Vegetation Management Plan

100 Fairey Road, South Windsor, NSW 2756

Report prepared by Narla Environmental Pty Ltd

For Benbow Environmental

Issued By	Position	Role	NARLA ENVIRONMENTAL PTY LTD	CLIENT
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1. Vegetation Management Plan

1.1 Introduction

This Vegetation Management Plan (VMP) has been prepared pursuant to Hawkesbury City Council requirements following the Development Application submission for a Concrete Recycling Facility at 100 Fairey Road, South Windsor, NSW 2756 (4/-/DP264156; hereafter the 'Subject Property'; **Figure 1**). The VMP has been written following the review of the project civil drawings (Sparks & Partners 2019) and Threatened Species Test of Significance Report (Anderson Environmental 2018).

1.2 Background Information

The focus of this VMP are the areas designated for landscaping, weed management and post-works rehabilitation within the Subject Property (**Figure 1**). The following vegetation communities were present within the Subject Property:

- Low condition Plant Community Type (PCT) 849 'Grey Box – Forest Red Gum grassy woodland of flats of the Cumberland Plain, Sydney Basin Bioregion' (Conforming to Cumberland Plain Woodland in the Sydney Basin Bioregion – Critically Endangered Ecological Community);
- Freshwater Wetlands of Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions – Endangered Ecological Community; and
- Exotic Dominated Pasture

Several watercourses and the associated riparian buffer zones have been mapped within the north and east of the Subject Property (**Figure 1**).

1.3 Objectives

This VMP aims to achieve the following objectives for environmental protection and impact mitigation:

- To promote and detail the protection of retained trees within the Subject Property;
- To specify the timeframe, types of works and objectives of vegetation management;
- To identify, conserve and protect any native vegetation and environmentally sensitive areas within the Subject Property;
- To protect and rehabilitate the riparian land present within the Subject Property.
- To manage the direct and indirect impacts from the development on retained native vegetation; and
- To manage environmental and priority weeds, and prevent weed invasion into adjoining vegetation.

1.4 Management Zones

A site assessment was conducted by qualified Narla Ecologist Jonathan Coy on the 17th of September 2020. The Subject Property was divided into the following six (6) management zones (**Figure 2**) to account for the different management objectives and actions to be implemented:

- Zone 1 – Exotic Dominated Pasture
- Zone 2 – Landscaping
- Zone 3 – Bioretention Swales
- Zone 4 – Riparian Vegetation
- Zone 5 – Retained Cumberland Plain Woodland
- Zone 6 – Retained Freshwater Wetlands

The details of these zones are outlined below.

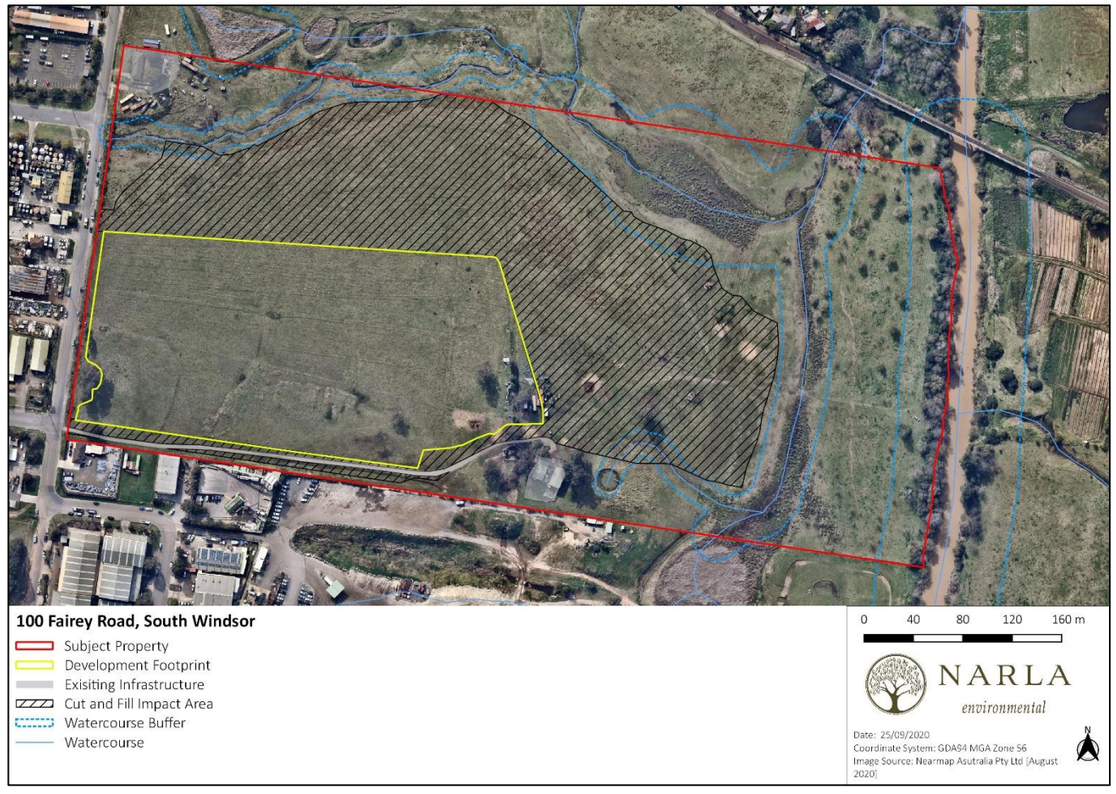

Figure 1. Subject Property at 100 Fairey Road, South Windsor

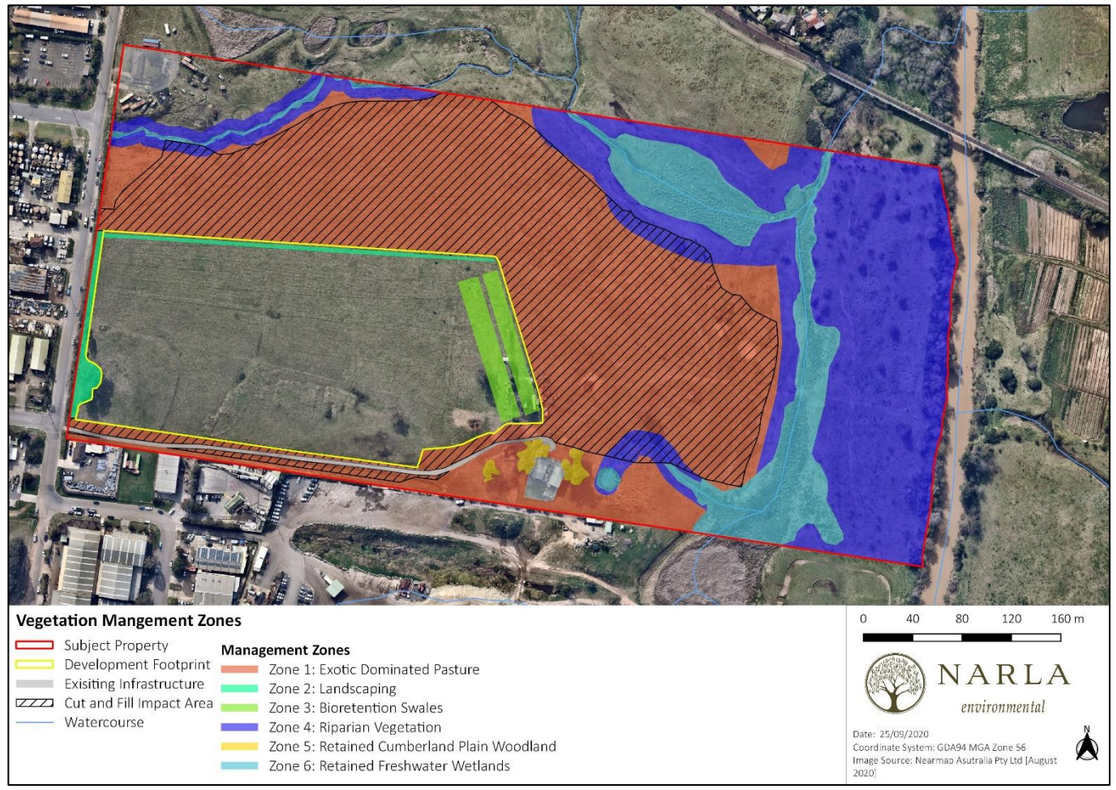

Figure 2. Management Zones within the Subject Property.

Zone 1: Exotic Dominated Pasture

Total area: 8.6ha

Description

This zone is located throughout a majority of the site. The vegetation comprises of primarily exotic pasture species, with only a small number of native species present. Native species include *Eucalyptus crebra* (Narrow-leaved Ironbark), *Dichondra repens* (Kidney Weed), *Cynodon dactylon* (Couch) and *Microlaena stipoides* (Weeping Grass). Dominant exotic species included *Pennisetum clandestinum* (Kikuyu Grass), *Senecio madagascariensis* (Fireweed), *Solanum sisymbriifolium, Sonchus oleraceus* (Common Sowthistle), *Cirsium vulgare* (Spear Thistle), *Plantago lanceolata, Malva* sp. (Mallow), *Trifolium repens* (White Clover), *Taraxacum officinale* (Common Dandelion) and *Hypochaeris radicata* (Flatweed).

Objectives

- To undertake environmentally sensitive vegetation clearing and earthworks;
- To control priority and environmental weeds within this zone; and
- To revegetate areas associated with cut and fill works for soil stability.

Management Requirements

Weed Control

- Under take weed control for priority and environmental weeds that occur within the zone. The priority weed occurring within this zone is *Senecio madagascariensis* (Fireweed). Fireweed should be reduced to <10% of the current cover by the end of this VMP.
- Control and prevent encroachment of priority and environmental weeds from this zone into adjoining zones.

Sediment Controls

- Sediment fencing will be installed prior to construction at the base of the cut and fill works to separate the works from zones 4, 5 and 6.

Exclusion Fencing

- A site security fence will be installed prior to construction at the base of the cut and fill works.

Revegetation

- The vegetation within this zone would have probably once comprised of PCT 849 'Grey Box – Forest Red Gum grassy woodland of flats of the Cumberland Plain, Sydney Basin Bioregion' (Anderson Environmental 2018). It is recommended that the areas within the 'Cut and Fill Impact Area' are revegetated using locally occurring native species representative of PCT 849 'Grey Box – Forest Red Gum grassy woodland of flats of the Cumberland Plain, Sydney Basin Bioregion (**Table 1**).
- If any *Eucalyptus crebra* (Narrow-leaved Ironbark) or *Eucalyptus tereticornis* (Forest Red Gum) are required to be removed as a result of the proposed works they should be replaced at a ratio of 3:1 within this zone, from species representative of the Cumberland Plain Woodland (**Table 1**).
- All cattle should be excluded from this zone.

Zone 2: Landscaping

Total area: 0.2ha

Description

This zone is located along the western and northern boundaries of the proposed development footprint. The current vegetation consists of both exotic dominated pasture and low condition PCT 849 'Grey Box – Forest Red Gum grassy woodland of flats of the Cumberland Plain, Sydney Basin Bioregion'. Dominant native species include *Eucalyptus tereticornis* (Forest Red Gum), *Busaria spinosa* (Blackthorn) and *Microlaena stipoides* (Weeping Grass). Exotic species included *Pennisetum clandestinum* (Kikuyu Grass), *Senecio madagascariensis* (Fireweed), *Solanum sisymbriifolium, Sonchus oleraceus* (Common Sowthistle), *Cirsium vulgare* (Spear Thistle), *Plantago lanceolata, Lycium ferocissimum* (African Boxthorn) and *Trifolium repens* (White Clover).

Objectives

- To implement environmentally sensitive tree protections;
- To control priority and ecological weeds invading this zone; and
- To undertake landscaping using locally occurring native species from the Cumberland Plain Woodland vegetation community (**Table 1**) and the species outlined in the proposed landscape plan (Site Design Studios 2019).

Management Requirements

Weed Control

- Under take weed control for priority and environmental weeds that occur within the zone. The priority weeds occurring within this zone are *Senecio madagascariensis* (Fireweed) and *Lycium ferossimum* (African Boxthorn). Fireweed should be reduced to <10% of the current cover by the end of this VMP. African Boxthorn should be eradicated by the end of this VMP.
- Control and prevent encroachment of priority and environmental weeds from this zone into adjoining zones.

Tree Protection

- Australian Standard 4970 (2009) Protection of Trees on Development Sites (AS-4970) outlines that a Tree Protection Zone (TPZ) is the principal means of protecting trees on construction sites. It is an area isolated from construction disturbance so that the tree remains viable. Ideally, works should be avoided within the TPZ.
- Tree Protection Zones (TPZ) are to be implemented for trees being retained using temporary protective fencing around the drip zone of the tree (in line with the crown cover).

Landscaping

- Landscaping is to use locally occurring native species from the Cumberland Plain Woodland ecological community (**Table 1**), in accordance with **section 1.6.4** and the proposed landscape plan (Site Design Studios 2020).
- If any *Eucalyptus crebra* (Narrow-leaved Ironbark) or *Eucalyptus tereticornis* (Forest Red Gum) are required to be removed as a result of the proposed works they should be replaced at a ratio of 3:1 within this zone, from species representative of the Cumberland Plain Woodland (**Table 1**).

Zone 3: Bioretention Swales

Total area: 0.35ha

Description

This zone is comprised of primarily exotic pasture species, with a small stand of native vegetation also present. Dominant Native species include *Eucalyptus crebra* (Narrow-leaved Ironbark), *Eucalyptus tereticornis* (Forest Red Gum) and *Melaleuca decora.* Dominant exotic species include *Pennisetum clandestinum* (Kikuyu Grass), *Senecio madagascariensis* (Fireweed), *Solanum sisymbriifolium, Sonchus oleraceus* (Common Sowthistle), *Cirsium vulgare* (Spear Thistle), *Plantago lanceolata, Malva* sp. (Mallow), *Trifolium repens* (White Colver), *Taraxacum officinale* (Common Dandelion) and *Hypochaeris radicata* (Flatweed).

Objectives

- To undertake environmentally sensitive vegetation clearing;
- To control priority and ecological weeds invading this zone; and
- To construct bioretention swales and undertake replanting of locally occurring native wetland species for use in the bioretention swales.

Management Requirements

Weed Control

- Reduce environmental and priority weeds that occur within this management zone. The priority weed occurring within this zone is *Senecio madagascariensis* (Fireweed). Fireweed should be reduced to <10% of the current cover by the end of this VMP.
- Control and prevent the encroachment of weeds from this zone into other management zones.

Landscaping

- Landscaping is to use the following native species outlined in the proposed landscape plan (Site Design Studios 2019):
  - *Isoplepi nodosa;* and
  - *Juncus usitatus.*

Sediment and Erosion Controls

- All erosion and sediment control should be done in accordance with the 'Blue Book' (Landcom 2004).

Zone 4: Riparian Vegetation

Total area: 5.07ha

Description

This zone is located along all mapped watercourses within the Subject Property, primarily in the east along South Creek. The vegetation comprises of primarily exotic pasture and orchard species, with several native species present. Native species include *Dichondra repens* (Kidney Weed), *Microlaena stipoides* (Weeping Grass) and a small stand of *Casuarina cunninghamiana (*River She-oak) consisting of six (6) trees on the bank of South Creek. Dominant exotic species included *Morus alba* (Mulberry Tree), *Gleditsia triacanthos* (Honey Locust), *Pennisetum clandestinum* (Kikuyu Grass), *Senecio madagascariensis* (Fireweed), *Solanum sisymbriifolium, Cirsium vulgare* (Spear Thistle), *Cestrum parqui* (Green Cestrum) and *Rubus fruticosus* aggregate species (Blackberry).

Objectives

- To control priority and ecological weeds invading this zone;
- To protect and rehabilitate the riparian land present within this zone;
- To allow native regeneration of native vegetation; and
- To undertake revegetation using locally occurring native species from the River-flat Eucalypt Forest ecological community.

Management Requirements

Weed Control

- Reduce environmental and priority weeds that occur within this management zone. The priority weeds occurring within the zone are *Senecio madagascariensis* (Fireweed), *Cestrum parqui* (Green Cestrum) and *Rubus fruticosus* aggregate species (Blackberry). Other prominent species that should be targeted are *Morus alba* and *Gleditsia triacanthos*.
- Fireweed and Blackberry should be reduced to <10% of the current cover by the end of this VMP. Green Cestrum should be eradicated by the end of this VMP.
- Control and prevent the encroachment of weeds from this zone into adjacent zones and bushland.

Sediment Controls

- Sediment fencing will be installed prior to construction at the base of the cut and fill works to separate the works from the remaining area of Management Zone as well as zones 5 and 6.

Exclusion Fencing

- A site security fence will be installed prior to construction at the base of the cut and fill works.

Revegetation

- Due to the presence of *Casuarina cunninghamiana* (River She-oak) it is recommended that this management zone be revegetated using locally occurring native species conforming to River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions Endangered Ecological Community (**Table 2**).
- All cattle should be excluded from this zone.

Zone 5: Retained Cumberland Plain Woodland

Total area: 0.01

Description

This zone is located within the southern extent of the Subject Property. The current vegetation consists of low condition PCT 849 'Grey Box – Forest Red Gum grassy woodland of flats of the Cumberland Plain, Sydney Basin Bioregion' with a heavily grazed ground layer which in some areas is completely bare. Dominant native species include *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Eucalyptus tereticornis* (Forest Red Gum). Where present, ground cover species consists of *Pennisetum clandestinum* (Kikuyu Grass), *Plantago lanceolata, Malva* sp. (Mallow), *Trifolium repens* (White Clover) and *Taraxacum officinale* (Common Dandelion)

Objectives

- To control priority and ecological weeds invading this zone;
- To assist natural regeneration of native vegetation;
- To implement environmentally sensitive tree protections; and
- To undertake revegetation using locally occurring native species from the Cumberland Plain Woodland critically endangered ecological community.

Management Requirements

Tree Protection

- Australian Standard 4970 (2009) Protection of Trees on Development Sites (AS-4970) outlines that a Tree Protection Zone (TPZ) is the principal means of protecting trees on construction sites. It is an area isolated from construction disturbance so that the tree remains viable. Ideally, works should be avoided within the TPZ.
- TPZ will be implemented for trees being retained using temporary protective fencing around the drip zone if the tree (in line with the crown cover).

Assisted Natural Regeneration

- Control and prevent the encroachment of environmental and priority weeds into this zone.
- All cattle should be excluded from this zone.

Exclusion Fencing and Signage

- An exclusion zone should be installed around this management zone using fencing or bunting. The exclusion zone should be clearly marked as a "No Go Area" or "Environmentally Sensitive".

Revegetation

- It is recommended that this management zone should be revegetated us locally occurring native species (in particular shrubs and groundcovers) from PCT 849 'Grey Box – Forest Red Gum grassy woodland of flats of the Cumberland Plain, Sydney Basin Bioregion.
- If any *Eucalyptus crebra* (Narrow-leaved Ironbark) or *Eucalyptus tereticornis* (Forest Red Gum) are required to be removed as a result of the proposed works they should be replaced at a ratio of 3:1 within this zone, from species representative of the Cumberland Plain Woodland (**Table 1**).

Zone 6: Retained Freshwater Wetlands

Total area: 1.88ha

Description

This zone is located within the north and east of the Subject Property. The current vegetation consists Freshwater Wetlands of Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions Endangered Ecological Community. Dominant species included *Carex appressa* (Tall Sedge), *Marsilea mutica* (Nardoo), *Hydrocharis dubia* (Frogbit), *Persecaria sp., Juncus sp., Senecio madagascariensis* (Fireweed)and *Ranunculus sceleratus*.

Objectives

- To control priority and ecological weeds invading this zone; and
- To assist natural regeneration of native vegetation.

Management Requirements

Assisted Natural Regeneration

- Control and prevent the encroachment of environmental and priority weeds into this zone. The priority weed occurring within the zone is *Senecio madagascariensis.* Fireweed should be reduced to <10% of the current cover by the end of this VMP.
- *Ranunculus sceleratus* was also prominent within this zone and should be targeted for weed control.
- All cattle should be excluded from this zone.

Exclusion Fencing and Signage

- An exclusion zone should be installed around this management zone using fencing or bunting. The exclusion zone should be clearly marked as a "No Go Area" or "Environmentally Sensitive".

Table 1. Recommended species list for planting in management zones 1,2 and 5, based on PCT 849 Grey Box – Forest Red Gum grassy woodland of flats of the Cumberland Plain, Sydney Basin Bioregion. (DPIE 2019a). This is not an exhaustive list and other locally occurring indigenous species may also be deemed appropriate by the Project Ecologist.

Category	Scientific Name
Tree	*Eucalyptus crebra*
	Eucalyptus eugenioides
	Eucalyptus moluccana
	Eucalyptus tereticornis
Shrub	*Acacia decurrens*
	Acacia parramattensis
	Busaria spinosa
	Daviesia ulicifolia
	Dillwynia sieberi
	Exocarpos cupressiformis
	Indigofera australis
Ground layer/ Vines	*Anthropodium milleflorum*
	Aristrida vagans
	Austrodanthonia tenuior
	Brunoniella asutralis
	Cheilanthes sieberi
	Desmodium gunnii
	Dianella longifolia
	Dichelachne micrantha
	Dichondra repens
	Echinopogon caespitosus
	Eragrostos leptostachya
	Goodenia hederacea
	Lomandra filiformis
	Lomandra multiflora
	Microlaena stipoides
	Opercularia diphylla
	Oxalis perennans
	Paspalidium distans
	Themeda asutralis
	Wahlenbergia gracilis

Table 2. Recommended species list for planting in management zone 4, based on River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (DPIE 2019b). This is not an exhaustive list and other locally occurring indigenous species may also be deemed appropriate by the Project Ecologist.

Category	Scientific Name
Tree	*Angophora floribunda*
	Casuarina cunninghamiana
	Casuarina glauca
	Eucalyptus tereticornis
	Eucalyptus amplifolia
	Eucalyptus botryoides
	Eucalyptus elata
	Eucalyptus moluccana
	Eucalyptus ovata
	Eucalyptus tereticornis
Shrub	*Acacia parramattensis*
	Acmena smithii
	Backhousia myrtifolia
	Bursaria spinosa
	Melaleuca decora
	Melaleuca linariifolia
	Ozothamnus diosmifolius
Ground layer/ Vines	*Adiantum aethiopicum*
	Centella asiatica
	Cheilanthes sieberi
	Commelina cyanea
	Dichondra repens
	Eingadia hastata
	Euchiton sphaericus
	Eustrephus latifolius
	Oxalis perannans
	Persicaria decipiens
	Pratia purpurascens
	Viola hederacea
	Wahlenbergia gracilis
	Echinopogon caespitosus
	Entolasia marginata
	Imperata cylindrica
	Lomandra longifolia
	Microlaena stipoides
	Themeda asutralis

1.5 Ongoing Management Actions

1.5.1 Performance Criteria

Objective		Key Performance Indicator (KPI)	How will this KPI be Assessed?	Designated time to meet KPI	If KPI cannot be met by designated time
1	Control priority weeds	Remove 90% of priority weeds from all management zones by the end of the first year of this VMP.	Determined by the Project Ecologist through a site assessment in spring.	Within 12 months of VMP implementation.	Land owner to conduct weed control or engage Bush Regeneration team until KPI is met.
2	Control all other (environmental) weeds	All other (environmental) weeds to be reduced by 90% each year across all management zones over the life of the VMP.	Determined by the Project Ecologist through a site assessment in spring.	Yearly for the life of the VMP.	Land owner to conduct weed control or engage Bush Regeneration team until KPI is met.
3	Landscaping and Revegetation	Landscaping and revegetation within the Subject Property are to use locally occurring species in accordance with the management requirements of each zone.	Determined by the Project Ecologist through a site assessment in spring.	NA	NA

1.5.2 Work Schedule/Timing

Task	Process for Completion	Time Required (estimate)	Responsibility	Scheduling				
				Year 1	Year 2	Year 3	Year 4	Year 5
Appointment of relevant contractors	Appointment of a qualified Project Ecologist.	Prior to yearly monitoring events.	Land Owner					
	Appointment of a qualified Bushland Regenerator Contractor.	As required	Land Owner					
Implement Hygiene Protocol	Implementation of Hygiene Protocol as per the report, 'Arrive Clean, Leave Clean' (Commonwealth of Australia 2015).	As required	Contractors Project Ecologist Land Owner					
Installation of Environmental Fencing	Installation of sediment control surrounding the proposed construction area must be completed prior to any excavation or modification of vegetation for construction. Install temporary signage around the development to delineate the external area to be conserved during and after works. Install TPZ fencing around trees to be retained in management zones 2 and 5. Install signage and bunting/fencing around areas to be conserved within management zones 4, 5 and 6.	Prior to constructing beginning	Land Owner Contractors					
Weed control and assisted natural regeneration	Remove 90% of priority weeds from all zones by the end of the first year of this VMP. Reduction in environmental weeds in all management zones by 90% per year. Maintain regular weeding to prevent further incursions of priority or environmental weeds into all management zones and adjacent bushland.	Ongoing	Land Owner Bush Regenerator Contractor					
Landscaping and Revegetation	Landscaping and revegetation in management zones 1, 2 and 5 is to use locally occurring native species commensurate with Cumberland Plain Woodland Critically Endangered Ecological Community (**Table 1**). Landscaping in Management Zone 3 is to use the locally occurring native species outlined in the proposed landscape plan (Site Design Studios 2019)	As required	Land Owner					

Task	Process for Completion	Time Required (estimate)	Responsibility	Scheduling				
				Year 1	Year 2	Year 3	Year 4	Year 5
	Revegetation in Management Zone 4 is to use locally occurring native species conforming to River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions Endangered Ecological Community (**Table 2**). Any *Eucalyptus crebra* (Narrow-leaved Ironbark) or *Eucalyptus tereticornis* (Forest Red Gum) removed by the proposal should be replaced at a compensating planting ratio of 3:1 within management zones 1, 2 and 5.							
Plant Watering Regime and Maintenance	All plantings should be watered and maintained by a team of Bush Regenerators Contractors, with extra watering visits planned during times of predicted low rainfall.	As required	Land Owner Bush Regenerators Contractors					
Monitoring and Reporting	Assess progress of weed control works and native plantings through an annual site assessment. Photographic evidence of weed control should be included in the associated report.	Annually (in spring); 1 day for site assessment and 2 days for reporting	Project Ecologist					

1.6 Management strategies applicable to all management zones:

1.6.1 Assign a Project Ecologist

- Prior to commencement of any vegetation clearing, weed removal, or construction works within the Subject Property, a Project Ecologist must be assigned to oversee relevant works. The Project Ecologist must as a minimum:
    - Hold a relevant tertiary degree in Science, Biology, Ecology, Environmental Science, Environmental Management, or Natural Resource Management;
    - Be fully licensed under the Biodiversity Conservation Act 2016 (or equivalent); and
    - Be fully licensed with a NSW Animal Research Authority (or equivalent) permitting the handling, relocation, and humane euthanasia of all terrestrial fauna.

1.6.2 Assigning a Bush Regenerator Contractor

- All works associated with weed management and revegetation are to be implemented by a fully qualified (Certificate IV in Conservation & Land Management) and experienced Bush Regeneration Contractor with familiarity of New South Wales south coast flora.

1.6.3 Weed Control

- Weed management is to be undertaken throughout all Management Zones, targeting weed infestations and ensuring no weed encroachment into surrounding areas.
- Weed management visits will be as quoted by the Bush Regenerator Contractor for five years, or until the weeds are controlled to levels deemed acceptable by the Project Ecologist.
- All weeds removed are to be bagged, removed from site, and disposed of at a registered waste facility.
- For weed specific practices, guidance can be sought at NSW Weedwise (DPI 2020) or through the local land services officer.
- The locations of all priority weeds are mapped in **Appendix A**.

a. Performance Criteria
    - Specified weed densities for each management zone 1,2,3,4 and 6 are achieved and maintained.
    - All weeds maintained to low levels (not spreading or impacting native plant species growth or regeneration).

b. Weeding Techniques
    - Cut and Paint: Woody weeds are to be treated using the cut and paint method, which involves the cutting of the stem as close to the ground as possible and applying herbicide to the freshly exposed stem.
    - Scrape and Paint: Weeds with a deep tap root will need to be treated utilising the cut and paint method which involves taking a knife and scrapping up the stem from the base to as high as possible and then applying herbicide to the exposed section of the stem.
    - Hand Removal: Weeds such as Trad will be required to be dug out with a trowel or shovel. Trying not to remove too much soil, you must dig to expose and remove the crown.
    - Herbicide Usage: Due to the riparian corridor located on the Subject Property, only herbicides suitable for use in environmentally sensitive areas, such as Roundup Bioactive, should be used.

1.6.4 Landscaping Guidelines

- Plantings must consist only of species selected from **Table 1**, **Table 2** or the proposed landscaping plan (Site Design Studios 2019).
- Tree plantings are to be undertaken using mature stock:
    - Any *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Eucalyptus tereticornis* (Forest Red Gum) removed by the proposal should be replaced at a compensating planting ratio of 3:1 within management zones 1, 2 and 5; and
    - Prior to construction the number of each tree species being removed should be counted to provides to the Project Ecologist to ensure the correct amount of trees are replanted.
- Shrub plantings are to be undertaken using hiko cells or tube stock.
- Groundcover (grass, sedge and herb) densities can be achieved using a combination of any of the following sources: direct seeding, translocation by bush regenerators, or planting of hiko cell or tube stock.
- Planting efforts should only be conducted by a qualified Bush Regenerator Contractor;
- Tube stock and hiko cells are to be planted into appropriately sized pits in the soil that are at least twice the depth of the pot the plant is in. Appropriate fertiliser and soil wetting agent should be applied to each plant.
- Planting must only take place after exotic groundcovers have been cleared around the planting area.
- All plantings should be watered and maintained by a team of Bush Regenerators Contractors, with extra watering visits planned during times of predicted low rainfall.

1.6.5 Erosion Control

- All erosion and sediment control should be done in accordance with the prepared Erosion and Sediment Control Plan (ESCP).
- In pre-emptive action, adequate erosion and sediment measures will be in place at all times during construction activities in case of minor sediment run off and/or disruption to soil profiles.
- Preceding construction works, the 'Blue Book' (Landcom 2004) should be consulted to ensure any additional necessary erosion controls are adequately installed.
- Appropriate sediment traps should be installed around the construction area prior to any excavation works being undertaken.
- Specifically, sediment fencing will be placed around the 'Cut and Fill Impact Area' to avoid potential impacts to adjacent zones and waterfront land.

1.6.6 Monitoring Specifications

- Vegetation monitoring is to be completed on an annual basis (in spring time) by a suitably qualified Ecologist.
- Vegetation condition (presence of weeds and status of native plantings) within each monitoring plot is to be monitored against performance criteria.
- The following data should be recorded within each zone during the site assessment:
    - A list of native and exotic species, including percentage cover;
    - Leaf litter and vegetation debris (recorded as presence/absence); and
    - Photographs are to be taken as a reference to highlight the regeneration and maintenance of the Management Zones and included in annual monitoring reports.

1.6.7 Reporting and Review

- Monitoring reports are to be produced annually (spring) following monitoring events. These are to be produced by a suitably qualified Ecologist. Monitoring reports are to include the following:
    - A summary of annual weed management works;
    - A site assessment based on performance targets;
    - Presentation of photographic evidence to illustrate progress of weed management;
    - Any management issues/recommendations required to meet performance targets;
    - Update work specifications as required to meet performance targets; and
    - Management/maintenance requirements or recommendations to inform any subsequent management of the site (beyond the 1st year maintenance period).
- This VMP should be reviewed by a qualified Ecologist at least every five years from the date of its adoption.

1.7 References

Anderson Environmental (2018) Threatened Species Test of Significance Report for a Proposed Development at 100 Fairey Road South Windsor.

Commonwealth of Australia (2015) 'Arrive Clean, Leave Clean'

Site Design Studios (2019) Proposed Landscape Plan

Sparks & Partners (2019) Civil Drawings

Department of Planning, Industry and Environment (DPIE) (2019a) Cumberland Plain Woodland in the Sydney Basin Bioregion – critically endangered ecological community listing

Department of Planning, Industry and Environment (DPIE) (2019b) River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions – Endangered Ecological Community listing.

NSW Department of Primary Industries (DPI) (2020) NSW WeedWise https://weeds.dpi.nsw.gov.au/

Landcom (2004) Managing Urban Stormwater: Soils and Construction – 'the Blue Book'.

Appendix A. Locations of Priority Weeds within the Subject Property

Priority Weeds Locations

- Subject Property
- Development Footprint

Priority Weeds

- Cestrum parqui
- Lycium ferocissimum
- Rubus fruticosus agg. species
- Senecio madagascariensis

0 40 80 120 160 m

NARLA environmental

Date: 29/09/2020
Coordinate System: GDA94 MGA Zone 56
Image Source: Nearmap Asutralia Pty Ltd [August 2020]

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