Oakdale West Estate
SSD7348 MOD 5

DRAFT Vegetation Management Plan

prepared for

Goodman Property
Services (Aust.) Pty Ltd

écologique | environmental consulting

Oakdale West Estate SSD7348 MOD 5
Draft Vegetation Management Plan

prepared for

Goodman Property Services (Aust.) Pty Ltd

Document control

Prepared by		
Kathryn Duchatel BSc. Env. CEnvP EIANZ #691 BAM Accreditation No.BAAS17054		01/07/2020

écologique
12 Wanganella Street, Balgowlah NSW 2093
0437 821 110 | kat@ecologique.com.au

Revision Schedule

Rev No	Date	Description	Issued to
1	01/07/2020	Draft VMP for review	Goodman

Executive Summary

Goodman Property Services (Aust.) Pty Ltd (Goodman) are currently developing the Oakdale West Industrial Estate (Oakdale West) under State Significant Development approval (SSD7348). Oakdale West is located in Kemps Creek within the Western Sydney Employment Area.

The approved SSD7348 includes the construction of a new regional road known as the Western North South Link Road (WNSLR) connecting to Lenore Drive to provide the primary access to the Oakdale West.

Construction of the WNSLR required the removal of 0.42 ha of planted native vegetation from within the Erskine Park Biodiversity Corridor (EPBC). The EPBC is managed on behalf of the NSW Planning Ministerial Corporation by the NSW Office of Strategic Lands (OSL).

Consultation with the OSL determined an appropriate location in which the vegetation removed from the EPBC could be offset. Relevantly the following consent conditions were applied to the SSD7348 approval:

D93. Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must:

- Offset 0.42ha of vegetation lost in the Erksine Park Biodiversity Corridor as a result of the WNSLR by carrying out planting within the area shown in the green edging on Figure 9 (Appendix 6 of consent conditions)
- Plant the areas shown in the green edging on Figure 9 (Appendix 6 of consent conditions) with species similar to those identified for zone 4a, on the south-eastern side of Ropes Creek, in the Biodiversity Management Plan Erskine Park Employment Area (HLA-Envirosciences, 2 May 2006)

D94. The Applicant shall monitor and maintain the planting for a period of six months to ensure a minimum 85% survival rate of the planting.

D95. The Applicant must notify the Planning Ministerial Corporation at least one month before the completion of planting to enable the Planning Ministerial Corporation to arrange ongoing maintenance.

Post SSD7348 approval, the area shown in the green edging on Figure 9 (Appendix 6 of consent conditions) was found to be unsuitable for this purpose. An alternative location has since been identified by the OSL and a development modification (MOD 5) for SSD7348 seeks to amend condition D93 as follows:

D93. Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must:

- Offset 0.42ha of vegetation lost in the Erksine Park Biodiversity Corridor as a result of the WNSLR by carrying out planting within the area shown ~~in the green edging on Figure 9 (Appendix 6 of consent conditions)~~ Figure 1-1 and Figure 2-1 of the Oakdale West Estate SSD7348 MOD 5 Vegetation Management Plan (ècologique, 01/07/2020).
- Plant the areas shown in ~~the green edging on Figure 9 (Appendix 6 of consent conditions)~~ Figure 1-1 and Figure 2-1 of the Oakdale West Estate SSD7348 MOD 5 Vegetation Management Plan (ècologique, 01/07/2020) with species similar to those identified for zone 4a, on the south-eastern side of Ropes Creek, in the Biodiversity Management Plan Erskine Park Employment Area (HLA-Envirosciences, 2 May 2006)

The Oakdale West Estate SSD7348 MOD 5 Vegetation Management Plan (ècologique, 01/07/2020), this Vegetation Management Plan, has been prepared to support SSD7348 MOD 5 and provides the management actions required to fulfil the proposed amended consent conditions D93, and consent conditions D94 and D95 (which remain unchanged).

Contents

1. Introduction 1
1.1 Background 1
1.2 Purpose of VMP 1
1.2 Land to which this VMP applies 2
2. Site Description 4
2.1 Ropes Creek riparian corridor 4
2.2.1 Native vegetation 4
2.2.2 Exotic vegetation 4
2.2 Cleared paddocks 4
2.3 Other site characteristics 5
2.3.1 Soils 5
2.3.2 Salinity and sodicity 5
2.3.2 Flooding 5
2.3.3 Access 5
2.4 Planting area 5
3. Management Actions 7
3.1 Site Preparation 7
3.1.1 Site survey 7
3.1.2 Fencing and signage 7
3.1.3 Native vegetation protection 7
3.1.4 Photographic monitoring sites 7
3.1.5 Slashing of pasture grasses 7
3.2 Weed Control 7
3.2.1 Priority weed species 7
3.2.2 Primary weeding 9
3.2.3 Secondary weeding 9
3.3 Soil amelioration 9
3.4 Site stabilisation 9
3.5 Planting program 10
3.5.1 Plant procurement 10
3.5.2 Planting procedure 10
3.6 Practical completion 10
3.7 Maintenance / Defects liability 10
3.7.1 Monitoring and maintenance 10
3.7.2 Defects liability 10
3.7.3 Performance targets 11
3.8 Compliance certification 11

4. References 12
Appendix A. Planting Schedule 13

Tables

Table 3-1. Priority weed species known from the locality 8
Table 3-2. VMP implementation schedule / performance measures 11

Figures

Figure 1-1. Planting area location 3
Figure 2-1. Planting area 6

1. Introduction

1.1 Background

Goodman Property Services (Aust.) Pty Ltd (Goodman) are currently developing the Oakdale West Industrial Estate (Oakdale West) under State Significant Development approval (SSD7348). Oakdale West is located in Kemps Creek within the Western Sydney Employment Area.

The approved SSD7348 includes the construction of a new regional road known as the Western North South Link Road (WNSLR) connecting to Lenore Drive to provide the primary access to the Oakdale West. Construction of the WNSLR required the removal of 0.42 ha of planted native vegetation from within the Erskine Park Biodiversity Corridor.

The Erskine Park Biodiversity Corridor (EPBC) comprises 15 parcels of land split into 41 zones, including large tracts of riparian corridor along both South Creek and Ropes Creek. The EPBC is managed on behalf of the NSW Planning Ministerial Corporation by the NSW Office of Strategic Lands (OSL).

As part of the SSD7348 assessment process, the OSL was consulted, in order to determine an appropriate location in which the vegetation removed from the EPBC could be offset. Relevantly the following consent conditions were applied to the SSD7348 approval:

D93. Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must:

- Offset 0.42ha of vegetation lost in the Erksine Park Biodiversity Corridor as a result of the WNSLR by carrying out planting within the area shown in the green edging on Figure 9 (Appendix 6 of consent conditions)
- Plant the areas shown in the green edging on Figure 9 (Appendix 6 of consent conditions) with species similar to those identified for zone 4a, on the south-eastern side of Ropes Creek, in the Biodiversity Management Plan Erskine Park Employment Area (HLA-Envirosciences, 2 May 2006)

D94. The Applicant shall monitor and maintain the planting for a period of six months to ensure a minimum 85% survival rate of the planting.

D95. The Applicant must notify the Planning Ministerial Corporation at least one month before the completion of planting to enable the Planning Ministerial Corporation to arrange ongoing maintenance.

Post SSD7348 approval, the area shown in the green edging on Figure 9 (Appendix 6 of consent conditions) was found to be unsuitable for this purpose. An alternative location (in which the above consent conditions can be fulfilled) has been identified by OSL.

1.2 Purpose of VMP

This Vegetation Management Plan (VMP) has been prepared to support a development modification (MOD 5) for SSD7348 and provides the management actions required to fulfil consent conditions D93, D94 and D95.

Relevant to consent condition D93, MOD 5 seeks to amend this condition to the following:

D93. Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must:

- Offset 0.42ha of vegetation lost in the Erksine Park Biodiversity Corridor as a result of the WNSLR by carrying out planting within the area shown in ~~the green edging on Figure 9 (Appendix 6 of consent conditions)~~ Figure 1-1 and Figure 2-1 of the Oakdale West Estate SSD7348 MOD 5 Vegetation Management Plan.

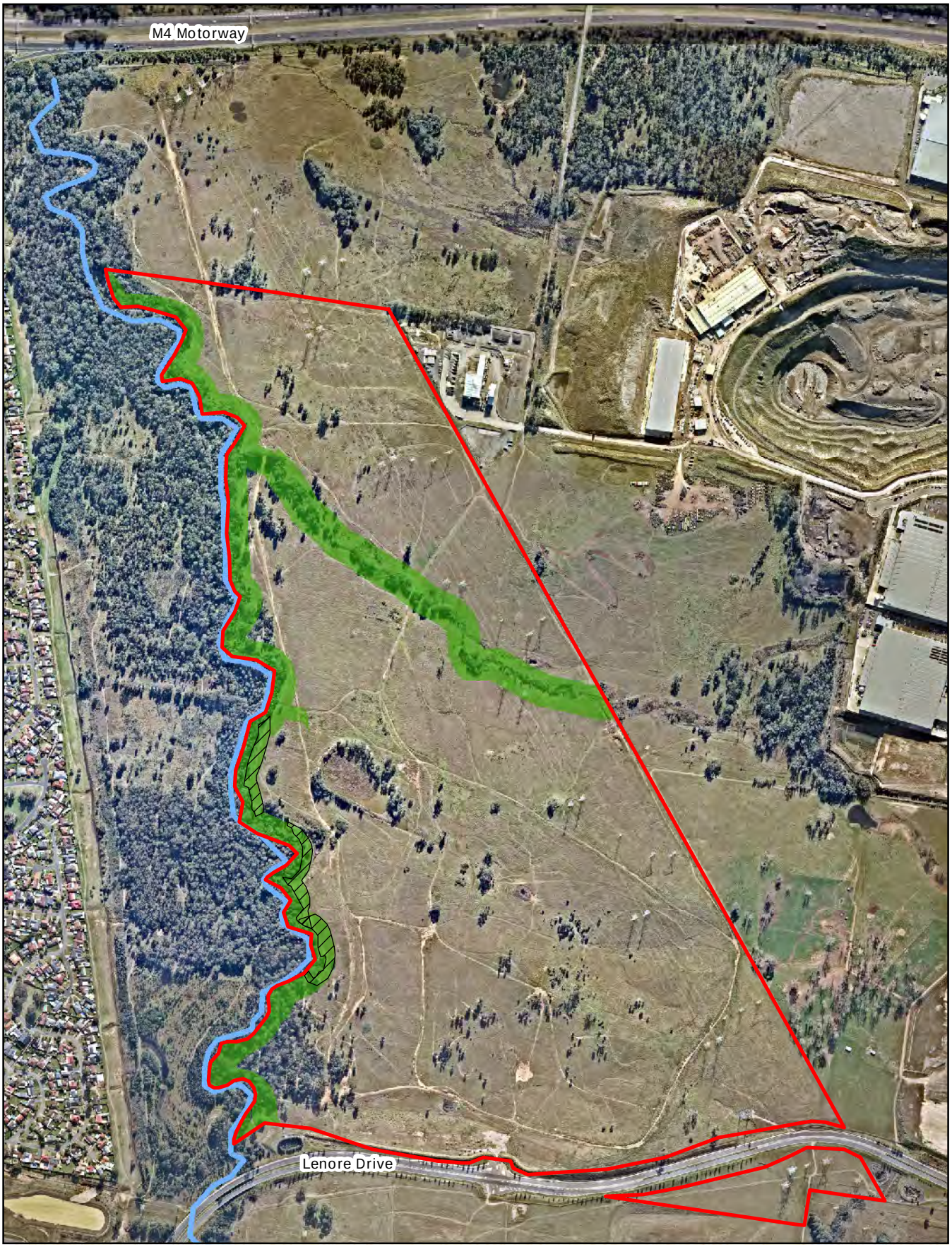
- Plant the areas shown in ~~the green edging on Figure 9 (Appendix 6 of consent conditions)~~ Figure 1-1 and Figure 2-1 of the Oakdale West Estate SSD7348 MOD 5 Vegetation Management Plan, with species similar to those identified for zone 4a, on the south-eastern side of Ropes Creek, in the Biodiversity Management Plan Erskine Park Employment Area (HLA-Envirosciences, 2 May 2006).

1.2 Land to which this VMP applies

This VMP applies to the planting area, which is located along the western extent of Lot 10 DP 1157491 on land zoned as E2 Environmental Conservation (as shown in Figure 1-1).

Lot 10 DP 1157491 is bounded by cleared paddocks to the north with the M4 Motorway beyond this, cleared paddocks and a waste facility to the east and north-east, cleared paddocks and Lenore Drive to the south and Ropes Creek to the west.

The majority of the site itself is cleared, with a heavily vegetated riparian zone along the western boundary of Ropes Creek. Whilst Ropes Creek is located outside of Lot 10 DP 1157491, the riparian zone of the watercourse does extend into the lot.



Lot 10 DP1157491

E2 Zone

Potential planting locations

Ropes Creek

N

0 65 130 260 390 520 m

Oakdale West Estate

Figure 1-1. Planting area location

Coordinate System:
MGA Zone 56 (GDA 94)

Image sources:
Nearmap 6 June 2020

2. Site Description

2.1 Ropes Creek riparian corridor

The Ropes Creek riparian corridor contains riparian forest of varying widths along both sides of the creek, extending across the western boundary of the site. The riparian forest is identified as the plant community type (PCT) PCT 835 Forest Red Gum – Rough barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion in Remnant Vegetation of the western Cumberland subregion mapping (2013 Update. VIS_ID 4207).

PCT 835 is representative of the endangered ecological community (EEC): River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.

Eco Logical Australia (2016) identified this EEC as having a high level of conservation significance, which is likely to provide important shelter and safe passage to fauna species that may utilise the site.

2.2.1 Native vegetation

The dominant canopy tree species is *Casuarina glauca* (Swamp Oak) with *Angophora floribunda* (Rough-barked Apple), *Angophora subvelutina* (Broad-leaved Apple), *Eucalyptus amplifolia* (Cabbage Gum), *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus moluccana* (Grey Box) also present.

The mid-storey layer consisted of *Melaleuca styphelioides* (Prickly-leaved Paperbark), *Acacia parramattensis* (Parramatta Wattle) and *Melaleuca decora* (Honey Myrtle) and the native shrub layer is dominated by *Bursaria spinosa* (Native Blackthorn).

While a high level of weed infestations occur in the ground layer, a relatively diverse native ground layer persist which is predominantly patches of *Themeda australis* (Kangaroo Grass), *Microlaena stipoides* var *stipoides* (Weeping Grass), *Rytidosperma bipartitum* (Wallaby Grass) with *Dichondra repens* (Kidney Weed), *Oxalis perennans*, *Pratia purpurascens* (Whiteroot), *Cheilanthes sieberi* (Narrow Rockfern) and *Wahlenbergia gracilis* (Australian Bluebell) also present.

2.2.2 Exotic vegetation

The shrub layer of the riparian zone consisted and patches of *Rubus fruticosus* agg.(Blackberry) with *Ligustrum sinense* (Small leaved Privet), *Lycium ferocissimum* (African box-thorn), *Olea europaea* subsp. *cuspidata* (African Olive) also present.

The ground layer contains widespread weed species including *Senecio madagascariensis* (Fireweed), *Asparagus aethiopicus* (Asparagus Fern), *Asparagus asparagoides* (Bridal creeper), *Sida rhombifolia* (Paddy's Lucerne), *Solanum nigrum* (Blackberry Nightshade) and *Solanum pseudocapsicum* (Madeira Winter Cherry).

2.2 Cleared paddocks

The cleared paddocks across the site are dominated by exotic grasses with occasional remnant trees, consisting predominantly of *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus moluccana* (Grey Box).

Dominant exotic grass species include *Chloris gayana* (Rhodes grass), *Paspalum dilatatum* (Paspalum), *Eragrostis curvula* (African love grass) with *Setaria* spp. (Pigeon grass), *Sporobolus fertilis* (Giant Parramatta Grass) and patches of the native *Cynodon dactylon* (Common couch) also present.

Weed species present include, but are not limited to, *Senecio madagascariensis* (Fireweed), *Sida rhombifolia* (Paddy's Lucerne), *Bidens pilosa* (Cobblers pegs), and *Solanum pseudocapsicum* (Madeira Winter Cherry).

2.3 Other site characteristics

2.3.1 Soils

The Soil Conservation Service of NSW (1991) *Penrith 1:100,000 Soil Landscape sheet 9030* indicates that Lot 10 DP 1157491 is located over two soil landscapes which consist of the alluvial South Creek soils along the Ropes Creek riparian corridor and residual Blacktown soil landscape across the remainder of the lot.

The planting area is located in the South Creek Landscape, which is described by Bannerman and Hazelton (1990) as consisting of floodplains, valley flats and drainage depressions of the Cumberland Plain; usually flat with incised channels; mainly cleared.

WSP | Parsons Brinckerhoff conducted a Land Capability, Salinity and Contamination Assessment of Lot 10 DP 1157491 for the then NSW Department of Planning and Environment in October 2016. The soils within the riparian corridor of Ropes Creek was found to comprise alluvial clayey silt and other silts. The following profile was observed immediately east of the planting area:

- Silty CLAY - dark brown, soft, rootlets present throughout.to 0.4m
- CLAY - light brown, soft. Becoming firm with depth. 0.5-1.4m
- Clayey SAND - light brown, loose.1.5-2.4m.

2.3.2 Salinity and sodicity

Salinity and sodicity investigations indicate that the planting area has some salinity risk and is prone to erosion.

Although no obvious signs of salinity were noted on the ground surface or within drainage lines (such as salt crusts or efflorescence). Some saline tolerant vegetation was observed that are an indicator of salt in the landscape along Ropes Creek (such as the introduced *Juncus acutus* (Spike rush) and Common couch).

2.3.2 Flooding

AECOM (2016) identified Ropes Creek and its riparian corridor as affected by flood events to the 1 in 100 ARI.

Recent flood events during February 2020 were evident by way of stranded detritus along fence lines alongside the riparian corridor.

2.3.3 Access

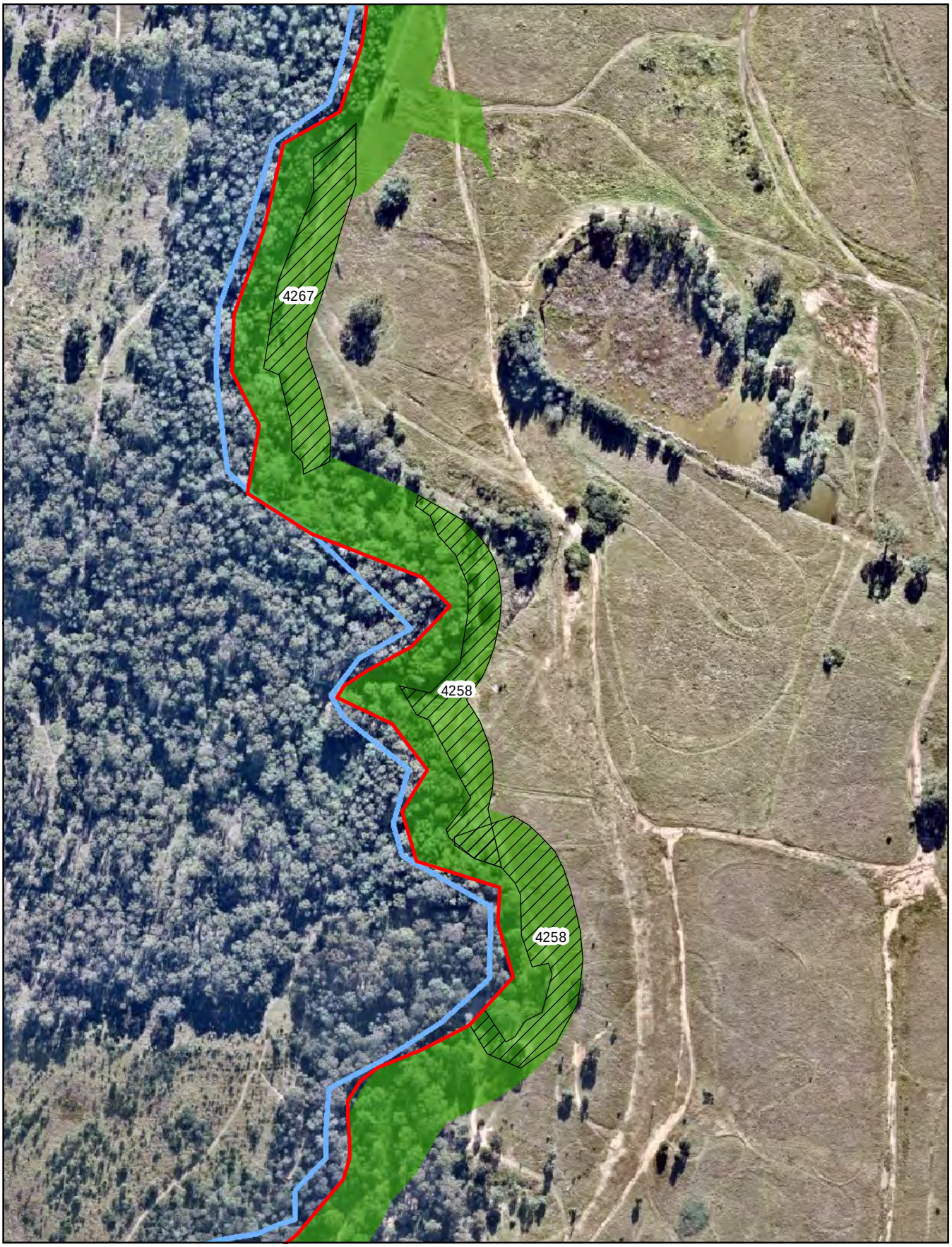
Current access to the site if via a Council controlled locked gate at Archbold Road, Minchinbury to the north of the M4 Motorway. Once entering Lot 10 DP 1157491 there are numerous unsealed access tracks, which contain eroded and water filled depressions. Navigating past these depressions is often blocked by illegally dumped cars, most likely abandoned where unable to be driven through water filled depressions.

The allotment also contains a large number of motor cross tracks that have been formed from unauthorised use of the site by motor vehicles and motor bikes.

Alternative access from Lenore Drive to the south of the planting area is likely to be available in the future (6-8 months). Consequently, current access to the site requires GPS guidance and a 4WD vehicle to safely navigate to the planting area.

2.4 Planting area

The planting area is located along the western extent of the Ropes Creek riparian corridor and is predominantly cleared paddock with an unsealed access track running south to north through most of its extent, as shown in Figure 2-1.



Lot 10 DP1157491

Potential planting locations

E2 Zone

Ropes Creek

N

0 25 50 100 150 200 m

Oakdale West Estate

Figure 2-1. Planting area

Coordinate System:
MGA Zone 56 (GDA 94)

Image sources:
Nearmap 6 June 2020

3. Management Actions

3.1 Site Preparation

3.1.1 Site survey

Prior to works commencing the planting area shall be surveyed and marked out with survey pegs with GPS measurements provided for mapping purposes.

3.1.2 Fencing and signage

The extent of the planting area as marked out by survey shall be fenced to prevent unauthorised pedestrian and vehicle access.

Signage shall be installed to identify the planting area as an OSL offset area.

3.1.3 Native vegetation protection

The planting area contains remnant native paddock trees along with scattered patches of native grasses. These areas shall be demarcated with star pickets and flagging tape in order to identify areas containing native vegetation that must be protected during weed control activities (as specified in Section 4.2.

3.1.4 Photographic monitoring sites

Prior to weed control activities (as specified in Section 4.2), establish suitable sites that are GPS measured and physically marked for ongoing photographic monitoring. Photographic monitoring shall be undertaken prior to the commencement of the following management activities:

1. Weed control slashing
2. Primary weed control
3. Secondary weed control
4. Practical completion of planting
5. Monthly over the duration of the maintenance period

3.1.5 Slashing of pasture grasses

Prior to primary weeding (refer Section 3.2.2) and following native vegetation protection (refer Section 3.1.3) the planting area will be slashed to reduce pastoral grass biomass.

Slashed foliage shall for the most part be left in situ unless it contains flowers or seed heads on priority weed species (refer Section 3.2.1). Quantities of slashed foliage shall be hand blown or raked onto the access road where it runs through the planting area following tilling/ripping (refer Section 3.3).

3.2 Weed Control

3.2.1 Priority weed species

Weed infestations will be managed as outlined in this VMP and in accordance with the *Biosecurity Act 2015*. The *Biosecurity Act 2015* replaces the *Noxious Weeds Act 1993,* which was repealed in August 2017.

The *Biosecurity Act 2015* itself is tenure neutral, in that unlike the previous *Noxious Weeds Act 1993* there is no scheduled “list” of weeds. As such all weeds need to be categorised by a risk they pose in relation to human health, biodiversity or agricultural production. The General Biosecurity Duty (GBD) is a key feature of the *Biosecurity Act 2015* (s22). Simply put, it means that all private and public land managers (or anyone who deals with weeds) must prevent, eliminate or minimise the risk those weeds present.

The Greater Sydney Regional Strategic Weed Management Plan 2017-2022 identifies both State level and regionally determined priority weeds and high-risk activities. Priority weed species known to occur on Lot 10 DP 1157491 are listed in Table 3-1.

Table 3-1. Priority weed species known from the locality

Species	Management measures
Schedule 1: State Priority Weed | Objective – ASSET PROTECTION (Whole of State)	
Asparagus aethiopicus ground asparagus; *A. asparagoides* bridal creeper; *A. plumosus* climbing asparagus fern	Mandatory Measure (Division 8, Clause33, Biosecurity Regulation 2017): A person must not move, import into the State or sell. **Regional Strategic Response:** • Identify priority assets for targeted management. • Destruction of all infestations where feasible. • Manage in accordance with New Weed Incursion Plan. • Detailed surveillance and mapping to locate all infestations
Anredera cordifolia Madeira vine	Mandatory Measure (Division 8, Clause33, Biosecurity Regulation 2017): A person must not move, import into the State or sell. **Regional Strategic Response:** Identify priority assets for targeted management.
Lantana camara Lantana	
Lycium ferocissimum African boxthorn	
Rubus fruticosus agg Blackberry	
Senecio madagascariensis Fireweed	
Schedule 2: Regional Priority Weed | Objective – CONTAINMENT	
Olea europaea subsp. *cuspidata* African olive	The planting area lies within the region classified as the core infestation area, the following applies: • The plant or parts of the plant are not traded, carried, grown or released into the environment. • Implement quarantine and/or hygiene protocols. • Surveillance and mapping to locate all infested properties. • Monitor change in current distribution to ensure containment of spread. • Land managers prevent spread from their land where feasible. • Land managers reduce the impact on priority assets. • Identify priority assets for targeted management
Schedule 3: Local Priority Weed	
Asparagus virgatus Asparagus fern	The plant or parts of the plant are not traded, carried, grown or released into the environment. Surveillance and mapping to locate all infested properties and maintain currency of exclusion zone and objectives.
Other weeds	

Axonopus fissifolius Carpet grass	*Araujia sericifera* Moth vine
Briza subaristata Chilean quaking grass	*Anagallis arvensis* Scarlet pimpernel
Bromus catharticus Prairie grass	*Brassica fruticulosa* Twiggy turnip
Ehrharta erecta Panic veldtgrass	*Cirsium vulgare* Spear thistle

Species	Management measures
Lolium perenne Ryegrass	*Hypochaeris radicata* Catsear
Paspalum dilatatum Paspalum	*Sida rhombifolia* Paddy's lucerne
Pennisetum clandestinum Kikuyu	*Solanum americanum* American black nightshade
Sporobolus africanus Parramatta grass	*Solanum linnaeanum* Apple of Sodom
	Sonchus oleraceus Common sowthistle

3.2.2 Primary weeding

Following site preparation management actions, the planting area will be subject to the following:

- Broadscale herbicide application to all exotic pasture grasses and weeds;
- Cutting/scraping and painting deep rooted woody weeds and climbers with hand tools; and
- Selective hand removal of weeds growing within and in close proximity to patches of native groundcovers (refer Section 4.1.3).

Additionally:

- Herbicide should not be allowed to fall into a watercourse or when wind conditions could cause drift outside the area to be treated or onto desirable plants.
- Damage to native plant species should be avoided during any weeding works; and
- Where seed, flowering and invasive vegetative parts of weeds are present, these should be bagged and disposed of appropriately off site.

3.2.3 Secondary weeding

Secondary weeding involves the selective removal or treatment of weeds, whilst allowing regenerating native plants to increase in size, abundance and percentage cover.

Secondary weeding should be undertaken at not more than four weeks following the completion of primary weeding.

Prior to planting any weed regrowth should either be manually removed or carefully target sprayed with herbicide.

3.3 Soil amelioration

With the exception of access tracks, it is anticipated that existing soils will be suitable for revegetation following weed control without the need for amelioration.

The unsealed access track that runs through the planting area may require tilling/ripping prior to planting.

3.4 Site stabilisation

Mulching is not recommended due to the potential for flooding of the proposed planting area.

The site exhibits a level of native plant regeneration. Jute matting to stabilise soils in the planting area is therefore not recommended in order to allow natural regeneration to continue.

Prior to planting the site will be slashed and subject to weed control with dead roots and plant foliage left in situ to stabilise soils.

3.5 Planting program

3.5.1 Plant procurement

Plant stock is to be purchased at least four months prior to the anticipated delivery and be plant species that are consistent with those provided in the Planting Schedule (provided in Appendix A).

Plants that are not: true to species; vigorous and healthy; with a well-developed root system; free from disease / pests; and are not without scars or dead wood; shall be rejected at delivery.

Planting shall be undertaken immediately after acceptance of plant delivery. If this is not possible: appropriate storage to keep the plants in good condition on the site, adequately protected from frost, wind, sun and vermin, and secured from vandals; shall be facilitated.

3.5.2 Planting procedure

Planting shall generally entail the following:

- Dig hole sufficient for root ball of plant. The removal from the container and the positioning of the plant is to be done with minimum disturbance to the roots.
- Slow-release native plant fertiliser (low phosphorous formulated native plant fertiliser tablet/granules) and water saving crystals shall be placed into the planting hole.
- After planting, the soil shall be replaced and carefully firmed, leaving a slight depression around each plant to allow for water collection. Soil is to be replaced in the hole so that the base of the stem is level with the soil surface, not set below the soil, or sitting above.
- All plants should be watered-in thoroughly after planting to settle any air pockets around the root ball of the plant and to give the plant a good initial supply of water.

3.6 Practical completion

Practical completion will be achieved when all site preparation management actions (refer Section 3.1) and the planting program (refer Section 3.5) has been satisfactorily completed.

3.7 Maintenance / Defects liability

3.7.1 Monitoring and maintenance

The contractor will be responsible for ongoing maintenance of the planting area to fulfil consent condition D94 which requires:

- The plantings are be monitoring and maintained for a period of six months to ensure a minimum 85% survival rate of the plantings.

Maintenance activities shall include:

- Ongoing weed control to achieve a maximum of five percent (5%) weed cover over the planting area;
- Watering of plantings and replacement planting to ensure a minimum 85% survival rate of the plantings; and
- Maintaining the planting area free of litter/rubbish.

3.7.2 Defects liability

Consent condition D95 requires Goodman must notify the OSL at least one month before the completion of planting to enable the Planning Ministerial Corporation to arrange ongoing maintenance.

A defects inspection will be undertaken 5 months following practical completion to allow the contractor sufficient time to rectify any defects found before handover to the OSL.

Any defective work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or of any other cause, shall be removed and replaced at the Contractor's expense by work or materials of the required standard.

3.7.3 Performance targets

Performance targets are necessary to objectively measure the progress and the achievement of the VMP. The anticipated timing of VMP management activities and related performance measures are outlined below and in Table 3-2.

1) All weeds are to be continuously suppressed and, if possible, eradicated from the site using recognised appropriate weed control methods in accordance with best practice.
2) Weed control and revegetation works are to be carried out by a qualified bushland regeneration contractor for a period of 6 months.
3) A minimum 85% survival rate of the plantings.
4) A maximum of five percent (5%) weed cover over the planting area.

Table 3-2. VMP implementation schedule / performance measures

Task	Timing	Performance measure
Plant procurement	Minimum 4mths pre-commencement of VMP implementation	Plants that are not: true to species; vigorous and healthy; with a well-developed root system; free from disease / pests; and are not without scars or dead wood; shall be rejected at delivery.
Completion of revegetation planting works	Practical Completion	• 100% of site preparation works completed • 100% of weed control works completed • 100% of plants installed
Defects Liability Period	5-6 months	• Minimum 85% per cent survival rate of each species planted • Maximum 5% weed cover
Maintenance Period	6 months	

3.8 Compliance certification

Site audits, monitoring and reporting on the progress and achievement of the VMP performance targets (refer Section 3.7.3) shall be undertaken by an independent VMP specialist as nominated by Goodman. In general, reporting and compliance certificates shall be issued for the following items:

- Completion of site preparation works;
- Completion of primary weed control works;
- Completion of secondary weed control works;
- Inspection of plant materials delivered to site prior to commencement of planting works;
- Completion of planting works (Practical Completion);
- Defects inspection at 5 months following Practical Completion;
- Satisfactory achievement of performance targets at 6 months following Practical Completion.

4. References

AECOM (2016) Ropes Creek Precinct Development Control Plan (Draft) prepared for the Department of Planning and Environment, 16 November 2016.

Eco Logic Australia (2016) Ropes Creek Precinct – Biodiversity and Riparian Assessment Prepared for NSW Department of Planning and Environment, October 2016

Greater Sydney Local Land Services (2019) Greater Sydney Regional Strategic Weed Management Plan 2017-2022 Version: Amended September 2019

WSP | Parsons Brinckerhoff (2016) Land Capability, Salinity and Contamination Assessment Ropes Creek, NSW Department of Planning and Environment Project No 2300094A, October 2016.

Appendix A. Planting Schedule

Layer	Species	density/m^2	%mix	Qty
Trees/large shrubs	Acacia decurrens	0.05	5	10
	Acacia parramattensis	0.05	5	10
	Angophora floribunda	0.05	16	34
	Angophora subvelutina	0.05	15	30
	Eucalyptus amplifolia	0.05	16	34
	Eucalyptus moluccana	0.05	15	30
	Eucalyptus tereticornis	0.05	16	34
	Melaleuca styphelioides	0.05	15	30
			100	**212**
Smaller shrubs	Acacia floribunda	0.2	8	68
	Breynia oblongifolia	0.2	10	84
	Clerodendrum tomentosum	0.2	10	84
	Daviesia genistifolia	0.2	8	68
	Daviesia ulicifolia	0.2	8	68
	Dillwynia sieberi	0.2	8	68
	Dodonaea spp.	0.2	10	84
	Goodenia ovata	0.2	10	84
	Indigofera australis	0.2	10	84
	Ozothamanthus diosmifolium	0.2	10	84
	Pultenea spp.	0.2	8	68
			100	**844**
Grasses	Aristida ramosa/vagans	4	5	840
	Cymbogon refractus	4	10	1,680
	Chloris truncata/ventricosa	4	5	840
	Dicanthium sericeum	4	5	840
	Dichelachne micrantha	4	10	840
	Echinopogon ovata	4	10	840
	Eriochloa pseudochritcha	4	5	840
	Imperata cylindrica	4	10	1,680
	Microlaeana stipoides	4	10	1,680
	Poa labillardieri	4	10	1,680
	Rytidosperma racemosum	4	10	1,680
	Themeda triandra	4	10	1,680
			100	**15,120**
Sedges/Sedge-like	Lomandra longifolia	1	50	2,100
	Dianella longifolia	1	50	2,100
			100	**4,200**
Herbs	Arthropodium spp.	0.05	as available	840
	Bulbine bulbosa	0.05		

Layer	Species	density/m^2	%mix	Qty
	Clematis spp.	0.05		
	Desmodium varians	0.05		
	Dichondra repens	0.05		
	Glycine clandestina	0.05		
	Hardenbergia violacea	0.05		
	Oplismenus aemulus	0.05		
	Oxalis perannans	0.05		
	Plectranthus parviflorus	0.05		
	Pratia purpurescens	0.05		
	Scaveola albida	0.05		
	Veronca plebeia	0.05		
	Wahlenbergia gracilis	0.05		
				840
			Total plants	**21,216**

écologique | environmental consulting