GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9219/1

File Number: DWERVT7537

Duration of Permit: From 25 February 2022 to 25 February 2034

PERMIT HOLDER

Rawling Road Pty Ltd (V & V Walsh)

LAND ON WHICH CLEARING IS TO BE DONE

Lot 1050 on Plan 33291, Davenport

AUTHORISED ACTIVITY

The permit holder must not clear more than 3.87 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

ADVICE NOTE:
In relation to conditions 10 and 11 of this Permit, it is noted that 1.83 hectares of Lot 1050 on Plan 33291, Davenport, and 3.2 hectares of Lot 1 on Plan 12060 will be attributed to the offset for this project. The nominated areas contain up to 2.88 hectares of western ringtail possum (*Pseudocheirus occidentalis*) habitat and up to 2.63 hectares of *black cockatoo species* habitat, in addition to other environmental values.

CONDITIONS

1. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 25 February 2024.

2. Fencing

(a) The permit holder shall construct a fence along the black line on Figure 2 of Schedule 2 and enclosing the area shaded orange on Figure 3 of Schedule 2 of this permit.

(b) Within one month of installing the fence, the permit holder shall notify the CEO in writing that the fence has been completed.

3. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

(a) avoid the *clearing* of *native vegetation*;

(b) minimise the amount of *native vegetation* to be cleared; and

(c) reduce the impact of *clearing* on any environmental value.

4. Weed and dieback management

When undertaking any *clearing* authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds* and *dieback*:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

5. Mitigation

The Permit Holder must not clear native vegetation within the mitigation area shaded blue in Figure 2 of Schedule 2.

6. Fauna management – black cockatoo foraging habitat

The Permit Holder must not clear more than 0.46 hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1 that provides foraging habitat for *Calyptorhynchus latirostris* (Carnaby's cockatoo), *Calyptorhynchus banksia* subsp. *naso* (forest red-tailed black cockatoo), *Calyptorhynchus baudinii* (Baudin's cockatoo).

7. Fauna management – western ringtail possums

The Permit Holder must not clear more than 0.35 hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1 that provides habitat for western ringtail possum(s) (*Pseudocheirus occidentalis*).

8. Fauna management - directional clearing

The Permit Holder must:

(a) conduct *clearing* authorised under this permit in one direction towards adjacent native vegetation; and

(b) allow a reasonable time for fauna present within the area being cleared to move into that adjacent *native vegetation* ahead of the *clearing* activity.

9. Fauna management – western ringtail possums

(a) In relation to the area cross-hatched yellow in Figure 1 of Schedule 1, the permit holder must engage a *fauna specialist* to inspect that area immediately prior to, and for the duration of *clearing* activities, for the presence of western ringtail possum(s) (*Pseudocheirus occidentalis*).

(b) *Clearing* activities must cease in any area where fauna referred to in condition 9(a) are identified until either:

(i) the western ringtail possum(s) individual has moved on from that area to adjoining *suitable habitat*; or

(ii) the western ringtail possum(s) individual has been removed by a *western ringtail possum specialist*.

(c) Any western ringtail possum(s) individual removed in accordance with condition 9(b)(ii) must be relocated by a *western ringtail possum specialist* to a *suitable habitat* as approved by the *CEO*.

(d) Where fauna is identified under condition 9(a), the permit holder must within 14 calendar days provide the following records to the *CEO*:

(i) the number of individuals identified;

(ii) the date each individual was identified;

(iii) the location where each individual was identified recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(iv) the number of individuals removed and relocated;

(v) the relevant qualifications of the *western ringtail possum specialist* undertaking removal and relocation;

(vi) the date each individual was removed;

(vii) the method of removal;

(viii) the date each individual was relocated;

(ix) the location where each individual was relocated to, recorded using a GPS unit set to GDA94, expressing the geographical coordinates in Eastings and Northings or decimal degrees; and

(x) details pertaining to the circumstances of any death of, or injury sustained by, an individual.

10. Offset – Land acquisition

The Permit Holder shall:

(a) provide evidence within 12 months of the permit commencement date that a conservation covenant under section 30 of the *Soil and Land Conservation Act*

1945 has been placed over the area shaded orange in Figure 3 of Schedule 2 for the protection and management of vegetation; and

(b) provide to the CEO a copy of the executed conservation covenant.

11. Offset – Rehabilitation

(a) The Permit Holder must rehabilitate native vegetation in a degraded to completely degraded (Keighery, 1994) condition within the area shaded blue in Figure 2 of Schedule 2 of this Permit, of which:

(i) 0.15 hectares must contain species which provide suitable foraging, breeding and roosting habitat for *Pseudocheirus occidentalis* (western ringtail possum) as identified in the *western ringtail possum recovery plan*

(ii) 0.4 hectares must contain species which provide suitable foraging, breeding and roosting habitat for *Calyptorhynchus latirostris* (Carnaby's cockatoo), *Calyptorhynchus banksia* subsp. *naso* (forest red-tailed black cockatoo) and *Calyptorhynchus baudinii* (Baudin's cockatoo) as identified in *black cockatoo recovery plan*

(b) The Permit Holder must rehabilitate 2.48 hectares of native vegetation in a degraded or better (Keighery, 1994) condition within the area shaded orange in Figure 3 of Schedule 2 of this Permit, of which:

(i) 2.48 hectares must contain species which provide suitable foraging, breeding and roosting habitat for *Pseudocheirus occidentalis* (western ringtail possum) as identified in the *western ringtail possum recovery plan*

(ii) 2.48 hectares must contain species which provide suitable foraging, breeding and roosting habitat for *Calyptorhynchus latirostris* (Carnaby's cockatoo), *Calyptorhynchus banksia* subsp. *naso* (forest red-tailed black cockatoo) and *Calyptorhynchus baudinii* (Baudin's cockatoo) as identified in *black cockatoo recovery plan*

(c) The *rehabilitation* required under condition 11(a) and (b) of this Permit, must be undertaken in accordance with the *Revegetation Plan* prepared under condition 12 of this Permit.

12. Revegetation Plan

Within 24 months of clearing commencing, the Permit Holder shall implement the *Revegetation Plan* included under Schedule 3, within the area shaded blue in Figure 2 of Schedule 2 and the area shaded orange in Figure 3 of Schedule 2 of this Permit.

13. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised *clearing* activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the *clearing* occurred,

No.	Relevant matter	Specifications
		recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken in accordance with condition 2; (f) actions taken to avoid, minimise, and reduce the impacts and extent of *clearing* in accordance with condition 3; (g) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 4; (h) actions taken to manage and mitigate impacts to western ringtail possums in accordance with condition 9; (i) actions taken to conserve the area shaded orange in Figure 3 of Schedule 2 of this Permit, in accordance with condition 10 of this Permit; and (j) actions taken to implement the *Revegetation Plan* in accordance with condition 12 of this Permit.

14. Reporting

(a) The Permit Holder must provide to the *CEO* on or before 30 June of each year, a written report:

(i) of records required under condition 13 of this Permit; and

(ii) concerning activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding calendar year.

(b) If no *clearing* authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no *clearing* under this Permit has been carried out, must be provided to the *CEO* on or before 30 June of each year.

(c) Prior to 25 November 2033, the Permit holder must provide to the *CEO* a written report of records required under condition 13 of this Permit, where these records have not already been provided under condition 14(a) of this Permit.

DEFINITIONS

In this permit, the terms in Table 2 have the meanings defined.

Table 2: Definitions

Term	Definition
black cockatoo species	means one or more of the following species: (a) *Calyptorhynchus lateriosis* (Carnaby's cockatoo); (b) *Calyptorhynchus baudinii* (Baudin's cockatoo); and/or (c) *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo).
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
dieback	means the effect of *Phytophthora* species and *Neofusicoccum australe* on native vegetation.
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the CEO as a suitable environmental specialist.
EP Act	*Environmental Protection Act 1986* (WA)
fauna specialist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the *CEO* as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the *Biodiversity Conservation Act 2016*.
fill	means material used to increase the ground level, or to fill a depression.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
suitable habitat (western ringtail possum)	means habitat known to support western ringtail possums (*Pseudocheirus occidentalis*) within the known current distribution of the species, typically characterised by abundant foliage, presence of suitable nesting structures such as tree hollows, as well as high canopy cover and continuity. Known habitat includes peppermint (*Agonis flexuosa*) dominated woodlands, jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) forests, riparian vegetation with a canopy of Bullich (*Eucalyptus megacarpa*) or flooded gum (*Eucalyptus rudis*), karri (*Eucalyptus diversicolor*) forests, sheoak (*Allocasuarina fraseriana*) dominated woodlands, and other stands of myrtaceous trees growing near swamps, watercourses or floodplains.

Term	Definition
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.
western ringtail possum recovery plan	means a plan prepared by Department of Parks and Wildlife (2017) to guide recovery actions for the western ringtail possum for the next 10 years.
western ringtail possum specialist	means a *fauna specialist* who holds a tertiary qualification specialising in environmental science or equivalent, has a minimum of two years of work experience in western ringtail possum (*Pseudocheirus occidentalis*) identification, surveys of western ringtail possums and capture and handling of western ringtail possums, and holds a valid fauna licence issued under the *Biodiversity Conservation Act 2016*.

REFERENCES

Department of Parks and Wildlife (2017). Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan. Wildlife Management Program No. 58. Department of Parks and Wildlife, Perth, WA.

Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

END OF CONDITIONS

Ryan Mincham
2022.02.02
15:40:19
+08'00'

Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

2 February 2022

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

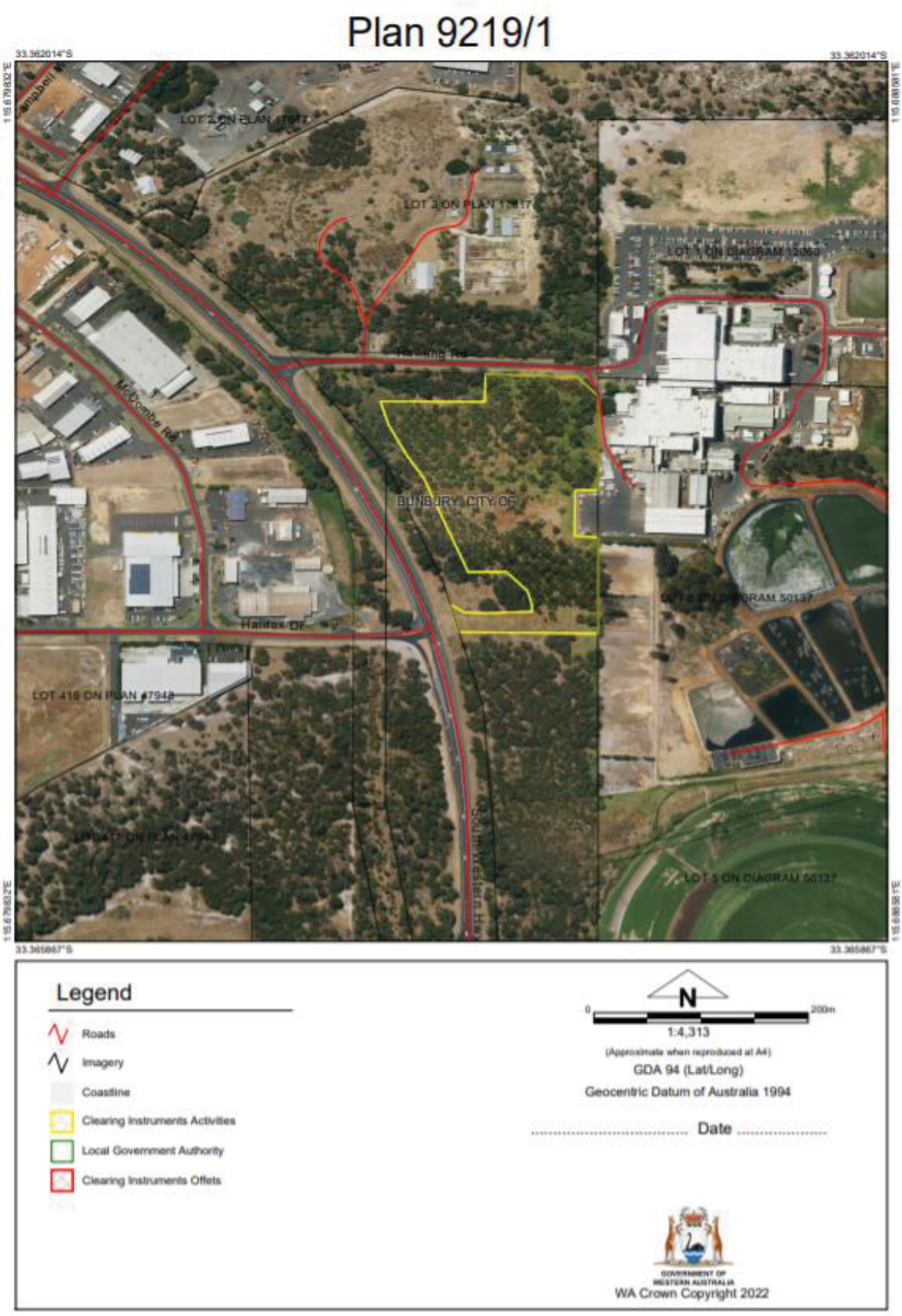


Figure 1: Map of the boundary of the area within which clearing may occur

SCHEDULE 2

The boundary of the area within which mitigation activities are to be undertaken is shown in the map below (Figure 2).

Figure 2: Map of the boundary of the mitigation area within which clearing may not occur and revegetation must be undertaken (shaded blue) and fence line (black line)

The boundary of the offset site is shown in the map below (Figure 3).

Figure 3: Map of the boundary of the offset area (shaded orange)

SCHEDULE 3
Revegetation Plan

Revegetation Plan

Offset areas for cold storage development

RR Unit Trust (Rawling Road Pty Ltd ATF the RR Unit Trust)

19 November 2021

→ **The Power of Commitment**

GHD Pty Ltd | ABN 39 008 488 373
10 Victoria Street, 1st Floor
Bunbury, Western Australia 6230, Australia
T +61 8 9721 0700 | **F** +61 8 9721 0777 | **E** bunmail@ghd.com | **ghd.com**

Printed date	2/12/2021 4:35:00 PM
Last saved date	02 December 2021
File name	https://projectsportal.ghd.com/sites/pp18_01/vvwalshclearingpermi/ProjectDocs/12539969-REP-V&VWalsh Revegetation Plan_Draft_Client.docx
Author	Tarsh Woods, Alex Sleep
Project manager	Natarsha Anne Woods
Client name	RR Unit Trust (Rawling Road Pty Ltd ATF the RR Unit Trust)
Project name	V&V Walsh - Clearing Permit
Document title	Revegetation Plan | Offset areas for cold storage development
Revision version	Rev A
Project number	12539969

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S0	R0	Tarsh Woods Alex Sleep Rochelle Lupton	Meranda Toner		Fionnuala Hannon		17/11/2021
[Status code]	R1	Tarsh Woods	Fionnuala Hannon		Fionnuala Hannon		2/12/2021
[Status code]							
[Status code]							
[Status code]							

© GHD 2021

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

Contents

Table index

Appendices

1. Introduction

1.1 Project Description

V & V Walsh Pty (Walsh) propose to develop a cold store and load out (the Proposal). The proposed development will include the construction of an access road, connection of power and other utilities, heavy movement parking areas, warehouse, offices, fencing and drainage.

Activities that may impact the environment associated with the proposal include vegetation clearing, removal of topsoil, digging and trenching for utilities and drainage, import of fill to raise low lying sections, construction of roads and road formations and construction of buildings.

The Proposal is located on Lot 1050 South Western Highway, Davenport, adjacent to the western boundary of V & V Walsh's Bunbury abattoir (Lot 5) and has a project area of 5.4 ha.

Environmental assessments of the Proposal have identified the following significant residual impacts to conservation significant species:

– 0.46 ha of Black Cockatoo habitat for *Calyptorhynchus latirostris* (Carnaby's Cockatoo) (Endangered), *Calyptorhynchus baudinii* (Baudin's Cockatoo) (Endangered), and *Calyptorhynchus banksii naso* (Forest Red-tailed Black Cockatoo) (Vulnerable)
– 0.35 ha of Western Ringtail Possum (*Pseudocheirus occidentalis*) (Critically Endangered) habitat

To counterbalance these residual impacts, V&V Walsh have identified two on-ground rehabilitation offsets:

– Revegetation within Lot 1050 – 1.83 ha
– Revegetation of part of Lot 1 – approximately 3.2 ha

1.2 Purpose of this Plan

This purpose of this Revegetation Plan (the Plan) is to outline the rehabilitation measures, completion criteria, roles and responsibilities and monitoring and corrective actions for revegetation associated with the Proposals offsets.

This Plan has been prepared in response to DWER recommendations for Clearing Application CPS 921/1.

Advice provided by DWER 5th October 2021, included the follow recommendation:

Offsets may include (but are not limited to):

– Increased corridor width with associated supplementary plantings and weed control
– Habitat conservation, creation and restoration works on the adjoining Lot 1 (which are owned by the proponent) with the aim of expanding available habitat alongside the Preston River corridor; which will be added int the Regional Park

A meeting was held with DWER, DBCA and the V & V Walsh on the 13th of October 2021. Proposed offset areas were presented included draft significant residual impacts and offsets calculations. In principal agreement was reached with further work needed to confirm calculations and develop a Revegetation Plan (this document).

1.3 Objectives of revegetation

The objective of the Plan is to improve the quality of habitat within the two areas for the following species:

– *Pseudocheirus occidentalis* (Western Ringtail Possum) (Critically Endangered)
– *Calyptorhynchus latirostris* (Carnaby's Cockatoo) (Endangered)
– *Calyptorhynchus baudinii* (Baudin's Cockatoo) (Endangered)
– *Calyptorhynchus banksii naso* (Forest Red-tailed Black Cockatoo) (Vulnerable).

1.4 Location

The Two areas subject to this Plan are:

– The Mitigation Area, this area is within Lot 1050 South Western Highway, Davenport – approximately 1.83 ha of retained vegetation buffer. The Mitigation Area has two sections, Section A is up to 20 m from the disturbance area and Section B is the remainder of Mitigation Area. This separation is to allow for the revegetation approach in Section A to be consistent with the *Plant Guide within the Building Protection Zone for the Swan Coastal Plain of Western Australia* (FESA 2011).
– The Offset Area, this is an area of approximately 3.2 ha on Lot 1, which is adjacent to the Preston River.

The two revegetation areas are shown in Figure 1, Appendix A. The details of the Mitigation Area, sections A and B are shown in Figure 2, Appendix A.

1.5 Limitations

This report: has been prepared by GHD for V&V Walsh and may only be used and relied on by V&V Walsh for the purpose agreed between GHD and RR Unit Trust V&V Walsh as set out in section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than V&V Walsh arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

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

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by V&V Walsh and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Current Environmental Quality

2.1 Lot 1050

GHD (2020) completed an ecological survey of the Proposal area in Lot 1050 in November and December 2020. This survey included the Proposed impact area and the Mitigation Area.

Four vegetation types were described and mapped within the survey area, excluding previously cleared areas. The vegetation types include *Corymbia calophylla* open forest, *Melaleuca rhaphiophylla* low woodland, *Eucalyptus rudis* tall woodland and an area of grassland of introduced species with clumps of *Juncus pallidus* sedges and scattered *Eucalyptus rudis* or *Melaleuca rhaphiophylla* trees.

The vegetation condition of the survey area ranged from Good to Completely Degraded. Historical clearing, firebreaks, tracks, aggressive weed species and edge effects have influenced the structure and composition of the remaining native vegetation.

A field survey to further define the habitat values for Western Ringtail Possum and Black Cockatoo was conducted on 10 November 2021. Black Cockatoo habitat consisted of *Corymbia calophylla* (marri) with a stem density of two per 100m^2 over a closed grassland of **Cenchrus clandestinus* (kikuyu). No additional flora species were recorded, including other food resources for Black Cockatoo.

The Western Ringtail Possum habitat consisted of *Corymbia calophylla* with a stem density of one per 100m^2 and *Agonis flexuosa* (Peppermint) with a stem density of six per 100m^2 (along with approximately 17 saplings) over a grassland dominated by **Ehrharta longiflora* (Annual Veldt Grass). An additional four weed species were recorded within the quadrat including **Zantedeschia aethiopica* which is a Declared Pest under the BAM Act. No native understorey species were recorded and it was noted that *Melaleuca rhaphiophylla* was recorded just outside the quadrat. In general, the majority of the trees in this location appeared to be relatively young (small dbh) indicating that the area has been at least partially cleared in the past, lack of any native understorey species indicates that the area has potentially been grazed.

2.2 Lot 1 – Preston River

A survey of the Offset Area within Lot 1 Preston River was conducted on 10 November 2021 to determine habitat values for Black Cockatoo and Western Ringtail Possum. Three vegetation types were recorded in the area and the vegetation condition ranged from Degraded to Completely Degraded.

Vegetation type 1 provides limited habitat value for Western Ringtail Possum and Black Cockatoo with a wetland consisting of an open woodland of *Melaleuca rhaphiophylla* over open water with fringing *Eucalyptus rudis* (0.38 ha). Vegetation type 2 (2.10 ha) provides habitat value for both Western Ringtail Possum and Black Cockatoos as it consists of a *Corymbia calophylla* (2 stems per 100m^2*) Agonis flexuosa* (3-5 stems per 100m^2) woodland over weeds including *Ehrharta longiflora (80% cover), **Fumaria capreolata* (25% cover) and **Zantedeschia aethiopica* (12% cover). There is evidence that area is utilised by Forest Red-tailed Black Cockatoo (nearby calls, and male tail-feather observed). Vegetation type 3 (0.81 ha) provides habitat value for both WRP and BC, it consists of *Corymbia calophylla* (2 stems per 100m^2) over *Agonis flexuosa* (10 stems per 100m^2) over *Pteridium esculentum* (5% cover) and *Watsonia meriana* (40% cover). There is evidence that the area is utilised by Western Ringtail Possum, as one drey was observed near to the quadrat.

3. Revegetation Plan

3.1 Completion criteria

The target objective of the revegetation works is to provide habitat for Black Cockatoo and Western Ringtail Possum within the two revegetation areas. It is assumed that the value of the offset sites after revegetation would be higher than the Proposal area.

Therefore, success criteria have been developed based on achieving this target objective, with an emphasis on two key targeted species *Corymbia calophylla* and *Agonis flexuosa*. Proposed completion criteria for the revegetation areas after five years include:

– Planting survival rate – 70% of tube stock planted within revegetation areas.
– Target stem density of key habitat species – 70% of the impact area. Black cockatoo habitat in the impact area consists of an average density of 200 *Corymbia calophylla* per ha. A target of 140 *Corymbia calophylla* per ha will be applied. Western Ringtail Possum habitat was recorded as 100 *Corymbia calophylla* per ha and 600 *Agonis flexuosa* per ha. A target of 420 *Agonis flexuosa* per ha and 70 *Corymbia calophylla* per ha will be applied.
– Target weed cover – 25 % reduction in weed density over five years. The average weed cover of Site 1 is 90%, a 25% reduction in cover would result in a target of 67%. The average weed cover of Site 2 is 69%, a 25% reduction in cover would result in a target of 52%.

Revegetation actions will also include a secondary aim to improve the biodiversity of the two sites, no completion criteria are specifically assigned to this objective, however species potentially included in the revegetation are included in Table 1.

3.2 Basis for revegetation

Revegetation of the two sites will be undertaken using tube stock and direct planting methods. Planting with tube stock is appropriate for small areas such as the two revegetation areas and can be more effective where there is dense weed cover and competition for resources.

Much of the Offset Area and parts of the Mitigation Area have dense native vegetation and only infill planting will be necessary to meet the completion criteria.

3.3 Site preparation

The understorey of both sites is dominated by introduced species (grasses and herbs). These species have the potential to limit the success of revegetation. A qualified and licenced weed contractor will undertake weed control measures one month prior to revegetation works. Weed control will then be undertaken annually for five years.

Weed control will include removing any woody weeds by hand and herbicide application for introduced grasses and herbs.

In the Mitigation Area, will be recontoured where required prior to soil treatment, to minimise the potential for erosion.

A permanent fence will be erected prior to revegetating the Offset Area. The fence will be maintained to prevent livestock from accessing the Offset Area and will be high enough to prevent kangaroos from entering the revegetation area.

3.4 Species selection

The species mix for revegetation was selected to provide a range of foraging species for Black Cockatoos and Western Ringtail Possums and improve biodiversity. It has also been guided by previous vegetation mapping of Lot 1050 (Beard 1979, Heddle et. al. 1980) and site observations (GHD 2014/2020, Ecoedge 2020).

Local native plant species have been selected for the revegetation and given the small size of each site and their existing weed density, robust plant species have been nominated.

Species selected for revegetation at Mitigation Areas Site A comprise shrubs only. This area is located within 20 m of infrastructure and therefore located within the building protection zone for bushfire management. As outlined by the *Plant Guide within the Building Protection Zone for the Swan Coastal Plain of Western Australia* (FESA 2011) where possible, no trees should be within the building protection zone.

Potential species to be used in the revegetation are presented in Table 1.

Table 1 Potential species to be used in revegetation

Family	Species	Common Name	Growth habit	Mitigation Area Site A	Mitigation Area Site B	Offset Area
Myrtaceae	*Corymbia calophylla*	Marri	Tree		✓	✓
Myrtaceae	*Eucalyptus rudis*	Flooded Gum	Tree		✓	✓
Myrtaceae	*Eucalyptus marginata*	Jarrah	Tree		✓	✓
Myrtaceae	*Agonis flexuosa*	Peppermint	Tree/shrub		✓	✓
Myrtaceae	*Melaleuca preissiana*	Moonah	Tree/shrub		✓	✓
Myrtaceae	*Melaleuca rhaphiophylla*	Swamp Paperbark	Tree/shrub		✓	✓
Myrtaceae	*Kunzea glabrescens*	Spearwood	Shrub	✓	✓	✓
Myrtaceae	*Kunzea recurva*		Shrub		✓	✓
Myrtaceae	*Hypocalymma angustifolium*	White Myrtle	Shrub	✓	✓	✓
Myrtaceae	*Melaleuca thymoides*		Shrub	✓	✓	✓
Myrtaceae	*Melaleuca viminea*	Mohan	Shrub	✓	✓	✓
Fabaceae	*Acacia saligna subsp. stolonifera*	Orange Wattle	Shrub	✓	✓	✓
Proteaceae	*Adenanthos meisneri*		Shrub	✓	✓	✓
Proteaceae	*Hakea prostrata*	Harsh Hakea	Shrub	✓	✓	✓
Fabaceae	*Jacksonia furcellata*	Grey Stinkwood	Shrub	✓	✓	✓
Fabaceae	*Viminaria juncea*	Swishbush	Shrub	✓	✓	✓
Proteaceae	*Hakea varia*	Variable-leaved Hakea	Shrub	✓	✓	✓

3.5 Tubestock

Tube stock will be sourced from an accredited nursery within the Bunbury area, for example the Leschenault Community Nursery. All tube stock used in the revegetation will be locally native. Advice will be sought from nurseries/seedling suppliers regarding appropriate storage and transport methods of tube stock.

Tube stock will be hand planted so that the top of the pot soil is slightly below ground level. This should provide a shallow 'saucer' for water retention. A native plant fertiliser tablet will be placed at the base of each hole and all tubes will be watered in with at least 1 L of water per plant. Water will include a wetting agent to ensure the tube stock and surrounding soil is thoroughly wet.

3.6 Watering

Watering will be undertaken for both sites for the first summer to increase the survival rates.

Each plant will be provided with a tree guard (with weed mat if required) to protect the new seedlings from herbivores, particularly rabbits.

3.7 Planting Density

To reach the 70% target, the revegetation efforts are aiming for:

– 140 *Corymbia calophylla* per hectare for Black Cockatoo habitat
– 70 *Corymbia calophylla* per hectare and 420 *Agonis flexuosa* per hectare for Western Ringtail Possum habitat

For the purposes of planting density estimates, it is assumed that 140 *Corymbia calophylla* will be utilised for both species.

This translates to the following planting density:

– Mitigation Area - 256 *Corymbia calophylla* and 769 *Agonis flexuosa* planted over 1.83 ha
– Offset Area - both VT2 and VT3 already meet the target for *Corymbia calophylla*, therefore no additional planting of *Corymbia calophylla* will be required in this section. *Agonis flexuosa* will be planted in this section, with an average of 120 per ha to meet the 420 target. VT3 has 1000 *Agonis flexuosa* per hectare, so the target is already met.

3.8 Schedule

A proposed schedule for the implementation of this revegetation plan is outlined in Table 4.

Table 2 Proposed schedule for revegetation works

Activity	Season	Year	Comment
Order tube stock for planting	October/November/ December	2022	Tube stock orders will be placed with accredited nurseries.
Site preparation activities	April/May and immediately prior to planting	2023	Refer to Section 3.2 for detail. This will allow sufficient time to control weeds in preparation for planting. The City of Bunbury will cease weed control at the site in April, with V&V Walsh taking control of the site weed control.
Tube stock planting	May/June	2023	There is no allowance in this plan for artificial watering of the revegetation areas, therefore tube stock should be planted following substantial winter rains.

Activity	Season	Year	Comment
Weed monitoring	August	2023	Undertake weed control as necessary.
Weed monitoring	November	2023	Undertake weed control as necessary.
Weed monitoring	February	2023	Undertake weed control as necessary.
Revegetation monitoring	March/April	2024	Repeat annually.
Weed monitoring	May	2024	Undertake weed control as necessary.
Weed monitoring	August	2024	Undertake weed control as necessary. Repeat annually.
Order additional tube stock for planting (if required)	October/November/ December	2024	Repeat annually as required. Tube stock to be planted in May/June the following year.
Weed monitoring	February	2025	Undertake weed control as necessary. Repeat annually.

3.9 Monitoring

The monitoring program will be designed to inform a requirement for remediation works, including weed control and infill planting. It is proposed that monitoring and remediation works be undertaken for a period of five years following the revegetation to ensure its success.

The revegetation will be initially monitored in March/April 2024 to determine seedling establishment and survival rates and then on an annual basis after summer (March/April), which is when the most attrition (death) of the planted tube stock is likely to occur. Data at each revegetation area will be collected using a combination of qualitative and quantitative methods. Additionally, a permanent photo point will be established at each revegetation area for comparison purposes.

Vegetation monitoring quadrats (10 x 10 m) will be established within each area (at least 3 quadrats in each area). The location of the quadrats will be determined once revegetation has been completed, and quadrats will be located in representative sites.

At each quadrat the following will be recorded:

– Survival and death rates of tube stock
– Observed health of native vegetation (poor/good/excellent)
– Observed percentage cover of native species in the overstorey and midstorey
– Stem count of key target habitat species (Table 1)
– Weed species present and observed percentage cover of weeds as either <10%, 11 – 30%, 31-70% or >70%
– Indications of grazing by rabbits or kangaroos
– Photograph of revegetation area taken from a permanent photo point
– Any other observations such as erosion, fire or vandalism.

It may not be possible to identify the species of some of the tube stock until they reach reproductive maturity. Data collected from each monitoring event will be compiled and compared against previous monitoring results and completion criteria. Comparison of monitoring data will identify whether completion criteria are not being met and guide any required remediation works.

3.10 Remediation works

Remediation works within the revegetation areas should be undertaken to ensure the completion criteria as outline above are achieved after a period of five years. Remediation works may include:

– Infill/extra planting during the next planning season to achieve planting survival rate, target density and target composition/diversity and target structure
– Weed control to achieve target weed cover
– Additional protection of seedlings
– Erosion control e.g. brushing/mulching and/or topsoil replacement if erosion is noted during monitoring as a potential issue.

3.11 Weed management

Weed management should be undertaken throughout the revegetation areas to reduce the extent of weed infestation with the target objective to meet the target weed cover.

A number of weed species were observed in northern part of Lot 1050 in the 2014 survey and included (but are not limited to): **Cenchrus clandestinus* (Kikuyu Grass), **Citrullus lanatus* (Pie Melon), **Cucumis myriocarpus* (Prickly Paddy Melon), **Rumex conglomeratus* (Clustered Dock), **Rumex crispus* (Curled Dock), **Solanum nigrum* (Black Berry Nightshade), and **Symphyotrichum squamatum* (Bushy Starwort).

Additionally, during the 2020 survey 34 introduced flora species were recorded in the survey area of Lot 1050. One of these, *Asparagus asparagoides (Bridal Creeper), is listed as a Declared Pest under the Biosecurity and Management Act 2007 and as a Weed of National Significance (WONS).

Two species are listed as Declared Pest Plant, **Zantedeschia aethiopica* (Arum lily) and **Opuntia* sp. (Prickly Pear species).

Within Lot 1, 14 introduced flora species were recorded, including **Zantedeschia aethiopica* (Declared Pest).

Weed management will be undertaken in revegetated areas whenever the completion criteria for weeds are not met (i.e. target weed control) and will continue for a minimum of five years following the commencement of revegetation works.

Weed management will comprise the following activities:

– Weed monitoring to determine of weed species present and observed percentage cover of weeds.
– Manual (hand removal) or chemical (herbicide application) removal of key weed species within revegetation areas as necessary. Optimal removal times may vary for weed species, however, at a minimum weed control will occur annually prior to seed set.

Weed management will be undertaken by appropriately experienced personnel to ensure native plants are not damaged or destroyed.

3.12 Phytophthora dieback management

Phytophthora Dieback controls will be applied by contractors during all revegetation works to minimise the potential of dieback introduction and spread within Lot 1050 and Lot 1.

Phytophthora Dieback management will comprise of the following activities:

– Tube stock sourced from an accredited nursery.
– All vehicles and footwear will be cleaned of soil and plant material prior to entering and after leaving Lot 1050.
– Limit vehicle access to Lot 1050 and Lot 1, where possible, to dry soil conditions only.

3.13 Reporting

The results of the revegetation monitoring, including data collected from the monitoring event, photos and comparison of results against previous monitoring results and completion criteria will be compiled in report format and provided annually to DWER. Similarly, the results of the weed monitoring will also be reported and provided annually to DWER. Submission of the reports to DWER should be within one month of the monitoring period.

3.14 Responsibility

V&V Walsh will be responsible for the revegetation and ongoing management of the two revegetation areas for a minimum period of five years. After the five years (or when the completion criteria is met), the City will take on management responsibility via incorporation into the existing bushland management program for the Mitigation Area on Lot 1050, with V&V Walsh continuing with management responsibility for the Offset Area on Lot 1.

4. References

Beard, JS 1979, Vegetation Survey of Western Australia: Perth Map and Explanatory Memoir 1:250,000 series, Perth, Vegmap Publications.

GHD 2014, Lot 1050 South Western Highway Davenport, unpublished memorandum prepared by GHD for V & V Walsh, May 2014.

GHD 2014, Lot 1050 South Western Highway Davenport, Revegetation Plan

GHD 2021, V & V Walsh – Flora & Fauna Survey & Permitting Biological Survey Report, February 2021

Fire and Emergency Services Authority of Western Australia (FESA) 2011, Plant Guide within the Building Protection Zone for the Swan Coastal Plain of Western Australia, Bush Fire and Environmental Protection Branch, FESA.

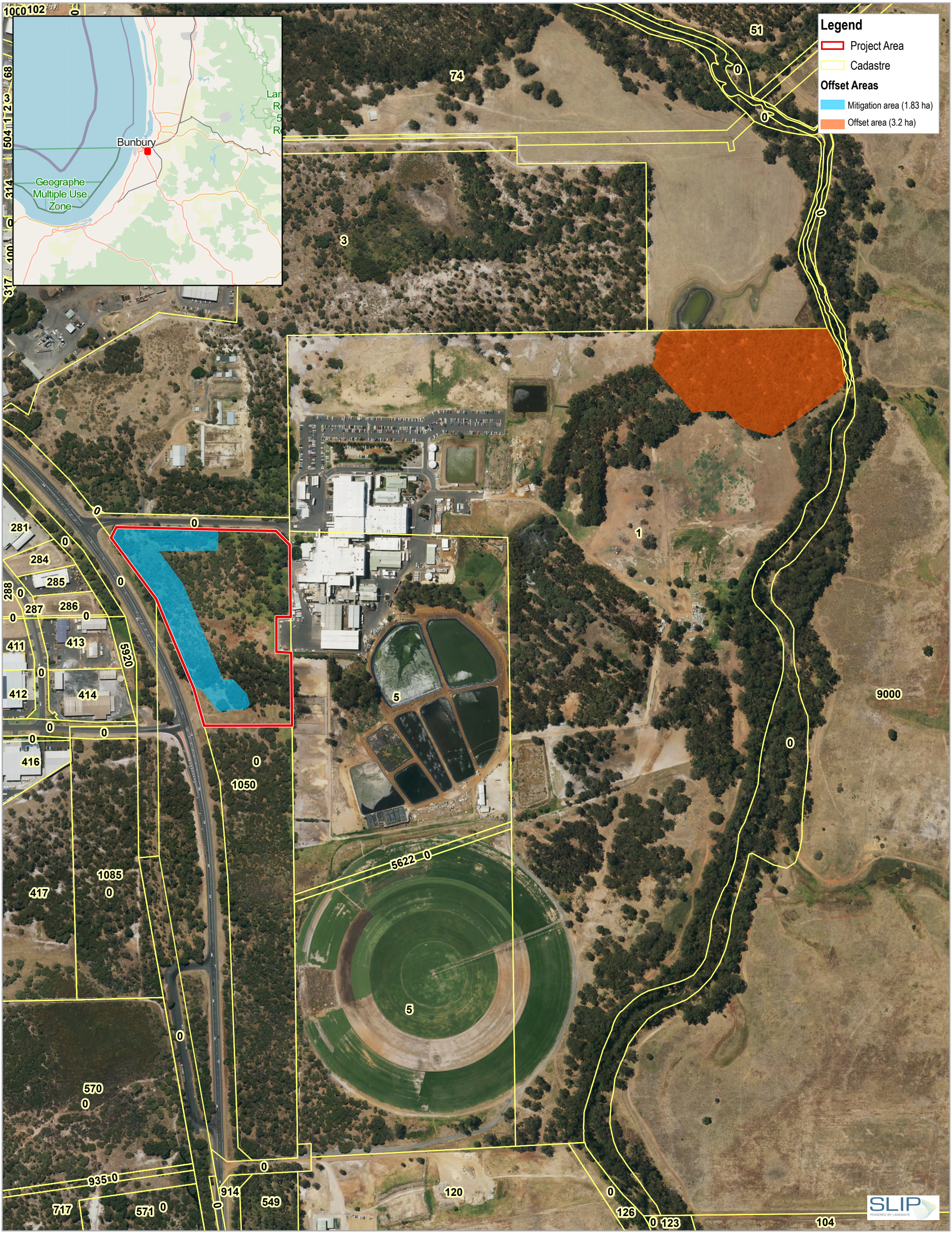
Heddle, EM, Loneragan, OW, & Havel, JJ 1980, Vegetation Complexes of the Darling System, Western Australia, In Atlas of Natural Resources, Darling System, Western Australia, Perth, Department of Conservation and Environment.

Hill, AL, Semeniuk, CA, Semeniuk, V & Del Marco, A 1996, Wetlands of the Swan Coastal Plain Volume 2A, Perth, Water and Rivers Commission.

Keighery, BJ 1994, Bushland Plant Survey: A Guide to Plant Community Survey for the Community, Nedlands, Wildflower Society of WA (Inc.).

Appendix A

Figures



Paper Size ISO A3
at Scale: 1:5,000

0 50 100 150 200

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

V & V Walsh
V & V Walsh Clearing Permit

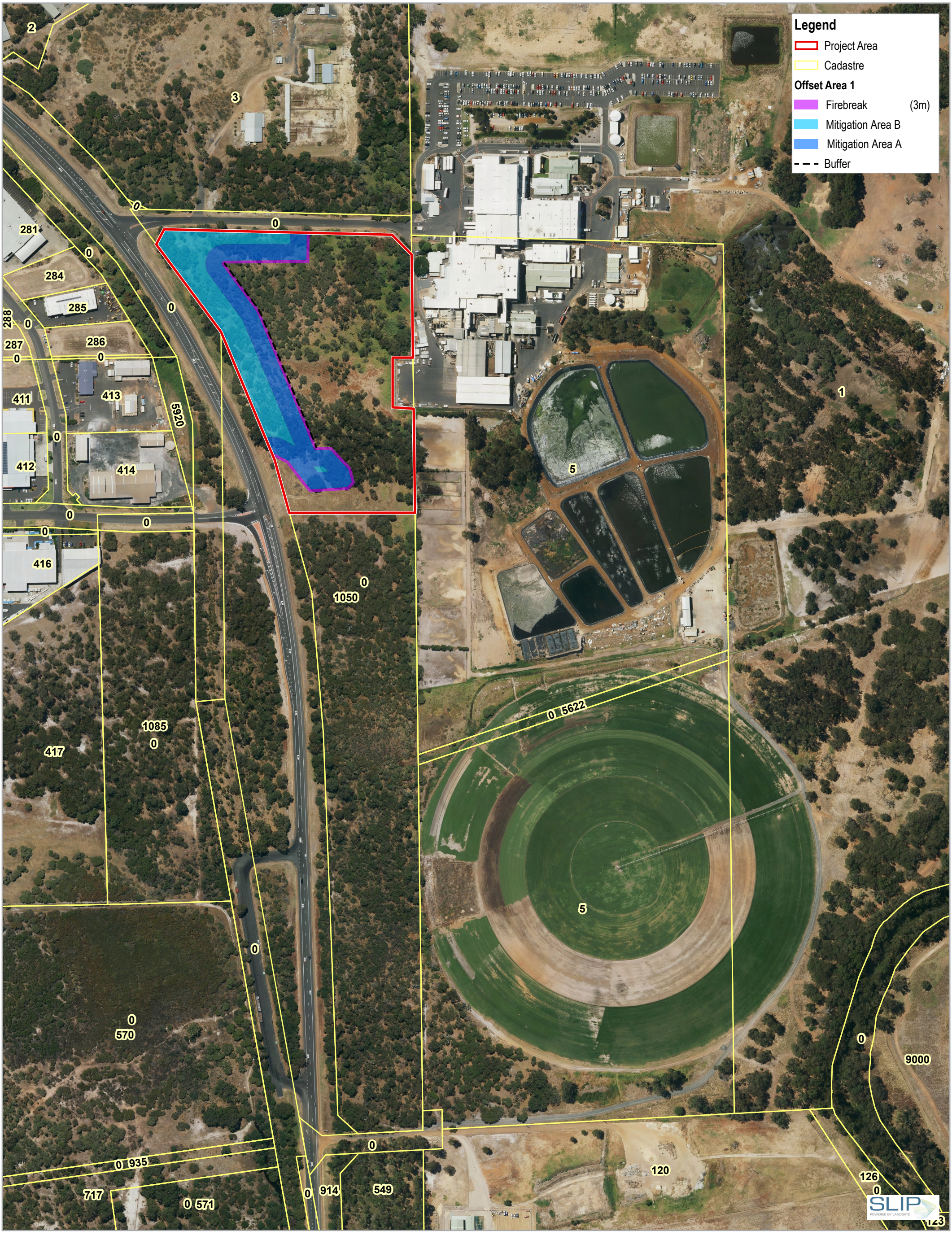
Offset Areas

Project No. 12539969
Revision No. 0
Date 30/11/2021

FIGURE 1

\\ghdnet\ghd\AU\Perth\Projects\61\12539969\GIS\Maps\Working\12539969\12539969.aprx\12539969_X_OffsetAreas_Rev0
Print date: 22 Nov 2021 - 09:08

Data source: Cadastre, Aerial imagery: Landgate / SLIP
OpenStreetMap: Map data © OpenStreetMap contributors, Microsoft, Esri Community Maps contributors, Map layer by Esri. Created by: jabaygar



Paper Size ISO A3
at Scale: 1:3,500

0 25 50 75 100
Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

V & V Walsh
V & V Walsh Clearing Permit

Detail Mitigation Area

Project No. **12539969**
Revision No. **0**
Date **2/12/2021**

FIGURE 2

\\ghdnet\ghd\AU\Perth\Projects\61\12539969\GIS\Maps\Working\12539969\12539969.aprx\12539969_X_DetailOffset1_Rev0
Print date: 22 Nov 2021 - 09:10

Data source: Cadastre, Aerial imagery: Landgate / SLIP. Created by: jabaygar

Appendix B

Quadrat data

Site ID:	V&VQ06	Site 1 (Lot 1050)
Type:	Quadrat	Size 10 x 10 m
Date:	10/11/21	Described by: Alex Sleep
Co-ordinates:	377702.7887 mE	6307709.204 mN
Landform and slope:	Flat	
Drainage:	Seasonally wet / poor drainage	
Aspect:	Flat	
Soil colour and type:	Black brown loamy clay	
Vegetation condition:	Completely Degraded	
Fire age and intensity:	None evident	
Disturbances:	Partial clearing, complete clearing of understorey. Weed invasion. History of grazing.	

Species	Status	Height	Density	Form/stratum	Cover (%)
Cenchrus clandestinus	*	1.25	-	Tussock grass (G)	99
Corymbia calophylla		12	2	Tree, palm (U)	35

Site ID:	V&VQ04	Site 1 (Lot 1050)
Type:	Quadrat	Size 10 x 10 m
Date:	10/11/21	Described by: Alex Sleep
Co-ordinates:	377661.1133 mE	6307707.384 mN
Landform and slope:	Flat	
Drainage:	Poorly drained/seasonally moist	
Aspect:	Flat	
Soil colour and type:	Dark brown, high organic matter content	
Vegetation condition:	Degraded to Completely Degraded	
Fire age and intensity:	Old	
Disturbances:	Partial clearing, including complete clearing of understorey, regrowth of native trees, history of grazing, weed invasion.	

Species	Status	Height	Density	Form/stratum	Cover (%)
Agonis flexuosa		11	6	Tree, palm (U)	40
Briza maxima	*	0.25		Tussock grass (G)	0.1
Corymbia calophylla		12	1	Tree, palm (U)	20
Ehrharta longiflora	*	0.5		Tussock grass (G)	85
Fumaria capreolata	*	0.5		Forb (G)	2
Melaleuca rhaphiophylla				Tree, palm (U)	opportunistic

Species	Status	Height	Density	Form/stratum	Cover (%)
Solanum nigrum	*	0.5		Forb (G)	0.1
Zantedeschia aethiopica	*DP	0.75		Forb (G)	0.1

Site ID:	V&VQ05	Site 1 (Lot 1050)
Type:	Quadrat	Size 10 x 10 m
Date:	10/11/21	Described by: Alex Sleep
Co-ordinates:	377548.726 mE	6307727.534 mN
Landform and slope:	Flat	
Drainage:	Poorly drained/seasonally moist	
Aspect:	Flat	
Soil colour and type:	Dark brown layer with high organic matter content over grey sand	
Vegetation condition:	Degraded to Completely Degraded	
Fire age and intensity:	Old	
Disturbances:	Partial clearing, including complete clearing of understorey, regrowth of native trees, history of grazing, weed invasion.	

Species	Status	Height	Density	Form/stratum	Cover (%)
Agonis flexuosa		12	7	Tree, palm (U)	35
Banksia attenuata		10		Tree, palm (U)	10
Briza maxima	*	0.25		Tussock grass (G)	20
Corymbia calophylla		2	1	Tree, palm (U)	0.1
Dasypogon bromeliifolius		0.25		Shrub, cycad, grass-tree, tree-fern (M)	0.1

Species	Status	Height	Density	Form/stratum	Cover (%)
Desmocladus fasciculatus		0.25		Rush (G)	0.1
Ehrharta longiflora	*	0.25		Tussock grass (G)	60
Hovea trisperma		0.25		Forb (G)	0.1
Hypochaeris glabra	*	0.25		Forb (G)	0.1
Kunzea glabrescens		4.5		Shrub, cycad, grass-tree, tree-fern (M)	9
Lolium rigidum	*	0.25		Tussock grass (G)	12
Macrozamia riedlei		0.5		Shrub, cycad, grass-tree, tree-fern (M)	0.1
Microtis media		0.25		Forb (G)	0.1
Platytheca galioides		0.25	7	Forb (G)	0.1
Sonchus oleraceus	*	0.25		Forb (G)	0.1
Zantedeschia aethiopica	* DP	0.25		Forb (G)	0.1

Site ID:	V&VR04	Site 1 (Lot 1050)
Type:	Relevé	Size 10 x 10 m
Date:	10/11/21	Described by: Alex Sleep
Co-ordinates:	377472.549 mE	6307709.95 mN
Landform and slope:	Flat	
Drainage:	Poorly drained/seasonally moist	
Aspect:	Flat	
Soil colour and type:	Dark brown layer with high organic matter content over moist dark grey sandy loam	
Vegetation condition:	Degraded to Completely Degraded	
Fire age and intensity:	Old	
Disturbances:	Partial clearing, including complete clearing of understorey, regrowth of native trees, history of grazing, weed invasion.	

Species	Status	Height	Density	Form/stratum	Cover (%)
Acacia saligna		1.75		Shrub, cycad, grass-tree, tree-fern (M)	0.1
Briza maxima	*	0.25		Tussock grass (G)	31
Caladenia flava		0.1		Forb (G)	0.1
Corymbia calophylla		14	5	Tree, palm (U)	40

Species	Status	Height	Density	Form/stratum	Cover (%)
Ehrharta calycina	*	1		Tussock grass (G)	40
Eucalyptus marginata		3	1	Tree, palm (U)	0.1
Fumaria capreolata	*	0.5		Forb (G)	0.1
Hypochaeris glabra	*	0.5		Forb (G)	0.1
Kunzea glabrescens		3		Shrub, cycad, grass-tree, tree-fern (M)	0.1
Lolium rigidum	*	0.25		Tussock grass (G)	5
Microtis media		0.25		Forb (G)	0.1
Persoonia longifolia		2		Tree, palm (U)	0.1
Sonchus oleraceus	*	0.1		Forb (G)	0.1
Vicia sativa	*	0.25		Forb (G)	0.1
Watsonia meriana	*	1.25		Forb (G)	5
Zantedeschia aethiopica	*DP	0.25		Forb (G)	0.1

Site ID:	V&VQ01	Site 2 (Lot 1, Preston River)
Type:	Quadrat	Size 10 x 10 m
Date:	10/11/21	Described by: Alex Sleep
Co-ordinates:	378353.7832 mE	6307952.13 mN
Landform and slope:	Flat	
Drainage:	Poorly drained/seasonally moist	
Aspect:	Flat	
Soil colour and type:	Dark brown-grey clay-loam	
Vegetation condition:	Completely Degraded	
Fire age and intensity:	Old	
Disturbances:	Partial clearing, including complete clearing of understorey, grazing, weed invasion, including declared pests.	

Species	Status	Height	Density	Form/stratum	Cover (%)
Agonis flexuosa		10	3	Tree, palm (U)	25
Bromus diandrus	*	0.25		Tussock grass (G)	2
Corymbia calophylla		12	3	Tree, palm (U)	50
Cyperus tenellus	*	0.1		Sedge (G)	0.1
Ehrharta longiflora	*	0.5		Tussock grass (G)	80
Fumaria capreolata	*	0.5		Forb (G)	25

Species	Status	Height	Density	Form/stratum	Cover (%)
Hordeum leporinum	*	0.5		Tussock grass (G)	5
Lolium rigidum	*	0.25		Tussock grass (G)	0.1
Oxalis pes-caprae	*	0.25		Forb (G)	2
Phytolacca octandra	*	0.75		Forb (G)	0.1
Poa annua	*	0.1		Tussock grass (G)	0.1
Ranunculus muricatus	*	0.25		Forb (G)	0.1
Rumex crispus	*	0.5		Forb (G)	0.1
Solanum nigrum	*	1.5		Forb (G)	0.1
Zantedeschia aethiopica	*DP	1.25		Forb (G)	12

Site ID:	V&VQ02	Site 2 (Lot 1, Preston River)
Type:	Quadrat	Size 10 x 10 m
Date:	10/11/21	Described by: Alex Sleep
Co-ordinates:		
Landform and slope:	Flat/floodplain	
Drainage:	Seasonally moist	
Aspect:	Flat	
Soil colour and type:	Dark brown-grey silty clay-loam	
Vegetation condition:	Completely Degraded	
Fire age and intensity:	Old	
Disturbances:	Partial clearing, including complete clearing of understorey, grazing, weed invasion, including declared pests.	

Species	Status	Height	Density	Form/stratum	Cover (%)
Agonis flexuosa		12	5	Tree, palm (U)	45
Corymbia calophylla		15	3	Tree, palm (U)	50
Ehrharta longiflora	*	0.5		Tussock grass (G)	5
Fumaria capreolata	*	0.5		Forb (G)	0.1
Hordeum leporinum	*	0.25		Tussock grass (G)	0.1
Oxalis pes-caprae	*	0.25		Forb (G)	30

Species	Status	Height	Density	Form/stratum	Cover (%)
Rumex crispus	*	0.5		Forb (G)	0.1
Zantedeschia aethiopica	*	0.75		Forb (G)	2

Site ID:	V&VQ03	Site 2 (Lot 1, Preston River)
Type:	Quadrat	Size 10 x 10 m
Date:	10/11/21	Described by: Alex Sleep
Co-ordinates:		
Landform and slope:	Flat/floodplain	
Drainage:	Moderately well drained	
Aspect:	Flat	
Soil colour and type:	Brown-grey silty sand	
Vegetation condition:	Degraded	
Fire age and intensity:	Old	
Disturbances:	Partial clearing, significant weed invasion (**Watsonia meriana*).	

Species	Status	Height	Density	Form/stratum	Cover (%)
Agonis flexuosa		12	10	Tree, palm (U)	40
Corymbia calophylla		12	2	Tree, palm (U)	15
Ehrharta longiflora	*	0.25		Tussock grass (G)	5
Eucalyptus rudis				Tree, palm (U)	OPP
Oxalis pes-caprae	*	0.25		Forb (G)	0.1
Pteridium esculentum		1.25		Fern (G)	5
Watsonia meriana	*	2		Forb (G)	40

ghd.com

→ The Power of Commitment

Government of Western Australia
Department of Water and Environmental Regulation

Bilateral Assessment
Clearing Permit Decision Report

This report has been prepared to fulfil the requirements of an accredited environmental assessment process between the Commonwealth and State governments, pursuant to a bilateral agreement established under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This report is set out in four parts:
- Part 1: Application and site details;
- Part 2: Assessment against matters of national environmental significance (pursuant to the EPBC Act);
- Part 3: Assessment against the clearing principles (pursuant to the *Environmental Protection Act 1986* (EP Act)); and
- Part 4: References and databases

Part 1: Application and site details

1. Application details and outcome

1.1. Permit application details

Permit number:	CPS 9219/1
EPBC number:	2021/8902
Permit type:	Area permit
Applicant name:	Rawling Road Pty Ltd (V& V Walsh)
Application received:	23 February 2021
Application area:	3.87 hectares (ha) of native vegetation
Purpose of clearing:	Construction of a cold storage and distribution centre
Method of clearing:	Mechanical clearing
Property:	Lot 1050 on Deposited Plan 33291, Davenport
Location (LGA area/s):	City of Bunbury
Localities (suburb/s):	Davenport

1.2. Description of clearing activities.

The vegetation applied to be cleared is contained within a single contiguous area and is part of a large corridor of remnant vegetation that is continuous with regional open space under the Greater Bunbury Regional Scheme (due to be included in the Kalgulup Regional Park) immediately south of the application area (see Figure 1, Section 2.2).

The applicant has avoided and minimised clearing for this project to enable a fauna corridor and good quality habitat for western ringtail possums to be retained.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	2 February 2022
Decision area:	3.87 hectares (ha) of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

In undertaking the assessment, the Delegated Officer had regard for:
- the 10 Clearing Principles set out in Schedule 5 of the EP Act
- the application area site information (see Section 2 of this report)
- flora, vegetation and targeted fauna surveys undertaken by GHD (2021a)
- actions taken by Rawling Road Pty Ltd (V & V Walsh) which resulted in the avoidance and minimisation of the extent of the clearing area and the mitigation of the impacts of clearing (see section 4 of this report)
- economic and social matters associated with the application (see section 5 of this report)
- the detailed description of the vegetation types within the application area (Appendix A)

- an analysis of flora, fauna and ecological communities recorded/mapped within the local area (a 10-kilometre radius measured from the perimeter of the application area) (GHD, 2021a)
- the location and extent of black cockatoo feeding, watering and roosting sites within, and adjacent to the application area (Appendix G)
- the extent of native vegetation within five and 12-kilometre buffers of the closest roosting site and 12-kilometre buffer of the closest known breeding site, taking into account marine environments
- relevant datasets available at the time of the assessment (Part 5)
- other matters considered relevant to the assessment (see section 5 and section 2 of this report)
- advice from DBCA (2021) on the offset alternatives identified by the applicant.

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Water and Environmental Regulation (DWER) on 23 February 2021. DWER advertised the application for public comment and no submissions were received.

After consideration of the above information, as well as the avoidance, minimisation and mitigation actions taken by the applicant, the Delegated Officer determined that the proposed clearing will result in the following significant residual impacts (SRI):

- the loss of 0.35 hectares of habitat for *Pseudocheirus occidentalis* (western ringtail possum)
- the loss of 0.47 hectares of foraging habitat for black cockatoos
- the loss of 38 potential habitat trees for black cockatoos
- the loss of 3.87 hectares of vegetation associated with, and supporting, a mapped South-West Regional Ecological Linkage

A preliminary assessment against the clearing principles, planning instruments and other matters has been undertaken in accordance with section 51O of the EP Act. The assessment identified that the proposed clearing is at variance with Principles (a), (b), (f) and (h), may be at variance with Principle (e) and is not likely to be at variance with the remaining Principles.

To address the above SRIs and applying the EPBC Offsets assessment guide (Commonwealth Offsets Calculator), the Delegated Officer determined that the following offset is required:

- covenanting of 3.29 hectares of Lot 1 on Plan 17617 which includes 2.48 hectares of existing black cockatoo and western ringtail possum habitat.

The Delegated Officer noted that Lot 1 contains good (Keighery, 1994) condition vegetation which provides foraging habitat for black cockatoos, 99 potential Black cockatoo habitat trees and habitat for western ringtail possums. The above offset strategy will therefore address:

- 208.94 per cent of SRIs of the proposed clearing on black cockatoo; and
- 235.57 per cent of SRIs of the proposed clearing on western ringtail possums.

Given this, the Delegated Officer has decided to grant a clearing permit subject to the following conditions:

- avoid, minimise to reduce the impact and extent of clearing
- weed and dieback management to minimise the risk of introduction and spread of weeds
- fauna management to provide fauna an opportunity to move to adjacent native vegetation ahead of the clearing activity
- black cockatoo management to ensure that the proposed clearing will not adversely impact this species
- riparian vegetation management to mitigate the potential impacts of the proposed clearing on native vegetation growing in association with a mapped wetland
- offset conditions relating to the inclusion of a portion of Lot 1 on Plan 17617 as a conservation covenant to offset the significant residual impacts of the proposed clearing on black cockatoo and western ringtail possum habitat.

2. Site Information

2.1. Site Characteristics

Site characteristic	Details
Local context	The area proposed to be cleared is part of a series on interconnected patches and corridors of native vegetation in the intensive land use zone of Western Australia. It is surrounded by urban development, roadways and adjacent to existing industrial operations. Spatial data indicates the local area (5-kilometre radius from the centre of the area proposed to be cleared) retains approximately 22.09 per cent of the pre-European native vegetation cover. The application area represents a connecting patch of vegetation in an east west linkage between the coast to the west and riverine environment to the east.
Vegetation description	A flora survey of Lot 1050 was undertaken in October 2020 and indicates that the vegetation within the proposed clearing area consists of four discrete vegetation types • *Corymbia calophylla* open forest • *Melaleuca rhaphiophylla* low woodland

Site characteristic	Details
	• *Eucalyptus rudis* tall woodland • Grassland of introduced species with clumps of *Juncus pallidus* sedges and scattered *Eucalyptus rudis* or *Melaleuca rhaphiophylla* trees. The full survey descriptions and maps are available in Appendix A. This is consistent with the mapped vegetation type swan coastal plain Southern River complex (Heddle *et al*., 1980), which is described as open woodland of *Corymbia calophylla* (Marri) – *Eucalyptus marginata* (Jarrah) – Banksia species on elevated areas and a fringing woodland of *Eucalyptus rudis* (Flooded Gum) – *Melaleuca rhaphiophylla* (Swamp Paperbark) along streams. South of the Murray River *Agonis flexuosa* (Peppermint) occurs in association with the Flooded Gum and Swamp Paperbark (Webb *et al*., 2016). The mapped vegetation type retains approximately 18.43 per cent of the original extent (Government of Western Australia, 2019).
Vegetation condition	A flora survey (GHD, 2021a) of the vegetation within Lot 1050 indicates the vegetation within the proposed clearing area is in good to completely degraded (Keighery, 1994) condition (Figure 1). The applicant has reduced the proposed clearing area as a result of the flora survey in order to avoid all good quality vegetation and retain a 45 metre corridor for faunal movement. The avoidance footprint is 1.83 ha in size (GHD, 2021a). Refer to Appendix D for definitions of vegetation condition.

VEGETATION CONDITION	EXTENT IN SURVEY AREA (HA)	EXTENT IN SURVEY AREA (%)
Good	0.13	2.55
Degraded	3.78	71.31
Completely Degraded	1.38	26.15
Total	**5.28**	**100**

Figure 1: Extent of vegetation conditions within the survey area (extracted from GHD, 2021a)

Soil description	The soil is mapped as two different zones: • Pinjarra Zone: Alluvial deposits (early Pleistocene to Recent) between the Bassendean Dunes Zone and the Darling Scarp, colluvial and shelf deposits adjacent to the Darling Scarp. Clayey to sandy alluvial soils with wet areas. • Bassendean Zone: Mid Pleistocene Bassendean sand. Fixed dunes inland from coastal dune zone. Non-calcareous sands, podsolised soils with low-lying wet areas.

2.2. Site Map

Figure 2: Application area hatched blue.

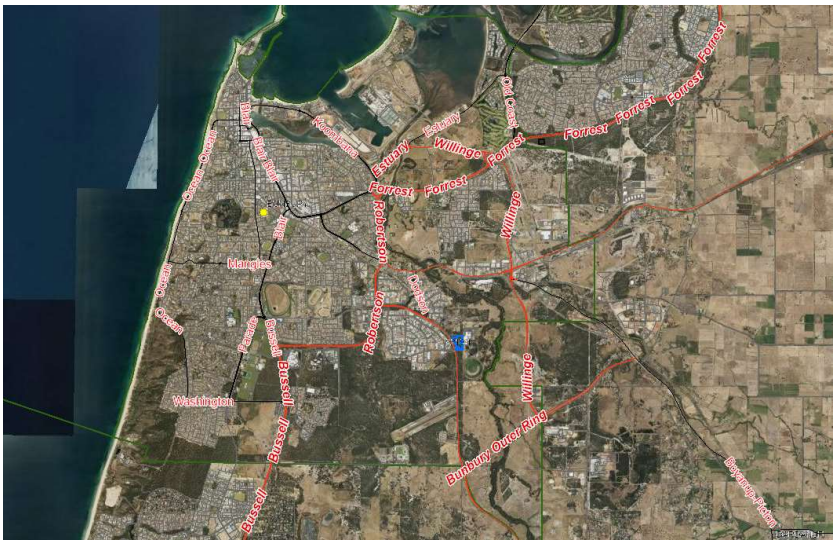


Figure 3: Context map showing the application hatched blue.

Part 2: Assessment against matters of national environmental significance

1. Description of controlling provision(s)

The proposed action to construct a cold storage and distribution centre was determined by the Department of Agriculture, Water and the Environment (DAWE) to be a controlled action on 16 April 2021.

Based on the information in the referral, the proposed action will have a significant impact on the following species and ecological communities listed under the EPBC Act:

- Western ringtail possum (*Pseudocheirus occidentalis*) (Critically Endangered)
- Carnaby's cockatoo (*Calyptorhynchus latirostris*) (Endangered)
- Baudin's cockatoo (*Calyptorhynchus baudinii*) (Endangered)
- Forest red-tailed black cockatoo (*Calyptorhynchus banksia naso*)

Western ringtail possum

*Information excerpt from Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan (DPaW, 2017)

> *Pseudocheirus occidentalis* (Western Ringtail Possum (WRP)) are a small to medium sized leaf-eating arboreal marsupial endemic to the southwest of Western Australia. Adults weigh approximately 700g to 1.3kg, have a head/body length of 30-40cm and a tail as long as its body. Its tail is strongly prehensile which is used to support the possum while foraging in the tree canopy. They spend most of their time in trees (arboreal), particularly in the canopy of peppermint (*Agonis flexuosa*) woodland and eucalypt forests. They feed on leaves and like to forage for food at night (nocturnal). They build nests or resting places called 'dreys' from the foliage and also use tree hollows (DPaW, 2015).
>
> Habitat requirements are not well understood, however, the commonalities in habitat include high nutrient foliage availability for food, suitable structures for protection/nesting, and canopy continuity to avoid/escape predation and other threats. Species persistence is dependent on linkages between suitable habitat patches. Vegetation communities critical to the species include long unburnt mature remnants of peppermint (*Agonis flexuosa*) woodlands with high canopy continuity and high foliage nutrients (high in nitrogen and low toxin levels); jarrah (*Eucalyptus marginata*)/marri (*Corymbia calophylla*) forests and woodlands with limited anthropogenic disturbance (unlogged or lightly logged, and a low intensity and low frequency fire history), that are intensively fox-baited and have low indices of fragmentation; coastal heath, jarrah/marri woodland and forest, peppermint woodlands, myrtaceous heaths and shrublands, Bullich (*Eucalyptus megacarpa*) dominated riparian zones and karri forest. (DPaW, 2017)
>
> There is an unknown number of western ringtail possums in the southern forests, however, it is thought to have been the largest population prior to 2002. A severe decline in the number of western ringtail possums of >95% (probably >99%) between 1998 and 2009 occurred with subsequent surveys presence in extremely reduced numbers in 2013 (DPaW, 2017). Survey data suggests the population in the Bunbury to Dunsborough region is possibly between 2,000 and 5,000 animals.

Carnaby's black cockatoo

Carnaby's cockatoo is endemic to the southwest of Western Australia. Breeding takes place between late July and December and occurs mostly in the inland wheatbelt region of its distribution, in areas receiving between 300 and 750 millimetres of annual average rainfall (Saunders, 1974). During the non-breeding season (January to July), the majority of the birds move to the higher rainfall coastal regions of their range including the midwest coast, Swan Coastal Plain and south coast (Saunders, 1980; Saunders, 1990; Berry, 2008; Johnstone *et al*., 2011). There has been an apparent expansion in the breeding range to include areas further west and south since the middle of last century with a more rapid increase into the jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) forests of the southwest (Johnstone and Storr, 1998; Johnstone *et al*., 2011). This expansion in breeding range is due to threatening processes such as clearing of breeding habitat and competition for suitable breeding hollows.

Carnaby's cockatoo preferred habitat is remnant native eucalypt woodlands, especially those of salmon gum (*Eucalyptus salmonophloia*) and wandoo (*Eucalyptus wandoo*), and in shrubland or kwongkan heathland dominated by plants of the Proteaceae family. It also occurs in forests containing marri, jarrah, karri (*Eucalyptus diversicolor*) and tuart (*Eucalyptus gomphocephala*) (DPaW, 2013).

Carnaby's cockatoo forages on the seeds, flowers and nectar of native proteaceous plant species (e.g. *Banksia*, *Hakea* and *Grevillea* species), eucalypts and *Callistemon* species. The species also forages on seeds of introduced species (e.g. *Pinus* and *Erodium* species, canola and almonds), insects and insect larvae. Carnaby's cockatoo generally forages within six kilometres of a night roost site and, while nesting, within a 12 kilometres radius of their nest site (Commonwealth of Australia, 2012).

Carnaby's cockatoo nests in large hollows in tall, living or dead eucalypts. It nests most commonly in smooth-barked wandoo and salmon gum but has also been recorded breeding in red morrel (*Eucalyptus longicornis*), York gum (*Eucalyptus loxophleba*), tuart, flooded gum (*Eucalyptus rudis*), swamp yate (*Eucalyptus occidentalis*), gimlet (*Eucalyptus salubris*) and marri, and are said to nest in any species of eucalypt with a suitable hollow (DPaW, 2013).

Currently, the overall population trend for Carnaby's cockatoo is one of decline due to the loss and fragmentation of habitat as a result of clearing of native vegetation (Saunders, 1990; Johnstone and Storr, 1998; Saunders and Ingram, 1998; Garnett *et al*., 2011).

The Carnaby's cockatoo recovery plan summarises habitat critical to the survival of Carnaby's cockatoos as:

- the eucalypt woodlands that provide nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding;
- woodland sites known to have supported breeding in the past and which could be used in the future, provided adequate nearby food and/or water resources are available or are re-established; and
- in the non-breeding season, the vegetation that provides food resources as well as the sites for nearby watering and night roosting that enable the cockatoos to effectively utilise the available food resources.
  (DPaW, 2013)

The recovery plan also states that success in breeding is dependent on the quality and proximity of feeding habitat within 12 kilometres of nesting sites. Along with the trees that provide nest hollows, the protection, management and increase of this feeding habitat that supports the breeding of Carnaby's cockatoo is a critical requirement for the conservation of the species (DPaW, 2013).

Baudin's black cockatoo

*Information excerpt from forest black cockatoo (Baudin's cockatoo *Calyptorhynchus baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan (DPaW, 2008)

> Baudin's cockatoo is one of two species of white-tailed black cockatoo endemic to south-west Western Australia with the other being the Carnaby's cockatoo described above. Baudin's Cockatoo is a large, mostly dull black cockatoo 52–57 cm in length, 110 cm in wingspan and 660 g in weight (Higgins, 1999). Males and females have a large bill, a rounded white patch on the ear covers and rectangular white panels in the tail (Higgins, 1999).
>
> Baudin's cockatoo is endemic to a 2,000 km^2 area (Garnett and Crowley, 2000) of the humid and sub-humid zones of south-west Western Australia (Johnstone and Storr, 1998). The distribution of Baudin's cockatoo is generally contained within the 750 mm isohyet of average annual rainfall (Saunders, 1979). Flocks of Baudin's cockatoo visit the central and northern Darling Range and the eastern margin of the Swan Coastal Plain in March and September (Johnstone and Storr, 1998). The cockatoos move north through the Perth region from March to May and south through the Perth region from August to October (Serventy, 1937; Sedgwick, 1940; Serventy, 1948; Heron, 1970; Saunders, 1979).
>
> Baudin's cockatoo mainly feeds on the seeds of Marri (*Corymbia calophylla)*, in the forested regions of south-west Western Australia (Ashby and Le Souef 1928; Saunders 1974a, 1974b). In addition to Marri, Baudin's Cockatoo feeds on the seeds of *Banksia grandis*, *B. littoralis, B. ilicifolia, Hakea undulata, H. prostrata, H. trifurcata*, *Erodium botrys* (Saunders 1979; Johnstone and Storr 1998), Jarrah (*E. marginata)* (Saunders 1974a) and *Banksia* spp. (Sedgwick 1964). It also feeds on invertebrate larvae (Saunders 1979a). The cockatoos harvest larvae from galls (Robinson 1965), strip dead bark from trees in search of beetle larvae (Saunders 1974a; Johnstone and Storr 1998). Unlike Carnaby's Cockatoo (Saunders 1974b), Baudin's cockatoo is not known to feed on the commercial plantations of *Pinus* spp. that are present in its range (Saunders 1974a; Cooper 2000). Baudin's cockatoo, however, does feed on apple and pear seeds in domestic and commercial orchards (Robinson 1960; Long 1985; Halse 1986).
>
> Baudin's cockatoo nests in mature trees such as Marri (*Corymbia calophylla)*, Karri (*Eucalyptus diversicolor)*, Jarrah (*E. marginata)* and Wandoo (*E. wandoo)* (Saunders 1974a) in the lower south-west of Western Australia (Johnstone and Storr 1998). The northern-most breeding record for Baudin's Cockatoo is for Lowden, near Donnybrook (Johnstone and Storr 1998). The cockatoos nest in large tree hollows, 30–40 cm in diameter and more than 30 cm deep (Saunders 1974a).

Forest red-tailed black cockatoo

*Information excerpt from forest black cockatoo (Baudin's cockatoo *Calyptorhynchus baudinii* and forest red-tailed black cockatoo *Calyptorhynchus banksii naso*) Recovery Plan (DPaW, 2008)

> The forest ted-tailed black cockatoo (*Calyptorhynchus banksii naso)* is a sub species of red-tailed black cockatoo endemic to the south-west of Western Australia. Forest red-tailed black cockatoo are 55–60 cm in length, 570–870 g in weight (Higgins 1999) and the female is distinguished by yellow or whitish spots on the feathers of the head and upper wing covers (Johnstone and Storr 1998). In females, the tail feathers are bright red and orange, grading to yellow on the inner margins, and the tail feathers have variable black horizontal barring (Johnstone and Storr 1998).
>
> Forest red-tailed black cockatoo inhabit the dense Jarrah (*Eucalyptus marginata)*, Karri (*E. diversicolor)* and Marri (*Corymbia calophylla)* forests receiving more than 600 mm of annual average rainfall (Saunders *et al.,* 1985; Saunders and Ingram, 1995). Forest red-tailed black cockatoo roosts in Jarrah-Marri-Blackbutt habitat on road-sides, paddocks or forest blocks (Johnstone and Kirkby 1999). Flocks leave the roost at sunrise and feed in small family groups of up to 10 birds, usually within one to 4km of the roost (Johnstone and Kirkby 1999).
>
> Forest red-tailed black cockatoo feed on the seeds of other species, however, around 90 per cent of its diet is made up of the seeds from Marri (*Corymbia calophylla)* and Jarrah (*Eucalyptus marginata)* (Johnstone and Kirkby, 1999) fruits. The other species used for feeding include Blackbutt (*E. patens)*, Albany Blackbutt (*E. staeri)*, Forest Sheoak (*Allocasuarina fraseriana)*, Snottygobble (*Persoonia longifolia)* and the non-indigenous native Spotted Gum (*E. maculata)* and Cape Lilac (*Melia azedarach)* (Johnstone and Storr 1998; Johnstone and Kirkby 1999). In most years, only about 20–50 per cent of Marri trees produce a large crop of fruits and a small proportion of the trees produce only male flowers, which do not fruit (Mawson 1995). The other important source of food for forest red-tailed black cockatoos, Jarrah, may only flower every four to six years (Abbott *et al.* 1989). Buds are produced in December and January and flowering takes place between September and December (Abbott *et al.* 1989). The fruits develop in the following September and the seeds are shed from the fruits from December to March (Abbott *et al.* 1989). The cycle of flowering in Jarrah therefore takes 24–27 months from budding to seed shed (Abbott *et al.* 1989). Johnstone and Kirkby (1999) concluded that while the food supply was probably adequate, the profitability of Marri (*Corymbia calophylla)* and Jarrah

(*Eucalyptus marginata)* fruits, or the volume of fruit produced by trees traditionally used for feeding, may limit the number of birds that can breed. In addition, Forest Red-tailed Black Cockatoos may only breed in the north and east of their range on the margins of the forest (Higgins, 1999).

2. Summary of impacts

Western ringtail possum

The assessment of the potential impacts of the proposed clearing on Western ringtail possums identified that the clearing:

- will impact on 0.35 hectares of western ringtail possum habitat.

A survey identified two dreys and one individual western ringtail possum within the same Lot as the application area, indicating use of the habitat within the application area. The clearing permit application was designed to avoid these areas of critical western ringtail possum habitat.

Advice provided by the Department of Biodiversity, Conservation and Attractions (DBCA) noted that:

> "*There are known WRP populations to the west (in Kalgulup Regional Park) and east (in Lot 2 Regional Open Space) of this property, and the Preston River corridor provides habitat suitable for WRP. The importance of the habitat in the local area is exemplified by the fact that Lot 104 Willinge Drive (ie: 800m south east) is an MRWA offset site for the creation of WRP and Cockatoo habitat.*
>
> *The above known populations, and the application area, all occur in "Class C" WRP habitat suitability1, which demonstrates the value of "Class C" WRP habitat within the application area. Additionally, the proximity of "Class B" habitat in the adjoining Preston River corridor further enhances the value of retaining habitat on the Lot 1050 application area and adjoining Lot 5.*
>
> *A density of 2 – 5 WRP per ha is expected within "Class C" habitat. Therefore, removal of 3.87 ha will directly impact on ~20 WRP. Given the site location, relocation through displacement is not recommended due to existing infrastructure/development to the east and the west of the site and reduced connectivity through proposed clearing. A lawful authority will be required for take and disturbance for a minimum of 20 WRP*." (DBCA, 2021).

Black cockatoo's (Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo)

The assessment of the potential impacts of the proposed clearing on black cockatoo's identified that the clearing:

- will impact on 0.46 hectares of black cockatoo habitat for *Calyptorhynchus latirostris* (Carnaby's Cockatoo) (Endangered), *Calyptorhynchus baudinii* (Baudin's Cockatoo) (Endangered), and *Calyptorhynchus banksii naso* (Forest Red-tailed Black Cockatoo) (Vulnerable).

The application area is located within the modelled distribution of three species of conservation significant black cockatoo. The application area is located within the known feeding and breeding range of Carnaby's cockatoo and feeding range and predicted breeding range of the Baudin's cockatoo and the forest red-tailed black Cockatoo (Commonwealth of Australia, 2012). The application area includes 0.46 hectares of high value black cockatoo foraging habitat and 38 potential breeding habitat trees (none of which contain suitable hollows for nesting).

Advice from the DBCA notes that:

> "*Six white-tailed black cockatoo roost sites are recorded within five kilometres of the proposed site; recorded as part of the Great Cocky Count (Birdlife Australia); numerous roosts occur beyond the 5km distance.*
>
> *The table below identifies the distance of these sites to the proposed area and the number of birds recorded during the Great Cocky Count between 2012-2018.*
>
> *Black cockatoos are known to opportunistically forage on a variety of plant species. Forest red-tailed black cockatoos usually forage within a 1 - 4 km radius of their roost site or nesting hollow. Carnaby's cockatoo are known to forage within a 6 to 12 km radius of their roost of nesting tree, and possibly greater distances. Similarly, the foraging distance for Baudin's cockatoos, although not fully investigated, is expected to be between 1 to 12 km from their roost or nest site. Given the level of development and agriculture in the surrounding area, the remaining habitat is significantly important.*
>
> *During the fauna survey 47, potential breeding habitat trees were identified within the survey area, of which none currently contain suitable hollows for breeding. Lack of available suitable hollows is a key threat to black cockatoos and the long-term survival of the three threatened species (respective Recovery Plans). It is not possible to say which trees may produce hollows in the future. Where possible, large eucalypt trees should be retained within the known breeding range of the species. Younger smaller trees should also be retained to ensure succession of nesting trees, as potential future nesting trees.*
>
> *Black cockatoo habitat, for all three species, will be impacted by this proposal. Cumulative impact of loss of habitat is reducing the amount of habitat and so reducing the number of birds that can be supported in the region. In the respective black cockatoo recovery plans they note that reversal of threats (including loss of habitat) is required before significant increases in the cockatoo populations can occur. The Recovery Plans identify the need to protect and manage as much habitat as possible to minimise the impacts of habitat loss. Therefore, all remaining resources are significantly important to black cockatoos."* (DBCA, 2021)

3. Public consultation

The applicant has advised that stakeholder consultation has been undertaken with the following:

- City of Bunbury
- Department of Water and Environmental Regulation
- Department of Planning Lands and Heritage (DPLH)
- Main Roads WA
- South West Development Commission
- Department of Primary Industries and Regional Development (DPIRD)

The proposed action was advertised on the DWER website on 4 June 2021 with a 21 day submission period. No public submissions were received in relation to this application.

4. Avoidance, mitigation and offsets

The applicant has advised that the following measures have been considered to avoid and mitigate the impact of the proposed clearing (Rawling Road, 2021).

Avoidance

A retained vegetation buffer (the avoidance footprint) is proposed (1.82 hectares in size). This buffer will comprise the portion of the project area zoned environmental conservation reserve and areas of high value fauna habitat. The buffer has been designed to avoid clearing of the key habitat for western ringtail possum where dreys and an individual were observed as well as potential black cockatoo nesting habitat and a section of high value foraging habitat for black cockatoos.

The corridor will maintain a connectivity of habitat for a range of species, linking vegetation to the north and south of the project area by a corridor approximately 45 metres width and 270 metres in length. Following avoidance measures, clearing of western ringtail possum habitat was reduced from 0.75 hectares to 0.35 hectares. The vegetation within which dreys were recorded has been avoided through project design.

High value black cockatoo foraging habitat clearing was reduced from 0.62 hectares to clearing of up to 0.46 hectares. Clearing of potential habitat trees was reduced from 63 trees to 47 trees, none of which contain suitable hollows for nesting. The inclusion of a 45 metre corridor further reduced the number of habitat trees to 38.

Mitigation

A range of mitigation measures are proposed. Consultation was undertaken with local Western Ringtail Possum expert Barbara Jones regarding construction of connective structures for western ringtail possum. Proposed measures are:

- *Construction of a western ringtail possum **connective structure** linking the southern end of the retained vegetation buffer with the larger section of habitat to the south of the project area. The Peppermint woodland habitat located to the south is considered to represent suitable habitat for the species, and the area is reserved as regional open space managed by the City of Bunbury.*

The connective structure may be constructed utilising existing trees linked by large diameter rope, a rope bridge using a pine pole structure, sections of piled removed trees, revegetation planting or a combination of these elements. Construction method will be confirmed following development of detailed proposal design and assessment of existing tree suitability to support a connective structure. The termination of this connective structure will be located within land managed by the City. As such, consultation with and approval from the City will be required for the final design.

- ***Revegetation** work in the retained vegetation buffer to improve habitat quality for western ringtail possum and black cockatoos through the planting of additional Peppermint and Marri trees adjacent to existing habitat. An area of 0.10 ha of currently cleared land is available adjacent to the area of habitat where dreys were observed. The retained vegetation buffer will be located within land managed by the City. As such, consultation with and approval from the City will be required.*

- *Utilise staged **directional clearing** in an east to west direction, to direct displaced fauna towards the retained vegetation buffer. The fauna may then disperse north and south to surrounding vegetation which is protected as regional open space.*

- *Undertake **pre-clearing inspections** of habitat for western ringtail possum in the disturbance footprint to check for the presence of newly constructed dreys prior to clearing. At the time of the biological surveys no dreys were recorded within the disturbance footprint. If new dreys are identified directional clearing will be undertaken up to drey and paused for one night to allow the possum to self-relocate away from the disturbance before recommencing clearing works.*

- *Construction and clearing impacts mitigated through the preparation of a **Construction Environment Management Plan** (CEMP). The CEMP will describe in detail the directional clearing plan, clearing staging and controls, fauna spotting and relocation procedures.*

- *Allow for **fauna spotters** to be present during clearing works in western ringtail possum habitat. If western ringtail possum is observed in the disturbance footprint during clearing works, clearing will pause and the tree or trees containing the animal will be left for one night to allow the possum to self-relocate. An inspection will be undertaken by the fauna spotter the following day. If the tree continues to be occupied after 48 hours, the animal will be coerced / moved to a safe area outside of the clearing footprint by the appointed zoologist / fauna spotter. Any trees containing dreys will be thoroughly inspected once felled, with the drey destroyed to prevent possible re occupation. Vegetation adjacent to the disturbance footprint appears to be suitable habitat for western ringtail possum to self-relocate into.*

- *Any western ringtail possums showing signs of injury or illness will be caught, bagged and taken to an experienced wildlife veterinarian or approved wildlife rehabilitation facility. Liaison will be undertaken with Department of Biodiversity Conservation and Attractions (DBCA).*

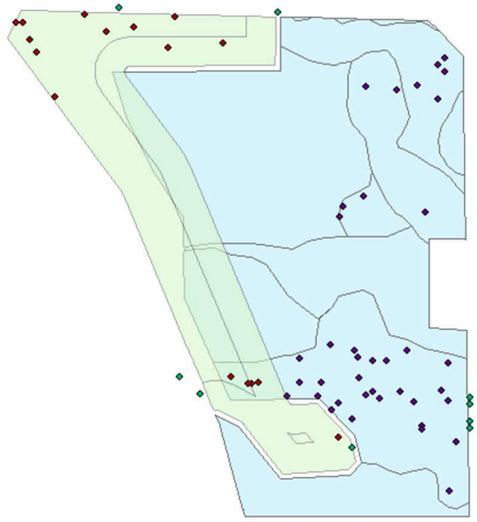


Figure 4: Potential habitat trees outside (green) and inside (purple) the application area and those avoided (red/pink) within the mitigation area.

Offsets

After consideration of the above avoidance, minimisation and mitigation actions taken by the applicant, the Delegated Officer determined that the proposed clearing will result in the following significant residual impacts:

- Loss of 0.35 hectares of western ringtail possum habitat; and

- Loss of 0.46 hectares of black cockatoo habitat.

To address the above impacts and applying the EPBC Offsets assessment guide (Commonwealth Offsets Calculator), the Delegated Officer determined that the following offset is appropriate:

- Mitigation within Lot 1050 (Area 1) – 1.83 hectares. Of this, there is 0.15 hectares of existing Black Cockatoo and 0.4 hectares of Western Ringtail Possum habitat. V & V Walsh propose to revegetate 1.3 hectares with suitable habitat for Black Cockatoo and Western Ringtail Possum. Note, revegetation efforts will overlap with the existing habitat to improve habitat quality (mid and understory).

- Offset site (Area 2) within Lot 1 on Plan 17617 – 3.29 hectares. Of this, there is 2.48 hectares of existing Black Cockatoo and Western Ringtail Possum habitat (including 99 potential black cockatoo habitat trees) and revegetation of approximately 3.2 hectares is proposed.

The calculations determined that the mitigation and offset of Lot 1050 (1.83 hectares) and Lot 1 (3.2 hectares) respectively, is sufficient to adequately address significant residual impacts of the clearing. Further information relating to the mitigation and offset actions are included under Part 4 and Appendix E and F.

Figure 5: Locations of the mitigation (Area 1) offset sites (Area 2)

5. Other relevant considerations

Economic and Social Factors

Established company asset:
V & V Walsh (Walsh) is Western Australia's leading producer of lamb and beef with around 1,000 staff and the capacity to process 5,000 sheep and 400 cattle per day from its abattoir facility located at Rawlings Road, Davenport, Bunbury. Under the brand Amelia Park, Walsh is a major supplier to the domestic market as well supplying chilled, vacuum packed beef, lamb and mutton products to China. The company was the first in the world to be granted a license to export chilled lamb and beef to China and is the only Australian company holding such license.

The abattoir occupies a site comprising Lot 1 and Lot 5, Rawling Road Davenport in the City of Bunbury situated between the South Western Highway and the Preston River. Rawling Road provides the single road access to the site.

The existing processing facility, transport facilities, administration and staff car parking occupy the north-western part of the site, with wastewater treatment and a turf farm occupying the central and southern portions. The northern building in the processing facility complex has a long-term lease to Woolworths and is operated by Hilton Foods under contract. The building has a cold store specific to Woolworth's purposes.

Walsh export product is currently chilled and packaged off-site at freeze and cold store facilities operated by third parties. The Chinese export licence is specific to Lot 5 and in anticipation of the requirement for chilled meat exported to China to be frozen onsite and to allow for expansion of production, Walsh propose to construct a major new cold store facility.

Proposed development and expansion:
Walsh propose to develop a $25-$30 million purpose-built plate freezing cold store and distribution centre adjacent to their existing facility. The proposed development will include a second access road and heavy vehicle movement areas.

The cold store itself will offer services including plate freezing, order picking, boxing, repacking, backing, labelling, loading/unloading of 20' and 40' containers, import and export inspections, forwarding services, order fulfilment, palletisation and shrink wrapping and inventory management. The proposed site is portion of Lot 1050 immediately west of the existing abattoir (Lot 5) bounded by the South Western Highway to the west and Rawling Road to the north and extending south to the intersection of Halifax Drive and the South Western Highway.

Social and economic benefits
During the construction period, up to 100 construction workers varying over a nine-month construction period will be needed with an additional 30 mechanical, electrical engineering, and trades jobs during a four-month period on-site during equipment installation and commissioning.

Further indirect jobs will include professionals (project management, designers and engineers, estimators etc) and materials suppliers. A multiplier of 1.2 may be considered and result in 156 jobs over an 18-month period. It is expected that 36 jobs will be created by the supply chain.

(Rawlings Road, 2021)

Applicant's Environmental History

V & V Walsh Abattoirs currently hold one clearing permit (CPS 8310/1) 150m east of the current application area. V & V Walsh Pty Ltd have also previously held two clearing permits; CPS 6251/1 (adjacent to current application area) and CPS 3199/1, both now expired.

The Department has not recorded any compliance issues relating to these clearing permits to Rawlings Road Pty Ltd, V & V Walsh Pty Ltd or V & V Walsh Abattoirs.

Part 3: Assessment against the clearing principles

1. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biodiversity.

Proposed clearing is at variance to this Principle

The native vegetation within the application area includes 0.35 hectares of western ringtail possum habitat, 0.47 hectares of black cockatoo habitat and 38 potential habitat trees. The vegetation within the application area is degraded to completely degraded underrepresented vegetation association Southern River Complex and is mapped as part of a significant ecological linkage.

Evidence

- Four vegetation types were described and mapped within the survey area, excluding previously cleared areas. The vegetation types include *Corymbia calophylla* open forest, *Melaleuca rhaphiophylla* low woodland, *Eucalyptus rudis* tall woodland and an area of grassland of introduced species with clumps of *Juncus pallidus* sedges and scattered *Eucalyptus rudis* or *Melaleuca rhaphiophylla* trees.
- The vegetation in the survey area ranged from degraded to completely degraded (Keighery, 1994) condition. Historical clearing, firebreaks, tracks, aggressive weed species and edge effects have influenced the structure and composition of the remaining native vegetation.
- 67 flora taxa (including subspecies and varieties) representing 27 families were recorded from the survey area during the field survey. This total comprised 33 native taxa and 34 introduced flora taxa.
- No EPBC Act or BC Act listed flora were recorded from the survey area. One DBCA Priority 4 listed flora species *Eucalyptus rudis* subsp. *cratyantha* was recorded within the survey area*. Based on previous records, habitat requirements, efficacy of the survey, intensity of the survey, flowering times and condition of the site, all other conservation significant flora identified within the desktop searches are considered highly unlikely/unlikely to occur within the survey area.
- 34 introduced flora species were recorded in the survey area. One of these, **Asparagus asparagoides* (Bridal Creeper), is listed as a Declared Pest under the *Biosecurity and Management Act 2007* (BAM Act) and as a Weed

of National Significance (WONS). Two species are listed as Declared Pest Plant, **Zantedeschia aethiopica* (Arum lily) and **Opuntia* sp. (Prickly Pear species).

- Five fauna habitat types are mapped in the survey area based on the predominant landforms, soil and vegetation structure in the area. These include flooded gum woodland, marri and melaleuca woodland, melaleuca woodland, peppermint woodland and completely degraded grassland.
- The field survey recorded a total of 23 fauna species, consisting of 14 bird, five mammal, three reptile and one amphibian species within the survey area. Of these, 20 are native and three are introduced.
- Suitable habitat for western ringtail possum (*Pseudocheirus occidentalis*) (Critically Endangered) was identified within the survey area. Two dreys in close proximity and one western ringtail possum were observed. The habitat type peppermint woodland is considered to be preferred habitat for the western ringtail possum.
- Of the 33 conservation significant fauna (threatened and priority listed species) identified in the desktop searches, one species was present, Western Ringtail Possum, while nine are considered likely to occur.
- A total of 38 potential Black Cockatoo breeding habitat trees with a diameter at breast height greater than 500 mm were recorded within the application area. None were identified as having hollows suitable for Black Cockatoo breeding.
- The application area is mapped as 1A under the South West Regional Ecological Linkage project and is a significant part of the Preston River to Ocean Regional Park Establishment Plan (DBCA, 2021).

(GHD, 2021a)

*One species taxonomically consistent with the description for DBCA Priority 4 listed flora species *Eucalyptus rudis* subsp. *cratyantha* was recorded within the survey area. This species was characteristic of vegetation unit C. The species *Eucalyptus rudis* subsp. *cratyantha* is a rough barked box type tree growing to 20 metres. The species grows in winter-wet areas and is locally abundant. Recent taxonomic re-assessment of the species indicates that plants in the Bunbury region are an intergrade between *Eucalyptus rudis* subsp. *cratyantha* and the common species *Eucalyptus rudis* subsp. *rudis*, with subsp. *cratyantha* confined to a near coastal distribution in the Cape Naturaliste area. As a result, it is likely that the species collected from the survey area does not represent the priority 4 listed flora species *Eucalyptus rudis* subsp. *cratyantha*, however this cannot be resolved at this time. As such the species recorded from the survey area has been reported as *Eucalyptus rudis* subsp. *cratyantha* (GHD, 2021a).

Assessment

The vegetation within the application area is mapped in degraded to completely degraded (Keighery, 1994) condition, however, retains significant environmental values and ecological functions.

Clearing of the proposed native vegetation will sever the east-west ecological linkage between the coast and the riverine environment to the west (see figure 6 below). Figure 6 below shows the preferred fauna pathway (blue dash line) between coast to riverine environments. The purple dashed line indicates the previous preferred fauna pathway which has been degraded by infrastructure and services (i.e. power lines and access roads) and the yellow line shows the only other viable alternative fauna pathway which is reliant on an area of native vegetation that has been approved to clear in association with the Bunbury Outer Ring Road. The red and purple cross-hatched areas indicate vegetation that is associated with clearing permit conditions and offset sites and the yellow cross-hatched areas are approved clearing permits.

The purpose of this map is to demonstrate the significance of the patch of vegetation, despite its degraded to completely degraded (Keighery, 1994) condition. Assessment of the value of the patch as an ecological linkage is included under Principle (b).

Figure 6: Map of local area from coast to riverine environments.

The vegetation within the application area supports the biological diversity of the local and regional area through fauna dispersal. Fragmentation of this ecological linkage will negatively impact the biological diversity of flora (in terms of dispersal opportunities)

and fauna and therefore the vegetation within the application area contains high level of biodiversity (most commonly as a transitional habitat).

Advice from DBCA notes that:

> "*The combination of the Kalgulup Regional Park, Regional Open Space (ROS) adjacent to the Lot, Preston River corridor and active habitat creation offsets in the local vicinity are all components of maintaining and restoring the ecological functionality of the "Ocean to Preston" corridor (Preston River to Ocean Regional Park establishment plan - www.wa.gov.au) and linkages to significant ROS habitat to the east. A loss of habitat on Lot 1050 contributes to a loss of functionality and integrity of the ecological corridor, with particular reference to WRP*." (DBCA, 2021).

Summary

The vegetation within the application area is in degraded to completely degraded (Keighery, 1994) condition, however, it retains significant ecological function and environmental value. Based on the evidence and assessment above, the proposed clearing is at variance to this principle.

The applicant has demonstrated avoidance and mitigation measures, however, significant residual impacts remain as a result of the proposed clearing. Significant residual impacts must be offset in accordance with the Commonwealth offsets calculator for matters of national environmental significance.

The applicant has proposed to retain a corridor of vegetation 45 metres in width on the western edge of the property to mitigate environmental impacts to the ecological corridor.

DBCA advice on the suitability of the corridor width is that;

> "*In higher quality ("Class B") WRP habitat in the Busselton area, WRP populations are able to survive and persist in urban POS reserves that are 40m in width. Given that the habitat on Lot 1050 is a lower quality and the proposed retention corridor is only 30m, it is unlikely to be capable of sustaining ongoing WRP occupancy.*
> *The placement of the corridor on the boundary of the Lot and the long-term retention of vegetation will be in conflict with the requirements for perimeter firebreaks and low fuel buffers around the development.*
>
> *There is no published evidence in relation to required width. However, there are unpublished reports (Shedley and Williams 2014) that support the need for good quality, dense vegetation to provide physical protection and refuge from predators. There is also a strong correlation between the level of canopy connectivity (number of canopy connections per tree) and abundance of WRP (Jones et. al. 1994)."* (DBCA, 2021)

Noting this advice, the applicant increased the corridor width to 45 metres.

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.

Proposed clearing is at variance to this Principle

The native vegetation within the application area includes 0.35 hectares of suitable habitat for western ringtail possums, 0.46 hectares of suitable habitat for black cockatoos, 38 potential habitat trees for black cockatoos and is a significant part of a mapped regional ecological linkage. Based on the information above, the native vegetation within the application area is part of, and possibly necessary for the maintenance of significant habitat for conservation significant fauna. The proposed clearing is at variance to this principle.

Evidence

- Five fauna habitat types are mapped in the survey area based on the predominant landforms, soil and vegetation structure in the area. These include flooded gum woodland, marri and melaleuca woodland, melaleuca woodland, peppermint woodland and completely degraded grassland.
- The field survey recorded a total of 23 fauna species, consisting of 14 bird, five mammal, three reptile and one amphibian species within the survey area. Of these, 20 are native and three are introduced.
- Suitable habitat for western ringtail possum (*Pseudocheirus occidentalis*) (Critically Endangered) was identified within the survey area. Two dreys in close proximity and one western ringtail possum were observed. The habitat type peppermint woodland is considered to be preferred habitat for the western ringtail possum. A survey identified 0.35 hectares of suitable western ringtail possum habitat within the application area. The applicant has avoided and minimised impacts of clearing to critical habitat for western ringtail possum identified in the survey.
- Of the 33 conservation significant fauna (threatened and priority listed species) identified in the desktop searches, one species was present (Western Ringtail Possum), with a further nine species considered likely to occur.
- A total of 38 potential Black cockatoo breeding habitat trees with a diameter at breast height greater than 500 mm were recorded within the application area. None were identified as having hollows suitable for Black Cockatoo breeding.
- The application area is significant as an ecological linkage in the local and regional area and is mapped as a 1A patch under the South West Regional Ecological Linkage project.

Ecological Linkage - Evidence

The area proposed to be cleared is part of a series on interconnected patches and corridors of native vegetation in the intensive land use zone of Western Australia and is mapped as part of a regional ecological linkage (Molloy et al., 2009). It is surrounded by urban development and adjacent to existing industrial operations. The application area is in a choke point for this ecological linkage and serves as a conduit between coastal and riverine fauna habitats. The application area is bounded to the north and south by approximately 30 metre cleared areas facilitating current and future road access points (A. Fry, pers comm. 2021).

The current ecological corridor is approximately 260 metres to 170 metres in width (east to west) and 270 metres in length (north to south). The proposed clearing would reduce the corridor to approximately 45 metres in width (east to west) and 270 metres in length (north to south).

The vegetation within the application area is completely degraded to degraded (Keighery, 1994) condition and its efficacy as an ecological corridor is unknown. A survey identified one western ringtail possum and two dreys within the same Lot as the application area. As the home-range for western ringtail possums is approximately 5 hectares, it is reasonable to assume that this individual does not exclusively occupy the survey area and that movement, by western ringtail possums, through the application area is viable despite the cleared areas immediately adjacent to the application area.

Figure 7: Aerial imagery of the local area showing the application area (blue hatched)

Spatial data indicates the local area (5-kilometre radius from the centre of the area proposed to be cleared) retains approximately 22.09 per cent of the original native vegetation cover. The largest block of native vegetation (to the south west of the application area) connects to the southern end of the application area is not currently zoned as a conservation area but is in the process of being designated as part of the Kalgulup Regional Park.

Evidence of the significance of ecological linkages

Local and regional connectivity has a variety of well documented benefits, including;

- movement of flora and fauna through disturbed landscapes
- increasing immigration into isolated patches (maintaining species richness and diversity and the potential persistence of the patch)
- facilitating ecological function and ecosystem services
- providing transitional and primary habitat

(DEC, 2006)

Connectivity has also been shown to be detrimental in some circumstances, such as in:

- the spread of pests, weeds, exotic species and disease
- the spread of fire or other abiotic disturbances
- increasing homogeneity
- formation of 'sink' habitats within linkages where mortality exceeds reproductive output.

(Aars & Ims 1999; Bienen 2002; Plummer & Mann 1995; Simberloff & Cox 1987; Simberloff et al. 1992)

Environment impact assessment of ecological linkages considers a range of factors such as fauna species usage, life-history, characteristics, ecological processes (Poiani et al. 2000) and scale. The level of knowledge of the efficacy of the application area as part of a regional linkage is incomplete. The precautionary approach to mitigate the effects of habitat loss and fragmentation

is to prioritise the integrity of ecological processes and continuity of biological communities. Reconstruction of ecological corridors is difficult and therefore best practice conservation advice is to prioritise identification, protection and maintenance (Bennett 1999).

Research has identified that narrow corridors may only be suitable for rapid movements (Hess and Fischer 2001) with poorly designed narrow corridors acting as sinks due to high edge effects (Henein and Merriam 1990). Adding a low-quality corridor connected to a low-quality patch has been shown to have a negative impact on the larger source populations (Henein and Merriam 1990).

There is insufficient scientific knowledge relating to corridor width and ecological linkage efficacy to determine the significance of the patch proposed to be cleared. An oversimplification of existing data can be extrapolated to generalise that sensitive avifauna require corridors of above 300 metres, common species required corridors over 100 metres and that corridors less than 10 metres in width were rarely used (Davis, 2009). Corridors between 25-50 m wide are recorded as having some avifauna present (Sieving et al., 2000) and a study of riparian corridors identified that a corridor width of 75 to 175 metres was necessary to accommodate most (90 per cent) of avifauna in an area (Davis, 2009). Generalisation of correlation between corridor width and efficacy of an ecological linkage are to be a weak source of evidence for decision making, however, the contextual information provides valuable understanding of scale (i.e. 100 metres versus 1000 metres).

Assessment of the importance of the vegetation within the application area as part of an ecological linkage

The native vegetation within the application area is a choke point for this regional ecological linkage as described under Principle (a) and depicted in Figure 7. The application area is in degraded to completely degraded (Keighery, 1994) condition, however, it retains significant environment values and ecological function.

Western Ringtail Possums

The assessment of the potential impacts of the proposed clearing on Western ringtail possums identified that the clearing will impact on 0.35 hectares of western ringtail possum habitat.

Spatial data indicates that there are 670 records of western ringtail possums within the local area. Given the fragmented and highly cleared landscape, resources for this species are likely to be limiting on their continued existence in the local area.

A survey identified two dreys and one individual western ringtail possum within the same Lot as the application area, indicating use of the habitat within the application area. The clearing permit application was designed to avoid these areas of critical western ringtail possum habitat.

Black Cockatoos

The assessment of the potential impacts of the proposed clearing on MNES black cockatoo's identified that the clearing 0.46 hectares of black cockatoo habitat for *Calyptorhynchus latirostris* (Carnaby's Cockatoo) (Endangered), *Calyptorhynchus baudinii* (Baudin's Cockatoo) (Endangered), and *Calyptorhynchus banksii naso* (Forest Red-tailed Black Cockatoo) (Vulnerable) (see Part 2 of this report)

The application area is located within the modelled distribution of three species of conservation significant black cockatoo. The application area is located within the known feeding and breeding range of Carnaby's cockatoo and feeding range and predicted breeding range of the Baudin's cockatoo and the forest red-tailed black Cockatoo (Commonwealth of Australia, 2012). The application area includes 0.46 hectares of high value black cockatoo foraging habitat and 38 potential breeding habitat trees (none of which contain suitable hollows for nesting).

The local area includes records of three Baudin's black cockatoo, three Forest red-tailed black cockatoo and 50 Carnaby's black cockatoo (see map in Appendix G).

Spatial data identifies two confirmed white tail black cockatoo breeding sites and 12 black cockatoo roosts within 12 kilometres of the application area, the closest of which is a roost site 1.7 kilometres north of the application area. The local area (5 kilometre radius) retains 1831.01 hectares of native vegetation, of which approximately 95 per cent is mapped as black cockatoo feeding habitat. This percentage is significantly reduced at a 12 kilometre radius due to the presence of coastal vegetation types. Based on the above evidence, the black cockatoo foraging habitat within the application area is likely to be significant and the proposed clearing will result in significant residual impacts to these species.

Summary

Based on the evidence and assessment above, the vegetation is significant as habitat for black cockatoos and western ringtail possums. The vegetation within the application area is in degraded to completely degraded (Keighery, 1994) condition, however, it retains significant ecological function and environmental value for fauna movement locally and regionally. Based on the evidence and assessment, above the proposed clearing is at variance to this principle.

The applicant has demonstrated avoidance and mitigation measures however significant residual impacts are likely as a result of the proposed clearing. Significant residual impacts must be offset in accordance with the WA Environmental Offsets Policy, Guideline and calculator as well as with the Commonwealth offsets calculator for matters of national environmental significance.

The applicant has proposed to retain a corridor of vegetation 45 metres in width on the western edge of the property to mitigate environmental impacts to the ecological corridor.

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.

Proposed clearing is not likely to be at variance to this Principle
According to DBCA's TPFL and WA Herbarium datasets, records of three threatened flora species occur within a 5-kilometre radius of the application area, *Austrostipa jacobsiana, Austrostipa bronwenae* and *Diuris drummondii*.

Evidence:

- *Austrostipa jacobsiana* is a perennial rhizomatous grass that grows to 1.5 metres tall and flowers in October to November. It is known to grow in association with open marri woodland or open shrub including *Xanthorrhoea preissii, Viminaria* spp., *Hakea* spp., *Acacia* spp., *Melaleuca* spp., *Kunzea* spp., and *Gahnia* spp.

- *Austrostipa bronwenae* is a perennial rhizomatous grass that grows to 1.5 metres tall and flowers in October to November. It is usually associated with swampy vegetation; tall open shrubland of *Callitris* spp., *Viminaria* spp., *Melaleuca* spp., *Hypocalymma* spp., *Grevillea* spp., *Acacia* spp., *Banksia* spp., *Boronia* spp., and *Gahnia trifida*, sometimes with *Eucalyptus* spp. and *Hakea* spp.

- *Diuris drummondii* is a tuberous perennial herb which grows to 0.5-1.05 metres high and has yellow flowers from November to December or January. It is known to grow in association with riparian vegetation in peaty and sandy clay swamps, usually low forest of marri, flooded gum, Melaleuca, over mixed scrub and sedges.

- No threatened flora species were identified within the application area during a flora survey (GHD, 2021a). The flora survey was undertaken on the 2 October 2020, the survey methodology was undertaken with reference to the Environmental Protection Authority (EPA) Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016a). The applicant noted that 'due to the degraded nature of the survey area [the survey effort] is not considered a major constraint." (GHD, 2021a)

Assessment
Given the survey effort and season coverage (spring survey), if populations of Threatened flora taxa were present it is expected they would have been identified by the survey.

It is recognised that the survey was undertaken approximately one month prior to the expected flowering period for *Diuris drummondii*. In 2020, Bunbury experienced higher than average rainfall during May and June with July and August having lower than average rainfall, before returning to higher-than-average rainfall in September and no recorded rainfall in October. Given the rainfall patterns in Bunbury in 2020, it is reasonable to expect that flowering of *Diuris drummondii* would have been earlier than normal and therefore that the October 2020 survey could have reasonably been expected to find this species if it was present within the application area.

Summary
Based on the evidence and assessment above, the proposed clearing is not likely to include threatened flora and is therefore not likely to be at variance to this Principle.

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Proposed clearing is not likely to be at variance to this Principle
According to available databases, there are no state listed TECs recorded within the local area and the flora survey did not record any vegetation types within the application area which would be commensurate with state or commonwealth listed TECs (GHD, 2021a).

The proposed clearing is not likely to be at variance with this Principle.

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Proposed clearing may be at variance to this Principle
Evidence

- The vegetation within the application area is mapped as Jarrah-Marri/Low woodland; Banksia/Low forest; Teatree (*Melaleuca* spp.) (association 1000) vegetation association.

- Regional vegetation for the Swan Coastal Plain (at vegetation complex level) was mapped by Heddle et al. (1980) and updated and extended by Webb et al. (2016). Spatial data indicates that one vegetation complex is present within the application area; Southern River Complex – Open woodland of *Corymbia calophylla* (Marri) – *Eucalyptus marginata* (Jarrah) – Banksia species on elevated areas and a fringing woodland of *Eucalyptus rudis* (Flooded Gum) – *Melaleuca rhaphiophylla* (Swamp Paperbark) along streams. South of the Murray River *Agonis flexuosa* (Peppermint) occurs in association with the Flooded Gum and Swamp Paperbark.

- The extent of vegetation association 1000 and Southern River Complex (42) are below the recommended 30 per cent retention targets (26 per cent and 18 per cent remaining respectively).

- The modified national objectives and targets for biodiversity conservation within constrained areas of Australia has a target to prevent clearance of ecological communities with an extent below 10 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

- The local area (10 kilometre radius) retains approximately 22 per cent native vegetation. The application area is located within the Swan Coastal Plain IBRA bioregion which retains approximately 39 per cent of its pre-European vegetation extents (Government of Western Australia, 2017).

- The majority of the application area is in degraded to completely degraded (Keighery, 1994) condition (GHD, 2021a), contains foraging habitat for conservation significant black cockatoo's, critical habitat for western ringtail possums and critical environmental linkage values, therefore the native vegetation is considered to be a significant remnant.

Table 1: Remnant vegetation extents (Government of Western Australia, 2019).

	Pre-European	Current Extent	Remaining	Extent in DBCA Managed Lands
	(ha)	(ha)	(%)	(%)
IBRA Bioregion				
Swan Coastal Plain	1,501,222	578,997	39	38
Beard Vegetation Association in Bioregion*				
1000	94,175	24,806	26	19
Heddle Complex Associations in Bioregion**				
Southern River Complex	58,781	10,828	18	2
Local area				
5-kilometre radius	8,297	1,831.01	22	

Assessment

The application area is mapped as an under-represented vegetation association; Southern River Complex (and at a broader mapping scale as Beard Vegetation Unit 1000). The application area falls within the constrained greater Bunbury area and therefore the modified targets for retention of ecological communities is relevant to this clearing permit application. This target, of 10 per cent retention of each ecological community, is exceeded by both mapped vegetation types (18 and 26 per cent respectively).

GBR Constrained Area includes the consolidated area urban, urban deferred and industrial zone. The modified objective on the Constrained Area being to seek to:

- retain at least 10% of the pre-clearing extent of the ecological community in the Constrained Area of the GBR where >10% of the ecological community remains on the Swan Coastal Plain (the natural region)
  OR
- retain all remaining areas of each ecological community in the Constrained Area of the GBR where 10% or <10% of this ecological community remains on the Swan Coastal Plain.

However, a Constrained Area can be considered regionally significant if selection of the natural area is:

- from an ecological community below 10% pre-clearing extent;
- a threatened ecological community; and/or
- part of a regionally significant sequence of ecological communities.

(EPA, 2003)

Spatial data indicates that there is approximately 32 per cent of the Southern River Complex remaining within the Constrained Area. On this basis the first modified target has been met (retain at least 10% of the pre-clearing extent of the ecological community in the Constrained Area of the GBR where >10% of the ecological community remains on the Swan Coastal Plain (the natural region)) and the application area is not significant as a representation of the Southern River Complex.

The application area is assessed under Principles (a) and (b) as being significant as fauna habitat and as a local and regional ecological linkage.

The local area retains approximately 22 per cent native vegetation cover (approximately 1,831.01 hectares). The application area represents approximately 0.21 per cent of the remaining vegetation within the local area and the proposed clearing will reduce the extent of native vegetation within the local area to 1,827.14 hectares. The location of the application area within the Greater Bunbury Region Scheme "constrained area" infers that the local area has been extensively cleared for urbanisation and as such has modified targets.

The EPA note that:

"*It is important to note that the 'at least 10%' target adopted in the Urban Bushland Strategy (based on the IUCN 1991 guidelines) was only ever intended to apply to constrained urban environments. It is now well recognised that the 'at least 10%' target is inadequate to provide effective conservation of biodiversity. In 1997, in the preliminary stages of preparing the Draft GBRS the [*agency*] advised Minister for Planning, that it was becoming increasingly recognised that '20% of the land surface should be retained under natural vegetation cover for biodiversity and soil conservation*." (EPA, 2003).

Summary
Based on the evidence and assessment above, the vegetation within the application area is significant as habitat for conservation significant fauna and as a regional ecological linkage and is located within a highly cleared area known as the Greater Bunbury Region Scheme 'Constrained Area'. Based on the modified objectives for constrained areas, and taking into consideration the EPA's advice that conservation of biodiversity is possible at a rate of closer to 20 per cent retention, the clearing of 0.21 per cent of the remaining 22 per cent native vegetation cover in the local area may be at variance to this principle.

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Proposed clearing is at variance to this Principle
The application area includes vegetation growing in, and in association with, a wetland. Based on the information available the proposed clearing is at variance to this principle.

Evidence
Spatial data identified one multiple use wetland (ID 14329) intersecting the application area. In addition, one connected conservation class wetland is mapped approximately 60 m south of the survey area (ID 14516). This wetland is part of the Bennett Brook consanguineous wetlands suites and is associated with the designation of an environmentally sensitive area which intersects the southwest corner of the application area (conservation category wetland).

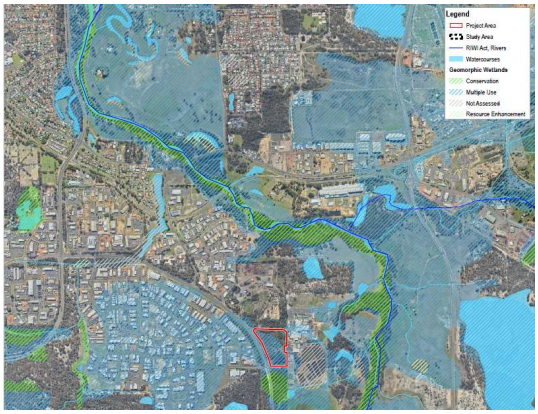


Figure 8: Mapped water resources within and near the application area (extracted from GHD, 2021a).

No watercourses are mapped within the application area. The closest watercourse is the Preston River approximately 500m east of the application area.

A survey of the application area identified some vegetation (*Eucalyptus rudis* and *Melaleuca rhaphiophylla*) growing in association with a wetland (GHD, 2021a).

Assessment
The evidence above, and photographs provided (see Appendix A), identifies vegetation growing in association with a wetland with the application area.

The vegetation within the application area is in completely degraded to degraded (Keighery, 1994) condition, the vegetation is highly modified and fragmented from other wetland vegetation, therefore, the impacts of the proposed clearing on the mapped wetland is not likely to be significant.

Summary
Based on the evidence and assessment above, the proposed clearing is at variance to this principle as vegetation growing in association with a wetland will be impacted. However, considering the avoidance and minimisation measures and that the extent of the impacts to the wetland are limited to small, degraded areas, the clearing is not likely to have a significant impact upon riparian vegetation or the environmental values of the wetlands. It is considered the impacts of the proposed clearing are unlikely to have any long-term adverse impacts on the hydrological and ecological values of the wetland.

The applicant will be required to adhere to weed and dieback management measures (as conditioned on the clearing permit) to minimise this risk.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Proposed clearing is not likely to be at variance to this Principle
Evidence

- The Swan Coastal Plain is comprised of five major geomorphological units, the survey area lies within;
    - Bassendean dune and sandplain system: Pleistocene sand dunes with very low relief, leached grey siliceous sand intervening sandy and clayey swamps and gently undulating plains. These occur immediately west of, and partly overlie, the Pinjarra Plain.
    - Pinjarra Plain: Broad low relief plain west of the foothills, comprising predominantly Pleistocene fluvial sediments and some Holocene alluvium associated with major current drainage systems. Major soils are naturally poorly drained with many swamps.
- Spatial data identifies two different soil zones within the survey area.
    - Pinjarra Zone: Alluvial deposits (early Pleistocene to Recent) between the Bassendean Dunes Zone and the Darling Scarp, colluvial and shelf deposits adjacent to the Darling Scarp. Clayey to sandy alluvial soils with wet areas.
    - Bassendean Zone: Mid Pleistocene Bassendean sand. Fixed dunes inland from coastal dune zone. Non-calcareous sands, podsolised soils with low-lying wet areas.
- Spatial data indicates that the application area is made up of the following soil types;
    - Bassendean B2 Phase; Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.
    - Pinjarra P1b Phase; Flat to very gently undulating plain with deep acidic mottled yellow duplex (or effective duplexes) soils. Moderately deep pale sand to loamy sand over clay: imperfectly drained and moderately susceptible to salinity in limited areas.
- The vegetation within the application area is in degraded to completely degraded (Keighery 994) condition (GHD, 2021a).
- Spatial data identified one multiple use wetland (ID 14329) intersecting the application area. In addition, one connected conservation class wetland is mapped approximately 60 m south of the survey area (ID 14516). This wetland is part of the Bennett Brook consanguineous wetlands suite and is associated with the designation of an environmentally sensitive area which intersects the southwest corner of the application area (conservation category wetland).
- The risk of land degradation by wind erosion, waterlogging, phosphorus export and subsurface acidification is mapped as high (see Table 2 below).
- The application area is flat, existing wholly within the mapped 15 metre isohyet line.
- Spatial data indicates that annual mean rainfall is approximately 900 millimetres per annum and mean evapotranspiration rate is approximately 900 millimetres per annum.

Table 2: Land Degradation risk of mapped soil type.

Risk categories	
Wind erosion	H1: 50-70% of map unit has a high to extreme wind erosion risk M2: 30-50% of map unit has a high to extreme wind erosion risk
Water erosion	L1: <3% of map unit has a high to extreme water erosion risk
Salinity	L1: <3% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	H2: >70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	L1: <3% of the map unit has a moderate to high flood risk
Water logging	H2: >70% of map unit has a moderate to very high waterlogging risk L2: 3-10% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	H2: >70% of map unit has a high to extreme phosphorus export risk L2: 3-10% of map unit has a high to extreme phosphorus export risk

Assessment

A review of the land degradation risks of the mapped soils (DPIRD, 2021) indicates that some soils mapped within the clearing footprint have elevated risks of wind erosion, subsurface acidification, waterlogging and phosphorus export risk.

Given the topography of the application area is relatively flat (15 metre isohyet) and the rainfall and evaporation averages are similar, the risk of waterlogging and phosphorus export is considered to be low at this location. Further, retention of a 45-metre vegetation corridor to the west and proposed offset area to the east of the application area, make it unlikely that the site will suffer appreciable land degradation between vegetation clearing and development of the site.

Subsurface acidity is the acidification of the soil acidity, which develops between 10 to 35 cm in soil. The key environmental factors that can affect the difference in pH between surface and subsurface layers are soil fertility, initial soil pH profile before clearing, rainfall and fluctuations in soil moisture content. In the subsurface (10-30 cm) layers, low pH causes an increase in the solubility of aluminium, which is toxic to plant roots, resulting in restricted root growth and poor access to moisture and nutrients. Photographs of the vegetation (see Appendix A) do not display any growth characteristics that are common of vegetation growing in association with subsurface acidification.

Summary
Based on the evidence and assessment above, the proposed clearing of 3.87 hectares of native vegetation is not likely to cause appreciable land degradation. Given the above, the proposed clearing is not likely to be at variance to this Principle.

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Proposed clearing is at variance to this Principle

Evidence

- The application area is immediately north of the proposed boundary of the new Kalgulup Regional Park and land currently designated as regional open space under the Greater Bunbury Regional Scheme (GBRS).
- The vegetation within the application area is part of a regional ecological linkage which will be reduced from approximately 170 metres to 45 metres in width.
- The application area is connected to the Preston River by contiguous native vegetation.
- 34 four introduced flora species were recorded in the survey area. One of these, **Asparagus asparagoides* (Bridal Creeper), is listed as a Declared Pest under the BAM Act and as a Weed of National Significance (WONS). Two species are listed as Declared Pest Plant, **Zantedeschia aethiopica* (Arum lily) and **Opuntia* sp. (Prickly Pear species).

Assessment

Proposed Kalgulup Regional Park

Regional parks are areas of Regional Open Space (ROS) identified within the Western Australian (WA) planning framework as having regionally significant conservation, landscape or recreation values. The Greater Bunbury Region Scheme (GBRS) is the statutory document that provides for the creation of the Kalgulup Regional Park, through the reservation of ROS (regional open space). A regional park is a land management system that provides the opportunity for a coordinated planning and management approach by different land management agencies and private landowners. Under section 8E(2) of the CALM Act, a regional park may consist of lands with a variety of tenures and purposes.

Two proposed regional parks; Preston River to Ocean Regional Park and the Leschenault Regional Park have been amalgamated all into one regional park (see Figure 9 below).

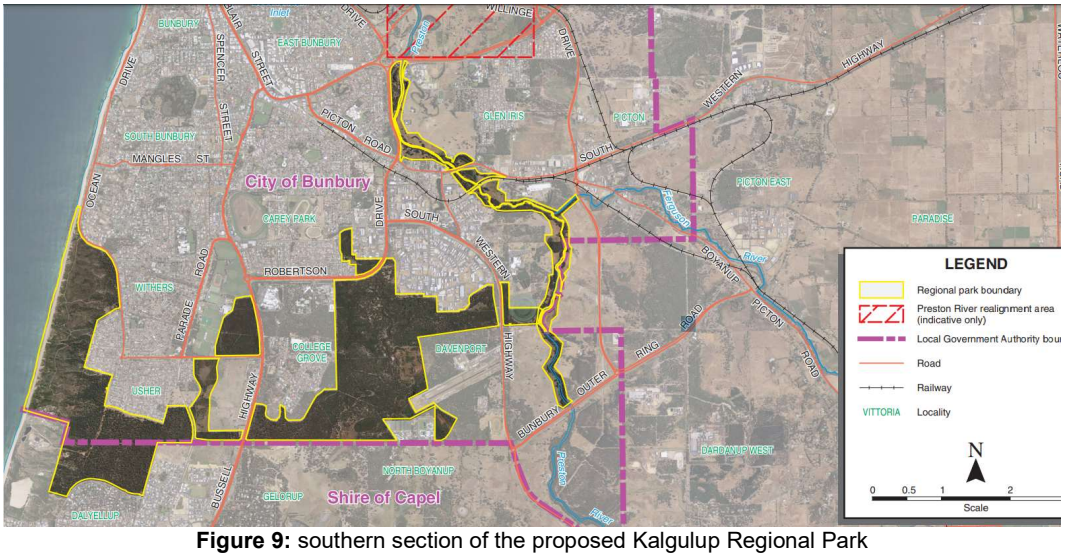


Figure 9: southern section of the proposed Kalgulup Regional Park

The Kalgulup Regional Park draft management plan identifies one of the key natural values of the park as its value as a regional ecological linkage. The EPA identified 16 regionally significant ecological linkages within the Greater Bunbury Regional Scheme area. The application area is within the key regional ecological linkages between the major landform elements known as Maidens/Preston River linkage (EPA 2003). The draft management plan states that "*these strong ecological linkages within and to areas outside of the park are important in maintaining biodiversity and ecological systems, buffering the park from undesirable impacts and in helping to integrate the park within the broader urban and peri-urban landscapes. Opportunities should be taken to strengthen regional ecological linkages*" (DBCA, 2020).

No conservation areas are mapped within the application area, however, vegetation within the application area supports the continued existence of nearby conservation areas through its function as an ecological linkage.

Summary
Based on the evidence above, the proposed clearing is at variance to this principle as clearing may degrade ecological connectivity and function and spread weeds and/or dieback into the proposed Kalgulup Regional Park (currently regional open space).

The applicant will be required to adhere to weed and dieback management measures (as conditioned on the clearing permit) to minimise this risk.

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Proposed clearing is not likely to be at variance to this Principle

Evidence

- Spatial data identifies that the application area is mapped as having high (greater than 50 per cent risk) of wind erosion, waterlogging, water repellence and phosphorus export risk. All other land degradation risks were mapped as moderate to low risk. A full table of land degradation risks are available in Table 2.
- The application area is flat, existing wholly within the mapped 15 metre isohyet line.
- Spatial data indicates that annual mean rainfall is approximately 900 millimetres per annum and mean evapotranspiration rate is approximately 900 millimetres per annum.
- The vegetation within the application area is in degraded to completely degraded (Keighery 994) condition (GHD, 2021a).
- Spatial data identified one multiple use wetland (ID 14329) intersecting the application area. In addition, one connected conservation class wetland is mapped approximately 60 m south of the survey area (ID 14516). This wetland is part of the Bennett Brook consanguineous wetlands suite and is associated with the designation of an environmentally sensitive area which intersects the southwest corner of the application area (conservation category wetland).

Assessment
According to available databases, the application area intersects one wetland but is mapped within Bunbury Groundwater area. Approximately 2.72 hectares of vegetation growing in an environment associated with wetlands is within the application area. Of this, the applicant will not clear approximately 1.83 hectares of the western extent as it will be retained as an ecological corridor. Noting this, and that the proposed clearing of wetland vegetation is limited to less than one hectare (0.89 hectares) of degraded to completely degraded (Keighery, 1994) condition vegetation, it is unlikely to result in significant long-term impacts to surface water quality.

Groundwater salinity is mapped between 0 – 1,000 milligrams per litre total dissolved solids which is considered to be marginal (Mayer, Ruprecht & Bari, 2005). Noting this, the proposed clearing is not likely to result in deterioration in the quality of groundwater in the form of salinity.

No direct impacts to groundwater are anticipated as the applicant has not proposed to carry out any drawdown activities.

Summary
Given the above evidence and assessment, the proposed clearing is not likely to be at variance to this Principle

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing is not likely to be at variance to this Principle

Topographical mapping indicates that the application area is relatively flat. Although waterlogging risk is increased around wetland areas, annual average rainfall and evapotranspiration are roughly equivalent at this site, therefore it is unlikely that excess water will be retained at the surface.

Given the above, the proposed clearing is not likely to cause, or exacerbate, the incidence or intensity of flooding and is not likely to be at variance to this Principle.

2. Planning instruments and other relevant matters.

On 16 April 2021, the Commonwealth Department of the Agriculture, Water and the Environment determined that the proposed clearing is a controlled action and is likely to have a significant impact on Western Ringtail Possum, listed as a threatened species under Part 3 of the EPBC Act (matters of national environmental significance).

On 3 June 2021, the Department advised that the clearing permit application was accepted and the environmental impact assessment would include assessment against the EPBC Act under the State of WA and Commonwealth Bilateral Agreement.

On 22 June 2021, the City of Bunbury provided the following comment on the proposed clearing and the applicant responded to each comment accordingly.

Table 3: Comments from the City of Bunbury and responses from the applicant

CoB comment	Response
The portion of the subject lot proposed for clearing is zoned 'General Industry' under the City of Bunbury Local Planning Scheme No 8 (LPS8).	Walsh consider the project to be a suitable land use under this zoning
At this time, no development application has been lodged by V and V Walsh. It is currently unclear/unknown as to the extent of the development footprint of any future building works.	A development application will be lodged following the preparation of more detailed project designs. Preliminary design has been undertaken, however, progress on the project is now contingent on approval of a clearing permit for the site. Detailed design and a development application will proceed following this milestone.
It is noted Lot 1050 forms part of the Southern River vegetation complex and is identified as being of regional significance and recommended for retention by **EPA Planning Bulletin 1282.**	Significance of remnant native vegetation has been addressed under Principle (e) in the Assessment Against the 10 Clearing Principles (See Appendix G, 12539969-REP-0_V&V Walsh Flora and Fauna Survey). Although the Southern River vegetation complex occurs at less than 30% pre-European extent in the City of Bunbury LGA, vegetation within the project area is not considered to be of regional significance. This is due to several factors including: • The highly degraded and modified condition of the project area. Of the biological survey area, 97.46% was assessed as being in degraded or completely degraded condition. • The size of the project area • Considering that within the immediate vicinity of the survey area there exists significant areas of remnant vegetation associated with the Preston River corridor, Manea Park and City of Bunbury land zoned as regional open space immediately to the south of the survey area. Many of these areas of adjacent remnant vegetation fall within the recently proclaimed Kalgalup Regional Park.
The proposed vegetation buffer generally aligns with the boundary of the existing Environmental Conservation Reserve as per LPS8 (green and black hatch in above image).	The proposed retained vegetation buffer was specifically designed to align with the boundary of the existing Environmental Conservation Reserve as per LPS8. This aligns with the purpose of the zoning for environmental conservation.
Lot 1050 is located within the 'Special Control Area - Bushland Area,' as per LPS8 and will require any future development to satisfactorily address issues of vegetation protection and retention as part of any planning application. This may include, but not limited to, the preparation of development impact statements and environmental management plans.	Significant steps have been taken by Walsh to date to maximise environmental protection and retention. A total project area of 5.28 ha was considered in the initial stages of the proposal and subject to biological surveys. Following determination of key environmental values of the project area and in consultation with the regulators, it was determined that a vegetation buffer would be retained running along the west edge of the project area (the avoidance footprint). The avoidance footprint comprises a portion of the project area zoned environmental conservation reserve under LPS8 and areas of high value fauna habitat. To further address environmental protection, a Construction Environmental Management Plan will be prepared to guide clearing and construction activities.

	Finally, Walsh reiterates that impact assessments were provided to both the State and Commonwealth environmental regulators for assessment in regard to this project.
It is noted that V&V Walsh intend to consult with the City regarding revegetation within the area that will remain under City management (Part 4, 2nd dot point: *Revegetation work in the retained vegetation buffer*). Can V&V Walsh confirm that revegetation works would be at their expense? The City are unable to commit at this stage to prioritising revegetation within this area within current budgets.	Walsh is prepared to cover the cost of revegetation and a maintenance period. Walsh is happy to engage with the City to reach an agreement on this matter. The buffer zone is proposed to remain under the management of the City.
Please confirm the pre-clearing inspections will be undertaken by a licenced fauna spotter (Part 4, 4th dot point: *Undertake pre-clearing inspections of habitat for Western Ringtail Possum*).	Fauna spotters will hold all required permits and licenses. Liaison will be undertaken with DBCA in preparation prior to clearing.
Given that V&V Walsh are proposing to introduce disturbance surrounding the vegetation buffer. What mitigation measures do V&V Walsh plan to undertaken to prevent the spread of weeds from increased activity (vehicles/trucks) in this area? City resources are constrained and this area is likely to increase edge effects and the spread of weeds, which will be detrimental to the vegetation buffer and potentially the adjacent ESA to the south.	Walsh will undertake control of Declared Pest Plants within land under their management in line with requirements under the BAM Act. Measures will be implemented during clearing and construction under a Construction Environmental Management Plan to mitigate and manage the risk of introduction of new weed species or other pests and diseases.

The concerns raised by the City of Bunbury have been addressed in the above assessment where relevant.

On 26 July 2021, the Department received a request for advice relating to Planning Approval PA 043309 - WAPC 161068 on Lot 5 & 1050 South Western Highway Davenport for a proposed boundary re-alignment. This matter relates to the subdivision amalgamation of lots associated with the application area. Planning approval requires formalisation of the vegetation buffer on the western side of the application area (offset site 1) which will be determined and conditioned as part of this permit.

The application area falls within the RIWI Act 1914-1974 proclaimed Bunbury groundwater area. The applicant does not propose to extract any water for the proposed activities at the site, therefore no groundwater licence is required. No applications have been received in relation to the take of groundwater specifically for this expansion, at this time. V&V Walsh has an existing licence for the adjacent abattoir which will likely be used for any ancillary use associated with this site.

A review of the Register of Places and Objects as well as the DPLH Aboriginal Heritage Database concludes that the proposed works do not intersect with any registered Aboriginal site. The land in question does intersect with Aboriginal Heritage Place ID 5815 (Bunbury/Preston River), which has been assessed as “Not A Site” for the purposes of the Act. The applicant has advised that;

> “*Provisions are to be included in a Construction Environmental Management Plan (CEMP) requiring that in the event that suspected Aboriginal heritage items or remains are uncovered that work shall cease pending consultation with DPLH and traditional owner groups*” (V & V Walsh, 2021).

The EPA assessed and the Minister approved Ministerial Statement 697 which is relevant to this clearing permit application. The EPA have advised that conditions requiring the EPA’s assessment of the GBRS seem to have been fulfilled, the southern portion of Reserve 670 has been reserved in the GBRS.

The EPA has a statutory assessment role as opposed to ‘comment’ regarding subdivisions; the WAPC should consider its s38 EP Act obligations as a Decision Making Authority, whether the proposal is a ‘significant’ proposal requiring referral to the EPA for EIA.
Internal comment from the EPA noted that:

- *the remnant vegetation on the northern portion of Reserve 670 should be conserved primarily because of its faunal habitat values and value as an additional ecological linkage to Preston River; and*
- *a portion of the remnant vegetation to the north of Reserve 670 should be conserved to provide a consolidated ecological linkage between Reserve 670 and the Preston River”.*

Part 4: Offsets

1. Mitigation credit

The applicant has proposed to undertake onsite (Lot 1050 South Western Highway, Davenport) rehabilitation of 1.83 hectares of native vegetation in a 45 metre corridor on the western edge of the application area (see Figure 4).
Rehabilitation of this area will:

- improve the condition of approximately 0.15 hectares of existing Black Cockatoo habitat
- improve the condition of approximately 0.4 hectares of Western Ringtail Possum habitat
- maintain connectivity in a fragmented landscape
- maintain the regionally significant north-south ecological corridor between the coast and Preston River.

Lot 1050 South Western Highway, Davenport
Key attributes contained within the native vegetation includes habitat for Western Ringtail Possum and Black Cockatoo. A survey of the site identified two vegetation types including:

- Melaleuca rhaphiophylla low woodland
- Corymbia calophylla open forest

In addition, one conservation significant flora was identified, *Eucalyptus rudis* subsp. *cratyantha* (Priority 4) within Lot 1050 (GHD, 2021a).

Assessment of the fauna habitats within Lot 1050 identified four habitats including:

- Peppermint Woodland
- Melaleuca Woodland
- Marri and Melaleuca Woodland
- Flooded Gum Woodland

Lot 1050 was also observed to contain 19 potential Black Cockatoo breeding trees and sightings of Western Ringtail Possum.

Lot 1050 would contribute to mitigating the significant residual impacts of clearing by providing 0.15 hectares of habitat for Black Cockatoos and 0.4 hectares of habitat for Western Ringtail Possum. The proposed offset forms a 45-metre-wide ecological corridor.

The applicant is currently in the process of excising Lot 1050 from the City of Bunbury for the purposes of this clearing permit. The applicant will remove the mitigation areas from the excision and leave these areas in the care and control of the City of Bunbury. The applicant will form an agreement with the City of Bunbury for the management of this mitigation credit.

Mitigation credits are applied to the WA environmental offsets calculator but not to the EPBC calculator (See Appendix F).

The mitigation actions proposed account for a mitigation credit of:

- 0.02 hectares of black cockatoo habitat
- 0.03 hectares of western ringtail possum habitat

2. Description of offsets

Through the assessment outlined in Parts 2 and 3 above, the Delegated Officer determined that the following Significant Residual Impacts (SRIs) remain after the application of the avoidance, minimisation and mitigation actions summarised in Part 2, Section 6:

- Loss of 0.35 hectares of western ringtail possum habitat; and
- Loss of 0.46 hectares of black cockatoo habitat.

To address the above impacts and applying the EPBC Offsets assessment guide (Commonwealth Offsets Calculator), the applicant proposed the following offset:

- Lot 1 on Plan 17617 – 3.29 hectares in size. Of this, there is 2.48 hectares of existing Black Cockatoo and Western Ringtail Possum habitat (including 99 potential habitat trees), and revegetation of approximately 3.2 hectares is proposed.

Lot 1 on Plan 17617
Key attributes contained within the native vegetation includes riparian vegetation along the Preston River, that forms a wildlife corridor. A survey of Site 2 identified the presence of three vegetation types including:

- Open Woodland of *Melaleuca rhaphiophylla* over open water with fringing *Eucalyptus rudis* (0.38 ha)
- *Corymbia calophylla* and *Agonis flexuosa* Woodland over introduced grass species (2.10 ha)
- *Corymbia calophylla* over *Agonis flexuosa* Woodland over *Pteridium esculentum* and **Watsonia meriana* in close proximity to the river (0.81 ha)

During a survey, evidence of use by Forest Red-tailed Black Cockatoo was recorded within *Corymbia calophylla* and *Agonis flexuosa* woodland over introduced grass species. Further, one Western Ringtail Possum drey was recorded near to the river.

The offset site is currently under threat from freehold property, sheep grazing, weed incursion, and potential for future loss via development. The offset site will have a conservation covenant over a portion of Lot 1 covering approximately 2.48 hectares.

The calculations determined that the conservation of Lot 1 (3.2 hectares), which contains native vegetation in good to degraded (Keighery, 1994) condition, is sufficient to adequately address significant residual impacts of the clearing.

EPBC Calculations
Based on the justifications provided by the applicant and reviewed by the Department, the proposed offset accounts for;

- 208.94 per cent of the significant residual impact to Black Cockatoos
- 235.57 per cent of the significant residual impact to Western ringtail possums

A map of the proposed offset is included at Figure 5. Offset calculations are provided under Appendix F.

3. Justification of offsets

Table 4: Consistency with Commonwealth Offset Policy 2012 (GHD, 2021b)

Principle	Assessment
1. deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action	The offsets will provide a conservation outcome that improves the viability of Black Cockatoo and WRP habitat in both sites. This Offset Strategy provides over 100% offset for all protected matters. The conservation outcome will be achieved through protecting land containing Black Cockatoo habitat and Western Ringtail Possum habitat.
2. be built around direct offsets but may include other compensatory measures	The Offset Strategy is built around direct offsets, involving two suitable offset properties to provide over 100% direct offsets for Black Cockatoo and Western Ringtail Possum.
3. be in proportion to the level of statutory protection that applies to the protected matter	Site 1 will remain in Crown Reserve and be managed for conservation by the City of Bunbury, as part of Reserve 670. Site 2 would be placed under conservation covenant. VV Walsh will be responsible for the management of the land and creation of the conservation reserve, providing in perpetuity protection and management. The quantum of offsets proposed are in proportion to the level of statutory protection applied to Carnaby's Cockatoo (Endangered), Baudin's Cockatoo (Endangered), FRTBC (Vulnerable) and Western Ringtail Possum (Critically Endangered) as presented in the preliminary offset calculations (Appendix A).
4. be of a size and scale proportionate to the residual impacts on the protected matter	The offsets will be of a size and scale proportional to the residual impacts Carnaby's Cockatoo, Baudin's Cockatoo, FRTBC and Western Ringtail Possum. The draft Offset Strategy provides over 100% offset for all impacted MNES. The provision of direct offsets is based on completed offset assessment guide calculations, incorporating evidence based justification for all inputs.
5. effectively account for and manage the risks of the offset not succeeding	The estimation of direct offsets is based on completed offset assessment guide calculations, incorporating a conservative assessment of risk of the offset not succeeding. VV Walsh will contract an experience revegetation consultant, and City of Bunbury has a history of land management. The transfer of land to City of Bunbury is expected to have a high chance (90%) of successfully delivering the required conservation outcomes.
6. be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs (this does not preclude the recognition of state or territory offsets that may be suitable as offsets under the EPBC Act for the same action, see section 7.6)	The proposed offsets are additional to any other requirements.
7. be efficient, effective, timely, transparent, scientifically robust and reasonable	The proposed offsets identified in the Offset Strategy will be implemented in accordance with the Revegetation Plan. The offsets will involve an efficient and timely implementation of revegetation activities, with revegetation to be completed within 5 years and meeting completion criteria. The proposed offset is scientifically robust, based on surveys of the proposal area and the two offset properties.
8. have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.	After completion of the revegetation activities to the satisfaction of the completion criteria, offset Site 1 will be managed by City of Bunbury and protected through conservation tenure. After completion of the revegetation activities to the satisfaction of the completion criteria, offset Site 2 will be managed by VV Walsh and protected through conservation covenant.

Table 5: Consistency with WA Environmental Offset Policy

Principle	Assessment
Environmental offsets will only be considered after avoidance and mitigation options have been pursued	All strategies to avoid and mitigate environmental impacts have been explored and implemented as detailed in Section 3.2 including: – Detailed ecological surveys were undertaken of the proposed impact area to identify environmental constraints and opportunities for avoidance. – The proposal footprint was constrained to minimise impact to native vegetation including Black Cockatoo and Western Ringtail Possum habitat. – The clearing area will be pegged and check prior to clearing to prevent accidental impacts – Construction techniques will be selected to prevent potential indirect tree death – A revegetation offset has been applied to this proposal.
Environmental offsets are not appropriate for all projects	Environmental offsets are required when a significant residual impact remains (GoWA, 2014). A significant residual impact remains for this proposal after the application of avoidance and mitigation options and, therefore, an offset is appropriate for this proposal.
Environmental offsets will be cost-effective, as well as relevant and proportionate to the significance of the environmental value being impacted	V&V Walsh believes the proposed offset represents a cost-effective solution that is proportionate to the environmental value being impacted by the proposal. The areas to be revegetated will provide environmental values that are equal or of higher value than the vegetation proposed to be cleared within the proposal footprint.
Environmental offsets will be based on sound environmental information and knowledge	The selection of offset revegetation locations have been undertaken in consultation with City of Bunbury. Sound environmental knowledge has been used in the development of this Offset Strategy, as well as the Revegetation Plan completion criteria.
Environmental offsets will be applied within a framework of adaptive management	The land to be revegetated will be placed within conservation estate and will be managed in accordance with advances in environmental knowledge and understanding as typically applied to conservation reserve, including weed control and fencing.
Environmental offsets will be focussed on longer term strategic outcomes.	The proposed offset has been developed in consultation with City of Bunbury, to achieve long term strategic outcomes, specifically maintaining and improving the environmental values of the proposed sites. The revegetation will increase the availability of habitat for fauna including Black Cockatoo and Western Ringtail Possum.

Table 6: Application of the WA Environmental Offsets Guideline

Concept	Application
Type	On-ground management and revegetation.
In proximity to the area of impact	The proposed offset property is located adjacent to the Proposal area
Similar or better vegetation condition than the area impacted	Vegetation within Lot 1 is of a similar condition and density to the area impacted.
Similar habitat structure to undisturbed examples of impacted vegetation type	The vegetation of both the impact area and the proposed offset (Lot 1) are significantly disturbed due to historic clearing as well as grazing of the understorey. The upper canopy (*Corymbia calophylla* and *Agonis flexuosa*) remains intact, thus offering suitable habitat structure for Western Ringtail Possum and Black Cockatoo foraging.
Has a better area to perimeter ratio that the area impacted	Depending on the final configuration of the offset, the preference is to avoid narrow linear strips and target larger intact remnants adjacent to the Preston River.
Contains additional rare or otherwise significant species and threatened species or community compared with the impact site	The value of the offset site is in its proximity to the Preston River wildlife corridor and enhancing the foraging / habitat values for the target species along this corridor. Evidence of Forest Red-tailed Black Cockatoo and Western Ringtail Possum utilising the area was recorded.
Close to or contiguous with an existing conservation area (e.g. Bush Forever)	All proposed offset sites are located next to the Preston River (Regional Open Space) and will contribute to this corridor.
Likely to enhance biological corridors or ecological linkages between conservation areas	All proposed offset sites are located next to the Preston River (Regional Open Space) and will contribute to this corridor and assist with effective ecological extension of the Kalgulup Regional Park
It includes actions to address threatening processes	The proposed offset Site 2 is freehold and currently used for sheep grazing / is has a high incidence of weed species (in the understorey). The intention for offsets would be to place a conservation covenant on a portion of the Lot 1, fence to remove sheep and undertake rehabilitation measures.
Allows for secure management arrangements in place that will provide for long term conservation	The offset areas will be placed under a conservation covenant.
Sound knowledge and adaptive management	The final offset strategy will establish targets for each offset area and include an implementation plan, monitoring and corrective actions.

Part 5: References and databases

1. GIS datasets

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- *Aboriginal Heritage Places (DPLH-001)*
- *Cadastre Address (LGATE-002)*
- *Contours (DPIRD-073)*
- *DBCA – Lands of Interest (DBCA-012)*
- *DBCA Legislated Lands and Waters (DBCA-011)*
- *Directory of Important Wetlands in Australia – Western Australia (DBCA-045)*
- *Environmentally Sensitive Areas (DWER-046)*
- *Flood Risk (DPIRD-007)*
- *Groundwater Salinity Statewide (DWER-026)*
- *IBRA Vegetation Statistics*
- *Local Planning Scheme – Zones and Reserves (DPLH-071)*
- *Regional Parks (DBCA-026)*
- *Soil and Landscape Mapping – Best Available*

Restricted GIS Databases used:

- *ICMS (Incident Complaints Management System) – Points and Polygons*
- *Threatened Flora (TPFL)*
- *Threatened Flora (WAHerb)*
- *Threatened Fauna*
- *Threatened Ecological Communities and Priority Ecological Communities*

2. References

Abbott, I., Bell, D. T., Loneragan, O. (1989) The Jarrah plant. In 'The Jarrah Forest: a complex Mediterranean Ecosystem'. (Eds B. Dell, J. J. Havel and N. Malajczuk) pp. 41-51. (Kluwer Academic Press: Dordrecht.)

Ashby, E., Le Souef, A. S. (1928) Birds observed during the R.A.O.U camp-out at Nornalup, south-west Australia. Emu 27, 266-270.

Benshemesh, J. (2007). National Recovery Plan for Malleefowl. Department for Environment and Heritage, South Australia

Berry, P.F. (2008). Counts of Carnaby's cockatoo (Calyptorhynchus latirostris) and records of flock composition at an overnight roosting site in metropolitan Perth. Western Australian Naturalist. 26: 1-11.

Commonwealth of Australi (2012) EPBC Act 1999 Referral Guidelines for three threatened black cockatoo species, retrieved from https://www.awe.gov.au/sites/default/files/documents/referral-guidelines-wa-black-cockatoo.pdf

Cooper, C. (2000) Food manipulation by southwest Australian cockatoos. Eclectus 8, 3-9.

Department of Biodiversity Conservation and Attractions (DBCA) (2021) Advice relating to CPS 9219/1. DWER Ref DWERDT522467.

Department of Environment and Conservation (2008). Badgingarra Box (*Eucalyptus absita*) Recovery Plan. Interim Recovery Plan No. 226. Department of Environment and Conservation, Perth, Western Australia.

Department of Environment and Conservation (2012). Chuditch (*Dasyurus geoffroii*) National Recovery Plan. Wildlife Management Program No.54. Department of Environment and Conservation, Perth, Western Australia.

Department of Environment and Conservation (2012). Cinnamon Sun Orchid (Thelymitra dedmaniarum) Interim Recovery Plan 2013-17. Interim Recovery Plan No. 331. Department of Environment and Conservation, Western Australia.

Department of Conservation and Land Management (2000) Narrow Curved-leaf Grevillea (*Grevillea curviloba subp. Incurca*) Interim Recovery Plan 2000 – 2003. Interim Recovery Plan No. 67. Department of Conservation and Land Management, Western Australia.

Department of Water and Environmental Regulation (DWER) (2020) Position Statement on FOGO Collection. Getting our Waste Sorted. https://www.wasteauthority.wa.gov.au/images/resources/files/2020/09/Position_statement_on_FOGO_collection_systems.pdf

Department of Parks and Wildlife (DPaW) (2008) FOREST BLACK COCKATOO (BAUDIN'S COCKATOO *Calyptorhynchus baudinii* AND FOREST RED-TAILED BLACK COCKATOO *Calyptorhynchus banksii naso*) RECOVERY PLAN, retried from: https://www.awe.gov.au/sites/default/files/documents/wa-forest-black-cockatoos-recovery-plan.pdf

Department of Parks and Wildlife (DPAW)(2013) Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan, WESTERN AUSTRALIAN WILDLIFE MANAGEMENT PROGRAM NO. 52, Retrieved from https://www.awe.gov.au/sites/default/files/documents/carnabys-cockatoo-recovery-plan.pdf

Department of Parks and Wildlife (DPaW) (2015) Corporate Policy No. 36, Recovery of threatened species through translocation and captive breeding or propagation, Department of Parks and Wildlife, Perth.

Department of Parks and Wildlife (DPaW). (2016). Fauna profiles: Malleefowl Leipoa ocellata. Retrieved from: http://www.dpaw.wa.gov.au/

Department of Parks and Wildlife (DPaW) (2017) Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan, retrieved from https://www.awe.gov.au/environment/biodiversity/threatened/publications/recovery/western-ringtail-possum-recovery-plan

Garnett, S. T., Crowley, G. M. (2000) 'The Action Plan for Australian Birds 2000.' Environment Australia, Canberra.

Garnett, S., Szabo, J. and Dutson, G. (2011). The Action Plan for Australian Birds 2010. CSIRO Publishing, Melbourne, Victoria.

GHD (2021a) Flora and Fauna survey for clearing permit application CPS 9219/1 for V & V Walsh Pty Ltd DWER Ref DWERDT451036.

GHD (2021b) Environmental Offset Proposal for significant residual impacts of clearing permit application CPS 9219/1 for V & V Walsh Pty Ltd, DWER Reference DWERDT532440.

Halse, S. A. (1986) 'Parrot damage in apple orchards in south-western Australia - a review.' Department of Conservation and Land Management, Technical Report Number 8, Perth.

Heron, S. J. (1970) The birds of Middle Swan, Western Australia. Emu 70, 155-158.

Higgins, P. J. (1999) (Ed.) 'Handbook of Australian, New Zealand and Antarctic Birds, Volume 4. Parrots to Dollarbird.' (Oxford University Press: Melbourne.)

Johnstone, R.E. and Storr, G.M. (1998). Handbook of Western Australian Birds, Volume I, Non-passerines (Emu to Dollarbird). Western Australian Museum, Perth.

Johnstone, R. E., Kirkby, T. (1999) Food of the Forest Red-tailed Black Cockatoo Calyptorhynchus banksii naso in south-west Western Australia. Western Australian Naturalist 22, 167-177.

Johnstone, R.E., Johnstone, C. and Kirkby, T. (2011). Black Cockatoos on the Swan Coastal Plain. Report for the Department of Planning, Western Australia.

Long, J. L. (1985) Damage to cultivated fruit by parrots in the south of Western Australia. Australian Wildlife Research 12, 75-80.

Olde P.M, and Marriott N.R (2008) Recognition of new taxa in Grevillea (proteaceae: Grevilleoideae) from south-west Western Australia. *Nuytsia* V18, pages 223-234.

Robinson, A. (1960) The importance of the Marri as a food source in south-western Australian birds. Western Australian Naturalist 7, 109-115.

Saunders, D.A. (1974a). Subspeciation in the White-tailed Black Cockatoo, *Calyptorhynchus baudinii*, in Western Australia. Australian Wildlife Research. 1: 55-69.

Saunders, D. A. (1974b) The occurrence of the White-tailed Black Cockatoo, Calyptorhynchus baudinii, in Pinus plantations in Western Australia. Australian Wildlife Research 1, 45-54.

Saunders, D. A. (1979) Distribution and taxonomy of the White-tailed and Yellow-tailed Black Cockatoo Calyptorhynchus spp. Emu 79, 215-227.

Saunders, D.A. (1980). Food and movements of the short-billed form of the White-tailed Black Cockatoo. Australian Wildlife Research. 7: 257-269.

Saunders, D.A. (1990). Problems of survival in an extensively cultivated landscape: the case of Carnaby's cockatoo *Calyptorhynchus funereus latirostris*. Biological Conservation. 54: 277-290.

Saunders, D.A. and Ingram, J.A. (1998). Twenty-eight years of monitoring a breeding population of Carnaby's cockatoo. Pacific Conservation Biology. 4: 261-270.

Sedgwick, E. H. (1940) Rockingham district. Emu 40, 237-245.

Sedgwick, L. E. (1964) Birds of the Stirling Ranges. Emu 64, 7-19.

Serventy, D. L. (1937) Migration in the Perth district. Emu 37, 90-94.

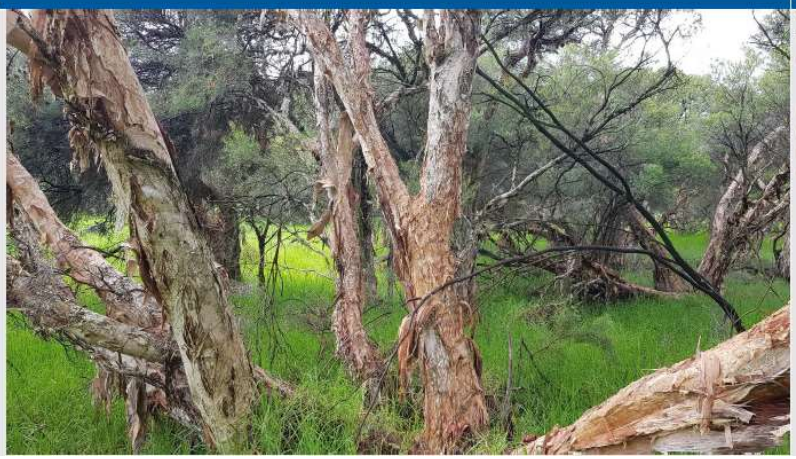
Serventy, D. L. (1948) Birds of the Swan River district. Emu 47, 241-286.

V & V Walsh (2021) Response to government agency submissions on clearing permit CPS 9219/1, DWER reference DWERDT532375.

Appendix A – Vegetation recorded within the application area

Extracted from GHD (2021a)

VEGETATION TYPE DESCRIPTION	PHOTOGRAPH	SAMPLE SITES (QUADRATS), CONDITION AND EXTENT WITHIN SURVEY AREA
Vegetation Unit A: *Corymbia calophylla* open forest over *Agonis flexuosa* low woodland over *Kunzea glabrescens* tall open shrubland over *Macrozamia riedlei* open shrubland over **Cenchrus clandestinus*, **Ehrharta calycina* grassland and **Oxalis pes-caprae*, **Watsonia meriana* and **Zantedeschia aethiopicum* herbland on grey loamy sand		WAL01, WAL02, WAL03 Good-Completely Degraded condition 1.12 ha

VEGETATION TYPE DESCRIPTION	PHOTOGRAPH	SAMPLE SITES (QUADRATS), CONDITION AND EXTENT WITHIN SURVEY AREA
Vegetation Unit B: *Melaleuca rhaphiophylla* low woodland over **Cynodon dactylon*, **Ehrharta longifolia* grassland over *Caladenia latifolia*, **Lotus subbiflorus*, **Rumex crispus*, **Zantedeschia aethiopica* open herbland with **Lepidosperma longitudinale* open sedgeland on grey sandy clay loam.		WAL04, WAL05, WAL06 Degraded-Completely Degraded condition 1.70 ha

VEGETATION TYPE DESCRIPTION	PHOTOGRAPH	SAMPLE SITES (QUADRATS), CONDITION AND EXTENT WITHIN SURVEY AREA
Vegetation Unit C: *Eucalyptus rudis* subsp. *cratyantha* (P4) tall woodland over *Agonis flexuosa, Melaleuca rhaphiophylla* low woodland over **Asparagus asparagoides* very open shrubland over **Cenchrus clandestinus, *Ehrharta longifolia* grassland over *Caladenia latifolia, *Lotus subbiflorus, *Rumex crispus, *Sonchus oleraceus, *Zantedeschia aethiopica* open herbland on grey loamy sand		WAL07, WAL08, WAL09 Degraded condition 1.3 ha

VEGETATION TYPE DESCRIPTION	PHOTOGRAPH	SAMPLE SITES (QUADRATS), CONDITION AND EXTENT WITHIN SURVEY AREA
Vegetation Unit D: Grassland and herbland of introduced species with clumps of *Juncus pallidus* sedges and scattered *Eucalyptus rudis* or *Melaleuca rhaphiophylla* trees.		Completely Degraded condition 0.76 ha
Cleared		Completely Degraded condition 0.40 ha
Total		**5.28 ha**

Appendix B – Flora species recorded within the survey area

Extracted from GHD (2021a)

Flora recorded within the project area

Family	Species	Naturalised	Conservation status
Araceae	*Lemna disperma*		
Araceae	*Zantedeschia aethiopica*	* DP	
Asparagaceae	*Asparagus asparagoides*	* DP WONS	
Asparagaceae	*Lomandra micrantha*		
Asparagaceae	*Sowerbaea laxiflora*		
Asteraceae	*Arctotheca calendula*	*	
Asteraceae	*Conyza bonariensis*	*	
Asteraceae	*Cotula coronopifolia*	*	
Asteraceae	*Cotula turbinata*	*	
Asteraceae	*Hypochaeris glabra*	*	
Asteraceae	*Senecio pinnatifolius*		
Asteraceae	*Sonchus oleraceus*	*	
Asteraceae	*Ursinia anthemoides*	*	
Boraginaceae	*Echium plantagineum*	*	
Cactaceae	*Opuntia* sp.	* DP	
Caryophyllaceae	*Silene gallica*	*	
Colchicaceae	*Burchardia congesta*		
Crassulaceae	*Crassula colorata*		
Crassulaceae	*Crassula natans*	*	
Cyperaceae	*Ficinia nodosa*		
Cyperaceae	*Lepidosperma longitudinale*		
Cyperaceae	*Mesomelaena tetragona*		
Dasypogonaceae	*Dasypogon bromeliifolius*		
Euphorbiaceae	*Ricinus communis*	*	
Fabaceae	*Acacia pulchella*		
Fabaceae	*Acacia saligna*		
Fabaceae	*Jacksonia furcellata*		
Fabaceae	*Kennedia prostrata*		
Fabaceae	*Lotus subbiflorus*	*	
Fabaceae	*Lupinus angustifolius*	*	
Fabaceae	*Trifolium arvense*	*	
Fabaceae	*Trifolium repens*	*	
Fabaceae	*Vicia sativa*	*	
Geraniaceae	*Erodium cicutarium*	*	
Iridaceae	*Romulea rosea*	*	
Iridaceae	*Sparaxis bulbifera*	*	
Iridaceae	*Watsonia meriana*	*	
Juncaceae	*Juncus pallidus*		
Juncaginaceae	*Cycnogeton lineare*		
Lauraceae	*Cassytha racemosa*		
Myrtaceae	*Agonis flexuosa*		
Myrtaceae	*Corymbia calophylla*		
Myrtaceae	*Eucalyptus rudis* subsp. *cratyantha*		P4
Myrtaceae	*Hypocalymma angustifolium*		
Myrtaceae	*Kunzea glabrescens*		
Myrtaceae	*Melaleuca preissiana*		
Myrtaceae	*Melaleuca rhaphiophylla*		
Orchidaceae	*Caladenia latifolia*		
Orchidaceae	*Microtis media*		
Oxalidaceae	*Oxalis pes-caprae*	*	
Poaceae	*Briza maxima*	*	
Poaceae	*Cenchrus clandestinus*	*	
Poaceae	*Cynodon dactylon*	*	
Poaceae	*Ehrharta calycina*	*	
Poaceae	*Ehrharta longiflora*	*	
Poaceae	*Eragrostis curvula*	*	
Poaceae	*Lolium perenne*	*	
Poaceae	*Poa annua*	*	
Polygonaceae	*Rumex crispus*	*	
Proteaceae	*Banksia grandis*		
Proteaceae	*Banksia littoralis*		
Proteaceae	*Hakea varia*		
Proteaceae	*Persoonia longifolia*		
Ranunculaceae	*Ranunculus muricatus*	*	
Rubiaceae	*Opercularia hispidula*		
Xanthorrhoeaceae	*Xanthorrhoea brunonis*		
Zamiaceae	*Macrozamia riedlei*		

* Introduced (weed) species

DP Declared Pest

WONS Weed of National Significance

P4 Priority 4

Appendix C – Fauna species recorded within the survey area

Extracted from GHD (2021a)

Family	Taxon	Common name	Status (EPBC Act)
Birds			
Alcedinidae	*Dacelo novaeguineae*	Laughing kookaburra	Int
Anatidae	*Chenonetta jubata*	Australian wood duck	
Anatidae	*Anas superciliosa*	Pacific black duck	
Artamidae	*Gymnorhina tibicen*	Australian magpie	
Artamidae	*Cracticus nigrogularis*	Pied butcherbird	
Corvidae	*Corvus coronoides*	Australian raven	
Hirundinidae	*Hirundo neoxena*	Welcome swallow	
Meliphagidae	*Anthochaera carunculata*	Red wattlebird	
Monoarchidae	*Grallina cyanoleuca*	Magpie-lark	
Phalacrocoracidae	*Phalacrocorax varius*	Pied cormorant	
Psittaculidae	*Barnardius zonarius*	Australian ringneck	
Psittaculidae	*Purpureicephalus spurius*	Red-capped parrot	
Rhipiduridae	*Rhipidura leucophrys*	Willie wagtail	
Threskiornithidae	*Threskiornis moluccus*	Australian white ibis	
Mammals			
Felidae	*Felis catus*	House cat	Int
Leporidae	*Oryctolagus cuniculus*	Rabbit	Int
Macropodidae	*Macropus fuliginosus*	Western grey kangaroo	
Phalangeridae	*Trichosurus vulpecula*	Common brushtail possum	
Pseudocheiridae	*Pseudocheirus occidentalis*	Western ringtail possum	Cr
Reptiles			
Gekkonidae	*Christinus marmoratus*	Marbled Gecko	
Scincidae	*Hemiergis quadrilineata*	Two-toed earless skink	
Scincidae	*Menetia greyii*	Common dwarf skink	
Amphibians			
Pelodryadidae	*Ranoidea moorei*	Motorbike frog	

Cr = Critically endangered under the *WA Biodiversity Conservation Act 2016*

En = Endangered under the *Environment Protection and Biodiversity Conservation Act 1999*

Vu = Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999*

Int = Introduced species

Appendix D – Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from:
Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Table 1 Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

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

Appendix E – Offset calculator value justification

E.1. Western Ringtail Possum

Attribute	Value	Justification
Area of impact	0.35 ha	GHD (2020) flora and fauna survey confirmed the presence of Western Ringtail Possums and their habitat within the survey area. The extent of impact has been defined after application of the mitigation hierarchy.
Quality	8	The impact site has known Western Ringtail Possums, two dreys (that will be retained / are avoided) and connects to other habitat areas. A value of 7 has been applied for Western Ringtail Possum habitat quality.
Quantum of impact	0.28 ha	

Attribute	Value	Justification
Offset area	2.48 ha	A field survey (November 2021) identified areas of habitat available within Lot 1 that form part of the Preston River wildlife corridor. The preferred offset area is in the North-eastern corner of Lot 1 and is 3.2 ha in size, with 2.48 ha of this considered to provide suitable habitat for Western Ringtail Possum.
Start Quality	6	The offset area within Lot 1 has a weedy understorey and is devoid of shrub layers. However, given their proximity to Preston River and connectivity they have high contextual value. There is evidence that Western Ringtail Possums utilise the area as one drey was recorded.
Future quality without offset	5	Potential for future degradation over time if not managed for conservation purposes. Cattle are currently grazed within the lot, weed incursion is high, and given tenure there is also the potential for future loss via development.
Future quality with offset	8	Quality will be improved with the proposed revegetation detailed in the Revegetation Plan including completion criteria. The offset site is expected to provide high quality Western Ringtail Possum habitat as it is part of the Preston River wildlife corridor.
Risk related time horizon	1	Lot 1 is freehold and owned by V&V Walsh. A conservation covenant will be placed over a portion of the Lot within 12 – 24 months. The risk related time horizon refers to the period in which the site is at risk of changes, in this case a value of 1 has been applied as the risk will be reduced at approximately 1 year.
Time until ecological benefit (years)	10	To be placed in conservation covenant or managed for conservation purposes within 12 – 24 months, with rehabilitation works completed over a five-year period. Full ecological benefit is expected to be gained at 10 years.
Risk of loss without offset (%)	30 %	Freehold property, however it is considered to have a low potential for the sites to be developed. DWER advice that a 30% value is acceptable for this attribute.
Risk of loss with offset (%)	10 %	Very low risk of loss once a conservation covenant is placed over the offset area.
Confidence in result (%)	90 %	High level of confidence that there is a very low risk of loss and that the quality can be improved with management and revegetation activities proposed in the revegetation plan.
% of impact offset	235.57 %	

E.1. Black Cockatoo

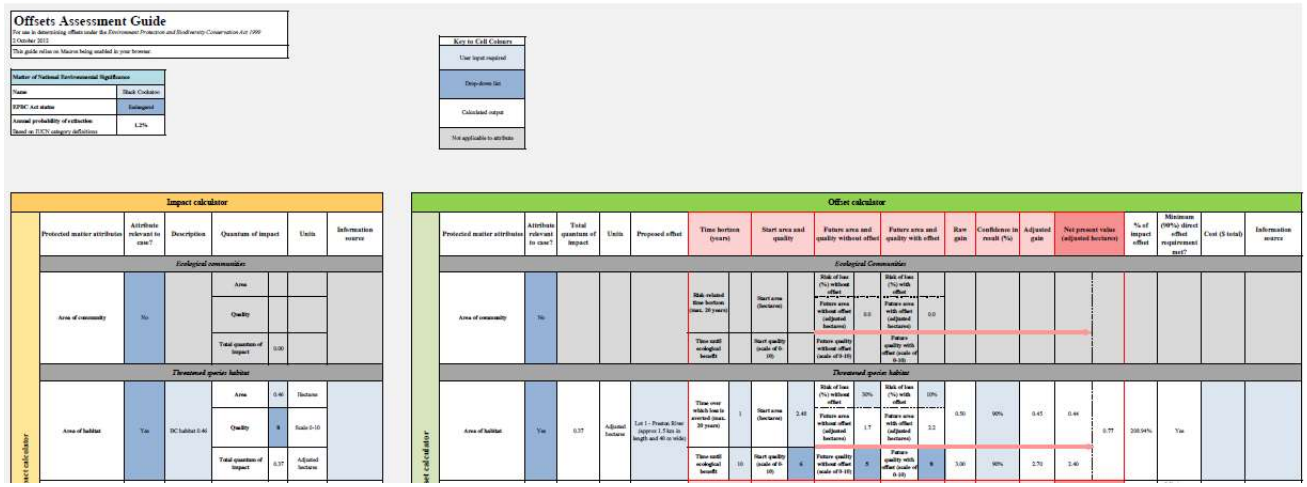
Attribute	Value	Justification
Area of impact	0.46 ha	GHD (2020) flora and fauna survey confirmed the presence of high quality black cockatoo habitat within the survey area. The extent of impact has been defined after application of the mitigation hierarchy.
Quality	8	0.46 ha of high value foraging habitat including 47 potential breeding trees
Quantum of impact	0.37 ha	

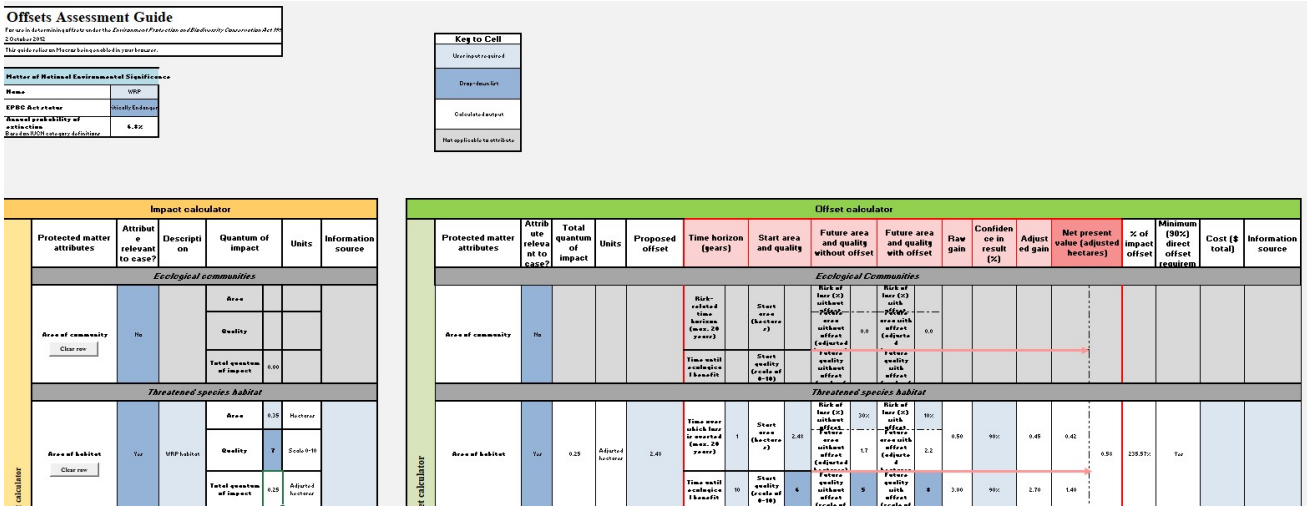
Attribute	Value	Justification
Offset area	2.48 ha	A field survey (November 2021) identified areas of habitat available within Lot 1 that form part of the Preston River wildlife corridor. The preferred offset area is in the North-eastern corner of Lot 1 and is 3.2 ha in size, with 2.48 ha of this considered to provide suitable habitat for Black Cockatoo species.
Start Quality	6	The offset area within Lot 1 has a weedy understorey and is devoid of shrub layers, however the overstory layer is suitable for use by Black Cockatoo species. Evidence of use by Forest Red-tailed Black Cockatoo was recorded within the *Corymbia calophylla* and *Agonis flexuosa* woodland over introduced grass species.
Future quality without offset	5	Potential for future degradation over time if not managed for conservation purposes. Sheep are currently grazed within the lot, weed incursion is high, and given tenure there is also the potential for future loss via development.
Future quality with offset	8	Quality will be improved with the proposed revegetation detailed in the Revegetation Plan including completion criteria. The site is expected to be

Attribute	Value	Justification
		revegetated with suitable foraging species for Black Cockatoo, therefore increasing its habitat quality.
Risk related time horizon	1	Lot 1 is freehold and owned by V&V Walsh. A conservation covenant will be placed over a portion of the Lot within 12- 24 months. The risk related time horizon refers to the period in which the site is at risk of changes, in this case a value of 1 has been applied as the risk will be reduced at approximately 1 year.
Time until ecological benefit (years)	10	To be placed in conservation covenant or managed for conservation purposes within 12 – 24 months, with rehabilitation works completed over a five year period. Full ecological benefit is expected to be gained at 10 years.
Risk of loss without offset (%)	30 %	Freehold property, however it is considered to have a low potential for the sites to be developed. DWER advice that a 30% value is acceptable for this attribute.
Risk of loss with offset (%)	10 %	Very low risk of loss once a conservation covenant is placed over the offset area.
Confidence in result (%)	90 %	High level of confidence that there is a very low risk of loss and that the quality can be improved with management and revegetation activities proposed in the revegetation plan.
% of impact offset	208.94%	

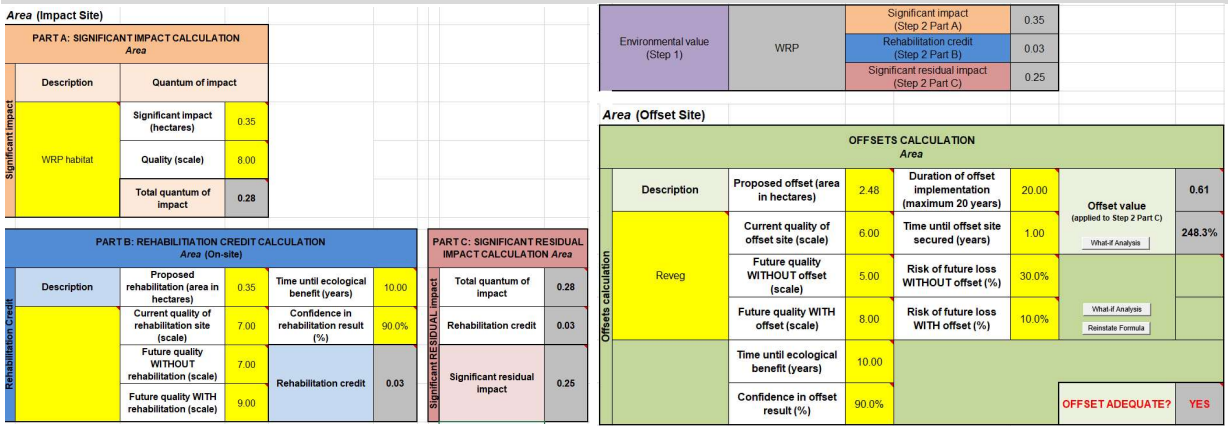
Appendix F – Offset calculators

F.1. EPBC Calulators





F.2. WA Metric Calculators



PART A: SIGNIFICANT IMPACT CALCULATION
Area

Significant impact

Description	Quantum of impact	
BC habitat	Significant impact (hectares)	0.46
	Quality (scale)	8.00
	Total quantum of impact	0.37

PART B: REHABILITIATION CREDIT CALCULATION
Area (On-site)

Rehabilitation Credit

Description				
	Proposed rehabilitation (area in hectares)	0.15	Time until ecological benefit (years)	10.00
	Current quality of rehabilitation site (scale)	8.00	Confidence in rehabilitation result (%)	90.0%
	Future quality WITHOUT rehabilitation (scale)	7.00	Rehabilitation credit	0.02
	Future quality WITH rehabilitation (scale)	9.00		

PART C: SIGNIFICANT RESIDUAL IMPACT CALCULATION *Area*

Significant RESIDUAL impact

Total quantum of impact	0.37
Rehabilitation credit	0.02
Significant residual impact	0.34

Environmental value (Step 1)	BC	Significant impact (Step 2 Part A)	0.46
		Rehabilitation credit (Step 2 Part B)	0.02
		Significant residual impact (Step 2 Part C)	0.34

***Area* (Offset Site)**

OFFSETS CALCULATION
Area

Offsets calculation

Description						
	Proposed offset (area in hectares)	2.48	Duration of offset implementation (maximum 20 years)	20.00	Offset value (applied to Step 2 Part C)	0.81
Reveg	Current quality of offset site (scale)	6.00	Time until offset site secured (years)	1.00	What-if Analysis	234.9%
	Future quality WITHOUT offset (scale)	5.00	Risk of future loss WITHOUT offset (%)	30.0%		
	Future quality WITH offset (scale)	8.00	Risk of future loss WITH offset (%)	10.0%	What-if Analysis Reinstate Formula	
	Time until ecological benefit (years)	10.00				
	Confidence in offset result (%)	90.0%			OFFSET ADEQUATE?	YES

Appendix G – Black cockatoo spatial data

Location of Black Cockatoo breeding (blue) and roosting (red) sites within 5km and 12km of the application area