Biodiversity Surveys (Flora, Fauna and Vegetation)

Wadandi Track Alignment, Gardiner Road to Sunset Drive, Cowaramup

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CONTENTS

EXECUTIVE SUMMARY **6**
1 INTRODUCTION **8**
1.1 PROJECT OVERVIEW 8
1.2 SCOPE OF WORK 8
2 METHODS **10**
2.1 DESKTOP STUDY 10
2.2 SURVEY PERSONNEL 10
2.3 FIELD SURVEY 11
2.3.1 Survey Approach 11
2.3.2 Flora and Vegetation 11
2.3.3 Fauna 11
2.4 LIMITATIONS 12
3 DESKTOP STUDY **14**
3.1 OVERVIEW 14
3.1.1 Previous Surveys 14
3.2 REGIONAL ENVIRONMENTAL SETTING 14
3.2.1 Climate 14
3.2.2 Soils and Vegetation 15
3.3 LOCALLY SIGNIFICANT FLORA RECORDS 16
3.4 LOCALLY SIGNIFICANT VEGETATION RECORDS 17
3.5 LOCAL FAUNA RECORDS 17
3.6 BLACK COCKATOOS 17
3.6.1 Profiles 17
3.6.2 Breeding Requirements and Records 18
3.6.3 Roosting Behaviour and Records 18
3.7 WESTERN RINGTAIL POSSUM 19
3.7.1 Profile 19
3.7.2 Local Context and Records 20
4 FIELD RESULTS AND DISCUSSION **21**
4.1 FLORA 21
4.1.1 Conservation Significant Flora 21
4.1.2 Weeds 24

4.2 VEGETATION 24
4.2.1 Vegetation Units 24
4.2.2 Vegetation Condition 28
4.2.3 Conservation Significant Vegetation 30
4.3 FAUNA 30
4.3.1 Fauna Habitat 30
4.3.2 Suitable DBH Trees 31
4.3.3 Fauna Recorded 31
4.3.4 Conservation Significant Fauna Recorded 32
4.3.5 Likelihood of Occurrence - Conservation Significant Fauna 32
4.4 BLACK COCKATOOS 34
4.4.1 Field Survey Results 34
4.4.2 Foraging Scoring Tool Assessment Results 34
4.5 WESTERN RINGTAIL POSSUM 35
5 CONCLUSIONS AND RECOMMENDATIONS 35
6 REFERENCES 38
APPENDIX A FIGURES 42
APPENDIX B CONSERVATION CODES 43
APPENDIX C METHODOLOGY TABLES 44
APPENDIX D LOCAL FLORA AND FAUNA LISTS 46
APPENDIX E LOCAL SIGNIFICANT VEGETATION RECORDS 64
APPENDIX F LIKELIHOOD OF OCCURRENCE FOR CONSERVATION SIGNIFICANT FLORA 67
APPENDIX G LIKELIHOOD OF OCCURRENCE FOR CONSERVATION SIGNIFICANT FAUNA 77
APPENDIX H BLACK COCKATOO SURVEY METHODS 78
APPENDIX I BLACK COCKATOO FORAGING ASSESSMENT RESULTS 87
APPENDIX J PROTECTED MATTERS SEARCH TOOL RESULTS 90
APPENDIX K VASCULAR FLORA TAXA RECORDED DURING SURVEY 91
APPENDIX L TREE SURVEY RESULTS 95

Figures

Figure 1 Survey Area location and Desktop Study Area 42
Figure 2 Survey Area 42
Figure 3 Conservation Significant Flora 42
Figure 4 Vegetation Units across the Survey Area 42
Figure 5 Vegetation Condition across the Survey Area 42
Figure 6 Suitable DBH trees and WRP dreys along the proposed track 42
Figure 7 Nocturnal survey effort and results 42

Tables

Table 2-1 Survey Personnel and Licensing Information 10

Table 2-2 Survey dates and type 11

Table 2-3 Assessment of survey limitations 12

Table 3-1 - Previous surveys within the Wadandi Track alignment 14

Table 3-2 Vegetation complex statistics (DBCA, 2019) 16

Table 3-3 DBCA roosts within 10 km of the Survey Area 19

Table 4-1 Vegetation unit descriptions 26

Table 4-2 Vegetation units, condition and areas of the rail reserve 28

Table 4-3 Vegetation units, condition and areas of the proposed track (nominal 4 m width) including canopy 29

Table 4-4 Vertebrate terrestrial fauna taxa recorded during the surveys 31

Table 4-5 Conservation significant fauna that may occur within the Survey Area, based on habitat suitability. 33

Table 4-6 Black cockatoo Foraging Scoring Tool Assessment Results 34

Table C-1 Desktop sources interrogated for the Desktop Assessment 44

Table C-2 Vegetation condition scale (Keighery, 1994) 44

Table C-3 Fauna habitat quality categories and descriptions (SW Environmental, n.d.). 45

Table I-1 Black cockatoo foraging species across habitat types within the rail reserve and track (4 m nominal width) 87

Table I-2 Areas of native vegetation remaining within a 10 km foraging distance from the Survey Area (DPIRD, 2023, 2025a) 88

Table I-3 Black cockatoo Foraging Scoring Tool Assessment Results 88

Abbreviations and Acronyms

Organisations	
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DWER	WA Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
The City	City of Busselton
The Shire	Shire of Augusta Margaret River
Common Terms	
Conservation significant	Threatened or Priority flora, fauna or communities or considered significant for other reasons, such as association with restricted habitat types, potential undescribed taxa, or species representing a significant range extension.
CR	Critically Endangered
DBH	Diameter at Breast Height (cm)
DSA	Desktop Survey Area - Survey Area plus a 10 km buffer
EN	Endangered
GIS	Geographic Information Systems
FRTBC	Forest Red-tailed Black Cockatoo
IBRA	Interim Biogeographic Regionalisation for Australia
LSNA	Locally Significant Natural Area
MNES	Matters of National Environmental Significance
PEC	Priority Ecological Community
PMST	Protected Matters Search Tool
Project	The proposed action
Significant flora	As defined in Section 11 of EPA Technical Guidance (EPA, 2016)
Significant vegetation	As defined in Section 11 of EPA Technical Guidance (EPA, 2016)
SPRAT	Species Profile and Threats
Suitable DBH tree	Generally native eucalypt trees over 50 cm Diameter at Breast Height (DBH).
Survey Area	Wadandi Track - Gardiner Road to Sunset Drive, Cowaramup (4.68 km) - Targeted survey area included approximately 4 m either side of the track centre (total 8 m width), General survey area included the broader rail reserve.
SW	Southwest
Target species	Threatened or Priority flora or fauna taxa specifically targeted in the Survey
TEC	Threatened Ecological Community
VU	Vulnerable
WA	Western Australia
WRP	Western Ringtail Possum (*Pseudocheirus occidentalis*)
WTBC	White Tailed Black Cockatoo (Baudin's cockatoo or Carnaby's cockatoo)
Legislation	
BC Act	*Biodiversity Conservation Act 2016* (WA)
BC Regs	*Biodiversity Conservation Regulations 2018* (WA)
EP Act	*Environmental Protection Act 1986* (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
Measurements	

ha	Hectare
km	Kilometre
m	Metre

Data Capture and Information Management Systems Approach

Data collection	
Field data collection	Handheld high sensitivity Garmin Global Positioning Systems (GPS) with ~3 m accuracy
Photos	Mobile phones were used for site photos taken by SW Environmental personnel
Reporting and Artificial Intelligence (AI)	
Chat GPT Plus	SW Environmental retains full responsibility for the content and findings presented in the report. AI was used for quality control, summarising text and grammar improvements. No confidential, personal, or sensitive project information was intentionally disclosed during the use of AI.
Grammarly	Used for quality control, text review and to edit written language structure.

Executive Summary

The Shire of Augusta Margaret River proposes to construct a section of the Wadandi Track between Gardiner Road and Sunset Drive, Cowaramup. The project involves the development of a track predominantly along a former rail corridor. The track will require some clearing of native vegetation within a well-defined linear disturbance footprint.

SW Environmental undertook a Reconnaissance and Targeted Flora and Vegetation Survey, and a Basic and Targeted Fauna Assessment, comprising desktop review and field investigations in accordance with Environmental Protection Authority (EPA) guidance. The 4.68 km long Survey Area encompasses the proposed track alignment and adjacent vegetation. The alignment follows a former rail corridor characterised by a low gradient, with an original formation width of ~ 4 m and localised cut-and-fill batters of up to ~ 2 m wide. Vegetation along the rail formation was historically cleared and now comprises a mosaic of conditions, including cleared areas, weed-dominated vegetation, non-local plantings and patches of native regrowth, particularly within wetter sections. In contrast, more intact native vegetation occurs adjacent to the rail formation and along its margins and is generally not expected to be impacted by the proposed works.

The desktop study identified 54 conservation significant flora taxa recorded within the 10 km desktop survey area. Six conservation significant vegetation communities were identified within this area, including four Threatened Ecological Communities. The Cowaramup Valleys vegetation complex mapped within the Survey Area is below the national biodiversity conservation objective, with only 20.32% of its pre-European extent remaining. Both the Cowaramup Valleys and Cowaramup Uplands vegetation complexes, which together comprise the vegetation within the Survey Area, meet the criteria for Locally Significant Natural Areas.

The Survey Area occurs within the Southern Jarrah Forest (JAF02) IBRA subregion and comprises a mosaic of upland forest, creekline vegetation and disturbed areas. Four vegetation units were mapped:

- Jarrah-Marri open forest over mixed shrubland and groundcover;
- Karri creekline forest associated with lower slopes and seasonal creeklines;
- seasonally wet woodland/shrubland associated with the southern drainage line; and
- disturbed shrubland associated with the former rail alignment.
- An additional cleared habitat type was also noted.

Vegetation condition ranged from Excellent to Completely Degraded, with higher condition vegetation associated with drainage lines and remnant edges, and more degraded vegetation occurring along the historical rail formation.

Two flora species of conservation significance were recorded during the survey: *Grevillea bronweniae* (Priority 3) and *Netrostylis* sp. Blackwood River (Priority 3). An additional Priority species, *Cyathochaeta teretifolia* (Priority 3), is considered likely to occur within suitable habitat but was not detected during the survey. No Threatened flora species were recorded within the Survey Area.

Weeds were present throughout the Survey Area, with higher densities associated with localised disturbance nodes along the former rail alignment, including areas of historical infrastructure, gravel extraction and dumping.

Vegetation associated with drainage lines exhibited characteristics consistent with Whicher Scarp G2-type vegetation (Priority 1 Priority Ecological Community). While not formally classified, these areas are

considered to represent higher ecological value and are associated with seasonal hydrology, habitat provision and landscape connectivity.

The desktop study identified 230 vertebrate fauna species that may occur within the DSA, including 38 conservation significant species. Eight additional conservation significant invertebrates and two fish were returned in the desktop search results. Twenty-two taxa of fauna were recorded. Numerous additional fauna species are likely to utilise the Survey Area as part of a broader habitat network.

Habitat quality was assessed as moderate to high within intact vegetation and drainage lines, and generally low within disturbed areas.

Evidence of foraging by black cockatoos (Baudin's and FRTBC) was observed; however, no breeding habitat (i.e. hollow-bearing trees) was identified within areas proposed to be impacted. No hollow bearing trees were recorded along the proposed track. Twenty-five trees within the proposed track were recorded with a suitable DBH for developing black cockatoo breeding hollows (>50 cm). Three suitable DBH trees were recorded as being likely to require clearing with the remaining 22 trees located along the edge or on the batter.

Two WRP were recorded within the Survey Area. Two dreys were recorded within or very close to the alignment, scats confirmed the presence of WRP, and there are abundant records around Cowaramup generally.

Other conservation significant fauna (Quenda - observed, South-western Brush-tailed Phascogale, Rakali, Masked Owl, Peregrine Falcon and Chuditch) may be transient or associate the track with movement through the landscape rather than long-term occupation.

Overall, the proposed works involve a linear disturbance footprint within a broader vegetated landscape and are unlikely to result in significant impacts to flora, vegetation or fauna values, subject to implementation of appropriate avoidance and management measures.

Recommendations:

- Clearing should be minimised and confined to the defined disturbance footprint, with avoidance of remnant native vegetation where practicable.
- Priority flora species should be retained wherever possible.
- Drainage lines and creekline vegetation, including areas consistent with Whicher Scarp G2-type vegetation, should be avoided, with bridge structures utilised to span these features and maintain natural hydrological processes.
- An authorised fauna spotter should be present during clearing to manage risks to fauna, particularly WRP and other arboreal species. A risk based approach could be adopted.
- Where practicable, clearing should be scheduled outside peak fauna breeding periods.
- Weed hygiene and management measures should be implemented during construction to prevent the spread of high-impact environmental weeds along the alignment.
- Disturbed areas should be rehabilitated where practicable, including infill planting of locally native species, particularly adjacent to higher value vegetation.
- Clearing of native vegetation will require a permit under Part V Division 2 of the EP Act, unless exemptions apply (noting that exemptions do not apply within ESAs).
- Potential impacts to MNES should be reviewed against the Significant Impact Guidelines under the EPBC Act. Based on current information, referral of the project is considered unlikely to be required.

1 Introduction

1.1 Project Overview

The Shire of Augusta Margaret River ('the Shire) is proposing to construct a section of the Wadandi Track, between 500 m to the north of Gardiner Road and Sunset Drive, Cowaramup (approximately 4.68 km in length). Figure 1 (Appendix A) presents the Survey Area location and Desktop Study Area (DSA) (10 km). Figure 2 (Appendix A) presents the approximate Survey Area (proposed alignment).

The proposed track is located predominantly along a former railway line formation, within the associated rail reserve under the care and management of the Shire. The existing rail formation is approximately 4 m wide and has cut or fill batters in some areas of approximately 2 m wide. It will largely utilise existing cleared sections of the rail formation, with some sections requiring clearing of regrowth vegetation or pruning of encroaching vegetation to establish a safe and accessible track. Very minor localised deviations may cross remnant vegetation. Conversely the track has already been constructed in some areas as walking track, firebreaks or existing roads / hardstands.

The proposed track may require clearing assessment and approvals under relevant State and Commonwealth environmental legislation, including the *Environmental Protection Act 1986* (EP Act), *Biodiversity Conservation Act 2016* (BC Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

SW Environmental was engaged to undertake a flora, fauna and vegetation survey of the proposed track alignment to identify environmental values and constraints, and to inform track design to avoid and minimise impacts to native vegetation, conservation significant flora and fauna, and associated habitats.

1.2 Scope of Work

SW Environmental was commissioned to carry out Reconnaissance and Targeted Flora and Vegetation and Basic Fauna and Targeted Black Cockatoo[1] and Western Ringtail Possum (WRP) (*Pseudocheirus occidentalis*) (Critically Endangered) Biodiversity Surveys. The assessment included both desktop review and field survey components and was undertaken in accordance with the EPA Technical Guidance (EPA, 2016, 2020). The scope of work included:

- A desktop assessment of existing environmental information relevant to the Survey Area, including Threatened and Priority flora, fauna and ecological communities (conservation significant[2] species and communities), wetlands and waterways, and other biodiversity constraints.

[1] collectively refers to

- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii subsp. naso*) (Vulnerable)
- Baudin's Cockatoo (*Zanda baudinii*) (Endangered)
- Carnaby's Cockatoo (*Zanda latirostris*) (Endangered)

[2] Conservation significant refers to Threatened or Priority flora, fauna or communities or those considered significant for other reasons, such as association with restricted habitat types, potential undescribed taxa, or species representing a significant range extension.

- A reconnaissance flora and vegetation survey to map vegetation types and condition along the alignment.
- A targeted flora survey, undertaken in spring, to identify the presence of target flora species with potential to occur within the Survey Area.
- A likelihood of occurrence assessment for conservation significant flora.
- A fauna survey and habitat assessment, including identification of habitat for target fauna species.
- Targeted surveys for black cockatoos, including identification of foraging habitat, potential breeding habitat (suitable DBH[3] trees), and roost sites.
- Targeted surveys for WRP, including identification of suitable habitat and evidence of species presence.
- Dusk / nocturnal surveys to identify potential use of the Survey Area by nocturnal fauna, including WRP and roosting black cockatoos.
- Identification and assessment of suitable DBH trees, including trees containing hollows suitable for black cockatoos and other hollow-dependent fauna within the Survey Area.
- A likelihood of occurrence assessment for conservation significant fauna.
- Identification of wetlands, drainage lines and other sensitive habitat along or adjacent to the alignment.
- Recommendations for management measures to avoid and minimise impacts to native vegetation, flora and fauna, and associated habitats.

The flora and vegetation survey included a reconnaissance survey of the alignment and adjacent vegetation, with targeted surveys for conservation significant flora undertaken during the spring survey period along the proposed track and batters and vegetation unit mapping and condition assessment within the broader rail reserve.

The fauna survey component included a basic terrestrial fauna habitat assessment, species list, likelihood of occurrence assessment for conservation significant species, along with targeted black cockatoo and WRP surveys. The targeted black cockatoo component also recorded suitable DBH trees within the proposed track and batters. Opportunistic observations of fauna and signs within the surrounding habitat were recorded.

[3]generally native eucalypt trees over 50 cm Diameter at Breast Height (DBH); Trees between 30 – 49 cm DBH were also recorded. Whilst not considered being of suitable size to develop black cockatoo hollows (>50 cm), they may develop black cockatoo breeding hollows in the future and were provided for context.

2 Methods

2.1 Desktop Study

A desktop study was undertaken prior to the field survey, including a review of publicly available information and datasets relevant to the project (outlined in Table A-1, Appendix C). This provided background information to inform the survey design and subsequent reporting. Aerial imagery of the Survey Area was also reviewed to undertake a preliminary assessment of vegetation extent and required survey effort.

The Desktop Study Area (DSA) comprises the Survey Area with a 10 km buffer. The DSA was utilised to compile relevant desktop assessment information to inform the survey and contextualise the results within the wider region. The location of the Survey Area and DSA is presented in Figure 1 (Appendix A).

2.2 Survey Personnel

Personnel involved in the survey and reporting are listed in Table 2-1. Where required, plant material was collected under a Flora Taking (Biological Assessment) Licence and an Authorisation to Take or Disturb Threatened Flora issued under the BC Act and associated Regulations.

The survey conformed to Section 4 of the *Australian code of practice for the care and use of animals for scientific purposes* (National Health and Medical Research Council, 2004). No animals were captured or collected during the survey. Surveys were carried out under Scientific Use License *Animal Welfare Act 2002*: Licence No: U285 / 2025 - 2027 and Wildlife Animal Ethics Committee (WAEC) Permit: WAEC 22-08-88. No nesting black cockatoos were disturbed during this survey.

Table 2-1 Survey Personnel and Licensing Information

Personnel	Experience	DBCA Flora Licences (BC Act)	Role
Kelly Paterson *Senior Botanist* *B. Sc. Hons. (Natural Resource Management)*	>10 years	FB62000182-2b TFL-2425-0086	Field Lead - Flora Plant Identifications Reporting
Shane Priddle *Ecologist* *B. Sc. (Marine Science)* *CEnvP*	>25 years	N/A	Field Lead - Fauna Reporting
Georgia Johnsen *Ecologist/Botanist* *B. Sc. (Marine Science & Conservation Biology)*	>3 years	FB62000470-1b TFL 2324-0179	Field Survey Reporting
Madeline Barrett *Project Officer - Ecology* *BSc (Health Science), MSc (Sustainability and Environmental Management)*	<1 year	N/A	Field Survey Reporting

2.3 Field Survey

2.3.1 Survey Approach

Field surveys were primarily undertaken in spring 2025, to maximise detectability of flora and fauna (Table 2-2). The survey comprised a reconnaissance flora and vegetation assessment, targeted flora survey, and fauna surveys and targeted surveys for black cockatoos and WRP.

Table 2-2 Survey dates and type

Survey Type	Dates
Flora	16 October 2025
Fauna - Diurnal (basic and targeted black cockatoo and WRP)	20, 21 November 2025
Fauna - Nocturnal (black cockatoo roosts and WRP)	16 July 2025

2.3.2 Flora and Vegetation

The Survey Area was traversed on foot to characterise vegetation types, structure and condition. The primary survey area included the 4 m alignment with a 2 m buffer on either side, with additional opportunistic observations of adjacent vegetation to inform vegetation unit mapping and condition assessment.

Vegetation units were delineated based on aerial imagery, field observations and mapping notes, with mapping undertaken using GIS. Quadrat-based sampling and numerical analysis were not undertaken, as these are not required for reconnaissance-level surveys (EPA 2016). Vegetation condition was assessed using the Keighery (1994) scale, as adopted by the EPA (2016) (Table A-1, Appendix C).

Targeted surveys for conservation significant flora were undertaken during the spring survey period (Table 2-2 above), focusing on suitable habitat identified during the desktop assessment and field reconnaissance. Where conservation significant flora was identified, their location and abundance were recorded using a handheld GPS (± 3 m accuracy), and voucher specimens were collected where appropriate.

2.3.3 Fauna

General Fauna

Fauna surveys comprised diurnal habitat assessment and opportunistic sightings in November 2025 and nocturnal surveys on 16 July 2025. Surveys validated desktop findings and characterised fauna habitat types based on vegetation structure and condition. Evidence of fauna, including sightings, scat, tracks, diggings and feeding signs, was recorded. The fauna Survey Area was centred along the proposed track alignment with a width of 8 m (4 m plus 2 m either side) and included observations of fauna taxa in the broader rail reserve.

Black Cockatoo Survey Methodology

Targeted black cockatoo habitat surveys were carried out during the diurnal surveys within the 8 m survey corridor. Foraging habitat and evidence, potential breeding habitat (trees of suitable size and species recorded as Suitable DBH trees were assessed for hollows) and roosts were recorded. Detailed

black cockatoo survey methodology is provided in Appendix H. Suitable DBH trees were categorised as 'clearing' or 'shoulder', depending on whether they were likely to be cleared of not (i.e. within the 4 m wide formation or 2 m shoulder).

Western Ringtail Possum Survey Methodology

The entire alignment occurs with the known distribution of WRP; higher population densities coincide with the best habitat, being remnant vegetation with midstorey and canopy connection offsite, and much lower densities occur in degraded areas or paddock trees. Following consultation with Parks and Wildlife Service, DBCA South West Region, to support impact assessment the WRP survey scope was refined:

- Diurnal surveys to identify presence or absence from scat and drey searches along the track,
- Nocturnal surveys to target the highest quality vegetation and exclude degraded and completely degraded areas,
- A single pass (rather than repeat surveys) of the target areas.

Targeted surveys for WRP were undertaken in Spring (diurnal) and Winter (nocturnal) and 2025. They included habitat assessment and targeted searches for evidence of WRP, including scats and dreys, focussed on the 8 m wide Survey Area. Adjacent habitat features were noted where observed.

Nocturnal spotlight surveys included approximately 4 km of transects in July 2025 by two experienced observers using 1000 lumen Ledlenser headtorches. They were conducted by foot or slow moving vehicle (walking pace) where the alignment followed or was located adjacent to a road. The abundance and distribution of WRP within the Survey Area and adjacent reserve was recorded up to approximately 40 m each side, depending on spotlight throw. Individuals observed outside the Survey Area were also recorded where possible.

Other nocturnal mammals were also recorded including Common Brushtail Possum (*Trichosurus vulpecula*) and South-western Brush-tailed Phascogale (*Phascogale tapoatafa* subsp. *wambenger*) (CD).

2.4 Limitations

The following survey limitations are shown below.

Table 2-3 Assessment of survey limitations

Aspect	Constraint	Comment
Availability of contextual information	No limitation	The Survey Area is located within a well surveyed region, with sufficient contextual information available. Relevant database searches were obtained, including DBCA Threatened and Priority Fauna, Flora and Ecological Communities databases, NatureMap and the PMST database extracts.
Competency / experience	No limitation	Surveys were undertaken by suitably qualified and experienced personnel, including a Senior Botanist (>10 years' experience) and a Principal Ecologist (>25 years' experience and Certified Environmental Practitioner No.310).
Adequacy of the survey intensity and proportion of survey achieved	No limitation	The survey effort applied was adequate to identify biodiversity values. A precautionary approach was adopted.
Survey timing / season	No limitation	The survey scope is adequate to inform environmental assessment. The surveys were completed in suitable weather conditions, with the rainfall in the 12 months preceding the survey consistent with long-term averages,

Aspect	Constraint	Comment
		with slightly higher rainfall recorded during the winter period. Nocturnal fauna surveys were undertaken in winter which may have reduced the species count.
Survey effort and coverage	No limitation	The Survey Area was traversed on foot, with survey effort distributed along the alignment to provide representative coverage of vegetation types and fauna habitat.
Detectability	Minor limitation	While surveys were undertaken during an appropriate season, some flora (e.g. orchids) and fauna may exhibit seasonal or inter-annual variability in detectability and may not have been recorded.
Access	Minor limitation	Some densely vegetated areas and drainage lines were difficult to traverse; however, the majority of the Survey Area was accessible, and these areas are unlikely to have significantly influenced survey outcomes.
Disturbance	Minor limitation	Localised disturbances were present within the Survey Area, including areas of historical disturbance (e.g. tracks and clearing). However, these disturbances were localised and are not considered to have significantly affected the overall assessment of vegetation values or fauna habitat within the Survey Area.
Resources	No limitation	Adequate time, personnel and equipment were available to complete the survey to the required standard.
Identification of hollows	Minor limitation	Known limitations inherent in the survey of hollows are addressed in detail in Appendix G. Hollow characteristics may change over time. There is a low risk that black cockatoos may breed in a hollow where evidence of use is not visible or hollow characteristics are atypical. Not all active cockatoo hollows show signs of heavy chewing, and active or past breeding hollows may be missed. The lead surveyor has extensive experience in the identification and assessment of hollows and is considered competent in relation to this skill. The results are provided based on experience and professional judgement though certainty of use cannot be guaranteed without hollow watching during the breeding season.

3 Desktop Study

3.1 Overview

A desktop study was undertaken for the Survey Area plus a 10 km buffer (Desktop Study Area; DSA) to identify conservation significant flora, fauna and ecological communities with potential to occur. A list of common fauna species was also compiled. The assessment used publicly available datasets, including DBCA Threatened and Priority Flora and Fauna databases, Threatened and Priority Ecological Communities, NatureMap and the DCCEEW Protected Matters Search Tool (PMST).

3.1.1 Previous Surveys

A number of previous surveys have been completed along the track alignment and were reviewed during the desktop assessment (Table 3-1).

Table 3-1 - Previous surveys within the Wadandi Track alignment

Author	Report Name	Year
Harewood, G.	Fauna assessment Busselton to Flinders Bay Rail Trail.	2013
Ekologica	A flora and vegetation survey for the proposed Busselton-Flinders Bay Rail Trail	2012
Great Southern Biologic	Dieback survey and Management Plan	2012
ngh environmental	Survey of the proposed rail walk trail to identify known and potential *Engaewa* habitat	2012
Roberts, J.D.	Rails to Trails *Geocrinia alba* surveys, October 16-17, 2012	2012
Eco Logic and Ecosystem Solutions	Rails to Trails Desktop Review Analysis and Recommendations	2011
John Monoghan and Associates	Final Report - Rails to Trails Study. Ludlow to Flinders Bay	1996

The desktop assessment informed targeted survey effort and methodology, as well as the likelihood of occurrence of conservation significant taxa.

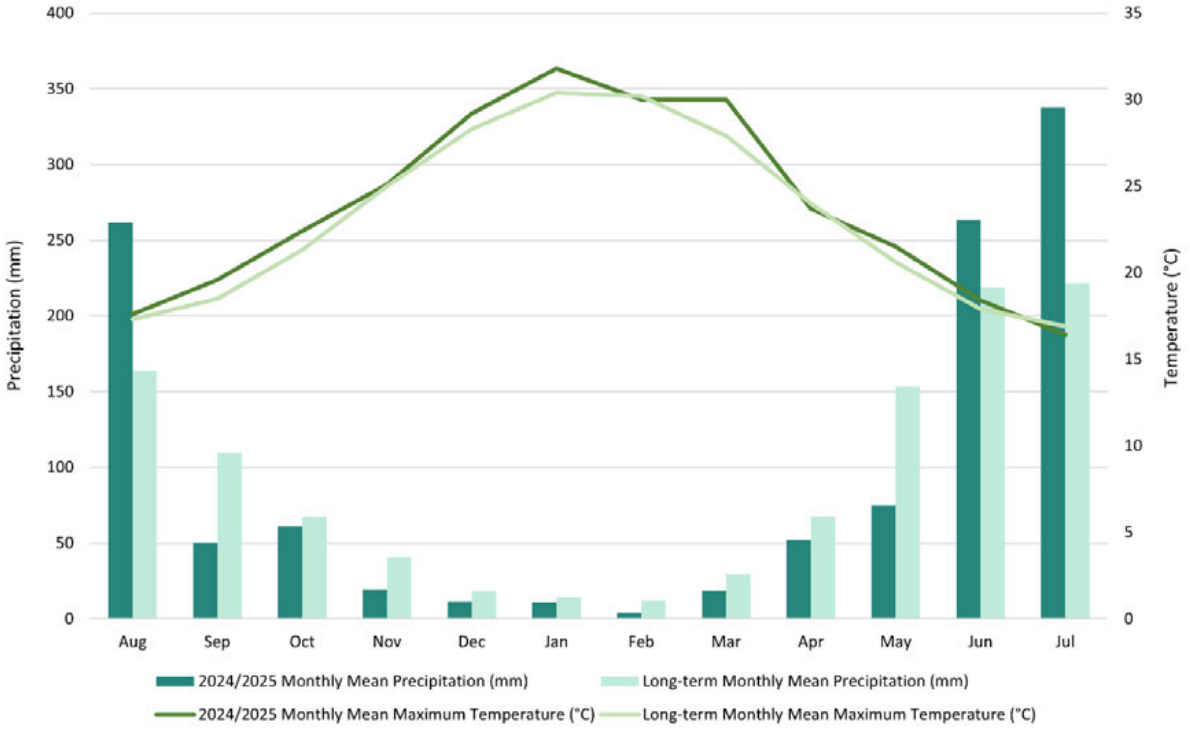
3.2 Regional Environmental Setting

3.2.1 Climate

The Survey Area lies within the Jarrah Forest IBRA bioregion, which experiences a Mediterranean climate characterised by cool, wet winters and warm, dry summers. Climate data for the area was obtained from the Bureau of Meteorology, with rainfall data sourced from the Cowaramup weather station (Station No. 009636) and temperature data from the Busselton Aero weather station (Station No. 009603). Rainfall in the 12 months preceding the survey was generally consistent with long-term averages, with slightly higher rainfall recorded during the winter period (Graph 3-1).

The flora survey was undertaken in spring under favourable seasonal conditions for detection, including adequate soil moisture and active growth. Slightly elevated winter rainfall may have contributed to

increased vegetation growth, including weed cover in disturbed areas; however, this is not considered to have significantly influenced overall survey outcomes.



Graph 3-1 Rainfall and mean maximum temperature data from the Cowaramup (number 009636) and Busselton Aero (number 009603) bureau stations, respectively (BoM, 2025)

3.2.2 Soils and Vegetation

Soil landscape mapping prepared by the Department of Agriculture (now the Department of Primary Industries and Regional Development (DPIRD)) represents a compilation of multiple soil and soil-landscape surveys across the south-west of Western Australia (DPIRD, 2025b). Soils within the Survey Area occur across four mapped units:

- **216CoCO1 Cowaramup flats Phase -** Flats (0-2% gradient) with gravelly duplex (Forest Grove) and pale grey mottled (Mungite) soils;
- **216CoCOi Cowaramup ironstone rises Phase -** Flats and gentle slopes (0-5% gradient) with some laterite outcrop and shallow gravelly sands over laterite;
- **216CoCOw Cowaramup wet flats Phase -** Flats and gentles slopes (0-5% gradient) with gravelly duplex (Forest Grove) and pale grey mottled (Mungite) soils; and
- **216CoCOvw Cowaramup wet vales Phase -** Small, broad U-shaped drainage depressions with swampy floors. Gravelly duplex (Forest Grove) soils on sideslopes and poorly drained alluvial soils on valley floor (DPIRD, 2025b).

Two vegetation complexes of the South West Forest Region intersect the Survey Area (DBCA, 2018):

Cowaramup Uplands (C2): Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Banksia grandi*s on lateritic uplands in perhumid and humid zones.

Cowaramup Valleys (Cw2): Woodland of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on slopes and low woodland of *Melaleuca preissiana-Banksia littoralis* on depressions in perhumid and humid zones.

The vegetation complexes represented within the Survey Area are presented in Table 3-2, outlining both the current and pre-European extent (DBCA, 2019). The EPA's *Position Statement on the Environmental protection of native vegetation in Western Australia* (EPA, 2000), references the national biodiversity conservation objective of avoiding reductions in ecological communities below 30% of their pre-European extent. In this context, Cowaramup Uplands (C2) remains above this threshold, with 32.45% of its pre-European extent remaining, whereas Cowaramup Valleys (Cw2) retains only 20.32% and is therefore below this benchmark. The South West Biodiversity Project provides criteria for identifying and prioritising Locally Significant Natural Areas (LSNAs) (Molloy et al., 2007). Both vegetation complexes meet relevant LSNA criteria, including having less than 15 % of extent remaining within lands protected for conservation (DBCA, 2019).

Table 3-2 Vegetation complex statistics (DBCA, 2019)

Vegetation Complex	Vegetation Complex Class	Pre-European Extent (ha)	Current Extent (ha)	% Remaining
Cowaramup Uplands	C2	13,692.45	4,442.60	32.45
Cowaramup Valleys	Cw2	6,654.67	1,352.26	20.32

3.3 Locally Significant Flora Records

Database searches identified 54 conservation significant flora taxa within the DSA, including 11 Threatened species listed under State and/or Commonwealth legislation.

The returned taxa represent a range of growth forms and habitat preferences, including several terrestrial orchid species, taxa associated with seasonal wetlands, creeklines and riparian habitats, and species typical of upland forest and woodland systems. Seasonally wet environments and drainage features within the Survey Area provide suitable habitat for a number of these taxa.

Several orchid taxa were identified in the database search results. While the survey was undertaken during the spring period, it is acknowledged that detectability of some orchid species may be influenced by seasonal conditions, inter-annual variability in emergence and flowering, and staggered flowering periods.

Based on habitat assessment, many of the conservation significant flora taxa identified in the database search are unlikely to occur within the Survey Area due to a lack of suitable habitat, disturbance history associated with the former rail alignment, or their known geographic distribution. However, species associated with creeklines, wetlands and remnant native vegetation are considered to have some potential to occur.

A full list of returned taxa is provided in Appendix D, with a post-survey likelihood of occurrence assessment presented in Appendix F.

3.4 Locally Significant Vegetation Records

Database searches identified six conservation significant vegetation communities within the DSA, including four Threatened Ecological Communities (TECs) listed under State and/or Commonwealth legislation (DBCA, 2025; DCCEEW, 2025, Appendix D).

One Priority Ecological Community (PEC), Shrublands of near-permanent wetlands in creeklines of the Whicher Scarp (Whicher Scarp community G2), is mapped within approximately 5 km of the Survey Area. Several additional conservation significant vegetation communities are recorded within 2 km of the Survey Area (DBCA, 2025a). The Whicher Scarp G2 PEC is associated with seasonally to near-permanently wet creeklines and drainage systems. Other communities identified in the database search are associated with a range of landforms and vegetation types across the broader region.

A full list of conservation significant vegetation communities identified in the desktop assessment is provided in Appendix E.

3.5 Local Fauna Records

The desktop study identified 230 vertebrate fauna species that may occur within the DSA, including 38 conservation significant species.

- Amphibia 13
- Aves 178
- Mammalia 28
- Reptilia 23

Eight additional conservation significant invertebrates and two fish were returned in the desktop search results. The full list of returned taxa is provided in Appendix D, with a likelihood of occurrence assessment for conservation significant fauna presented in Appendix G.

No Important Bird Areas defined as high conservation priority by BirdLife International occur within the DSA (Birds Australia, 2023).

3.6 Black Cockatoos

3.6.1 Profiles

All three black cockatoo species have been recorded within the DSA (DBCA, 2025b). Detailed species profiles are provided Appendix F.

The DAWE (2022) Referral Guideline identifies four key SW habitat regions; Swan Coastal Plain, Wheatbelt, Jarrah Forest and South Coast. These are utilised differently by each of the three local black cockatoo taxa. The Survey Area occurs within the South Coast habitat region which supports Jarrah-Marri forest, as well as Karri (*E. diversicolor*), and areas of low heath, including Banksia spp., and scrub. This region provides foraging resources for each species, as well as critical breeding habitat for Baudin's and Carnaby's Cockatoo. Black cockatoos rely on this region to provide a range of foraging resources (Appendix G), including those in association with breeding habitat (DAWE, 2022).

There is an estimated 13,517 ha of native vegetation (including regrowth) remaining within 10 km (35 % of total area) of the Survey Area, of which a considerable portion is likely to provide foraging resources to black cockatoos (DBCA, 2025).

3.6.2 Breeding Requirements and Records

Black cockatoos rely on large hollows for breeding. Hollow formation takes many years and requires damage to the tree, from animals (normally termites) or dropped branches, then further rotting. Fire is generally not a hollow-forming process; it may reduce the quality and number of hollows over time (Author pers obs.) and as a major contributor to the loss of older trees. Young and healthy trees quickly heal after damage and trees less than 100 years old are unlikely to contain large hollows. Supporting literature identifies suitable breeding hollows as occurring in:

- Trees over 150 years old (Koch, 2008),
- Marri trees aged ~200 years and Jarrah (~300 years), with an average tree being inhabited at ~400 years for Marri and ~500 years for Jarrah (Inions et al., 1989),
- Marri trees aged between 140 and 410 years of age (Johnstone et al., 2015),
- Jarrah trees aged between 120 and 150 years (Whitford, 2002),
- Marri trees aged at ~450 years, utilised by the medium sized Long-billed Corella (smaller than black cockatoos) (Mawson & Long, 1994), and
- Jarrah trees aged at over 1000 years (as stags) (Wayne, 2005).

For nesting, black cockatoos show a preference for:

- Large senescing trees,
- hollows not angled more than 45 degrees from vertical,
- entrances of at least 12 cm but usually much larger (20-40 cm), and
- deep or well-sheltered hollows in main trunks, or large branches which can provide a floor space of at least 30 cm diameter or more.

All three species of black cockatoo are of similar size and utilise similar hollows when breeding. The actual species of tree is likely unimportant. For example, Carnaby's cockatoo nest in Marri trees in the Marri forest and wandoo in the Wheatbelt. Each species may use the same individual hollows when not occupied by other black cockatoo species (Kirkby pers comm, 2019) or may be used interchangeably with other medium sized birds such as corellas, Galah, ducks and owls.

While breeding, black cockatoos will generally forage within a 6 - 12 km radius of their nesting site. Following breeding, birds assemble into flocks and move through the landscape searching for food, usually within 6 kms of a night roost (SEWPaC, 2012). Black cockatoos rely on access to watering points in selecting night roost sites, with roost sites usually within 2 kms of a watering point where they drink in the afternoon following daytime feeding (DAWE, 2022).

No breeding records were returned within the DSA from desktop database searches (DBCA, 2025b).

3.6.3 Roosting Behaviour and Records

Roosts are normally in large stands of tall trees, with a dense canopy and close to permanent water. Roosting trees need to be a suitable height, have a leafy canopy to shield the birds and help retain body heat. Smaller roost sites up to eight km away from the main roosts may be used when foraging distances from the main roost become too great (e.g. when Jarrah fruit has been exhausted locally) (Author pers obs., Johnstone et al., 2010).

Baudin's and Carnaby's cockatoos often roost about 30 cm or more apart in the outermost thin branches of the canopy, often among a clump of dense leaves, and generally in positions that are wind affected. FRTBC, however, roost side-by-side in family groups and on thick, protected perches under tall tree canopy (Johnstone et al., 2011).

DBCA database records returned 14 black cockatoo roosts within 10 km of the Survey Area, observed over 30 surveys since 2014 (DBCA, 2025b). They included a total 566 WTBC birds with a maximum

count of 150. FRTBC were less prevalent with a total of 134 with a maximum of 96 on one roost. The closest two roost sites have had no birds recorded since prior to 2014 (AUGCOWR001, AUGCOWR003) (DBCA, 2025b). AUGCOWR003 appears to be within a planted belt of vegetation immediately adjacent to the proposed track and is likely to be a historic roost and may no longer be used.

Table 3-3 DBCA roosts within 10 km of the Survey Area

Site code	Distance (m)	White-tailed total	White-tailed max	FRTBC total	FRTBC max	Surveys
AUGCOWR001	824	0	0	0	0	1
AUGCOWR002	6089	0	0	0	0	1
AUGCOWR003	6	0	0	0	0	1
AUGCOWR004	6093	0	0	4	4	2
AUGGRAR002	6752	268	89	0	0	7
AUGGRAR003	5968	7	7	0	0	1
AUGMARR006	4827	21	19	0	0	3
AUGMARR008	8544	16	16	96	96	3
AUGMARR012	7681	24	20	0	0	3
BUSJINR003	9421	0	0	0	0	1
BUSMETR001	2679	0	0	0	0	1
BUSMETR002	2869	175	150	27	27	3
BUSWILR002	7867	55	45	0	0	2
BUSYELR001	8610	0	0	7	7	1

3.7 Western Ringtail Possum

3.7.1 Profile

A detailed species profile is provided in Appendix G. Critical habitat for WRP is defined below from the Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan (DPaW, 2017).

Critical habitat for WRP is not well understood and is therefore based on the habitat variables observed where WRP possums are most recorded. These appear to vary between key management zones. The common themes however are high nutrient foliage availability for food, suitable structures for protection/nesting, and canopy continuity to avoid/escape predation and other threats. Long-term survival of the species requires linkages between suitable habitat patches and as such habitat critical to survival incorporates this. Vegetation communities critical to the species include long unburnt mature remnants of Peppermint (*Agonis flexuosa*) woodlands with high canopy continuity and high foliage nutrients (high in nitrogen and low toxin levels); Jarrah / Marri forests and woodlands with limited anthropogenic disturbance (unlogged or lightly logged, and a low intensity and low frequency fire history), that are intensively fox-baited and have low indices of fragmentation; coastal heath, Jarrah / Marri woodland and forest, Peppermint woodlands, myrtaceous heaths and shrublands, Bullich (*Eucalyptus megacarpa*) dominated riparian zones and Karri forest. Any habitat where WRP occur naturally are considered critical and worthy of protection.

3.7.2 Local Context and Records

Three key management zones are established in the Recovery Plan (DPaW 2017), comprising areas known to currently, or previously support large numbers of WRP. They include the Swan Coastal Plain zone, Southern Forest zone and South Coast zone. The Wadandi Track falls within the Swan Coastal Plain management zone, specifically within the Cape to Cape subpopulation, detailed in Biota (2020) which coincides with the Warren and part of the Southern Jarrah Forest IBRA sub-regions (Thackway & Cresswell, 1995).

A regional survey of WRP (Teale et al., 2025) using density sampling estimated an abundance of approximately 21,800 individuals within the surveyed footprint (approximately 113,000 ha), across the three management zones. Within the surveyed areas, population estimates included approximately 9,364 individuals in the Southern Swan Coastal Plain, 9,205 individuals in the Southern Forests, and 3,240 individuals in the South Coast management zones.

During a previous regional population assessment (Biota, 2020), within the Cape to Cape subpopulation eight sites were surveyed, all on Crown Land. The nearest of these sites to the proposed track are the Yelverton NP 4.7 km north (0.68 WRP / ha) and the North East Margaret River State Forest 6.7 km east (0 detections). Western Ringtail Possum had a general trend of decreasing encounter rates from 3 WRP / ha in the northern sites (Big Rock and Yallingup) to 0 to <0.3 in the southern sites (Boranup and Augusta North). The Yelverton site, in the central Capes region and closest to the track, had a 4-5 fold density decrease than the higher numbers in the north.

Two study sites supporting Karri were also surveyed: the Wooditjup National Park (10 Mile Brook Reservoir near Margaret River) 15 km south of the Survey Area, comprising large mature Karri forest, and West Cape How near Albany also in large mature Karri. Neither survey recorded WRP. Further none of the WRP detections within the Manjimup and Upper Warren regions were made in Karri trees. Detections were largely recorded within either Jarrah or Marri trees, with others within Peppermint (*Agonis flexuosa*), and to a lesser extent in Pine (*Pinus sp*.), Wandoo, *Melaleuca sp., Persoonia, Banksia* sp. and *Allocasuarina* sp.

SW Environmental also undertook a targeted WRP survey for the proposed Record Brook Reservoir (2019) near Manjimup which included approximately 80 km of nocturnal transects often through Karri forest, also resulting in no WRP observations in Karri. Additional recent surveys in Karri and Peppermint near Northcliffe by SW Environmental (2024) at Boorara Brook also resulted in no observations.

Based on the Biota WRP regional assessment results and previous field work by the project team (Biota, 2020), the following considerations are made:

- Western Ringtail Possum had a general trend of decreasing encounter rates from north to south sites within the Cape to Cape region. Mean densities of WRP / ha were as follows from north to south:
    - Big Rock NR (2.76 / ha)
    - Yallingup (Leewin Naturaliste NP) (3.15 / ha)
    - Canal Rocks (2.55 / ha)
    - Yelverton (0.68 / ha)
    - North East Margaret River State Forest (0.00 / ha)
    - Wooditjup National Park (10 Mile Brook Dam) (0.00 / ha)
    - Boranup (south of Margaret River / Hamelin Bay area) (0.23 / ha)
    - Augusta North (0.10 / ha)

- Karri Forest is not an important habitat type for WRP and WRP are unlikely to occur in high numbers through Karri areas.

DBCA (2025b) database contains 370 records of WRP within the DSA, and 98 records within 1 km. Western Ringtail Possum are locally prevalent around the Cowaramup townsite (more people with higher interactions) and in local remnant vegetation patches.

4 Field Results and Discussion

4.1 Flora

A total of 81 vascular flora taxa were recorded within the Survey Area, of which 71 were native and 10 were introduced (Appendix K). Flora was recorded opportunistically during reconnaissance-level survey and does not represent a comprehensive census. The number of taxa recorded is considered typical of a reconnaissance-level survey and reflects the disturbance gradient present along the alignment.

4.1.1 Conservation Significant Flora

No Threatened flora taxa were recorded during the survey. Two Priority flora taxa were recorded within the Survey Area:

- *Grevillea bronweniae* (Priority 3); and
- *Netrostylis* sp. Blackwood River (A.R. Annels 3043) (Priority 3).

These species were recorded in low abundance within suitable habitat along the alignment (Figure 3, Appendix A). Individuals were located within intact vegetation adjacent to the former rail formation.

An additional species, *Cyathochaeta teretifolia* (Priority 3) is likely to occur within the creeklines of the Survey Area but was sterile at the time of the surveys and could not be confirmed. Database searches indicate one additional Priority flora species has previously been recorded within the Survey Area - *Synaphea decumbens* (Priority 3).

While targeted surveys were undertaken during an appropriate survey period, some flora species, particularly those with variable emergence or flowering (e.g. geophytes), may not be detectable in a single survey season. However, based on the level of survey effort and habitat assessment, it is unlikely that additional conservation significant flora occur within the Survey Area. Locations of significant flora are presented in Figure 3 (Appendix A).

***Grevillea bronweniae* - Priority Three**

Grevillea bronweniae (Priority 3) was recorded to the south of Brockman Road. This represents a known population of this species, with more than 50 plants previously recorded as scattered within the rail alignment and adjacent Shire reserve in 2016 (DBCA, 2025c). This is the only known population to occur on the Margaret River Plateau, increasing its conservation significance (City of Busselton, 2025). The individuals recorded during the current survey occur adjacent to an existing, well-constructed section of track and are unlikely to be impacted by the proposed upgrades.

Grevillea bronweniae can be distinguished from other species within the *G. brachystylis* complex by its purple pollen presenter, green adaxial leaf surface and shorter, caducous bracteoles (approximately

2mm compared to 4mm). It is further characterised by a relatively shorter pedicel (3.5 - 4.5 mm) and longer perianth (11 - 14 mm) (Keighery, 1990; Kestel et al., 2026).



Photo 1 *Grevillea bronweniae* (Priority 3) within the Survey Area

Netrostylis sp. Blackwood River (A.R. Annels 3043) - Priority Three

Netrostylis sp. Blackwood River (A.R. Annels 3043) was recorded within a seasonal creekline to the south of Webster Road. This is typical habitat for the taxon, which is associated with creeklines and drainage systems, typically growing in loamy soils and often in association with *Eucalyptus patens* and *Lepidosperma tetraquetrum*. The species generally flowers during autumn, with inflorescences becoming dry and brittle by spring, which can reduce detectability during surveys. It also typically occurs within dense understorey vegetation and is relatively fine in stature compared to many co-occurring sedge species. As a result, the taxon may be under-represented in herbarium collections (WA Herbarium, 1998-).

Netrostylis sp. Blackwood River can be distinguished from other *Netrostylis* taxa in the area by its relatively tall growth form (up to 1.6 m) and branched, pendulous inflorescence bearing 14 - 72 spikelets. The inflorescence is open and sparse, with long pedicels and a pseudo-lateral arrangement of spikelets. In contrast, the commonly occurring *Netrostylis* sp. Jarrah Forest is typically stiffly erect, generally well under 1 m in height, and occurs in drier, sandier habitats. Identification characteristics are based on available taxonomic descriptions and draft identification keys (Barrett et al., 2012; R. L. Barrett, pers. comm. 2021), supported by field observations made during the current survey and previous surveys undertaken by the authors.



Photo 2 Netrostylis sp. Blackwood River (A.R. Annels 3043) (Priority 3) from within a nearby area

Cyathochaeta teretifolia - Priority Three

Several seasonal creeklines within the Survey Area supported a *Cyathochaeta* species, which may represent *C. teretifolia* (Priority 3). *Cyathochaeta teretifolia* is a rhizomatous perennial sedge that typically forms clumps up to approximately 1 m in width and 1.5 m in height, occasionally reaching 2 m. The species is locally associated with seasonal creeklines and wetland habitats.

The species is distinguishable from other *Cyathochaeta* taxa by reproductive characteristics, including spikelets extending beyond the sheathing bracts and a style base approximately 1.5 mm long above the nut. As all individuals recorded during the survey were sterile, it was not possible to confirm identification to species level, and the plants may represent either *C. teretifolia* or the more common *C. clandestina*.

Based on vegetative characteristics, the specimens are unlikely to represent *C. avenacea*, which is distinguished by a crescent-shaped to hemispherical leaf blade cross-section. In contrast, the observed specimens exhibited leaf blades that were slightly compressed to circular or ellipsoid in cross-section. However, it is noted that vegetative characteristics alone are insufficient to reliably distinguish between *C. teretifolia* and *C. clandestina*, and definitive identification requires fertile material, including examination of the style base, nut and spikelet arrangement (Wheeler et al., 2002).



Photo 3 Possible *Cyathochaeta teretifolia* (Priority 3) within typical habitat, in a nearby seasonal creekline.

4.1.2 Weeds

A range of introduced plants were recorded within the Survey Area primarily associated with disturbed areas along the former rail alignment.

The most significant weed species recorded included Blackberry (**Rubus* sp.), Arum Lily (**Zantedeschia aethiopica*) and Olive (**Olea europaea*), all of which are recognised as high-impact environmental weeds. Additional introduced species recorded included bulb weeds including **Watsonia / Gladiolus* spp., pasture grasses and herbs, Dolichos Pea (**Dipogon lignosus*) and Nasturtium (**Tropaeolum majus*).

Weed occurrence was generally localised but more pronounced in areas of historical disturbance, including sections of the rail alignment likely associated with former station locations, gravel extraction areas and informal dumping sites. These areas supported higher weed cover and reduced native understorey diversity compared to less disturbed sections of the alignment.

Overall, weed presence reflects historical land use and disturbance patterns, with higher weed cover corresponding to areas of past clearing, earthworks and dumping and being less prevalent away from these disturbance nodes.

4.2 Vegetation

4.2.1 Vegetation Units

Four vegetation units (VU) were mapped within the Survey Area (Figure 4, Appendix A):

- VU 1: Jarrah-Marri Open Forest (upland) - *Eucalyptus marginata* (Jarrah) and *Corymbia calophylla* (Marri) open forest over a mixed mid to tall shrubland including *Acacia pulchella, Bossiaea* spp., *Hovea elliptica* and *Hakea* spp., over a diverse low shrub and herb layer including *Conostylis* spp., *Dampiera* spp., *Hibbertia hypericoides* and *Patersonia* spp. The ground layer comprised a mixture of sedges, grasses and forbs, including *Mesomelaena tetragona, Tetrarrhena laevis* and *Pteridium esculentum,* with occasional *Xanthorrhoea* spp.

This vegetation unit occurs on upland positions along the alignment and represents typical Jarrah-Marri forest of the region.

- VU 2: Karri Creekline Forest - *Eucalyptus diversicolor* (Karri) and *Corymbia calophylla* (Marri) open forest, with occasional *Eucalyptus patens,* over a mixed shrub and sedge layer including *Taxandria linearifolia, Bossiaea* spp. and *Hovea elliptica,* over a ground layer dominated by sedges, rushes and ferns including *Machaerina* spp., *Lepidosperma* spp., *Leptocarpus* spp., *Adiantum aethiopicum* and *Pteridium esculentum.*

  This vegetation unit occurs in lower landscape positions associated with seasonal creeklines and areas of increased soil moisture.

- VU 3: Drainage Line Woodland (southern extent) - Open woodland to shrubland dominated by *Corymbia calophylla* with scattered *Banksia ilicifolia,* over a mid shrub layer including *Dodonaea ceratocarpa* and *Taxandria parviceps*, over a low shrub and herb layer including *Hibbertia hypericoides, Dampiera linearis, Conostylis laxiflora* and *Xanthosia candida.* The ground layer includes sedges and forbs such as *Mesomelaena tetragona* and *Cyathochaeta avenacea*.

  This vegetation unit occurs along drainage lines in the southern extent of the Survey Area and is associated with seasonally moist soils.

- VU 4: Disturbed Open Shrubland - Degraded open shrubland characterised by scattered native species including Agonis flexuosa, Allocasuarina fraseriana and Acacia myrtifolia, with a sparse to patchy shrub layer including Daviesia sp., Petrophile diversifolia and Taxandria parviceps. The ground layer was generally open, with species such as Desmocladus flexuosus occurring in areas of exposed gravel.

  Vegetation structure was highly modified, with evidence of disturbance and the presence of planted species (including Melaleuca sp.). This vegetation unit occurs on gravelly, well-drained soils and is associated with previously disturbed sections of the alignment.

Overall, the vegetation units reflect a clear relationship with landscape position and disturbance history, with upland areas supporting Jarrah-Marri forest, lower slopes and creeklines supporting moisture-influenced vegetation, and disturbed sections of the rail alignment supporting degraded or regrowth vegetation.

Table 4-1 Vegetation unit descriptions

Vegetation Unit / Habitat type	Description	Representative Photos
VU1 - Jarrah-Marri Forest	Upland open forest	
VU2 - Karri Creekline Forest	Lower slope / creekline	
VU3 - Drainage Line Vegetation	Southern drainage line / seasonally wet depression	

Vegetation Unit / Habitat type	Description	Representative Photos
VU4 - Disturbed Open Shrubland	Degraded / disturbed	
Cleared - Paddocks and / or Hardstand	Degraded / cleared / grazed	
	Maintained or existing infrastructure (e.g. road / parking / sealed track or verge areas).	

Table 4-2 Vegetation units, condition and areas of the rail reserve

Vegetation Unit - Vegetation Condition	Area (ha)
Cleared	**11.00**
Cleared	0.61
Completely Degraded	10.39
Disturbed Open Shrubland	**0.19**
Completely Degraded	0.10
Good	0.08
Very Good	0.01
Drainage Line Vegetation	**0.35**
Excellent	0.32
Good	0.03
Jarrah-Marri Forest	**12.93**
Completely Degraded	1.34
Degraded	4.42
Excellent	1.69
Good	3.52
Very Good	1.96
Karri Creekline Forest	**1.76**
Degraded	0.31
Excellent	1.10
Good	0.36
Grand Total	***26.22***

4.2.2 Vegetation Condition

Vegetation Condition - Rail Reserve

Vegetation condition within the reserve was assessed using the Keighery (1994) scale, as adopted by the EPA (2016). Vegetation condition across the reserve ranged from Excellent to Completely Degraded (Table 4-2; Figure 5, Appendix A), reflecting variation in disturbance history and land use.

- Areas of Excellent to Very Good condition were typically located along the edges of the alignment and within intact remnant vegetation, where native species diversity and vegetation structure were largely retained with minimal weed invasion.
- Vegetation in Good to Degraded condition was more common along sections of the alignment subject to edge effects, historical disturbance and weed encroachment, where native structure was retained but with reduced diversity and increased presence of introduced species.
- Areas of Completely Degraded condition were associated with highly disturbed sections of the alignment, including areas subject to historical clearing, gravel extraction and informal dumping. These areas were characterised by sparse native vegetation, high weed cover and a substantially altered vegetation structure.

The observed condition reflects a clear disturbance pattern associated with the former rail corridor and localised historic compaction, with more intact vegetation occurring away from disturbance nodes and more degraded vegetation associated with areas of past clearing and land use.

Vegetation Condition - Proposed Track

The proposed track being mostly co-located with the rail formation was generally significantly more degraded than the broader reserve and had already been constructed in some sections. The vegetation condition within such a narrow corridor (4 m formation) and batters (2 m either side) is difficult to map at the site scale due to highly localised (micro) variation along the track formation, and grading of vegetation condition through the transition of the batters into the adjacent vegetation. For this reason, a nominal width of 4 m (total 3.39 ha) has been used to capture representative areas of vegetation type and condition rather than an exact proposed impact area. It is noted that these may include canopy areas and are based on the condition of the adjacent alignment, therefore should not be used directly for final impact assessment. These areas are summarised in Table 4-3.

Of the total 3.41 ha nominal track area, approximately 1.75 ha may include native vegetation (mostly regrowth), 1.63 ha has been previously cleared (0.86 ha paddocks or 0.47 ha road and verge) and approximately 0.31 ha already contains existing paths or hardstands.

Table 4-3 Vegetation units, condition and areas of the proposed track (nominal 4 m width) including canopy

Status	Vegetation Unit	Vegetation Condition (reserve)	Area (ha)
Native vegetation (regrowth or remnant) Total area: 1.75 ha	Completely Degraded	Completely Degraded	0.23
	Disturbed Open Shrubland	Completely Degraded	0.03
		Good	0.01
	Jarrah-Marri Forest	Completely Degraded	0.06
		Degraded	0.65
		Good	0.42
		Very Good	0.04
		Excellent	0.03
	Karri Creekline Forest	Degraded	0.20
		Excellent	0.08
		Sub total	**1.75**
Cleared Total area: 1.34 ha	Completely Degraded Degraded / cleared / grazed	Completely Degraded	0.86
	Jarrah-Marri Forest canopy Cleared - Hardstand or edge	Cleared	0.47
Existing path / hardstand Total area: 0.31 ha	Cleared - Hardstand	Cleared	0.31
		Grand total	***3.41***

4.2.3 Conservation Significant Vegetation

No TECs or PECs were identified within the Survey Area.

Vegetation associated with drainage lines within the Survey Area exhibited characteristics consistent with seasonally wet shrubland systems, including the presence of sedges and moisture-tolerant shrub species such as *Cyathochaeta* spp. and *Taxandria* spp.. The floristic composition, structure and landscape position of this vegetation are broadly consistent with communities described for the Whicher Scarp G2, which comprises shrublands of near-permanent wetlands in creeklines of the Whicher Scarp and Blackwood region.

While some characteristics overlap with other wetland PECs recognised in the region (e.g. Whicher Scarp Paluslope Wetlands), the absence of key diagnostic species and lack of clear groundwater seepage indicators suggest the vegetation is more closely aligned with Whicher Scarp G2-type systems. Although the mapped distribution of Whicher Scarp G2 does not extend as far south as the Survey Area, PEC mapping is based on known occurrences and is not necessarily exhaustive, and the vegetation occurs in a comparable landform with similar floristic and structural attributes.

Accordingly, the drainage line vegetation is considered consistent with, and potentially analogous to, Whicher Scarp G2-type vegetation. However, given the reconnaissance-level nature of the survey and absence of detailed floristic analysis, these areas have not been formally classified as a PEC. Notwithstanding this, the drainage line vegetation represents a higher ecological value component of the Survey Area due to its hydrological function, structural complexity, and role in supporting fauna habitat and landscape connectivity.

4.3 Fauna

4.3.1 Fauna Habitat

Fauna habitat within the Survey Area varied in quality in response to vegetation type, condition and disturbance history along the former rail alignment. Fauna habitats were generally synonymous with Table 4-1 VU1 - Jarrah-Marri Forest, VU2 - Karri Creekline Forest, VU3 - Drainage Line Vegetation, and VU4 - Disturbed Open Shrubland with the addition of Cleared Areas and Hard Stands. Habitat quality varied significantly within vegetation types - nearly all areas of the proposed track had a much lower fauna habitat quality than the adjacent areas as the formation had been previously disturbed / compacted, resulting in lower plant diversity and cover.

Areas of good quality habitat (Appendix C-3) were mostly small patchy areas associated with relatively intact vegetation, particularly

- within drainage lines and creekline systems,
- where vegetation structure, canopy connectivity and understorey complexity were retained (for example small pockets of new alignment),
- or where long-term native regrowth has re-established these attributes.

These areas provide suitable habitat supporting habitat for a range of fauna species linking vegetation each side of the track in good habitat connectivity.

Moderate fauna habitat quality was recorded where vegetation adjacent to the track remained relatively intact, although the track itself was sparsely vegetated. Habitat values in these areas were primarily

associated with site-scale connectivity, with lower stratum regrowth facilitating linkage of midstorey vegetation within and beyond the track.

Lower quality habitat, coinciding with most of the track, was associated with disturbed sections of the alignment, including areas of historical clearing, weed invasion and reduced vegetation structure. These areas provide limited habitat value and are unlikely to support a diverse assemblage of native fauna.

Overall, habitat values reflect a disturbance gradient, with highest value habitat associated with remnant vegetation and drainage features and most of the track providing low fauna habitat quality.

4.3.2 Suitable DBH Trees

No hollow bearing trees were recorded within the total 8 m wide survey area. Twenty-five trees within the 8 m wide proposed track Survey Area were recorded with a suitable DBH for developing black cockatoo breeding hollows (>50 cm). They included one Blackbutt, one Jarrah, five Karri and 18 Marri trees (Figure 5, Appendix A). Only one Marri and two Karri trees were recorded as being likely to require clearing (within or close to the 4 m track alignment). The remaining 22 trees were located beyond the track footprint along the edge or on the batter. An additional 29 trees were recorded between 30-49 cm DBH, five of which were recorded within the 4 m track alignment. Trees are listed in Appendix L.

4.3.3 Fauna Recorded

Twenty-two taxa of fauna were recorded within the Survey Area, including 16 birds, five mammals, and one reptile (Table 4-4). Adjacent, intact vegetation was likely to support numerous additional fauna taxa that may frequent the site but were not recorded during survey. Other taxa are likely to occur but are more cryptic, nocturnal or would not have been detected during the brief diurnal reconnaissance visit (including volant mammals - bats, other reptiles - lizards and snakes and frogs).

Table 4-4 Vertebrate terrestrial fauna taxa recorded during the surveys

Class	Family	Taxon	Vernacular Name	WA Status	Commonwealth Status
Aves	Acanthizidae	*Sericornis frontalis maculatus*	Spotted Scrubwren		
	Accipitridae	*Accipiter cirrocephalus*	Collared Sparrowhawk		
	Alcedinidae	*Dacelo novaeguineae*	Laughing Kookaburra		
	Anatidae	*Chenonetta jubata*	Australian Wood Duck		
	Artamidae	*Gymnorhina tibicen*	Australian Magpie		
	Cacatuidae	***Calyptorhynchus banksii naso***	**Forest Red-tailed Black-cockatoo**	**VU**	**VU**
	Cacatuidae	*Eolophus roseicapilla*	Galah		
	Cacatuidae	***Zanda baudinii***	**Baudin's Cockatoo**	**EN**	**EN**
	Columbidae	*Phaps chalcoptera*	Common Bronzewing		
	Corvidae	*Corvus coronoides*	Australian Raven		
	Cuculidae	*Chalcites lucidus*	Shining Bronze-cuckoo		
	Meliphagidae	*Anthochaera carunculata*	Red Wattlebird		
	Meliphagidae	*Lichmera indistincta*	Brown Honeyeater		
	Pardalotidae	*Pardalotus striatus*	Striated Pardalote		
	Psittacidae	*Barnardius zonarius*	Australian Ringneck		
	Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail		

Class	Family	Taxon	Vernacular Name	WA Status	Commonwealth Status
Mammalia	Leporidae	*Oryctolagus cuniculus*	Rabbit		
	Macropodidae	*Macropus fuliginosus*	Western Grey Kangaroo		
	Peramelidae	***Isoodon fusciventer***	**Quenda**	**P4**	
	Phalangeridae	*Trichosurus vulpecula*	Common Brushtail Possum		
	Pseudocheiridae	***Pseudocheirus occidentalis***	**Western Ringtail Possum**	**CR**	**CR**
Reptilia	Scincidae	*Tiliqua rugosa*	Bobtail		

Bird observations were typical of the range of woodland and edge-associated species found in the south-west of Western Australia. Reptiles recorded included Bobtail (*Tiliqua rugosa*) also a common species. Nocturnal, arboreal mammals, including Common Brushtail Possum (6) and WRP (3), were recorded along during the surveys, indicating active use of the track as part of a broader habitat area.

The fauna taxa recorded is typical of the disturbed and partially vegetated linear corridor, supporting species associated with remnant woodland, edge habitats and modified environments. Numerous additional fauna species are likely to utilise the Survey Area as part of the broader habitat network, particularly within more intact vegetation and drainage line habitats.

4.3.4 Conservation Significant Fauna Recorded

Baudin's Cockatoo (Endangered, State and Commonwealth) and FRTBC (Vulnerable, State and Commonwealth) foraging residue was recorded, with Marri fruit displaying characteristic chew marks attributable to each species. No evidence of Carnaby's cockatoo was found. Cockatoo results are discussed in Section 4.4.

Two WRP (Critically Endangered, State and Commonwealth) were recorded within the Survey Area. Two dreys were recorded within or very close to the alignment, scats confirmed the presence of WRP, and there are abundant records around Cowaramup generally. No South-western Brush-tailed Phascogales (Conservation Dependant) were recorded. WRP results are discussed in in Section 4.5. A Quenda (P4) was recorded near the southern end of the Survey Area.

Overall, conservation significant fauna may utilise the Survey Area as part of the broader habitat network, particularly within areas of intact vegetation and along drainage lines where habitat structure and connectivity are greatest. While suitable habitat is present and may be actively be used by some species, the narrow linear and disturbance history of most of the alignment suggests that the area functions primarily as supporting foraging habitat and a movement corridor, rather than core (breeding or refuge) habitat.

4.3.5 Likelihood of Occurrence - Conservation Significant Fauna

Based on habitat assessment and desktop review, several conservation significant fauna taxa may at times utilise the Survey Area - the proposed track as a supporting habitat component of the broader rail reserve (Table 4-5). These include:

- Quenda (*Isoodon fusciventer*) was recorded within the Survey Area, and likely to occur in adjacent habitat along the alignment where there is suitable remnant vegetation (potentially all VUs).

- South-western Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) was not recorded within the Survey Area, but may occur in adjacent habitat along the alignment where there is suitable remnant vegetation (most likely in VU1 but possibly the other VUs).
- Rakali (*Hydromys chrysogaster*), not recorded, but associated with drainage lines and creekline habitats and may occur along the creekline east of Webster Road (SLK 1.20) (in VU2 and VU3);
- regionally significant or conservation-listed species such as Masked Owl (*Tyto novaehollandiae*) and Peregrine Falcon (*Falco peregrinus*), which may utilise the area opportunistically as part of a much larger patch for hunting.
- Chuditch (*Dasyurus geoffroii*) may also occur within the broader region; however, given the linear and partially disturbed nature of the Survey Area, the likelihood of occurrence is considered low.

Habitat for these species is generally limited to more intact vegetation and drainage line areas, with disturbed sections of the alignment providing reduced habitat value. The proposed track is considered to form part of a broader habitat mosaic, and any use by these species is likely to be transient or associated with movement through the landscape rather than long-term occupation.

Table 4-5 Conservation significant fauna that may occur within the Survey Area, based on habitat suitability.

CLASS Family	*Genus species*	Vernacular	Status Commonwealth	Stat. WA	Presence of habitat	Likelihood of occurrence
AVES Cacatuidae	*Calyptorhynchus banksii naso*	Forest Red-tailed Black Cockatoo	VU	VU	Present - supporting	Present
	Zanda baudinii	Baudin's Cockatoo	EN	EN	Present - supporting	Present
	Zanda latirostris	Carnaby's Cockatoo	EN	EN	Present - supporting	Possible
AVES Falconidae	*Falco peregrinus*	Peregrine Falcon	-	OS	Present - supporting	Possible
AVES Tytonidae	*Tyto novaehollandiae*	Masked Owl (Southwest)	-	P3	Present - supporting	Possible
MAMMALIA Dasyuridae	*Phascogale tapoatafa*	South-western Brush-tailed Phascogale	-	CD	Present - supporting	Possible
MAMMALIA Muridae	*Hydromys chrysogaster*	Rakali		P4	Present - supporting	Possible
MAMMALIA Peramelidae	*Isoodon obesulus fusciventer*	Quenda		P4	Present - supporting	Present
MAMMALIA Pseudocheiridae	*Pseudocheirus occidentalis*	Western Ringtail Possum	CR	CR	Present - supporting	Present

4.4 Black Cockatoos

4.4.1 Field Survey Results

FRTBC foraging residue was relatively common along the alignment where Marri was present and only a few older Marri fruits displaying evidence of Baudin's cockatoo feeding were observed. No evidence of Carnaby's cockatoo was recorded. Table I-1 in Appendix I provides a list of key black cockatoo foraging plants that were observed across each habitat type. The paucity of Baudin's and Carnaby's cockatoo feed residue is more likely a function of the seasonal time of the survey, local conditions and seasonal movements of different black cockatoo flocks and Baudin's and Carnaby's cockatoo may frequent the Survey Area at different times. Further the surveys focussed on the track and there was considerable areas of higher quality foraging habitat in the adjacent reserve areas.

Black cockatoos were not recorded breeding within the 8 m wide survey corridor given that no hollow bearing trees were recorded. Numerous large senescing hollow bearing trees, including Marri, and likely to have large hollows, occur elsewhere within the reserve but were not located near the proposed track. The three trees likely to be cleared, *Suitable DBH Tree without hollows,* ranged from 50-75 cm DBH. (Appendix L)

No evidence of roosting activity was recorded during surveys.

Overall, the habitat present provides supporting habitat, rather than core habitat, to black cockatoos. The narrow linear and disturbed nature of the alignment further reduces the likelihood of the track portion of the Survey Area providing any important black cockatoo habitat.

4.4.2 Foraging Scoring Tool Assessment Results

The total foraging score (out of 10) is provided in Table 4-6, calculated from vegetation composition, condition and structure, site context and species stocking rate, as detailed in Section 2.3.3 and Appendix H. Foraging habitat quality scores of the reserve are mapped in Figure 6 (Appendix A) based on the highest score of any black cockatoo taxa. Foraging scores are lower within the track alignment due to the track being only a small, disturbed portion of the broader reserve and consisting of young regrowth, sparse or low canopy cover of feed species.

Of the total 3.41 ha nominal track area, the 1.75 ha of native vegetation (predominately regrowth) was classified as lower quality foraging habitat.

Table 4-6 Black cockatoo Foraging Scoring Tool Assessment Results

Species	Final Score - Reserve, Track	Foraging Habitat Quality (DCCEEW 2022), Track only
VU1 - Jarrah-Marri Forest		
Baudin's cockatoo	7, **4**	**Lower, (0-4)**
Carnaby's cockatoo	6, **3**	**Lower, (0-4)**
FRTBC	7, **4**	**Lower, (0-4)**
VU2 -Karri Creekline Forest		
Baudin's cockatoo	5, **3**	**Lower, (0-4)**
Carnaby's cockatoo	5, **3**	**Lower, (0-4)**
FRTBC	5, **3**	**Lower, (0-4)**
VU3 - Drainage Line Vegetation		
Baudin's cockatoo	5, **3**	**Lower, (0-4)**

Species	Final Score - Reserve, Track	Foraging Habitat Quality (DCCEEW 2022), Track only
Carnaby's cockatoo	5, **3**	**Lower, (0-4)**
FRTBC	5, **3**	**Lower, (0-4)**
VU4 - Disturbed Open Shrubland		
Baudin's cockatoo	3, **2**	**Lower, (0-4)**
Carnaby's cockatoo	3, **2**	**Lower, (0-4)**
FRTBC	3, **2**	**Lower, (0-4)**
Cleared		
Baudin's cockatoo	1, **1**	**Lower, (0-4)**
Carnaby's cockatoo	1, **1**	**Lower, (0-4)**
FRTBC	1, **1**	**Lower, (0-4)**

4.5 Western Ringtail Possum

A pair of WRP were recorded within the Survey Area within connected, contiguous vegetation off Webster Road. Two dreys were found within other areas of the same patch, and scats were found along the existing track north of Barnard Road (Figure 7 Appendix A).

Suitable WRP habitat occurs along the 2.25 km north of Miamup Road and additional scats would likely have been found through this area but visibility was limited due to dense understorey and leave litter. The vegetation within the broader reserve provides good quality WRP habitat even though densities of the WRP are lower than those further north.

The number of observations was broadly in line with Biota (2020) who recorded 2.82 ± 0.37 detections of individual WRP / km in the most comparable survey site, Yelverton NP 4.7 km north of the Survey Area. The current survey detected 1.13 detections of individual WRP / km over the 2.25 km of suitable habitat. This may have been attributed to local vegetation structure in the vicinity of the track having less midstorey in parts, parts of the track being very dense limiting view distances and CBP being dominant in some locations (2.67 detections of individual CBP / km).

The partially disturbed and narrow, linear nature of the corridor suggests that the area functions primarily as supporting habitat and movement corridor, and rather than core habitat within the track alignment itself.

5 Conclusions and Recommendations

The following conclusions are drawn from the flora, vegetation and fauna assessment of the proposed Wadandi Track alignment between Gardiner Road and Sunset Drive:

- Four vegetation units were mapped within the Survey Area, comprising:
    - Jarrah-Marri open forest in upland positions;
    - Karri creekline forest in lower slope and drainage areas;

  - drainage line woodland/shrubland (southern extent) associated with seasonally moist soils; and
  - disturbed open shrubland associated with the former rail alignment and areas of historical disturbance.
  - An additional cleared habitat type was also noted.

- Vegetation condition ranged from Excellent to Completely Degraded. More intact vegetation occurred along the edges of the alignment and within remnant areas, while highly degraded vegetation was associated with historical clearing, gravel extraction and informal dumping.
- No Threatened flora taxa were recorded. Two Priority flora taxa were recorded within the Survey Area - *Grevillea bronweniae* (Priority 3) and *Netrostylis* sp. Blackwood River (Priority 3), both in low abundance within remnant native vegetation. An additional Priority species (*Cyathochaeta teretifolia* (Priority 3)) is considered likely to occur within creekline habitats but could not be confirmed due to sterile material at the time of survey.
- Vegetation associated with drainage lines exhibited characteristics consistent with Whicher Scarp G2-type vegetation (Priority 1 PEC). While not formally classified as a PEC, these areas are considered to represent a higher ecological value component of the Survey Area due to their hydrological function, structural complexity and role in supporting fauna habitat and landscape connectivity.
- Weed taxa were present throughout the Survey Area, with higher densities associated with localised disturbance nodes along the former rail alignment, including areas of historical infrastructure, gravel extraction and dumping.
- Fauna habitat quality varies along the alignment with the highest quality habitat associated with remnant vegetation and drainage features (small pockets) and most of the track providing low fauna habitat quality. Fauna habitat within the broader reserve can be summarised as follows:
  - Most areas are cleared or completely degraded (~23.44 ha)
  - Intact / higher quality vegetation is limited (~9.07 ha) and occurs in fragmented patches.
  - Highest conservation value areas are Karri Creekline Forest - ~1.46 ha Good-Excellent (1.10 ha Excellent) and Drainage Line Vegetation - ~0.35 ha (predominantly Excellent).
  - Patches of Jarrah-Marri Forest - ~5.17 ha Good-Excellent (1.69 ha Excellent, 1.96 ha Very Good).
  - Jarrah-Marri Forest represents the largest remaining vegetated unit (12.93 ha) but is highly variable in condition.
- No hollow bearing trees were recorded along the proposed track. Twenty-five trees within the proposed track were recorded with a suitable DBH for developing black cockatoo breeding hollows (>50 cm). Only one Marri and two Karri suitable DBH trees were recorded as being likely to require clearing. The remaining 22 trees were located along the edge or on the batter.
- Twenty-two taxa of fauna were recorded. Numerous additional fauna species are likely to utilise the Survey Area as part of a broader habitat network.
- The proposed track forms part of a broader fauna habitat mosaic. While suitable habitat is present for some conservation significant fauna and be may actively be used by some species, the narrow linear and disturbance history of most of the alignment indicates that the area

functions primarily as supporting foraging habitat and a movement corridor, rather than core (breeding or refuge) habitat.

- Baudin's Cockatoo and FRTBC foraging residue was recorded, with Marri fruit displaying characteristic chew marks attributable to each species. No evidence of Carnaby's cockatoo was found but may use the site at other times. Of the total 3.41 ha nominal track area, the 1.75 ha of native vegetation (predominately regrowth) was classified as lower quality foraging habitat. No roosts were recorded.
- Two WRP were recorded within the Survey Area. Two dreys were recorded within or very close to the alignment, scats confirmed the presence of WRP, and there are abundant records around Cowaramup generally.
- Other conservation significant fauna (Quenda - observed, South-western Brush-tailed Phascogale, Rakali, Masked Owl, Peregrine Falcon and Chuditch) may be transient or associate the track with movement through the landscape rather than long-term occupation.
- Overall, the proposed works are not expected to result in significant impacts to local biodiversity values, provided that the above avoidance and management measures are implemented.

Recommendations:

- Clearing should be minimised and confined to the defined disturbance footprint, with avoidance of remnant native vegetation where practicable.
- Drainage lines and creekline vegetation, including areas consistent with Whicher Scarp G2-type vegetation, should be avoided, with bridge structures utilised to span these features and maintain natural hydrological processes.
- An authorised fauna spotter should be present during clearing to manage risks to fauna, particularly WRP and other arboreal species. A risk based approach could be adopted.
- Where practicable, clearing should be scheduled outside peak fauna breeding periods.
- Weed hygiene and management measures should be implemented during construction to prevent the spread of high-impact environmental weeds along the alignment.
- Disturbed areas should be rehabilitated where practicable, including infill planting of locally native species, particularly adjacent to higher value vegetation.
- Clearing of native vegetation will require a permit under Part V Division 2 of the EP Act, unless exemptions apply (noting that exemptions do not apply within ESAs).
- Potential impacts to MNES should be reviewed against the Significant Impact Guidelines under the EPBC Act. Based on current information, referral of the project is considered unlikely to be required.

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Appendix A Figures

Figure 1 Survey Area location and Desktop Study Area

Figure 2 Survey Area

Figure 3 Conservation Significant Flora

Figure 4 Vegetation Units across the Survey Area

Figure 5 Vegetation Condition across the Survey Area

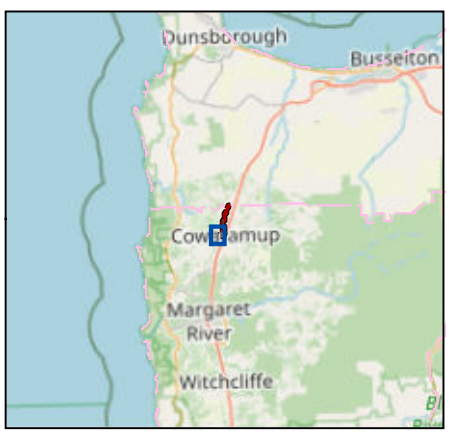
Figure 6 Suitable DBH trees and WRP dreys along the proposed track

Figure 7 Nocturnal survey effort and results



FIGURE 1 SURVEY AREA LOCATION AND DESKTOP STUDY AREA

- Proposed track
- Track already constructed
- Rail reserve Survey Area
- Desktop Study Area (10 km)
- Road
- Minor drainage line



Ref: SW709 SP Fauna
Date: 24/04/2026 Author: SP
Source: Base map © Esri and its data suppliers. SLIP Landgate (2026)

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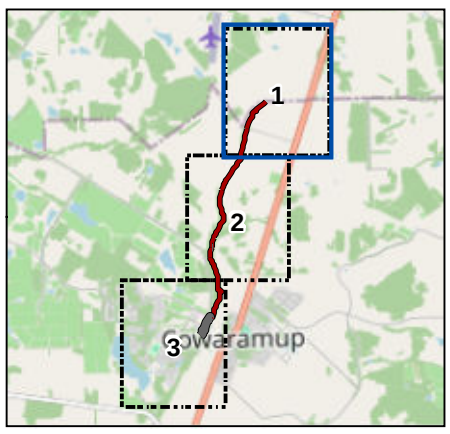
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FIGURE 2 SURVEY AREA

- Proposed track
- Rail reserve Survey Area
- Section start
- Road
- Minor drainage line
- Cadastral boundary



Ref: SW709 SP Fauna
Date: 28/04/2026 Author: SP
Source: Base map © Esri and its data suppliers. SLIP Landgate (2026)

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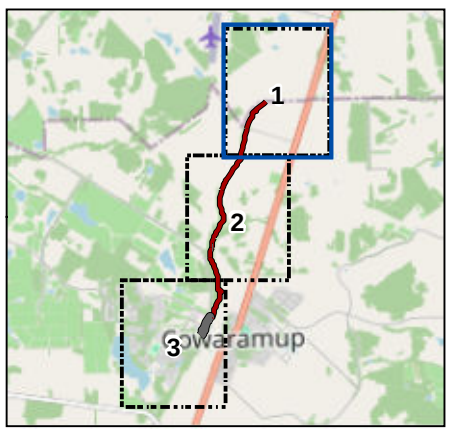
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FIGURE 3 CONSERVATION SIGNIFICANT FLORA

- Proposed track
- Rail reserve Survey Area
- Section start
- Road
- Minor drainage line



Ref: SW709 SP Fauna
Date: 24/04/2026 Author: SP
Source: Base map © Esri and its data suppliers. SLIP Landgate (2026)

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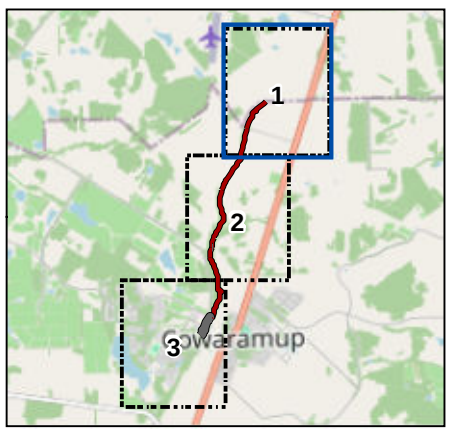
FIGURE 4 VEGETATION UNITS ACROSS THE SURVEY AREA

WADANDI TRACK: PAGE 1 OF 3

- Proposed track
- Road
- Rail reserve Survey Area
- Minor drainage line

Vegetation Unit

- Cleared
- Jarrah Marri Forest
- Section start



Ref: SW709 SP Fauna
Date: 24/04/2026 Author: SP
Source: Base map © Esri and its data suppliers. SLIP Landgate (2026)

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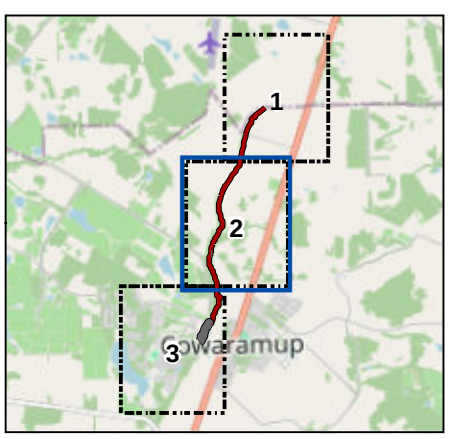


FIGURE 4 VEGETATION UNITS ACROSS THE SURVEY AREA

WADANDI TRACK: PAGE 2 OF 3

- Proposed track
- Track already constructed
- Rail reserve Survey Area

Vegetation Unit
- Cleared
- Jarrah Marri Forest
- Karri Creekline Forest
- Road
- Minor drainage line



Ref: SW709 SP Fauna
Date: 24/04/2026 Author: SP
Source: Base map © Esri and its data suppliers. SLIP Landgate (2026)

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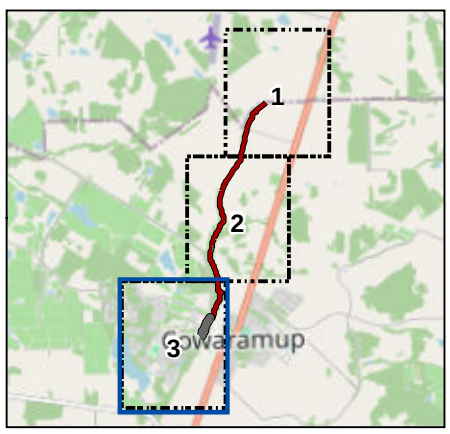
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FIGURE 4 VEGETATION UNITS ACROSS THE SURVEY AREA

WADANDI TRACK: PAGE 3 OF 3

- Proposed track
- Track already constructed
- Rail reserve Survey Area

Vegetation Unit
- Cleared
- Disturbed Gravelley Vegetation
- Drainage Line Vegetation
- Jarrah Marri Forest
- Road
- Minor drainage line



Ref: SW709 SP Fauna
Date: 24/04/2026 Author: SP
Source: Base map © Esri and its data suppliers.
SLIP Landgate (2026)

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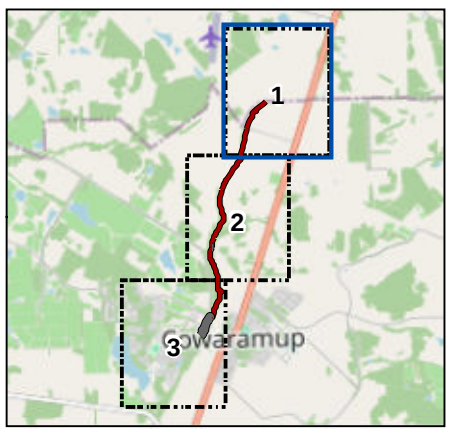
FIGURE 5 VEGETATION CONDITION ACROSS THE SURVEY AREA

WADANDI TRACK: PAGE 1 OF 3

- Proposed track
- Rail reserve Survey Area
- Road
- Minor drainage line

Vegetation Condition

- Completely Degraded
- Degraded
- Section start



Ref: SW709 SP Fauna
Date: 24/04/2026 Author: SP
Source: Base map © Esri and its data suppliers. SLIP Landgate (2026)

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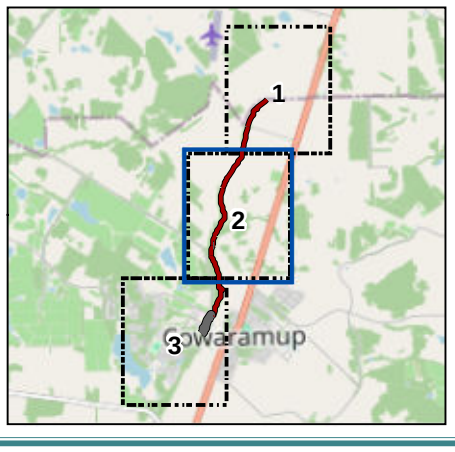
FIGURE 5 VEGETATION CONDITION ACROSS THE SURVEY AREA

WADANDI TRACK: PAGE 2 OF 3

- Proposed track
- Track already constructed
- Rail reserve Survey Area

Vegetation Condition

- Cleared
- Completely Degraded
- Degraded
- Good
- Very Good
- Excellent
- Road
- Minor drainage line



Ref: SW709 SP Fauna
Date: 24/04/2026 Author: SP
Source: Base map © Esri and its data suppliers. SLIP Landgate (2026)

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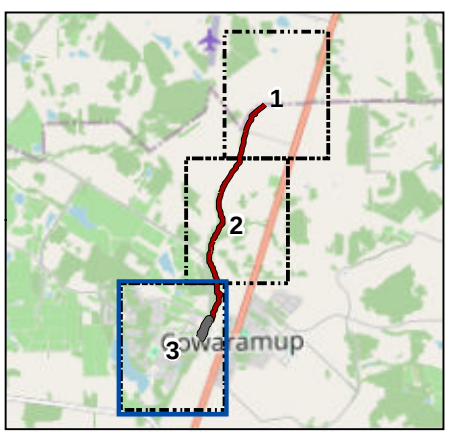
FIGURE 5 VEGETATION CONDITION ACROSS THE SURVEY AREA

WADANDI TRACK: PAGE 3 OF 3

- Proposed track
- Track already constructed
- Rail reserve Survey Area

Vegetation Condition

- Cleared
- Completely Degraded
- Degraded
- Good
- Very Good
- Excellent
- Road
- Minor drainage line



Ref: SW709 SP Fauna
Date: 24/04/2026 Author: SP
Source: Base map © Esri and its data suppliers.
SLIP Landgate (2026)

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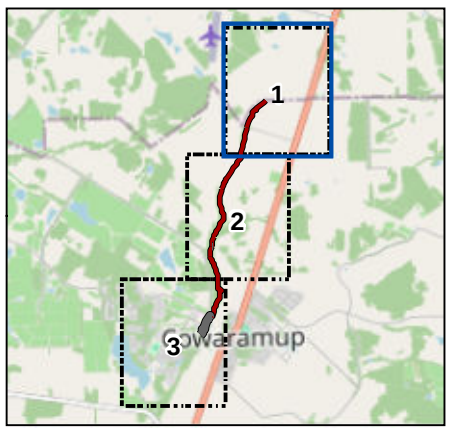
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FIGURE 6 SUITABLE DBH TREES AND WRP DREYS ALONG THE PROPOSED TRACK

WADANDI TRACK: PAGE 1 OF 3

- ★ WRP drey
- Proposed track
- Rail reserve Survey Area
- Section start
- Road
- Minor drainage line



Ref: SW709 SP Fauna
Date: 24/04/2026 Author: SP
Source: Base map © Esri and its data suppliers. SLIP Landgate (2026)

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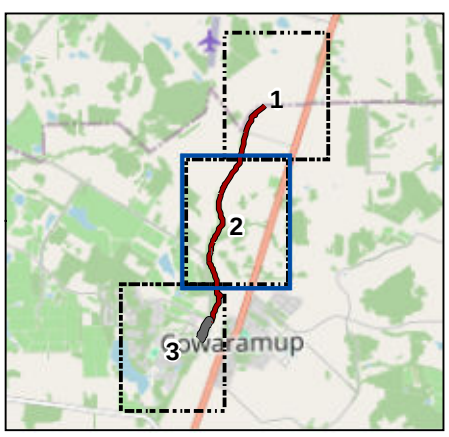
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FIGURE 6 SUITABLE DBH TREES AND WRP DREYS ALONG THE PROPOSED TRACK

WADANDI TRACK: PAGE 2 OF 3

- ★ WRP drey
- Suitable DBH tree no hollows
- ● Clearing
- ○ Shoulder
- Proposed track
- Track already constructed
- Rail reserve Survey Area
- Road
- Minor drainage line



Ref: SW709 SP Fauna
Date: 24/04/2026 Author: SP
Source: Base map © Esri and its data suppliers. SLIP Landgate (2026)

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FIGURE 6 SUITABLE DBH TREES AND WRP DREYS ALONG THE PROPOSED TRACK

WADANDI TRACK: PAGE 3 OF 3

★ WRP drey

Suitable DBH tree no hollows

● Clearing

○ Shoulder

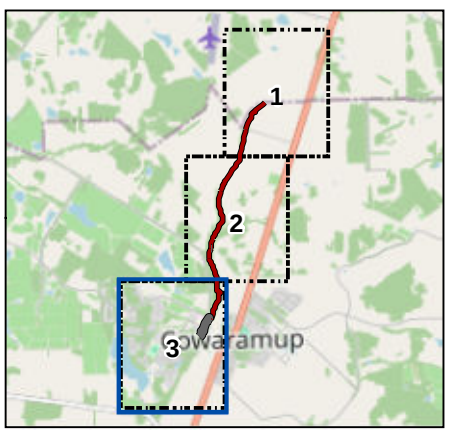
Proposed track

Track already constructed

Rail reserve Survey Area

Road

Minor drainage line



Ref: SW709 SP Fauna
Date: 24/04/2026 Author: SP
Source: Base map © Esri and its data suppliers.
SLIP Landgate (2026)

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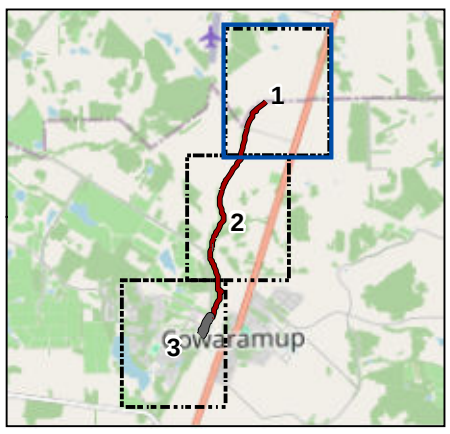
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FIGURE 7 CONSERVATION SIGNIFICANT FAUNA AND NOCTURNAL SURVEY RESULTS

WADANDI TRACK: PAGE 1 OF 3

- Rail reserve Survey Area
- Proposed track
- Section start
- Road
- Minor drainage line



Ref: SW709 SP Fauna
Date: 28/04/2026 Author: SP
Source: Base map © Esri and its data suppliers. SLIP Landgate (2026)

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FIGURE 7 CONSERVATION SIGNIFICANT FAUNA AND NOCTURNAL SURVEY RESULTS

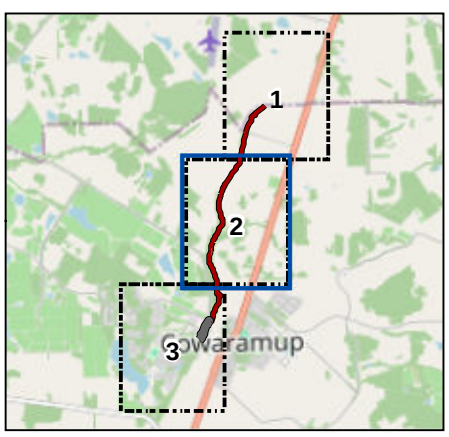
WADANDI TRACK: PAGE 2 OF 3

Conservation significant fauna and nocturnal survey results

- Western Ringtail Possum, 2
- Common Brushtail Possum, 1
- Rail reserve Survey Area

Nocturnal survey effort

- 16/07/2025
- Proposed track
- Track already constructed
- Road
- Minor drainage line



Ref: SW709 SP Fauna
Date: 28/04/2026 Author: SP
Source: Base map © Esri and its data suppliers. SLIP Landgate (2026)

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FIGURE 7 CONSERVATION SIGNIFICANT FAUNA AND NOCTURNAL SURVEY RESULTS

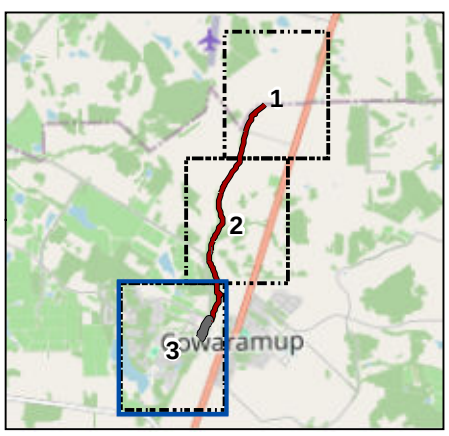
WADANDI TRACK: PAGE 3 OF 3

Conservation significant fauna and nocturnal survey results

- Quenda, 1
- Western Ringtail Possum, 1
- Rail reserve Survey Area

Nocturnal survey effort

- 16/07/2025
- Proposed track
- Track already constructed
- Road
- Minor drainage line



Ref: SW709 SP Fauna
Date: 28/04/2026 Author: SP
Source: Base map © Esri and its data suppliers. SLIP Landgate (2026)

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Appendix B Conservation Codes

Flora, fauna and ecological communities in WA may be afforded protection under the WA BC Act and or Commonwealth EPBC Act. Species listed as threatened or migratory under the above legislation are referred to collectively in this document as being 'conservation significant' or 'target' species. These terms include species and communities listed under the DBCA Priority lists.

BC Act

The WA BC Act and associated Regulations provide for the licensing and management of activities that affect biodiversity. The BC Act provides for the listing of threatened native animals (fauna) that need protection as critically endangered, endangered or vulnerable species because they are under identifiable threat of extinction (species).

The *Biodiversity Conservation (Listing of Native Species) (Fauna) Order 2023)* under the *Biodiversity Conservation Regulations 2018* contain the lists of Threatened, Extinct and Specially Protected species under Part 2 of the BC Act. These are described below.

Threatened species and communities

- PD: Presumed totally destroyed (TECs only)
- CR: Critically endangered species
- EN: Endangered species
- VU: Vulnerable species

Extinct species

- EX: Extinct species
- EW: Extinct in the wild species

Specially protected species

- MI: Migratory species
- CD: Species of special conservation interest (conservation dependent fauna)
- OS: Other specially protected species

EPBC Act

In accordance with Commonwealth legislation, the EPBC Act provides a list of 'Matters of National Environmental Significance' (NES), which includes significant fauna. Under the EPBC Act fauna matters of NES may be listed in any one of the following categories as defined in *Section 179* of the Act:

- Extinct,
- *Extinct in the wild,
- *Critically endangered,
- *Endangered,
- *Vulnerable,
- Conservation dependent.

*Only these categories are matters of NES under the Act.

The EPBC Act also lists migratory species that are recognized under international treaties including the Japan Australia Migratory Bird Agreement (JAMBA), the China Australia Migratory Bird Agreement (CAMBA) and the Bonn Convention (The Convention on the conservation of Migratory Species of Wild Animals). The EPBC Act is regulated by the DCCEEW.

IUCN Red List

The IUCN Red List is an inventory of the global conservation status of species and used to assist DBCA and other agencies in attributing a given threatened species status. It does not have any statutory authority and is not considered in detail in this assessment.

Appendix C Methodology Tables

Table C-1 Desktop sources interrogated for the Desktop Assessment

Source	Search Buffer	Purpose
Atlas of Living Australia (**ALA, 2025)**	10 km around Survey Area	Obtain locations and records of conservation significant fauna taxa within the DSA
Birdata (**BirdLife Australia, 2025)**	10 km around Survey Area	Obtain locations and records of birds within the DSA
DBCA Significant Fauna Database black cockatoo breeding and roosting records **(DBCA, 2025b)**	10 km around Survey Area	Obtain locations and records of conservation significant flora taxa within the DSA
DBCA Significant Flora Database (WA Herbarium specimen and Threatened and Priority Flora (TPFL) databases) **(DBCA, 2025c)**	10 km around Survey Area	Obtain locations and records of conservation significant flora taxa within the DSA
DBCA Threatened and Priority Ecological Communities Database **(DBCA, 2025a)**	10 km around Survey Area	Obtain locations and records of both Threatened and Priority Ecological Communities within the DSA
DBCA NatureMap (WA Herbarium and TPFL databases) **(DBCA, 2026)**	10 km around Survey Area	Obtain records of conservation significant flora and fauna taxa within the DSA (ensuring that no additional records to the DBCA database searches have been missed)
Department of Climate Change, Energy, the Environment and Water (DCCEEW) Species Profile and Threats (SPRAT) Database (interrogated using the Protected Matters Search Tool (PMST)) (DCCEEW, 2025)	10 km around Survey Area	Identify Matters of Environmental Significance (MNES) that occur or have the potential to occur within the DSA
2018 South West Vegetation Complex Statistics Report incorporating the CAR Reserve Analysis and DBCA-047 spatial dataset **(DBCA, 2019, 2018)**	Survey Area	Identify the extent of Vegetation Complexes within the Survey Area
Bureau of Meteorology Climate Data Online (BoM, 2025)	The most relevant meteorological station to the study area	Review long term and current climate data
Soil Landscape Mapping (Best Available DPIRD-027) spatial dataset **(DPIRD, 2025c)**	Survey Area	Identify Soil Landscape Mapping within the Survey Area

Table C-2 Vegetation condition scale (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.

Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact, and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.

Table C-3 Fauna habitat quality categories and descriptions (SW Environmental, n.d.).

Quality	Description
Good	• Native vegetation with intact and diverse habitat structure. Different vegetation age classes present at most stratum levels (ground, understorey, midstory, canopy). • Forest/woodland: abundant hollow-bearing trees, including those with or likely to develop large hollows. Mature trees offer more foraging resources (nectar/seed). • Presence of shelter/refuges at ground level (dense understorey plants, tussock, rocky outcrop, hollow logs). • High habitat complexity (ecotones between vegetation types or habitat mosaic). This increases the range of foraging and shelter opportunities within a habitat. • Presence of key foraging and microhabitat components for target species. • Little to no obvious weed invasion or evidence of grazing. • May be large patch and/or connected to other areas of native vegetation.
Moderate	• Native flora species dominant with moderate habitat structure complexity appropriate to vegetation type. Ground litter intact or slightly disturbed. More than one age class present. • Forest/woodland: low to moderate abundance of hollow-bearing trees or trees likely to develop hollows. • Some shelter and refuge present for ground dwelling fauna. • Some habitat complexity (ecotones between vegetation types or areas forming a habitat mosaic). • Marginal presence of key microhabitat components for target species. • May be small or large in scale, and isolated or well connected.
Poor	• Habitat highly disturbed and simplified with low structural complexity. Ground litter layer absent or highly modified. Complexity reduced by only one age class present. • Little or no shelter and refuge for ground dwelling fauna. • Forest/woodland: not likely to support hollow-bearing trees. • Lack of key foraging and microhabitat components for target species. • May have evidence of weed invasion or grazing. • May be narrow or small area and substantially influenced by edge effects, isolated from other areas of native vegetation.

Appendix D Local Flora and Fauna Lists

Taxon	Status (WA)	Status (EPBC)	Flowering Period (WA Herbarium, 1998-)	Habitat (WA Herbarium, 1998)	Source	
					DBCA (DBCA, 2025c)	**PMST (DCCEEW, 2025)**
Acacia flagelliformis	P4		May - Sep	Sandy soils. Winter-wet areas.	X	
Acacia inops	P3		Sep - Nov	Black peaty sand, clay. Swamps, creeks.	X	
***Acacia lateriticola* var. Glabrous variant (B.R. Maslin 6765)**	P3		Aug or Oct	Lateritic soils.	X	
Acacia semitrullata	P4		May - Oct	White/grey sand, sometimes over laterite. Open heath frequently fringing seasonally dry swamps, and in sand over laterite in shallow depressions in open Eucalyptus marginata forest (WA Herbarium, 2022)	X	
Acacia tayloriana	P4		Jan	Grey or yellow/orange sandy soils, lateritic gravel, clay loam. Winter-wet areas.	X	
Actinotus whicheranus	P2		Nov - Mar	Winter wet areas. Sand over laterite.	X	
Andersonia ferricola	P1		Oct - Dec	Red-brown loam over ironstone. Seasonally wet flats.	X	
***Andersonia* sp. Echidna (A.R. Annels ARA 5500)**	P2		Nov - Jan	White or grey sands, seasonally damp areas	X	
Banksia mimica	T	EN	Dec or Jan - Feb	White or grey sand over laterite, sandy loam.		X
Banksia nivea* subsp. *uliginosa	T	EN	Aug - Sep	Sandy clay, gravel. Ironstone.	X	X
Banksia sessilis* var. *cordata	P4		Jul - Oct	Coastal limestone	X	
Banksia squarrosa* subsp. *argillacea	T	VU	Jun - Nov	White/grey sand, gravelly clay or loam. Winter-wet flats, clay flats.	X	X
Boronia capitata* subsp. *gracilis	P3		Jun - Nov.	Winter-wet swamps, or gentle hillslopes. White/grey or black sand.	X	

***Boronia* sp. Leeuwin (J. Scott 235)**	P2		Aug - Dec	Seaonally wet areas, brown/grey/black loam, sand, peat, clay, with granite.	X	
Caladenia abbreviata	P3		Nov - Dec	Sand. Sand dunes.	X	
Caladenia excelsa	T	EN	Sep - Nov	Sandy soils in Banksia, Jarrah (Eucalyptus marginata) and marri (Corymbia calophylla) woodlands.	X	X
Caladenia huegelii	T	CR	Sep - Oct.	Grey or brown sand, clay loam. Sandy soils in near coastal woodlands and shrublands.		X
Calothamnus lateralis* var. *crassus	P3		Jun, Aug - Oct, Jan	Winter wet plains, brown/yellow or grey clayey sand or peaty sand.	X	
Calothamnus quadrifidus* subsp. *teretifolius	P4		Sep - Dec	Clay with ironstone, wet in winter, with tall shrubland.	X	
Chamaescilla gibsonii	P3		Aug - Nov	Brown or grey sandy clay. Winter-wet clay pans and flats	X	
Cyathochaeta teretifolia	P3		Jul - Nov	Grey sand, sandy clay. Swamps, creek edges.	X	
Dampiera heteroptera	P3		Sep - Oct	Sandy soils. Swampy areas.	X	
Daviesia elongata	T	VU	Sep - Dec	Well drained soils, undulating plains. Grey sand over laterite/ ironstone..	X	X
Drakaea micrantha	T	EN	Sep - Oct.	Edge of swamps, often found in clearings and tracks. White-grey sand.	X	X
Drosera fimbriata	P4		Sep - Oct	White sand, granite.	X	
Eucalyptus xphylacis	T	EN	May and Oct	Laterite, loam over granite. Coastal areas.		X
Franklandia triaristata	P4		Sep - Nov	Slopes or sandy rises. White or grey sand.	X	
Gahnia sclerioides	P4		Feb, Apr, Jun, Aug - Sep, Nov	Loam, sandy soils. Moist shaded situations	X	
Gastrolobium formosum	P3		Nov	Along river banks or in swamps.	X	
Gastrolobium papilio	P2		Oct - Dec.	Flat plains or gentle slopes, sandy clay over ironstone and laterite.		X
Gastrolobium whicherense	P2		Oct	Red-grey sandy clay over quartzite. Steep westerly slopes.	X	
Gonocarpus pusillus	P4		Oct - Dec, Feb	Grey sandy loam, sandy clay loam, wetlands or seasonally inundated areas.	X	
Grevillea brachystylis* subsp. *brachystylis	P3		Jun - Nov	Black sand, sandy clay. Swampy situations.	X	

Grevillea brachystylis* subsp. *grandis	T	CR	Jul - Oct or Dec - Jan	Plains or flats, brown sandy loam, lateritic clay.		X
***Grevillea brachystylis* subsp. *Yelverton* (A. Webb AW09122)**	P2		Sept - Oct	Midslope, shallow loam soils in among massive outcropping granite.	X	
Grevillea bronweniae	P3		Jul - Nov	Lateritic gravelly loam, grey sand or brown sand/loam. Slopes, drainage lines and watercourses	X	
Grevillea manglesioides* subsp. *ferricola	P3		Oct	Red sandy clay over ironstone. Winter wet flats.	X	
Hakea oldfieldii	P3		Sep - Nov	Flood plains or wetlands. Sandy loam over laterite/ironstone	X	
Isopogon formosus* subsp. *dasylepis	P3		Sep - Dec	Seasonally wet areas wet plains. Sandy clay over ironstone.	X	
Johnsonia inconspicua	P3		Oct - Nov	White-grey or black sand. Low dunes, winter-wet flats.	X	
Lambertia echinata* subsp. *occidentalis	T	CR	Feb - Apr or Dec	White sandy soils over laterite, orange/brown-red clay over ironstone. Flats to foothills, winter-wet sites.		X
Lasiopetalum laxiflorum	P3		Oct or Nov	Brown/grey sandy clay, clayey loam sand over laterite, slopes.	X	
Leptomeria furtiva	P2		Aug - Oct	Grey or black peaty sand. Winter-wet flats.	X	
Lepyrodia heleocharoides	P3		Dec	Moist peaty sand. Dry or seasonally inundated heath or woodland, swamps.	X	
Pultenaea pinifolia	P3		Oct - Nov	Loam or clay. Floodplains, swampy areas.	X	
Loxocarya magna	P3		Sep or Nov.	Sand, loam, clay, ironstone. Seasonally inundated or damp habitats.	X	
***Netrostylis* sp. Blackwood River (A.R. Annels 3043)**	P3		April/May	Swampy areas, dark peaty clay loam.	X	
***Netrostylis* sp. Nannup (P.A. Jurjevich 1133)**	P1		Sept - Oct	Creeklines, dark grey clay loam.	X	
Pimelea ciliata* subsp. *longituba	P3		Oct - Dec	Grey sand over clay, loam.	X	
Stylidium lowrieanum	P3		Oct - Nov	Sand or sandy loam over limestone. Eucalypt or Agonis woodland, forest, scrub.	X	
Synaphea decumbens	P3		Sept - Nov	Grey-brown loam over laterite	X	

Thelymitra variegata	T	CR	Aug - Oct	Brown clay loam or sand, in clearings amongst low shrubs, rushes and grass tussocks in freely draining deep sandy soil		X
Thysanotus glaucus	P4		Oct - Mar	White, grey or yellow sand, sandy gravel.	X	
Xyris maxima	P2		Nov - Dec or Jan	Black peaty sand. Drainage flats.	X	

Appendix C.2 Fauna taxa returned from desktop database searches within the DSA (10 km)

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
ACTINOPTERYGII									
Galaxiidae									
Mud Minnow	*Galaxiella munda*		VU				X		X
Nannopercidae									
Balston's pygmy Perch	*Nannatherina balstoni*		VU	VU			X		X
AMPHIBIA									
Limnodynastidae									
Moaning Frog	*Heleioporus eyrei*				X		X		
Plain Frog	*Heleioporus inornatus*						X		
Sand Frog	*Heleioporus psammophilus*				X		X		
Western Banjo Frog	*Limnodynastes dorsalis*				X		X		
Myobatrachidae									
Bleating Froglet	*Crinia pseudinsignifera*				X		X		
Glauert's Froglet	*Crinia glauerti*				X		X		
Gunther's Toadlet	*Pseudophryne guentheri*				X		X		
Lea's Frog	*Geocrinia leai*				X		X		
Nicholl's Toadlet	*Metacrinia nichollsi*				X		X		
Sign-bearing Froglet	*Crinia insignifera*				X		X		
Tschudi's Froglet	*Crinia georgiana*				X		X		
Pelodryadidae									
Motorbike Frog	*Litoria moorei*				X		X		
Slender Tree Frog	*Litoria adelaidensis*				X		X		
ARACHNIDA									
Migidae									
Western pygmy trapdoor spider	*Bertmainius opimus*		P3				X		
AVES									

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
Acanthizidae									
Brown Thornbill	*Acanthiza pusilla*				X				
Inland Thornbill	*Acanthiza apicalis*				X	X	X		
Spotted Scrubwren	*Sericornis frontalis maculatus*	X			X				
Weebill	*Smicrornis brevirostris*				X	X		X	
Western Gerygone	*Gerygone fusca*				X	X			
Western Thornbill	*Acanthiza inornata*				X	X			
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*				X	X			
Accipitridae									
Black-shouldered Kite	*Elanus axillaris*				X	X			
Brown Goshawk	*Accipiter fasciatus*				X	X			
Collared Sparrowhawk	*Accipiter cirrocephalus*	X			X	X			
Little Eagle	*Hieraaetus morphnoides*				X	X			
Osprey	*Pandion haliaetus*		MI	MI	X	X	X	X	
Square-tailed Kite	*Lophoictinia isura*				X	X			
Swamp Harrier	*Circus approximans*				X	X			
Wedge-tailed Eagle	*Aquila audax*				X	X			
Whistling Kite	*Haliastur sphenurus*				X	X			
White-bellied Sea-eagle	*Haliaeetus leucogaster*				X	X	X		
Acrocephalidae									
Australian Reed Warbler	*Acrocephalus australis*				X	X	X		
Aegothelidae									
Australian Owlet-nightjar	*Aegotheles cristatus*				X	X		X	
Alcedinidae									
Laughing Kookaburra	*Dacelo novaeguineae*	X			X	X			
Sacred Kingfisher	*Todiramphus sanctus*				X	X			
Anatidae									
Australasian Shoveler	*Spatula rhynchotis*				X	X			

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
Australian Shelduck	*Tadorna tadornoides*				X	X			
Australian Wood Duck	*Chenonetta jubata*	X			X	X			
Black Swan	*Cygnus atratus*				X	X			
Blue-billed Duck	*Oxyura australis*		P4		X	X			
Chestnut Teal	*Anas castanea*				X	X			
Common Mallard	*Anas platyrhynchos*				X	X			
Grey Teal	*Anas gracilis*				X	X			
Hardhead	*Aythya australis*				X	X			
Musk Duck	*Biziura lobata*				X	X		X	X
Pacific Black Duck	*Anas superciliosa*				X	X			
Pink-eared Duck	*Malacorhynchus membranaceus*				X				
Anhingidae									
Australasian Darter	*Anhinga novaehollandiae*				X	X			
Ardeidae									
Australasian Bittern	*Botaurus poiciloptilus*		EN	EN					X
Black Bittern	*Botaurus flavicollis*						X		
Cattle Egret	*Bubulcus ibis*				X	X			
Eastern Reef Egret	*Egretta sacra*				X				
Great Egret	*Ardea alba*				X	X			
Little Egret	*Egretta garzetta*				X	X			
Nankeen Night-heron	*Nycticorax caledonicus*				X				
White-faced Heron	*Egretta novaehollandiae*				X	X			
White-necked Heron	*Ardea pacifica*				X	X			
Artamidae									
Australian Magpie	*Gymnorhina tibicen*	X			X	X			
Black-faced Woodswallow	*Artamus cinereus*				X	X			
Dusky Woodswallow	*Artamus cyanopterus*				X	X			
Grey Butcherbird	*Cracticus torquatus*				X	X	X		

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
Grey Currawong	*Strepera versicolor*				X	X			
Pied Butcherbird	*Cracticus nigrogularis*				X				
Burhinidae									
Bush Stone-curlew	*Burhinus grallarius*				X				
Cacatuidae									
Baudin's Cockatoo	*Zanda baudinii*	X	EN	EN	X	X	X	X	X
Carnabys Cockatoo	*Zanda latirostris*		EN	EN	X	X	X	X	X
Forest Red-tailed Black-cockatoo	*Calyptorhynchus banksii naso*	X	VU	VU	X		X	X	X
Galah	*Eolophus roseicapilla*	X			X	X		X	X
Little Corella	*Cacatua sanguinea*				X	X			
Campephagidae									
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*				X	X			
White-winged Triller	*Lalage tricolor*					X			
Charadriidae									
Banded Lapwing	*Vanellus tricolor*				X	X			
Black-fronted Dotterel	*Elseyornis melanops*				X	X			
Greater Sand Plover	*Charadrius leschenaultii*		VU	VU & MI	X	X		X	
Grey Plover	*Pluvialis squatarola*		MI	VU & MI	X				
Masked Lapwing	*Vanellus miles*				X	X			
Red-capped Plover	*Charadrius ruficapillus*				X	X		X	X
Red-kneed Dotterel	*Erythrogonys cinctus*				X	X			
Climacteridae									
Rufous Treecreeper	*Climacteris rufus*				X	X			
Columbidae									
Brush Bronzewing	*Phaps elegans*				X	X			
Common Bronzewing	*Phaps chalcoptera*	X			X	X			
Crested Pigeon	*Ocyphaps lophotes*				X	X			

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
Laughing Turtle-dove	*Spilopelia senegalensis*	X			X	X			
Rock Dove	*Columba livia*				X	X			
Spotted Turtle-dove	*Spilopelia chinensis*				X	X			
Corvidae									
Australian Raven	*Corvus coronoides*	X			X	X	X		
Cuculidae									
Fan-tailed Cuckoo	*Cacomantis flabelliformis*				X	X			
Horsfield's Bronze-cuckoo	*Chalcites basalis*				X	X			
Pallid Cuckoo	*Heteroscenes pallidus*				X	X			
Shining Bronze-cuckoo	*Chalcites lucidus*	X			X	X			
Dicaeidae									
Mistletoebird	*Dicaeum hirundinaceum*				X	X			
Estrildidae									
Red-eared Firetail	*Stagonopleura oculata*				X	X			
Falconidae									
Brown Falcon	*Falco berigora*				X	X		X	X
Grey Falcon	*Falco hypoleucos*		VU	VU					X
Nankeen Kestrel	*Falco cenchroides*	X			X	X	X		
Peregrine Falcon	*Falco peregrinus*		OS		X	X	X	X	
Falcunculidae									
Western Shrike-tit	*Falcunculus frontatus*				X				
Haematopodidae									
Sooty Oystercatcher	*Haematopus fuliginosus*				X				
Hirundinidae									
Fairy Martin	*Petrochelidon ariel*	X			X				
Tree Martin	*Petrochelidon nigricans*				X	X			
Welcome Swallow	*Hirundo neoxena*				X	X			
Laridae									

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
Silver Gull	*Chroicocephalus novaehollandiae*				X				
Locustellidae									
Brown Songlark	*Cincloramphus cruralis*				X				
Little Grassbird	*Poodytes gramineus*				X	X			
Rufous Songlark	*Cincloramphus mathewsi*				X				
Maluridae									
Blue-breasted Fairy-wren	*Malurus pulcherrimus*				X		X		
Red-winged Fairy-wren	*Malurus elegans*				X	X	X		
Southern Emu-wren	*Stipiturus malachurus*				X	X			
Splendid Fairy-wren	*Malurus splendens*	X			X	X			
Megapodiidae									
Malleefowl	*Leipoa ocellata*		VU	VU	X		X		
Meliphagidae									
Brown Honeyeater	*Lichmera indistincta*	X			X	X			
Brown-headed Honeyeater	*Melithreptus brevirostris*					X			
Gilbert's Honeyeater	*Melithreptus chloropsis*				X		X		
New Holland Honeyeater	*Phylidonyris novaehollandiae*	X			X	X			
Red Wattlebird	*Anthochaera carunculata*	X			X	X			
Singing Honeyeater	*Gavicalis virescens*				X	X			
Tawny-crowned Honeyeater	*Gliciphila melanops*				X	X			
Western Spinebill	*Acanthorhynchus superciliosus*				X	X			
Western Wattlebird	*Anthochaera lunulata*				X	X			
White-cheeked Honeyeater	*Phylidonyris niger*				X	X		X	
White-fronted Chat	*Epthianura albifrons*				X	X			
White-naped Honeyeater	*Melithreptus lunatus*				X	X			
Yellow-throated Miner	*Manorina flavigula*				X		X		
Meropidae									
Rainbow Bee-eater	*Merops ornatus*				X	X			

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
Monarchidae									
Magpie-lark	*Grallina cyanoleuca*				X	X			
Restless Flycatcher	*Myiagra inquieta*				X				
Motacillidae									
Australian Pipit	*Anthus novaeseelandiae*				X	X			
Neosittidae									
Varied Sittella	*Daphoenositta chrysoptera*				X	X			
Pachycephalidae									
Golden Whistler	*Pachycephala pectoralis*	X			X	X			
Grey Shrike-thrush	*Colluricincla harmonica*	X			X	X			
Rufous Whistler	*Pachycephala rufiventris*	X			X	X			
Pardalotidae									
Spotted Pardalote	*Pardalotus punctatus*				X	X			
Striated Pardalote	*Pardalotus striatus*	X			X	X			
Pelecanidae									
Australian Pelican	*Pelecanus conspicillatus*				X	X			
Petroicidae									
Hooded Robin	*Melanodryas cucullata*				X				
Jacky Winter	*Microeca fascinans*					X			
Red-capped Robin	*Petroica goodenovii*				X				
Scarlet Robin	*Petroica boodang*				X	X			
Western Yellow Robin	*Eopsaltria griseogularis*				X	X			
White-breasted Robin	*Quoyornis georgianus*					X			
Phalacrocoracidae									
Little Black Cormorant	*Phalacrocorax sulcirostris*				X	X			
Little Pied Cormorant	*Microcarbo melanoleucos*				X	X			
Pied Cormorant	*Phalacrocorax varius*				X	X			
Phasianidae									

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
Brown Quail	*Synoicus ypsilophora*				X				
Stubble Quail	*Coturnix pectoralis*				X				
Podargidae									
Tawny Frogmouth	*Podargus strigoides*				X	X			
Podicipedidae									
Australasian Grebe	*Tachybaptus novaehollandiae*				X	X			
Great Crested Grebe	*Podiceps cristatus*				X	X			
Hoary-headed Grebe	*Poliocephalus poliocephalus*				X	X			
Psittacidae									
Australian Ringneck	*Barnardius zonarius*	X			X	X			
Elegant Parrot	*Neophema elegans*				X	X			X
Regent Parrot	*Polytelis anthopeplus*				X	X			
Rock Parrot	*Neophema petrophila*				X	X			
Western Rosella	*Platycercus icterotis*	X			X	X			
Psittaculidae									
Purple-crowned Lorikeet	*Glossopsitta porphyrocephala*					X			
Rallidae									
Australian Spotted Crake	*Porzana fluminea*				X	X			
Black-tailed Native-hen	*Tribonyx ventralis*				X	X			
Buff-banded Rail	*Hypotaenidia philippensis*				X	X			
Dusky Moorhen	*Gallinula tenebrosa*				X	X			
Eurasian Coot	*Fulica atra*				X	X			
Lewin's Rail	*Lewinia pectoralis*				X				
Purple Swamphen	*Porphyrio porphyrio*				X	X			
Spotless Crake	*Zapornia tabuensis*				X	X			
Torresian Baillon's Crake	*Zapornia pusilla palustris*				X		X	X	X
Recurvirostridae									
Banded Stilt	*Cladorhynchus leucocephalus*					X			

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
Black-winged Stilt	*Himantopus himantopus*				X				
Pied Stilt	*Himantopus himantopus leucocephalus*				X				
Red-necked Avocet	*Recurvirostra novaehollandiae*				X	X			
Rhipiduridae									
Grey Fantail	*Rhipidura albiscapa*	X			X	X			
Willie Wagtail	*Rhipidura leucophrys*				X	X			
Scolopacidae									
Bar-tailed Godwit	*Limosa lapponica*		MI	MI	X	X			
Common Greenshank	*Tringa nebularia*		MI	EN & MI	X	X			
Common Sandpiper	*Actitis hypoleucos*		MI	MI	X	X			
Curlew Sandpiper	*Calidris ferruginea*		CR	CR & MI					X
Far Eastern Curlew	*Numenius madagascariensis*		CR	CR & MI		X			X
Great Knot	*Calidris tenuirostris*		CR	VU & MI	X			X	
Marsh Sandpiper	*Tringa stagnatilis*		MI	MI	X	X		X	X
Red Knot	*Calidris canutus*		EN	VU & MI	X			X	
Red-necked Stint	*Calidris ruficollis*		MI	MI	X	X		X	
Sanderling	*Calidris alba*		MI	MI	X	X			X
Sharp-tailed Sandpiper	*Calidris acuminata*		MI	VU & MI	X				
Wood Sandpiper	*Tringa glareola*		MI	MI	X				
Strigidae									
Barking Owl	*Ninox connivens*				X				
Southern Boobook	*Ninox boobook*				X	X		X	X
Threskiornithidae									
Australian White Ibis	*Threskiornis moluccus*				X	X			
Glossy Ibis	*Plegadis falcinellus*		MI	MI	X				

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
Royal Spoonbill	*Platalea regia*				X	X			
Straw-necked Ibis	*Threskiornis spinicollis*				X	X			
Yellow-billed Spoonbill	*Platalea flavipes*				X	X			
Tytonidae									
Barn Owl	*Tyto alba*					X			
Masked Owl (southwest)	*Tyto novaehollandiae novaehollandiae*		P3				X	X	
Zosteropidae									
Silvereye	*Zosterops lateralis*				X	X			
BIVALVIA									
Hyriidae									
Carter's Freshwater Mussel	*Westralunio carteri*		VU	VU	X		X	X	X
GASTROPODA									
Assimineidae									
Cape Leeuwin freshwater snail	*Austroassiminea letha*		VU				X	X	
INSECTA									
Carabidae									
Ground beetle (Margaret River)	*Trichosternus relictus*		P3				X		
Tettigoniidae									
Grey vernal katydid (southwest)	*Kawanaphila pachomai*		P1				X		
MALACOSTRACA									
Parastacidae									
Dunsborough Burrowing Crayfish	*Engaewa reducta*		EN	CR	X		X	X	X
Margaret River Burrowing Crayfish	*Engaewa pseudoreducta*		CR	CR	X		X	X	X
Margaret River hairy marron	*Cherax tenuimanus*		CR	CR			X		X
MAMMALIA									
Burramyidae									
Western Pygmy-possum	*Cercartetus concinnus*				X		X	X	X
Canidae									

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
Fox	*Vulpes vulpes*	X			X				
Dasyuridae									
South-western Brush-tailed Phascogale	*Phascogale tapoatafa*				X				
Chuditch	*Dasyurus geoffroii*		VU	VU			X	X	X
Gilbert's dunnart	*Sminthopsis gilberti*						X		
Grey-bellied dunnart	*Sminthopsis griseoventer*						X		
Wambenger	*Phascogale tapoatafa wambenger*		CD		X		X	X	
Felidae									
Cat	*Felis catus*				X				
Leporidae									
Rabbit	*Oryctolagus cuniculus*	X			X				
Macropodidae									
Quokka	*Setonix brachyurus*		VU	VU	X		X	X	X
Western Brush Wallaby	*Notamacropus irma*		P4		X		X	X	
Western Grey Kangaroo	*Macropus fuliginosus*	X			X				
Molossidae									
White-striped Freetail bat	*Austronomus australis*						X		
Muridae									
Black Rat	*Rattus rattus*				X		X		
House Mouse	*Mus musculus*						X		
Water-rat	*Hydromys chrysogaster*		P4		X		X	X	
Myrmecobiidae									
Numbat	*Myrmecobius fasciatus*		EN	EN			X		
Peramelidae									
Quenda	*Isoodon fusciventer*	X	P4		X		X	X	
Phalangeridae									
Common Brushtail Possum	*Trichosurus vulpecula*	X			X		X		
Potoroidae									

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
Woylie	*Bettongia penicillata*		CR	EN	X			X	X
Pseudocheiridae									
Western Ringtail Possum	*Pseudocheirus occidentalis*	X	CR	CR	X		X	X	X
Tarsipedidae									
Honey Possum	*Tarsipes rostratus*				X		X		
Thylacomyidae									
Bilby	*Macrotis lagotis*		VU	VU			X		
Vespertilionidae									
Chocolate wattled bat	*Chalinolobus morio*						X		
Gould's wattled bat	*Chalinolobus gouldii*						X		
Southern Forest Bat	*Vespadelus regulus*				X		X		
Vespertilionid Bat	*Nyctophilus geoffroyi*						X		
Western long-eared bat	*Nyctophilus major major*				X				
REPTILIA									
Chelidae									
Southern Snake-necked Turtle	*Chelodina oblonga*				X				
Elapidae									
Dugite	*Pseudonaja affinis*				X				
Mitchell's Short-tailed Snake	*Suta nigriceps*				X				
Muller's Snake	*Rhinoplocephalus bicolor*				X				
Short-nosed Snake	*Elapognathus minor*		P2				X		
Tiger Snake	*Notechis scutatus*				X			X	
Western Brown Snake	*Pseudonaja mengdeni*				X				
Western Crowned Snake	*Elapognathus coronatus*				X				
Gekkonidae									
Marbled Gecko	*Christinus marmoratus*				X				X
Pygopodidae									
Heath Delma	*Delma hebesa*				X			X	X

CLASS Family Vernacular Name	*Taxon*	Observed	Status (WA)	Status (EPBC)	ALA, 10 km	Birdata, 10 km	Dandjoo, 10 km	DBCA, 10 km	PMST, 10 km
Scincidae									
Bobtail	*Tiliqua rugosa*	X			X		X		
Coastal Plains Skink	*Ctenotus ora*		P3		X		X		
Elegant Slider	*Lerista elegans*				X		X		
Four-toed Earless Skink	*Hemiergis peronii*				X				
Grey's Menetia	*Menetia greyii*	X			X		X		
King's Skink	*Egernia kingii*				X		X		
Lowlands Earless Skink	*Hemiergis peronii*				X				
Red-legged Ctenotus	*Ctenotus labillardieri*				X				
South-western Crevice-skink	*Egernia napoleonis*				X		X		
South-western Orange-tailed Slider	*Lerista distinguenda*						X	X	
West Coast Morethia Skink	*Morethia lineoocellata*				X		X		
Typhlopidae									
Southern blind snake	*Anilios australis*						X		
Varanidae									
Heath Monitor	*Varanus rosenbergi*				X		X		

Appendix E Local Significant Vegetation Records

Community	Description	Status (WA)	Status (EPBC)	Source
Banksia Woodlands of the Swan Coastal Plain	Canopy is most commonly dominated or co-dominated by *Banksia attenuata* and/or *B. menziesii*. Other Banksia species that can dominate in the community are *B. prionotes* or *B. ilicifolia*. It typically occurs on well drained, low nutrient soils on sandplain landforms, particularly deep Bassendean and Spearwood sands and occasionally on Quindalup sands; it is also common on sandy colluvium and aeolian sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau and can occur in other less common scenarios. The description, area and condition thresholds that apply to the EPBC-listed TEC of the same name, also apply to this Priority ecological community.	Priority 3	Endangered	(DBCA, 2025a; DCCEEW, 2025)
Coastal granitic shrublands and herblands of the exposed western and southern sides of the Leeuwin Block major landform **(Previously known as Low shrublands on acidic grey-brown sands of the Gracetown soil-landscape system / Coastal granitic shrublands and herblands PEC)**	Known from 36 occurrences between Cape Naturalist and Cape Leeuwin, with an area of occupancy of approximately 221.4 hectares. The Coastal granitic shrublands and herblands PEC is associated with outcropping granite (exposed or shallow sub-surface) and is characterised by a series of flora within the landform that only occur on outcropping granite, including the shrubs *Dodonaea ceratocarpa*, *Hakea trifurcata*, *Darwinia citriodora*, *Dillwynia laxiflora*, *Cryptandra arbutiflora*, *Kunzea ciliata*, *Verticordia plumosa* var. *plumosa* and *Daviesia horrida*, and the herbs *Stylidium megacarpum*, *Neurachne alopecuroidea*, *Stypandra glauca*, *Cheilanthes austrotenuifolia*, and a large robust form of *Lepidosperma squamatum* (sensu lato).	Priority 2	Not listed	(DBCA, 2025a)
Empodisma peatlands of southwestern Australia	The assemblage of plants, animals and other organisms associated with a type of freshwater, peat-based wetland (including within damplands, troughs, paluslopes, palusplains and palusmonts floodplains as per (Semeniuk, 1987)) that is found in the High Rainfall Province of the south-west of Western Australia (BoM, 2022; Hopper & Gioia, 2004). It is typically a sedgeland to shrubland vegetation complex on peaty substrates that almost always includes the perennial grass-like twig rush *Empodisma gracillimum* (tanglefoot). Empodisma peatlands provide habitat for a diverse range of hydrophilic species, including threatened, regionally endemic, and relictual flora and fauna species (DCCEEW, 2023).	Priority 1	Endangered	(DBCA, 2025a; DCCEEW, 2025)
Shrublands of near permanent wetlands in creeklines of the Whicher Scarp (Whicher Scarp community G2)	Community is species poor and included the following taxa: *Astartea scoparia, Homalospermum firmum, Taxandria fragrans, *Anthoxanthum odoratum, Machaerina rubiginosa, Cyathochaeta teretifolia, Isolepis cernua, Taraxis grossa.*	Priority 1	Not listed	(DBCA, 2025a)
Shrublands on southern Swan Coastal Plain Ironstones (Busselton area) (floristic community type 10b as	This species-rich plant community is a seasonal wetland on ironstone sheet rock overlain by shallow loam soils on the Swan Coastal Plain and Whicher Scarp near Busselton. Much of the species diversity comes from annuals and geophytes (plants with an underground storage organ). Typical and common shrubs include	Critically Endangered	Endangered	(DBCA, 2025a; DCCEEW, 2025)

Community	Description	Status (WA)	Status (EPBC)	Source
originally described in Gibson et al. 1994)	*Kunzea rostrata*, *Pericalymma ellipticum* (swamp teatree), *Hakea oldfieldii*, *Hemiandra pungens* (snakebush) and *Viminaria juncea* (swishbush). Aphelia cyperoides (hairy aphelia) and *Centrolepis aristata* (pointed centrolepis) also commonly occur. Many taxa in the community are endemic to this unusual geology including a suite of threatened flora. The community is also known as 'floristic community type 10b' as originally described in Gibson et al. (1994).			
Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain	Mostly confined to Quindalup Dunes and Spearwood Dunes but can also occur on the Bassendean dunes and Pinjarra Plain. It can occur on the banks of rivers and wetlands. Tuart is the key upper canopy species although it may co-occur with trees of other species. Trees commonly co-occurring with Tuart include *Agonis flexuosa* (peppermint), *Banksia grandis*, *Banksia attenuata*, *Eucalyptus marginata*; and less commonly, *Corymbia calophylla*, *Banksia menziesii* and *Banksia prionotes*. An understorey of native plants is typically present, which may include grasses, herbs and shrubs. The description, area and condition thresholds that apply to the EPBC-listed TEC of the same name, also apply to this Priority ecological community.	Priority 3 (iii)	Critically Endangered	(DCCEEW, 2025)

Appendix F Likelihood of Occurrence for Conservation Significant Flora

Taxon	Status (WA)	Status (EPBC)	Flowering Period (WA Herbarium, 1998-)	Habitat (WA Herbarium, 1998-)	Nearest Known Location (km)*	Identifiable During Survey Period**	Likelihood of Further Occurrence
Acacia flagelliformis	P4		May - Sep	Sandy soils. Winter-wet areas.	4.13	Y	**Unlikely to occur** - Habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Acacia inops	P3		Sep - Nov	Black peaty sand, clay. Swamps, creeks.	0.16	Y	**Unlikely to occur** - Habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Acacia lateriticola var. Glabrous variant (B.R. Maslin 6765)	P3		Aug or Oct	Lateritic soils.	7.94	Y	**Unlikely to occur** - Habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Acacia semitrullata	P4		May - Oct	White/grey sand, sometimes over laterite. Open heath frequently fringing seasonally dry swamps, and in sand over laterite in shallow depressions in open Eucalyptus marginata forest (WA Herbarium, 2022)	8.84	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Acacia tayloriana	P4		Jan	Grey or yellow/orange sandy soils, lateritic gravel, clay loam. Winter-wet areas.	7.71	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.

Taxon	Status (WA)	Status (EPBC)	Flowering Period (WA Herbarium, 1998-)	Habitat (WA Herbarium, 1998-)	Nearest Known Location (km)*	Identifiable During Survey Period**	Likelihood of Further Occurrence
Actinotus whicheranus	P2		Nov - Mar	Winter wet areas. Sand over laterite.	10.68	Y	**Unlikely to occur** - Habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Andersonia ferricola	P1		Oct - Dec	Red-brown loam over ironstone. Seasonally wet flats.	10.38	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Andersonia sp. Echidna (A.R. Annels ARA 5500)	P2		Nov - Jan	White or grey sands, seasonally damp areas	5.64	Y	**Unlikely to occur** - Habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Banksia mimica	T	EN	Dec or Jan - Feb	White or grey sand over laterite, sandy loam.		Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Banksia nivea subsp. *uliginosa*	T	EN	Aug - Sep	Sandy clay, gravel. Ironstone.	10.31	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Banksia sessilis var. *cordata*	P4		Jul - Oct	Coastal limestone	9.66	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Banksia squarrosa subsp. *argillacea*	T	VU	Jun - Nov	White/grey sand, gravelly clay or loam. Winter-wet flats, clay flats.	10.44	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.

Taxon	Status (WA)	Status (EPBC)	Flowering Period (WA Herbarium, 1998-)	Habitat (WA Herbarium, 1998-)	Nearest Known Location (km)*	Identifiable During Survey Period**	Likelihood of Further Occurrence
Boronia capitata subsp. *gracilis*	P3		Jun - Nov.	Winter-wet swamps, or gentle hillslopes. White/grey or black sand.	5.17	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Boronia sp. Leeuwin (J. Scott 235)	P2		Aug - Dec	Seaonally wet areas, brown/grey/black loam, sand, peat, clay, with granite. Coastal areas.	0.06	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Caladenia abbreviata	P3		Nov - Dec	Sand. Sand dunes.	8.91	Y	**Unlikely to occur -** The Survey Area does not contain habitat consistent with the species' documented soil, vegetation structure and/or landscape setting requirements. The surveys were undertaken during the species' flowering period. Although orchid detectability can vary between seasons, individuals would likely have been observable if present. Given the absence of suitable habitat and no records during survey, the species is considered unlikely to occur.
Caladenia excelsa	T	EN	Sep - Nov	Sandy soils in Banksia, Jarrah (Eucalyptus marginata) and marri (Corymbia calophylla) woodlands.	6.67	Y	**Unlikely to occur** - The survey was undertaken toward the end of the species' known flowering period. Detection of terrestrial orchids can be influenced by inter-annual variability in emergence and flowering intensity, as well as staggered flowering within a season. Notwithstanding these factors, the species would likely have been detectable if present. While some broadly suitable habitat elements occur within the Survey Area, the disturbed and fragmented condition of the vegetation reduces overall habitat suitability. On balance, the species is considered unlikely to occur.
Caladenia huegelii	T	CR	Sep - Oct.	Grey or brown sand, clay loam. Sandy soils in near coastal woodlands and shrublands.		Y	**Unlikely to occur** - The survey was undertaken toward the end of the species' known flowering period. Detection of terrestrial orchids can be influenced by inter-annual variability in emergence and flowering intensity, as well as staggered flowering within a season. Notwithstanding these factors, the species would likely have been detectable if present. While some broadly suitable habitat elements occur within the Survey Area, the disturbed and fragmented condition of the vegetation reduces overall habitat suitability. On balance, the species is considered unlikely to occur.

Taxon	Status (WA)	Status (EPBC)	Flowering Period (WA Herbarium, 1998-)	Habitat (WA Herbarium, 1998-)	Nearest Known Location (km)*	Identifiable During Survey Period**	Likelihood of Further Occurrence
Calothamnus lateralis var. *crassus*	P3		Jun, Aug - Oct, Jan	Winter wet plains, brown/yellow or grey clayey sand or peaty sand.	10.15	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Calothamnus quadrifidus subsp. *teretifolius*	P4		Sep - Dec	Clay with ironstone, wet in winter, with tall shrubland.	9.87	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Chamaescilla gibsonii	P3		Aug - Nov	Brown or grey sandy clay. Winter-wet clay pans and flats	9.50	Y	**Unlikely to occur** - Some habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Cyathochaeta teretifolia	P3		Jul - Nov	Grey sand, sandy clay. Swamps, creek edges.	5.64	Y	**Potentially occurs** - A sterile *Cyathochaeta* species was recorded from seasonal creeklines that are typical habitat for this species. Flowering specimens are required to confirm whether it was this species.
Dampiera heteroptera	P3		Sep - Oct	Sandy soils. Swampy areas.	0.06	Y	**Unlikely to occur** - Some habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Daviesia elongata	T	VU	Sep - Dec	Well drained soils, undulating plains. Grey sand over laterite/ ironstone.	7.86	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Drakaea micrantha	T	EN	Sep - Oct.	Edge of swamps, often found in clearings and tracks. White-grey sand.	5.98	P	**Unlikely to occur** - Small sections of the Survey Area may be broadly consistent with suitable habitat for this taxon. The survey was undertaken toward the end of the known flowering period, and detection of terrestrial orchids can be influenced by inter-annual

Taxon	Status (WA)	Status (EPBC)	Flowering Period (WA Herbarium, 1998-)	Habitat (WA Herbarium, 1998-)	Nearest Known Location (km)*	Identifiable During Survey Period**	Likelihood of Further Occurrence
							variability in emergence and flowering intensity, as well as staggered flowering within a season. However, given the limited extent of suitable habitat within the Survey Area, the taxon is considered unlikely to occur.
Drosera fimbriata	P4		Sep - Oct	White sand, granite.	1.68	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Eucalyptus xphylacis	T	EN	May and Oct	Laterite, loam over granite. Coastal areas.		Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Franklandia triaristata	P4		Sep - Nov	Slopes or sandy rises. White or grey sand.	8.22	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Gahnia sclerioides	P4		Feb, Apr, Jun, Aug - Sep, Nov	Loam, sandy soils. Moist shaded situations	6.98	Y	**Unlikely to occur** - Some habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Gastrolobium formosum	P3		Nov	Along river banks or in swamps.	8.44	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Gastrolobium papilio	P2		Oct - Dec.	Flat plains or gentle slopes, sandy clay over ironstone and laterite.		Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.

Taxon	Status (WA)	Status (EPBC)	Flowering Period (WA Herbarium, 1998-)	Habitat (WA Herbarium, 1998-)	Nearest Known Location (km)*	Identifiable During Survey Period**	Likelihood of Further Occurrence
Gastrolobium whicherense	P2		Oct	Red-grey sandy clay over quartzite. Steep westerly slopes.	9.85	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Gonocarpus pusillus	P4		Oct - Dec, Feb	Grey sandy loam, sandy clay loam, wetlands or seasonally inundated areas.	5.64	Y	**Unlikely to occur** - Some habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Grevillea brachystylis subsp. *brachystylis*	P3		Jun - Nov	Black sand, sandy clay. Swampy situations.	2.37	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Grevillea brachystylis subsp. *grandis*	T	CR	Jul - Oct or Dec - Jan	Plains or flats, brown sandy loam, lateritic clay.		Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Grevillea brachystylis subsp. *Yelverton* (A. Webb AW09122)	P2		Sept - Oct	Midslope, shallow loam soils in among massive outcropping granite.	7.16	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Grevillea bronweniae	P3		Jul - Nov	Lateritic gravelly loam, grey sand or brown sand/loam. Slopes, drainage lines and watercourses	0.01	Y	**Recorded**
Grevillea manglesioides subsp. *ferricola*	P3		Oct	Red sandy clay over ironstone. Winter wet flats.	2.37	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.

Taxon	Status (WA)	Status (EPBC)	Flowering Period (WA Herbarium, 1998-)	Habitat (WA Herbarium, 1998-)	Nearest Known Location (km)*	Identifiable During Survey Period**	Likelihood of Further Occurrence
Hakea oldfieldii	P3		Sep - Nov	Flood plains or wetlands. Sandy loam over laterite/ironstone	10.57	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Isopogon formosus subsp. *dasylepis*	P3		Sep - Dec	Seasonally wet areas wet plains. Sandy clay over ironstone.	10.49	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Johnsonia inconspicua	P3		Oct - Nov	White-grey or black sand. Low dunes, winter-wet flats.	3.94	Y	**Unlikely to occur** - Some habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Lambertia echinata subsp. *occidentalis*	T	CR	Feb - Apr or Dec	White sandy soils over laterite, orange/brown-red clay over ironstone. Flats to foothills, winter-wet sites.		Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Lasiopetalum laxiflorum	P3		Oct or Nov	Brown/grey sandy clay, clayey loam sand over laterite, slopes.	0.06	Y	**Unlikely to occur** - Some habitat within the Survey Area is broadly consistent with the species documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Leptomeria furtiva	P2		Aug - Oct	Grey or black peaty sand. Winter-wet flats.	0.04	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Lepyrodia heleocharoides	P3		Dec	Moist peaty sand. Dry or seasonally inundated heath or woodland, swamps.	5.64	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.

Taxon	Status (WA)	Status (EPBC)	Flowering Period (WA Herbarium, 1998-)	Habitat (WA Herbarium, 1998-)	Nearest Known Location (km)*	Identifiable During Survey Period**	Likelihood of Further Occurrence
Pultenaea pinifolia	P3		Oct - Nov	Loam or clay. Floodplains, swampy areas.	0.16	Y	**Unlikely to occur** - Small sections of the Survey Area may be broadly consistent with suitable habitat for this taxon. However, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Loxocarya magna	P3		Sep or Nov.	Sand, loam, clay, ironstone. Seasonally inundated or damp habitats.	10.49	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.
Netrostylis sp. Blackwood River (A.R. Annels 3043)	P3		April/May	Swampy areas, dark peaty clay loam.	1.55	Y	**Recorded**
Netrostylis sp. Nannup (P.A. Jurjevich 1133)	P1		Sept - Oct	Creeklines, dark grey clay loam.	0.06	Y	**Unlikely to occur** - Some habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Pimelea ciliata subsp. *longituba*	P3		Oct - Dec	Grey sand over clay, loam.	5.42	Y	**Unlikely to occur** - Some habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Stylidium lowrieanum	P3		Oct - Nov	Sand or sandy loam over limestone. Eucalypt or Agonis woodland, forest, scrub.	9.14	Y	**Unlikely to occur** - Some habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.

Taxon	Status (WA)	Status (EPBC)	Flowering Period (WA Herbarium, 1998-)	Habitat (WA Herbarium, 1998-)	Nearest Known Location (km)*	Identifiable During Survey Period**	Likelihood of Further Occurrence
Synaphea decumbens	P3		Sept - Nov	Grey-brown loam over laterite	0.01	Y	**Unlikely to occur** - Some habitat within the Survey Area is broadly consistent with the taxon's documented habitat preferences, and it has previously been recorded from the area. The location of the previous record was targeted during the survey but the taxon was not relocated. Given that it would have been identifiable during the survey period based on its growth form and/or phenology, and was not recorded despite targeted survey effort, it is considered unlikely to occur within the Survey Area.
Thelymitra variegata	T	CR	Aug - Oct	Brown clay loam or sand, in clearings amongst low shrubs, rushes and grass tussocks in freely draining deep sandy soil		Y	**Unlikely to occur** - The survey was undertaken toward the end of the species' known flowering period. Detection of terrestrial orchids can be influenced by inter-annual variability in emergence and flowering intensity, as well as staggered flowering within a season. Notwithstanding these factors, the species would likely have been detectable if present. While some broadly suitable habitat elements occur within the Survey Area, the disturbed and fragmented condition of the vegetation reduces overall habitat suitability. On balance, the species is considered unlikely to occur.
Thysanotus glaucus	P4		Oct - Mar	White, grey or yellow sand, sandy gravel.	5.13	Y	**Unlikely to occur** - Some habitat within the Survey Area is broadly consistent with the species' documented habitat preferences; however, the species would have been identifiable during the survey period based on its growth form and/or phenology. It was not recorded despite targeted survey effort and is therefore considered unlikely to occur within the Survey Area.
Xyris maxima	P2		Nov - Dec or Jan	Black peaty sand. Drainage flats.	4.10	Y	**Unlikely to occur** - Habitat within the Survey Area does not align with the species' documented habitat preferences, and the species would have been identifiable at the time of survey based on its growth form and/or phenology.

*Nearest known location for records returned by the DBCA WA Herbarium specimen and Threatened and Priority Flora (TPFL) database interrogation (DBCA, 2025c)

**Y = Yes, N = No, P = Potentially

Appendix G Likelihood of Occurrence for Conservation Significant Fauna

Table G.1 provides an evaluation of the presence of habitat and the likelihood of occurrence for conservation significant fauna taxa within the Survey Area. The potential to be impacted depends on the nature of the impacts proposed, habitat utilised by the target species and the likelihood of occurrence. The presence of habitat is broken into four categories:

- **Present - core:** Potential or known habitat present within the Survey Area. Consists of "habitat critical to the survival of a species" which refers to core areas that are necessary for activities such as foraging, breeding, roosting, or dispersal, necessary for the long-term maintenance of the species to maintain genetic diversity and long-term evolutionary development (DoE, 2013) or habitat types recognised in Recovery Plans or guidelines.
- **Present - supporting:** Likely to provide dispersal, transitory or supporting habitat that may support core / critical habitat areas, such as small areas of lesser quality habitat where an animal has a large home range.
- **Marginal:** Habitat present is not typical but may be suitable, or habitat is typical, but condition and microhabitat requirements of species are not present.
- **Absent:** No potential or known habitat is present within the project area.

There are four categories for likelihood of occurrence:

- **Present:** Species was recorded during the field investigations.
- **Possible:** Suitable habitat present and the species could occur in the Survey Area based on the proximity of nearest records.
- **Unlikely:** Species known or predicted within the locality. Suitable habitat may be present in the Survey Area, but the proximity of nearest records suggests it is unlikely to occur.
- **Nil:** Species known or predicted to occur within the locality but no suitable habitat within the Survey Area.

Some taxa have been excluded as they are not relevant to the proposal or would not be impacted:

- Species considered regionally extinct (potentially with only few historical records) misidentified from current records or outside of the known distribution (e.g. Malleefowl, Quokka, Bilby and Numbat).
- Marine (e.g. seals, dolphins, whales) or marine migratory species (e.g. Albatrosses).
- Migratory species where breeding is in the northern hemisphere, and Migratory waders such those in the family Scolopacidae - shorebirds or waders, which would not occur.

Oriental Pratincole	Curlew Sandpiper	Eastern Curlew
Bridled Tern	Pectoral Sandpiper	Whimbrel
Common Tern	Red-necked Stint	Grey-tailed Tattler
Common Sandpiper	Great Knot	Wood Sandpiper
Sharp-tailed Sandpiper	Bar-tailed Godwit	Common Greenshank
Sanderling	Black-tailed Godwit	Marsh Sandpiper
Red Knot	Greater Sand Plover	

Conservation status is as per the (federal) EPBC Act and (WA) DBCA Parks and Wildlife Service's Threatened and Priority Fauna List last updated in January 2025. Refer to Appendix B for Conservation Codes.

Table G.1 Evaluation of the presence of habitat and the likelihood of occurrence for conservation fauna significant species within the Survey Area

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
ACTINOPTERYGII - Galaxiidae	*Galaxiella munda*	Western mud minnow	VU	VU	Its centre of distribution is in the small lakes and streams around Windy Harbour in the 'Entrecasteaux National Park (Morgan et al., 1998a). Within the Margaret River mud minnows are essentially restricted to a few pools in the upper reaches, habitats that were previously free from introduced fishes (Morgan & Beatty, 2003). Morgan and Beatty (2004) reported the first record of mud minnows in the lower Margaret River, downstream of Canebreak Pool. Unable to tolerate marginally saline or eutrophic waters (characteristic of the larger rivers and wetlands of southwestern Australia) (Wetland Research & Management, 2007). No DBCA (2025) records within 10 km. Survey sites established by the Healthy Rivers project occur nearby, however, the Survey Area has not been mapped as "species found" or "species likely to be found" (DWER, 2026).	Absent	Nil
ACTINOPTERYGII -Percichthyidae	*Nannatherina balstoni*	Balston's Pygmy Perch	VU	VU	Known from a small area of coastal peat flats in south-western Western Australia that extends from Margaret River to Two Peoples Bay. Two additional populations have recently been found to the north of this area in the Collie River and the Moore River (Morgan et al., 1998b). In winter and spring Balston's Pygmy Perch is typically found among inundated riparian vegetation where it presumably feeds and spawns. In summer, Balston's Pygmy Perch has been found to be moderately abundant in pools and creeks that often dry up, such as those found between Windy Harbour and Walpole (Morgan et al., 1998b). No DBCA (2025) records within 10 km. Survey sites established by the Healthy Rivers project	Absent	Nil

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
					occur nearby, however, the Survey Area has not been mapped as “species found” or “species likely to be found” (DWER, 2026).		
ARACHNIDA - Migidae	*Bertmainius opimus*	Western pygmy trapdoor spider		P3	These spiders construct shallow burrows on the bark of tingle trees (*Eucalyptus guilfoylei*, *E. jacksonii* and *E. brevistylis*) or in soil on the banks of creek lines and gullies. The burrows are capped with a thin lid that serves to retain moisture and keep out predators such as ants. The lids are sealed with silk when the spiders moult, or when eggs or juveniles are in the burrow with the female. The spiders seem to prefer moist, shaded areas. Burrows are often clustered in appropriate microhabitats. Life history information is limited, and the age structure of the populations is unknown. However, most mygalomorph spiders are relatively long lived (>5 years) (Harvey et al., 2015). No DBCA (2025) records within 10 km.	Absent	Nil
AVES - Anatidae	*Oxyura australis*	Blue-Billed Duck		P4	Deep, densely vegetated freshwater lakes, swamps when breeding; winters on more open waters (Morcombe, 2011). No DBCA (2025) records within 10 km.	Absent	Nil
AVES - Ardeidae	*Botaurus poiciloptilus*	Australasian Bittern	EN	EN	The Australasian Bittern occurs in terrestrial freshwater wetlands and, rarely, estuarine habitats. In the south-west it is found in beds of tall rush mixed with, or near, short fine sedge or open pools. The species also occurs around swamps, lakes, pools, rivers and channels fringed with lignum (*Muehlenbeckia* sp.), canegrass (*Eragrostis* sp.) or other dense vegetation. The species occasionally ventures into areas of open water or onto banks. In the SW WA, it is confined to a relatively small number of regularly occupied locations. These locations probably number less than 70, including: less than five north of Perth; less than 10 in the greater Perth metropolitan area;	Absent	Nil

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
					less than 10 south to Busselton; less than 10 in the Lake Muir district; less than 10 from Augusta to Walpole; less than 10 around Albany; and less than 10 around Esperance and Cape Arid. Most of these sites are discrete basin/sumpland wetlands with local catchments, and many depend on the surface expression of groundwater (SPRAT, n.d.). No DBCA (2025) records within 10 km.		
AVES - Cacatuidae	*Calyptorhynchus banksii naso*	Forest Red-tailed Black Cockatoo	VU	VU	The FRTBC is a large forest cockatoo, endemic to the SW of WA. FRTBC occurs throughout the jarrah marri karri forested areas and more recently on the Swan Coastal Plain. Group sizes vary from small family groups and pairs to larger gatherings at roost sites. FRTBC generally breed in remnant woodland or forest but may also breed in partially cleared areas, including isolated trees. They nest in hollows in live or dead trees particularly marri, karri, wandoo, bullich, blackbutt, tuart and jarrah (DAWE, 2022; Johnstone et al., 2013). FRTBC have been recorded breeding in all months, but with peaks in Spring and Autumn following marri (or jarrah) fruit flushes. There are also years when very little breeding takes place (Johnstone and Kirkby, unpublished data). FRTBC diet is mostly (90%) seeds of jarrah and marri in woodlands and forest, and in the edges of karri forests, with the remainder made up of blackbutt, *E. staeri* (Albany blackbutt), bullich, *Hakea* spp, tuart, western sheoak *(Allocasuarina fraseriana)*, snottygobble (*Persoonia longifolia*) and the non-indigenous Australian native *Melia azederach* (cape lilac) (Johnstone & Kirkby, 1999). The species forage on cones, the fruits of	Present - Supporting	Present

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
					snottygobble and mountain marri. On the Swan Coastal Plain, the species often feed on introduced *Corymbia maculata* (spotted gum), *Eucalyptus caesia*, *Eucalyptus erythrocorys*, and lemon-scented gum (DAWE, 2022). FRTBC are known to roost within any tall trees that may provide roosting habitat, particularly tall jarrah, marri, blackbutt, tuart and introduced *Eucalyptus* spp. trees or large trees on the edges of forests (DAWE, 2022). Detected during the survey.		
AVES - Cacatuidae	*Zanda baudinii*	Baudin's Cockatoo	EN	EN	The FRTBC is a large forest cockatoo, endemic to the SW of WA. FRTBC occurs throughout the jarrah marri karri forested areas and more recently on the Swan Coastal Plain. Group sizes vary from small family groups and pairs to larger gatherings at roost sites. FRTBC generally breed in remnant woodland or forest but may also breed in partially cleared areas, including isolated trees. They nest in hollows in live or dead trees particularly Marri, Karri, Wandoo, Bullich, Blackbutt, Tuart and Jarrah (DAWE, 2022; Johnstone et al., 2013). FRTBC have been recorded breeding in all months, but with peaks in Spring and Autumn following Marri (or Jarrah) fruit flushes. There are also years when very little breeding takes place (Johnstone and Kirkby, unpublished data). FRTBC diet is mostly (90%) seeds of Jarrah and Marri in woodlands and forest, and in the edges of Karri forests, with the remainder made up of Blackbutt, *E. staeri* (Albany blackbutt), Bullich, *Hakea* spp, tuart, Western Sheoak *(Allocasuarina*	Present - Supporting	Present

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
					fraseriana), Snottygobble (*Persoonia longifolia*) and the non-indigenous Australian native *Melia azederach* (cape lilac) (Johnstone & Kirkby, 1999). The species forage on cones, the fruits of Snottygobble and Mountain Marri. On the Swan Coastal Plain, the species often feed on introduced *Corymbia maculata* (Spotted Gum), *Eucalyptus caesia*, *Eucalyptus erythrocorys*, and Lemon-scented Gum (DAWE, 2022). FRTBC are known to roost within any tall trees that may provide roosting habitat, particularly tall Jarrah, Marri, Blackbutt, Tuart and introduced *Eucalyptus* spp. trees or large trees on the edges of forests (DAWE, 2022). Detected during the survey.		
AVES - Cacatuidae	*Zanda latirostris*	Carnaby's Cockatoo	EN	EN	Carnaby's cockatoo mainly occurs in or near eucalypt woodlands, especially those dominated by wandoo or salmon gum, and sometimes in forests of marri, jarrah, karri or tuart. Nesting occurs mainly in the Wheatbelt but is increasingly occurring on the west and south coast. It is a postnuptial nomad, moving west after breeding. This species is currently expanding its breeding range westward and south into the jarrah marri forests of the Darling Scarp and into the tuart forests of the Swan Coastal Plain along with the Capes Region (Author pers obs.). This may be due to climate change (Cale, 2003; SPRAT, n.d.; WA Museum, 2010). Breeding occurs mainly from early July to mid-December normally in remnant woodland or forest, but also in partially cleared areas, including isolated trees. Nests are in hollows in live or dead	Present - Supporting	Possible

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
					trees, particularly salmon gum, wandoo, tuart, jarrah, flooded gum, york gum, powderbark, blackbutt and marri (DAWE, 2022). Breeding success is largely dependent on suitable feeding habitat near the nest site to provide food required for the survival of the chick (Johnstone et al., 2011). The species forages in native shrubland, kwongan heathland and woodland dominated by proteaceous plant species, on seeds, flowers and nectar of *Banksia* spp., *Hakea* spp. and *Grevillea* spp., as well as *Callistemon* spp. and marri, and in eucalypt woodland and forest that contains foraging species, individual trees and small stands of these species. It also feeds on seeds of introduced species including *Pinus* spp., *Erodium* spp., wild radish, canola, almonds, macadamia and pecans; insects and insect larvae; occasionally apples and persimmons; and liquidambar (DAWE, 2022). Carnaby's cockatoos roost near riparian environments or other natural or artificial permanent water sources. Any tall trees may provide roosting habitat, but particularly Flat-topped Yate, Salmon Gum, Wandoo, Marri, Karri, Blackbutt, Tuart, introduced *Eucalyptus* spp. and introduced *Pinus* spp. (DAWE, 2022).		
AVES - Falconidae	*Falco hypoleucos*	Grey Falcon	VU	VU	Frequents timbered lowland plains, particularly *Acacia* shrublands that are crossed by tree-lined water courses (Garnett et al., 2011; Ley & Tynan, 2016; Schoenjahn, 2013, 2018; Watson, 2011). Has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter (P. Olsen & Olsen, 1986; Schoenjahn, 2018).	Marginal	Unlikely

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
AVES - Falconidae	*Falco peregrinus*	Peregrine Falcon	-	OS	Peregrine Falcons occur in woodland, plains, gorges, wetlands but tend to breed either in stick-nests in trees or nest on cliff ledges. It appears that hollows and large abandoned nests of other birds may be used where cliff ledges are limited. Breeds Aug-Dec. Where good habitat occurs, and the density of Peregrine Falcons is high, active nests may occur within 2.5km of each other. The diet of the Peregrine Falcon includes wood duck, pigeons and doves, galahs, rosellas and cockatoo, starlings and larks (J. Olsen et al., 2006). Two DBCA (2025) records occur within 10 km, with the closest just over 8 km northeast of the Survey Area. Despite no DBCA (2025) records occurring within 10 km, Peregrine Falcons are wide ranging and Survey Area occurs within known distribution.	Present – supporting	Possible
AVES - Tytonidae	*Tyto novaehollandiae*	Masked Owl (Southwest)	–	P3	Inhabits forests, open woodlands and farmlands with large trees, including timber watercourses paperbark woodlands. Widespread but very sparse, they breed any time of the year when conditions are favourable with a nesting period of about three months (Pizzey & Knight, 2007). Fifteen DBCA (2025) records occur within 10 km, with the closest just under 5 km SSW.	Present – supporting	Possible
BIVALVIA - Hyriidae	*Westralunio carteri*	Carter's Freshwater Mussel	VU	VU	Patchily distributed in sandy/muddy sediments of freshwater lakes, rivers and streams with greatest densities associated with woody debris and overhanging riparian vegetation near stream banks and edges of lakes/dams (DAWE, 2017). Adults mostly sessile, but do move through sediments with a muscular foot, creating visual tracks; Juveniles much more mobile, moving in a similar fashion as a caterpillar (DAWE, 2017). When in burrowed, filter-feeding position, siphons extended, mantle and siphons have a mottled	Marginal	Unlikely

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
					red/black appearance; inhalant siphon lined with papillae (DAWE, 2017). Four DBCA (2025) records occur within 10 km, with the closest just under 8 km northwest. Survey sites established by the Healthy Rivers project occur nearby, however, the Survey Area has not been mapped as "species found" or "species likely to be found" (DWER, 2026).		
GASTROPODA - Assimineidae	*Austroassiminea letha*	Cape Leeuwin Freshwater Snail	VU	-	Known from six sites between Cape Leeuwin in the south to Cape Naturaliste in the north, though was once more widely spread throughout the Leeuwin-Naturaliste Ridge (Burbidge, 2004; Solem et al., 1982). Found in seepage films or splash zones alongside small freshwater streams and springs draining from limestone near the coast (Burbidge, 2004). Grows up to 5.4 mm, considered a short-range endemic as it is confined to small areas of discontinuous habitat and has poor powers of dispersal (Harvey, 2002; Solem et al., 1982). Single DBCA (2025) record within 10 km, occurring just under 10 km west of the Survey Area on the coast.	Absent	Nil
INSECTA - Tettigoniidae	*Trichosternus relictus*	Margaret River Pterostichid Ground Beetle	-	P3	Has been found under logs in *Eucalyptus* sp. woods (Bennelongia Pty Ltd, 2013). No DBCA (2025) records within 10 km.	Marginal	Unlikely
INSECTA - Carabidae	*Kawaniphila pachomai*	Vernal Grey Katydid	-	P1	A cricket known from only two records on NatureMap, one in Karragullen and the other from heathland in Margaret River (DBCA, 2026). No DBCA (2025) records within 10 km.	Marginal	Unlikely
MALACOSTRACA - Parastacidae -	*Cherax tenuimanus*	Margaret River Hairy Marron	CR	CR	Very restricted distribution, only known from a few locations in a small section of the Margaret River (DWER, 2026). Preference for highly oxygenated, clear-water habitats with complex shelter, inclusive of large, woody debris (also a food source). Intolerant of high salinity and temperature (DWER, 2026).	Absent	Unlikely

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
					Survey sites established by the Healthy Rivers project occur nearby, however, the Survey Area has not been mapped as "species found" or "species likely to be found" (DWER, 2026).		
MALACOSTRACA - Parastacidae -	*Engaewa reducta*	Dunsborough Burrowing Crayfish	CR	CR	The Dunsborough Burrowing Crayfish uses a variety of habitats that provide moist sandy/loamy soils and an accessible water table. These include vegetated seepages, swamp plains and swampy headwaters of streams (CALM 2008) (Burnham, 2012). Twenty-three DBCA (2025) records known from within 10 km of the Survey Area, with the closest just over 4 km NW.	Present – supporting	Possible
MALACOSTRACA - Parastacidae -	*Engaewa pseudoreducta*	Margaret River Burrowing Crayfish	CR	CR	The Margaret River Burrowing Crayfish is endemic to south-west WA and occurs in two subpopulations, Treeton and Payne Road (Burnham, 2012) (Burnham, 2014). At Treeton, it occurs in and adjoining State Forest No. 62 (Burnham 2014), in swampy headwaters of a tributary of the Margaret River, Osmington. It is known from two sites in the area with individuals collected in 2003 and 2007 (Burnham et al. 2012). At Payne Road, the species occurs in Carbunup River catchment (south-east of Dunsborough). One DBCA (2025) record within 10 km of Survey Area, occurring ~10 km southeast of the Survey Area.	Absent	Nil
MAMMALIA - Dasyuridae	*Phascogale tapoatafa*	Southern Brush-tailed Phascogale	-	CD	This arboreal species is found in a variety of forest types. Ideal habitat for this species consists of dry sclerophyll forest and open woodland (Jarrah, Marri, and mixed Jarrah Karri) that contain hollow bearing trees and sparse ground cover. Their many nesting sites include hollow tree limbs, rotten stumps and even birds' nests. Lactating females prefer a large tree cavity with a small entrance with a nest made of bark, feathers and fur. A female's home range covers 20 to 70 hectares, a male's	Present – supporting	Possible

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
					home range overlaps females and increases during breeding season. It is predominantly carnivorous, foraging on arthropods, invertebrates, small vertebrates and nectar (Strahan, 1995). Locally prevalent, with 64 DBCA (2025) records returned within 10 km of the Survey Area.		
MAMMALIA - Dasyuridae	*Dasyurus geoffroii*	Chuditch	VU	VU	Quolls may occupy a range of habitats including forest, woodland and desert, though in the SW they are largely restricted to Jarrah forest or scattered through the southern and eastern wheat belt (DEC, 2010). Current records indicated that this only represents approximately 5% of their former range. Habitat critical to Western Quoll are large areas of undisturbed habitat which a sufficient variety of key food and other resources such as large hollow logs, burrows or small caves at ground level for denning. To be suitable as den sites, logs must have a diameter of at least 30 cm but usually greater than 50 cm, a hollow diameter of 7–20 cm and generally 1m long (Orell & Morris, 1994). Annually, an adult female Chuditch will utilise an estimated average of 66 logs and 110 burrows within her home range. A large amount of den sites is required for both sexes. They occupy relatively large home ranges, with males utilizing over 15 km2 and females, 3-4 km^2 (Orell & Morris, 1994). Four records known from within 10 km, with the closest ~5 km north of the Survey Area (DBCA, 2025). Available habitat not sufficiently connected and unlikely to host taxon.	Marginal	Unlikely
MAMMALIA - Macropodidae	*Notamacropus irma*	Western Brush Wallaby	-	P4	Optimum habitat for the Western Brush Wallaby includes open Jarrah forest or woodland and seasonally wet flats with low grasses and scrubby thickets, but also areas of mallee and heathland. Common dietary flora includes *Carpobrotus edulis*,	Marginal	Unlikely

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
					Cynodon dactylon and *Nuytsia floribunda* (DEC, 2010). Needs large areas of habitat. Two DBCA (2025) records within 10 km of the Survey Area, with the closest just under 5.5 km south.		
MAMMALIA - Muridae	*Hydromys chrysogaster*	Rakali		P4	The Rakali is usually found in permanent fresh or brackish water but can be found in marine environments. Fresh water habitats include swamps, lakes, dams even urban drainage swamps. Typically forages close to the shoreline, restricting its movements to shallow water (up to 2 m in depth) (CSIRO, 2004). Eight DBCA (2025) records returned within 10 km of the Survey Area, with the closest just under 1.5 km east. Creekline habitat may support taxon.	Present – supporting	Possible
MAMMALIA - Peramelidae	*Isoodon obesulus fusciventer*	Quenda	-	P4	Bandicoot habitat consists of dense scrubby, often swampy vegetation with a dense cover up to one metre high particularly near watercourses/wetlands. It often feeds in adjacent forest (Jarrah and Wandoo) and woodlands that are burnt on a regular basis. Nests can be concealed next to or under old logs, shrubs or piles of debris and are made up of ground litter piled up over a shallow depression providing internal chambers. Home ranges vary with population density and range from 5-8.6 ha for males and 1-6 ha for females (DEC, 2010). Feed on a variety of ground-dwelling invertebrates and the fruit-bodies of hypogeous fungi. Their searches for food often create distinctive conical holes in the soil (DBCA, n.d.). Diggings observed. Locally prevalent, with 76 DBCA (2025) records returned within 10 km of the Survey Area. Detected during survey.	Present – supporting	Present
MAMMALIA - Potoroidae	*Bettongia penicillata ogilgyi*	Woylie	EN	CR	Tall eucalypt forest and woodland, dense myrtaceous shrubland, kwongan (proteaceous) or mallee heath (Christensen & Leftwich, 1980;	Absent	Nil

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
					Sampson, 1971). Thickets and other suitable habitat types such as heath, provide refuges for woylies against predators. Two records (one historic and one translocation from 2011) Woylie records occur within 10 km of the Survey Area, with the closest ~6 km east (DBCA, 2025).		
MAMMALIA - Pseudocheiridae	*Pseudocheirus occidentalis*	Western Ringtail Possum	CR	CR	In dense, coastal Peppermint forest, home ranges are about 0.5 hectares to 1.5 ha and in eucalypt forests about 2.5 ha. In the northern jarrah forests, home ranges are larger and have been recorded to at least 5.6 ha. Peppermint leaves form the basis of the WRP diet in coastal areas (between 79-100% based on a study of WRP near Busselton by Jones et al. (1994), but when unavailable, the dominant myrtaceous species are preferred. In the inland forest, Jarrah and Marri the main food source. Garden plant varieties are also exploited in urban areas. WRP use a range of nest and shelter sites to avoid predators and exposure to the weather. Dreys are constructed in the canopy if hollows are not available. Adequate nest and shelter sites are necessary components of good quality habitat (Jones et al., 1994; Shedley & Williams, 2014). Locally common, with 370 DBCA (2025) records returned within 10 km of the Survey Area. Detected during survey.	Present – supporting	Present
REPTILIA - Elapidae	*Elapognathus minor*	Short-nosed Snake	-	P2	Cryptic and uncommon. Occurs in heaths along swamp margins, in sedgeland and wet sclerophyll forests growing on sandy soil. Associated with ephemeral wetlands. Utilises low dense vegetation such as tussocks and sedges for shelter (Craig et al., 2017). No DBCA (2025) records within 10 km.	Marginal	Unlikely

CLASS - Family	*Genus species*	Vernacular	Status Federal	Stat. WA	Habitat and Distribution	Presence of habitat	Likelihood of occurrence
REPTILIA - Scincidae	*Ctenotus ora*	Coastal Plains Skink	-	P3	*Ctenotus ora* is a species of medium sized (6 cm) skink with a restricted range within the southern Swan Coastal Plain and Cape Naturaliste area, as far north as Pinjarra and south as far as Yallingup (Kay & Keogh, 2012) and Dunsborough (Ecoscape, 2012). It has previously been recorded within Armstrong Reserve in areas with sandy substrates and low vegetation (including heath) in open Eucalyptus/Corymbia woodland over Banksia in the sandy coastal plain and coastal dunes (Kay & Keogh, 2012). The Armstrong Reserve sections align with suitable habitat modelling by Ecoscape (2012). *Ctenotus* species are diurnal, terrestrial lizards that rely on solar radiation to maintain activity and therefore favour habitats that provide regular opportunities for basking and rapid movement between sun-exposed areas and shelter (Greer, 1989). As a result, their distribution is closely linked to environments that allow sufficient ground-level sunlight. Suitable habitat is typically characterised by relatively open vegetation structure, often with areas of bare soil or rock (Greer 1989). Distribution is likely to within densely vegetated landscapes is patchy and largely confined to edges, tracks, rocky outcrops or other naturally open microhabitats (Ecoscape, 2012). No DBCA (2025) records within 10 km.	Marginal	Unlikely

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Appendix H Black Cockatoo Survey Methods

Black Cockatoo Survey Methodology

Black cockatoo habitat surveys include an assessment of potential breeding trees, along with the presence and quality of roosting and foraging habitat. Field survey methodology was based on both the Main Roads factsheet (D19#1011841), a document nesting under the Commonwealth referral guidelines for black cockatoos (DAWE, 2022), and the species profile provided in the Desktop Study.

Twelve km is the maximum range that black cockatoos travel from a nesting site to forage (DAWE, 2022). A closer distance generally associates with more important foraging habitat. This desktop review is based on a 10 km distance, incorporating the local site context and nearby vegetation/habitat values.

Suitable DBH tree and hollow survey

Black cockatoos nest in hollows that are formed in large, generally over 50 cm Diameter at Breast Height (DBH) native eucalypt trees; "*Suitable DBH trees*". In the SW of WA, these are normally marri (*Corymbia calophylla*), tuart *(Eucalyptus gomphocephala)* or karri (*Eucalyptus diversicolor*). Sometimes blackbutt / yarri (*Eucalyptus patens*), flooded gum (*Eucalyptus rudis*), jarrah *(Eucalyptus marginata)*, or other native trees, may be used.

Trees between 30 - 49 cm DBH were also recorded as recruitment trees. Whilst not of suitable size to develop black cockatoo hollows (>50 cm), they may support black cockatoo breeding in the future and were provided for context. They are also required to support an EPBC Act Referral.



Photo 4 Example of a multi-stemmed *Eucalyptus decipiens* tree, where the main trunk has split at ground level and only the largest trunk would be measured.

Notes on recorded trees: Trees with a suitable DBH include those with a ≥ 50 cm DBH for most trees in the SW, ≥ 30 cm DBH for most Wheatbelt species e.g. wandoo *(Eucalyptus wandoo)* or salmon gum *(Eucalyptus salmonopholia*), and ≥75 cm for fast growing trees, such as non-endemic eucalypts or karri.

Mallee or multi-stemmed trees are measured by the largest stem. Multi-stemmed trees around head height or beyond with an under sized DBH on the main stem, unless the branch is large enough to develop large hollows, are not recorded as DBH trees (may still be a recruitment tree).

Planted non endemic eucalypts such as blue gums, e.g. *Eucalyptus saligna* or *Eucalyptus globulus,* are unlikely to develop hollows unless they are at an advanced age (author, pers obs.). There are no known records of black cockatoos breeding in non-endemic eucalypts in WA. They are not recorded unless they were visibly senescing, ≥75cm DBH or observed with large hollows. Trees laying over or considered to have no potential to develop hollows (burnt or close to falling) are not recorded.

Trees were mapped by a handheld Garmin Global Positioning System (GPS) (~3 m accuracy). Trees were assessed using binoculars if required. Notes were made on tree species, DBH and hollows. If a tree contained numerous hollows, records were restricted to the three most suitable, based on attributes including: hollow type, angle, estimated aperture size (mm), height (m), chamber size, and evidence of use (including from other fauna taxa). Assessment criteria are provided in Table H-1.

European honeybee (*Apis mellifera*) hives may render a hollow unsuitable for the short term, so bees were noted if observed. Hollows that were potentially suitable or likely to provide breeding habitat were further assessed by drone or pole camera, where possible. Hollow records noted as *confirmed* or *not confirmed* indicate whether pole camera or drone inspection was conducted. Pole camera and/or drone operation was conducted in line with animal ethics and license requirements.

Hollow assessment limitations

Known limitations inherent in the survey of hollows include bias with surveyors, times, differing familiarity with tree types, levels of expertise, survey conditions such as weather and time of day, and survey technique (Gorrod & Keith, 2008; Rayner et al., 2011)

Ground counts of hollows are subjective. Some obscured hollows may be missed, particularly hollows in branches and vertical hollows. As well as providing inaccurate counts of hollow abundance, ground surveys provide incomplete or inaccurate information on hollow dimensions and use of hollows by fauna (Koch, 2008). Generally, ground-based surveys lead to overestimation of hollows (Rayner et al. 2011, Author pers obs.). This limitation was reduced by checking hollows with a pole camera or drone for suitability where possible.

Hollow characteristics may change over time. There is a low risk that black cockatoos may breed in a hollow where evidence of use is not visible or hollow characteristics are atypical. Not all active cockatoo hollows show signs of heavy chewing, and active or past breeding hollows may be missed. Other animals such as Little Corella (*Cacatua sanguinea*) or Galah (*Eolophus roseicapilla*) may use black cockatoo hollows at other times of the year or between years.

The lead surveyor has extensive experience in the identification and assessment of hollows and is considered competent in relation to this skill. The results are provided based on experience and professional judgement though certainty of use cannot be guaranteed without hollow watching during the breeding season.

Table H-1 Suitable DBH tree and hollow classifications

Cat No.	Tree Category	Description
1	**Suitable DBH Tree with Known Nesting Hollows.**	**Hollow where breeding has been recorded (i.e. bird/s observed in hollow) or there is evidence of previous use (i.e. hollow contains black cockatoo feathers or eggs).**
2	**Suitable DBH Tree with a potential suitably hollow with signs of use (not confirmed).**	**Hollows that appear to have a suitably sized entry and display signs of use, however internal dimensions have not been assessed.** Although signs of use may be present, the signs, such as chew marks, could be from prospecting black cockatoos or other birds such as galahs, which leave very distinctive marks on hollow and trees (impacted potentially suitably sized hollows should be confirmed by competent observer). Where hollows cannot be avoided, the status of Category 2 hollows must be reassessed during the assessment process to determine whether it is a Category 1, 3, 4 or 6 hollow.
3	**Suitable DBH Tree with a suitable hollow with no signs of use (confirmed).**	**Hollows that appear to have a suitably sized entry, with internal dimensions assessed.** Category usually based on follow up hollow assessment with pole camera or drone. Although hollow appears to be suitable, there is no evidence of black cockatoo use. Where hollows cannot be avoided, status of Category 3 hollows should be reassessed within 48 hours of clearing.
4	**Suitable DBH Tree with a marginally unsuitable hollow with no signs of use (confirmed)**	**Hollows that are not currently suitable but have the potential to become suitable within five years.** Where hollows cannot be avoided and have not been checked within 5 years, the hollow status must be reassessed to determine whether it has become suitable (Category 3 hollows) or a Known Nesting Hollow (Category 1 hollows).
5	**Suitable DBH Tree with a potential suitable hollow with no signs of use (not confirmed).**	**Hollows that appear to have a suitably sized entry, however internal dimensions have not been assessed.** Category usually based on ground observation only. Where hollows cannot be avoided, status of Category 5 hollows must be reassessed during the assessment process to determine whether it is a Category 1, 3, 4 or 6 hollow.
6	**Suitable DBH Tree with unsuitable hollows (confirmed).**	**Hollows that have a hollow entry greater than 100 mm that is not suitable due to the size of its entry, internal dimensions, angle and/or height off ground**.
7	**Suitable DBH Tree without hollows.**	**Trees with a 500 mm DBH (or 300 mm for Wandoo or Salmon Gum) that do not have visible hollows (hollows with an entry opening below 50 mm not considered a hollow).** Note - multiple stemmed trees that branch above DBH may not be suitable.

Foraging Habitat Assessment

Black cockatoo foraging habitat quality was scored out of 10, aligning with the Commonwealth Offset Assessment Guide (offsets guide). The Offset Guide accompanies the EPBC Act environmental offsets policy and has been developed to align with the policy's requirements, enabling DCCEEW to assess impact significance and offset requirements.

The foraging value score reflects the significance of vegetation as potential foraging habitat for black cockatoos. It depends upon type, density and condition of vegetation in an area and can be influenced by contextual factors such as availability of foraging habitat nearby. This assessment uses methodology

derived from the BCE (2020) scoring system (methodology below). Calculation of foraging habitat quality (score out of 10) includes the following steps:

- ***Site condition***. Determining a score out of six for the vegetation composition, condition and structure. *Site condition* was described using structural vegetation mapping, with presence or absence of key feed species. Key feed species are defined in the species' profiles in the Desktop Study and from the plant list classified as primary or secondary foraging plants as assessed in Appendix I.
- ***Site context***. Determining a score out of three for the context of the site, based on the proportion of site vegetation against the total native vegetation within the DSA.
- ***Species stocking rate***. Determining a score out of one for species density/occurrence.
- ***Score*.** Determining the total score out of 10, which may require moderation for context and species density with respect to the site condition (vegetation) score. Moderation also includes consideration of pine plantations as a special case for foraging value. Foraging habitat scores are a high-level guide and used with consideration of site context, timing and other factors. For example:
    - Lower quality foraging habitat may be important during breeding periods if it is located near breeding habitat (the closer the resource the more important it may be).
    - Certain feed species may may be used in some regions but not in others due to a preference for other plants that may be available - feed species in the Jarrah Forest may not be used as heavily on the Swan Coastal Plain.
    - Primary feed plants may flower or fruit at certain times. Secondary plants may become as important as primary plants when primary resources become unavailable, potentially providing high quality foraging habitat.

Black cockatoo feed residue was noted during field surveys.

Roosting Habitat Survey

Direct and indirect evidence of black cockatoo roosting was noted. Evidence includes the presence of moulted, preened feathers or down, clipped branches and/or whitewash under trees. Roost searches were undertaken during the diurnal survey. Roosting birds are likely to have been observed during nocturnal surveys.

Site condition. Vegetation composition, condition and structure scoring

Table H-2

Site Score	Description of Vegetation Values		
	Carnaby's cockatoo	Baudin's cockatoo	Forest Red-tailed Black Cockatoo
0	**No foraging value.** • Dead trees. • Plant species that are not known to be fed on. • Water bodies (e.g. salt lakes, dams, rivers); • Bare ground, mown or pasture grass. • Developed sites devoid of vegetation (e.g. infrastructure, roads, gravel pits).	**No foraging value.** • Dead trees. • Plant species that are not known to be fed on. • Water bodies (e.g. dams, rivers). • Bare ground, mown or pasture grass. • Developed sites devoid of vegetation (e.g. infrastructure, roads, gravel pits).	**No foraging value.** • Dead trees. • Plant species that are not known to be fed on. • Water bodies (e.g. dams, rivers). • Bare ground, mown or pasture grass. • Developed sites devoid of vegetation (e.g. infrastructure, roads, gravel pits).
1	**Nil to Low foraging value.** • Scattered specimens of known food plants but projected foliage cover of these is < 2%. This could include urban areas with scattered foraging trees. • Paddocks that are lightly vegetated with melons or other known food-source weeds (e.g. *Erodium* spp.) that represent a short- term and/or seasonal food source. • Blue Gum plantations (foraging by Carnaby's Black-Cockatoos has been reported but appears to be unusual).	**Nil to Low foraging value.** • Scattered specimens of known food plants but projected foliage cover of these < 1%. This could include urban areas with scattered foraging trees.	**Nil to Low foraging value.** • Scattered specimens of known food plants but projected foliage cover of these < 1%. Could include urban areas with scattered foraging trees.
2	**Low foraging value.** • Shrubland in which species of foraging value, such as shrubby banksias, have < 10% projected foliage cover. • Woodland with tree banksias 2-5% projected foliage cover. • Open eucalypt woodland/mallee of small- fruited species. • Primary feed species that are isolated or disease affected. • Some secondary foraging species that are not frequently fed on or are not considered a sustaining resource, • Vegetation in a Completely Degraded or Degraded condition or relatively small areas relative to other higher quality surrounding habitat. • Examples include dieback (e.g. *Phytophthora* spp.) affected Jarrah or *Banksia* or severe canker	**Low foraging value.** • Woodland with scattered specimens of known food plants (e.g. Marri and Jarrah) 1-5% projected foliage cover. • Urban areas with scattered foraging trees. • Some secondary foraging species that are not frequently fed on or are not considered a sustaining resource, • Vegetation in a Completely Degraded or Degraded condition or relatively small areas relative to other higher quality surrounding habitat. • Examples include dieback (e.g. *Phytophthora* spp.) affected Jarrah or *Banksia* or severe canker (*Quambalaria coyrecup*) affected Marri or very sparse primary or secondary feed species.	**Low foraging value.** • Woodland with scattered specimens of known food plants (e.g. Marri, Jarrah or Sheoak) 1-5% projected foliage cover. • Urban areas with scattered food plants such as Cape Lilac, *Eucalyptus caesia* and *E. erythrocorys*. • Some secondary foraging species that are not frequently fed on or are not considered a sustaining resource. • Vegetation in a Completely Degraded or Degraded condition or relatively small areas relative to other higher quality surrounding habitat. • Examples include dieback (e.g. *Phytophthora* spp.) affected Jarrah or *Banksia* or severe canker (*Quambalaria*

Site Score	Description of Vegetation Values		
	Carnaby's cockatoo	**Baudin's cockatoo**	**Forest Red-tailed Black Cockatoo**
	(*Quambalaria coyrecup*) affected Marri or very sparse primary or secondary feed species. • Paddocks that are densely vegetated with melons or other known food-source weeds (e.g. *Erodium spp*.) that represent a short- term and/or seasonal food source.		*coyrecup*) affected Marri or very sparse primary or secondary feed species.
3	**Low to Moderate foraging value.** • Shrubland in which species of foraging value, such as shrubby banksias, have 10-20% projected foliage cover. • Woodland with tree banksias 5-20% projected foliage cover. • Eucalypt Woodland/Mallee of small-fruited species. • Eucalypt Woodland with Marri < 10% projected foliage cover.	**Low to Moderate foraging value.** • Eucalypt Woodland with known food plants (especially Marri) 5-20% projected foliage cover. • Parkland-cleared Eucalypt Woodland/Forest with known food plants 10-40% projected foliage cover (poor long-term viability without management). • Younger areas of (managed) revegetation with known food plants 10-40% projected foliage cover (establishing food sources with good long-term viability).	**Low to Moderate foraging value.** • Eucalypt Woodland with known food plants (especially Marri and Jarrah) 5-20% projected foliage cover. • Parkland-cleared Eucalypt Woodland/Forest with known food plants 10-40% projected foliage cover (poor long-term viability without management). • Younger areas of (managed) revegetation with known food plants 10-40% projected foliage cover (establishing food sources with good long-term viability).
4	**Moderate foraging value.** • Woodland/low forest with tree banksias (of key species *B. attenuata* and *B. menziesii*) 20- 40% projected foliage cover. • Kwongan/ Shrubland in which species of foraging value, such as shrubby banksias, have 20-40% projected foliage cover; • Eucalypt Woodland/Forest with Marri 20- 40% projected foliage cover. • Primary feed species (e.g., Hakea, Jarrah, Marri or pine trees) present but patchy or as paddock trees, • Habitat dominated by secondary feed species - vegetation communities with very few primary feed species present. • Native vegetation where few primary or secondary feed species are present in Degraded or Good condition.	**Moderate foraging value.** • Marri-Jarrah Woodland/Forest with 20- 40% projected foliage cover. • Marri-Jarrah Forest with 40-60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths. • Eucalypt Woodland/Forest with diverse, healthy understorey and known food trees (especially Marri) 10- 20% projected foliage cover. • Orchards with highly desirable food sources (e.g. apples, pears, some stone fruits). • Primary feed species (e.g., Hakea, Jarrah, Marri or pine trees) present but patchy or as paddock trees, • Habitat dominated by secondary feed species - vegetation communities with very few primary feed species present. • Native vegetation where few primary or secondary feed species are present in Degraded or Good condition.	**Moderate foraging value.** • Marri-Jarrah Woodland/Forest with 20-40% projected foliage cover. • Marri-Jarrah Forest with 40-60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths. • Sheoak Forest with 40-60% projected foliage cover. • Primary feed species (e.g., Hakea, Jarrah, Marri or pine trees) present but patchy or as paddock trees, • Habitat dominated by secondary feed species - vegetation communities with very few primary feed species present. • Native vegetation where few primary or secondary feed species are present in Degraded or Good condition.

Site Score	Description of Vegetation Values		
	Carnaby's cockatoo	**Baudin's cockatoo**	**Forest Red-tailed Black Cockatoo**
5	**Moderate to High foraging value.** • Banksia Low Forest (of key species *B. attenuata* and *B. menziesii*) with 40-60% projected foliage cover. • Banksia Low Forest (of key species *B. attenuata* and *B. menziesii*) with > 60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths. • Eucalypt Woodland/Forest with Marri 40- 60% projected foliage cover. • Pine plantations with trees more than 10 years old (but see pine note below in moderation section).	**Moderate to High foraging value.** • Marri-Jarrah Forest with 40-60% projected foliage cover. • Marri-Jarrah Forest with > 60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths.	**Moderate to High foraging value.** • Marri-Jarrah Forest with 40-60% projected foliage cover. • Marri-Jarrah Forest with > 60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths. • Sheoak Forest with > 60% projected foliage cover.
6	**High foraging value.** • Banksia Low Forest (of key species *B. attenuata* and *B. menziesii*) with > 60% projected foliage cover and vegetation condition good with low weed invasion and/or low tree deaths (indicating it is robust and unlikely to decline in the medium term). Eucalypt Woodland/Forest with Marri 40- 60% projected foliage cover. • Primary feed species e.g. *Hakea*, Jarrah, Marri or pine trees dominant as patches, or components of a larger patch.	**High foraging value.** • Marri-Jarrah Forest with > 60% projected foliage cover and vegetation condition good with low weed invasion and/or low tree deaths (indicating it is robust and unlikely to decline in the medium term). • Primary feed species e.g. *Hakea*, Jarrah, or Marri dominant as paddock trees, patches, or components of a larger patch.	**High foraging value.** • Marri-Jarrah Forest with > 60% projected foliage cover and vegetation condition good with low weed invasion and/or low tree deaths (indicating it is robust and unlikely to decline in the medium term). • Primary feed species e.g. *Hakea*, Jarrah, or Marri dominant patches, or components of a larger patch.

Structure and condition per EPA (2016).

Site context

Table H-3

Site Context Score	Site as a percentage of the existing native vegetation suitable for foraging within the DSA (10 km)	
	Local breeding known/likely	Local breeding unlikely (foraging habitat only)
3	> 5%	> 10%
2	1 - 5%	5 - 10%
1	0.1 - 1%	1 - 5%
0	< 0.1%	< 1%

Site Context is a function of site size, availability of nearby habitat and the availability of nearby breeding areas. Site context includes consideration of connectivity.

Table H-3 provides a guide to site context scoring. The maximum score for site context is 3, being a function of presence/absence of nearby breeding and the distribution of foraging habitat across the landscape. Note that Desktop Study Area (DSA) is defines the 'Local area' within a 10 km [4] radius of the centre point of the Survey Area.

Table H-3 provides weighting for known (or suspected) nearby breeding and for the proportion of foraging habitat in the site against available foraging habitat within 10 km (within the DSA). Some adjustments may be needed. For example, a small area of foraging habitat (e.g. 0.5% of such habitat within 10 km) could be upgraded to a context of 2 if it formed part of a critical movement corridor. In contrast, the same sized area of habitat, of the same local proportion, could be downgraded if it were so isolated that birds could never access it.

Stocking rate (species density) (derived from BCE (2020))

Species stocking rate is described as "the usage and/or density of a species at a particular site" in the offsets guide. The description also implies that a site supports a discrete population, which is unlikely in the case of highly mobile black cockatoos. Assignation of the species density score (0 or 1) is based upon the cockatoo species being either abundant or not abundant. A score of 1 is used where the species is seen or reported regularly and/or there is abundant foraging evidence. Regularly is when the species is seen at intervals of every few days or weeks for at least several months of the year. A score of 0 is used when the species is recorded or reported very infrequently and there is little or no foraging evidence. Where information on actual presence of birds is lacking, a species density score can be assigned by interpreting the landscape and the site context. For example, a site with a moderate condition score that is part of a network of such habitat where a black-cockatoo species is known would get a species density score of 1 even without clear presence data, while a species density score of 0 can be assigned to a site where the level of usage can confidently be predicted to be low.

[4] Note BCE use 15 km.

Score

Moderation of scores for the calculation of a value out of 10. The calculation out of 10 requires the *Site condition* score (out of 6) to be combined with the scores given for *Site context* and *Stocking rate*.

BCE (2020) notes: It is considered that the context and density scores are not independent of vegetation characteristics; otherwise habitat of absolutely no value for black cockatoo foraging (such as concrete or a wetland) could get a foraging score out of 10 as high as 4 if it occurred in an area where the species breed (context score of 3) and are abundant (species density score of 1). Similarly, vegetation of negligible or low characteristics which could not support black cockatoos could be assigned a score as high as 6 out of 10. In that case, the score of 6 would be more a reflection of nearby vegetation of high characteristics than of the foraging value of the negligible to low scoring vegetation. The black cockatoos would only be present because of vegetation of high characteristics, so applying the context and species density scores to vegetation of low characteristics would not give a true reflection of their foraging value.

For this reason, the context and species density scores need to be moderated for the vegetation characteristic score to prevent vegetation of little or no foraging value receiving an excessive score out of 10. A simple approach is to assign a context and species density score of zero to sites with a Condition score of low (2), negligible (1) or none (0), on the basis that birds will not use such areas unless they are adjacent to at least low-moderate quality foraging habitat (>3). The approach to calculating a score out of 10 can be summarised as follows:

Vegetation composition, condition and structure score (out of 6)	Context score	Species density score
3-6 (low/moderate to high value)	Assessed as per **Site condition**	Assessed as per **Site context**
0-2 (no to low value)	0	0

Note that this moderation approach may require interpretation depending on the context. For example, vegetation with a condition score of 2 could be given a context score of 1 under special circumstances. Such as when very close to a major breeding area or if strategically located along a movement corridor.

Appendix I Black Cockatoo Foraging Assessment Results

Foraging Plants Within the Survey Area

Table I-1 Black cockatoo foraging species across habitat types within the rail reserve and track (4 m nominal width)

Species	Primary Foraging Species	Secondary Foraging Species	Site Condition Score - Reserve	Site Condition Score[5] - Track
VU1 - Jarrah-Marri Forest				
Baudin's cockatoo	*Corymbia calophylla*[1]	*Eucalyptus marginata*[2] *Hakea* sp.[3] *Xanthorrhoea* sp.[4]	**6**	**3**
Carnaby's cockatoo	*Corymbia calophylla*[1] *Eucalyptus marginata*[2] *Mesomelaena* sp.[5] *Xanthorrhoea* sp.[4]	*Acacia saligna*[6]	**6**	**3**
FRTBC	*Eucalyptus marginata*[2] *Corymbia calophylla*[1]	-	**6**	**3**
VU2 -Karri Creekline Forest				
Baudin's cockatoo	*Corymbia calophylla*[1]	-	**5**	**3**
Carnaby's cockatoo	*Eucalyptus patens*[3]	-	**5**	**3**
FRTBC	*Eucalyptus patens*[3]	*Eucalyptus diversicolor*[5]	**5**	**3**
VU3 - Drainage Line Vegetation				
Baudin's cockatoo	*Corymbia calophylla*[1]	-	**5**	**3**
Carnaby's cockatoo	*Eucalyptus patens*[3]	-	**5**	**3**
FRTBC	*Eucalyptus patens*[3]	*Eucalyptus diversicolor*[5]	**5**	**3**
VU4 - Disturbed Open Shrubland				
Baudin's cockatoo	-	*Allocasuarina fraseriana*[9]	**3**	**2**
Carnaby's cockatoo	-	*Agonis flexuosa*[10] *Allocasuarina fraseriana*[9]	**3**	**2**
FRTBC	-	*Allocasuarina fraseriana*[9]	**3**	**2**
Cleared Areas				
Baudin's cockatoo	-	-	**1**	**1**
Carnaby's cockatoo	-	-	**1**	**1**
FRTBC	-	-	**1**	**1**

[5] Any areas vegetation on the cusp of be categorised as higher quality foraging habitat were highly localised, small pockets along a narrow corridor that are insignificant in relation to adjacent habitat and have been moderated in line with the methodology in Appendix H.

Species prefixed with * indicate introduced taxa.

Foraging Sources:

[1](DoEE, 2017; Johnstone et al., 2010a, 2010b, 2010c, 2017; Johnstone & Kirkby, 1999, 2008; Johnstone & Storr, 1998; Saunders, 1979; SEWPaC, 2012; Valentine & Stock, 2008)

[2](Birds Australia, n.d.; DoEE, 2017; Groom, 2011; Johnstone et al., 2010a, 2010b, 2010c, 2017; Johnstone & Kirkby, 1999; Johnstone & Storr, 1998; Saunders, 1979; SEWPaC, 2012; Valentine & Stock, 2008)

[3](DoEE, 2017; Saunders, 1979; SEWPaC, 2012)

[4](Groom, 2011; Johnstone et al., 2010b, 2010a; Valentine & Stock, 2008)

[5](Groom, 2011; Johnstone et al., 2010b)

[6](Groom, 2011; Valentine & Stock, 2008)

[7](DoEE, 2017; Groom, 2011; Johnstone et al., 2010b, 2010c; Johnstone & Kirkby, 1999; Johnstone & Storr, 1998; SEWPaC, 2012)

[8](DoEE, 2017; Johnstone et al., 2010a, 2010b, 2010c; Johnstone & Storr, 1998; SEWPaC, 2012)

[9](DoEE, 2017; Johnstone et al., 2010a, 2010b, 2010c, 2017; Johnstone & Storr, 1998; Valentine & Stock, 2008)

[10](Groom, 2011; Valentine & Stock, 2008)

Foraging Habitat Available within the DSA

Table I-2 Areas of native vegetation remaining within a 10 km foraging distance from the Survey Area (DPIRD, 2023, 2025a)

Foraging range	Total area (ha)*	Native vegetation (including regrowth) remaining % of total area, Area (ha)
10 km	38,904	13,517 (35 %)

Table I-3 Black cockatoo Foraging Scoring Tool Assessment Results

Species	Site Condition Score + Reserve Track	Site Context + (refer to Table 3.2)	Stocking Rate	= Final Score Reserve Track	Foraging Habitat Quality (DCCEEW 2022) Track only
VU1 - Jarrah-Marri Forest					
Baudin's cockatoo	6. High **3. Low to Moderate**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	1. No foraging evidence	7 **4**	**Lower (0-4)**
Carnaby's cockatoo	6. High **3. Low to Moderate**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	6 **3**	**Lower (0-4)**
FRTBC	6. High **3. Low to Moderate**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	1. No foraging evidence	7 **4**	**Lower (0-4)**
VU2 -Karri Creekline Forest					
Baudin's cockatoo	5. Moderate to High **3. Low to Moderate**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	5 **3**	**Lower (0-4)**

Carnaby's cockatoo	5. Moderate to High **3. Low to Moderate**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	5 **3**	**Lower (0-4)**
FRTBC	5. Moderate to High **3. Low to Moderate**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	5 **3**	**Lower (0-4)**
VU3 - Drainage Line Vegetation					
Baudin's cockatoo	5. Moderate to High **3. Low to Moderate**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	5 **3**	**Lower (0-4)**
Carnaby's cockatoo	5. Moderate to High **3. Low to Moderate**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	5 **3**	**Lower (0-4)**
FRTBC	5. Moderate to High **3. Low to Moderate**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	5 **3**	**Lower (0-4)**
VU4 - Disturbed Open Shrubland					
Baudin's cockatoo	3. Low to Moderate **2. Low**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	3 **2**	**Lower (0-4)**
Carnaby's cockatoo	3. Low to Moderate **2. Low**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	3 **2**	**Lower (0-4)**
FRTBC	3. Low to Moderate **2. Low**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	3 **2**	**Lower (0-4)**
Cleared					
Baudin's cockatoo	1. Nil to Low **1. Nil to Low**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	1 **1**	**Lower (0-4)**
Carnaby's cockatoo	1. Nil to Low **1. Nil to Low**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	1 **1**	**Lower (0-4)**
FRTBC	1. Nil to Low **1. Nil to Low**	0. < 0.1% Local breeding known/likely Local breeding unlikely (foraging habitat only) < 1%	0. No foraging evidence	1 **1**	**Lower (0-4)**

Appendix J Protected Matters Search Tool Results

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: 08-Apr-2026

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	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	77
Listed Migratory Species:	49

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:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	66
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	21
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	13
Key Ecological Features (Marine):	None
Biologically Important Areas:	6
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, 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
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Empodisma peatlands of southwestern Australia	Endangered	Community likely to occur within area
Shrublands on southern Swan Coastal Plain ironstones	Endangered	Community likely to occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche melanophris		
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within 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
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
CRUSTACEAN		
Cherax tenuimanus		
Hairy Marron, Margaret River Hairy Marron, Margaret River Marron [78931]	Critically Endangered	Species or species habitat may occur within area
Engaewa pseudoreducta		
Margaret River Burrowing Crayfish [82674]	Critically Endangered	Species or species habitat known to occur within area
Engaewa reducta		
Dunsborough Burrowing Crayfish [82675]	Critically Endangered	Species or species habitat known to occur within area
FISH		
Galaxiella munda		
Western Dwarf Galaxias, Western Mud Minnow [79240]	Vulnerable	Species or species habitat may occur within area
Nannatherina balstoni		
Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat known to occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat known to occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat may occur within area
OTHER		
Westralunio carteri Carter's Freshwater Mussel, Ambiguus Mussel [86266]	Vulnerable	Species or species habitat known to occur within area
PLANT		
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat known to occur within area
Banksia squarrosa subsp. argillacea Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Brachyscias verecundus Ironstone Brachyscias [81321]	Critically Endangered	Species or species habitat likely to occur within area
Caladenia busselliana Bussell's Spider-orchid [24369]	Endangered	Species or species habitat likely to occur within area
Caladenia excelsa Giant Spider-orchid [56717]	Endangered	Species or species habitat likely to occur within area
Caladenia hoffmanii Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat likely to occur within area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat may occur within area
Caladenia lodgeana Lodge's Spider-orchid [68664]	Critically Endangered	Species or species habitat likely to occur within area
Caladenia procera Carbunup King Spider Orchid [68679]	Critically Endangered	Species or species habitat may occur within area
Chamelaucium sp. S coastal plain (R.D.Royce 4872) Royce's Waxflower [87814]	Vulnerable	Species or species habitat likely to occur within area
Daviesia elongata subsp. elongata Long-leaved Daviesia [64883]	Vulnerable	Species or species habitat known to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat may occur within area
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat known to occur within area
Eucalyptus x phylacis Meelup Mallee [87817]	Endangered	Species or species habitat may occur within area
Gastrolobium papilio Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area
Grevillea brachystylis subsp. grandis Large-flowered Short-styled Grevillea [85001]	Critically Endangered	Species or species habitat known to occur within area
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat likely to occur within area
Morelotia australiensis listed as Tetraria australiensis Southern Tetraria [92784]	Vulnerable	Species or species habitat may occur within area
Petrophile latericola Laterite Petrophile [64532]	Endangered	Species or species habitat likely to occur within area
Thelymitra variegata Queen of Sheba [12582]	Critically Endangered	Species or species habitat may occur within area
Verticordia plumosa var. ananeotes Tufted Plumed Featherflower [23871]	Endangered	Species or species habitat likely to occur within area
Verticordia plumosa var. vassensis Vasse Featherflower [55804]	Endangered	Species or species habitat may occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Galeorhinus galeus		
Tope, Flake, Oil Shark, School Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

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

Scientific Name	Threatened Category	Presence Text
Onychoprion anaethetus		
Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
Phaethon rubricauda		
Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Phoebetria fusca		
Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta		
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris		
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Congregation or aggregation known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Mobula birostris as Manta birostris		
Giant Manta Ray [90034]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat may occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica		
Bar-tailed Godwit [844]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thinornis cucullatus as Thinornis rubricollis		
Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Fish		
Acentronura australe		
Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei		
Gale's Pipefish [66191]		Species or species habitat may occur within area
Heraldia nocturna		
Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus angustus		
Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps		
Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus subelongatus		
West Australian Seahorse [66722]		Species or species habitat may occur within area
Histiogamphelus cristatus		
Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Lissocampus caudalis		
Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Reptile		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		

Current Scientific Name	Status	Type of Presence
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Congregation or aggregation known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Bramley	National Park	WA
Haag	Nature Reserve	WA
Leeuwin-Naturaliste	National Park	WA
Ngari Capes	Marine Park	WA
NTWA Bushland covenant (0003)	Conservation Covenant	WA
NTWA Bushland covenant (0044A)	Conservation Covenant	WA
NTWA Bushland covenant (0044B)	Conservation Covenant	WA
NTWA Bushland covenant (0044C)	Conservation Covenant	WA
NTWA Bushland covenant (0065A)	Conservation Covenant	WA
NTWA Bushland covenant (0065B)	Conservation Covenant	WA
NTWA Bushland covenant (0130)	Conservation Covenant	WA
NTWA Bushland covenant (0148)	Conservation Covenant	WA
NTWA Bushland covenant (0149)	Conservation Covenant	WA
NTWA Bushland covenant (0152)	Conservation Covenant	WA
NTWA Bushland covenant (0164)	Conservation Covenant	WA
NTWA Bushland covenant (0168)	Conservation Covenant	WA
NTWA Bushland covenant (0186)	Conservation Covenant	WA
Sussex Location 2561	NRS Addition - Gazettal in Progress	WA
Unnamed WA45533	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Walburra	Nature Reserve	WA
Yelverton	National Park	WA

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
South-West Forest Region of Western Australia	Western Australia

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Gravel Extraction Project	2022/09278		Assessment
Controlled action			
Lot 32 Tom Cullity Drive, Wilyabrup	2020/8866	Controlled Action	Post-Approval
Shark Hazard Mitigation Drum Line Program, WA	2014/7174	Controlled Action	Completed
Not controlled action			
Bussell Highway (Bramley Section) SLK Upgrade	2012/6511	Not Controlled Action	Completed
Busselton to Flinders Bay Rails to Trails Project, WA	2013/6835	Not Controlled Action	Completed
Busselton to Margaret River Transmission Line	2008/3964	Not Controlled Action	Completed
Construction of the Margaret River bypass road		Not Controlled Action	Completed
Geo-science Investigations	2005/2069	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Proposed Expansion of Existing Gracetown Townsite & Upgrade of Existing Associa	2010/5358	Not Controlled Action	Completed
West's gravel pit development, Cowaramup, WA	2015/7586	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Not controlled action (particular manner)			
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval

Biologically Important Areas

[Resource Information]

Scientific Name	Behaviour	Presence
Seabirds		
Ardenna carneipes		
Flesh-footed Shearwater [82404]	Foraging (in high numbers)	Known to occur
Onychoprion anaethetus		
Bridled Tern [82845]	Foraging (in high numbers)	Known to occur
Puffinus assimilis tunneyi		
Little Shearwater [59363]	Foraging (in high numbers)	Known to occur
Whales		
Eubalaena australis		
Southern Right Whale [40]	Migration	
Eubalaena australis		
Southern Right Whale [40]	Reproduction	
Megaptera novaeangliae		
Humpback Whale [38]	Migration (north and south)	Known to occur

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 is 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 on the contents of this report.

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 point locations and environmental data layers.

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 when time permits.

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 breeding sites; and
- 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
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

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

Please feel free to provide feedback via the Contact us page.

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Appendix K Vascular Flora Taxa Recorded During Survey

Family	Taxon	Conservation Status	Vegetation Unit			
			VU1 - Jarrah-Marri Forest	VU2 - Karri Creekline Forest	VU3 - Drainage Line Vegetation	VU4 - Disturbed Open Shrubland
Alliaceae	**Allium triquetrum*					
Anarthriaceae	*Anarthria prolifera*		X	X		
Apiaceae	**Foeniculum vulgare*					
	Xanthosia candida			X		
Asparagaceae	*Lomandra pauciflora*					X
Casuarinaceae	*Allocasuarina fraseriana*		X		X	
Colchicaceae	*Burchardia congesta*		X			
	Burchardia multiflora			X		
Cyperaceae	*Cyathochaeta avenacea*			X		
	Cyathochaeta (teretifolia)	P3				X
	Machaerina juncea					X
	Machaerina (vaginalis)					X
	Mesomelaena tetragona		X	X		X
	Morelotia octandra		X	X		X
	Netrostylis sp. Blackwood River	P3				X
	Netrostylis sp. Jarrah Forest		X			X
Dasypogonaceae	*Kingia australis*		X			
Dennstaedtiaceae	*Pteridium esculentum*		X			X
Dilleniaceae	*Hibbertia hypericoides*		X	X		X
Elaeocarpaceae	*Tremandra stelligera*					X
Ericaceae	*Leucopogon verticillatus*		X			
Euphorbiaceae	*Ricinocarpos glaucus*					X
Fabaceae	*Acacia divergens*					
	Acacia extensa					X
	**Acacia longifolia*					
	Acacia myrtifolia		X	X	X	
	Acacia pulchella		X			
	Bossiaea aquifolium					X
	Bossiaea linophylla		X			X
	Bossiaea ornata		X			X
	Callistachys lanceolata					
	**Chamaecytisus palmensis*					
	Daviesia cordata		X			
	Daviesia sp.				X	
	**Dipogon lignosus*					
	**Genista linifolia*					
	**Genista monspessulana*					

Family	Taxon	Conservation Status	Vegetation Unit			
			VU1 - Jarrah-Marri Forest	VU2 - Karri Creekline Forest	VU3 - Drainage Line Vegetation	VU4 - Disturbed Open Shrubland
	Grievea brachytropis		X			
	Hovea elliptica		X			X
	Hovea trisperma		X			
	Mirbelia dilatata		X	X		
Goodeniaceae	*Dampiera alata*		X			
	Dampiera linearis		X	X		
	Lechenaultia biloba		X			
Haemodoraceae	*Conostylis aculeata*		X			
	Conostylis laxiflora			X		
	Conostylis setigera		X			
Hemerocallidaceae	*Johnsonia lupulina*		X	X		
Iridaceae	*Patersonia occidentalis*		X			
	Patersonia umbrosa var. *xanthina*		X			X
Lamiaceae	**Lavandula* sp.					
Myrtaceae	*Agonis flexuosa*		X		X	X
	Corymbia calophylla		X	X		X
	Eucalyptus diversicolor					X
	Eucalyptus marginata subsp. *marginata*		X			
	Eucalyptus patens					X
	**Melaleuca* sp. (planted)				X	
	Taxandria linearifolia		X			X
	Taxandria parviceps			X	X	X
Orchidaceae	*Cyrtostylis* sp.					X
Pittosporaceae	**Pittosporum undulatum*					
Poaceae	*Microlaena stipoides*		X			X
	Tetrarrhena laevis		X			X
Podocarpaceae	*Podocarpus drouynianus*		X			
Polygalaceae	*Comesperma virgatum*			X		
Proteaceae	*Banksia ilicifolia*			X		
	Grevillea bronweniae	P3	X	X		
	Grevillea quercifolia		X			
	Hakea amplexicaulis		X			
	Hakea lasianthoides					X
	Hakea lissocarpha		X			
	Petrophile diversifolia				X	
Pteridaceae	*Adiantum aethiopicum*					X
Restionaceae	*Desmocladus flexuosus*				X	
	Hypolaena exsulca			X		

Family	Taxon	Conservation Status	Vegetation Unit			
			VU1 - Jarrah-Marri Forest	VU2 - Karri Creekline Forest	VU3 - Drainage Line Vegetation	VU4 - Disturbed Open Shrubland
	Leptocarpus scariosus					X
Rhamnaceae	*Trymalium odoratissimum* subsp. *trifidum*					
Rubiaceae	*Opercularia apiciflora*		X			
	Opercularia hispidula		X	X		X
Sapindaceae	*Dodonaea ceratocarpa*			X		
Xanthorrhoeaceae	*Xanthorrhoea gracilis*		X			
	Xanthorrhoea preissii		X	X		

Note: Species prefixed with * indicate that the taxon is introduced to the area found. () denotes tentative identification

Appendix L Tree Survey Results

ID	Flora Sp	DBH	Category	Location	Hollow
1	Karri	420	7. Suitable DBH Tree without ho	Shoulder	0
2	Karri	450	7. Suitable DBH Tree without ho	Shoulder	0
3	Karri	520	7. Suitable DBH Tree without ho	Shoulder	0
4	Karri	300	7. Suitable DBH Tree without ho	Clearing	0
5	Marri	500	7. Suitable DBH Tree without ho	Shoulder	0
6	Marri	650	7. Suitable DBH Tree without ho	Shoulder	0
7	Marri	500	7. Suitable DBH Tree without ho	Shoulder	0
8	Marri	550	7. Suitable DBH Tree without ho	Shoulder	0
9	Marri	500	7. Suitable DBH Tree without ho	Shoulder	0
10	Marri	480	7. Suitable DBH Tree without ho	Shoulder	0
11	Marri	500	7. Suitable DBH Tree without ho	Shoulder	0
12	Marri	500	7. Suitable DBH Tree without ho	Shoulder	0
13	Marri	700	7. Suitable DBH Tree without ho	Shoulder	0
14	Marri	550	7. Suitable DBH Tree without ho	Shoulder	0
15	Karri	700	7. Suitable DBH Tree without ho	Shoulder	0
16	Karri	530	7. Suitable DBH Tree without ho	Shoulder	0
17	Karri	500	7. Suitable DBH Tree without ho	Clearing	0
18	Karri	480	7. Suitable DBH Tree without ho	Shoulder	0
19	Karri	650	7. Suitable DBH Tree without ho	Clearing	0
20	Karri	450	7. Suitable DBH Tree without ho	Shoulder	0
21	Marri	500	7. Suitable DBH Tree without ho	Shoulder	0
22	Marri	400	7. Suitable DBH Tree without ho	Shoulder	0
23	Marri	300	7. Suitable DBH Tree without ho	Clearing	0
24	Jarrah	490	7. Suitable DBH Tree without ho	Clearing	0
25	Marri	740	7. Suitable DBH Tree without ho	Shoulder	0
26	Marri	1190	7. Suitable DBH Tree without ho	Shoulder	0
27	Marri	390	7. Suitable DBH Tree without ho	Shoulder	0
28	Marri	730	7. Suitable DBH Tree without ho	Shoulder	0
29	Marri	490	7. Suitable DBH Tree without ho	Shoulder	0
30	Jarrah	600	7. Suitable DBH Tree without ho	Shoulder	0
31	Marri	430	7. Suitable DBH Tree without ho	Shoulder	0
32	Jarrah	420	7. Suitable DBH Tree without ho	Shoulder	0
33	Marri	320	7. Suitable DBH Tree without ho	Shoulder	0
34	Marri	600	7. Suitable DBH Tree without ho	Shoulder	0
35	Marri	370	7. Suitable DBH Tree without ho	Clearing	0
36	Marri	520	7. Suitable DBH Tree without ho	Shoulder	0
37	Marri	500	7. Suitable DBH Tree without ho	Shoulder	0
38	Marri	470	7. Suitable DBH Tree without ho	Shoulder	0
39	Marri	350	7. Suitable DBH Tree without ho	Shoulder	0
40	Marri	380	7. Suitable DBH Tree without ho	Shoulder	0

41	Marri	400	7. Suitable DBH Tree without ho	Shoulder	0
42	Marri	450	7. Suitable DBH Tree without ho	Shoulder	0
43	Marri	310	7. Suitable DBH Tree without ho	Shoulder	0
44	Blackbutt	1006	7. Suitable DBH Tree without ho	Shoulder	0
45	Marri	740	7. Suitable DBH Tree without ho	Clearing	0
46	Jarrah	400	7. Suitable DBH Tree without ho	Clearing	0
47	Marri	310	7. Suitable DBH Tree without ho	Shoulder	0
48	Blackbutt	480	7. Suitable DBH Tree without ho	Shoulder	0
49	Marri	330	7. Suitable DBH Tree without ho	Shoulder	0
50	Jarrah	490	7. Suitable DBH Tree without ho	Shoulder	0
51	Marri	590	7. Suitable DBH Tree without ho	Shoulder	0
52	Marri	380	7. Suitable DBH Tree without ho	Shoulder	0
53	Marri	430	7. Suitable DBH Tree without ho	Shoulder	0
54	Marri	430	7. Suitable DBH Tree without ho	Shoulder	0