55525]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grevillea brachystylis subsp. grandis Large-flowered Short-styled Grevillea [85001]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Grevillea elongata Ironstone Grevillea [64578]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Grevillea maccutcheonii McCutcheon's Grevillea [64522]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Kennedia lateritia Augusta Kennedia [45985]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat likely to occur within area	In feature area
Lambertia orbifolia Roundleaf Honeysuckle [15725]	Endangered	Species or species habitat known to occur within area	In feature area
Leptomeria dielsiana Diels' Currant Bush [5146]	Vulnerable	Species or species habitat known to occur within area	In feature area
Morelotia australiensis listed as Tetraria australiensis Southern Tetraria [92784]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Petrophile latericola Laterite Petrophile [64532]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Reedia spathacea Reedia [2995]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Synaphea sp. Fairbridge Farm (D.Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Verticordia densiflora var. pedunculata Long-stalked Featherflower [55689]	Endangered	Species or species habitat known to occur within area	In buffer area only
Verticordia plumosa var. ananeotes Tufted Plumed Featherflower [23871]	Endangered	Species or species habitat known to occur within area	In buffer area only
Verticordia plumosa var. vassensis Vasse Featherflower [55804]	Endangered	Species or species habitat known to occur within area	In feature area
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

SHARK

Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Centrophorus uyato Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only

Listed Migratory Species

[[Resource Information](#)]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area	In buffer area only
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Hydroprogne caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Marine Species			
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In buffer area only
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area	In buffer area only
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area	In buffer area only
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In buffer area only
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris alba Sanderling [875]		Species or species habitat known to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area	In feature area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat likely to occur within area	In buffer area only
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

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

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.

Commonwealth Land Name	State	Buffer Status
Unknown		
Commonwealth Land - [52112]	WA	In buffer area only
Commonwealth Land - [52117]	WA	In buffer area only
Commonwealth Land - [51991]	WA	In buffer area only
Commonwealth Land - [51103]	WA	In buffer area only
Commonwealth Land - [52113]	WA	In buffer area only
Commonwealth Land - [51992]	WA	In buffer area only
Commonwealth Land - [51482]	WA	In buffer area only
Commonwealth Land - [50382]	WA	In buffer area only
Commonwealth Land - [51990]	WA	In buffer area only
Commonwealth Land - [51121]	WA	In buffer area only
Commonwealth Land - [50386]	WA	In buffer area only
Commonwealth Land - [51995]	WA	In buffer area only
Commonwealth Land - [50383]	WA	In buffer area only
Commonwealth Land - [51483]	WA	In buffer area only

Commonwealth Heritage Places [\[Resource Information \]](#)

Name	State	Status	Buffer Status
Historic			
Cape Leeuwin Lighthouse	WA	Listed place	In buffer area only

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardena carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area	In buffer area only
Ardena grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area	In buffer area only
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area	In buffer area only
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In buffer area only
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area	In buffer area only
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat likely to occur within area	In buffer area only
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area	In buffer area only
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Fish			
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area	In buffer area only
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In buffer area only
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In buffer area only
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In buffer area only
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area	In buffer area only
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In buffer area only
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area	In buffer area only
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area	In buffer area only
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In buffer area only
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In buffer area only
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In buffer area only
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In buffer area only
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In buffer area only
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In buffer area only
Vanacampus poecilolaemus Longsnout Pipefish, Australian Longsnout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In buffer area only

Mammal

Scientific Name	Threatened Category	Presence Text	Buffer Status
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area	In buffer area only
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area	In buffer area only

Reptile

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

Whales and Other Cetaceans

[[Resource Information](#)]

Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area	In buffer area only
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Berardius arnuxii Arnoux's Beaked Whale [70]		Species or species habitat may occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area	In buffer area only
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area	In buffer area only
Globicephala melas Long-finned Pilot Whale [59282]		Species or species habitat may occur within area	In buffer area only
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area	In buffer area only
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area	In buffer area only
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area	In buffer area only
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area	In buffer area only
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area	In buffer area only
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area	In buffer area only
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In buffer area only
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area	In buffer area only
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area	In buffer area only
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area	In buffer area only

Australian Marine Parks		[Resource Information]	
Park Name	Zone & IUCN Categories	Buffer Status	
South-west Corner	National Park Zone (IUCN II)	In buffer area only	
South-west Corner	National Park Zone (IUCN II)	In buffer area only	
South-west Corner	Special Purpose Zone (Mining Exclusion) (IUCN VI)	In buffer area only	
South-west Corner	Special Purpose Zone (Mining Exclusion) (IUCN VI)	In buffer area only	

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Blackwood River	National Park	WA	In buffer area only
Bramley	National Park	WA	In buffer area only
Chester	Nature Reserve	WA	In buffer area only
D'Entrecasteaux	National Park	WA	In buffer area only

Protected Area Name	Reserve Type	State	Buffer Status
Easter	National Park	WA	In buffer area only
Fish Road	Nature Reserve	WA	In buffer area only
Flinders Bay	Nature Reserve	WA	In buffer area only
Forest Grove	National Park	WA	In buffer area only
Gingilup Swamps	Nature Reserve	WA	In buffer area only
Greater Beedelup	National Park	WA	In buffer area only
Haag	Nature Reserve	WA	In buffer area only
Hamelin Island	Nature Reserve	WA	In buffer area only
Hilliger	National Park	WA	In buffer area only
Leeuwin-Naturaliste	National Park	WA	In buffer area only
Milyeannup	National Park	WA	In buffer area only
Ngari Capes	Marine Park	WA	In buffer area only
NTWA Bushland covenant (0003)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0013)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0036)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0037)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0044A)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0044B)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0044C)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0065A)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0065B)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0069)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0116A)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0116B)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0130)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0144)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0147)	Conservation Covenant	WA	In buffer area only

Protected Area Name	Reserve Type	State	Buffer Status
NTWA Bushland covenant (0148)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0149)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0152)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0155)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0164)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0168)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0170)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0185)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0186)	Conservation Covenant	WA	In buffer area only
Pagett	Nature Reserve	WA	In feature area
Rapids	Conservation Park	WA	In buffer area only
Scott	National Park	WA	In feature area
Seal Island (WA25645)	Nature Reserve	WA	In buffer area only
St Alouarn Island	Nature Reserve	WA	In buffer area only
Stockdill Road	Nature Reserve	WA	In buffer area only
Sussex Location 2561	NRS Addition - Gazettal in Progress	WA	In buffer area only
Unnamed WA08910	5(1)(h) Reserve	WA	In buffer area only
Unnamed WA12952	5(1)(h) Reserve	WA	In buffer area only
Unnamed WA14567	Nature Reserve	WA	In buffer area only
Unnamed WA15185	Nature Reserve	WA	In buffer area only
Unnamed WA26065	Nature Reserve	WA	In buffer area only
Unnamed WA42377	Nature Reserve	WA	In feature area
Unnamed WA42942	Nature Reserve	WA	In buffer area only
Unnamed WA44676	5(1)(h) Reserve	WA	In buffer area only
Unnamed WA44705	5(1)(g) Reserve	WA	In buffer area only
Unnamed WA45533	Nature Reserve	WA	In buffer area only

Protected Area Name	Reserve Type	State	Buffer Status
Unnamed WA46400	National Park	WA	In buffer area only
Unnamed WA53843	National Park	WA	In buffer area only
Walburra	Nature Reserve	WA	In buffer area only
Whicher	National Park	WA	In buffer area only
Wiltshire-Butler	National Park	WA	In buffer area only
Yelverton	National Park	WA	In buffer area only

Regional Forest Agreements [\[Resource Information \]](#)

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
South West WA RFA	Western Australia	In feature area

Nationally Important Wetlands [\[Resource Information \]](#)

Wetland Name	State	Buffer Status
Blackwood River (Lower Reaches) and Tributaries System	WA	In buffer area only
Cape Leeuwin System	WA	In buffer area only
Gingilup-Jasper Wetland System	WA	In buffer area only

EPBC Act Referrals [\[Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Gnarabup Tourism Development: Resort and Beach Village	2022/09224		Assessment	In buffer area only
Gravel Extraction Project	2022/09278		Assessment	In buffer area only
Mara Team Testing Release 37 Dan	2024/09832		Referral Decision	In buffer area only
Mara Team Testing Release 37 Dan 2	2024/09836		Referral Decision	In buffer area only
Mara Team Testing Release 37 Dan 3	2024/09838		Referral Decision	In buffer area only

Controlled action

Development Guide Plan for 46 ha Residential Subdivision	2008/4102	Controlled Action	Post-Approval	In buffer area only
Flat Rock boating facility	2008/4506	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Lot 32 Tom Cullity Drive, Wilyabrup	2020/8866	Controlled Action	Post-Approval	In buffer area only
Milyeannup Wind Farm	2009/4911	Controlled Action	Post-Approval	In buffer area only
Shark Hazard Mitigation Drum Line Program, WA	2014/7174	Controlled Action	Completed	In buffer area only
Tutunup South Mineral Sands Project	2007/3441	Controlled Action	Post-Approval	In buffer area only
Urban development, multiple lots Northerly Street, Vasse, WA	2019/8494	Controlled Action	Assessment Approach	In buffer area only
Vasse Diversion Drain Upgrade	2017/7932	Controlled Action	Post-Approval	In buffer area only
Vlam Road Gravel Pit, Vlam Road, Karridale, WA	2014/7141	Controlled Action	Post-Approval	In buffer area only
Wonnerup South Mineral Sands Project, Yalyalup, WA	2014/7135	Controlled Action	Post-Approval	In buffer area only
Yalyalup Mineral Sands Project, WA	2017/8094	Controlled Action	Post-Approval	In buffer area only
Yarragadee Water Supply Development	2005/2073	Controlled Action	Completed	In buffer area only
Yoongarillup Mineral Sands Project, WA	2012/6521	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Bussell Highway (Bramley Section) SLK Upgrade	2012/6511	Not Controlled Action	Completed	In buffer area only
Busselton-Margaret River Regional Airport Development Project, WA	2016/7675	Not Controlled Action	Completed	In buffer area only
Busselton to Flinders Bay Rails to Trails Project, WA	2013/6835	Not Controlled Action	Completed	In buffer area only
Busselton to Margaret River Transmission Line	2008/3964	Not Controlled Action	Completed	In buffer area only
Construction of the Margaret River bypass road	2012/6677	Not Controlled Action	Completed	In buffer area only
CTBT - Cape Leeuwin Hydroacoustic Station Proposal	2000/27	Not Controlled Action	Completed	In buffer area only
Geo-science Investigations	2005/2069	Not Controlled Action	Completed	In feature area
Gloucester Park Precinct-expansion of ovals and	2017/7985	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
community facilities, Margaret River, WA				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Installation of stock proof fencing and a stock crossing 8 km from Karridale WA	2012/6427	Not Controlled Action	Completed	In buffer area only
Jalbarragup Telecommunications Tower, WA	2017/8026	Not Controlled Action	Completed	In buffer area only
Nuttman Road, Busselton Gravel Extraction, WA	2017/8086	Not Controlled Action	Completed	In buffer area only
Proposed Expansion of Existing Gracetown Townsite & Upgrade of Existing Associa	2010/5358	Not Controlled Action	Completed	In buffer area only
Reinstating of Firebreaks at McLeod Creek, South West WA	2012/6402	Not Controlled Action	Completed	In buffer area only
Residential & Light Industrial Development, Vasse WA	2013/6932	Not Controlled Action	Completed	In buffer area only
Residential Development Riverslea Estate Stage 8, Margaret River, WA	2014/7227	Not Controlled Action	Completed	In buffer area only
Residential-Rural Subdivision, Lot 1 Kudardup Rd, Kudardup, WA	2012/6471	Not Controlled Action	Completed	In buffer area only
Vegetation clearing for sand extraction, Lot 268 Leeuwin Road, Augusta	2013/6860	Not Controlled Action	Completed	In buffer area only
West's gravel pit development, Cowaramup, WA	2015/7586	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
Ambergate North Residential Development	2009/4802	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Clearing of understorey vegetation for fire management purposes	2010/5788	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
Locations 2629, 2699 & 2991 - Jamisons Road	2002/771	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Waterloo to Busselton 132kV Transmission Line	2002/816	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Ambergate North Residential Community (4896 lots)	2008/4617	Referral Decision	Completed	In buffer area only
Construction of 14.5km 132kV transmission line	2009/4995	Referral Decision	Completed	In buffer area only
Controlled Burn	2001/440	Referral Decision	Completed	In buffer area only

Key Ecological Features

[\[Resource Information \]](#)

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region	Buffer Status
Ancient coastline at 90-120m depth	South-west	In buffer area only
Cape Mentelle upwelling	South-west	In buffer area only
Western rock lobster	South-west	In buffer area only

Biologically Important Areas

[\[Resource Information \]](#)

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardena carneipes Flesh-footed Shearwater [82404]	Foraging (in high numbers)	Known to occur	In buffer area only
Eudyptula minor Little Penguin [1085]	Foraging (provisioning young)	Known to occur	In buffer area only
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In buffer area only
Larus pacificus Pacific Gull [811]	Foraging (in high numbers)	Known to occur	In buffer area only

Scientific Name	Behaviour	Presence	Buffer Status
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In buffer area only
Onychoprion fuscata Sooty Tern [82847]	Foraging	Known to occur	In buffer area only
Pelagodroma marina White-faced Storm petrel [1016]	Foraging (in high numbers)	Known to occur	In buffer area only
Pterodroma macroptera macroptera Great-winged Petrel (macroptera race) [1035]	Foraging (provisioning young)	Known to occur	In buffer area only
Pterodroma mollis Soft-plumaged Petrel [1036]	Foraging (in high numbers)	Known to occur	In buffer area only
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In buffer area only
Sternula nereis Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In buffer area only
Thalassarche chlororhynchos bassi Indian Yellow-nosed Albatross [85249]	Foraging (in high numbers)	Known to occur	In buffer area only
Sharks			
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur	In buffer area only
Whales			
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur	In buffer area only
Megaptera novaeangliae Humpback Whale [38]	Migration (north)	Known to occur	In buffer area only
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur	In buffer area only

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

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

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

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

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

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

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

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-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](#)
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- [-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.

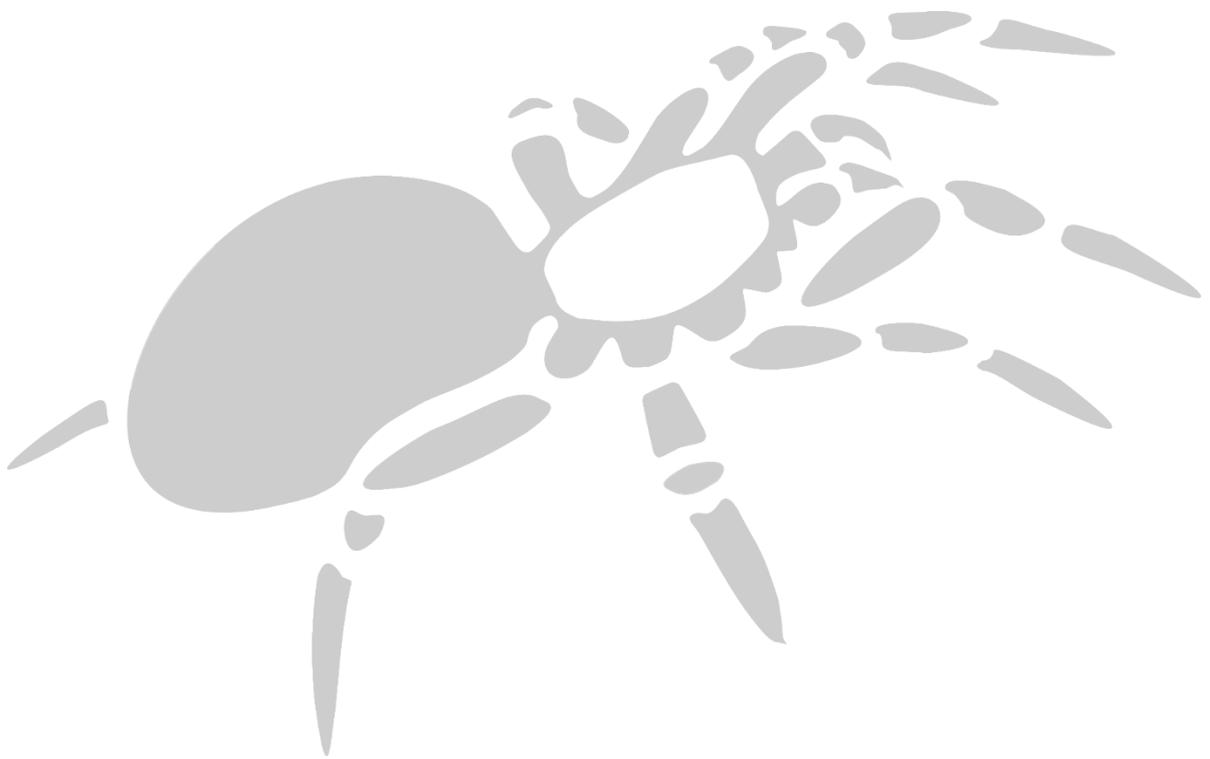
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