

# 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 <sup>1</sup>	
		Reliable record within search area	No reliable record within search area
Habitat	Suitable	High	Negligible
	Potentially suitable	Moderate	
	Unsuitable	Low	

<sup>1</sup> 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 <sup>1</sup>		Unreliable record <sup>2</sup>
		Access to site not impeded	Access to site impeded	
Habitat	Suitable	High	Very low	Negligible
	Potentially suitable	Moderate		
	Unsuitable	Low		
	Absent	Nil		

<sup>1</sup>Reliable record defined as DBCA or validated ALA record from the last ~20 years, <sup>2</sup>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<sup>1</sup> 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			
<i>Austrostipa mundula</i>	P3	-	P	Sept-Nov	Moderate
<i>Banksia sessilis</i> var. <i>cordata</i>	P4	-	P	Jul-Oct	High
<i>Stylidium lowrieianum</i>	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					
<i>Apus pacificus</i>	Pacific swift	MI	MI	Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities (Pizzey & Knight 2012).	Moderate
<i>Calyptorhynchus banksii naso</i>	Forest red-tailed black cockatoo	VU	VU	Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding <i>Corymbia calophylla</i> , <i>Eucalyptus marginata</i> , introduced <i>Melia azedarach</i> and <i>Eucalyptus</i> spp. trees (Johnstone et al. 2013).	Moderate

<sup>1</sup> Note DBCA determined that 20 km radius was most appropriate.

Species name	Common name	Status		Habitat description	Likelihood
		WA	EPBC Act		
<i>Falco peregrinus</i>	Peregrine falcon	OS	-	Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes (Johnstone and Storr 1998).	Moderate
<i>Pandion haliaetus</i>	Osprey	MI	MI	Coasts, estuaries, bays, inlets, islands, and surrounding waters; coral atolls, reefs, lagoons, rock cliffs, stacks (Pizze & Knight 2012).	High
<i>Tyto novaehollandiae novaehollandiae</i>	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 (Pizze & Knight 2012).	Moderate
<i>Zanda baudinii</i>	Baudin's black cockatoo	EN	EN	Mainly eucalypt forests. Attracted to seeding <i>Corymbia calophylla</i> , <i>Banksia</i> spp., <i>Hakea</i> spp., and to fruiting apples and pears (Johnstone and Storr 1998).	Moderate
<i>Zanda latirostris</i>	Carnaby's black cockatoo	EN	EN	Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of <i>Pinus</i> spp. Attracted to seeding <i>Banksia</i> spp., <i>Hakea</i> spp., <i>Eucalyptus</i> spp., <i>Corymbia calophylla</i> , <i>Grevillea</i> spp., and <i>Allocasuarina</i> spp. (Johnstone and Storr 1998).	Moderate
<b>Mammals</b>					
<i>Isoodon fusciventer</i>	Quenda	P4	-	Dense scrubby, often swampy, vegetation with dense cover up to one metre high (DEC 2012)	High
<i>Phascogale tapoatafa wambenger</i>	South-western brush-tailed phascogale	CD	-	Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover (Triggs 2003).	Moderate
<i>Pseudocheirus occidentalis</i>	Western ringtail possum	CR	CR	On the Swan Coastal Plain in <i>Agonis flexuosa</i> woodlands and <i>Agonis flexuosa</i> / <i>Eucalyptus gomphocephala</i> forests. Also <i>Eucalyptus marginata</i> 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)<sup>2</sup>.

## 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.

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<sup>2</sup> 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
<b>Af</b>	<i>Agonis flexuosa</i> trees and tall shrubs over non-native grasses and bare ground.	0.03	-	-	-	0.01
<b>AfMh</b>	Scattered <i>Agonis flexuosa</i> over tall closed shrubland <i>Melaleuca huegelii</i> over mixed native understorey species and non-native grasses on edges	0.03	-	-	-	-
<b>AfSg</b>	Woodland of <i>Agonis flexuosa</i> over scattered native shrubs such as <i>Spyridium globulosum</i> and <i>Hardenbergia comptoniana</i> over closed non-native grassland * <i>Ehrharta</i> sp. and * <i>Hyparrhenia hirta</i>	-	-	-	0.04	-
<b>AfSgHcW</b>	Woodland of <i>Agonis flexuosus</i> over shrubland of <i>Spyridium globulosum</i> , <i>Hibbertia cuneiformis</i> , <i>Templetonia retusa</i> with vineland of <i>Hardenbergia comptoniana</i> and <i>Muehlenbeckia adpressa</i> over low shrubland of <i>Phyllanthus calycinus</i> over forbland of <i>Tricoryne elatior</i> and <i>Thysanotus arenarius Austrostipa flavescens</i>	-	0.24	0.02	-	-
<b>Scattered native plants</b>	Scattered shrubs such as juvenile <i>Agonis flexuosa</i> , <i>Acacia littorea</i> and <i>Spyridium globulosum</i>	<0.01	-	-	-	-
<b>Non-native</b>	Heavily disturbed areas comprising non-native plants (weeds), bare ground and tracks.	0.12	0.01	-	0.03	0.01
<b>Total</b>		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
<b>Scattered trees and shrubs</b>	Native <i>Agonis flexuosa</i> trees and scattered native shrubs over low non-native grasses and bare ground. Includes non-native <i>E. botryoides</i> tree. 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	-	-	-	-
<b>Woodland</b>	Native <i>Agonis flexuosa</i> trees and scattered native shrubs over scattered native shrubs and forbs over dense non-native grasses. 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
<b>Woodland/shrubland</b>	Scattered native <i>Agonis flexuosa</i> trees over dense tall native shrubland <i>Melaleuca huegelii</i> and mixed native and non-native ground layer. 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	-	-
<b>Bare ground/grassland</b>	Heavily disturbed areas comprising non-native plants (weeds), bare ground and tracks. Low microhabitat complexity and provides limited habitat for fauna.	0.12	0.01	-	0.03	0.01
<b>Total</b>		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
<i>Apus pacificus</i>	Pacific swift	MI	MI	Primarily aerial species that may fly over but would not breed in the site (does not breed in Australia).				
<i>Calyptorhynchus banksii naso</i>	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.				
<i>Falco peregrinus</i>	Peregrine falcon	OS	-	Primarily aerial species that may fly over and/or foraging in the site but no breeding habitat occurs.				
<i>Pandion haliaetus</i>	Osprey	MI	MI	May fly over and/or foraging in the site but no breeding habitat occurs.				
<i>Tyto novaehollandiae novaehollandiae</i>	Australian masked owl	P3	-	May fly over and/or foraging in the site but no breeding habitat occurs.				
<i>Zanda baudinii</i>	Baudin's black cockatoo	EN	EN	Site occurs within the species' distribution and breeding range. 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. May fly over and perch in the site. Single <i>Banksia sessilis</i> var. <i>cordata</i> plant may provide foraging but very small extent. No breeding habitat occurs.	Site occurs within the species' distribution and breeding range. May fly over and perch in the site but no foraging or breeding habitat occurs.		
<i>Zanda latirostris</i>	Carnaby's black cockatoo	EN	EN	Site occurs within the species' distribution and breeding range. May fly over and perch in the site. Peppermint trees provide a secondary foraging resource. No breeding habitat occurs.				
<i>Isododon fusciventer</i>	Quenda	P4	-	<b>Woodland/shrubland</b> 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.				
<i>Phascogale tapoatafa wambenger</i>	South-western brush-tailed phascogale	CD	-	Likely occurs in the local area but no suitable habitat (no hollow bearing trees).				
<i>Pseudocheirus occidentalis</i>	Western ringtail possum	CR	CR	<b>Af</b> vegetation provides suitable habitat but no dreys or suitable hollows occur. <b>AfMh</b> 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.	<b>AfSgHcW</b> vegetation contains peppermint trees and so provides habitat for the species (in combination with a larger patch). No dreys or suitable hollows occur.	<b>AfSg</b> vegetation contains peppermint trees and so provides habitat for the species (in combination with a larger patch). No dreys or suitable hollows occur/	<b>Af</b> 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	<ul style="list-style-type: none"> <li>Scattered native peppermint trees (<b>Af</b> vegetation unit) in degraded – completely degraded condition.</li> <li>Patches of native shrubland (<b>AfMh</b> vegetation unit) in degraded to very good condition.</li> <li>Scattered native plants.</li> <li>No habitat for threatened or priority flora species.</li> </ul>
	<ul style="list-style-type: none"> <li>Habitat for western ringtail possum predominantly in the form of scattered trees but no dreys or hollows present.</li> </ul>
	<ul style="list-style-type: none"> <li>One non-native and ten native trees.</li> </ul>
Area 2	<ul style="list-style-type: none"> <li>Predominantly vegetation unit <b>AfSgHcW</b> in very good condition.</li> <li>No threatened or priority flora species present or considered likely to occur.</li> </ul>
	<ul style="list-style-type: none"> <li>Habitat for western ringtail possum in the form of native vegetation but no dreys or hollows present.</li> </ul>
Area 3	<ul style="list-style-type: none"> <li>Vegetation unit <b>AfSgHcW</b> in good condition.</li> <li>No threatened or priority flora species present or considered likely to occur.</li> </ul>
	<ul style="list-style-type: none"> <li>Habitat for western ringtail possum in the form of native vegetation but no dreys or hollows present.</li> </ul>
Area 4	<ul style="list-style-type: none"> <li>Vegetation unit <b>AfSg</b> in degraded condition.</li> <li>No threatened or priority flora species present or considered likely to occur.</li> </ul>
	<ul style="list-style-type: none"> <li>Habitat for western ringtail possum in the form of native vegetation but no dreys or hollows present.</li> </ul>
Area 5	<ul style="list-style-type: none"> <li>Vegetation unit <b>Af</b> in degraded condition.</li> <li>No threatened or priority flora species present or considered likely to occur.</li> </ul>
	<ul style="list-style-type: none"> <li>Habitat for western ringtail possum in the form of native vegetation but no dreys or hollows present.</li> </ul>

## 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*

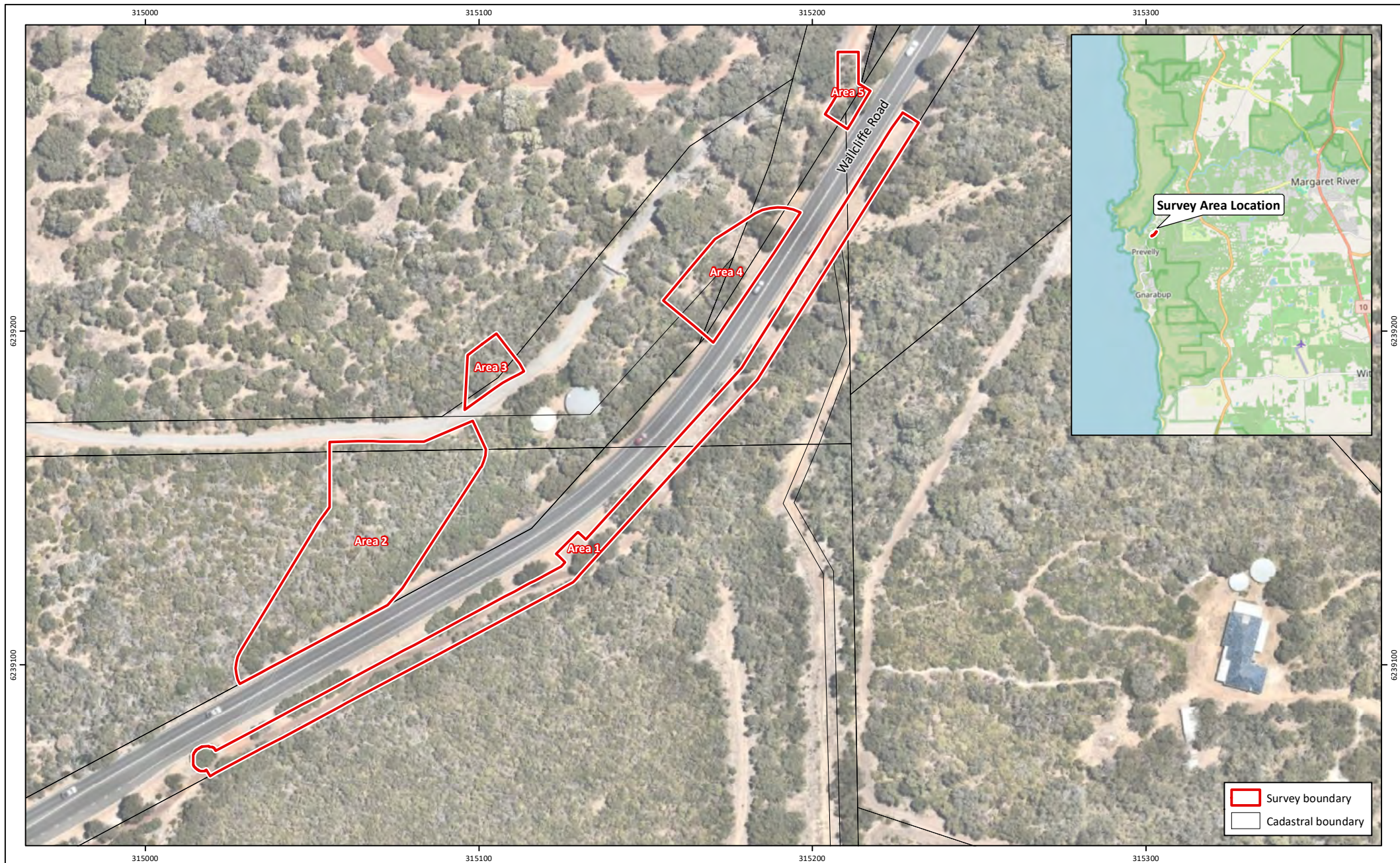
*Figure 2: Vegetation Units*

*Figure 3: Vegetation Condition*

*Figure 4: Fauna Habitat*

*Figure 5: Trees (Area 1)*





**Figure 1: Survey Area Location**

**Project:** Flora and Fauna Assessment  
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



0 2,100 4,200 6,300  
Metres  
Scale: 1:210,000@A4  
GDA 1994 MGA Zone 50







**Figure 2: Vegetation Units**

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

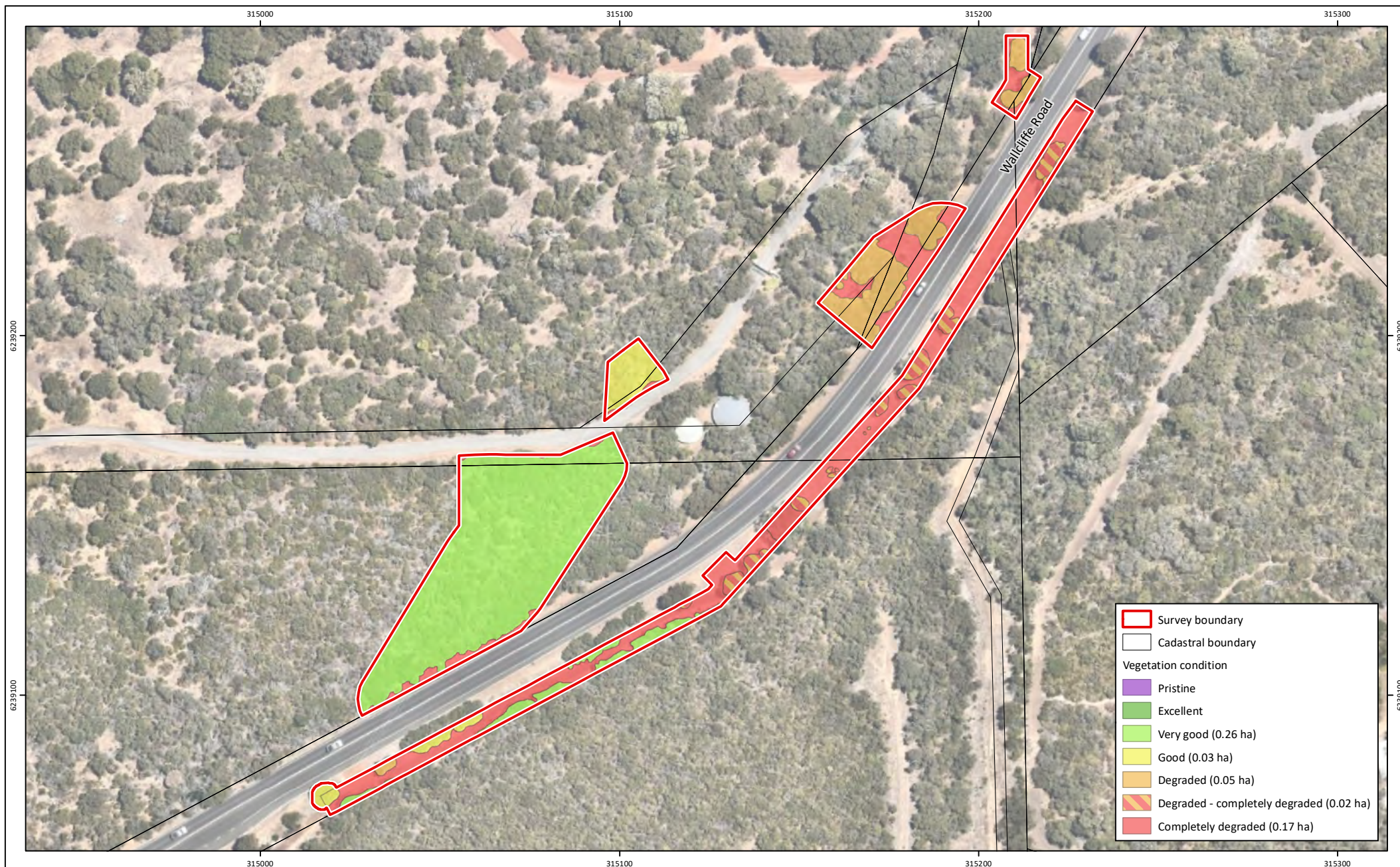
**Plan Number:**  
EP18-128(17)--F72  
**Drawn:** GAR  
**Date:** 20/09/2024  
**Checked:** RAW  
**Approved:** RAW  
**Date:** 16/10/2024



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



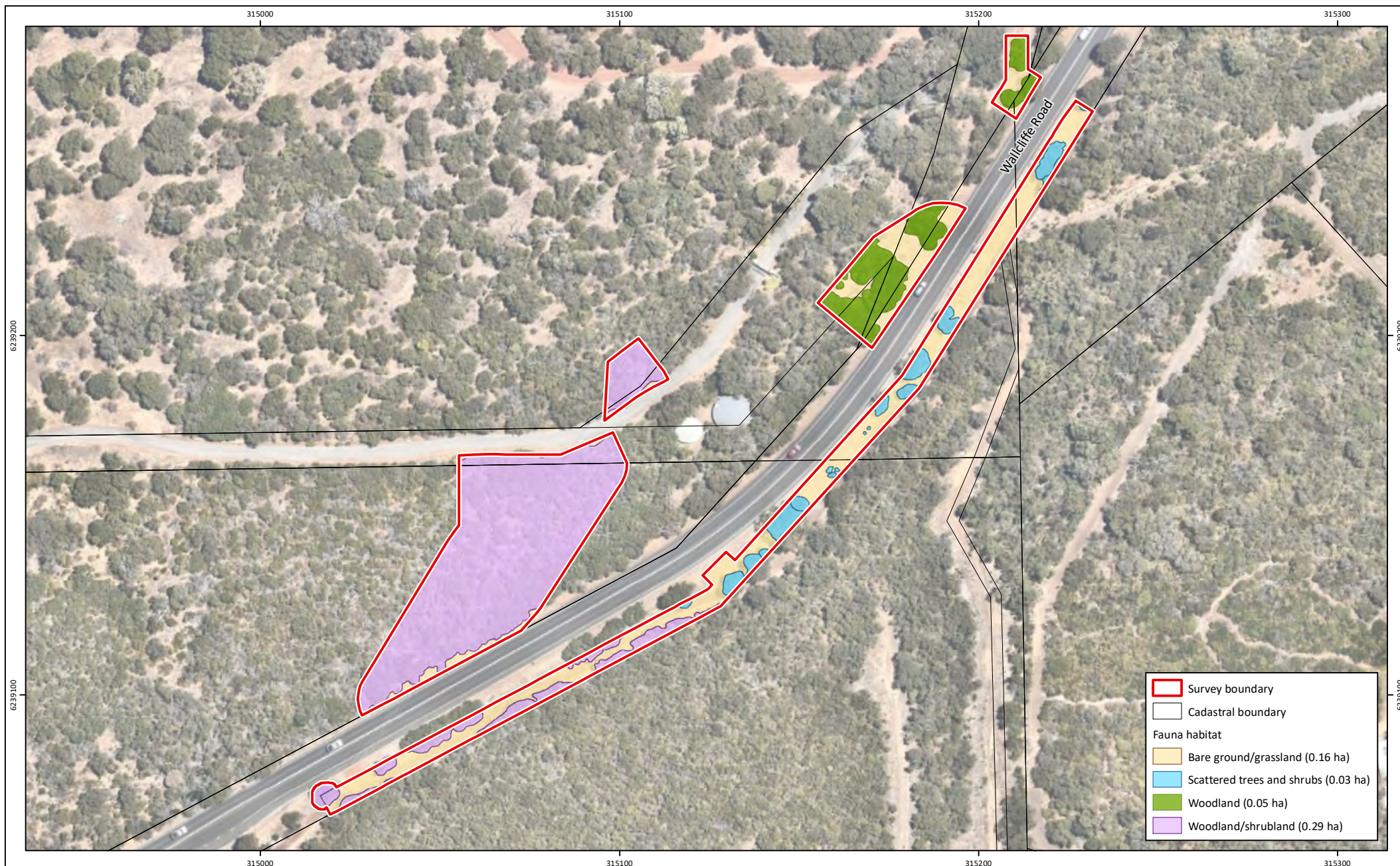
0 10 20 30  
Metres

Scale: 1:1,400@A4

GDA 1994 MGA Zone 50

**emerge**  
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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



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



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

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ASSOCIATES

# 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 (Strong's 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				
<i>Acacia inops</i>	P3	-	P	Black peaty sand, clay. Swamps, creeks.	Sep-early Nov	Low
<i>Acacia semitrullata</i>	P4	-	P	White/grey sand, sometimes over laterite, clay sometimes in sandplains, swampy areas.	May-Oct	Low
<i>Acacia tayloriana</i>	P4	-	P	Grey or yellow/orange sandy soils, lateritic gravel, clay loam. Winter-wet areas.	Jan	Low
<i>Actinotus repens</i>	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
<i>Amperea micrantha</i>	P2	-	P	Sandy soils.	Oct-Nov	Low
<i>Astartea onycis</i>	P4	-	P	Seasonally inundated swamps and low-lying areas on sandy clay, loam or peat	Nov-Mar	Low
<i>Austrostipa mundula</i>	P3	-	P	Grey sand over limestone.	Sept-Nov	Moderate
<i>Banksia mimica</i>	VU	EN	P	Flat to gentle slopes in grey and white sand in open woodlands.	Dec-Jan	Low
<i>Banksia sessilis</i> var. <i>cordata</i>	P4	-	P	White/grey sand. Coastal limestone.	Jul-Oct	High
<i>Banksia squarrosa</i> subsp. <i>argillacea</i>	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
<i>Boronia anceps</i>	P3	-	P	White sand, gravelly laterite in seasonally swampy heaths.	Sep-Dec/Jan	Low
<i>Boronia</i> sp. <i>Leeuwin</i> (J. Scott 235)	P2	-	P	Sand and peat with gravelly laterite in winter-wet depressions, swamps and watercourses.	Aug-Dec	Low
<i>Caladenia abbreviata</i>	P3	-	PG	Sand dunes.	Nov-Dec	Low
<i>Caladenia ambusta</i>	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				
<i>Caladenia excelsa</i>	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
<i>Caladenia hoffmanii</i>	EN	EN	PG	Clay, loam, laterite, granite. Rocky outcrops and hillsides, ridges, swamps and gullies.	Aug-Oct	Low
<i>Caladenia huegelii</i>	CR	EN	PG	Well-drained, deep sandy soils in lush undergrowth in a variety of moisture levels.	Sep-early Nov	Low
<i>Caladenia lodgeana</i>	CR	CR	PG	Seasonally moist to wet clay/sand soils on the margins of either low granite outcrops or ephemeral wetlands	Oct	Low
<i>Calectasia cyanea</i>	CR	CR	P	Heathland on white sand or laterite gravel over laterite. Known only from one population near Albany.	Jun-Oct	Low
<i>Chamaescilla gibsonii</i>	P3	-	PG	Clay to sandy clay in winter-wet flats, shallow water-filled claypans.	Sep-Oct	Low
<i>Dampiera heteroptera</i>	P3	-	P	Sandy soils, swampy areas.	Sep-Oct	Low
<i>Deyeuxia inaequalis</i>	P1	-	A	Loam soils	Nov-Dec	Low
<i>Drakaea micrantha</i>	EN	VU	PG	Open sandy patches often adjacent to winter-wet swamps.	Sept- early Oct	Low
<i>Drosera fimbriata</i>	P4	-	P	White sand, granite.	Sep-Oct	Low
<i>Eucalyptus calcicola</i> <i>subsp. calcicola</i>	P4	-	P	Red-brown sand over limestone on coastal dunes, calcareous ridges, rocky outcrops.	May-Jun	Low
<i>Eucalyptus marginata</i> x <i>megacarpa</i>	P4	-	P	Sandy loam. Interdunal areas.	Unknown	Low
<i>Franklandia triaristata</i>	P4	-	P	White or grey sand.	Aug-Oct	Low
<i>Gahnia sclerioides</i>	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				
<i>Gastrolobium formosum</i>	P3	-	P	Clay loam. Along river banks or in swamps.	Nov	Low
<i>Gastrolobium papilio</i>	CR	EN	P	Sandy clay over ironstone and laterite. Flat plains.	Oct-Dec	Low
<i>Grevillea brachystylis subsp. brachystylis</i>	P3	-	P	Black sand, sandy clay in swampy situations.	Aug-Nov	Low
<i>Grevillea bronweniae</i>	P3	-	P	Grey sand over laterite, lateritic loam on hillslopes.	Jun-Dec	Low
<i>Grevillea manglesioides subsp. ferricola</i>	P3	-	P	Red sandy clay over ironstone on winter wet flats.	Oct	Low
<i>Juncus meianthus</i>	P3	-	P	Black sand, sandy clay. Creeks, seepage areas.	Nov-Dec/Jan	Low
<i>Lambertia echinata subsp. occidentalis</i>	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
<i>Lasiopetalum laxiflorum</i>	P3	-	P	Sand and/or clay with laterite.	Sep-Dec	Low
<i>Leptomeria furtiva</i>	P2	-	P	Grey or black peaty sand in winter-wet flats.	Aug-Oct	Low
<i>Machaerina ascendens</i>	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
<i>Melaleuca basicephala</i>	P4	-	P	Black peaty sand, clay. Winter-wet flats, swamps.	Dec or Jan	Low
<i>Netrostylis sp.</i>	P3	-	P	Creebeds, edges of lakes and	?Nov	Low
<i>Netrostylis sp. Nannup</i>	P1	-	P	Sand and clay loam in valley	Undocume	Low
<i>Pimelea ciliata subsp.</i>	P3	-	P	Grey sand over clay, loam.	Oct-Dec	Low
<i>Pultenaea pinifolia</i>	P3	-	P	Loam or clay. Floodplains, swampy areas.	Oct-Nov	Low
<i>Stylidium lowrieianum</i>	P3	-	P	Sand or sandy loam over	Oct-Nov	Moderate
<i>Synaphea decumbens</i>	P3	-	P	Sand over laterite.	Sep-Oct	Low
<i>Synaphea macrophylla</i>	P1	-	P	Gravelly loam with jarrah or	Oct	Low
<i>Synaphea sp. Redgate Road (J. Scott 16)</i>	P1	-	P	Grey clay, litter. Winter-wet areas, wet areas along road verges and ditches.	Oct-Nov	Low
<i>Thysanotus cymosus</i>	P3	-	P	Shrubland or woodland on clay,	Sep-Oct	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	<i>Anstisia alba</i>	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	<i>Anstisia vitellina</i>	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	<i>Actitis hypoleucos</i>	Common sandpiper	MI	MI	Edge of sheltered waters salt or fresh, e.g. estuaries, mangrove creeks, rocky coasts, near-coastal saltlakes (including saltwork ponds), river pools, lagoons, claypans, drying swamps, flood waters, dams and sewage ponds. Preferring situations where low perches are available (Johnstone & Storr 1998).	Nil

Group	Species name	Common name	Level of significance		Habitat	Likelihood of occurrence
			WA	EPBC Act		
Bird	<i>Anous tenuirostris melanops</i>	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	<i>Apus pacificus</i>	Pacific swift	MI	MI	Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities (Pizzey & Knight 2012).	Moderate
Bird	<i>Ardenna carneipes</i>	Flesh-footed shearwater	VU	MI	Marine species that breeds on islands off south coast from near Cape Leeuwin (Johnstone and Storr 1998).	Nil
Bird	<i>Ardenna grisea</i>	Sooty shearwater	MI	MI	Marine, migratory species that may visit south-western Australian waters from June to October (Pizzey & Knight 2012).	Nil
Bird	<i>Ardenna pacifica</i>	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	<i>Atrichornis clamosus</i>	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-east 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	<i>Botaurus poiciloptilus</i>	Australasian bittern	EN	EN	In or over water, in tall reedbeds, sedges, rushes,	Nil
Bird	<i>Calidris acuminata</i>	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	<i>Calidris alba</i>	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	<i>Calidris canutus</i>	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	<i>Calidris ferruginea</i>	Curlew sandpiper	CR	CR (MI)	Mainly shallows of estuaries and near-coastal saltlakes (including saltwork ponds) and drying near-coastal freshwater lakes and swamps. Also beaches and near-coastal sewage ponds (Johnstone & Storr 1988).	Nil
Bird	<i>Calidris melanotos</i>	Pectoral sandpiper	MI	MI	Mainly fresh waters (swamps, lagoons, river pools, irrigation channels and sewage ponds); also samphire flats around estuaries and saltlakes (Johnstone & Storr 1998).	Nil
Bird	<i>Calidris ruficollis</i>	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	<i>Calyptorhynchus banksii naso</i>	Forest red-tailed black cockatoo	VU	VU	Eucalypt and Corymbia forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding Corymbia calophylla, Eucalyptus marginata, introduced Melia azedarach and Eucalyptus spp. trees (Johnstone et al. 2013).	Moderate
Bird	<i>Charadrius leschenaultii</i>	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	<i>Dasyornis broadbenti litoralis</i>	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	<i>Diomedea amsterdamensis</i>	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	<i>Diomedea dabbenena</i>	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	<i>Diomedea epomophora</i>	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	<i>Diomedea exulans</i>	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	<i>Diomedea sanfordi</i>	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	<i>Falco peregrinus</i>	Peregrine falcon	OS	-	Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes (Johnstone and Storr 1998).	Moderate

Group	Species name	Common name	Level of significance		Habitat	Likelihood of occurrence
			WA	EPBC Act		
Bird	<i>Halobaena caerulea</i>	Blue petrel	MI	VU (MI)	Marine species that breeds on southern subantarctic and northern arctic islands. Only an accidental or uncommon visitor to Western Australian waters (Johnstone & Storr 1998).	Nil
Bird	<i>Hydroprogne caspia</i>	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	<i>Ixobrychus flavicollis australis</i>	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	<i>Leipoa ocellata</i>	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	<i>Limosa lapponica</i>	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	<i>Limosa lapponica menzbieri</i>	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	<i>Macronectes giganteus</i>	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	<i>Macronectes halli</i>	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	<i>Numenius madagascariensis</i>	Eastern curlew	CR	CR (MI)	Mainly tidal mudflats; also reef flats, sandy beaches and rarely near-coastal lakes (including saltwork ponds) (Johnstone and Storr 1998).	Nil
Bird	<i>Numenius phaeopus</i>	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	<i>Onychoprion anaethetus</i>	Bridled tern	MI	MI	Tropical and subtropical seas, offshore islands, rarely coasts (Pizzey & Knight 2012).	Nil
Bird	<i>Pachyptila turtur subantarctica</i>	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	<i>Pandion haliaetus</i>	Osprey	MI	MI	Coasts, estuaries, bays, inlets, islands, and surrounding waters; coral atolls, reefs, lagoons, rock cliffs, stacks (Pizzey & Knight 2012).	High
Bird	<i>Phaethon rubricauda westralis</i>	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	<i>Phoebastria fusca</i>	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	<i>Plegadis falcinellus</i>	Glossy Ibis	MI	MI	Well-vegetated wetlands, wet pasture, ricefields, floodwaters, floodplains, brackish or occasionally saline wetlands, mangroves, mudflats and occasionally dry grassland (Pizzey & Knight 2012).	Low
Bird	<i>Psophodes nigrogularis nigrogularis</i>	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	<i>Pterodroma mollis</i>	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	<i>Puffinus huttoni</i>	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	<i>Stercorarius parasiticus</i>	Arctic skua	MI	MI	Offshore waters, bays and harbours, seldom ashore. Also follows ships (Pizzey & Knight 2012).	Nil
Bird	<i>Sternula nereis nereis</i>	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	<i>Thalassarche carteri</i>	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	<i>Thalassarche cauta</i>	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	<i>Thalassarche impavida</i>	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	<i>Thalassarche melanophris</i>	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	<i>Thalassarche steadi</i>	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	<i>Thalasseus bergii</i>	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	<i>Thinornis rubricollis</i>	Hooded plover	P4	VU	Margins and shallows of saltlakes, sandy and seaweedy beaches and estuaries; also dams (Johnstone and Storr 1998).	Nil
Bird	<i>Tyto novaehollandiae novaehollandiae</i>	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	<i>Xenus cinereus</i>	Terek sandpiper	VU (MI)	VU (MI)	Tidal mudflats, estuaries; shores and reefs of islands; coastal swamps, commercial saltfields (Pizzey & Knight 2012).	Nil
Bird	<i>Zanda baudinii</i>	Baudin's black cockatoo	EN	EN	Mainly eucalypt forests. Attracted to seeding <i>Corymbia calophylla</i> , <i>Banksia</i> spp., <i>Hakea</i> spp., and to fruiting apples and pears (Johnstone and Storr 1998).	Moderate

Group	Species name	Common name	Level of significance		Habitat	Likelihood of occurrence
			WA	EPBC Act		
Bird	<i>Zanda latirostris</i>	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	<i>Engaewa pseudoreducta</i>	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	<i>Galaxiella munda</i>	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	<i>Geotria australis</i>	Pouched lamprey	P3	-	Marine, estuarine and coastal rivers and streams. Adults live in Southern Ocean and migrate upstream to spawn. Larvae live in muddy burrows in the upper reaches of streams (Bray and Gomon 2018).	Nil
Invertebrate	<i>Austroassiminea lethia</i>	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	<i>Bertmainius opimus</i>	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 and in the mossy banks of creeks (FPC 2017).	Low
Invertebrate	<i>Cherax tenuimanus</i>	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	<i>Kawanaphila pachomai</i>	Grey vernal katydid	P1	-	Found in the southwest near Margaret River.	Negligible
Invertebrate	<i>Trichosternus relictus</i>	a ground beetle	P3	-	Under logs in Eucalyptus woodlands (Darlington 1953).	Negligible
Invertebrate	<i>Westralunio carteri</i>	Carter's freshwater mussel	VU	VU	Occurs in greatest abundance in slower flowing streams with stable sediments that are soft enough for burrowing amongst woody debris and exposed tree roots. 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	<i>Arctocephalus forsteri</i>	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	<i>Arctocephalus tropicalis</i>	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	<i>Bettongia penicillata ogilbyi</i>	Woylie	CR	EN	Woodlands and adjacent heaths with a dense understorey of shrubs, particularly <i>Gastrolobium</i> spp. (TSSC 2018).	Low
Mammal	<i>Dasyurus geoffroii</i>	Chuditch	VU	VU	Wide range of habitats from woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. Appears to utilise native vegetation along roadsides in the wheatbelt (DEC 2012).	Low
Mammal	<i>Hydromys chrysogaster</i>	Rakali	P4	-	Areas with permanent water, fresh, brackish or marine. Likely to occur in all major rivers and most of the larger streams as well as bodies of permanent water in the lower south-west (Christensen et al. 1984). Intact riparian vegetation and associated bank stability is critical to their survival (DWER 2023).	Low
Mammal	<i>Isoodon fusciventer</i>	Quenda	P4	-	Dense scrubby, often swampy, vegetation with dense cover up to one metre high (DEC 2012)	High
Mammal	<i>Macrotis lagotis</i>	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	<i>Myrmecobius fasciatus</i>	Numbat	EN	EN	Generally dominated by <i>Eucalyptus</i> 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	<i>Neophoca cinerea</i>	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	<i>Notamacropus eugenii derbianus</i>	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	<i>Notamacropus irma</i>	Western brush wallaby	P4	-	Dry sclerophyll forest, Banksia spp. woodlands and shrublands, typically favouring dense low vegetation that provides dense cover (Christensen and Strahan 1983).	Low
Mammal	<i>Perameles bougainville</i>	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	<i>Phascogale tapoatafa wambenger</i>	South-western brush-tailed phascogale	CD	-	Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover (Triggs 2003).	Moderate

Group	Species name	Common name	Level of significance		Habitat	Likelihood of occurrence
			WA	EPBC Act		
Mammal	<i>Potorous gilbertii</i>	Gilbert's potoroo	CR	CR	Dense Melaleuca heath with dense groundcover of sedges (Menkhorst & Knight 2011).	Negligible
Mammal	<i>Pseudocheirus occidentalis</i>	Western ringtail possum	CR	CR	On the Swan Coastal Plain in Agonis flexuosa woodlands and Agonis flexuosa/ Eucalyptus gomphocephala forests. Also Eucalyptus marginata forests (DBCA 2017).	High
Mammal	<i>Pseudomys shortridgei</i>	Heath mouse	VU	VU	Prefers long unburnt tall heath and scrubby mallee (Menkhorst and Knight 2011)	Negligible
Mammal	<i>Setonix brachyurus</i>	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	<i>Agonis flexuosa</i>	Native	5.28	2.34
2	315192	6239203	23	<i>Agonis flexuosa</i>	Native	2.76	1.79
3	315182	6239191	51	<i>Agonis flexuosa</i>	Native	6.12	2.49
4	315180	6239184	21	<i>Agonis flexuosa</i>	Native	2.52	1.72
5	315173	6239180	29	<i>Agonis flexuosa</i>	Native	3.48	1.97
6	315149	6239150	29	<i>Agonis flexuosa</i>	Native	3.48	1.97
7	315148	6239148	48	<i>Eucalyptus botryoides</i>	Non-native	5.76	2.43
8	315138	6239137	15	<i>Agonis flexuosa</i>	Native	1.8	1.49
9	315138	6239134	27	<i>Agonis flexuosa</i>	Native	3.24	1.91
10	315131	6239131	28	<i>Agonis flexuosa</i>	Native	3.36	1.94
11	315116	6239127	34	<i>Agonis flexuosa</i>	Native	4.08	2.1