# TECHNICAL MEMORANDUM

## Flora and Fauna Assessment

## Various landholdings Wallcliffe Road, Margaret River

| | | | |
|---|---|---|---|
| **PROJECT NUMBER** | EP18-128(17) | **DOC. NUMBER** | EP18-128(17)—053 RAW |
| **PROJECT NAME** | Lot 101 Wallcliffe House | **CLIENT** | Wallcliffe House Pty Ltd |
| **AUTHOR** | RAW | **REVIEWER** | KK |
| **VERSION** | 1 | **DATE** | 15/10/2024 |

## 1. INTRODUCTION

Wallcliffe House Pty Ltd are submitting a native vegetation clearing permit application to the Department of Water and Environmental Regulation (DWER) for the relocation of overhead powerlines within lots 101 and 102 Wallcliffe Road and adjacent areas in Margaret River. To support the application, Emerge Associates (Emerge) were engaged to conduct a flora and fauna assessment of areas potentially impacted by the clearing (referred to herein as the 'survey area').

The survey area comprises five portions, as described in **Table 1**.

*Table 1: Survey area details*

| ID | Details | Area (ha) |
|---|---|---|
| Area 1 | Linear polygon along south/eastern side of Wallcliffe Road | 0.18 |
| Area 2 | Polygon within recreation reserve, overhead powerlines present | 0.25 |
| Area 3 | Small polygon centred around one existing power pole | 0.02 |
| Area 4 | Rectangular polygon centred around one existing power pole | 0.07 |
| Area 5 | Rectangular polygon with one existing power pole | 0.02 |

The scope of work was to undertake a flora and fauna assessment to provide sufficient information on the values within the site to support the clearing permit application. As part of this scope of work, the following tasks were undertaken:

- Desktop review of background information including previous surveys and database searches.
- Determination of vegetation type and condition and fauna habitat, with particular emphasis on conservation significant species and communities.
- Assessment of trees within survey area 1.
- Documentation of the desktop assessment, survey methodology and results into a report.

## 2. DESKTOP REVIEW

### 2.1. Previous surveys

A *Spring Flora and Vegetation Assessment* of Lot 101 Wallcliffe Road was undertaken in 2018 which included all of area 2 and the majority of area 4 (Emerge Associates 2019). Both areas were mapped as comprising plant community **AfSgHcW** which was described as a 'woodland of *Agonis flexuosus* over shrubland of *Spyridium globulosum, Hibbertia cuneiformis, Templetonia retusa* with vineland of *Hardenbergia comptoniana* and *Muehlenbeckia adpressa over low shrubland of Phyllanthus calycinus* over forbland of *Tricoryne elatior and Thysanotus arenarius Austrostipa flavescens'* (Emerge

Associates 2019). Area 2 was mapped as being in 'very good' condition and area 4 was mapped as being in 'good' condition (using the EPA (2016) scale as adapted from Keighery (1994)). Targeted searches for threatened and priority flora were undertaken and none were recorded in area 2 or the portion of area 4. One individual of a priority 4 (P4) species, *Banksia sessilis* var. *cordata*, was recorded adjacent to the northern boundary of area 2.

A Fauna Assessment of Lot 101 Wallcliffe Road was undertaken in 2018 which included all of area 2 and the majority of area 4 (Harewood 2019). The fauna habitat within these areas was described as 'woodland of peppermint over shrubland with vineland over low shrubland over forbland'. A western ringtail possum assessment conducted at the same time did not record any western ringtail possum individuals or dreys, although some were recorded to the north-east of area 4. A black cockatoo assessment conducted at the same time did not record any black cockatoo breeding habitat or evidence of foraging habitat.

## 2.2. Database searches and likelihood of occurrence

Database searches were conducted for conservation significant flora and fauna species and ecological communities that have been recorded or may occur within a 10-20 km radius of the site using the *Protected Matters Search Tool* (DCCEEW 2024) and DBCA's conservation significant fauna, flora and ecological communities databases.

The likelihood of occurrence of the taxa identified in database searches was determined using the categories outlined in **Table 2** and **Table 3**.

*Table 2: Threatened and priority flora and ecological communities likelihood of occurrence assessment categories and definitions*

| | | Distribution[1] | |
|---|---|---|---|
| | | Reliable record within search area | No reliable record within search area |
| Habitat | Suitable | High | Negligible |
| | Potentially suitable | Moderate | |
| | Unsuitable | Low | |

[1] Reliable record defined as validated, recent (within the last ~40 years) and spatially accurate (refer DBCA search meta data) in order to exclude unverified range or habitat projections.

*Table 3: Conservation significant fauna likelihood of occurrence assessment categories and definitions*

| | | Reliable record[1] | | Unreliable record[2] |
|---|---|---|---|---|
| | | Access to site not impeded | Access to site impeded | |
| Habitat | Suitable | High | Very low | Negligible |
| | Potentially suitable | Moderate | | |
| | Unsuitable | Low | | |
| | Absent | Nil | | |

[1]Reliable record defined as DBCA or validated ALA record from the last ~20 years, [2]Unreliable record defined as record >20 years old or PMST prediction.

### 2.2.1. Flora

Ten threatened and 40 priority flora occur or potentially occur within a 20 km[1] radius of the site (DBCA reference no. 22-0924FL) (refer **Appendix A**). Prior to the field survey three priority flora species were classified as having a high or moderate likelihood of occurrence within the site, as outlined in **Table 4**. The remaining species were classified as having a low or negligible likelihood of occurrence. The complete likelihood of occurrence assessment is provided as **Appendix A**.

*Table 4: Threatened or priority flora species with a high or moderate likelihood of occurrence in the site*

| Species | Status | | Life strategy | Flowering period | Likelihood of occurrence |
|---|---|---|---|---|---|
| | WA | EPBC Act | | | |
| *Austrostipa mundula* | P3 | - | P | Sept-Nov | Moderate |
| *Banksia sessilis* var. *cordata* | P4 | - | P | Jul-Oct | High |
| *Stylidium lowrieanum* | P3 | - | P | Oct-Nov | Moderate |

### 2.2.2. Communities

Four TECs and two PECs occur or potentially occur within a 10 km radius of the site (DBCA reference no. 07-0924EC) (refer **Appendix B**). All of these communities were considered to have a low likelihood of occurrence in the site. The complete likelihood of occurrence assessment is provided as **Appendix B.**

### 2.2.3. Fauna

Eighty-three fauna species of conservation significance occur or potentially occur within a 10 km radius of the site (DBCA reference no. 55-0924FA) (refer **Appendix C**). Seven birds and three mammals were classified as having a high or moderate likelihood of occurrence in the site, as outlined in **Table 5**. The remaining species were classified as having a low, very low, negligible or nil likelihood of occurrence. The complete likelihood of occurrence assessment is provided as **Appendix C.**

*Table 5: Summary of conservation significant fauna species with a 'high' or 'moderate' likelihood of occurrence in the site*

| Species name | Common name | Status | | Habitat description | Likelihood |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| **Birds** | | | | | |
| *Apus pacificus* | Pacific swift | MI | MI | Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities (Pizzey & Knight 2012). | Moderate |
| *Calyptorhynchus banksii naso* | Forest red-tailed black cockatoo | VU | VU | Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding *Corymbia calophylla, Eucalyptus marginata*, introduced *Melia azedarach* and *Eucalyptus* spp. trees (Johnstone et al. 2013). | Moderate |

[1] Note DBCA determined that 20 km radius was most appropriate.

| Species name | Common name | Status | | Habitat description | Likelihood |
|---|---|---|---|---|---|
| | | WA | EPBC Act | | |
| *Falco peregrinus* | Peregrine falcon | OS | - | Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes (Johnstone and Storr 1998). | Moderate |
| *Pandion haliaetus* | Osprey | MI | MI | Coasts, estuaries, bays, inlets, islands, and surrounding waters; coral atolls, reefs, lagoons, rock cliffs, stacks (Pizzey & Knight 2012). | High |
| *Tyto novaehollandiae novaehollandiae* | Australian masked owl | P3 | - | Forests, open woodlands, farmlands with large trees. E.g. river red gums, adjacent cleared country, timbered watercourses, paperbark woodlands and caves (Pizzey & Knight 2012). | Moderate |
| *Zanda baudinii* | Baudin's black cockatoo | EN | EN | Mainly eucalypt forests. Attracted to seeding *Corymbia calophylla, Banksia* spp., *Hakea* spp., and to fruiting apples and pears (Johnstone and Storr 1998). | Moderate |
| *Zanda latirostris* | Carnaby's black cockatoo | EN | EN | Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of *Pinus* spp. Attracted to seeding *Banksia* spp., *Hakea* spp., *Eucalyptus* spp., *Corymbia calophylla*, *Grevillea* spp., and *Allocasuarina* spp. (Johnstone and Storr 1998). | Moderate |
| **Mammals** | | | | | |
| *Isoodon fusciventer* | Quenda | P4 | - | Dense scrubby, often swampy, vegetation with dense cover up to one metre high (DEC 2012) | High |
| *Phascogale tapoatafa wambenger* | South-western brush-tailed phascogale | CD | - | Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover (Triggs 2003). | Moderate |
| *Pseudocheirus occidentalis* | Western ringtail possum | CR | CR | On the Swan Coastal Plain in *Agonis flexuosa* woodlands and *Agonis flexuosa/ Eucalyptus gomphocephala* forests. Also *Eucalyptus marginata* forests (DBCA 2017). | High |

# 3. METHODS

## 3.1. Field survey

An ecologist from Emerge visited the site on 5 September 2024 to conduct the field survey. During the survey all areas were traversed on foot and the following tasks were completed:

- Mapping of vegetation unit and condition (using the EPA (2016) scale).
- Targeted searches within areas of habitat suitable for threatened and priority flora species and recording location of any individuals with a dGPS.
- An assessment of fauna habitat and determination of suitability for conservation significant fauna species.

- Searches for evidence of conservation significant fauna such as western ringtail possum and black cockatoo.
- Tree survey which included spatial location pickup using a dGPS and recording attributes of each tree (species, diameter at breast height (DBH)) (within area 1 only).

### 3.2. Mapping and data analysis

Vegetation unit and condition were mapped using notes collected in the field and NearMap aerial imagery. Where polygons mapped within the site were overhanging canopy from trees located outside of the survey area (as a product of mapping vegetation extent using canopy) they were designated on maps as 'overhang' to differentiate from trees directly located within the site which may be subject to proposed clearing. Locations of conservation significant flora and trees were shown on maps as points.

*AS 4970-2009 Protection of Trees on Development Sites* requires that tree protection zones (TPZ) are applied to protect trees during development (Standards Australia 2009). A TPZ aims to encompass the root area and crown area of a tree so that it can be isolated from disturbance. The radius of a TPZ is calculated by multiplying the DBH of an individual tree by 12. The minimum TPZ is 2 m, and maximum TPZ is 15 m except where crown protection is required.

*AS 4970-2009 Protection of Trees on Development Sites* defines the structural root zone (SRZ) as the minimum volume of roots required by a tree to remain stable in the ground (Standards Australia 2009). The SRZ for an individual tree is calculated as $SRZ = (D \times 50)^{0.42} \times 0.64$, *where D is the trunk diameter in metres (m), measured above the root buttress* (Standards Australia 2009)[2].

## 4. RESULTS AND DISCUSSION

### 4.1. Threatened and priority flora

One *Banksia sessilis* var. *cordata* (P4) individual was recorded within area 4, as shown in **Figure 2**.

One *Banksia sessilis* var. *cordata* (P4) individual was previously recorded by Emerge Associates (2019) adjacent to, but outside of, area 2. During the survey this individual was observed to be dead, possibly due to the severe heat experienced in the region over the 2023/2024 summer.

Area 2 comprises suitable habitat for the three priority flora species listed in **Table 2**. However, targeted searches within this area did not record any individuals. The three priority species are perennials and so if they occur they would have been visible at the time of the survey. Therefore, no threatened or priority flora occur in the site.

The remainder of the site is considered too disturbed to support threatened and priority flora.

### 4.2. Declared pests

No flora species listed as a declared pest (C3 control category) or weed of national significance (WoNS) were recorded in the survey area.

[2] Note for ease of survey and consistency the DBH has been used to calculate SRZ, which is generally accepted by industry as appropriate.

## 4.3. Vegetation

### 4.3.1. Vegetation units

Six vegetation units were recorded in the survey area, as described in **Table 6** and shown in **Plate 1** to **Plate 5**. The locations of these units are shown in **Figure 2.**

*Table 6: Vegetation units within the survey area*

| Vegetation unit | Description | Survey area and extent (ha) | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| **Af** | *Agonis flexuosa* trees and tall shrubs over non-native grasses and bare ground. | 0.03 | - | - | - | 0.01 |
| **AfMh** | Scattered *Agonis flexuosa* over tall closed shrubland *Melaleuca huegelii* over mixed native understorey species and non-native grasses on edges | 0.03 | - | - | - | - |
| **AfSg** | Woodland of *Agonis flexuosa* over scattered native shrubs such as *Spyridium globulosum* and *Hardenbergia comptoniana* over closed non-native grassland **Ehrharta* sp. and **Hyparrhenia hirta* | - | - | - | 0.04 | - |
| **AfSgHcW** | Woodland of *Agonis flexuosus* over shrubland of *Spyridium globulosum, Hibbertia cuneiformis, Templetonia retusa* with vineland of *Hardenbergia comptoniana* and *Muehlenbeckia adpressa over low shrubland of Phyllanthus calycinus* over forbland of *Tricoryne elatior and Thysanotus arenarius Austrostipa flavescens* | - | 0.24 | 0.02 | - | - |
| **Scattered native plants** | Scattered shrubs such as juvenile *Agonis flexuosa*, *Acacia littorea* and *Spyridium globulosum* | <0.01 | - | - | - | - |
| **Non-native** | Heavily disturbed areas comprising non-native plants (weeds), bare ground and tracks. | 0.12 | 0.01 | - | 0.03 | 0.01 |
| **Total** | | 0.18 | 0.25 | 0.02 | 0.07 | 0.02 |

*Plate 1: Vegetation unit **AfMh** in 'very good' condition (on edges of path) (area 1)*

*Plate 2: Vegetation unit **AfSg** in 'degraded' condition (area 4)*

*Plate 3: Vegetation unit **AfSgHcW** in 'very good' condition (area 2)*

*Plate 4: Vegetation unit **scattered native plants** in 'degraded – completely degraded' condition (area 1)*

*Plate 5: Vegetation unit **Af** in 'degraded – completely degraded' condition (area 1)*

#### 4.3.2. Vegetation condition

The extent of vegetation by condition category is detailed in **Table 3** and shown in **Figure 2.**

*Table 7: Vegetation condition categories within the site*

| Condition category (Keighery (1994)) | Survey area and extent (ha) | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Pristine | - | - | - | - | - |
| Excellent | - | - | - | - | - |
| Very good | 0.02 | 0.24 | - | - | - |
| Good | 0.01 | - | 0.02 | - | - |
| Degraded | - | - | - | 0.04 | 0.01 |
| Degraded – completely degraded | 0.02 | - | - | - | - |
| Completely degraded | 0.13 | 0.01 | 0 | 0.03 | 0.01 |

#### 4.3.3. Threatened and priority ecological communities

No threatened or priority ecological communities occur within the survey area.

### 4.4. Fauna

A summary of the fauna habitat values in the survey area is provided in **Table 8** and shown in **Figure 4**.

*Table 8: Fauna habitats within the survey area*

| Fauna habitat | Description | Survey area and extent (ha) | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| **Scattered trees and shrubs** | Native *Agonis flexuosa* trees and scattered native shrubs over low non-native grasses and bare ground. Includes non-native *E. botryoides* tree.<br>Low microhabitat complexity due to the lack of understorey vegetation and evidence of vegetation management (mowing/pruning). Would provide habitat for avian and arboreal species. | 0.03 | - | - | - | - |
| **Woodland** | Native *Agonis flexuosa* trees and scattered native shrubs over scattered native shrubs and forbs over dense non-native grasses.<br>Low microhabitat complexity due to the open ground layer and dominance of a couple of non-native grasses. May provide habitat for some native ground dwelling species but is more likely to be used by avian/arboreal species. | - | - | - | 0.04 | 0.01 |
| **Woodland/shrubland** | Scattered native *Agonis flexuosa* trees over dense tall native shrubland *Melaleuca huegelii* and mixed native and non-native ground layer.<br>Moderate to high microhabitat complexity including branches, leaf litter and multiple structural layers. Would provide habitat for a range of native fauna species, particularly patches which are contiguous with a larger patch. | 0.03 | 0.24 | 0.02 | - | - |
| **Bare ground/grassland** | Heavily disturbed areas comprising non-native plants (weeds), bare ground and tracks.<br>Low microhabitat complexity and provides limited habitat for fauna. | 0.12 | 0.01 | - | 0.03 | 0.01 |
| **Total** | | 0.18 | 0.25 | 0.02 | 0.07 | 0.02 |

## 4.5. Conservation significant fauna

A description of the habitat values in the survey area for each conservation significant fauna species identified in **Section 2.2.3** is provided in **Table 9**.

*Table 9: Summary of habitat values for conservation significant fauna species within the survey area*

| Species name | Common name | Status | | Survey area and suitability | | | | |
|---|---|---|---|---|---|---|---|---|
| | | WA | EPBC Act | 1 | 2 | 3 | 4 | 5 |
| *Apus pacificus* | Pacific swift | MI | MI | Primarily aerial species that may fly over but would not breed in the site (does not breed in Australia). | | | | |
| *Calyptorhynchus banksii naso* | Forest red-tailed black cockatoo | VU | VU | Site occurs within the species' distribution and breeding range. May fly over and perch in the site but no foraging or breeding habitat occurs. | | | | |
| *Falco peregrinus* | Peregrine falcon | OS | - | Primarily aerial species that may fly over and/or foraging in the site but no breeding habitat occurs. | | | | |
| *Pandion haliaetus* | Osprey | MI | MI | May fly over and/or foraging in the site but no breeding habitat occurs. | | | | |
| *Tyto novaehollandiae novaehollandiae* | Australian masked owl | P3 | - | May fly over and/or foraging in the site but no breeding habitat occurs. | | | | |
| *Zanda baudinii* | Baudin's black cockatoo | EN | EN | Site occurs within the species' distribution and breeding range.<br>May fly over and perch in the site but no foraging, breeding or roosting habitat occurs. | | | Site occurs within the species' distribution and breeding range.<br>May fly over and perch in the site.<br>Single *Banksia sessilis* var. *cordata* plant may provide foraging but very small extent. No breeding habitat occurs. | Site occurs within the species' distribution and breeding range.<br>May fly over and perch in the site but no foraging or breeding habitat occurs. |
| *Zanda latirostris* | Carnaby's black cockatoo | EN | EN | Site occurs within the species' distribution and breeding range. May fly over and perch in the site.<br>Peppermint trees provide a secondary foraging resource. No breeding habitat occurs. | | | | |
| *Isoodon fusciventer* | Quenda | P4 | - | **Woodland/ shrubland** habitat may provide suitable habitat due to dense shrubland vegetation. | Suitable habitat occurs but no evidence of the species. | | | |

| Species name | Common name | Status | | Survey area and suitability | | | | |
|---|---|---|---|---|---|---|---|---|
| | | WA | EPBC Act | 1 | 2 | 3 | 4 | 5 |
| | | | | Remainder would not provide habitat. | | | | |
| *Phascogale tapoatafa wambenger* | South-western brush-tailed phascogale | CD | - | Likely occurs in the local area but no suitable habitat (no hollow bearing trees). | | | | |
| *Pseudocheirus occidentalis* | Western ringtail possum | CR | CR | **Af** vegetation provides suitable habitat but no dreys or suitable hollows occur. **AfMh** vegetation contains peppermint trees and so provides habitat for the species (in combination with a larger patch). However, heathland vegetation is not the preferred habitat type for the species. No dreys or suitable hollows occur. | **AfSgHcW** vegetation contains peppermint trees and so provides habitat for the species (in combination with a larger patch). No dreys or suitable hollows occur. | | **AfSg** vegetation contains peppermint trees and so provides habitat for the species (in combination with a larger patch). No dreys or suitable hollows occur/ | **Af** vegetation contains peppermint trees and so provides habitat for the species (in combination with a larger patch). No dreys or suitable hollows occur/ |

### 4.6. Trees

A total of 10 native (*Agonis flexuosa*) and one non-native (*Eucalyptus botryoides*) trees were recorded in survey area 1. The locations of the trees, TPZs and SRZs are shown in **Figure 4**. Attributes of the trees are provided in **Appendix D**.

## 5. CONCLUSIONS

A summary of the values within each area is provided in **Table 10**.

*Table 10: Survey area flora and fauna values*

| ID | Ecological values |
|---|---|
| Area 1 | • Scattered native peppermint trees (**Af** vegetation unit) in degraded – completely degraded condition.<br>• Patches of native shrubland (**AfMh** vegetation unit) in degraded to very good condition.<br>• Scattered native plants.<br>• No habitat for threatened or priority flora species. |
| | • Habitat for western ringtail possum predominantly in the form of scattered trees but no dreys or hollows present. |
| | • One non-native and ten native trees. |
| Area 2 | • Predominantly vegetation unit **AfSgHcW** in very good condition.<br>• No threatened or priority flora species present or considered likely to occur. |
| | • Habitat for western ringtail possum in the form of native vegetation but no dreys or hollows present. |
| Area 3 | • Vegetation unit **AfSgHcW** in good condition.<br>• No threatened or priority flora species present or considered likely to occur. |
| | • Habitat for western ringtail possum in the form of native vegetation but no dreys or hollows present. |
| Area 4 | • Vegetation unit **AfSg** in degraded condition.<br>• No threatened or priority flora species present or considered likely to occur. |
| | • Habitat for western ringtail possum in the form of native vegetation but no dreys or hollows present. |
| Area 5 | • Vegetation unit **Af** in degraded condition.<br>• No threatened or priority flora species present or considered likely to occur. |
| | • Habitat for western ringtail possum in the form of native vegetation but no dreys or hollows present. |

# 6. REFERENCES

## 6.1. General references


Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2024, *Protected Matters Search Tool*, <https://pmst.awe.gov.au/>.

Emerge Associates 2019, *Spring Flora and Vegetation Assessment - Lot 101 Wallcliffe Road, Prevelly*, EP18-128(01)--002A SKP, Version A.

Environmental Protection Authority (EPA) 2016, *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment*, Perth.

Harewood, G. 2019, *Fauna Assessment Lot 101 Wallcliffe Road Prevelly*, Version 2.

Keighery, B. 1994, *Bushland Plant Survey: A guide to plant community survey for the community*, Wildflower Society of WA (Inc), Nedlands.

Standards Australia 2009, *AS 4970-2009 Protection of trees on development sites* Sydney.


## 6.2. Online references


Western Australian Herbarium (2018). *FloraBase—the Western Australian Flora.* Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au>

# Figures

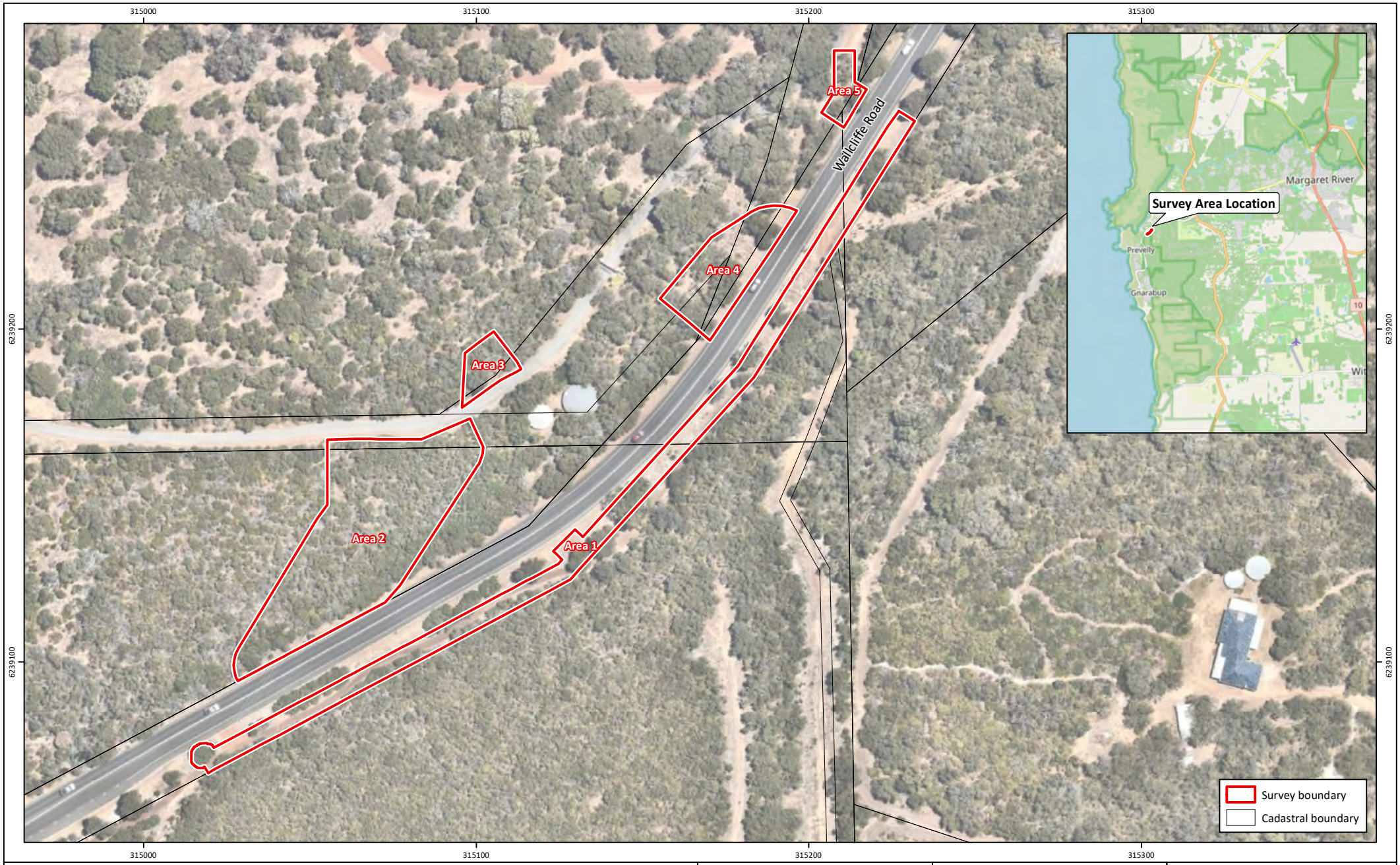


**Figure 1: Survey Area Location**

| | |
|---|---|
| **Project:** | Flora and Fauna Assessment<br>Lot 101 Wallcliffe Road Clearing Permit |
| **Client:** | Wallcliffe House Pty Ltd |

**Plan Number:**
**EP18-128(17)--F71**

| | |
|---|---|
| Drawn: | GAR |
| Date: | 20/09/2024 |
| Checked: | RAW |
| Approved: | RAW |
| Date: | 16/10/2024 |

N

0 2,100 4,200 6,300
Metres

Scale: 1:210,000@A4

GDA 1994 MGA Zone 50

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**Figure 2: Vegetation Units**

**Project:** Flora and Fauna Assessment
Lot 101 Wallcliffe Road Clearing Permit
**Client:** Wallcliffe House Pty Ltd

**Plan Number:**
**EP18-128(17)--F72**
Drawn: GAR
Date: 20/09/2024
Checked: RAW
Approved: RAW
Date: 16/10/2024

N

0 10 20 30
Metres
Scale: 1:210,000@A4
GDA 1994 MGA Zone 50

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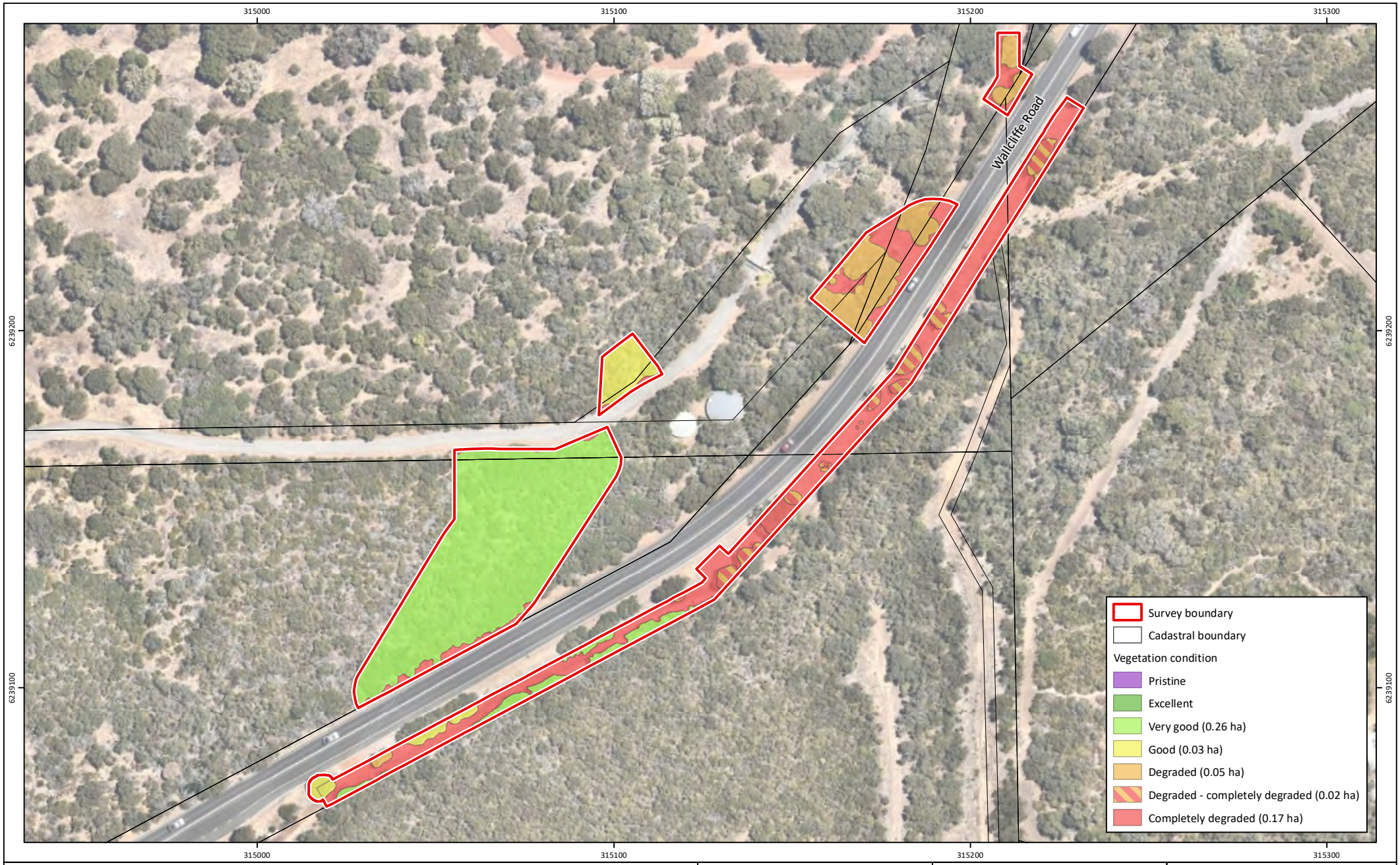


**Figure 3: Vegetation Condition**

**Project:** Flora and Fauna Assessment
Lot 101 Wallcliffe Road Clearing Permit
**Client:** Wallcliffe House Pty Ltd

**Plan Number:**
**EP18-128(17)--F73**
Drawn: GAR
Date: 20/09/2024
Checked: RAW
Approved: RAW
Date: 16/10/2024

N

0 10 20 30
Metres
Scale: 1:1,400@A4
GDA 1994 MGA Zone 50

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**Figure 4: Fauna Habitat**

**Project:** Flora and Fauna Assessment
Lot 101 Wallcliffe Road Clearing Permit
**Client:** Wallcliffe House Pty Ltd

**Plan Number:**
**EP18-128(17)--F75**
Drawn: GAR
Date: 20/09/2024
Checked: RAW
Approved: RAW
Date: 16/10/2024

N

0 10 20 30
Metres
Scale: 1:1,400@A4
GDA 1994 MGA Zone 50

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**Figure 5: Trees**

**Project:** Flora and Fauna Assessment
Lot 101 Wallcliffe Road Clearing Permit
**Client:** Wallcliffe House Pty Ltd

**Plan Number:**
**EP18-128(17)--F74**

| | |
|---|---|
| Drawn: | GAR |
| Date: | 20/09/2024 |
| Checked: | RAW |
| Approved: | RAW |
| Date: | 16/10/2024 |

N

0 10 20 30
Metres

Scale: 1:1,400@A4

GDA 1994 MGA Zone 50

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# Appendix A

Likelihood of Occurrence Assessment - Flora

| Code | Community name | TEC/ PEC | Level of significance | | Likelihood of occurrence |
|---|---|---|---|---|---|
| | | | State | EPBC Act | |
| Melaleuca lanceolata forests | Melaleuca lanceolata forests, Leeuwin Naturaliste Ridge | PEC | P2 | - | Low |
| Augusta-microbial | Rimstone pools and cave structures formed by microbial activity on marine shorelines (Augusta microbialites) | TEC | EN | - | Low |
| Leeuwin Granites was Low shrublands (Gracetown) | 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). | PEC | P2 | - | Low |
| CAVES LEEUWIN02 | Aquatic Root Mat Community Number 2 of Caves of the Leeuwin-Naturaliste Ridge (Strongs Cave) | TEC | CR | EN | Low |
| CAVES LEEUWIN04 | Aquatic Root Mat Community 4 in Caves of the Leeuwin Naturaliste Ridge | TEC | CR | EN | Low |
| - | Empodisma peatlands of southwestern Australia | TEC | - | EN | Low |

Note: TEC=threatened ecological community, PEC=priority ecological community, CR=critically endangered, EN=endangered, VU=vulnerable, P3=priority 3

# Appendix B

Likelihood of Occurrence Assessment - Communities

| Species name | Level of significance | | Life strategy | Habitat | Flowering period | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | WA | EPBC Act | | | | |
| *Acacia inops* | P3 | - | P | Black peaty sand, clay. Swamps, creeks. | Sep-early Nov | Low |
| *Acacia semitrullata* | P4 | - | P | White/grey sand, sometimes over laterite, clay sometimes in sandplains, swampy areas. | May-Oct | Low |
| *Acacia tayloriana* | P4 | - | P | Grey or yellow/orange sandy soils, lateritic gravel, clay loam. Winter-wet areas. | Jan | Low |
| *Actinotus repens* | P3 | - | P | Sand, clay or loam in wetlands or low lying areas in scrub, woodland or forest with Agonis spp. and/or Taxandria and often karri trees. | Dec-Mar | Low |
| *Amperea micrantha* | P2 | - | P | Sandy soils. | Oct-Nov | Low |
| *Astartea onycis* | P4 | - | P | Seasonally inundated swamps and low-lying areas on sandy clay, loam or peat | Nov-Mar | Low |
| *Austrostipa mundula* | P3 | - | P | Grey sand over limestone. | Sept-Nov | Moderate |
| *Banksia mimica* | VU | EN | P | Flat to gentle slopes in grey and white sand in open woodlands. | Dec-Jan | Low |
| *Banksia sessilis var. cordata* | P4 | - | P | White/grey sand. Coastal limestone. | Jul-Oct | High |
| *Banksia squarrosa subsp. argillacea* | VU | VU | P | White/grey sand, gravelly clay or loam predominantly in winter-wet areas over ironstone in open to tall shrubland. | Jun-Nov | Low |
| *Boronia anceps* | P3 | - | P | White sand, gravelly laterite in seasonally swampy heaths. | Sep-Dec/Jan | Low |
| *Boronia sp. Leeuwin (J. Scott 235)* | P2 | - | P | Sand and peat with gravelly laterite in winter-wet depressions, swamps and watercourses. | Aug-Dec | Low |
| *Caladenia abbreviata* | P3 | - | PG | Sand dunes. | Nov-Dec | Low |
| *Caladenia ambusta* | P2 | - | PG | Flat to gentle slopes in brown soil or dunes (limited information) | Nov | Low |

| Species name | Level of significance | | Life strategy | Habitat | Flowering period | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | WA | EPBC Act | | | | |
| *Caladenia excelsa* | EN | EN | PG | Hilltops, slopes, swales and low plains in deep pale yellow, white or grey sandy soils among dense low shrubs in banksia, jarrah and marri woodlands | Sep-Oct | Low |
| *Caladenia hoffmanii* | EN | EN | PG | Clay, loam, laterite, granite. Rocky outcrops and hillsides, ridges, swamps and gullies. | Aug-Oct | Low |
| *Caladenia huegelii* | CR | EN | PG | Well-drained, deep sandy soils in lush undergrowth in a variety of moisture levels. | Sep-early Nov | Low |
| *Caladenia lodgeana* | CR | CR | PG | Seasonally moist to wet clay/sand soils on the margins of either low granite outcrops or ephemeral wetlands | Oct | Low |
| *Calectasia cyanea* | CR | CR | P | Heathland on white sand or laterite gravel over laterite. Known only from one population near Albany. | Jun-Oct | Low |
| *Chamaescilla gibsonii* | P3 | - | PG | Clay to sandy clay in winter-wet flats, shallow water-filled claypans. | Sep-Oct | Low |
| *Dampiera heteroptera* | P3 | - | P | Sandy soils, swampy areas. | Sep-Oct | Low |
| *Deyeuxia inaequalis* | P1 | - | A | Loam soils | Nov-Dec | Low |
| *Drakaea micrantha* | EN | VU | PG | Open sandy patches often adjacent to winter-wet swamps. | Sept- early Oct | Low |
| *Drosera fimbriata* | P4 | - | P | White sand, granite. | Sep-Oct | Low |
| *Eucalyptus calcicola subsp. calcicola* | P4 | - | P | Red-brown sand over limestone on coastal dunes, calcareous ridges, rocky outcrops. | May-Jun | Low |
| *Eucalyptus marginata x megacarpa* | P4 | - | P | Sandy loam. Interdunal areas. | Unknown | Low |
| *Franklandia triaristata* | P4 | - | P | White or grey sand. | Aug-Oct | Low |
| *Gahnia sclerioides* | P4 | - | P | Loam, sandy soils. Moist shaded situations. | Feb, Apr, Jun, Aug or Nov | Low |

| Species name | Level of significance | | Life strategy | Habitat | Flowering period | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | WA | EPBC Act | | | | |
| *Gastrolobium formosum* | P3 | - | P | Clay loam. Along river banks or in swamps. | Nov | Low |
| *Gastrolobium papilio* | CR | EN | P | Sandy clay over ironstone and laterite. Flat plains. | Oct-Dec | Low |
| *Grevillea brachystylis subsp. brachystylis* | P3 | - | P | Black sand, sandy clay in swampy situations. | Aug-Nov | Low |
| *Grevillea bronweniae* | P3 | - | P | Grey sand over laterite, lateritic loam on hillslopes. | Jun-Dec | Low |
| *Grevillea manglesioides subsp. ferricola* | P3 | - | P | Red sandy clay over ironstone on winter wet flats. | Oct | Low |
| *Juncus meianthus* | P3 | - | P | Black sand, sandy clay. Creeks, seepage areas. | Nov-Dec/Jan | Low |
| *Lambertia echinata subsp. occidentalis* | CR | EN | P | White sandy soils over laterite, orange/brown-red clay over ironstone. Flats to foothills, winter-wet sites. | Feb, Apr or Dec | Low |
| *Lasiopetalum laxiflorum* | P3 | - | P | Sand and/or clay with laterite. | Sep-Dec | Low |
| *Leptomeria furtiva* | P2 | - | P | Grey or black peaty sand in winter-wet flats. | Aug-Oct | Low |
| *Machaerina ascendens* | P2 | - | P | Water or waterlogged soil on edges of swamps and boggy ground in peat, sand and clay soils. Occurs in swamps associated with the Blackwood River, Rosa Brook and Gingilup Swamp. | Aug-Oct | Low |
| *Melaleuca basicephala* | P4 | - | P | Black peaty sand, clay. Winter-wet flats, swamps. | Dec or Jan | Low |
| *Netrostylis sp.* | P3 | - | P | Creebeds, edges of lakes and | ?Nov | Low |
| *Netrostylis sp. Nannup* | P1 | - | P | Sand and clay loam in valley | Undocume | Low |
| *Pimelea ciliata subsp.* | P3 | - | P | Grey sand over clay, loam. | Oct-Dec | Low |
| *Pultenaea pinifolia* | P3 | - | P | Loam or clay. Floodplains, swampy areas. | Oct-Nov | Low |
| *Stylidium lowrieanum* | P3 | - | P | Sand or sandy loam over | Oct-Nov | Moderate |
| *Synaphea decumbens* | P3 | - | P | Sand over laterite. | Sep-Oct | Low |
| *Synaphea macrophylla* | P1 | - | P | Gravelly loam with jarrah or | Oct | Low |
| *Synaphea sp. Redgate Road (J. Scott 16)* | P1 | - | P | Grey clay, litter. Winter-wet areas, wet areas along road verges and ditches. | Oct-Nov | Low |
| *Thysanotus cymosus* | P3 | - | P | Shrubland or woodland on clay, | Sep-Oct | Low |

| Species name | Level of significance | | Life strategy | Habitat | Flowering period | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | WA | EPBC Act | | | | |
| *Tricostularia davisii* | P3 | - | P | Mallee woodland and heath on flats, hillsides and valeys in a variety of soils including grey sand, brown sandy clay, peaty sand over clay, lateritic loam and granite. | Oct-Nov | Low |
| *Xyris maxima* | P2 | - | P | Black peaty sand on drainage flats. | Nov-Dec/Jan | Low |

Note: CR=critically endangered, EN=endangered, VU=vulnerable, P1=Priority 1, P2=Priority 2, P3=Priority 3, P4=Priority 4, P=perennial, PG=perennial geophyte, A=annual. Species considered to potentially occur within the site are shaded green.

# Appendix C

Likelihood of Occurrence Assessment - Fauna

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Amphibia | *Anstisia alba* | White-bellied frog | CR | CR | Swampy flows along drainage depressions in an area of subdued topography (relief < 80m) near the junction of the Leeuwin-Naturaliste Ridge and Blackwood Plateau. Breeding sites are typically associated with sandy soils, dense overstorey vegetation dominated by Homalospermum firmum, Agonis linearifolia, Astartea fascicularis, and a dense ground layer of rhizomatous vegetation, usually composed of Pseudoloxocarya sp., Loxocarya sp. and Tetrarrhena laevis (DPAW 2014). | Low |
| Amphibia | *Anstisia vitellina* | Orange-bellied frog | VU | VU | Swampy flows along drainage depressions in an area of subdued topography (relief < 80m) near the junction of the Leeuwin-Naturaliste Ridge and Blackwood Plateau. Breeding sites are typically associated with sandy soils, dense overstorey vegetation dominated by Homalospermum firmum, Agonis linearifolia, Astartea fascicularis, and a dense ground layer of rhizomatous vegetation, usually composed of Pseudoloxocarya sp., Loxocarya sp. and Tetrarrhena laevis (DPAW 2014). | Low |
| Bird | *Actitis hypoleucos* | Common sandpiper | MI | MI | Edge of sheltered waters salt or fresh, e.g. estuaries, mangrove creeks, rocky coasts, near-coastal saltlakes (including saltwork ponds), river pools, lagoons, claypans, drying swamps, flood waters, dams and sewage ponds. Preferring situations where low perches are available (Johnstone & Storr 1998). | Nil |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Bird | *Anous tenuirostris melanops* | Australian lesser noddy | EN | VU | Very common in blue-water seas around the Abrolhos (endemic to this area, accidental occurrences on lower west coast of Australia) (Johnstone and Storr 1998). | Nil |
| Bird | *Apus pacificus* | Pacific swift | MI | MI | Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities (Pizzey & Knight 2012). | Moderate |
| Bird | *Ardenna carneipes* | Flesh-footed shearwater | VU | MI | Marine species that breeds on islands off south coast from near Cape Leeuwin (Johnstone and Storr 1998). | Nil |
| Bird | *Ardenna grisea* | Sooty shearwater | MI | MI | Marine, migratory species that may visit south-western Australian waters from June to October (Pizzey & Knight 2012). | Nil |
| Bird | *Ardenna pacifica* | Wedge-tailed Shearwater | MI | MI | Pelagic species that inhabits tropical and subtropical seas. Common in western and eastern Australian seas. In western Australia breeds on offshore islands from Montebello to Rottnest/Carnac (Morcombe & Stewart 2021; Pizzey & Knight 2012). | Nil |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Bird | *Atrichornis clamosus* | Noisy scrub-bird | EN | EN | Dense vegetation, including low forest, scrub thicket and (rarely) heath. Generally in gullies and drainage lines or overgrown swamps, lake margins and streams. Species occurs on the south-coast of Western Australia, from Two Peoples Bay Nature Reserve to Cheynes Beach and on Bald Island (DPAW 2014). Translocated populations were released at multiple sites on the south-cast and in the Darling Range. Most of these translocated populations have failed. In the Darling Range singing males persisted at several locations, with evidence of breeding having been recorded at one site. It is unknown where these populations are located (Comer et. al 2010). | Negligible |
| Bird | *Botaurus poiciloptilus* | Australasian bittern | EN | EN | In or over water, in tall reedbeds, sedges, rushes, | Nil |
| Bird | *Calidris acuminata* | Sharp-tailed sandpiper | VU (MI) | VU (MI) | Occurs in tidal mudflats, saltmarshes and mangroves, as well as, shallow fresh, brackish or saline inland wetlands. It is also known from floodwaters, irrigated pastures and crops, sewage ponds, saltfields (Pizzey & Knight 2012). | Nil |
| Bird | *Calidris alba* | Sanderling | MI | MI | Mainly steeply shelving sandy beaches exposed to ocean swell. Also sandy inlets, estuarine sandbanks and near-coastal saltlakes (including saltwork ponds) (Johnstone & Storr 1998). | Nil |
| Bird | *Calidris canutus* | Red knot | EN | EN (MI) | Mud and sand flats in estuaries and on sheltered coasts. Also near-coastal saltlakes, including saltwork ponds (Pizzey & Knight 2012). | Nil |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Bird | *Calidris ferruginea* | Curlew sandpiper | CR | CR (MI) | Mainly shallows of estuaries and near-coastal saltlakes (including saltwork ponds) and drying near-coastal freshwater lakes and swamps. Also beaches and near-coastal sewage ponds (Johnstone & Storr 1988). | Nil |
| Bird | *Calidris melanotos* | Pectoral sandpiper | MI | MI | Mainly fresh waters (swamps, lagoons, river pools, irrigation channels and sewage ponds); also samphire flats around estuaries and saltlakes (Johnstone & Storr 1998). | Nil |
| Bird | *Calidris ruficollis* | Red-necked stint | MI | MI | Tidal mudflats, saltmarshes, sandy or shelly beaches, saline and freshwater wetlands (coastal and inland), saltfields, sewage ponds (Pizzey and Knight 2012). | Nil |
| Bird | *Calyptorhynchus banksii naso* | Forest red-tailed black cockatoo | VU | VU | Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding Corymbia calophylla, Eucalyptus marginata, introduced Melia azedarach and Eucalyptus spp. trees (Johnstone et al. 2013). | Moderate |
| Bird | *Charadrius leschenaultii* | Great sand plover | VU | VU (MI) | Wide sandy or shelly beaches, sandpits, tidal mudflats, reefs, sand cays, mangroves, saltmarsh, dune wilderness, bare paddocks, seldom far inland (Pizzey & Knight 2012). | Low |
| Bird | *Dasyornis broadbenti litoralis* | Rufous Bristlebird | EX | EX | Dense coastal heaths, thickets and wiregrass (Macrombe & Stewart 2004). Also gullies with growth of sword-grass and blackberries (Pizzey & Knight 2012). | Negligible |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Bird | *Diomedea amsterdamensis* | Amsterdam Island albatross | CR | EN (MI) | The Amsterdam albatross is a marine, pelagic seabird. It nests in open patchy vegetation (among tussocks, ferns or shrubs) near exposed ridges or hillocks (Weimerskirch et al. 1985). It sleeps and rests on ocean waters when not breeding (Marchant and Higgins 1990) | Nil |
| Bird | *Diomedea dabbenena* | Tristan albatross | CR | EN (MI) | The Tristan albatross is a marine, pelagic seabird. It forages in open water in the Atlantic Ocean near the Cape of Good Hope, South Africa. It sleeps and rests on ocean waters when not breeding (Marchant and Higgins 1990). | Nil |
| Bird | *Diomedea epomophora* | Southern royal albatross | VU | VU (MI) | Rare visitor to Western Australian seas; it breeds on subantarctic islands south of New Zealand (Johnstone and Storr 1998). | Nil |
| Bird | *Diomedea exulans* | Wandering albatross | VU | VU (MI) | Marine, pelagic and aerial species. It breeds on Macquarie Island and feeds in Australian portions of the Southern Ocean (DoE 2018). | Nil |
| Bird | *Diomedea sanfordi* | Northern royal albatross | EN | EN | Species is marine, pelagic and aerial. Habitat includes subantarctic, subtropical, and occasionally Antarctic waters (Marchant & Higgins 1990). Rare visitors to south-western Australian waters. | Nil |
| Bird | *Falco peregrinus* | Peregrine falcon | OS | - | Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes (Johnstone and Storr 1998). | Moderate |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Bird | *Halobaena caerulea* | Blue petrel | MI | VU (MI) | Marine species that breeds on southern subantarctic and northern artic islands. Only an accidental or uncommon visitor to Western Australian waters (Johnstone & Storr 1998). | Nil |
| Bird | *Hydroprogne caspia* | Caspian tern | MI | MI | Mainly sheltered areas, estuaries (when not laden with silt) and tidal creeks; occasionally near-coastal saltlakes (including saltwork ponds) and brackish pools in lower courses of rivers; rarely fresh waters (DCCEEW 2023). | Nil |
| Bird | *Ixobrychus flavicollis australis* | Black bittern | P2 | - | Freshwater pools, swamps and lagoons, well-screened with trees. Occasionally feeding by day but mainly sheltering in dense waterside vegetation (Melaleuca spp., Eucalyptus camaldulensis, Pandanus spp. and long grass) (Johnstone and Storr 1998). | Nil |
| Bird | *Leipoa ocellata* | Malleefowl | VU | VU | Scrubs and thickets of Eucalyptus spp., Melaleuca lanceolata and Acacia linophylla; also other dense litter-forming shrublands. Attracted to fallen wheat in stubbles and along roads (Johnstone and Storr 1998). | Negligible |
| Bird | *Limosa lapponica* | Bar-tailed godwit | MI | MI | Estuarine sand and mudflats and sandy beaches with loads of seaweed; also reef flats and near-coastal saltlakes (including saltwork and sewage ponds) (Johnstone and Storr 1998). | Nil |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Bird | *Limosa lapponica menzbieri* | Bar-tailed godwit | CR (MI) | CR (MI) | Mainly coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. Has also been recorded in coastal sewage farms and saltworks, saltlakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats (Higgins and Davies 1996). | Nil |
| Bird | *Macronectes giganteus* | Southern giant-petrel | MI | EN (MI) | Breeds on southern subantarctic and antarctic islands. May visit Western Australian waters from February to December (mostly June to September) (Johnstone and Storr 1998). | Nil |
| Bird | *Macronectes halli* | Northern giant petrel | MI | VU (MI) | Breeds on subantarctic islands. May visit Western Australian water from February to September (Johnstone and Storr 1998). | Nil |
| Bird | *Numenius madagascariensis* | Eastern curlew | CR | CR (MI) | Mainly tidal mudflats; also reef flats, sandy beaches and rarely near-coastal lakes (including saltwork ponds) (Johnstone and Storr 1998). | Nil |
| Bird | *Numenius phaeopus* | Whimbrel | MI | MI | Estuaries, mangroves, tidal flats, coral cays, exposed reefs, flooded paddocks, sewage ponds, bare grasslands, sportsgrounds and lawns (Pizzey & Knight 2012). | Low |
| Bird | *Onychoprion anaethetus* | Bridled tern | MI | MI | Tropical and subtropical seas, offshore islands, rarely coasts (Pizzey & Knight 2012). | Nil |
| Bird | *Pachyptila turtur subantarctica* | Fairy prion | - | VU | Breeds on subantarctic islands and is presumed to frequent subtropical waters during non-breeding period (TSSC 2015). | Nil |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Bird | *Pandion haliaetus* | Osprey | MI | MI | Coasts, estuaries, bays, inlets, islands, and surrounding waters; coral atolls, reefs, lagoons, rock cliffs, stacks (Pizzey & Knight 2012). | High |
| Bird | *Phaethon rubricauda westralis* | Red-tailed tropicbird | P4 (MI) | EN (MI) | Spend most of their lives at sea and rarely venture near land. This bird is normally found in tropical and subtropical seas around northern Australia. Though rarely seen in colder areas, a few pairs breed on Sugarloaf Rock, south of Cape Naturaliste (DPAW 2017b). Are known to breed on Rottnest Island (DCCEEW 2023). | Nil |
| Bird | *Phoebetria fusca* | Sooty albatross | EN | VU (MI) | Marine, pelagic species that tolerates a wide range of sea surface temperatures and salinities. breeds on subtropical and subantarctic islands in the Indian and Atlantic Oceans, on vegetated cliffs and steep slopes that are sheltered from prevailing winds, often amongst tussock grass (Pizzey & Knight 2012). | Nil |
| Bird | *Plegadis falcinellus* | Glossy Ibis | MI | MI | Well-vegetated wetlands, wet pasture, ricefields, floodwaters, floodplains, brackish or occasionally saline wetlands, mangroves, mudflats and occasionally dry grassland (Pizzey & Knight 2012). | Low |
| Bird | *Psophodes nigrogularis nigrogularis* | Western whipbird (western heath) | EN | EN | Dense scrub of heath, mallee and broombush (Macrombe & Stewart 2004). Species range is restricted to a small area east of Albany Western Australia. | Negligible |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Bird | *Pterodroma mollis* | Soft-plumaged petrel | MI | VU (MI) | Marine species that breeds on temperate and subantarctic islands in south Atlantic and south Indian Ocean. Visitor to West Australian waters from March to September. Rarely observed inshore (Johnstone & Storr 1998). | Nil |
| Bird | *Puffinus huttoni* | Hutton's shearwater | EN | MI | Marine species that breeds in New Zealand and disperses mainly to seas off northern Australia (Johnstone & Storr 1998). | Nil |
| Bird | *Stercorarius parasiticus* | Arctic skua | MI | MI | Offshore waters, bays and harbours, seldom ashore. Also follows ships (Pizzey & Knight 2012). | Nil |
| Bird | *Sternula nereis nereis* | Australian fairy tern | VU | VU | Sheltered blue-water seas close to land, estuaries (when free of silt) and near-coastal lakes (Johnstone and Storr 1998). | Nil |
| Bird | *Thalassarche carteri* | Indian yellow-nosed albatross | EN | VU (MI) | Marine species that inhabits seas of south and west coast of Western Australia and breeds on islands in the south Indian Ocean and in the south Atlantic (Johnstone & Storr 1998). | Nil |
| Bird | *Thalassarche cauta* | Shy albatross | VU | VU (MI) | Scarce visitor (late May to mid-October) to southwestern and western seas. Breeds on islands off Tasmania and south New Zealand (Johnstone and Storr 1998). | Nil |
| Bird | *Thalassarche impavida* | Campbell albatross | VU | VU (MI) | Scarce visitor to south-western and western Australian seas. Breeds on Campbell Island (Pizzey & Knight 2012). | Nil |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Bird | *Thalassarche melanophris* | Black-browed albatross | EN | VU (MI) | Seas of south and west coasts. Visitor to Western Australian mainland from January to early November (mostly May to September). Breeds on southern subantarctic and Antarctic islands (Johnstone and Storr 1998). | Nil |
| Bird | *Thalassarche steadi* | White-capped albatross | VU | VU (MI) | Scarce visitor (late May to mid-October) to southwestern and western seas. Breeds on islands off Tasmania and south New Zealand (Johnstone and Storr 1998). | Nil |
| Bird | *Thalasseus bergii* | Crested tern | MI | MI | Mainly blue-water seas (especially within 3 km of land), including southern estuaries in summer and autumn (when free of silt); also tidal creeks in north, but not penetrating far into larger estuaries (DCCEEW 2023). | Nil |
| Bird | *Thinornis rubricollis* | Hooded plover | P4 | VU | Margins and shallows of saltlakes, sandy and seaweedy beaches and estuaries; also dams (Johnstone and Storr 1998). | Nil |
| Bird | *Tyto novaehollandiae novaehollandiae* | Australian masked owl | P3 | - | Forests, open woodlands, farmlands with large trees. E.g. river red gums, adjacent cleared country, timbered watercourses, paperbark woodlands and caves (Pizzey & Knight 2012). | Moderate |
| Bird | *Xenus cinereus* | Terek sandpiper | VU (MI) | VU (MI) | Tidal mudflats, estuaries; shores and reefs of islands; coastal swamps, commercial saltfields (Pizzey & Knight 2012). | Nil |
| Bird | *Zanda baudinii* | Baudin's black cockatoo | EN | EN | Mainly eucalypt forests. Attracted to seeding Corymbia calophylla, Banksia spp., Hakea spp., and to fruiting apples and pears (Johnstone and Storr 1998). | Moderate |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Bird | *Zanda latirostris* | Carnaby's black cockatoo | EN | EN | Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of Pinus spp. Attracted to seeding Banksia spp., Hakea spp., Eucalyptus spp., Corymbia calophylla, Grevillea spp., and Allocasuarina spp. (Johnstone and Storr 1998). | Moderate |
| Crustacean | *Engaewa pseudoreducta* | Margaret River burrowing crayfish | CR | CR | Species has been recorded near creeks, swamps, dams drainage lines and wetlands with significant native vegetation canopy. Species only known from four locations between Yallingup and Margaret River in Western Australia (Burnham et al. 2012). | Nil |
| Fish | *Galaxiella munda* | Mud minnow | VU | - | Prefers swift-flowing streams in Karri forests, near submerged vegetation. The water in these streams is usually acidic (pH 3.0-6.0) and darkly tannin-stained, and the water temperature fluctuates widely with the seasons. It also occasionally occurs in ponds, swamps and roadside drains (Gomon et al. 2020). | Nil |
| Fish | *Geotria australis* | Pouched lamprey | P3 | - | Marine, estuarine and coastal rivers and streams. Adults live in Southern Ocean and migrate upstream to spawn. Larvae live in muddy burrows in the upper reaches of streams (Bray and Gomon 2018). | Nil |
| Invertebrate | *Austroassiminea letha* | Cape Leeuwin freshwater snail | VU | - | Natural freshwater seepages and springs emerging from limestone or lime sands in coastal areas (Ponder et al. 2016) | Low |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Invertebrate | *Bertmainius opimus* | Western pygmy trapdoor spider | P3 | - | Mesic habitats including karri and tingle forests in the south west of WA (Main 1991). The species makes shallow burrows in the bark of karri and tingle trees an in the mossy banks of creeks (FPC 2017). | Low |
| Invertebrate | *Cherax tenuimanus* | Margaret River marron | CR | CR | Occurs primarily in the upper reaches of the Margaret River. Prefers sandy areas, particularly where detritus (organic matter) accumulates, and requires in-stream structural diversity for protection (DoE 2013) | Nil |
| Invertebrate | *Kawanaphila pachomai* | Grey vernal katydid | P1 | - | Found in the southwest near Margaret River. | Negligible |
| Invertebrate | *Trichosternus relictus* | a ground beetle | P3 | - | Under logs in Eucalyptus woodlands (Darlington 1953). | Negligible |
| Invertebrate | *Westralunio carteri* | Carter's freshwater mussel | VU | VU | Occurs in greatest abundance in slower flowing streams with stable sediments that are soft enough for burrowing amongst woody debris and exposed tree roots. Also occupies lentic systems including large water supply dams and even on-stream farm dams. Salinity tolerance quite low (Morgan et al. 2011). | Nil |
| Mammal | *Arctocephalus forsteri* | New Zealand fur seal | OS | MA | Breeds and hauls out on areas of jumbled boulders rather than open rock platforms. Breeds on islands off South Australia and Tasmania (Menkhorst and Knight 2011). | Nil |
| Mammal | *Arctocephalus tropicalis* | Sub-antarctic fur seal | VU | EN | Individuals occur at Heard Island and Macquarie Island; and some wide-ranging (mostly juvenile) vagrants occasionally reach beaches on Tasmania, the Australian mainland and offshore islands (TSSC 2016). | Nil |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Mammal | *Bettongia penicillata ogilbyi* | Woylie | CR | EN | Woodlands and adjacent heaths with a dense understorey of shrubs, particularly Gastrolobium spp. (TSSC 2018). | Low |
| Mammal | *Dasyurus geoffroii* | Chuditch | VU | VU | Wide range of habitats from woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. Appears to utilise native vegetation along roadsides in the wheatbelt (DEC 2012). | Low |
| Mammal | *Hydromys chrysogaster* | Rakali | P4 | - | Areas with permanent water, fresh, brackish or marine. Likely to occur in all major rivers and most of the larger streams as well as bodies of permanent water in the lower south-west (Christensen et al. 1984). Intact riparian vegetation and associated bank stability is critical to their survival (DWER 2023). | Low |
| Mammal | *Isoodon fusciventer* | Quenda | P4 | - | Dense scrubby, often swampy, vegetation with dense cover up to one metre high (DEC 2012) | High |
| Mammal | *Macrotis lagotis* | Bilby | VU | VU | Open tussock grassland on uplands and hills, mulga woodland/shrubland growing on ridges and rises and hummock grassland (spinifex) growing on sandplains and dunes, drainage systems, salt lake systems and other alluvial areas (DBCA 2017). | Negligible |
| Mammal | *Myrmecobius fasciatus* | Numbat | EN | EN | Generally dominated by Eucalyptus spp. that provide hollow logs and branches for shelter and termites for food (van Dyck & Strahan 2008). | Negligible |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Mammal | *Neophoca cinerea* | Australian Sea Lion | EN | EN (MA) | Australian Sea-lions use a wide variety of habitats for breeding sites and, during the non-breeding season, for haul-out sites. Onshore habitats used include exposed islands and reefs, rocky terrain, sandy beaches and vegetated fore dunes and swales. They also use caves and deep cliff overhangs as haul-out sites or breeding habitat. | Nil |
| Mammal | *Notamacropus eugenii derbianus* | Tammar wallaby | P4 | - | Dry sclerophyll forest, Banksia spp. woodlands and shrublands, typically favouring dense low vegetation that provides dense cover (Christensen and Strahan 1983). | Negligible |
| Mammal | *Notamacropus irma* | Western brush wallaby | P4 | - | Dry sclerophyll forest, Banksia spp. woodlands and shrublands, typically favouring dense low vegetation that provides dense cover (Christensen and Strahan 1983). | Low |
| Mammal | *Perameles bougainville* | Shark Bay Bandicoot | VU | EN | Habitats recorded for mainland animals included a variety of fairly open vegetation types in semi-arid and arid parts of southern Australia, such as 'at the base of elevated dunes' on Peron Peninsula, Shark Bay dense scrub including thickets of Allocasuarina seedlings, open bluebush and saltbush plains and stony hills bordering scrub. | Negligible |
| Mammal | *Phascogale tapoatafa wambenger* | South-western brush-tailed phascogale | CD | - | Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover (Triggs 2003). | Moderate |

| Group | Species name | Common name | Level of significance | | Habitat | Likelihood of occurrence |
|---|---|---|---|---|---|---|
| | | | WA | EPBC Act | | |
| Mammal | *Potorous gilbertii* | Gilbert's potoroo | CR | CR | Dense Melaleuca heath with dense groundcover of sedges (Menkhorst & Knight 2011). | Negligible |
| Mammal | *Pseudocheirus occidentalis* | Western ringtail possum | CR | CR | On the Swan Coastal Plain in Agonis flexuosa woodlands and Agonis flexuosa/ Eucalyptus gomphocephala forests. Also Eucalyptus marginata forests (DBCA 2017). | High |
| Mammal | *Pseudomys shortridgei* | Heath mouse | VU | VU | Prefers long unburnt tall heath and scrubby mallee (Menkhorst and Knight 2011) | Negligible |
| Mammal | *Setonix brachyurus* | Quokka | VU | VU | On the mainland mostly dense streamside vegetation or shrubland and heath areas, particularly around swamps (Cronin 2007). | Negligible |

# Appendix D

Tree Inventory

# Tree Inventory

## Various landholdings Wallcliffe Road, Margaret River

| ID | Easting | Northing | DBH (cm) | Species name | Origin | TPZ (m) | SRZ (m) |
|---|---|---|---|---|---|---|---|
| 1 | 315218 | 6239248 | 44 | *Agonis flexuosa* | Native | 5.28 | 2.34 |
| 2 | 315192 | 6239203 | 23 | *Agonis flexuosa* | Native | 2.76 | 1.79 |
| 3 | 315182 | 6239191 | 51 | *Agonis flexuosa* | Native | 6.12 | 2.49 |
| 4 | 315180 | 6239184 | 21 | *Agonis flexuosa* | Native | 2.52 | 1.72 |
| 5 | 315173 | 6239180 | 29 | *Agonis flexuosa* | Native | 3.48 | 1.97 |
| 6 | 315149 | 6239150 | 29 | *Agonis flexuosa* | Native | 3.48 | 1.97 |
| 7 | 315148 | 6239148 | 48 | *Eucalyptus botryoides* | Non-native | 5.76 | 2.43 |
| 8 | 315138 | 6239137 | 15 | *Agonis flexuosa* | Native | 1.8 | 1.49 |
| 9 | 315138 | 6239134 | 27 | *Agonis flexuosa* | Native | 3.24 | 1.91 |
| 10 | 315131 | 6239131 | 28 | *Agonis flexuosa* | Native | 3.36 | 1.94 |
| 11 | 315116 | 6239127 | 34 | *Agonis flexuosa* | Native | 4.08 | 2.1 |