328-330 Annangrove Rd, Rouse Hill

Vegetation Management Plan

Mills Oakley

21 February 2022

Final

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The preparation of this report has been in accordance with the brief provided by the Client and has relied upon the data and results collected at or under the times and conditions specified in the report. All findings, conclusions or commendations contained within the report are based only on the aforementioned circumstances. The report has been prepared for use by the Client and no responsibility for its use by other parties is accepted by Cumberland Ecology.

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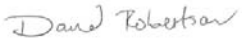
Signed:	
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Glossary

Term/Abbreviation	Definition
BAM	Biodiversity Assessment Method
BC Act	NSW *Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
Biosecurity Act	NSW *Biosecurity Act 2015*
CPW	Cumberland Plain Woodland
DA	Development Application
DAWE	Commonwealth Department of Agriculture, Water and Environment
DoEE	Commonwealth Department of Environment and Energy
DPIE	NSW Department of Planning, Industry and Environment
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
GIS	Geographic Information System
GPS	Global Positioning System
ha	hectares
LGA	Local Government Area
m	metres
PCT	Plant Community Type
SSTF	Sydney Sandstone Transition Forest
Study Area	Lot 12 DP833069 and Lot 34 DP834050, also known as 328-330 Annangrove Road, Rouse Hill
TEC	Threatened Ecological Community
the 'project'	Concept proposal for development of a mixed use/bulky goods commercial centre
VMP	Vegetation Management Plan
VMP Area	The area that is subject to this VMP

1. Introduction

1.1. Introduction

Cumberland Ecology has been requested by Mills Oakley, on behalf of Thomas Baxter (the 'client'), to prepare a Vegetation Management Plan (VMP) to support a concept Development Application (DA) for land located at 328 – 330 Annangrove Road, Rouse Hill NSW (hereafter referred to as the 'study area'). The study area is proposed to be developed as a mixed use / bulky goods commercial centre (the project – see ***Section 1.1.2*** for further details).

The DA is presently the subject of Class 1 Land and Environment Court (LEC) proceedings 2021/88386, known as Thomas Baxter v The Hills Shire Council (Council). This VMP has been prepared to satisfy the matters identified in Council's Statement of Facts and Contentions (SoFC), as well as Council's Amended SoFC, and should be read in conjunction with the Biodiversity Development Assessment Report (BDAR) prepared by Cumberland Ecology (2021).

The study area is approximately 3.40 ha in area and is situated in The Hills Local Government Area (LGA). The study area contains two existing vacant dwellings, gardens, and areas of native vegetation in varying condition states, including areas of Shale Sandstone Transition Forest (SSTF) and Shale Plains Woodland, which is a component of Cumberland Plain Woodland (CPW). Both SSTF and CPW are ecological communities that are listed as Critically Endangered Ecological Communities (CEEC) under the NSW *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

To support the proposed development, a Biodiversity Development Assessment Report (BDAR) was previously prepared by Keystone Ecological in 2020 (Keystone Ecological. 2020), which was lodged with the DA. Subsequently, the proposed development layout was revised as part of the LEC proceedings, and a new BDAR was prepared by Cumberland Ecology in 2021 (Cumberland Ecology. 2021) to support the revised development proposal. The Cumberland Ecology BDAR replaces the earlier BDAR prepared by Keystone Ecological.

The proposed construction footprint (the 'subject land') for the project totals approximately 2.77 ha, whilst approximately 0.58 ha of vegetation will be retained, rehabilitated and managed for conservation. The vegetation to be retained consists of areas of the two TECs that have been recorded from the study area; SSTF and CPW. This VMP has been prepared to guide the management and conservation of these two areas of retained native vegetation (hereafter referred to as the 'VMP Area') to improve their ecological value and maintain them in the long term as high-quality examples of CPW and SSTF. This includes the restoration of the impacted areas associated with the construction of a stormwater pipeline through the eastern portion of the VMP Area. It should be noted that the design of any infrastructure will be finalised in consultation with Sydney Water so as to minimise impacts on vegetation within the corridor. The restoration of any additional impact area associated with the pipeline to the east of the VMP Area, along Second Ponds Creek, will be subject to discussions with Sydney Water and final design requirements and are therefore not part of this VMP. Any further investigations required could be undertaken in any future detailed DA for the site.

The VMP has been prepared with due reference to The Hills Vegetation Management Plan Guideline (the 'Guideline') (The Hills Shire Council 2015). **Table 1** below identifies where each required component of the Guideline is addressed in this VMP.

Table 1 Required components of the Hills Vegetation Management Plan Guidelines and the location of where each component is addressed within this VMP

Hills Vegetation Management Plan Guideline Required Component	Where Component is Addressed within VMP
2.1 Site Description	**Section 1.1**
2.2 Aims of the VMP	**Section 1.2**
2.3 Objectives of the VMP	**Section 1.2**
2.4 Identification of Management Zones	**Chapter 3**
2.5 Define Management Tasks by Management Zone	**Chapters 3 and 5**
2.6 Fencing	**Section 4.4**
2.7 Determine Performance Criteria	**Chapter 8 (Table 8)**
2.8 Define Monitoring and Reporting Methods	**Chapter 7**
2.9 Provide a Timeframe	**Chapter 8 (Table 8)**
2.10 Costing	**Section 7.4**

1.2. Background

1.2.1. Description of the Study area and VMP Area

The study area is located at 328-330 Annangrove Rd, Rouse Hill NSW and is located within The Hills Shire Local Government Area (LGA). Two areas within the study area are proposed to be managed for conservation, located in the east (0.27 ha) and west (0.31 ha) of the study area. These two areas are hereafter collectively referred to as the 'VMP Area'. The boundaries of the study area, subject land and VMP Area are shown in **Figure 1**.

Most of the study area is zoned as B6 – Enterprise Corridor under *The Hills Local Environmental Plan 2019*, except for a thin strip along Annangrove Road that is zoned as SP2 - Infrastructure. The study area is generally surrounded by rural properties, new approved developments, residential properties, and remnant bushland along Second Ponds Creek. The study area is bounded by a rural property to the north, remnant bushland and Second Ponds Creek to the east, a new approved development to the south, and Annangrove Road to the west.

The VMP Area comprises two areas of the study area that contain native vegetation that will be retained and managed in the long term for conservation. The areas of native vegetation present within the VMP Area are representative of two vegetation communities:

- Shale Sandstone Transition Forest (SSTF) (plant community type (PCT) 1395); and
- Shale Plains Woodland (PCT 849).

Shale Sandstone Transition Forest (SSTF) is mapped across the north-eastern and eastern parts of the study area and occurs in the eastern section of the VMP Area. Shale Plains Woodland is mapped as occurring in the western parts of the study area adjoining Annangrove Road and occurs in the western section of the VMP Area. As discussed previously, Shale Plains Woodland is representative of Cumberland Plain Woodland (CPW). Both SSTF and CPW are listed as CEECs under both the BC Act and the EPBC Act.

The existing vegetation mapping of the study area is shown in **Figure 2**.

1.2.2. The Project

The project involves a concept proposal for development of a mixed use/bulky goods commercial centre. Specifically, the project proposes areas of various development blocks which are subject to the following indicative uses:

- Neighbourhood shops, bulky good premises and other uses; and
- Food and drink premises;

The concept proposal also includes car parking facilities at ground and lower ground levels, as well as ancillary infrastructure, and landscaping.

1.3. Aims and Objectives

The aim of this VMP is to provide a working document that will successfully protect, maintain and enhance the native vegetation in the VMP Area in order to increase its ecological value over time, both for immediate rehabilitation purposes and also for maintenance into the future.

The objectives of the VMP are to guide the weed control, maintenance and revegetation of SSTF and CPW within the VMP Area. This includes weed management and supplementary planting where required of characteristic native species, as well as details of the protocols to be followed during vegetation clearing in areas of the study area outside of the VMP Area in to minimise the impact of clearing. It also includes the restoration and revegetation of the areas that will be impacted by the construction of the stormwater pipeline through the eastern part of the VMP Area.

To accomplish these objectives, the following measures are addressed within this VMP:

- Vegetation management zones (**Chapter 3**);
- Vegetation clearing protocols (**Chapter 4**);
- Weed management plan (**Chapter 5**);
- CPW reconstruction strategies (**Chapter 6**);
- Monitoring strategies and reporting requirements (**Chapter 7**);
- Details of timing and responsibilities (**Chapter 8**); and
- Performance and Completion criteria (**Chapter 8**)

1.4. Relevant Legislation

Legislation relevant to this BMP includes:

- The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act);
- The NSW *Biodiversity Conservation Act 2016* (BC Act);
- The NSW *Biosecurity Act 2015* (Biosecurity Act);
- The NSW *Pesticides Act 1999;* and
- The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

2. Methods

2.1. Literature Review

The preparation of this VMP involved a literature review to determine the most up to date methods of weed control for exotic species that are present in the VMP Area. This literature review involved a variety of sources including government fact sheets and websites. Cumberland Ecology staff with expertise in bushland maintenance were also consulted on current best practice methods and techniques.

The literature review included, but was not limited to review of the following documents;

- Cumberland Plain Woodland in the Sydney Basin Bioregion – Final Determination (NSW Scientific Committee 2009);
- Shale Sandstone Transition Forest in the Sydney Basin Bioregion – Final Determination (NSW Scientific Committee 2014);
- Restoring Bushland on the Cumberland Plain (DEC (NSW) 2005);
- The Hills Vegetation Management Plan Guideline (The Hills Shire Council 2015);
- Cumberland Plain Recovery Plan (DECCW 2011); and
- Biodiversity Development Assessment Report, 328 – 330 Annangrove Road, Rouse Hill, The Hills LGA (Keystone Ecological. 2020);
- NSW BioNet VIS Vegetation Classification Database (EES 2021b);
- NSW BioNet Atlas (EES 2021a); and
- The Commonwealth EPBC Act Protected Matters Search Tool, and the EPBC Act Species Protection and Threats Profile Database.

2.2. Field Survey

Recent field surveys of the vegetation within the study area were completed by Cumberland Ecology on 12 November 2012, and comprised the following:

2.2.1. Vegetation Mapping

Broad scale vegetation mapping prepared by OEH (2013) exists for the subject land and study area and was reviewed prior to field surveys. Previous detailed vegetation mapping undertaken by Keystone Ecological (2020) and Eco Logical Australia (2020) was also reviewed and considered prior to the field surveys. Cumberland Ecology conducted additional vegetation surveys on 12 November 2021 and 3 February 2022 to verify and update the vegetation extent and PCT mapping. The vegetation within the study area was ground-truthed to examine and verify the mapping of the condition and extent of the different plant communities. Mapping of plant communities within the subject land and study area was undertaken by random meander surveys through patches of vegetation, noting key characteristics of areas in similar broad condition states such as similar tree cover, shrub cover, ground cover, weediness or combinations of these. Soils were also inspected.

Records of plant community boundaries were made using a hand-held Global Positioning System and mark-up of aerial photographs. The resultant information was synthesised using GIS to create a spatial database that was used to interpret and interpolate the data to produce a vegetation map of the subject land.

2.2.2. Plot-based Vegetation Survey and Vegetation Integrity Assessment

A plot-based vegetation survey and vegetation integrity assessment was undertaken concurrently within the subject land and study area in accordance with the BAM (hereafter referred to as 'BAM plots'). These BAM plots were undertaken in accordance with Section 4.2.1 and Section 4.3.2 of the BAM.

A total of seven BAM plots (P1-P7) were undertaken within the subject land and surrounds on 12 November 2021 and 3 February 2022. The BAM plots required the establishment of a 20 x 50 m plot with an internal 20 m x 20 m plot. The following data was collected within each of the plots:

- Composition for each growth form group by counting the number of native plant species recorded for each growth form group within a 20 m x 20 m floristic plot;
- Structure of each growth form group as the sum of all the individual projected foliage cover estimates of all native plant species recorded within each growth form group within a 20 m x 20 m floristic plot;
- Cover of 'High Threat Exotic' weed species within a 20 m x 20 m floristic plot;
- Assessment of function attributes within a 20 x 50 m plot, including:
    - Count of number of large trees;
    - Tree stem size classes, measured as 'diameter at breast height over bark' (DBH);
    - Regeneration based on the presence of living trees with stems <5 cm DBH;
    - The total length in metres of fallen logs over 10 cm in diameter;
- Assessment of litter cover within five 1 m x 1 m plots evenly spread within the 20 x 50 m plot; and
- Number of trees with hollows that are visible from the ground within the 20 x 50 m plot.

3. Vegetation Management Zones

This chapter outlines the vegetation management zones proposed for the VMP Area, and their objectives.

3.1. Vegetation Management Zones

The VMP Area comprises four management zones, as detailed below and shown in **Figure 3**. The objectives and management approach for each zone are summarised in **Table 2**.

3.1.1. Management Zone 1 – PCT 1395 Slashed

Management Zone 1 is located along the eastern boundary of the study area and occurs as a modified condition state of PCT 1395. Native vegetation exists mainly as canopy trees, grasses, and groundcovers, with a sparse mid-storey of exotic *Olea europaea* subsp. *cuspidata*. The management approach for this zone will include assisted regeneration through the treatment of exotic weeds, as well as supplementary infill planting of native species consistent with PCT 1395 (see **Table 11** in **Appendix B**). This includes revegetation of the corridor that will be impacted by the works associated with the construction of the stormwater pipeline.

3.1.2. Management Zone 2 – PCT 1395 DNG

Management Zone 2 is in the western section of the study area, bordering Management Zone 3 to the south. This management zone is in relatively poor condition with native vegetation occurring as derived native grasslands (DNG), comprising grass and groundcover species. Management approach for this zone will primarily involve revegetation with native species consistent with PCT 1395 (see **Table 11** in **Appendix B**).

3.1.3. Management Zone 3 – PCT 849 Mown Understorey

Management Zone 3 is split into two small areas, placed either side of Management Zone 4. Vegetation condition within this management zone is also relatively poor, with native species occurring mainly as canopy trees and groundcovers. There is no native mid-storey present, due to existing management that includes regular mowing of the understorey. Exotic species occur in abundance in the groundcover stratum. The management approach for this zone will focus primarily on revegetation of native species consistent with PCT 849 (see **Table 10** in **Appendix B**), with an emphasis on recreating a substantial shrub layer.

3.1.4. Management Zone 4 – PCT 849 Exotic Understorey

Management Zone 4 is in relatively poor condition with native vegetation existing primarily as canopy trees, under which lies a dense mid-storey of *Olea europaea* subsp. *cuspidata*. Native grasses or groundcovers are sparse within this area. Management approach within this zone will focus on assisted regeneration through the treatment of *Olea europaea* subsp. *cuspidata* and exotic grasses. Revegetation with native species is not seen as necessary as the removal of native mid-storey and exotic grasses should result in germination and regeneration of native species. The highly shaded nature of this zone is also not conducive to high survival rate of installed plantings.

3.2. Management Approach and Objectives

The proposed management approach and objectives for each vegetation management zone within the VMP Area are outlined in **Table 2.**

Table 2 Management approach and objectives for management zones

Management Zone	Management Approach	Management Objectives
Management Zone 1	Assisted natural regeneration and revegetation	Control and treat exotic species Improve community structure and species composition through regeneration and revegetation Revegetation of areas impacted by the construction of the stormwater pipeline Provide in perpetuity protection
Management Zone 2	Revegetation	Improve community structure and species composition through regeneration and revegetation Provide in perpetuity protection
Management Zone 3	Revegetation	Control and treat exotic species (particularly in exotic understorey area) Improve community structure and species composition through regeneration and revegetation Provide in perpetuity protection
Management Zone 4	Assisted natural regeneration	Control and treat exotic species (particularly in exotic understorey area) Improve community structure and species composition through regeneration Provide in perpetuity protection

4. Vegetation Clearing Protocols

4.1. Introduction

This chapter provides protocols for vegetation clearing and other site works associated with the proposed development in the study area, to avoid impacts to biodiversity in the development footprint, as well as impacts to retained native vegetation in the VMP Area. Other specific VMP works to be undertaken within the VMP Area such as weed control and revegetation are detailed in later chapters.

4.2. Hygiene Protocols

To avoid the spread of Root rot Fungus (*Phytophthora cinnamomic*) and other soil borne pathogens appropriate hygiene procedures and guidelines described in Best Practice Management Guidelines for *Phytophthora cinnamomi* within the Sydney Metropolitan Catchment Management Authority Area (SMCMA) will be followed (Botanic Gardens Trust 2008).

This will involve all machinery, clothing (such as boots and gloves), and tools, which will have contact with soil to be disinfected with a spray prior to entering and leaving the VMP Area.

Recommended disinfectant products include:

- Non-corrosive disinfectants including Coolacide®, Phytoclean®, or Biogram® which can be for cleaning footwear, tools, tyres, machinery and other items in contact with soil;
- 70% Methylated spirits solution in a spray bottle which is suitable for personal use (clothing); and
- Sodium Hypochlorite 1%, which is effective, but can damage clothing and degrades rapidly in light.

4.3. Environmental Inductions

Inductions will be undertaken for all personnel who will work within the study area prior to the commencement of any works to communicate environmental features to be protected and measures to be implemented. The induction will specify in detail which areas of vegetation are approved to be removed and the importance of not damaging retained vegetation. The induction will specify that unauthorised personnel are not permitted to enter retained vegetation areas, and that no machinery or stockpiling of materials is permitted within the VMP Area.

4.4. Protection of Retained Vegetation in the VMP Area

Vegetation clearing is proposed to occur in the study area immediately adjacent to the VMP Area. Additionally, a small corridor of the eastern VMP Area will be temporarily impacted by the construction of a stormwater pipeline. Hence, appropriate measures will be implemented to protect retained native vegetation with this area.

Prior to clearing being undertaken, a permanent fence (without barbed wire) or bollards will be erected between the VMP Area and the remainder of the study area. A gate is to be included to allow for access for future management and signage is to be placed on the fence, which is to bear the words "Conservation Area - No Unauthorised Access". This fence and signage are to be maintained in perpetuity. The temporary construction corridor through the eastern VMP Area should also be clearly delineated to avoid clearing beyond the approved temporary construction corridor.

To avoid unnecessary damage to vegetation or inadvertent habitat removal, disturbance is to be restricted to the delineated area. No stockpiling of equipment, soils, or machinery is to take place beyond delineated boundaries within the VMP Area, including the temporary construction corridor for the stormwater pipeline.

Sediment control measures will be installed to prevent run-off of soil, weed propagules, excess nutrients, and pollutants into the VMP Area. Sediment fencing will be installed along the entire perimeter of the extent of the proposed works to protect retained vegetation in the VMP Area.

4.5. Weed Management During Construction

Several weed species have been recorded from the study area, and if left uncontrolled these may threaten the objectives of the VMP Area. In addition, disturbance during development works can create opportunities for weed invasion, and as such appropriate weed control activities will be undertaken prior to clearing in the development footprint. The amount of bare soil exposed at any one time will be minimised, and as outlined previously, sediment fencing will be installed along the boundary of any areas proposed to be cleared, and downslope of any activities involving earthworks to prevent the spread of weeds into the VMP Area from clearing works.

Prior to clearing, all plant equipment entering the study area will be inspected and recommended for wash down (in designated wash down areas) as required to ensure weed material from off-site locations do not establish or spread into native vegetation within the VMP Area. Any weed materials will need to be carefully removed off site in a manner appropriate to the species to prevent the spread of propagules to uncleared areas of native vegetation, both on and off site.

Several of the exotic species recorded within the study area including *Lantana camara* (Lantana) and *Ligustrum sinense* (Small-leaved Privet) are listed as State Priority Weeds within the Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022 (LLS: Greater Sydney 2019). These weeds are required to be controlled where they occur in the development footprint prior to construction to avoid these species spreading into other parts of the study area and VMP Area.

More detailed weed control measures for implementation in the VMP Area are presented in **Chapter 4**.

4.6. Habitat Clearing Protocols

Clearing in the study area will be undertaken in accordance with the protocols outlined in this section in order to avoid and minimise impacts to biodiversity.

Prior to vegetation clearance, any trees that require removal will be inspected for hollows, nests and other habitat features prior to removal through a preclearance survey by a qualified ecologist. Pre-clearing surveys will include demarcation of key habitat features as hollow-bearing trees, fallen logs and bush rock within one week of the proposed clearing activities. Any hollow logs or tree hollows that would be suitable for salvage as habitat features will also be identified and marked during this survey.

As part of the pre-clearing surveys, all built structures to be demolished will also be inspected to identify any habitat features that have a high potential to support native fauna species, in particular, microbats. The surveys will include visual roost searches for crevices that a microbat may be able to access and roost in, with the aid

of a torch where required, and the use of a hand-held ultrasonic bat detector. If any suitable roost sites are identified, additional surveys comprising roost watches and the deployment of ultrasonic bat detectors will be completed over a period of two nights to detect bats using the buildings. Any roost watches and ultrasonic bat detector surveys should be undertaken during spring/summer when microbats are more likely to leave their roost (and subsequently be detected) and not be carried out during periods of heavy rain. All targeted microbat surveys should be carried out by a qualified ecologist with a minimum of three years' experiences in surveying microbats.

To minimise impacts to native fauna species, clearing will be undertaken using a two-stage process under the supervision of a suitably qualified ecologist. The initial phase of clearing will involve clearing around identified habitat features and leaving the features for a 24-hour period.

The second stage will involve clearing of the habitat features left overnight under ecologist supervision. During clearance works, standard clearance supervision protocols will be observed. This will involve the ecologist inspecting habitat features immediately prior to disturbance for occupying fauna. Following the initial inspection, each habitat tree will be agitated prior to felling in the presence of an ecologist and then inspected by an ecologist once felled. Inspections will consist of a thorough examination of hollows, nests and decorticating bark to find any remaining resident fauna. A torch will be used to facilitate the inspection of deeper parts of hollows for fauna such as microbats. For each species captured and identified after felling, an experienced ecologist will place the animal in an appropriate container/calico bag and relocate it to an appropriate area of native vegetation outside the disturbance footprint.

The demolition of built structures will be guided by the results of the pre-clearing surveys. Where suitable bat roost sites and evidence of bat usage is recorded, the relevant built structures should be demolished under supervision of an ecologist. Staging of the built structures may also be required to provide opportunity for any roosting bats to self-relocate. Depending on the location of potential suitable roosting sites, the method for demolition of the existing buildings may involve an initial removal of the roof structures, with the buildings left overnight without roofing. Demolition of the remaining portion of the buildings would then occur on the following day. The specific details of the recommended demolition process will be included in the pre-clearance letter, as required.

For the duration of tree removal, a qualified ecologist must be present at all times to actively seek, capture and release any microbats or other native species that may be disturbed and flee from felled trees to limit the impacts to native fauna caused by clearing.

Provisions will be made to protect any native fauna during clearing activities by the following means:

- All persons working on vegetation clearing will be briefed about the possible fauna present and must avoid injuring any fauna;
- Animals disturbed or dislodged during the clearance but not injured should be assisted to move to the adjacent bushland; and

- If animals are injured during the vegetation clearance, appropriate steps will be taken to humanely treat the animal (either taken to the nearest veterinary clinic for treatment, or if the animal is unlikely to survive, it will be humanely euthanized).

4.7. Salvage of Habitat Items

Where present, fauna habitat features including hollow-bearing trees, hollow-bearing logs, other woody material and bushrock will be salvaged from the development footprint during clearing and stockpiled for future use in restoration of the VMP Area. The placement of salvaged items in the VMP Area will increase habitat complexity as such items are used by a variety of invertebrate and vertebrate species as microhabitat. Furthermore, the re-use of large hollows has been demonstrated to provide higher potential for uptake success by comparison to artificial nest boxes (Central Coast Council 2016). Hollows to be translocated will be those that are structurally sound to the extent that they survive the trees felling and subsequent translocation. The suitability of each hollow is to be determined during pre-clearance surveys by an ecologist.

Trees and stags containing hollows felled during the clearing process will be relocated to within the VMP Area and used for habitat reconstruction. Hollows will be trimmed by a tree removal specialist and will be installed in trees within the VMP Area in accordance with the Central Coast Council Guideline for the Relocation of Large Tree Hollows (Central Coast Council 2016) under the supervision of an ecologist. This document provides detailed recommendations for the salvaging of tree hollows, including the steps to follow in removing tree hollows, treating them with oil and strapping them to ensure their longevity and installing them appropriately into their new surrounds to maximise future use by hollow-dependant fauna species.

Habitat features are to be stored until such time as management of the VMP Area commences. Storage must be undertaken within designated stockpile areas, with onsite contractors made aware material is to be retained, to prevent loss of stored habitat features prior to utilisation. Placement of stored habitat features within the VMP Area will be undertaken in co-ordination with an ecologist.

4.8. Erosion and Sediment Control

Potential impacts to flora and fauna occurring in the construction phase that can be managed include run-off, sedimentation, erosion and pollution. To reduce sedimentation on the construction site, erosion control measures will be implemented including minimising the amount of exposed soils at any given time. All soil stockpiles should be adequately covered when not in use to prevent erosion from heavy rainfall. Clearing should not take place during periods of heavy rain in order to minimise erosion and sediment run-off.

Sediment fences will be established around the perimeter of the development area as outlined previously to prevent the impacts of sedimentation on the adjoining vegetation. During construction, precautions will be taken to ensure that no pollution, such as petrochemical substances or water containing suspended solids, escapes the construction site. Pollution traps and efficient removal of pollution to an off-site location would help to minimise pollution impacts.

5. Weed Management Plan

5.1. Introduction

5.1.1. Objectives

The VMP Area contains several Priority Weed species identified in the Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022 (LLS: Greater Sydney 2019), as well as weeds identified as Weeds of National Significance (WoNS). The objectives of weed management in the VMP Area are to control the existing weeds that occur in order to facilitate the recovery of the native vegetation present and to prevent the establishment of any additional weed species, through ongoing maintenance.

5.1.2. Relevant Legislation

Under the NSW *Biosecurity Act 2015* (Biosecurity Act) all weeds are required to be controlled by all persons under a "General Biosecurity Duty". The General Biosecurity Duty means that all public and private land owners or managers and all other people who deal with weed species (biosecurity matters) must use the most appropriate approach to prevent, eliminate, or minimise the negative impact (biosecurity risk) of those weeds (DPI 2017). The power for enforcement of penalties relating to compliance with the legislation is given to Local Control Authorities (i.e. Local Governments).

State-wide management of weeds under the Biosecurity Act is directed by the NSW Invasive Species Plan (LLS: Greater Sydney 2019). This assigns weed responses to four categories:

- Prevention of new weeds establishing;
- Eradication of small and localised infestations where feasible;
- Containment of larger infestation to stop wider spread; and
- Protection of key assets, such as threatened plants and agricultural land, to prevent their damage or degradation by weed invasion.

Under the Biosecurity Act some weed species have been prioritised for management by specific regulations and controls under the Act. These are known as State Level Priority Weeds. Specific legal requirements exist for how these weeds are managed.

All land within the VMP Area is within the Greater Sydney Local Land Services region, and weed management within the region is be undertaken under the direction of the Greater Sydney Regional Strategic Weed Management Plan (LLS: Greater Sydney 2019). Appendix 1 of the plan outlines the State Listed Priority Weeds, Regional Priority Weeds, and other weeds of regional concern. Several of the exotic species recorded within the study area including *Lantana camara* (Lantana), *Senecio madagascariensis* (Fireweed), and *Asparagus aethiopicus* (Asparagus Fern) are listed as State Priority Weeds, while others such as *Cestrum parqui* (Green Cestrum) are listed as Regional Priority Weeds within the Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022 (LLS: Greater Sydney 2019). These weeds are required to be controlled in every management zone that they occur in.

Four exotic species are also listed as Weeds of National Significance (WoNS). These weeds are of the highest priority to control within the study area and VMP Area.

Table 3 below summarises significant weeds recorded within the study area and their listing status.

Table 3 Significant weed species recorded from the study area

Scientific Name	Common Name	Status	WoNS
Araujia sericiflora	Moth Vine	SSLMP	No
Asparagus aethiopicus	Asparagus Fern	SP	Yes
Asparagus asparagoides	Bridal Creeper	SP	Yes
Cenchrus clandestinus	Kikuyu	SSLMP	No
Cestrum parqui	Green Cestrum	RP	No
Eragrostis curvula	African Lovegrass	SSLMP	No
Hypericum perforatum	St. Johns Wort	SSLMP	No
Lantana camara	Lantana	SP	Yes
Ligustrum lucidum	Large-leaved Privet	SSLMP	No
Ligustrum sinense	Small-leaved Privet	SSLMP	No
Olea europaea subsp. cuspidata	African Olive	SSLMP	No
Passiflora suberosa	Corky Passionflower	SSLMP	No
Senecio madagascariensis	Fireweed	SP	Yes

Table Key: *SP = State Priority Weed, RP = Regional Priority Weed, SSLMP = Species Subject to Local Management Programs.*

5.1.3. Best Management Practice

Contractors for weed removal within the VMP Area will have regard to the following, to minimise impacts upon existing vegetation and habitats:

- The main principles of the Bradley Method of bush regeneration, i.e. not over-clearing (remove only targeted species), employment of minimal disturbance techniques to avoid soil and surrounding vegetation disturbance, and replacement of disturbed mulch/leaf-litter;
- Removal of fruiting/seeding parts of weeds carefully, to minimise spread of plant propagules;
- Use of chemicals and sprays only during suitable weather conditions (i.e. not during wet or windy conditions), and only during appropriate seasons;
- All equipment should be thoroughly cleaned prior to entering the study area to minimise contamination;
- Proximity to watercourses and swampy areas; and
- Presence of native fauna or nesting/breeding sites.

5.1.4. Weed Control Methods

Weed control is to be implemented over the entire VMP Area. All weed removal works should be approached using the strategies outlined below.

5.1.4.1. Manual Weed Removal

Manual removal, or hand weeding, is an effective form of weed control when all viable parts of the plant are removed from the soil (roots, fruiting material and rhizomes) and site. All weeds removed by hand will be handled according to best practice bush regeneration techniques to prevent subsequent seed set from the removed weeds, and the unviable plant material will be retained on site to provide mulch and natural leaf litter to protect the soil surface.

5.1.4.2. Use of Herbicides

All herbicides should be used according to recommendations on the herbicide label. Appropriate Personal Protective Equipment (PPE) should be worn and consideration given to time of day, likelihood of rainfall, wind direction and likely impact on native species as per guidelines on the label. Use of glyphosate will be appropriate for most species. Glyphosate is the preferred herbicide for use in environmentally sensitive areas as it is rapidly broken down by microbes in the soil, so residue is short lived and will not affect remnant and planted native individuals in the long-term following application. In areas near water courses, an appropriate form of the herbicide should be used to minimise impact to aquatic life and amphibians. Herbicide use should be avoided within 2 m of the riparian edges. Examples of appropriate herbicide forms are Roundup Biactive and Clearup Bio 360 which have surfactants that are formulated to minimise harm to amphibians. As runoff is a likely way for herbicide residue to enter watercourses, chemical treatment should be avoided prior to or directly after rains.

It is important to note that there can be legal restrictions and permit requirements for use of specific herbicides for specific plants, and chemical labels and permit requirements always need to be researched prior to herbicide application. While the recommended methods for weed treatment detailed in **Appendix A** are effective, some will require a permit to be undertaken. The relevant permit numbers are PER9907, and PER11916. These permits need to be obtained from the Federal Government body, the Australian Pesticides and Veterinary Management Authority.

Manual removal will be an appropriate form of control for some species, and all chemical treatment should be carried out according to best practice guidelines.

Planting should not occur within 10 days of herbicide application.

5.2. Weed Management in the VMP Area

5.2.1. Initial Weed Control

After installation of sediment fencing has been completed, initial weed treatment in the VMP Area will commence. This will consist of spraying weeds with Glyphosate 360g/L at a concentration of 10 mL herbicide to 1 L of water. This strength is commonly used in bushland regeneration works as it will effectively kill most herbaceous weed species. A marker dye should be used in the herbicide solution to ensure no areas of weeds are missed. Knapsack sprayers with a spray cone to direct the spray towards the ground are recommended to be used to prevent herbicide drift into adjacent vegetated areas. Spraying should be adjusted based on on-ground conditions and should target areas with weed infestations.

Following the initial spraying, the VMP Area should be left for three weeks to allow time for any treated weeds to die back. After this period the treated areas should be resprayed with Glyphosate again, with a focus made on treating any exotic plant species that still have green colouring left in foliage, and any juvenile germinated exotic grasses.

If required, mulch can be laid across the VMP Area in areas that contain no native plants. In areas containing native plants, the mulch can be spread on the ground surface around the occurrences of remnant native plants. If mulch is used, a certified weed-free mulch of known provenance should be used.

5.2.2. Ongoing Weed Maintenance

Maintenance Weeding is to be undertaken throughout the entire VMP Area in the months following initial control works, to treat any establishment or regrowth of weeds. This will involve the selective removal or treatment of weeds, whilst allowing planted native plants to increase in size, abundance and percentage cover. Weed control during each site visit should prioritise High Threat Weed species, Priority Weeds and WoNS, followed by other environmental weeds, and then infestations of any weed species within the VMP Area to prevent them becoming established to the extent they threaten the viability of native plantings.

The most cost and time effective method of controlling weed regrowth will be by spraying a non-selective Glyphosate herbicide. This is only to be used for large infestations. If targeting individual weeds, then wick wiping/direct press techniques are advisable. Tree guards will also allow herbicide to be used for control of most regrowth weeds, without damage to native plants by herbicide drift.

It is recommended that any woody weeds, climbers, and key herbaceous weeds identified during reconstruction are subject to a programme of intense follow up weeding around any patches of planted native herbaceous plants to encourage the spread of the native plant species. Weed suppression methods such as mulching/matting will suppress mass regrowth of weeds within the VMP Area, but not entirely prevent regrowth of weeds.

Ongoing maintenance of the VMP Area should occur for a five-year period by the contracted bushland regeneration company, and the VMP Area be covered in its entirety once every month, to diminish the soil seed bank of exotic weed species present on site. To eliminate the occurrence of these species, weeds should not be allowed to achieve a reproductive stage in their life cycles.

Tree guards should remain around all native planted trees and shrubs, for at least 18 months to protect them from herbivory. Rabbits can devastate revegetation areas soon after planting if tree guards are not used. It is recommended that signs of rabbit herbivory be noted during site visits, and control measures undertaken if significant impacts to planted vegetation are occurring threatening the long-term viability of the VMP Area.

The following sequential steps are recommended to manage the VMP Area effectively for each site visit:

- Initially the bushland regeneration team working in the VMP Area should sweep from one end of each area to the other. During this sweep weeds occurring within each tree guard alongside native plants should be removed by hand and any weed occurring within a patch of dominant native plants (such as a patch of grasses).

- A member of the team should then sweep the entire area, spraying all regrowth weeds between native plantings/remnant natives in open areas with herbicide, and spot spraying where possible in regeneration areas.

It is important during visits for ongoing weed maintenance that as many weed species as possible are controlled. This will minimise maturity and set seed of weeds between site visits. Some weed species are prolific seeders, and many exotic plants can have seed that remains viable in the soil for long periods of time. In order to effectively diminish the soil seed bank occurrences of exotic species it is important that individuals are not allowed to set seed.

Temporary sediment fencing should be retained until it is determined plants have sufficiently established to prevent surface soil erosion.

After the five-year follow-up and maintenance period has been completed, a review should be conducted to determine on-site maintenance requirements.

5.2.3. Weed Monitoring

An ongoing weed monitoring program will be established to determine the success of the weed management actions undertaken in the VMP Area and to identify areas where additional actions are required to meet the performance criteria for the VMP Area. Details of the monitoring program are presented in Section 6.2, and are summarised below:

- Establish a series of fixed monitoring points within the VMP Area. Additional points can be established over the life of the VMP for areas with particular weed problems;
- Take photographs annually from each monitoring point. Compare photographs to previous years;
- Use the photograph point to form a corner of a 20 x 20 m/ 10 x 10m quadrat at each monitoring point; and
- Note any other weed outbreaks in the VMP Area. This can be done while walking between monitoring points.

Monitoring will be conducted before weed control commences, then once every month while revegetation works are undertaken. Once initial plantings are complete, monitoring will be conducted every three months for the next year, then every six months after that for the life of the VMP (see **Section 6.2**).

During the period of six-monthly monitoring, if maintenance weeding is conducted, each patch of land where weed control has occurred should be checked approximately a month afterwards, or after rain, in order to determine whether more weeding is required.

Indicative locations of where monitoring points are to be established are identified in **Figure 4**. The co-ordinates for final locations should be recorded at establishment of the monitoring site and documented in the annual report.

5.3. Weed Control Methods

Detailed weed control methods for all exotic and non-endemic species recorded on the site are located in **Appendix A**. The preparation of weed control methods involved a literature review to determine the most up-to-date methods of weed control for exotic species that are present on the site. This literature review involved a variety of sources including government fact sheets and websites. Previous professional experience of a Cumberland Ecology botanist formerly employed in bushland maintenance was also utilised. This list includes additional species not recorded on the site that are common, exotic weed species in the Sydney Region. Exotic species recorded in the study area are provided in the BDAR prepared by Cumberland Ecology (2021).

6. Revegetation Plan

This chapter provides details for the restoration of the native vegetation within the VMP Area. Although this area contains substantial native canopy vegetation cover, there are some gaps in the canopy and the understorey has been modified by mowing, slashing and weed invasion and is currently in a degraded condition. The objective of this revegetation plan is to provide details of the measures that will be implemented in the VMP Area to replace and rehabilitate the missing components of the natural vegetation and enhance the biodiversity value of this area in the long term.

6.1. Recommended Revegetation Techniques

6.1.1. Species Selection and Planting Densities

Appropriate plant species for the VMP Area are those that naturally occur in SSTF and CPW. A list of appropriate species for each community is provided in **Appendix B** and are to be used for revegetation using plants sourced from local provenance (within the local area), in accordance with the proposed management objectives for each management zone (see **Chapter 3**). Plants may be sourced from seed collections or cuttings from within the existing remnant vegetation within the study area or from commercially attainable tube stock.

The species list prepared for revegetation areas within the VMP Area not only includes species listed as diagnostic for the vegetation communities, but also includes additional species that were recorded as naturally occurring local endemics within these communities in adjacent areas. It should be noted that these additional species are not listed under the final determination for the community. Species listed under final determinations are a broad view of characteristic species for a particular community, and do not take into account natural variation at the site level which the proposed species list attempts to do.

The recommended planting specifications for the VMP Area are:

- Canopy Trees @ 1 unit / 16 m^2
- Shrubs @ 2 unit / 10 m^2
- Groundcovers @ 4 unit / 1 m^2 planted in clumps/thickets or singly.

Differential cover of shrubs will also provide a greater diversity of fauna habitat, particularly for some small, woodland birds which forage in grassy areas and shelter in shrub thickets. Trees and shrubs should be planted unevenly in patches to mimic natural distribution. Planting should be avoided within 10 metres of existing (retained) canopy trees or in areas where natural regeneration of native trees and shrubs is occurring.

Natural regeneration will be encouraged, with planting of canopy species only undertaken where needed if natural regeneration does not occur in months following weed removal. If required, canopy species will be planted in bare patches. Planting of understorey and ground layer species will be undertaken to restore areas where dense weed infestations have been removed and for the purposes of increasing species diversity in these strata.

6.1.2. Species Richness of Plantings

The goal of revegetation should be to reach 50% of the species richness benchmarks for each PCT five years post commencement of revegetation works. The goal of only 50% of benchmark recognises that the ability to

match benchmark species richness is dependent on stock able to be obtained from local nurseries. Where possible to source a greater number of species, greater than 50% should be achieved.

6.1.3. Characteristic Planting Units

Native species should be planted in characteristic planting units to correspond with the topology, aspect, soil type and proximity to water.

Grasses may be planted in clumps of 3+ (spaced 15–20 cm apart within clumps) to generate physical / structural support for each other and microclimates. Wind pollinated grasses such as *Themeda australis* may be particularly planted in clumps to aid fertilisation and to create a natural grassland understorey within the restoration areas. Trees and shrubs should be planted unevenly in patches to mimic natural distribution.

6.1.4. Plant Supply

Any tube stock will be purchased of local provenance native plants identified in **Appendix B**. If the required quantities of tube stock are not available, then it may be necessary to collect or source suitable quantities of local native seed for propagation.

If required for propagation, local native plant propagules should be collected using principles prescribed in 'Bringing the Bush back to Western Sydney' (DIPNR 2003). Seeds and vegetative propagules should be of local provenance, preferably from within 10 km of the study area. Material should be propagated in a local commercial or community nursery, with well-established plants used for revegetation, for trees and shrub species particularly. It may be necessary to get the required amounts of seed and vegetative material contract-collected and grown-on by specialist nurseries. Local native plants should be grown in "Hiko" tube, maxi cell or viro-tube, or Forestry Tube-type containers.

6.2. Ongoing Maintenance

After planting works have been completed, planted areas should be maintained by appropriately qualified personnel, selectively spot spraying and hand weeding around native plants, watering plants and replacing dead plants as needed.

Provision should be made to irrigate planted areas, as required, in the first 3 months after planting, (on at least 4-5 occasions, depending on rainfall conditions, more watering if required). Irrigation water may be sourced by pumping from the river and local dams. A permit from the NSW Office of Water may be sought to use water for watering-in newly installed plants.

Re-growing environmental weeds such as vines, woody trees and shrubs, broadleaf annuals and naturalised grasses should be closely monitored and controlled using ecologically sensitive bushland regeneration hand weeding and spot-spraying methods, to ensure adequate weed control and native plant (see **Section 5.2.2** for more details of ongoing weed maintenance measures). Weeding inside each planting bag by hand or selective herbicides will be required, as well as in an approximate 50 cm radius around the outside of each plant and tree guard.

Plants that have died due to drought or pest and disease damage should be replaced as required. Plants that are observed to have died should be replaced by the bushland maintenance team with a planting of the same form.

7. Monitoring, Reporting and Costing

7.1. Responsibilities

It is recommended that a project manager/supervisor with the BRC be assigned to co-ordinate, supervise and manage all works and correspondence with respect to the reconstruction of the VMP Area. The project manager must be available for the duration of the project and become familiar with the site and progress of all aspects of works undertaken.

The project manager will be responsible for allocation of maintenance tasks to personnel in response to establishment issues and other factors as monitoring results are reported (e.g.: plant losses/re-planting, weed control, irrigation). Regular monitoring and feedback from personnel will assist in the allocation of labour relative to available funds.

7.2. Monitoring

A qualified bushland management or ecological consultant will carry out a program of regular monitoring of the implementation of the VMP. The monitoring program will be carried out for the duration of the VMP and a monitoring survey will be completed every six months for the five-year management period of the VMP.

General observations of the nature and condition of the VMP Area along with the collection of quantitative data will be taken during monitoring including:

- Photo reference points will be established at fixed locations in the VMP Area and a photograph shall be taken at each photo reference point for a visual assessment of site progress;
- Use the photograph point to form a corner of a 20 x 20 m/10 x 10m quadrat at each monitoring point. Note any weeds occurring in the quadrat and state relative abundance of weed species (using Braun-Blanquet scale), as well as projective foliage cover of native species in each strata. Record numbers of failed plantings in each quadrat;
- Estimates of the success rate of plantings and natural regeneration, and assessment of plant replacement requirements;
- Weed abundance and locations of significant weed infestations in the VMP Area;
- Exotic to native understorey ratio; and
- Recommendations for corrective measures and/or vegetation management.

During the monitoring surveys of the VMP Area, any salvaged tree hollows that have been installed in the VMP Area will be monitored to determine their usage by native fauna species. During each monitoring survey, each hollow will be inspected using a camera on a pole and the results recorded, including the number and species of the fauna recorded. The condition of the nest box will also be recorded in order to identify when they need replacing due to damage or age.

The proposed monitoring plot locations are shown in **Figure 4.**

7.3. Reporting

A brief and concise report should be submitted every 12 months for the life of the VMP. This report will be forwarded to The Hills Shire Council and will provide a record of the implementation of the VMP. The report will:

- Describe the works undertaken;
- State the findings of the monitoring activities including results and analysis of the performance criteria;
- Discuss any problems encountered in implementing the VMP; and
- Recommend any adaptations or additions to the VMP.

The report should contain the photographs, as well as a short description of weeds in each quadrat and a short comparison of the photographs to the previous years. Any other notable occurrences of weeds should also be reported. The report should also recommend and prioritise areas where weed control should be targeted and replanting should occur, based on the performance criteria.

7.4. Costing

Tables 4-7 provide a high-level estimate of costings for the implementation and maintenance for the life of this VMP.

Please note that all estimations are based on previous projects and prices quoted during the writing of this report and are subject to a high degree of variability based on the availability of resources and other unforeseen economic factors. Therefore, the costing provided should be used only as a high-level general guide as totals may vary over the life of the VMP. Costings for seed collection are not included in these estimates as the full extent of area from which seed is to be collected is currently unknown as the collection of an adequate supply of seeds will vary with seasons and plant conditions.

Table 4 High level cost estimate for Management Zone 1

Task	Establishment	Year 1	Year 2	Year 3	Year 4	Year 5
Site Preparation (Initial Weeding) - 1 day for Bush Regeneration team @ $2500 per day	$2,500.00					
1 Star Pickets (Photo reference points)	$17.88					
Hiko Planting Ground Cover (4 units/m2 for 3100 m^2)	$31,000.00					
Hiko Planting Shrub (1 unit/10 m^2 for 3100 m^2)	$775.00					
Hiko Planting Canopy (1unit/32 m^2 for 3100 m^2)	$242.19					
Tree guards	$420.00					
Signage	$200.00					
Maintenance Visits (Weeding and Plant Replacement) with associated Photomonitoring and reporting		$15,038.89	$8,034.44	$7,210.00	$5,974.00	$4,738.00
Total Establishment Costs	**$35,155.07**	**24 Visits**	**12 Visits**	**12 Visits**	**12 Visits**	**12 Visits**

Table 5 High level cost estimate for Management Zone 2

Task	Establishment	Year 1	Year 2	Year 3	Year 4	Year 5
Site Preparation (Initial Weeding) - 1 day for Bush Regeneration team @ $2500 per day	$1,250.00					
1 Star Pickets (Photo reference points)	$17.88					
Hiko Planting Ground Cover (4 units/m^2 for 600 m^2)	$6,000.00					
Hiko Planting Shrub (1 unit/10 m^2 for 600 m^2)	$150.00					
Hiko Planting Canopy (1unit/32 m^2 for 600 m^2)	$93.75					
Tree guards	$440.00					
Signage	$50.00					
Maintenance Visits (Weeding and Plant Replacement) with associated Photomonitoring and reporting		$15,038.89	$7,370.78	$7,210.00	$5,974.00	$4,738.00

Task	Establishment	Year 1	Year 2	Year 3	Year 4	Year 5
Total Establishment Costs	**$8,001.63**	**24 Visits**	**12 Visits**	**12 Visits**	**12 Visits**	**12 Visits**

Table 6 High level cost estimate for Management Zone 3

Task	Establishment	Year 1	Year 2	Year 3	Year 4	Year 5
Site Preparation (Initial Weeding) - 1 day for Bush Regeneration team @ $2500 per day	$1,250.00					
1 Star Pickets (Photo reference points)	$17.88					
Hiko Planting Ground Cover (4 units/m^2 for 900 m^2)	$9,000.00					
Hiko Planting Shrub (1 unit/10 m^2 for 900 m^2)	$225.00					
Hiko Planting Canopy (1unit/32 m^2 for 900 m^2)	$0.00					
Tree guards	$420.00					
Signage	$50.00					
Maintenance Visits (Weeding and Plant Replacement) with associated Photomonitoring and reporting		$13,865.09	$7,447.54	$7,210.00	$5,974.00	$4,738.00
Total Establishment Costs	**$10,962.88**	**24 Visits**	**12 Visits**	**12 Visits**	**12 Visits**	**12 Visits**

Table 7 High level cost estimate for Management Zone 4

Task	Establishment	Year 1	Year 2	Year 3	Year 4	Year 5
Site Preparation (Initial Weeding) - 1 day for Bush Regeneration team @ $2500 per day	$2,500.00					
1 Star Pickets (Photo reference points)	$17.88					
Hiko Planting Ground Cover (4 units/m^2 for 1200 m^2)	$0.00					
Hiko Planting Shrub (1 unit/10 m^2 for 1200 m^2)	$0.00					
Hiko Planting Canopy (1unit/32 m^2 for 1200 m^2)	$0.00					

Task	Establishment	Year 1	Year 2	Year 3	Year 4	Year 5
Tree guards	$0.00					
Signage	$50.00					
Maintenance Visits (Weeding and Plant Replacement) with associated Photomonitoring and reporting		$13,390.00	$7,210.00	$7,210.00	$5,974.00	$4,738.00
Total Establishment Costs	**$2,567.88**	**24 Visits**	**12 Visits**	**12 Visits**	**12 Visits**	**12 Visits**

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8. Timing and Responsibilities

This VMP covers work to be carried out on site over a five-year period. The VMP Area is to be managed in a series of phases as follows:

- Phase 1 – Site establishment and construction of proposed development;
- Phase 2 – Revegetation and weeding;
- Phase 3 – Maintenance; and
- Phase 4 – Monitoring and Reporting

Timing and responsibilities at each phase of management within the VMP Area are shown within **Table 8**. This table assigns each activity within each phase to those responsible.

Table 8 Timing and responsibilities

Management	Action	Responsibility	Performance Criteria	Timing
Phase 1: Site Establishment				
Extent of clearing boundary	Installation of sediment/erosion controls	Construction Contractor	Sediment/erosion controls have been installed around the perimeters of all clearance works.	Prior to commencement of clearing works.
Extent of clearing boundary	Delineation of clearing boundary	Property Owner or Construction Contractor	Temporary fencing has been installed around the perimeters of all clearance works.	Prior to commencement of clearing works.
Extent of clearing boundary	Vegetation Clearance	Construction Contractor	Vegetation removed following completion of pre-clearance surveys. Any logs removed have been placed within the VMP Area.	During construction works
Phase 2: Revegetation and Primary Weeding				
VMP Area	Primary weeding conducted across VMP Area	Bush Regeneration Contractor	All woody weeds have been removed from VMP Area and all other weeds have been treated	First two months of works.
VMP Area	Revegetation within VMP Area	Bush Regeneration Contractor	Cleared areas have been planted to the	Immediately upon

Management	Action	Responsibility	Performance Criteria	Timing
			specifications outlined in **Chapter 5**, using the species in **Appendix B.**	establishment of VMP Area – within first month
VMP Area	Installation of permanent fencing and educational signage	Property Owner or Construction Subcontractor	Permanent fencing and signage have been installed around the boundaries of the VMP Area	Immediately upon establishment of VMP Area – within first month
VMP Area	Fixed Point Monitoring.	Bush Regeneration Contractor	Photographs (4 total) of fixed monitoring sites to compare the survival and retention of plantings.	Every 6 months for five-year maintenance period under the VMP.
VMP Area	Carry out secondary weeding.	Bush Regeneration Contractor	0 reproductively mature individuals present of priority weeds or woody weeds 0 priority weeds or woody weeds present >10cm in height	Following primary weeding, site visits quarterly.
Phase 3: Maintenance				
VMP Area	Carry out maintenance weeding (control of all weed species including annual weeds) throughout management zones.	Bush Regeneration Contractor	KPI Weed coverage targets (all weed species) achieved: less than 30% at end of first year; less than 20% at end of second year; less than 15% at end of third year; less than 10% at end of fourth year; and less than 5% at end of fifth year. 0 new weed species or infestations at end of each visit	Quarterly for duration of maintenance period under VMP
VMP Area	Maintenance of plantings.	Bush Regeneration Contractor	0 dead plantings remaining (each	Quarterly for duration of

Management	Action	Responsibility	Performance Criteria	Timing
			replaced with new planting) Plants watered when drought stressed. Additional plantings where required due to observed gaps in any strata. Densities for each stratum will be as below or greater: Trees @1 unit / 16m^2, Shrubs @ 2 unit / 10 m^2, Groundcovers @ 4 unit / 1m^2	maintenance period under VMP
VMP Area	Rubbish removal	Bush Regeneration Contractor	Ensure any rubbish is removed	Quarterly for the 5-year maintenance period of the VMP.
Phase 4: Monitoring and reporting				
VMP Area	Biannual inspection of site.	Bush Regeneration Contractor or Ecologist	Site inspection completed as outlined in **Chapter 7**	Biannually for the 5-year maintenance period of the VMP
VMP Area	Progress report preparation	Bush Regeneration Contractor or Ecologist	Annual Report prepared on progress of VMP	Annually for the 5-year maintenance period of the VMP

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APPENDIX A :
Weed Control Methods

Table 9 Weed control methods for weeds

Family	Scientific Name	Common Name	Status	Treatment Method
Oleaceae	*Olea europaea subsp. cuspidata*	African Olive	RP	- Spray juveniles with glyphosate 10mL/1L
				- Cut mature individuals with saw or loppers near ground level and paint stump with undiluted glyphosate or Triclopyr (600g/L formulation)/diesel at 4L/60L concentration (as per Garlon 600 label)
				- Use a power drill (9mm drill bit with dowelling tip) to drill holes less than 20 mm apart throughout lignotuber of mature trees and fill holes with glyphosate a 1:5 mixture with water. After all holes have been filled with herbicide mixture refill holes with herbicide mixture a second time (plant will have absorbed herbicide by this time). Check trees monthly for regrowth and repeat treatment if resprouting foliage is observed
Oleaceae	*Ligustrum lucidum*	Large-leaved Privet	SSLMP	- Hand weed juveniles and regrowth from small pieces - Cut near ground level and paint with undiluted glyphosate
Oleaceae	*Ligustrum sinense*	Small-leaved Privet	SSLMP	- Hand weed juveniles and regrowth from small pieces - Cut near ground level and paint with undiluted glyphosate
Solanaceae	*Lycium ferocissimum*	African Boxthorn	SP, WONS	- Hand weed juveniles and regrowth from small pieces
				- Spot spray with glyphosate 10mL/1L
				- Slash using brushcutter, or hand cut with loppers, and spray regrowth foliage with glyphosate 10mL/1L
				- Cut near ground level and paint with undiluted glyphosate - Some individuals will have stumps which will still regrow foliage, spray regrowth foliage with glyphosate 10mL/1L
Verbenaceae	*Lantana camara*	Lantana	SP, WONS	- Hand weed juveniles and regrowth from small pieces
				- Spot spray with glyphosate 10mL/1L

Family	Scientific Name	Common Name	Status	Treatment Method
				- Slash using brushcutter, or hand cut with loppers, and spray regrowth foliage with glyphosate 10mL/1L
				- Cut near ground level and paint with undiluted glyphosate - Some individuals will have stumps which will still regrow foliage, spray regrowth foliage with glyphosate 10mL/1L
Rosaceae	*Rubus fruticosus sp. agg.*	Blackberry Complex	SP, WONS	-Hand weed juveniles and regrowth from small pieces
				-Spot spray with glyphosate 10mL/1L
				- Slash using brushcutters, or hand cut with loppers, and spray regrowth foliage with glyphosate 10mL/1L
				- Cut near ground level and paint with undiluted glyphosate
				- Some individuals will have stumps which will still regrow foliage, spray regrowth foliage with glyphosate 10mL/1L
Asphodelaceae	*Kniphofia uvaria*	Red Hot Poker		- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Asteraceae	*Conyza sumatrensis*	Tall Fleabane		- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Asteraceae	*Gamochaeta pensylvanica*	Cudweed		- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Asteraceae	*Hypochaeris radicata*	Catsear		- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Asteraceae	*Senecio madagascariensis*	Fireweed	SP, WONS	- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Boraginaceae	*Echium plantagineum*	Paterson's Curse	RC	- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Boraginaceae	*Heliotropium amplexicaule*	Blue Heliotrope	RC	- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Caprifoliaceae	*Lonicera japonica*	Japanese Honeysuckle		- Hand weed using PPE
				- Spray juveniles with glyphosate 10mL/1L

Family	Scientific Name	Common Name	Status	Treatment Method
				- Cut mature individuals with saw or loppers near ground level and paint stump with undiluted glyphosate (360g/L)
Caryophyllaceae	*Arenaria serpyllifolia*	Thyme-leaved Sandwort		- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Caryophyllaceae	*Cerastium glomeratum*	Mouse-ear Chickweed		- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Caryophyllaceae	*Stellaria media*	Common Chickweed		- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Cyperaceae	*Cyperus eragrostis*	Umbrella Sedge		- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Malvaceae	*Sida rhombifolia*	Paddy's Lucerne		- Hand weed
				- Spray with glyphosate 10mL/1L
				- Cut large, firmly rooted individuals at the base with secateurs and paint with undiluted glyphosate
Myrsinaceae	*Anagallis arvensis*	Scarlet Pimpernel		- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Phytolaccaceae	*Phytolacca octandra*	Inkweed		- Hand weed
				- Spot-spray - Glyphosate 10mL/1L
Polygonaceae	*Acetosa sagittata*	Turkey Rhubarb		- Bag and remove seed present on mature plants
				- Cut vines close to the ground and dig out as much as of root system and tubers as possible
				- Juvenile plants growing from seed can be dug out or hand pulled - Tuber at base of plant needs to be removed
				- On individuals with deep and difficult to remove tubers, stems can be scraped on one side with a blade for a length of 45cm and scraped area painted with undiluted glyphosate - This treatment may need to be repeated on subsequent site visits
				- The tubers close to the surface can also be scraped and painted with undiluted Glyphosate

Family	Scientific Name	Common Name	Status	Treatment Method
Scrophulariaceae	*Verbascum virgatum*	Twiggy Mullein		- Hand weed - Spot-spray - Glyphosate 10mL/1L
Solanaceae	*Solanum nigrum*	Black-berry Nightshade		- Hand weed - Spot-spray - Glyphosate 10mL/1L
Verbenaceae	*Verbena bonariensis*	Purpletop		- Hand weed - Spot-spray - Glyphosate 10mL/1L
Poaceae	*Argrostis capillaris*	Browntop Bent		- Hand weed - Spot-spray - Glyphosate 10mL/1L
Poaceae	*Axonopus fissifolius*	Narrow-leafed Carpet Grass		- Hand weed - Spot-spray - Glyphosate 10mL/1L
Poaceae	*Cenchus clandestinus*	Kikuyu		- Hand weed - Spot-spray with 10mL/1L
Poaceae	*Dactylis glomerata*	Cocksfoot		- Hand weed - Spot-spray - Glyphosate 10mL/1L
Poaceae	*Ehrharta erecta*	Panic Veldtgrass		- Hand weed - Spot-spray - Glyphosate 10mL/1L
Poaceae	*Eragrostis curvula*	African Lovegrass	RC	- Spot-spray - Glyphosate 10mL/1L - Hand weed
Poaceae	*Festuca pratensis*	Meadow Fescue		- Spot-spray - Glyphosate 10mL/1L - Hand weed
Poaceae	*Lolium perenne*	Perennial Ryegrass		- Spot-spray - Glyphosate 10mL/1L - Hand weed
Poaceae	*Pennisetum clandestinum*	Kikuyu Grass	RC	- Spot-spray - Glyphosate 10mL/1L - Hand weed
Poaceae	*Setaria parviflora*			- Spot-spray - Glyphosate 10mL/1L - Hand weed
Anthericaceae	*Arthropodium milleflorum*	Pale Vanilla-lily		- Spot-spray - Glyphosate 10mL/1L - Hand weed
Asparagaceae	*Asparagus asparagoides*	Bridal Creeper	SP, WONS	- Dig out with hand tools - Care needs to be taken to remove all tuberous masses and rhizomes. Tuberous masses need soil excavation around and careful levering with hand tools to remove without leaving plant material behind to resprout.

Family	Scientific Name	Common Name	Status	Treatment Method
				- July-September - Spray foliage with glyphosate 10mL/1L + surfactant
				- May to June - Spray foliage with metsulfuron methyl (e.g. Brush Off) 5g/100L + non-ionic surfactant
Asparagaceae	*Asparagus aethiopicus*	Asparagus Fern	SP, WONS	- Dig out with hand tools - Care needs to be taken to remove all tuberous masses and rhizomes. Tuberous masses need soil excavation around and careful levering with hand tools to remove without leaving plant material behind to resprout.
				- July-September - Spray foliage with glyphosate 10mL/1L + surfactant
				- May to June - Spray foliage with metsulfuron methyl (e.g. Brush Off) 5g/100L + non-ionic surfactant
Apocynaceae	*Araujia sericifera*	Moth Vine	RC	- Hand Weed Juveniles
				- Spray juveniles with glyphosate 10mL/1L
				- Skirt mature vines (cut through plant close to root) and then pull root manually or apply undiluted glyphosate to cut surface
				- Scrape and paint vine with undiluted glyphosate
Pinaceae	*Pinus radiata*	Radiata Pine	RC	- Spray juveniles with glyphosate 10mL/1L
				- Cut mature individuals with saw or loppers near ground level and paint stump with undiluted glyphosate or Triclopyr (600g/L formulation)/diesel at 4L/60L concentration (as per Garlon 600 label)
				- Use a power drill (9mm drill bit with dowelling tip) to drill holes less than 20 mm apart throughout lignotuber of mature trees and fill holes with glyphosate a 1:5 mixture with water. After all holes have been filled with herbicide mixture refill holes with herbicide mixture a second time (plant will have absorbed herbicide by this time). Check trees monthly for regrowth and repeat treatment if resprouting foliage is observed
Plantaginaceae	*Plantago lanceolata*	Lamb's Tongue		- Spot-spray - Glyphosate 10mL/1L - Hand weed

Family	Scientific Name	Common Name	Status	Treatment Method
Solananaceae	*Cestrum parqui*	Green Cestrum	RP	- Scrape and paint stem with undiluted Glyphosate - Cut and paint stem with undiluted Picloram - Spot – spray plant under 1m with Triclopyr 17mL/10L
Hypericaceae	*Hypericum perforatum*	St. John's Wort	SSLMP	- Spot-spray with mix of Glyphosate 20mL/10L and Metsulfuron-methyl 1g/10L - Spot-spray with Fluroxypyr 30mL/10L from flowering to early seed set
Passifloraceae	*Passiflora suberosa*	Corky Passionflower		- Hand removal of smaller plants - Scrape and paint of larger stems with undiluted Glyphosate - Spot-spray with Glyphosate 20mL/10L

APPENDIX B :
Revegetation Planting List

Table 10 Species Planting List for PCT 849

Stratum	Scientific Name	Common Name
Tree	*Corymbia maculata*	Spotted Gum
Tree	*Eucalyptus crebra*	Grey Ironbark
Tree	*Eucalyptus eugenioides*	Narrow-leaved Stringybark
Tree	*Eucalyptus moluccana*	Grey Box
Tree	*Eucalyptus tereticornis*	Forest Red Gum
Shrub	*Acacia implexa*	Hickory Wattle
Shrub	*Acacia decurrens*	Black Wattle
Shrub	*Acacia parramattensis*	Parramatta Wattle
Shrub	*Bossiaea prostrata*	
Shrub	*Bursaria spinosa*	Blackthorn
Shrub	*Chorizema parviflorum*	Eastern Flame Pea
Shrub	*Daviesia ulicifolia*	Gorse Bitter Pea
Shrub	*Dillwynia sieberi*	
Shrub	*Dodonaea viscosa* subsp. *cuneata*	
Shrub	*Indigofera australis*	Native Indigo
Shrub	*Pultenaea microphylla*	
Shrub	*Rubus parvifolius*	Native Raspberry
Ground – Grass	*Anthosachne scabra*	Common Wheatgrass
Ground – Grass	*Aristida ramosa*	Purple Wiregrass
Ground – Grass	*Aristida vagans*	Threeawn Speargrass
Ground – Grass	*Bothriochloa decipiens*	Redleg Grass
Ground – Grass	*Bothriochloa macra*	Redleg Grass
Ground – Grass	*Chloris truncata*	Windmill Grass
Ground – Grass	*Chloris ventricosa*	Plump Windmill Grass
Ground – Grass	*Cymbopogon refractus*	Barbed Wire Grass
Ground – Grass	*Dichanthium sericeum*	Queensland Bluegrass
Ground – Grass	*Dichelachne micrantha*	Plumegrass
Ground – Grass	*Dichelachne parva*	
Ground – Grass	*Digitaria diffusa*	Open Summer Grass
Ground – Grass	*Echinopogon caespitosus*	Bushy Hedgehog Grass
Ground – Grass	*Echinopogon ovatus*	Forest Hedgehog Grass
Ground – Grass	*Eragrostis leptostachya*	Paddock Lovegrass
Ground – Grass	*Eriochloa pseudoacrotricha*	Early Spring Grass
Ground – Grass	*Microlaena stipoides* var. *stipoides*	Weeping Meadow Grass

Stratum	Scientific Name	Common Name
Ground – Grass	*Panicum effusum*	Hairy Panic
Ground – Grass	*Paspalidium distans*	
Ground – Grass	*Poa labillardieri* var. *labillardieri;*	Tussock Grass
Ground – Grass	*Rytidosperma caespitosum*	Ringed Wallaby Grass
Ground – Grass	*Rytidosperma racemosa* var. *racemosa*	
Ground – Grass	*Rytidosperma tenuius*	
	Sorghum leiocladum	Wild Sorghum
Ground – Grass	*Sporobolus elongatus*	Slender Rat's Tail Grass
Ground – Grass	*Themeda triandra*	Kangaroo Grass
Ground - Graminoid	*Carex inversa*	Knob Sedge
Ground - Graminoid	*Cyperus gracilis*	
Ground - Graminoid	*Fimbristylis dichotoma*	Forked Fimbry
Ground - Graminoid	*Juncus usitatus*	
Ground - Graminoid	*Lomandra filiformis* subsp. *filiformis*	Wattle Mat-rush
Ground - Graminoid	*Lomandra multiflorus* subsp. *multiflorus*	Many-flowered Mat-rush
Ground - Graminoid	*Scleria mackaviensis*	
Ground - Forb	*Arthropodium milleflorum*	Pale Vanilla Lily
Ground - Forb	*Arthropodium minus*	Small Vanilla Lily
Ground - Forb	*Asperula conferta*	Common Woodruff
Ground - Forb	*Brunoniella australis*	Blue Trumpet
Ground - Forb	*Centaurium spicatum*	
Ground - Forb	*Centella asiatica*	Gotu Cola
Ground - Forb	*Chrysocephalum apiculatum*	Common Everlasting
Ground - Forb	*Commelina cyanea*	Scurvy Weed
Ground - Forb	*Crassula sieberiana*	Australian Stonecrop
Ground - Forb	*Cyanthillium cinerea* var. *cinerea*	Iron Weed
Ground - Forb	*Cymbonotus lawsonianus*	Bears-ear
Ground - Forb	*Daucus glochidiatus*	Native Carrot
Ground - Forb	*Dianella longifolia*	Blue Flax Lily
Ground - Forb	*Dichondra repens*	Kidney Weed
Ground - Forb	*Dichopogon fimbriatus*	Nodding Chocolate Lily
Ground - Forb	*Dichopogon strictus*	Chocolate Lily
Ground - Forb	*Einadia hastata*	Berry Saltbush

Stratum	Scientific Name	Common Name
Ground - Forb	*Einadia nutans*	Climbing Saltbush
Ground - Forb	*Einadia polygonoides*	
Ground - Forb	*Einadia trigonos*	
Ground - Forb	*Eremophila debilis*	Winter Apple
Ground - Forb	*Euchiton sphaericus*	Star Cudweed
Ground - Forb	*Geranium homeanum*	
Ground - Forb	*Geranium solanderi* var. *solanderi*	Native Geranium
Ground - Forb	*Hypericum gramineum*	Small St. John's Wort
Ground - Forb	*Hypoxis hygrometrica*	Golden Weather Grass
Ground - Forb	*Hypoxis pratensis* var. *pratensis*	Golden Weather Grass
Ground - Forb	*Mentha diemenica*	Slender Mint
Ground - Forb	*Phyllanthus virgatus*	
Ground - Forb	*Plantago debilis*	Shade Plantain
Ground - Forb	*Plantago gaudichaudii*	Narrow Plantain
Ground - Forb	*Plectranthus parviflorus*	Cockspur Flower
Ground - Forb	*Pratia purpurascens*	Whiteroot
Ground - Forb	*Opercularia diphylla*	
Ground - Forb	*Oxalis perennans*	
Ground - Forb	*Scutellaria humilis*	Dwarf Skullcap
Ground - Forb	*Senecio diaschides*	Shingle Fireweed
Ground - Forb	*Senecio hispidulus* var. *hispidulus*	Hill Fireweed
Ground - Forb	*Sida corrugata*	Corrugated Sida
Ground - Forb	*Solanum cinereum*	Narrawa Burr
Ground - Forb	*Solanum prinophyllum*	Forest Nightshade
Ground - Forb	*Stackhousia viminea*	Slender Stackhousia
Ground - Forb	*Tricoryne elatior*	Yellow Autumn-lily
Ground - Forb	*Veronica plebeia*	Trailing Speedwell
Ground - Forb	*Wahlenbergia gracilis*	Australian Bluebell
Ground - Forb	*Wahlenbergia stricta* subsp. *stricta*	Tall Bluebell
Ground - Forb	*Wurmbea dioica* subsp. *dioica*	Early Nancy
Ground - Forb	*Zornia dyctiocarpa var. dyctiocarpa*	Zornia
Ground – Climber	*Desmodium varians*	Slender Tick Trefoil
Ground – Climber	*Glycine clandestine*	Twining Glycine
Ground – Climber	*Glycine microphylla*	Small-leaf Glycine
Ground – Climber	*Glycine tabacina*	Variable Glycine

Stratum	Scientific Name	Common Name
Ground – Climber	*Hardenbergia violacea*	Purple Coral Pea
Fern	*Cheilanthes distans*	Bristly Cloak Fern
Fern	*Cheilanthes sieberi* subsp. *sieberi*	Poision Rock Fern

Table 11 Species Planting List for PCT 1395

Stratum	Scientific Name	Common Name
Tree	*Allocasuarina littoralis*	Black She-oak
Tree	*Allocasuarina torulosa*	Forest Oak
Tree	*Angophora bakeri*	Narrow-leaved Apple
Tree	*Angophora costata*	Sydney Red Gum
Tree	*Angophora floribunda*	Rough-barked Apple
Tree	*Corymbia eximia*	Yellow Bloodwood
Tree	*Corymbia gummifera*	Red Bloodwood
Tree	*Corymbia maculata*	Spotted Gum
Tree	*Eucalyptus agglomerata*	Blue-leaved Stringybark
Tree	*Eucalyptus crebra*	Grey Ironbark
Tree	*Eucalyptus eugenioides*	Narrow-leaved Stringybark
Tree	*Eucalyptus fibrosa*	Broad-leaved Ironbark
Tree	*Eucalyptus moluccana*	Grey Box
Tree	*Eucalyptus haemastoma*	Scribbly Gum
Tree	*Eucalyptus paniculata*	Grey Ironbark
Tree	*Eucalyptus punctata*	Grey Gum
Tree	*Eucalyptus pilularis*	Blackbutt
Tree	*Eucalyptus resinifera*	Red Mahogany
Tree	*Eucalyptus sparsifolia*	Narrow-leaved Stringybark
Tree	*Eucalyptus tereticornis*	Forest Red Gum
Tree	*Syncarpia glomulifera*	Turpentine
Shrub	*Acacia brownii*	Heath Wattle
Shrub	*Acacia implexa*	Hickory Wattle
Shrub	*Acacia decurrens*	Black Wattle
Shrub	*Acacia parramattensis*	Parramatta Wattle
Shrub	*Acacia parvipinnula*	Silver-stemmed Wattle
Shrub	*Astrotricha latifolia*	Broad-leaf Star Hair
Shrub	*Banksia spinulosa*	Hairpin Banksia

Stratum	Scientific Name	Common Name
Shrub	*Bossiaea obcordata*	Spiny Bossiaea
Shrub	*Bossiaea prostrata*	Creeping Bossiaea
Shrub	*Breynia oblongifolia*	Coffee Bush
Shrub	*Bursaria spinosa*	Blackthorn
Shrub	*Cryptandra amara*	Bitter Cryptandra
Shrub	*Daviesia ulicifolia*	Gorse Bitter Pea
Shrub	*Dodonaea triquetra*	Large-leaf Hop Bush
Shrub	*Exocarpos cuppressiformis*	Native Cherry
Shrub	*Exocarpos strictus*	Dwarf Cherry
Shrub	*Gompholobium grandiflorum*	Large Wedge-pea
Shrub	*Grevillea mucronulata*	Green Spider Flower
Shrub	*Hakea dactyloides*	Finger Hakea
Shrub	*Hakea sericea*	Silky Hakea
Shrub	*Hibbertia aspera*	Rough Guinea Flower
Shrub	*Hibbertia diffusa*	Wedge Guinea Flower
Shrub	*Indigofera australis*	Native Indigo
Shrub	*Kunzea ambigua*	Tick Bush
Shrub	*Lasiopetalum parviflorum*	
Shrub	*Leptospermum trinervium*	Flaky-barked Tea-tree
Shrub	*Leucopogon juniperinus*	Prickly Beard-heath
Shrub	*Leucopogon affinis*	
Shrub	*Leucopogon microphyllus*	
Shrub	*Leucopogon muticus*	Blunt Beard-heath
Shrub	*Melaleuca thymifolia*	Honey Myrtle
Shrub	*Olearia microphylla*	Small-leaved Daisy Bush
Shrub	*Ozothamnus diosmifolius*	Rice Flower
Shrub	*Persoonia linearis*	Narrow-leaved Geebung
Shrub	*Pimelea linifolia*	Slender Rice Flower
Shrub	*Platylobium formosum*	Handsome Flat-pea
Shrub	*Pultenaea flexilis*	Graceful Bush-pea
Shrub	*Pultenaea villosa*	
Shrub	*Styphelia laeta*	Five-corners
Ground – Grass	*Aristida vagans*	Threeawn Speargrass
Ground – Grass	*Cymbopogon refractus*	Barbed Wire Grass
Ground – Grass	*Entolasia stricta*	Wiry Panic

Stratum	Scientific Name	Common Name
Ground – Grass	*Eragrostis brownii*	Brown's Lovegrass
Ground – Grass	*Microlaena stipoides* var. *stipoides*	Weeping Meadow Grass
Ground – Grass	*Poa labillardieri*	Tussock Grass
Ground – Grass	*Poa sieberiana*	Snow Grass
Ground – Grass	*Rytidosperma tenuius*	
Ground – Grass	*Sporobolus creber*	Slender Rat's Tail Grass
Ground – Grass	*Themeda triandra*	Kangaroo Grass
Ground - Graminoid	*Lepidosperma laterale*	
Ground - Graminoid	*Lomandra filiformis*	Wattle Mat-rush
Ground - Graminoid	*Lomandra longifolia*	Spiny-headed Mat-rush
Ground - Forb	*Arthropodium milleflorum*	Pale Vanilla Lily
Ground - Forb	*Calotis cuneifolia*	Purple Burr-daisy
Ground - Forb	*Chenopodium carinatum*	Keeled Goosefoot
Ground - Forb	*Dianella prunina*	Blue Flax Lily
Ground - Forb	*Einadia hastata*	Berry Saltbush
Ground - Forb	*Eremophila debilis*	Winter Apple
Ground - Forb	*Euchiton sphaericus*	Star Cudweed
Ground - Forb	*Goodenia hederacea*	Forest Goodenia
Ground - Forb	*Hypericum gramineum*	Small St. John's Wort
Ground - Forb	*Lomatia silaifolia*	Crinkle Bush
Ground - Forb	*Phyllanthus gasstroemii*	Scrubby Spurge
Ground - Forb	*Phyllanthus hirtellus*	Thyme Spurge
Ground - Forb	*Pomax umbellata*	
Ground - Forb	*Siegesbeckia orientalis*	Indian Weed
Ground - Forb	*Solanum prinophyllum*	Forest Nightshade
Ground - Forb	*Stackhousia muricata*	Western Stackhousia
Ground - Forb	*Stellaria flaccida*	Forest Starwort
Ground - Forb	*Wahlenbergia gracilis*	Australian Bluebell
Ground – Climber	*Glycine clandestine*	Twining Glycine
Ground – Climber	*Hardenbergia violacea*	Purple Coral Pea
Fern	*Cheilanthes sieberi*	

FIGURES

Figure 1. Location of the study area, subject land and VMP Area

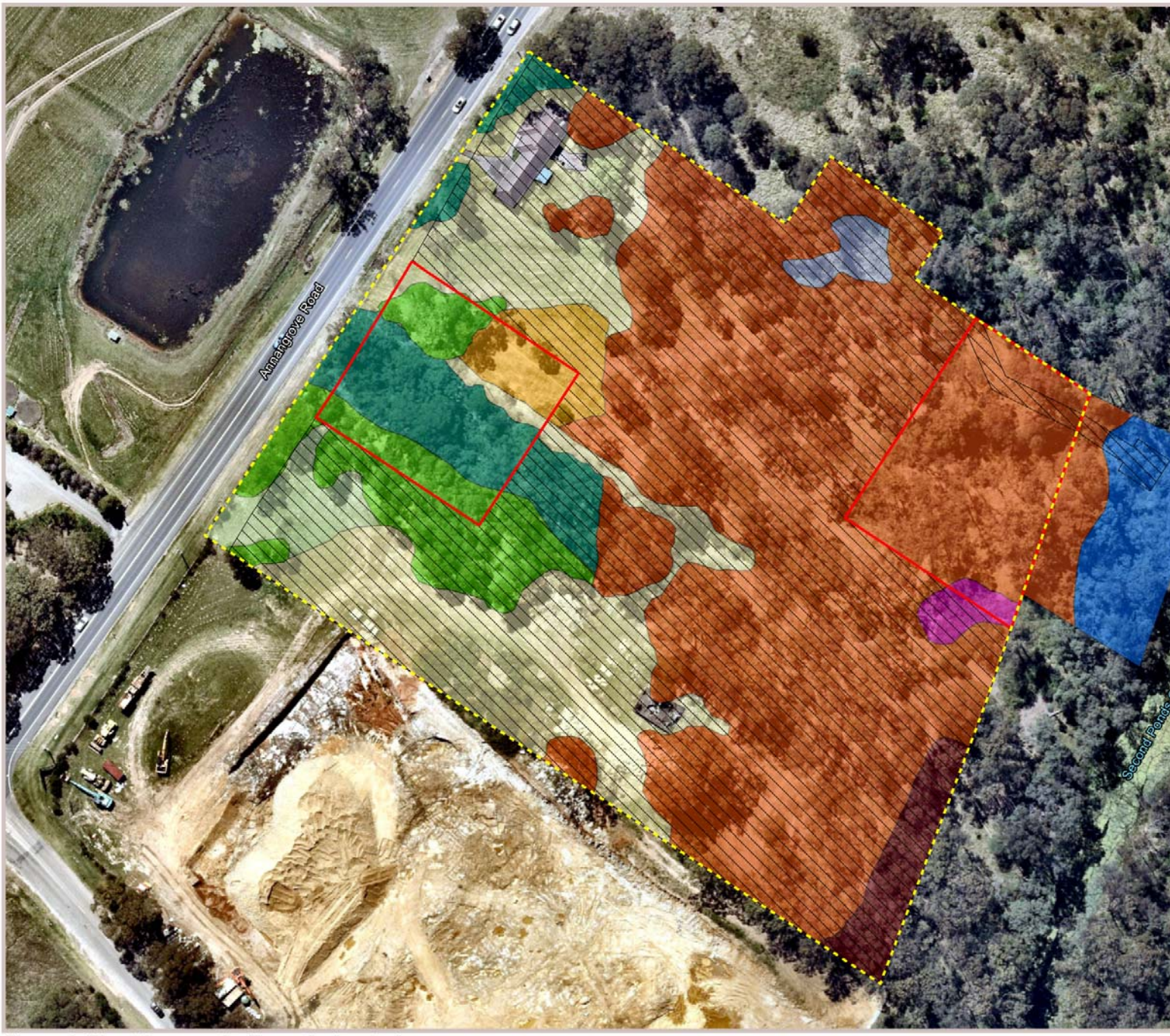

Figure 2. Plant Community Types in the study area

Figure 3. Vegetation management zones in the VMP Area

Figure 4. Proposed monitoring plot locations in the VMP Area