

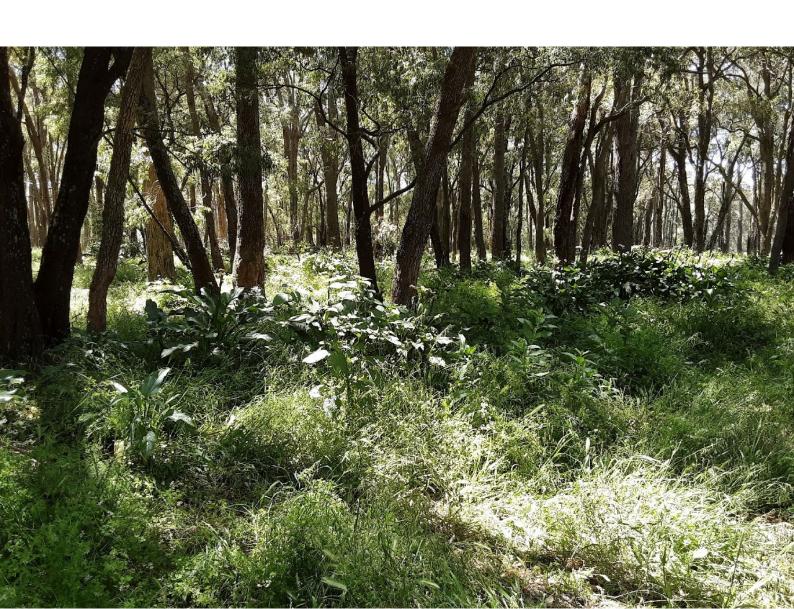
Revegetation Plan

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



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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.

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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 100m² 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 100m²) *Agonis flexuosa* (3-5 stems per 100m²) 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 100m²) over *Agonis flexuosa* (10 stems per 100m²) 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.

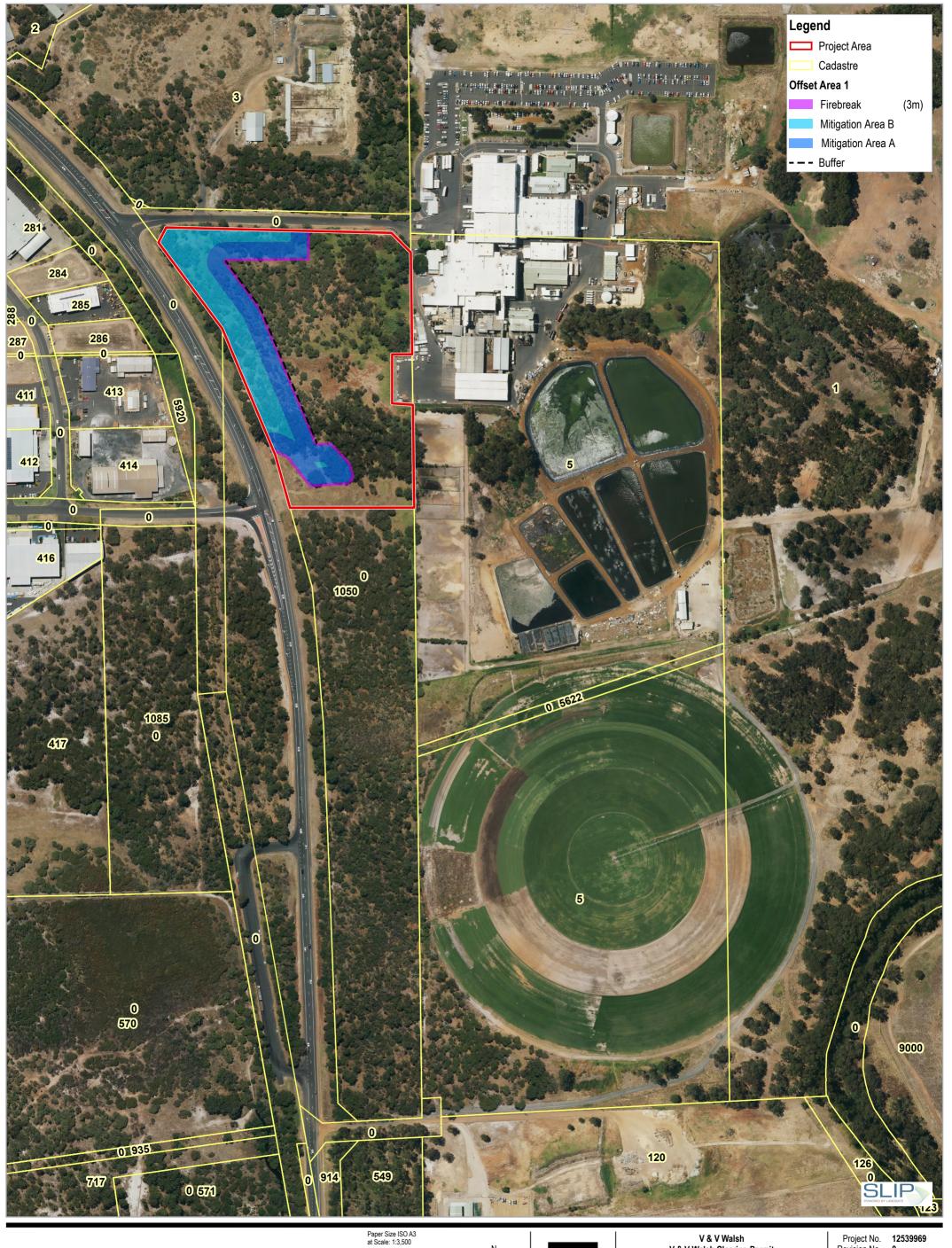
Heddle, EM, Loneragan, OW, & Havel, JJ 1980, Vegetation Complexes of the Darling System, Western Australia, In Atlas of Natural Resources, Darling System, Western Australia, Perth, Department of Conservation and Environment.

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





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25 50 75

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



V & V Walsh V & V Walsh Clearing Permit

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

Appendix B

Quadrat data

Site ID:	V&VQ06	Site 1 (Lot 1050)			
Туре:	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)			
Туре:	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)		
Туре:	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 matte	er 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)		
Туре:	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)		
Туре:	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)			
Туре:	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	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)		
Туре:	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



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