

Revegetation Management Plan

Lots 101, Wilgarrup

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Abbreviations and acronyms

Common terms

Study Area	Revegetation site (2.36 ha)
DBCA	WA Department of Biodiversity, Conservation and Attractions
DCCEEW	Federal Department of Climate Change, Energy, the Environment and Water
DWER	WA Department of Water and Environmental Regulation
FRTBC	Forest Red-tailed Black Cockatoo
RMP	Revegetation Management Plan
WA	Western Australia
Legislation	
BC Act	<i>WA Biodiversity Conservation Act 2016</i>
EP Act	<i>WA Environmental Protection Act 1986</i>
EPBC Act	<i>Federal Environment Protection and Biodiversity Conservation Act 1999</i>
Measurements	
cm	Centimetres
ha	Hectares
km	Kilometres
m	Metres

1 Introduction

1.1 Project Background

Manjimup Kiwi Pty Ltd (herein referred to as ‘the proponent’) intends to undertake the clearing of 1.18 ha of native vegetation for horticultural purposes at Lot 101 on Deposited Plan 411364, Wilgarrup. The lots are located within the Shire of Manjimup. A Clearing Permit application was submitted by the proponent to the Department of Water and Environmental Regulation (DWER) on the 29th of May 2024 (CPS 10644/1). The proponent, as a requirement by DWER, proposes to undertake revegetation within an area of Lot 102. SW Environmental were engaged to prepare a Revegetation Management Plan (RMP) for the chosen area.

The ‘Study Area’ for revegetation is 2.36 ha in area and is presented in Figure 1, Appendix A. The revegetation site is in a cleared, Completely Degraded vegetation condition (as per the vegetation condition scale presented in EPA (2016) Technical Guidance). The Study Area is currently dominated by introduced plant taxa (see Section 4.1.2), with no remnant native vegetation present. This Revegetation Management Plan (RMP) has been prepared with objectives of establishing native vegetation that will support local fauna, particularly creating black cockatoo¹ foraging (and eventually breeding) habitat, returning biodiversity value to the site, improving general ecosystem functioning and site stabilisation.

1.2 Purpose of the Plan

This RMP has been prepared to provide a framework and management document to formally capture the revegetation management commitments proposed by the proponent. The objectives of the Plan are to:

- Revegetate the Study Area, establishing native vegetation to a condition capable of generating long-term environmental values.
- Implement successful revegetation by controlling present and ongoing risks to the site.

The Plan has been prepared with general reference to the Department of Water and Environment Regulation’s (DWER) publication: *A guide to preparing revegetation plans for clearing permits* (DWER, 2018). Following revegetation, the offset site will be placed under Conservation Covenant pursuant to the *Soil and Land Conservation Act 1945* once the planted vegetation is established, ensuring long-term protection of the revegetation site.

From correspondence from DWER 5 June 2025, the following objectives are to met in the RMP:

- ***In considering the above, an offset involving the revegetation of 2.36 hectares (of which at least 0.71 hectares comprises foraging habitat for black cockatoos) from a Completely Degraded (Keighery, 1994) condition to a Good (Keighery, 1994)***

¹ Collectively referring to the Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii* subsp. *naso*) (Vulnerable), Baudin's Cockatoo (*Zanda baudinii*) (Endangered) and Carnaby's Black Cockatoo (*Zanda latirostris*) (Endangered), herein referred to as black cockatoos.

condition to be placed under a conservation covenant, may be sufficient to counterbalance the impacts of the proposed clearing.

The RMP aims to recreate vegetation to a condition that supports the objectives of the plan. The reintroduction of native vegetation through revegetation would create fauna habitat value and improve general ecosystem functioning and site stability.

1.3 Personnel Preparing the Plan

The Plan has been prepared by Georgia Johnsen (Project Officer – Ecology, SW Environmental), with input from Greg Overton (Revegetation Specialist, SW Environmental), Kelly Paterson (Senior Botanist, SW Environmental) and Shane Priddle (Principal Consultant, SW Environmental). All individuals involved in the plan compilation are experienced in the preparation of revegetation management plans and/or implementing revegetation programs.

1.4 Responsibilities

The proponent is responsible for the implementation of the RMP.

1.5 Management Commitments

1.5.1 Vision Statement and Objectives

The management vision for the site is:

To recreate the ecological values of the study area by revegetating the landscape post-disturbance, whilst implementing ongoing weed control and management measures.

The vision, objectives and completion targets are consistent with the **SMART** principles (DWER, 2018):

- **Specific**
- **Measurable**
- **Achievable**
- **Relevant**
- **Time-bound**

In view of the above, the key objectives and aims associated with the revegetation works are to:

- Recreate the ecological values present at the site by revegetating the area with existing, endemic flora taxa where possible,
- Implement successful revegetation by controlling present and ongoing risks to the site
- Return the site to a vegetation condition that supports the objectives of the plan (meeting or exceeding the pre-existing condition in the long-term)
- Recreate fauna habitat values
- Meet the proposed project completion targets (provided in Section 3.2 below) and requirements of DWER to create a revised plan (in line with recommendations outlined in DWER's guide to revegetation plans (DWER, 2018)).

1.6 Completion Target

The target is to meet the objectives outlined in Section 3.1. Table 1-1 summarises recommended completion targets for the site, used to measure the success of revegetation.

Table 1-1 Rehabilitation and revegetation targets

Aspect	Attribute	Measure	Target
Flora and vegetation	Vegetation cover	Number of stems per hectare	2,000 stems/ha after 10 years
	Species richness	Number of species present	60 % of species planted to be present after 10 years
	Weed species presence and abundance	List of weed species and approximate percentage cover	For weed cover to be less than 10 % of the Study Area with no Declared Weeds
	Vegetation condition	Assessment against the Vegetation Condition Scale presented in EPA (2016) Technical Guidance, as adapted from Keighery (1994).	Create vegetation that meets the definition of Good or better vegetation condition.
Fauna	Long-term presence of habitat capable of supporting local significant and general fauna for foraging and/or breeding	Presence and growth of <i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> , and/or other black cockatoo (or alternative local fauna) foraging species, and/or the presence of fauna refuge within vegetation.	For flora with value to local fauna (particularly black cockatoos) to be present and growth rates to be increasing.
	Presence of local fauna species within revegetated area for foraging and/or breeding habitat	Number of local fauna species observed at site and/or presence of secondary evidence such as feeding residue or scratch marks.	For evidence of local fauna species within the revegetation site to be present.

2 Methods

2.1 Desktop Assessment

A brief desktop assessment was undertaken, including a review of available information, datasets and reports relevant to the project. This was undertaken to provide background information to support the RMP. Sources/references interrogated as part of the desktop assessment included:

- 2018 South West Vegetation Complex Statistics Report, utilising the DBCA-047 spatial dataset (DBCA, 2019, 2018)
- Soil Landscape Mapping (Best Available DPIRD-027) spatial dataset (DPIRD, 2022)
- Bureau of Meteorology Climate Data Online (BoM, 2025)
- SW Environmental (2025). *Basic and Targeted Fauna Survey: Lot 101, Wilgarrup*. [Prepared for Manjimup KW Pty Ltd, April 2025].

2.2 Field Survey

2.2.1 Survey Timing and Overview

A site visit was conducted on the 1st of August 2025 to assess the existing values of the Study Area, along with reference vegetation in an area adjacent to the revegetation site. During this visit, a list of key structural flora and observed weeds was created. Notes were made on the site condition.

The Study Area was traversed on foot and by car, with point locations marked (utilising a handheld Global Positioning System (GPS) unit) for corresponding notes on existing site values. Representative photographs were taken. Disturbances to the Study Area were noted. Personnel involved in survey aspects are listed in Table 2-1.

Table 2-1 Survey Personnel

Personnel	Experience	Role
Georgia Johnsen <i>Ecologist</i> <i>BSc (Marine Science & Conservation Biology)</i>	~3 years	Field Survey Reporting
Shane Priddle <i>Principal Consultant</i> <i>BSc (Marine Science)</i> <i>Certified Environmental Practitioner EIANZ (No. 910)</i>	~25 years	Project Manager Field Survey
Greg Overton <i>Revegetation Expert</i>	> 40 years	Technical Advice
Kelly Paterson <i>Senior Botanist</i> <i>BSc (Natural Resource Management - Botany)</i>	>10 years	Botanical Advice

2.2.2 *Vegetation Assessment*

In an area nearby to the revegetation site (Figure 1, Appendix A), an assessment of intact vegetation was undertaken, with the purpose of compiling a list of locally occurring species to inform the revegetation species list, presented in Appendix B. Notes on vegetation structure were made, and native vascular flora taxa were recorded. Additional, opportunistic records were made whilst traversing the Study Area, noting the presence of introduced plant taxa, significant weeds and/or additional patches of native remnant vegetation. A full list of vascular flora taxa observed during the site visit is presented in Appendix C.

3 Results

3.1 Desktop Assessment

3.1.1 Climate, Landform and Soils

The Survey Area is located within the Jarrah Forest Interim Biogeographic Regionalisation for Australia (IBRA) bioregion, specifically within the Southern Jarrah Forest (JAF02) IBRA subregion (DCCEEW, 2022, 2023). Soils within the Study Area, as mapped by Department of Agriculture (now the Department of Primary Industries and Regional Development) (DPIRD, 2022), include:

- **254MpBE Bevan Subsystem (Manjimup)** – Broad, gently sloping (3-15%) divides on laterite, soils are sandy gravels and loamy gravels.
- **254MpYN Yanmah Subsystem (Manjimup)** – Shallow (5-20 m) minor valleys, usually U-shaped with gentle sideslopes (3-10%) and broad swampy floors. Soils are loamy gravels, sandy gravels and deep sands with non-saline wet soils on the valley floors.
- **254DwWH Wheatley Subsystem (Dwalganup)** – Shallow (20-40 m) minor valleys with low sideslopes (5-20%), and narrow swampy floors with a slightly incised stream channel. Soils are loamy gravels, sandy gravels and loamy earths.

The Southern Jarrah Forest region is of a warm Mediterranean climate, typically experiencing winter precipitation ranging between 600 to 1200 mm per annum and a dry season of 5 to 6 months per year (Beard, 2015). Graph 1 presents climatic information for the year preceding the site visit. The Wilgarrup climate station (number 9619) contained the most comprehensive rainfall data to the Survey Area. Data from Manjimup (station number 9573, situated 11.6 km from Wilgarrup) was analysed for temperature data (BoM, 2025).

Long-term mean maximum temperatures ranged from 27.3°C in the hottest month of January, to 14.5°C in the coolest month of July. The long-term average annual rainfall is 894 mm. Weather records between July 2024 and June 2025 indicate that temperatures have exceeded the long-term average across all but one month of April 2025. Annual precipitation across this period fell below the long-term average by 47.1 mm. The month of greatest variation between long-term and recent rainfall records occurred in August 2024, with a value 82.8 mm above the long-term average. Contrarily, in May 2025, monthly precipitation fell below the long-term average by 70.6 mm (Graph 1).



Graph 1 Rainfall and temperature data from the Wilgarrup (9619) and Manjimup (9573) stations, respectively (BoM, 2025)

3.1.2 Regional Vegetation

Vegetation complexes of the southwest forest region (Webb et al., 2016) that intersect the Study Area are mapped as:

- **Bevan (BE2):** Open forest to woodland of *Eucalyptus marginata* subsp. *marginata* with some *Corymbia calophylla* on lateritic uplands in humid and subhumid zones.
- **Wheatley (WH2):** Woodland of *Eucalyptus marginata* subsp. *marginata*-*Eucalyptus wandoo* on slopes with woodland of *Eucalyptus rudis* on valley floors in the humid zone.

3.1.3 Regional Fauna

SW Environmental (2025) completed a Basic and Targeted Fauna Survey at the proposed clearign area, part of Lot 101, Wilgarrup on the 26th of February 2025. Twenty-one terrestrial fauna species were observed during the survey (19 birds and two mammals). Of these, there were signs of one species of conservation significance, Forest Red-tailed Black Cockatoo (*Calyptorhynchys banksia* subsp. *naso* (Vulnerable). Core habitat for Baudin's Cockatoo (*Zanda baudinii*) (Endangered) and Carnaby's Cockatoo (*Zanda latirostris*) (Endangered) is present at the site and these species are possible to occur. Overall, 181 vertebrate terrestrial fauna taxa were returned in desktop searches that may occur or have been recorded within a 10 km buffer of the site (SW Environmental, 2025).

The Survey Area falls within the Region 3 Jarrah Forest (DAWE, 2022), characterised by Jarrah and Marri forest, with Marri-Wandoo woodlands towards the eastern edge. All three black cockatoo species breed in this region, and this is the main area used by Baudin's cockatoo and the FRTBC for breeding. Baudin's cockatoo has key foraging and wintering areas in this region. Marri is a primary foraging

species for Baudin's cockatoo and the FRTBC. Foraging areas associated with breeding are critical for all species (DAWE, 2022). There are scattered records for all three black cockatoo species locally (ALA, 2025; BirdLife Australia, 2025; DBCA, 2024).

All three black cockatoo species may utilise the Survey Area for foraging, however no suitable breeding hollows or evidence of roosting recorded. There were 33 suitable DBH trees within the fauna Survey Area, with an additional 21 trees recorded in adjoining vegetation. No black cockatoo roosts were recorded within the Survey Area. Appendix D presents a list of black cockatoo foraging species that were either recorded during the site visit or have been added to the indicative revegetation species list (Appendix B). There was no evidence of Western Ringtail Possums (*Pseudocheirus occidentalis*) (Critically Endangered) occurring within the fauna Survey Area.

Western grey kangaroo (*Macropus fuliginosus*) scat and tracks were found within the revegetation area during the site visit. The revegetation area may also be considered as suitable habitat for introduced European rabbit (*Oryctolagus cuniculus*).

3.2 Field Survey

3.2.1 Existing Vegetation

The revegetation Study Area was cleared and dominated by introduced species (Photo 3-1). No remnant vegetation occurred within the Study Area. Weed presence is further discussed in Section 4.4.



Photo 3-1 Revegetation area

3.2.2 Reference Vegetation

Remnant, representative vegetation existed in Palgarup State Forest to the north, with the closest edge extending <20 m from the northern Study Area boundary. This patch was used as a reference to compile an indicative revegetation species list for the project, due to its sufficient vegetation condition and close proximity to the Study Area. Other patches of remnant vegetation at Lot 101 were in degraded vegetation condition and were not appropriate for use as reference vegetation.

Reference vegetation consisted of *Eucalyptus marginata* (Jarrah) and *Corymbia calophylla* (Marri) mid forest over open shrubland over isolated clumps of forbs (Photo 3-2). The location of reference vegetation is presented in Figure 1 (Appendix A). The reference site was in Very Good to Excellent vegetation condition (EPA, 2016). A list of vascular flora taxa recorded during the survey, inclusive of species within reference vegetation is presented in Appendix C.

Given the proximity of the Study Area to the Wilgarrup River, minor variation in soil moisture conditions may occur across the site, particularly within lower slope areas adjoining the river corridor. Accordingly, the indicative revegetation species list was developed based on flora recorded within the reference vegetation described above, as well as other remnant vegetation within the local area, and incorporates both upland forest species characteristic of the reference vegetation and several taxa tolerant of higher soil moisture conditions.



Photo 3-2 Reference vegetation

3.3 Hydrology and Drainage

The revegetation Study Area consists of a gentle to moderately sloping gradient. Water is likely to run down the sloped area into the dam situated outside of the revegetation area. The slope would decrease chances of water retention within the revegetation area.

The revegetation area occurs on a gentle to moderately sloping landform adjoining the Wilgarrup River. While the overall slope is expected to facilitate downslope drainage and reduce the likelihood of prolonged surface ponding across most of the site, the proximity to the river suggests that lower slope and riparian sections may experience relatively higher soil moisture levels. In particular, these areas may be influenced by seasonal waterlogging, elevated winter soil moisture, or a relatively shallow watertable associated with the adjacent river corridor. Based on current site observations, widespread or prolonged surface inundation is not considered likely; however, small-scale variation in soil moisture conditions may occur across the site. Consequently, revegetation planning should allow for the inclusion of species tolerant of locally wetter microsites where required. If necessary, further site inspection during the winter months could be undertaken to confirm seasonal hydrological conditions and inform final species selection.

4 Revegetation Management

4.1 Disturbances, Risks and Management

The proposed revegetation site, having been previously subject to historical clearing disturbance, faces a number of risks requiring management. Risks include erosion, weed invasion and grazing pressures. Management strategies can be put in place to mitigate the effect of these risks to achieve successful revegetation of the Study Area, as detailed below.

4.1.1 Erosion

Erosion is a prevalent risk for the revegetation Study Area, due to the sloping gradient of the site and level of exposure to the elements that the Study Area is currently presented with. Water retention issues may arise and subsequent revegetation failure if this risk is not managed effectively. By implementing successful revegetation across the Study Area across the slope, soil stability would be enhanced, whilst simultaneously providing biodiversity value.

4.1.2 Weeds

Invasive flora taxa were observed to be proliferating across the Study Area. Predominant weed types within the revegetation areas included widespread grassy weeds (Photo 4-1), Blackberry (*Rubus* sp.) (Photo 4-2), Thistle (*Cirsium* sp.) and various other broadleaf weeds and herbs. Blackberry (*Rubus* sp.) is a listed Declared Pest under the *Biosecurity and Agriculture Management Act 2007* (DPIRD, 2025) and a Weed of National Significance (WoNS) (Weeds Australia, 2021). Significant Blackberry invasion was evident within the revegetation Study Area. Multiple observed weeds are capable of high ecological impact and/or rapid invasiveness, as per DBCA's (2023) South West Region Impact and Invasiveness Rating system. Weed species observed at the site are presented as part of Appendix C.

The Study Area is likely to require significant ongoing monitoring and maintenance if initial weed control efforts are not comprehensive. There is a potential for ongoing weed invasion to occur from adjacent, open properties. This risk can be minimised with periodic monitoring and follow-up weed control (as detailed in Section 4.4), along with the successful establishment of native species, which may outcompete invasive flora taxa. Overall, planting of native species sourced from local provenance will improve vegetation condition, habitat quality and connectivity within the site over the long term.



Photo 4-1 Grassy weeds at the site



Photo 4-2 Blackberry infestation

4.1.3 Grazing Pressures

With evidence of Western grey kangaroo (*Macropus fuliginosus*) activity observed within the study area (Photo 4-3), it is likely that grazing pressure would be a threat to young seedlings that will be planted during revegetation. The recommended management strategy to exclude these grazing pressures includes the installation of fencing around revegetation areas. By ensuring that grazing species are excluded from the rehabilitation area prior to the commencement of revegetation works (through fencing installation), requirements for ongoing management are likely to be reduced, along with the requirement for plant guards.



Photo 4-3 Kangaroo scat within revegetation site

4.1.4 Other

Phytophthora cinnamomi may exist on site. This along with other pathogens could be introduced through tubestock, or equipment used in rehabilitation (including on the clothes or person of site workers). This risk can be reduced by only using material from a Nursery and Garden Industry Western Australia (NGIWA) accredited nursery. Standard plant hygiene practices would also be utilised during revegetation, to minimise the risk of further spread (provided in Appendix E).

4.2 Implementation Schedule

Recommended timing for implementation of primary weed control and initial planting activities are shown in Table 4-1. Implementation has been broken down into three phases, detailing the tasks to be undertaken:

- prior to **(Phase I)**
- during/around the time of **(Phase II)**
- and following the completion of **(Phase III)** planting.

Actual implementation timing may be impacted by the stages of clearing, availability of seedlings, contractors and rainfall. The timing and extent of ongoing maintenance activities depend on findings from site monitoring following revegetation (Section 5).

Table 4-1 Implementation schedule for primary weed control and planting at the site

Task	Timing	Process Notes
Phase I – Year 0		
Sourcing of plant stock	Immediately following plan approval (summer–autumn prior to planting year)	Recommended use of native species stock (indicative list in Appendix B), sourced from local provenance (Appendix F)
Weed control – initial	Summer to autumn prior to planting (continuing until initial weed control is sufficient for ground preparation)	Undertake initial weed control to ensure weeds are sufficiently reduced prior to ground preparation. Effective blackberry control may require multiple seasons and should commence early where present. As detailed in Section 4.4.
Ground preparation	Following initial weed control, during dry soil conditions and once blackberry control has achieved sufficient reduction	As detailed in Section 4.3.2
Fencing installation	Following ground preparation	As detailed in Section 4.3.3
Phase II – Year 1+, based on effectiveness/completion timing of Phase I processes		
Weed control – ongoing	During year of revegetation when weather conditions are suitable, continuing into months leading up to planting, eliminating any weeds that may reappear following ground preparation	As detailed in Section 4.4
Planting and Bacteria Reintroduction	Around June when soil moisture levels are suitable (period when reasonable rainfall has occurred or is predicted to occur during planting)	As detailed in Section 4.5.6
Watering	Not required if planting occurs during period of suitable soil moisture content	–
Plant protection	Not required if fencing is installed sufficiently	Installation of fencing and elimination of grazing pests should eliminate the requirement of plant guards
Phase III – Year 5+, based on timing of Phase II processes		

<p>Monitoring</p>	<p>To occur:</p> <ul style="list-style-type: none"> - In spring the year following implementation of works - Annually for two years following implementation - 5- and 10-years post completion <p>To reduce ongoing costs, it is recommended that additional brief monitoring checks-ups are undertaken each month following implementation for the following growing season</p>	<p>As detailed in Section 5</p>
<p>Weed control – follow-up</p>	<p>Following planting for at least one year, as required.</p> <p>Recommended use of a combination of selective and river-safe herbicide.</p> <p>Further requirements as identified through regular monitoring.</p>	<p>Selective herbicide application suitable for weeds present (Section 4.4)</p>

4.3 Site Preparation

Site preparation activities are essential for the site to obtain the greatest chance of successful rehabilitation to meet completion requirements. Recommendations for site and soil preparation to be carried out prior to revegetation within the study area are outlined in Table 4-1.

Table 4-2 Summary of recommended tasks for site preparation within the study area, to be performed prior to revegetation.

Task	Purpose	Process
Weed control – initial	Remove invasive weeds Improve chances of growing success for native species (both regenerated and revegetated) by reducing competition Improve condition of site	Selective herbicide application for blackberry infestation patches. Blackberry control may take a few seasons to achieve, completed prior to site preparation. General non-selective herbicide application for mixed weeds. Selective herbicide application for concentrated patches of same-type weeds following planting.
Fencing installation	Grazing exclusion	Installation of fencing around the outermost perimeter of revegetation site.
Ground preparation	Moisture retention for enhanced plant growth Manage erosion risk and prevent significant water run-off	Ripping along the contour to a depth of ~500 mm at ~1 m intervals.

4.3.1 Weed Control – Initial

As detailed in Section 4.4, selective herbicide application to target the extensive blackberry infestation is recommended, along with widespread, non-selective herbicide application for areas of mixed weeds. The use of selective herbicides, targeted at controlling blackberry (such as Metsulfuron or Chlorsulfuron) are known to persist and remain active in the soil for an extended period following application, sometimes for several years. Whilst this can ensure good long-term weed control effects, the residual herbicide may affect seedling germination, and hence only established seedlings are recommended for planting, as opposed to the additional spreading of ungerminated seed for this RMP. The use of residual herbicides should be kept to a minimum where possible to ensure good plant growth.

Timing: At the earliest time practicable, prior to further site preparation. Blackberry control may take a few seasons to achieve. To predominantly occur across dry months (around summer) in appropriate weather conditions. Planting should not occur within 2 weeks of broad-spectrum herbicide application.

4.3.2 Ground Preparation

Ground preparation is recommended to ensure that maximum chances of revegetation success are achieved within the Study Area. By adequately preparing the site for planting, the erosion risk posed by the sloping gradient of the area can be mitigated. Ripping to a depth of ~500 mm at ~1 m intervals horizontally along the contour is recommended. Ripping will improve chances of successful seedling growth, enhancing moisture retention and plant root penetration into the soil. With clay known to occur in within part of the soil profile of the site. Ripping can be particularly effective if there is an impervious clay layer evident (Limestone Coast Landscape Board, 2021). Additionally, when ripping occurs, topsoil

will fall into the rip line, providing a better medium for plants to grow into. Ripping also creates furrows that seedlings can easily be planted in. By ripping horizontally along the contour of the site, water movement will be slowed, increasing the time for water absorption to occur during a rainfall event, as opposed to water running off directly down the slope.

Timing: To be undertaken following initial weed control efforts, prior to fencing installation.

4.3.3 Fencing Upgrade

For grazing exclusion – as opposed to ongoing control – it is recommended that boundary fencing around the rehabilitation area is installed prior to revegetation. Fencing exists around the perimeter of the lot boundary; however evidence of kangaroo activity exists within this area, and they have therefore not been excluded successfully. Therefore, the installation of additional fencing around the revegetation area is recommended to achieve complete grazing exclusion. Fencing is a more effective and environmentally friendly choice than installing plant guards and is likely to require less maintenance effort long-term.

The fencing design should ensure effective exclusion of kangaroos, which present the greatest grazing risk at the site. Fencing should be at least 1.5 m high and incorporate a buried bottom wire or mesh (such as vermin mesh) along the lower 30 cm to prevent access. Reduced post spacing (e.g. 4 – 5 m) may also be implemented as a preventative approach. Although these measures may increase upfront costs, they will significantly reduce grazing pressure on newly established plants. Ring lock fencing, as opposed to plain wire fencing, is recommended, with a row of barbed wire across the top.

Timing: To be undertaken following ground preparation, prior to planting.

4.4 Weed Control

The implementation of a weed control program is essential as part of a revegetation plan, to support the success of native plant establishment, as well as encouraging natural regeneration in areas where remnant vegetation still exists.

Weed control for the Study Area is inclusive of:

- Initial widespread/general control as early as practicable, in suitable weather conditions. Selective herbicide application for blackberry infestations should occur between summer and autumn, with optimum treatment months between December and February. Non-selective, broadscale herbicide treatment of other mixed weeds can occur at the same time. This can occur in the lead up to ground preparation activities, ensuring that weeds are sufficiently controlled prior to soil movement.
- Ongoing weed control is recommended in the lead-up to planting, during the year of planting. This will ensure that any weeds that may reappear following ground preparation can be controlled prior to planting.
- Follow-up, targeted control of remnant weeds following planting. Additional care should be taken to protect establishing native plants, with consideration of selective herbicide application and careful spot spraying for specific weeds occurrences. Personnel should be trained and able to identify native species, including emergent seedlings.
- Follow-up, targeted control of remnant weeds identified during ongoing monitoring. Once again, care must be taken to avoid impact to native plants.

Chemical weed control should be undertaken in accordance with the general guidelines for herbicide application included in Table 4-3.

Table 4-3 Standard guidelines for herbicide application

Standard	Detail
Trained personnel and legal use	Herbicide application should be undertaken by qualified personnel who are able to identify relevant weed species, identify and avoid native species including emergent seedlings, and follow legal requirements for application (including application in accordance with manufacturers' instructions and safety requirements).
Monitor for weeds appearing later/not identified in survey	Late summer and/or autumn spraying may be necessary for weeds that were not present during initial treatment, ensuring dry weather conditions are guaranteed.
Work planning/staging	Weed control activities should generally commence in areas of best condition, moving into areas in worse condition. This helps to minimise the risk of transporting weeds from the low condition areas into better areas.
Weather conditions	Spray during still, dry conditions, when no rain is predicted within 12 hours. Conduct spraying to minimise spray drift that could affect non-target species. Plan for weed control during typical dry months for the area (referring to long-term average precipitation presented in the Section 3.1.1 climate graph).
Timing of post-treatment planting	Weed control should preferably begin at least 12 months preceding planting to allow for sufficient time to manage weeds entirely before revegetation efforts are implemented. Planting should not occur until at least two weeks after last period of spraying, or once sprayed weeds are effectively dead. The weeds require some time to break down.

4.4.1 Species-Specific Control Methods

Note: Weed management methodology should be carried out by a suitably qualified weed contractor with specialist knowledge of weed control in natural areas.

Blackberry Infestation

Blackberry (*Rubus* sp.) shrubs were observed extensively across the revegetation site, proliferating in patches. Blackberries are rated as being of High ecological impact and Moderate invasiveness as per the South West Region Impact and Invasiveness Rating system (DBCA, 2023). Eradicating the species is therefore of high priority for the site. The suggested method of management and control for the species is to spray plants with selective herbicide (for example, herbicide containing Metsulfuron or Chlorsulfuron, mixed as per label instructions) during summer to autumn. Optimum treatment months for blackberry treatment occur during December to February (Western Australian Herbarium, 1998-). For any significantly large shrubs, plants can be cut and painted with 20-50 % glyphosate (Western Australian Herbarium, 1998-). Any regrowth plants should be sprayed at ~50 cm, again with selective herbicide (Metsulfuron or Chlorsulfuron) (Western Australian Herbarium, 1998-).

Mixed Weeds

Various weedy herbs, grasses and broadleaf weeds were observed to be proliferating across the site. For initial control, broadscale non-selective herbicide application is recommended. Glyphosate can be used in this case. Following ground preparation activities, non-selective, ongoing control can occur on any emergent weeds prior to planting. Once planting has occurred, targeted and careful spot spraying of any mixed weed occurrences is recommended, undertaken by a qualified individual with experience in distinguishing native seedlings from weedy species. Further follow-up control efforts may be necessary, as identified by ongoing monitoring surveys. During follow-up control, selective herbicides can also be used based on weeds present, such as Haloxypop® for grasses and Lontrel® for broadleaf weeds (mixed as per label instructions).

4.4.2 Weed Control Schedule

Adequate weed control is essential to be implemented prior to revegetation and ground preparation activities, up to the time of planting, and following planting, with additional control occurring as per requirements identified during post-revegetation monitoring. By following the recommended schedule of weed control at the site, the chances of successful seedling establishment and growth will be enhanced. It is essential that control efforts are implemented prior to the undertaking of ground preparation activities. Table 4-4 provides a guide to weed control implementation at the site. Follow-up maintenance weed control following revegetation is likely to be required.

Table 4-4 Recommended weed control timeline within the study area.

Timing		Control
Phase I (prior to planting)	Summer to Autumn	Selective herbicide application for Blackberry Broadscale non-selective herbicide application for mixed weeds
Phase II (during/around the time of planting)	Autumn up until time of planting during suitable weather conditions	Selective and/or non-selective herbicide application based on weeds present
Phase III (following planting/during monitoring)	As dictated by weed presence	Selective or non-selective herbicide for remnant weeds where/if required, based on site condition and weed presence following planting

4.5 Planting

4.5.1 Revegetation Requirements

For the purpose of this RMP, the entirety of the revegetation Study Area will be treated as a single management zone (2.36 ha). The revegetation Study Area is presented in Figure 1 (Appendix A). The Study Area is in Completely Degraded vegetation condition. Objectives for the revegetation are to establish native vegetation to a condition capable of generating long-term environmental values, controlling present and ongoing risks to the site. This includes the provision of species that will be of value of general and conservation significant fauna that have been recorded in the area, particularly black cockatoos (evidence observed by SW Environmental (2025)). Fauna assemblages expected to utilise the area are discussed in Section 3.1.3.

4.5.2 Plant Stock

Seedlings may include tube stock, with a preference for forestry pots over small plant cells to maximise chances of success. Forestry pots are economical and are generally at a stage of growth that can establish successfully during revegetation. For tree species, advanced 1 litre pots can be considered to maximise revegetation success and shorten the length of time taken for trees to start providing fauna habitat value.

An indicative list of species to be used during revegetation are listed in Appendix B. There is a potential that not all species listed will be available, and alternative, local species may be required to meet completion criteria. Where possible, tube stock should be sourced from suppliers that collect local provenance seed and propagation material, as therefore plants will have a higher likelihood of being genetically similar to the naturally occurring plants adapted to growing conditions of the Area. A list of local potential suppliers and revegetation contractors is provided in Appendix F.

Tubestock may help introduce microorganisms that have become depleted in the site soil, which can be beneficial to revegetation success. It is essential that plants are sourced from a reputable supplier and inspected for health prior to purchase and importation to the site stock must be sourced from accredited dieback free suppliers (refer to Appendix F for recommended suppliers).

4.5.3 Density

Planting density for the Study Area is recommended at 3,000 plants per hectare. Professional revegetation practitioners should be engaged to oversee appropriate distribution of seedlings throughout the site, which will vary across the site. The recommended densities are aimed at achieving a target of 2,000 stems/ha after 10 years.

The density of tree canopy species varies slightly between planting management areas, based on habitat preferences. The indicative revegetation species list is presented in Appendix B. Plants should be randomly distributed, rather than evenly spaced, to achieve a natural effect. Grouping of several seedlings of the same species may also reflect a more natural distribution.

4.5.4 Diversity

Species diversity of 60% of the total taxa on the revegetation species list (Appendix B) is the recommended requirement after 10 years, achieving a Good or better vegetation condition rating (EPA, 2016). This diversity will be achieved through direct planting of seedlings in a combination of advanced 1 litre pots and forestry pots.

4.5.5 Timing

Planting of seedlings across most of the site should occur when soil moisture levels are suitable, usually following a rainfall event. Planting timing is recommended around the months May/June. Due consideration must also be given to weed control activities. Planting should not occur within 2 weeks of broad-spectrum herbicide application. Weed control recommendations for the site are detailed in Section 4.4.

4.5.6 Bacteria Reintroduction

The soil microbe is influenced both biotically and abiotically by the presence of surrounding vegetation through the plant-soil feedback mechanism (Bennett & Klironomos, 2018). This influences surrounding seedling growth (Bennett & Klironomos, 2018). The Study Area is currently in Completely Degraded vegetation condition, with no vegetation present (with the exception of weedy herb and grass-dominated ground cover). A loss in soil microbial diversity has been considered as a significant threat to the balance of ecosystems (Yang et al., 2020). The use of pesticides and insecticides is also known to negatively

impact the soil microbiome (Jeyaseelan et al., 2024). This is a practice that would be prevalent for the adjacent land use of horticultural kiwi farming. There is a possibility that surrounding pesticide use, combined with clearing disturbances may have resulted in a loss of microbial diversity within the Study Area. Seedling performance following revegetation planting may therefore be inhibited.

To manage this risk and enhance the bacterial community and subsequently the soil microbe and overall quality within the Study Area, bacteria can be reintroduced to the soil profile prior to planting. This would promote plant growth, boosting chances of revegetation success and seedling performance. The product Bactivate®5, applied with Bactivate® BioBoost Enhance can be sprayed in liquid form across the site during planting to introduce bacteria, along with some carbon to the soil. This will increase chances of successful plant growth.

4.5.7 Methodology

If ripping is undertaken, an auger will not be required for planting of seedlings, as suitable planting furrows would be established. A Pottiputki® can instead be used to easily plant seedlings along furrow lines. Plants are not required to be staked for support. Free standing plants are generally of increased durability and strength in the long-term, as opposed to staked plants.

Low phosphorous fertiliser pills are recommended to be added at the time of planting for all seedlings (with the exclusion of Proteaceae spp.). Plants should be placed in suitable locations based on individual species light requirements or growth habits. Professional revegetation practitioners distribute plants and seed accordingly, relevant to the existing values of the area. Bacterial re-introduction is also recommended to occur at the time of planting, spread as per Bactivate® BioBoost Enhance spraying instructions.

4.5.8 Revegetation Maintenance

Revegetation works will require ongoing maintenance after planting, including:

- follow-up weed control as discussed in Section 4.4, and
- replacement plantings if necessary.

It is expected that following revegetation there will be a maximum loss of about 50% of the original plantings. Subsequently, replacement plantings may be required to maintain the original planting numbers and achieve completion targets.

5 Monitoring and Maintenance

A program of revegetation monitoring is required to ensure that the revegetation objectives are achieved. Monitoring is recommended to be undertaken at the following intervals:

- In spring the year following implementation of revegetation works
- Annually in spring for the following two years
- After five years
- After 10 years

Additionally, regular (monthly) quick check-ups during the initial monitoring interval are recommended to ensure that weed and grazing control measures are acting effectively on the site. This may reduce long-term costs by decreasing the requirement for significant maintenance works down the track.

Recommended monitoring methodology is inclusive of the following:

- Plots and transects:
 - Overstorey/canopy monitoring utilising permanent 20 m x 20 m plots to sample tree density (number of stems), height, and stem diameter at breast height (DBH) by species (for measuring growth rates and vegetation cover). Species present in the understorey will also be listed to contribute to species richness.
 - Understorey monitoring utilising permanent transects consisting of one line of ten 2 m x 2 m quadrats (along the edge of the 20 m x 20 m plot) to sample native plant density and species present (for measuring vegetation cover, species richness, along with the presence of invasive species). It is recommended that the transect is oriented across the contour.
 - A total of four plots per hectare should be established for the Study Area (9-10 plots).
- Opportunistic recordings of vegetation condition in mapping notes, utilising the Vegetation Condition scale presented in Section 5.6 of EPA (2016) *Technical Guidance for Flora and Vegetation Surveys for Environmental Impact Assessment*, presented in Appendix G.

The location of monitoring transects can be identified during the spring following the implementation of the rehabilitation. Graphs can then be produced to illustrate vegetation cover, species richness and growth rates. Signs of fauna habitat utilisation and signs of pest activity and/or grazing may be opportunistically recorded during monitoring visits. Monitoring of weed presence should determine any further control measures required at the site. Where issues are identified, reference should be made to control methodologies detailed throughout Section 4. If additional weed or pest species become established over time, advice must be sought from a suitably experienced contractor to determine suitable control methods.

Fence boundaries should also be inspected upon each monitoring visit to ensure that their integrity has not been compromised. If fencing becomes inadequate, maintenance activities should be undertaken. If areas of planting are unsuccessful and do not meet completion targets, additional planting may be required. If the scale of additional planting required is significant, consideration should be given as to potential reasoning why seedling establishment was unsuccessful, and any issues should be addressed for subsequent plantings. Examples of problems may be:

- Grazing by fauna due to insufficiencies in fencing upgrade

- Competition with weeds
- Poor planting technique
- Poor herbicide application/herbicide or pesticide drift from adjacent agricultural practices
- Excessive shading
- Localised conditions not suited to species
- Physical disturbance by humans

6 References

- ALA. (2025). *Atlas of Living Australia*. Explore Your Area. <https://biocache.ala.org.au/explore/your-area>
- Beard, J. S. (2015). *Plant Life of Western Australia* (2nd ed.). Rosenberg Publishing.
- Bennett, J., & Klironomos, J. (2018). Mechanisms of plant–soil feedback: Interactions among biotic and abiotic drivers. *New Phytologist*, 222(1), 91–96. <https://doi.org/10.1111/nph.15603>
- BirdLife Australia. (2025). *Birddata* [Dataset]. <https://birddata.birdlife.org.au/>
- BoM. (2025). *Climate Data Online*. Commonwealth of Australia, Bureau of Meteorology (BoM). <http://www.bom.gov.au/climate/data/>
- DAWE. (2022). *Referral guideline for 3 WA threatened black cockatoo species Carnaby's Cockatoo (Zanda latirostris), Baudin's Cockatoo (Zanda baudinii) and the Forest Red-tailed Black-cockatoo (Calyptorhynchus banksii naso)*. Department of Agriculture, Water and the Environment.
- DBCA. (2018). *Vegetation Complexes—South West forest region of Western Australia (DBCA-047)* [Dataset]. Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/vegetation-complexes-swf-50k>
- DBCA. (2019). *2018 South West Vegetation Complex Statistics Report*. Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca/resource/3d067960-2896-42fd-ba52-1aa46b2edf13>
- DBCA. (2023). *South West Region Impact and Invasiveness Ratings*. Department of Biodiversity, Conservation and Attractions. <https://www.dbca.wa.gov.au/management/threat-management/weeds>
- DBCA. (2024). *DBCA Threatened, Specially Protected, and Priority Fauna Database* [Dataset]. Department of Biodiversity, Conservation and Attractions.
- DCCEEW. (2022). *Interim Biogeographic Regionalisation for Australia (IBRA), Version 7 (Subregions). Spatial data. Last updated 11 May 2022*. Department of Climate Change, Energy, the Environment and Water. <http://www.environment.gov.au/fed/catalog/main/home.page>
- DCCEEW. (2023). *Interim Biogeographic Regionalisation for Australia (IBRA), Version 7 (Regions). Spatial data. Last updated 17 October 2023*. Department of Climate Change, Energy, the Environment and Water. <http://www.environment.gov.au/fed/catalog/main/home.page>
- DPIRD. (2022). *Soil Landscape Mapping—Best Available (DPIRD-027). Spatial data. Last updated 13 July 2022*. [Dataset]. Department of Primary Industries and Regional Development. <https://catalogue.data.wa.gov.au/dataset/soil-landscape-mapping-best-available>
- DPIRD. (2024). *Western Australian Organism List*. Department of Primary Industries and Regional Development - Agriculture and Food. <https://www.agric.wa.gov.au/organisms>
- DPIRD. (2025). *Western Australian Organism List*. Department of Primary Industries and Regional Development - Agriculture and Food. <https://www.agric.wa.gov.au/organisms>
- DWER. (2018). *A guide to preparing revegetation plans for clearing permits*. Department of Water and Environmental Regulation - Government of Western Australia. <https://www.wa.gov.au/system/files/2023-05/A-guide-to-preparing-revegetation-plans-for-clearing-permits.pdf>
- EPA. (2016). *Technical Guidance—Flora and Vegetation Surveys for Environmental Impact Assessment*. Environmental Protection Authority.
- Jeyaseelan, A., Muragesan, K., Thayanithi, S., & Palanisamy, S. B. (2024). A review of the impact of herbicides and insecticides on the microbial communities. *Environmental Research*, 245. <https://doi.org/10.1016/j.envres.2023.118020>

- Keighery, B. (1994). *Bushland Plant Survey: A guide to plant community survey for the community*. Wildflower Society of Western Australia.
- Limestone Coast Landscape Board. (2021). *Revegetation Site Preparation* (No. 202107). Landscape South Australia Limestone Coast.
- SW Environmental. (2025). *Basic and Targeted Fauna Survey: Lot 101, Wilgarrup* [Unpublished report prepared for Manjimup KW Pty Ltd, April 2025].
- Webb, A., Kinloch, J., Keighery, G., & Pitt, G. (2016). *The extension of vegetation complex mapping to landform boundaries within the Swan Coastal Plain landform and forested region of south-west Western Australia*. (p. 11). Department of Parks and Wildlife.
- Weeds Australia. (2021). *Profile for Weeds of National Significance*. Weeds Australia. <https://weeds.org.au/weeds-profiles/>
- Western Australian Herbarium. (1998). *Rubus ulmifolius: Management Notes (for the Swan NRM Region)*. <https://florabase.dbca.wa.gov.au/browse/profile/3191>
- Yang, Y., Cheng, H., Liu, L., Dou, Y., & An, S. (2020). Comparison of soil microbial community between planted woodland and natural grass vegetation on the Loess Plateau. *Science Direct*, 460. <https://doi.org/10.1016/j.foreco.2019.117817>

Appendix A Figures

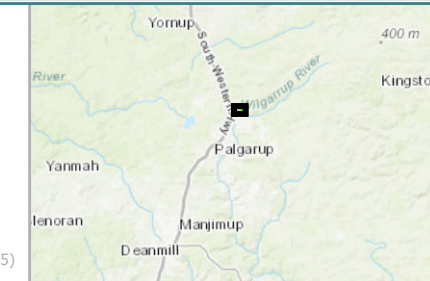
Figure 1 Location Map Revegetation Area and Reference Vegetation



**FIGURE 1 - LOCATION MAP
REVEGETATION AREA AND
REFERENCE VEGETATION**

LOTS 101 AND 102 ON DP 411364, WILGARRUP

- ▨ Proposed Revegetation (2.36 ha)
- Reference Vegetation Site
- Road
- DBCA Managed Land (Palgarup State Forest)



A3 @ 1:3000

0 20 40 80 m

GRID: GDA zone 50

Appendix B Indicative Revegetation Species Lists

Plants highlighted in green indicate alternative species that are available at native nurseries, that can be an option to swap out with other proposed taxa of the same form that may be unavailable for acquisition. Similar rates to other plants of the same form can be applied. If able to be sourced, *Macrozamia reidleyi* should be planted in low numbers, distributed widely across the area, as natural occurrences are isolated (approximately ~25 plants per hectare).

Taxon	Per Ha (Stems)	Total (Stems)
Canopy		
<i>Corymbia calophylla</i>	300	789
<i>Eucalyptus marginata</i>	300	789
<i>Eucalyptus patens</i>	200	526
Shrubs		
<i>Bossiaea aquifolium</i>		
<i>Bossiaea linophylla</i>	200	526
<i>Mirbelia dilatata</i>		
<i>Taxandria parviceps</i>		
<i>Hibbertia cuneiformis</i>	200	526
<i>Hibbertia cunninghamii</i>	200	526
<i>Acacia alata</i>		
<i>Acacia divergens</i>		
<i>Acacia myrtifolia</i>		
<i>Acacia pulchella</i>	200	526
<i>Bossiaea ornata</i>		
<i>Hovea chorizemifolia</i>	200	526
<i>Hovea elliptica</i>		
<i>Hypocalymma cordifolium</i>	200	526
<i>Hypocalymma angustifolium</i>		
<i>Hakea amplexicaulis</i>		
<i>Hakea lissocarpa</i>	200	526
<i>Acacia urophylla</i>		
Cycads		
<i>Macrozamia reidleyi</i>		
Sedges/Restionaceae/Rushes		
<i>Cyathochaeta avenacea</i>	100	263
Herbs		
<i>Anigozanthos flavidus</i>	200	526
<i>Chamaescilla corymbosa</i>	200	526
Climbers		
<i>Kennedia prostrata</i>	100	263
<i>Hardenbergia comptoniana</i>	200	526
<i>Clematis pubescens</i>		
Total	3000	7890

Appendix C Vascular Plants: Observed and Recommended

Family	Species	Form	Observed (Lot 101)	Additional Recommended Species	Available at Nurseries
Myrtaceae	<i>Corymbia calophylla</i>	1. Canopy	x		Y
	<i>Eucalyptus marginata</i>	1. Canopy	x		Y
	<i>Eucalyptus patens</i>	1. Canopy	x		Y
	<i>Eucalyptus rudis</i>	2. Trees 10-30 m	x		Y
	<i>Melaleuca preissiana</i>	3. Small trees <10 m	x		Y
	<i>Melaleuca raphiophylla</i>	3. Small trees <10 m	x		Y
Fabaceae	<i>Bossiaea aquifolium</i>	4. Tall shrubs >2 m		x	Y
	<i>Bossiaea linophylla</i>	4. Tall shrubs >2 m	x		Y
	<i>Mirbelia dilatata</i>	4. Tall shrubs >2 m		x	Y
Myrtaceae	<i>Taxandria parviceps</i>	4. Tall shrubs >2 m		x	Y
Dilleniaceae	<i>Hibbertia cuneiformis</i>	5. Small shrubs <2 m		x	Y
	<i>Hibbertia sp.</i>	5. Small shrubs <2 m	x		NA
	<i>Hibbertia cunninghamii</i>	5. Small shrubs <2 m	x		Y

Eleocarpaceae	<i>Tetradlea affinis</i>	5. Small shrubs <2 m	x		N
Ericaceae	<i>Leucopogon australis</i>	5. Small shrubs <2 m	x		N
	<i>Leucopogon capitellatus</i>	5. Small shrubs <2 m	x		N
Fabaceae	<i>Acacia alata</i>	5. Small shrubs <2 m		x	Y
	<i>Acacia divergens</i>	5. Small shrubs <2 m		x	Y
	<i>Acacia myrtifolia</i>	5. Small shrubs <2 m		x	Y
	<i>Acacia pulchella</i>	5. Small shrubs <2 m	x		Y
	<i>Bossiaea ornata</i>	5. Small shrubs <2 m		x	Y
	<i>Hovea chorizemifolia</i>	5. Small shrubs <2 m	x		Y
	<i>Hovea elliptica</i>	5. Small shrubs <2 m		x	Y
Myrtaceae	<i>Hypocalymma cordifolium</i>	5. Small shrubs <2 m		x	Y
	<i>Hypocalymma angustifolium</i>	5. Small shrubs <2 m		x	Y
Proteaceae	<i>Hakea lissocarpa</i>	5. Small shrubs <2 m	x		Y
	<i>Hakea amplexicaulis</i>	5. Small shrubs <2 m		x	Y
Fabaceae	<i>Acacia urophylla</i>	5. Small shrubs 1-2 m		x	Y
Zamiaceae	<i>Macrozamia riedlei</i>	6. Cycad, to 2 m	x		Y
Cyperaceae	<i>Cyathochaeta avenacea</i>	7. Sedges/Restios/Rushes		x	Y
	<i>Netrostylis</i> sp. Jarrah Forest (R. Davis 7391)	7. Sedges/Restios/Rushes	x		N

Dennstaedtiaceae	<i>Pteridium esculentum</i>	8. Herbaceous	x		N
Droseraceae	<i>Drosera</i> spp.	8. Herbaceous	x		N
Haemodoraceae	<i>Anigozanthos flavidus</i>	8. Herbaceous		x	Y
Hemerocallidaceae	<i>Chamaescilla corymbosa</i>	8. Herbaceous	x		Y
Rubiaceae	<i>Opercularia hispidula</i>	8. Herbaceous	x		N
Fabaceae	<i>Kennedia prostrata</i>	9. Climber or Prostrate		x	Y
	<i>Hardenbergia comptoniana</i>	9. Climber or Prostrate		x	Y
Ranunculaceae	<i>Clematis pubescens</i>	9. Climber or Prostrate	x		Y
Asteraceae	<i>Cirsium</i> sp.	Weed	x		NA
	<i>Hypochaeris</i> spp.	Weed	x		NA
	<i>Taraxacum khatoonae</i>	Weed	x		NA
Brassicaceae	<i>Brassica</i> sp.	Weed	x		NA
	<i>Raphanus raphanistrum</i>	Weed	x		NA
Poaceae	<i>Poaceae</i> spp.	Weed	x		NA
Polygonaceae	<i>Rumex</i> sp.	Weed	x		NA
Rosaceae	<i>Rubus</i> sp.	Weed	x		NA

Appendix D Black Cockatoo Foraging Plants

Table D-1 Flora taxa from the Indicative Revegetation Species List with black cockatoo foraging value

Species	Common name	Habit	Baudin's cockatoo	Carnaby's cockatoo	FRTBC	Reference
<i>Anigozanthos flavidus</i>	Tall kangaroo paw	Herb	Secondary			(DoEE, 2017; Johnstone et al., 2010a, 2010b, 2010c; SEWPaC, 2012)
<i>Corymbia calophylla</i>	Marri	Tree	Primary	Primary	Primary	(DoEE, 2017; Johnstone et al., 2010a, 2010b, 2010c, 2011, 2017; Johnstone & Kirkby, 1999, 2008; Johnstone & Storr, 1998; Saunders, 1979; SEWPaC, 2012; Valentine & Stock, 2008)
<i>Eucalyptus marginata</i>	Jarrah	Tree	Secondary	Primary	Primary	(Birds Australia, n.d.; DoEE, 2017; Groom, 2011; Johnstone et al., 2010a, 2010b, 2010c, 2011, 2017; Johnstone & Kirkby, 1999; Johnstone & Storr, 1998; Saunders, 1979; SEWPaC, 2012; Valentine & Stock, 2008)
<i>Eucalyptus patens</i>	Blackbutt	Tree		Primary	Primary	(DoEE, 2017; Groom, 2011; Johnstone et al., 2010b, 2010c; Johnstone & Kirkby, 1999; Johnstone & Storr, 1998; SEWPaC, 2012)
<i>Hakea amplexicaulis</i>	Prickly hakea	Small shrub	Secondary	Primary	Secondary	(Doherty et al., 2016)

References (Appendix D):

- Birds Australia. (n.d.). *Native plant species used by Carnaby's Black-Cockatoos*.
- DoEE. (2017). *Revised draft referral guideline for three threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black Cockatoo*. Commonwealth of Australia.
- Doherty, T. S., Wingfield, B. N., Stokes, V. L., Craig, M. D., Lee, J., Finn, H. C., & Calver, M. C. (2016). Successional changes in feeding activity by threatened cockatoos in revegetated mine sites. *Wildlife Research*, 43, 93–104.
- Groom, C. (2011). *Plants Used by Carnaby's Black Cockatoo*. Department of Environment and Conservation, Perth.
- Johnstone, R. E., Johnstone, C., & Kirkby, T. (2011). *Black Cockatoos on the Swan Coastal Plain: Carnaby's Cockatoo (Calyptorhynchus latirostris), Baudin's Cockatoo (Calyptorhynchus baudinii) and the Forest Red-tailed Black Cockatoo (Calyptorhynchus banksii naso) on the Swan Coastal Plain (Lancelin–Dunsborough), Western Australia. Studies on distribution, status, breeding, food, movements and historical changes*. Department of Planning, Western Australia.
- Johnstone, R. E., & Kirkby, T. (1999). Food of the Red-tailed Forest Black Cockatoo *Calyptorhynchus banksii naso* in Western Australia. *The Western Australian Naturalist*, 22, 167–178.
- Johnstone, R. E., & Kirkby, T. (2008). Distribution, status, social organisation, movements and conservation of Baudin's Cockatoo (*Zanda baudinii*) in South-west Western Australia. *Records of the Western Australian Museum*, 25, 107–118.
- Johnstone, R. E., Kirkby, T., & Sarti, K. (2017). The distribution, status movements and diet of the forest red-tailed black cockatoo in the south-west with emphasis on the greater Perth region, Western Australia. *The Western Australian Naturalist*, 30(4), 193–219.
- Johnstone, R. E., Sarti, K., & Kirkby, T. (2010a). *Baudin's Cockatoo Zanda baudinii information sheet*. Western Australian Museum.
- Johnstone, R. E., Sarti, K., & Kirkby, T. (2010b). *Carnaby's Cockatoo Zanda latirostris information sheet*. Western Australian Museum.
- Johnstone, R. E., Sarti, K., & Kirkby, T. (2010c). *Forest Red-tailed Black Cockatoo Calyptorhynchus banksii naso information sheet*. Western Australian Museum.
- Johnstone, R. E., & Storr, G. M. (1998). *Handbook of Western Australian Birds* (Vol. 1). Western Australian Museum.
- Saunders, D. A. (1979). Distribution and taxonomy of the white-tailed and yellow-tailed Black-Cockatoos *Calyptorhynchus* spp. *Emu*, 79, 215–227.
- SEWPaC. (2012). *EPBC Act referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (endangered), Zanda latirostris, Baudin's cockatoo (vulnerable), Zanda baudinii, and Forest red-tailed black cockatoo (vulnerable) Calyptorhynchus banksii naso*. Department of Sustainability, Environment, Water, Population and Communities.
- Valentine, L. E., & Stock, W. (2008). *Food Resources of Carnaby's Black-Cockatoo (Calyptorhynchus latirostris) in the Gnangara Sustainability Strategy Survey Area* [Report prepared for the Forest Products Commission]. Centre for Ecosystem Management, Edith Cowan University and the Department of Environment and Conservation.

Appendix E Plant Hygiene

Activity	Requirement
All site access – personnel	Ensure shoes and gloves are clean. Sterilize if known to have recently visited a site where pathogens are present (e.g. <i>Phytophthora spp</i>), or working in wet areas. This can be achieved by first scraping boots clear of mud, then standing the soles in a disinfecting solution that contains benzalkonium chloride. The remainder of the boot should be rinsed or sprayed with disinfecting solution. Note: disinfecting solutions should be prevented from entering any water bodies. Use of rubber boots (gumboots) is recommended because of the ease of cleaning these.
Use of tools and machinery	All tools and machinery should be adequately cleaned, and if necessary, disinfected, prior to use on the site, especially if previously used in a damp area or where disease is known to be present.
Tubestock acquisition	Ensure stock has no signs of disease, e.g. no withered or discoloured leaves, deformed growth, discolouration, shrivelled or insufficient looking quantity of roots; no visible pests on foliage, stems or roots; and no weeds growing in pots.

Appendix F Relevant Local Suppliers and Contractors

Potential local plant/seed stockists

Note: early ordering of plant/seed is of high importance. Ordering from multiple suppliers as opposed to just one may decrease the risk of not obtaining stock.

Carramar Coastal Nursery: 1834 Mandurah Road, Port Kennedy, Ph: 0407 472 894

Hamel Nursery: 178 Attein Road, West Coolup, Ph: 0439 769 379

Leschenault Landcare Community Nursery: 114 Johnston Road, Bunbury, Ph: 0477 799 900

Geographe Community Landcare Nursery: Queen Elizabeth Ave, Busselton, Ph: 0429 644 885

The Tube Nursery: Blond St, Cowaramup, Ph: 9755 5509

Everyday Potted Plants: Sebbes Rd, Forest Grove, Ph: 9757 7424

Boyanup Botanical: South West Highway, Boyanup, Ph: 9731 5470

APACE: 1 Johanna St, Fremantle, Ph: 93361262

Potential local revegetation contractors

CapeLife Environmental Services: 57 Kevill Road, Margaret River, Ph: 0422 428 884

Tranen Revegetation Southwest: 20 Possum Place, City of Busselton, Ph: 9754 2643

Appendix G Vegetation Condition Scale (EPA, 2016)

Table 2: Vegetation Condition Scale (adapted from Keighery 1994 and Trudgen 1988)

Vegetation Condition	South West and Interzone Botanical Provinces	Eremaean and Northern Botanical Provinces
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.	
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor		Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.