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LANDSCAPE AND VEGETATION MANAGEMENT PLAN

EASTERN CREEK RECYCLING ECOLOGY PARK AND LANDFILL

LANDSCAPE AND VEGETATION MANAGEMENT PLAN (LVMP)

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ACRONYMS AND DEFINITIONS

Acronym / Term	Meaning
BC Act	*Biodiversity Conservation Act 2016*
Bingo	Bingo Industries Limited
CEEC	Critically Endangered Ecological Community
CoA	Conditions of Project Approval
DADEC	Dial-A-Dump (EC) Pty Ltd
DPIE – Water	Department of Planning Industry and Environment – Water Group (NOW)
EAR	Environmental Assessment Report
EEC	Endangered Ecological Community
EMS	Environmental Management Strategy
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPL	Environment Protection Licence
ESCP	Erosion and Sediment Control Plan
NOW	NSW Office of Water (now DPIE – Water)
OEMP	Operational Environmental Management Plan
OSD	On Site Detention
River-Flat Eucalypt Forest	*River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*
SEQ	Safety, Environment and Quality
The Facility	Eastern Creek Recycling Ecology Park (& Landfill)
VLMP	Landscape and Vegetation Management Plan
WoNS	Weeds of National Significance

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1 INTRODUCTION

1.1 Background

Bingo Industries Limited (Bingo) acquired the Eastern Creek Recycling Ecology Park (& Landfill) (the Facility) site on 11 December 2017 and took over the management of the Eastern Creek site in April 2019. The site was previously known as the Genesis Resource Recovery Facility.

The Project was originally approved under Section 75J Part 3A (now repealed) of the *Environmental Planning and Assessment Act 1979* on the 22 November 2009 (Project Approval 06_0139) to ThaQuarry Pty Ltd. The Project was transitioned to a State Significant Development (SSD) on 2 October 2020.

The approval permitted the construction and operation of a non-putrescible landfill and waste management facility. The approval provided for a total throughput of 2 million tonnes of waste at the site per year including landfilling of up to 700,000 tonnes per calendar year, and for the stockpiling of up to 50 tonnes of tyres and 20,000 tonnes of green waste at any one time. Operations on the site commenced in 2012 and since this time, six modifications have been approved to facilitate a number of changes to the layout and operation of the Facility.

Modification 6 (MOD6), the most recent modification, was approved by the Minister for Planning and Public Spaces on 29 April 2020, which facilitated lifting the landfill cap from 700,000 tonnes per annum (tpa) to one million tpa (1 Mtpa) and to support the extension of site operations to 24 hours for most activities undertaken on the site.

The Facility operates under Environmental Protection Licence (EPL 20121) which allows for compositing, resource recovery and waste storage and EPL 13426, which allows for waste disposal (application to land) and waste storage. The EPLs will be amended to align with Modification 6 (06_0139 MOD6).

The Facility is operated by Dial-A-Dump (EC) Pty Ltd (DADEC), a fully owned subsidiary of Bingo Industries Pty Ltd.

1.2 Purpose and Application

This *Landscape and Vegetation Management Plan* (LVMP) has been prepared to address the Conditions of the Project Approval (06_0139) (CoA). The LVMP provides details for:

- Maintenance of landscaped areas, including amenity berms;
- Plant species appropriate for landscaping activities;
- Management of threatened species and ecological communities;
- Managements of pests including vermin, feral animal and priority weeds;
- Reporting requirements;
- Roles and responsibilities of key personnel and training all personnel on site.

The LVMP has considered the following:

- The Project Approval as modified (06_0139 MOD6);
- The Statement of Commitments included in the Environmental Assessment Report (EAR) (ERM, 2008) and subsequent modification assessments;
- The Light Horse Business Centre Vegetation Management Plan (Abel Ecology, 2009);
- NSW Government guidelines for Environmental Management Plans (Post Approval Guideline, April 2020).

1.3 Objectives and Targets

Table 1-1 below outlines the objectives and targets set out for the Facility for the management of landscape, vegetation and pest species during operation.

Table 1-1: Objectives and Targets

Objective	Target	Timeframe	Accountability
Landscaping planting is appropriately carried out and maintained	Vegetated areas are stabilised	Ongoing	Site Supervisor / Site Environmental Officer
Endangered ecological communities are protected	No reduction in mapped reserve areas or degradation of endangered ecological communities	Ongoing	Site Supervisor / Site Environmental Officer
Weed species are effectively removed and prevented from growing on the site	Reduction of weed species by 5% each year	Ongoing	Site Supervisor / Site Environmental Officer
The quality of native vegetation improves	Evidence of native species regeneration	Ongoing	Site Supervisor / Site Environmental Officer
Pest species are controlled and discouraged from entering the site	No evidence of pest species on site	Ongoing	Site Supervisor / Site Environmental Officer
Regular inspections and maintenance of fencing	Fence line remains intact. No dumping or evidence of unauthorised access	Ongoing	Site Supervisor / Site Environmental Officer
Ongoing monitoring and maintenance	Comply with the requirements of: • CoPA 06_0139 • The EAR, 2008 and subsequent modification assessments • Abel Ecology VMP (2009)	Ongoing	Site Supervisor / Site Environmental Officer

2 SITE DESCRIPTION

2.1 Facility Overview

The Facility covers an area of 52.4 Ha (including the surface area of the quarry) at Lot 1 DP 1145808; and Lot 8 DP 1200048, within an area being developed for commercial and industrial use under the *State Environmental Planning Policy (Western Sydney Employment Area) 2009.* The adjacent land is owned by a mix of private companies and the NSW Government.

The Facility is currently accessed via Kangaroo Avenue located to the east and north-east of the site. The M4 Western Motorway is located to the north and Archbold Road is located to the west. An open grassland is located to the south.

The residential area of Minchinbury is about 430 m north and Erskine Park is about 1,200 m west of the nearest site boundaries. The nearest commercial premises are adjacent to the northern boundary of the site (See **Figure 2-1**).

The Facility as managed under the Environmental Management Strategy (EMS) and this LVMP includes:

- Site entrance with security and weighbridge;
- Site offices and amenities;
- Parking for light vehicles and trucks, staff and visitors;
- Waste processing equipment comprising:
  - screening areas with overhead gantry crane, screener and conveyors;
  - storage bays;
  - load out area.
- Segregated stockpile area;
- Pre-sort enclosure (PSE);
- General solid (non-putrescible) landfill;
- Wheel wash bay.

Mounds of overburden material (amenity berms) which act as impervious barriers and visual screens are located to the north, south and west of the Facility operational area. A Conservation Area is also located at the north-western corner of the operations area which is fenced and maintained as part of the operations of the Facility.

Appendix A shows the layout of the Facility.

Figure 1-1: Facility location

2.2 Geology, Soils and Topography

The EAR (2008) indicates that the natural soils and fill material at the site are underlain by Bringelly Shale of the Wianamatta Group. This group consists of shale, carbonaceous claystone, claystone, laminite, occasional interbedded units of fine to medium grained lithic sandstone and rare coal and tuff. The quarry is within an intrusive (igneous) plug of dolerite and volcanic breccia which may have caused localised metamorphism of the shale rocks.

The majority of the site is assigned to the residual Blacktown soil landscape, with an area of disturbed terrain over the quarry. The Blacktown soil landscape is characterised by shallow to moderately deep (<100cm) hard-setting mottled texture contrast soils, which are moderately reactive and highly plastic. Red and brown podzolic soils typically occur on crests, grading to yellow podzolic soils on lower slopes and in drainage lines. These soils typically have low fertility and are poorly drained. The area can be classed as 'disturbed terrain', with all original soils being removed and greatly disturbed.

The site topography would have originally been gently undulating rises, with broad rounded crests and ridges with gently inclined slopes, however this has been significantly altered from its original state by over 50 years of quarrying and associated earthmoving activities.

2.3 Hydrology

Seven small un-named dams or reservoirs are located within a one-kilometre radius of the site. The following surface water features in close proximity to the site include the following (See **Figure 2-1**):

- Ropes Creek, approximately 1.5 km to the west of the quarry;
- Eastern Creek, approximately 3 km east of the quarry; and
- Prospect Reservoir, approximately 6 km east of the quarry.

The site drainage system diverts surface runoff from operational areas surrounding the landfill void, to storages outside of the operational area of the Facility. Site grading also ensures that any clean runoff from non-operational areas of the site is also diverted around the landfill site. The landfill catchment is estimated to be about 265,000 m^2.

2.4 Flora

The majority of the site is cleared, containing open grassland dominated by exotic species. Large areas of the site have been highly disturbed by quarrying and bulk earthworks and all original vegetation has been removed from the quarry and overburden stockpiles. Overburden stockpiles now support grasslands of mostly introduced species.

No threatened flora was recorded within the site however potential habitat for the following threatened flora species is present on site (Ashby, 2006):

- *Marsdenia viridiflora* subsp *viridiflora;*
- *Hypsela sessilifora;*
- *Acacia pubescens;*
- *Grevillea juniperina* subsp. *Juniperina;*
- *Pimelea spicata.*

2.4.1 Management zones

Natural vegetation on the site is restricted to two areas, a small woodland remnant located in the north west corner and riparian vegetation in southern portion of the site. These zones are described in more detail in **Section 4.2**. Both zones require ongoing management to ensure the protection of any threatened species, populations and/ or EECs identified as occurring or potentially occurring at and surrounding the site.

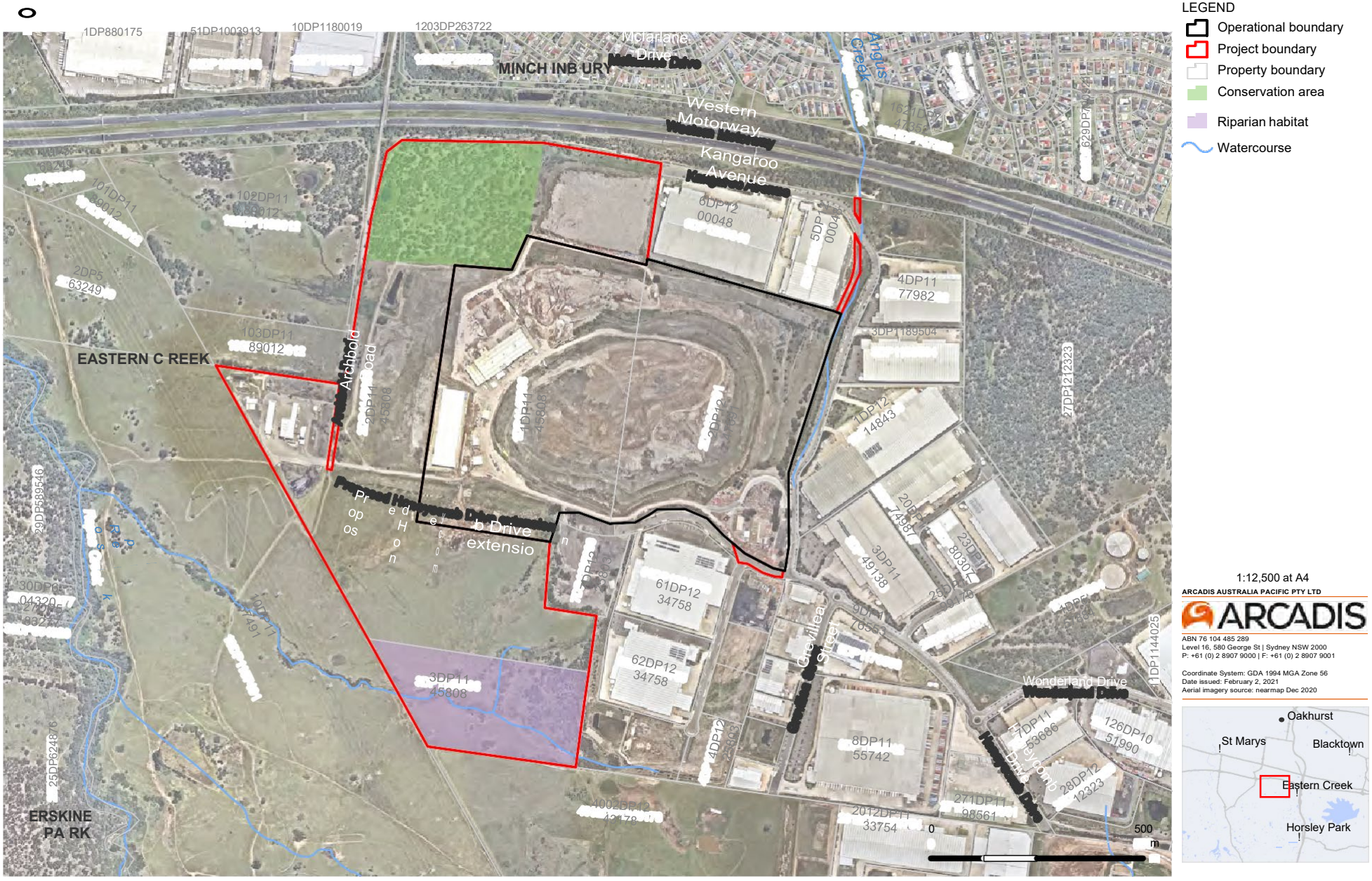

Figure 2-2: Project and operational boundaries

2.4.1.1 Conservation Area

The north-west corner of the site contains an area of remnant vegetation which has been mapped as Shale Plains Woodland. This community is consistent with Cumberland Plain Woodland, a Critically Endangered Ecological Community (CEEC) listed under the *Biodiversity Conservation Act 2016* (BC Act) and the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The area is fenced and is sign posted as a conservation area.

The vegetation ranges from open grassy woodland to woodland with dense young tree regrowth and few mid layer shrubs. This is consistent with the form of Cumberland Plain Woodland which is characterised by a grassy, herbaceous understorey. Scattered weeds have been observed throughout the area.

2.4.1.2 Riparian habitat

The riparian habitat along the Ropes Creek tributary at the southern boundary of the site contains Alluvial Woodland which is consistent with *River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* (henceforth referred to as River-Flat Eucalypt Forest), an Endangered Ecological Community (EEC) listed under the BC Act. The area is fenced and is heavily impacted by weeds.

The canopy is dominated by Swamp Oak (*Casuarina glauca*) and occasional Grey Box (*Eucalyptus moluccana*).

2.4.2 Weeds

The *Biosecurity Act 2015* places restrictions on the trade and movement of plants called 'priority weeds' which harm the NSW environment, economy and community. Under the National Weeds Strategy, some plants have been identified as Weeds of National Significance (WoNS). These weeds are regarded as the worst weeds in Australia because of their invasiveness, potential for spread, and economic and environmental impacts.

For the purposes of this LVMP, a weed is regarded as any non-indigenous plant. Keystone Ecological (Ashby, 2006) identified 60 weed species on site; of these species, seven are priority weeds for the Greater Sydney region and four are also considered to be WoNS.

- African Boxthorn (*Lycium ferocissimum*) (WoNS);
- African Olive (*Olea europaea* subsp. *cuspidata*[1]);
- Bridal Creeper (*Asparagus asparagoides*) (WoNS);
- Fireweed (*Senecio madagascariensis*) (WoNS);
- Ground Asparagus (*Asparagus aethiopicus*) (WoNS);
- Ludwigia (*Ludwigia peruviana*);
- Pampas Grass (*Cortaderia selloana*).

2.5 Fauna

A total of 36 native fauna species (including amphibians, reptiles, birds and mammal species) were recorded within the site during surveys conducted by Keystone Ecological (Ashby, 2006) and AMBS (2002). Of these species only *Meridolum corneovirens* (Cumberland Plain Land Snail) is listed as endangered under the Schedule 1 of BC Act. Discarded shells of this species were recorded within the Conservation Area.

Seven introduced species were recorded within the site:

- Spotted Turtledove (*Streptopelia chinensis*);

[1] Previously named *Olea europaea* subsp. *africana*, as recorded Keystone Ecological (2007)

- Common Myna (*Acridotheres tristis*);
- Common Starling (*Sturnus vulgaris*);
- Dog (*Canis familiaris*);
- European Red Fox (*Vulpes vulpes*);
- Cat (*Felis catus*);
- Rabbit (*Oryctolagus cuniculus*).

2.5.1 Native fauna habitat

The study area has been significantly disturbed and is cleared of native vegetation, however, the disturbed conditions should not be used to negate potential habitat values for native fauna. Keystone Ecological (Ashby, 2006) found that potential habitat existed on site for ten listed threatened fauna species:

- Green and Golden Bell Frog (*Litoria aurea*);
- Square-tailed Kite (*Lophoictinia isura*);
- Grey-headed Flying-fox (*Pteropus poliocephalus*);
- Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*);
- Eastern Freetail-bat, (*Mormopterus norfolkensis*);
- Large-eared Pied Bat (*Chalinolobus dwyeri*);
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*);
- Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*);
- Large-footed Myotis (*Myotis Macropus*);
- Greater Broad-nosed Bat (*Scoteanax rueppellii*).

The riparian area provides potential habitat for the Green and Golden Bell Frog, which is noted to often occur in highly disturbed areas. Mature trees in both the conservation area and the riparian habitat along Ropes Creek provides potential habitat values for the other identified birds, microbats and arboreal mammals which are dependent on trees for food, nesting or roosting. There are a handful of hollow-bearing trees in the conservation area which provide particularly valuable resources for native fauna. Cumberland Plain Woodland in the conservation area also provides specific habitat for the threatened *Meridolum corneovirens* (Cumberland Land Snail).

2.6 Amenity berms

Existing mounds of overburden material excavated from the former quarry are located to the west, north and northeast of the operational area. These mounds vary in height to a maximum of about 30 metres. A natural hill which provides an existing berm is located to the southeast of the landfill void and adjacent to the access road and is about 10 metres in height.

These mounds have become amenity berms which act as impervious barriers and visual screens around the perimeter of the operational area. The berms also assist in providing some noise attenuation to nearby receivers and act as a security measure. They also act as a shield against windblow litter and mitigate external movement of airborne particles from stockpiles. The amenity berms have been stabilised and are landscaped with low maintenance native species which create an appearance consistent with the surrounding landscape.

3 STATUTORY REQUIREMENTS

3.1 Legal and Other Obligations

The legislation, planning instruments and guidelines considered during development of this plan are listed below with specific details provided in the Legislation Register within Appendix B of the Operational Environmental Management Plan (OEMP).

- *Environmental Planning and Assessment Act (EP&A) 1979*
- *National Parks and Wildlife Act 1974.*

3.2 Development Consent

3.2.1 EP&A Act Approval

The original project approval for the site was granted by the Minister for Planning in 2009 (06_0139) under Section 75J of the NSW EP&A Act. Six modifications have been approved since 2009, with the most recent modification (MOD6) approved on 29 April 2020.

The Project Approval include requirements to be addressed in this plan and to be delivered during operation of the Facility. These requirements, and how they are addressed in the plan are provided in **Table 3-1**.

Table 3-1: CoPA 06_0139 as modified

#	Requirement	Document Reference
Primary Condition of Consent		
Schedule 3 – Specific Environmental Conditions		
59	**Landscape and Vegetation Management Plan** The Proponent shall prepare and implement a Landscape and Vegetation Management Plan for the project to the satisfaction of the Planning Secretary. This plan must:	This LVMP.
(a)	be prepared in consultation with NOW and Council and be submitted to the Secretary for approval within 3 months of this approval;	NOW is now DPIE – Water. Approval with NOW was required for controlled activities on, in or under waterfront land. The works have avoided impacts to the Ropes Creek Tributary however these guidelines have been considered in Section 4.2.2 of the LVMP. This LVMP will be sent to Council and DPIE – Water for their information.
(b)	be prepared in accordance with NOW's Guidelines for Controlled Activities –Vegetation Management Plans; and	
(c)	include:	
	• a Landscape Plan for the project, which identifies screen plantings to minimise visual impacts, particularly on the amenity berms;	This LVMP. Section 4.1.
(c)	• detailed plans and procedures to: – restore and maintain the waterways and riparian zones of the Ropes Creek Tributary on the site;	Abel Ecology VMP (2009) and this LVMP Section 4.2.2.
	– manage weeds in the vicinity of the riparian zones;	Abel Ecology VMP (2009) and this LVMP Section 4.2.2.
	– integrate works into the proposed landscaping for the rest of the site;	This LVMP. Section 4.1.

#	Requirement	Document Reference
	– manage impacts on fauna; and	This LVMP. Section 4.2
	– monitor the performance of the proposed restoration works.	This LVMP. Section 5.1
(d)	Provide details on how those areas identified as Conservation Areas in the Precinct Plan shall be actively managed for conservation purposes including; • improving the quality of the vegetation in these areas;	This LVMP. Section 4.2 Table 4-1 MM8, MM9, MM10
	• measures to control pests, vermin, and noxious weeds; and	This LVMP. Section 4.3 and Section 4.4 Table 4-1 MM16-28
	• measures to control access.	This LVMP. Section 4.2 Table 4-1 MM9
Secondary Conditions of Consent		
14 (a)	**Pest, Vermin, Feral Animal and Noxious Weed Management** The Proponent shall: Implement suitable measures to manage pests, vermin, feral animals and declared noxious weeds on site and identify those measures in the Environmental Management Strategy for the Project (See Schedule 5 condition 1)	 This LVMP. Section 4.3 (weeds) Section 4.4 (pest species) Table 4-1 MM16-28
(b)	Inspect the site on a regular basis to ensure that these measures are working effectively, and that pests, vermin, feral animals or noxious weeds are not present on site in sufficient numbers to pose an environmental hazard, or cause the loss of amenity in the surrounding area; and	This LVMP. Section 5.1
(c)	Perform ongoing monitoring of weed infestation on and adjoining the site.	This LVMP. Section 5.1 Table 4-1 MM10, MM14
54 (a)	**Amenity Berms** Prior to the commencement of operations, the Proponent shall: construct and maintain, for the duration of the operations, amenity berms, impervious barriers and visual screens around the perimeter of the operational area (as detailed in the EA, the site plan at Appendix 1 and Schedule 3, Condition 53 above);	 Section 2.6 EMS Appendix A
(b)	retain the existing amenity berm to the north east of the quarry void at the perimeter;	Section 2.6 Appendix A
(c)	vegetate the berms in accordance with the Landscape and Vegetation Management Plan at Schedule 3, Condition 59;	Abel Ecology VMP (2009) and This LVMP. Section 2.6 Table 4-1 MM1-7
(d)	maintain the height of the amenity berms at no less than 10 metres; and	This LVMP. Section 2.6 Table 4-1 MM1
(e)	conduct all earth works required to reshape the amenity berms on site, without impacting on adjoining landowners.	This LVMP. Section 2.6 Table 4-1 MM1

#	Requirement	Document Reference
57	**Flora and Fauna Management** The Proponent shall not disturb those areas identified as Conservation Areas in the Precinct Plan and identified and mapped in the EA.	This LVMP. Section 4.2 Table 4-1 MM8-15
Schedule 5 – Environmental Management, Reporting and Auditing		
2	**Management Plan Requirements** The Proponent must ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
(a)	detailed baseline data;	Section 2
(b)	a description of: • the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 3
	• any relevant limits or performance measures/criteria;	Section 4.5 (management measures) Section 5 (monitoring)
	• the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;	Section 5.1.1
(c)	a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	Section 4.5, Table 4-1 Section 5.1, Table 5-1
(d)	a program to monitor and report on the: • impacts and environmental performance of the project;	Section 5.1 Table 5-1
	• effectiveness of any management measures (see c above);	Section 5.1
(e)	a contingency plan to manage any unpredicted impacts and their consequences;	Section 5.5 Section 5.7
(f)	a program to investigate and implement ways to improve the environmental performance of the project over time;	Section 5.4
(g)	a protocol for managing and reporting any: • incidents;	Section 5.5
	• complaints;	Section 5.6
	• non-compliances with statutory requirements; and	Section 5.7
	• exceedances of the impact assessment criteria and/or performance criteria; and	Section 5.7
(h)	a protocol for periodic review of the plan.	Section 5.4

The Statement of Commitments relevant to visual amenity, vegetation management and ecology were identified in the EAR (ERM, 2008). These have been summarised in **Table 3-2**.

Table 3-2: Relevant Statement of Commitments (EAR, 2008)

#	Statement of Commitment	Document Reference
4. Construction Environmental Performance		
4.7 Visual Amenity		
4.7.4	The operator shall undertake landscaping works prior to operation of the facility. Landscaping shall be undertaken along internal roadways, on berms and around the administration building.	This LVMP. Section 4.1, Section 2.6 Table 4-1 MM2-7
4.8 Ecology		
4.8.1	Fencing is to be constructed around the identified Endangered Ecological Communities on site to restrict vehicular and pedestrian access.	This LVMP. Section 4.2 Table 4-1 MM9
4.8.2	As part of the construction environmental management plan all stockpiled materials are not to be located in close proximity to the EECs or any individual native trees on site.	This LVMP. Section 4.2 Table 4-1 MM13
5. Operational Environmental Performance		
5.7 Visual Management		
5.7.5	The operator shall maintain landscaped areas on site throughout operations.	This LVMP. Section 4.1 Table 4-1 MM1-7

3.3 Environment Protection Licence Conditions

The most recent EPLs associated with the Facility were issued by NSW EPA on 12 April 2018 (EPL 20121) and 7 June 2019 (EPL 13426).

There are no conditions within the EPLs that are associated with landscaping and vegetation.

3.4 Roles and Responsibilities

Key roles and responsibilities applicable to this LVMP are presented in **Table 3-3**.

Table 3-3: Roles and Responsibilities

Roles	Responsibilities
General Manager Operations NSW	• Ensuring an LVMP is developed and implemented; ensuring compliance with Project Approval conditions and any regulatory or other requirements • Ensuring appropriate resources are available to implement all aspects of the LVMP and maintain necessary records
Safety and Quality Manager NSW	• Provide support for the Site Supervisor • Participate in investigations of accidents on site • Take action to resolve non-conformances, non-compliances and incidents
Site Environmental Manager	• Identifying risks to landscaping and vegetation associated with the operations undertaken on site • Developing and implementing procedures and measures to minimise or eliminate any risks identified

Roles	Responsibilities
	• Ensuring that all personnel undertaking work at the site receive adequate training and education in the environmental measures developed to mitigate or minimise risks associated with landscaping and vegetation at the site • Implement appropriate landscaping and vegetation monitoring to ensure that the management measures adopted are effective • Undertaking reporting and internal audit annually • Review, maintain and assist implementation of the Environmental Management System
Site Operations Manager	• Effectively implement environmental controls on-site in accordance with environmental obligations • Demonstrate that suppliers and sub-contractors are implementing environmental requirements • Managing and minimising water consumption, energy consumption, waste consumption and emission of greenhouse gases, wherever possible. • Report environmental non-conformances, incidents and potential incidents to the Environment Manager NSW and General Manager Operations NSW • Manage and direct works in a manner that minimises potential for environmental impacts or stop works if there is a risk of environmental harm
Contractors	• Completing the site induction • Identifying the environmental risks associated with their activities at the site • Developing mitigating measures to minimise or eliminate the identified environmental risks • Being aware of and following onsite instructions and procedures implemented to minimise or eliminate environmental risks
Certified landscape contractor	• Installing and maintaining landscape planting on amenity berms, roads and around onsite detention (OSD) basins. • Undertaking maintenance efforts including watering, fertilising, replacing failed plants • Removal and suppression of weeds
Certified ecologist	• Undertake required periodic monitoring of the conservation area and riparian habitat • Completing monitoring transects and photo points and preparation of an associated report • Identifying any management issues in this area including fencing, weed incursion, feral pest observations and degradation issues.

3.5 Training and Competence

3.5.1 General environmental awareness training

All personnel undertaking work at the Facility will undergo general environmental awareness training and training relevant to their responsibilities under the Facility **Environmental Management Strategy (EMS)**. Environmental awareness training will include

- The responsibility of staff to ensure continued maintenance of landscaped vegetation on the amenity berms and around the site;
- Details on the location and value of the two EEC in the conservation area and riparian habitat;
- Advice on reporting weed observations around the site in order to continually suppress and remove them;

- Actions to take if pest fauna species are observed on site.

Records of the Facility environmental induction and other environmental training will be maintained and readily accessible.

Details of training are provided in Section 4.4 of the EMS.

4 IMPLEMENTATION

This section describes the overall approach to managing vegetation and landscaping during operation of the Facility. Management measures are summarised in **Table 4-1**.

The key priority areas for this landscape and management plan can be categorised into four management activities:

1. Maintaining landscape plantings which provide visual screening around the site.
2. Protecting and restoring the quality of the two areas of EECs.
3. Managing and supressing weeds around the whole site.
4. Managing and responding to pest fauna species around the site.

4.1 Landscaping for screening

Landscaping has been carried out to reduce the visual impacts of the site in three areas:

- Along internal roads
- On amenity berms
- Around onsite detention basins.

Landscaping plans used during the establishment of the landscape planting on site were developed with reference to the site's topography and used local species for rehabilitation and/or revegetation works.

Landscaping guidelines considered for any ongoing maintenance are provided in **Appendix B**. These guidelines are consistent with the landscaping plans used during the establishment of the landscape planting on site.

4.2 Endangered ecological communities

4.2.1 Conservation area

The conservation area which contains Cumberland Plain Woodland EEC will be managed as a natural regeneration zone with the aim of returning the bushland to its natural condition. This method relies on the natural germination and resprouting of plants from the soil bank and does not require replanting or landscaping techniques. Weed removal and management of disturbances is the focus of this approach.

Perimeter fencing has been established around the conservation area. This area remains locked to prevent access from the public and any other subcontractors who do not have relevant approvals to work in this area.

Redundant trail bike tracks within the area have been covered with loose earth and leaf litter to encourage natural regeneration. The larger unnamed roads have been left clear for use as fire and access trails which can be used for monitoring and management efforts.

The condition of the conservation area is to be monitored continually using identified transects and photo monitoring locations. These points are indicated on **Figure 4-1**. These photos should be collated with other monitoring notes into regular progress reports.

4.2.2 Riparian habitat

The riparian habitat has historically been highly affected by erosion and sedimentation. Early management measures have already been carried out to reinstate and rehabilitate the watercourse to reflect its original form. The channel was lined with rocks and gravel to prevent future scouring and erosion. The restored area was covered with topsoil and then revegetated using hydroseeding of native grasses. Regular weed control practices are already in place.

Ongoing management of the riparian habitat will not involve further structural works but would focus on supporting vegetation growth through natural regeneration. This method relies on the natural germination and resprouting of plants from the soil bank and will not require further landscape planting. No trees are to be removed along the drainage corridor with the aim of eventually creating conditions which encourage a continuous canopy along the creek corridor.

The land around the riparian habitat has been subdivided into its own lot (Lot 3 DP 1145808) which will ensure that no development occurs on this land. Fencing has also been installed which will provide the riparian zone and a relevant buffer on each side of the watercourse as a protection area.

LEGEND

- Eastern Creek Recycling Ecology Park boundary
- Amenity berm
- Conservation area
- Riparian habitat
- Property boundary
- Transect
- Watercourse
- Photo point and direction

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Aerial imagery source: Nearmap Dec 2020

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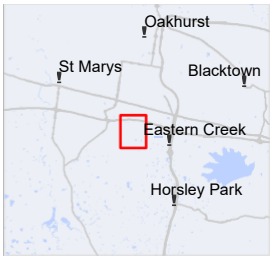

Figure 2-2: Landscape and vegetation management features

4.3 Weeds

Under the *Biosecurity Act 2015*, occupiers and owners of land located in the Greater Sydney Local Land Services region have the responsibility of controlling regional priority weeds that are listed in Appendix 1.2 of the *Greater Sydney Regional Strategic Weed Management Plan 2017-2022*.

There are seven identified priority weeds on site, including four which are WoNS. These species are shown below.

African Boxthorn (*Lycium ferocissimum*) (WoNS)

Ground Asparagus (*Asparagus aethiopicus*) (WoNS)

Bridal Creeper (*Asparagus asparagoides*) (WoNS)


Fireweed (*Senecio madagascariensis*) (WoNS)


African Olive (*Olea europaea* subsp. *cuspidata*[2])


Ludwigia (*Ludwigia peruviana*)

[2] Previously named *Olea europaea* subsp. *africana*, as recorded Keystone Ecological (2007)


Pampas Grass (*Cortaderia selloana*).

The recommended weed control measures for each species are provided on the NSW Department of Primary Industries website WeedWise[3]. Since 2016, weeding services has been undertaken at six monthly intervals in accordance with the schedule of works outlined in the Abel Ecology VMP (2009). Any weeds identified will be removed immediately and disposed of at the designated waste disposal site.

Weed control techniques for identified species can also be found in the Abel Ecology VMP (2009). General weed control techniques have also been provided in **Appendix C**.

4.4 Pest fauna species

Waste management and landfill sites can be attractive to various pest fauna species who are attracted to potential food sources on these sites. Eastern Creek Recycling Ecology Park and Landfill does not accept putrescible wastes including food and organic matter so there is limited available food sources which could attract these species. Despite this the potential occurrence of these species needs to be monitored and managed appropriately.

4.5 Management measures

Table 4-1 provides a summary of the applicable measures for managing landscape screening and for managing the conservation area and riparian habitat.

Responsibilities and timing for undertaking the measures is also provided in the tables.

[3] https://weeds.dpi.nsw.gov.au/

Table 4-1: Management Measures

ID	Ongoing Management Measure	Timing	Responsibility	Reference
Landscaping				
1	All berms will be maintained at a minimum height of no less than 10 metres. If any reshaping is required, this will be undertaken in a way that does not impact adjoining landowners.	Operation	Site supervisor	Sch3 C54(d)(e) Section 2.6 Section 4.1
2	Any ongoing landscaping planting will use local native species	Operation	Environmental Manager	Table 4-1
3	Any future landscaping planting will follow correct planting methodologies and installation procedures	Operation	Environmental Manager	Sch3 C54(c) Appendix B
4	Watering of plants to be undertaken as necessary to ensure healthy growth. Application of water will occur through water tanker, hose or handheld can depending on the location and terrain. Avoid watering in the middle of the day to minimise evaporation.	Fortnightly	Certified contractor	Appendix B
5	Plants are to be fertilised at a frequency in accordance with manufacturer's directions	3 monthly intervals unless otherwise specified by manufacturer	Certified contractor	Appendix B
6	Fortnightly inspections will consider the effectiveness of plantings and be used to identify any rectification required to ensure ongoing health of the plants.	Fortnightly	Environmental Manager	Section 5.1
Threatened ecological communities				
7	No vegetation or trees are to be damaged or removed from the conservation area or the riparian habitat area except for approved weed removal.	Operation	Environmental Manager	Sch 3 C59(d) C57 Section 4.2.1 Section 4.2.2
8	Inspect, maintain and repair any damage to the existing fences around the conservation area and riparian habitat	6 monthly intervals during operation	Environmental Manager	Sch 3 C59(d) C57 SoC 4.8.1 Section 4.2.1 Section 4.2.2 EMS

ID	Ongoing Management Measure	Timing	Responsibility	Reference
9	Inspect and remove weeds from the conservation area and riparian habitat	6 monthly intervals during operation	Certified contractor	Sch 3 C59(d) C57 Section 4.2.1 Section 4.2.2 Section 4.3 Appendix C
10	Check perimeter of conservation area and riparian habitat for evidence of rubbish and vegetative waste dumping. Remove waste or notify Blacktown Council for removal	6 monthly intervals during operation	Environmental Manager	Sch3 C57 Section 5.1
11	Stockpiled materials are not to be located in close proximity to the EECs, riparian habitat or any individual native trees on site.	Operation	Site supervisor	SoC 4.8.2 Section 4.2.1 Section 4.2.2 SWLMP
12	Check the perimeter of the for evidence of weed incursion and control any weeds.	6 monthly intervals during operation	Environmental Manager	Sch3 C57 Section 4.3 Section 5.1
13	Riparian monitoring should also be undertaken to check water quality, maintain silt fences and inspect creek beds for evidence of scour and erosion. These should be treated in accordance with the Erosion and Sediment Control Plan (ESCP).	In accordance with the ESCP	Environmental Manager	Sch 3 C59(c)(d) C57 SWLMP
Weeds				
14	Ongoing weed monitoring is to be undertaken to manage and supress those species which pose a potential threat to natural areas and to determine the success of weed control measures.	Quarterly inspections	Environmental Manager	Sch3 C14(a) Section 4.3 Appendix C
15	When undertaking regular monitoring inspections at photo point locations weed observations should be recorded.	6 monthly intervals during operation	Ecologist	Sch3 C14(a) Section 4.3 Appendix C
16	Priority weeds should be removed from both the conservation area and riparian habitat as well as from the rest of the site area.	Fortnightly inspections	Environmental Manager	Sch3 C14(a) Section 4.3

ID	Ongoing Management Measure	Timing	Responsibility	Reference
				Appendix C
17	Property boundary is to be inspected to monitor for unauthorised dumping of vegetation waste which could contain weed materials and pose a biosecurity risk.	Monthly inspections	Environmental Manager	Sch3 C14(a) & (c) Section 4.3 Appendix C
Pests fauna species				
18	Ensure that pest species, vermin, birds and insects are controlled through maintaining the site in a generally clean and tidy manner. Waste stockpiles are to be covered at the end of each day or in the case of potentially odorous or offensive wastes immediately following disposal at the tipping face.	Daily	Site supervisor	Sch3 C14(a) & (b) C59(d) Section 4.4
19	Waste will be continually compacted to prevent access by vermin	Daily	Site supervisor	Sch3 C14(a) & (b) C59(d) Section 4.4
20	If birds are observed as a problem (greater than 100 at any one time during operating hours), bird scares will be installed	As observed	Site supervisor	Sch3 C14(a) & (b) C59(d) Section 4.4
21	If rats are observed, rat bait will be laid as appropriate	As observed	Site supervisor	Sch3 C14(a) & (b) Sch3 C59(d) Section 4.4
22	Spraying with biodegradable pesticide to reduce insect infestations may also be required with relevant approvals.	As required	Site supervisor	Sch3 C14(a) & (b) Sch3 C59(d) Section 4.4
23	Areas of standing water, where mosquitoes may breed, must be eliminated unless they constitute an operational facility such as a leachate collection facility, sediment basin or clean water runoff holding facility.	Operation	Site supervisor	Sch3 C14(a) & (b) C59(d) Section 4.4 SWLMP
24	Proper fencing and closure of gates will ensure there is no unauthorised dumping of wastes on the site which could attract vermin.	Operation	Site supervisor	Sch3 C14(a) & (b) Sch3 C59(d) Section 4.4

ID	Ongoing Management Measure	Timing	Responsibility	Reference
25	Inspect property for potential European Rabbit and European Fox scats and shelter habitats (burrows) and employ control techniques as required.	As observed	Site supervisor	Sch3 C14(a) & (b) Sch3 C59(d) Section 4.4
26	Property boundary is to be inspected to monitor for unauthorised rubbish dumping which could attract pest species	Fortnightly inspections	Site supervisor	Sch3 C14(a) & (b) Sch3 C59(d) Section 4.4 Section 5.1

5 MONITORING AND REVIEW

5.1 Monitoring Requirements

Monitoring of landscaped vegetation, conservation areas, weeds and pest species will be conducted as required by this LVMP and the Condition of the Project Approval. Monitoring requirements relevant to the LVMP are summarised in **Table 5-1**.

Table 5-1: Monitoring requirements

Monitoring Focus	Area/Location	Responsibility	Frequency
Transect and photo monitoring	Conservation area and riparian habitat	Certified ecologist	Every 6 months
Weed monitoring	Whole site	Site Operations Manager	Fortnightly inspections
Weed monitoring	Conservation area and riparian habitat	Certified ecologist	Every 6 months
Fencing	Conservation area and riparian habitat	Site Environmental Officer	Every 6 months
Maintaining landscape planting	Amenity berms, roads and around OSD basins	Certified contractor	Annually
Riparian quality monitoring	Riparian habitat	Site Environmental Officer	In accordance the ESCP

5.1.1 Monitoring Criteria

The Site Operations Manager (or delegate) will monitor the site daily to ensure both conservation areas are secure and fencing will be monitored six-monthly to check for damage and potential vandalism. As discussed in **Section 4.2.1** and Section 2.13.3 of the EMS, the conservation area is enclosed with stock fencing and locked gates. Any identified remedial actions will be promptly addressed.

Monitoring of the conservation areas and the riparian corridor will be undertaken in accordance with this LVMP.

Site inspections are conducted by the Site Operations Manager (or their delegate) and the inspection results recorded on the inspection form. Any non-conformances are to be recorded on the inspection form.

In the event of a non-conformance, the Site Operations Manager and the Site Environmental Officer are to investigate the cause of the non-conformance and recommend corrective and/or preventative action. The effectiveness of the corrective and/or preventative action is to be assessed by analysis of the next available monitoring results and during the next monthly site inspection.

Training of staff and contractors will include weeds, pest species and vegetation management and importance of the conservation areas (refer to **Section 3.5**).

All records will be held and maintained as part of the electronic version of the EMS.

Incidents and complaints are detailed in **Section 5.5** and **Section 5.6** of this LVMP.

5.2 Environmental Auditing

Auditing will be undertaken in accordance with the Safety, Environment and Quality (SEQ) Management system and CoPA requirements as outlined within the overarching EMS.

Auditing applicable to this LVMP is summarised in **Table 5-2**.

Table 5-2: Environmental Auditing Requirements

Requirement	Area/Location	Responsibility	Frequency	Ref
Independent 3rd party audit	LVMP	External Independent Auditor	Annually	MP_06 0139

5.3 Reporting

Reporting requirements for monitoring, auditing and as required in the CoA will be undertaken in accordance with the overarching EMS. Reporting requirements applicable to this LVMP is summarised in **Table 5-3**.

Table 5-3: Environmental reporting requirements

Requirement	Area/Location	Responsibility	Frequency
Monitoring reports	Conservation area and riparian habitat	Environmental Manager NSW	Every 6 months

5.4 Review and Continuous Improvement

Review and improvement of this plan will be undertaken in accordance with the Conditions of PA and Section 6.6 of the EMS. Continuous improvement will be achieved by the ongoing evaluation of environmental management performance and effectiveness of this plan against regular environmental auditing, environmental policies, objectives and targets.

The updated plan and a summary of changes will be available on site and distributed to all relevant stakeholders in accordance with SEQ Management System document control procedure.

5.5 Incidents

In the event of a safety / environmental incident or unpredicted impacts relating to waste and resource recovery operations, it is the responsibility of all personnel to report the incident or event to the Site Operations Manager.

All environmental incidents are to be reported and managed in accordance with *Incident Reporting and Management Procedure (SOP- SEQ001)*. Incidents are classified based on the incident's severity as shown in Section 4.7 of the EMS.

All incidents will be managed and reported according to Section 4.7.2 of the EMS.

5.6 Complaints

Complaints may be received directly from stakeholders, or indirectly via the dedicated phone number, website. Complaints handling will be undertaken in accordance with Section 4.6 of the EMS.

5.7 Non-Compliance, Non-Conformances and Corrective Actions

Non-compliance may be identified via internal and external audits, site monitoring, inspections and observations, environmental incidents and emergencies, complaints and management reviews.

Non-compliance, non-conformances and resulting corrective actions are to be managed in accordance with Section 6.3 of the EMS.

6 REFERENCES

- Abel Ecology (2009): *Vegetation Management Plan for Light Horse Business Centre*, Archbold Road, Eastern Creek Lot 2 DP 262213, Lot 1 DP 400697, Lot 9 DP 241859 and Lot W DP 419612, Proposed Resource Recovery and Landfill Facility.
- AMBS (2002) *Eastern Creek Precinct Flora and Fauna Study*. Report to Blacktown City Council.
- Ashby, E. (2006) *Guiding Ecological Principles and Constraints*, Lot 2 DP 262213, Lot 1 DP 400697, Lot 9 DP 241859 and Lot W DP 419612, Blacktown LGA. Unpublished report, Keystone Ecological
- DPI. *NSW WeedWise*. Accessed October 2020. < https://weeds.dpi.nsw.gov.au/>
- DPIE (2020) *Environmental Management Plan Guideline: Guideline for Infrastructure Projects.* Reference DOC20/277703
- ERM (2008) *Light Horse Business Centre, Volume 1: Environmental Assessment Report.* Reference: 0088621. Environmental Resources Management Australia, Pyrmont. And associated modifications
- Greater Sydney Local Land Services (2019) *Greater Sydney Regional Strategic Weed Management Plan 2017-2022*.

APPENDIX A FACILITY OVERVIEW

LEGEND

- Eastern Creek Recycling Ecology Park boundary
- Conservation zone
- Amenity berm
- Green and timber waste
- Material processing centre (MPC)
- Pre-sort enclosure
- Segregated stockpile area
- Property boundary
- Site access road
- Internal road
- Watercourse

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Coordinate System: GDA 1994 MGA Zone 56
Date issued: February 2, 2021
Aerial imagery source: nearmap Dec 2020

Appendix A - Site Layout

APPENDIX B GENERAL GUIDELINES FOR LANDSCAPE PLANTING

General Guidelines for Landscape Planting

<table>
<tr><th>Treatment</th><th>Description</th></tr>
<tr><td>Management of amenity berms</td><td>

Assess potential need for mechanical stabilisation of embankments of the amenity berms to prevent soil erosion or movement
When necessary, embankments will be stabilised using a proprietary geotextile fabric suitable and fit for the purpose of embankment stabilisation
Any incidents of erosion will be rectified promptly and when necessary
An external geotechnical engineer will be engaged to provide expert advice if required
General mitigation for unexpected stabilisation requirements are:

Compaction of loose exposed berm surfaces
Installation of sediment fencing
Installation of geofabric or jute mesh
Application of hydroseed or sterilised rye grass
Application of native perinatal flora species for long-term control

</td></tr>
<tr><td>Plant selection</td><td>

All landscape planting will utilise native species appropriate to the local area
Plants will be selected with reference to the Blacktown Creek Regeneration and Revegetation Project as well as Blacktown Council’s plans for the Cumberland Plain Woodland
Plants will be sourced locally (where possible)
Recommended native species suitable for rehabilitation works at the site, and examples of relevant groundcover species are provided further below

</td></tr>
<tr><td>Planting methodologies</td><td>

A summary of the most likely methodologies which will be considered for areas requiring landscaping and rehabilitation is provided below:

<table>
<tr><td></td><td>Native grasses</td><td>Hydroseeding</td></tr>
<tr><td></td><td>Native grasses and groundcover</td><td>Combination of hydroseeding and matrix planting</td></tr>
<tr><td></td><td>Native aquatic emergent plants</td><td>Matrix planting</td></tr>
</table>
</td></tr>
<tr><td>Hydroseeding</td><td>

Hydroseeding is a technique which involves the hydraulic application of a blend of water, seed, fertiliser and stabilising factors
This method can be used to revegetate large areas more quickly and cost effectively than direct seeding methods and can be particularly useful in areas which are difficult to access such as on steep slopes (i.e. on the upper extents of the amenity berms)
The hydroseeding mixture will be determined in consultation with the specialist contractor engaged to complete the work
For consistency, consideration should be given to the application rates of seed mixture, fertilizer, mulch and water prepared by Abel Ecology (October 2009):

</td></tr>
</table>

<table>
<tr><th>Treatment</th><th>Description</th></tr>
<tr><td>Hydroseeding</td><td>
<table>
<tr><td></td><td>Native grasses certified as local provenance only</td><td>5-10 kg/Ha or to rate recommended by supplier</td></tr>
<tr><td></td><td>Defibrated pinus radiata fibre or approved equivalent</td><td>1,500-2,000 kg/Ha or to rate recommended by supplier</td></tr>
<tr><td></td><td>To suit native grasses</td><td>250-500 kg/Ha or to rate recommended by supplier</td></tr>
<tr><td></td><td>Bituminous emulsion or approved equivalent</td><td>250-500 kg/Ha or to rate recommended by supplier</td></tr>
<tr><td></td><td>Suitable to the site conditions</td><td>Sufficient to assist in the distribution of the seed, fertilizer and mulch.</td></tr>
</table>
</td></tr>
<tr><td>Matrix Planting</td><td>

Matrix planting involves a technique of planting a variety of species in an interconnected manner which attempts to replicate natural vegetation patterns and form a self-sustaining ecosystem. Generally, few larger plants are scattered throughout a greater number of smaller ground-cover matrix plants
The species variety achieved from matrix planting encourages biodiversity, improves soil stability and fertility, naturally supresses weeds and conserves water
Tube stock for matrix planting will have the following characteristics:

Large healthy root systems, with no evidence of root curl, restriction or damage
Vigorous, well established, free from disease and pests, of good form consistent with the species or variety
Hardened off, not soft or forced, and suitable for planting in the natural climatic conditions prevailing at the site, and in particular shade conditions
Grown in their final containers for not less than twelve weeks
Containers shall be free from weeds and of appropriate size in relation to their container.

The species identified on the Landscaping Plans for use in the matrix planting technique are:

Pennisetum alopecuroides
Lomandra fillformis
Hardenbergia violacea

Matrix planting should particularly be considered on the lower slopes of the berms adjacent to the road verge

</td></tr>
<tr><td>Plant installation</td><td>

Appropriate plant installation techniques will be used to ensure successful growth of plants.
The following technique is recommended when installing tube stock for matrix planting:

Planting will not occur in unsuitable weather conditions such as extreme heat, cold, wind or rain. The planting substrate will be dry or slightly moist and occur in sandy soils.
Do not vary the plant locations from those shown on the drawings unless otherwise directed.
For tree plantings, excavate a hole to twice the diameter of the root ball and at least 200 mm deeper than the root ball. Break up the base of the hole to a further depth of 100 mm, and loosen the compacted sides of the hole to prevent confinement of root growth.

</td></tr>
</table>

Treatment	Description
	– Thoroughly water the plants before planting, immediately after planting, and as required to maintain growth rates free of stress. No plant material shall showsigns of water stress at any time. – When installing the plant, remove the plant from the container with minimum disturbance to the root ball. Ensure that the root ball is moist and place it in its final position, in the centre of the hole and plumb, and with the topsoil level of the plant root ball level with the finished surface of the surrounding soil. All plants are to be positioned in the centre of the hole. – In planting beds and individual plantings, apply fertiliser pellets, as recommended in the soil testing results and in accordance with the manufacturer's recommendations around the plants at the time of planting. Provide proprietary fertilisers, delivered to the site in sealed containers displaying manufacturer or vendor's name, weight, fertiliser type, N:P:K ratio , recommended uses and application rates. – Backfill the planting holes with topsoil mixture. Lightly tamp and water to eliminate air pockets. Ensure the topsoil is not placed over the top of the root ball, so that the plant stem remains the same height above the ground as it was in thecontainer. – Any failed plants will be replaced within two weeks of observation. A "failed" plant may not mean complete death of soft tissue but failure due to poor growth, appearance, or unacceptable time for plant to re-establish new growth following damage or vandalism. Replacement plants shall be in a similar size and quality and identical species or variety to the plant that has failed.

Recommended native species suitable for rehabilitation works (and examples)

Native species to be used for landscaping and rehabilitation works

Trees	Shrubs	Groundcovers and grasses	Wetlands (OSD)
Eucalyptus moluccana	*Hardenbergis violacea*	*Patersonia occidentalis*	*Juncus usitatus*
Eucalyptus tereticornis	*Marsdenia viridiflora* subsp. *Viridiflora*	*Pennisetum alopecuroides*	*Carex appressa*
Eucalyptus crebra	*Macrozamia communis*	*Kennedia prostrata*	*Carex polyantha*
Eucalyptus eugenioides	*Hypsela sessiliflora*	*Hardenbergia violacea*	*Persicaria attenuata*
Corymbia maculata	*Acacia implexa*	*Themeda australis*	
Allocasuarina torulosa	*Pimelea spicata*	*Microlaena stipoides*	
Banksia menziesii	*Lissanthe strigosa*	*Lomandra filiformis*	
	Indigofera australia	*Dichondra repens*	
	Acacia pubescens	*Wahlenbergia gracilis*	
	Grevillea juniperina subsp. *Juniperin*		
	Grevillea sericea		

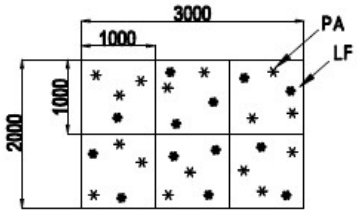
Examples of groundcover species – (A) Microlaena stipoides, (B) Lomandra filiformis and (C) Pennisetum alopecuroides

Recommended Landscape Planting Schedule for Various Degree Slopes

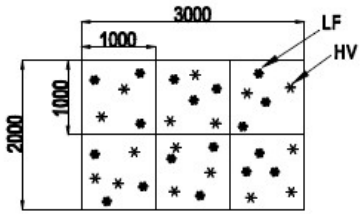
Sourced from Appendix B of the *Amenity Berm Management Plan (DADI,* May 2017)

Plant Schedule(For 1x matrix)					
Code	Botanical Name	Common Name	Approx Mature	Installation Size	Number
	Matrix Plant Type 1.		Height x Weight (m)		
PA	Pennisetum alopecuroides	Purple Fountain Grass	0.8 x 0.6	Tubestock	17
LF	Lomandra Filiformis	Wattle Mat-Rush	0.5 x 0.5	Tubestock	13

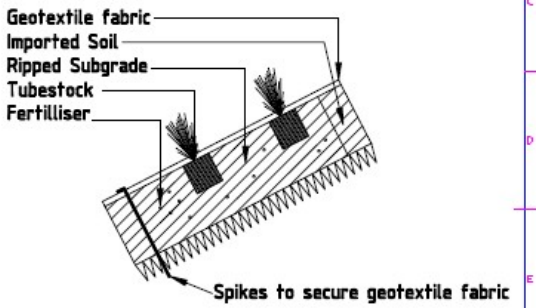
Plant Schedule(For 1x matrix)					
Code	Botanical Name	Common Name	Approx Mature	Installation Size	Number
	Matrix Plant Type 2.		Height x Weight (m)		
HV	Hardenbergia Violacea	Happy Wanderer	3.0 x 1.5	Tubestock	15
LF	Lomandra Filiformis	Wattle Mat-Rush	0.5 x 0.5	Tubestock	18



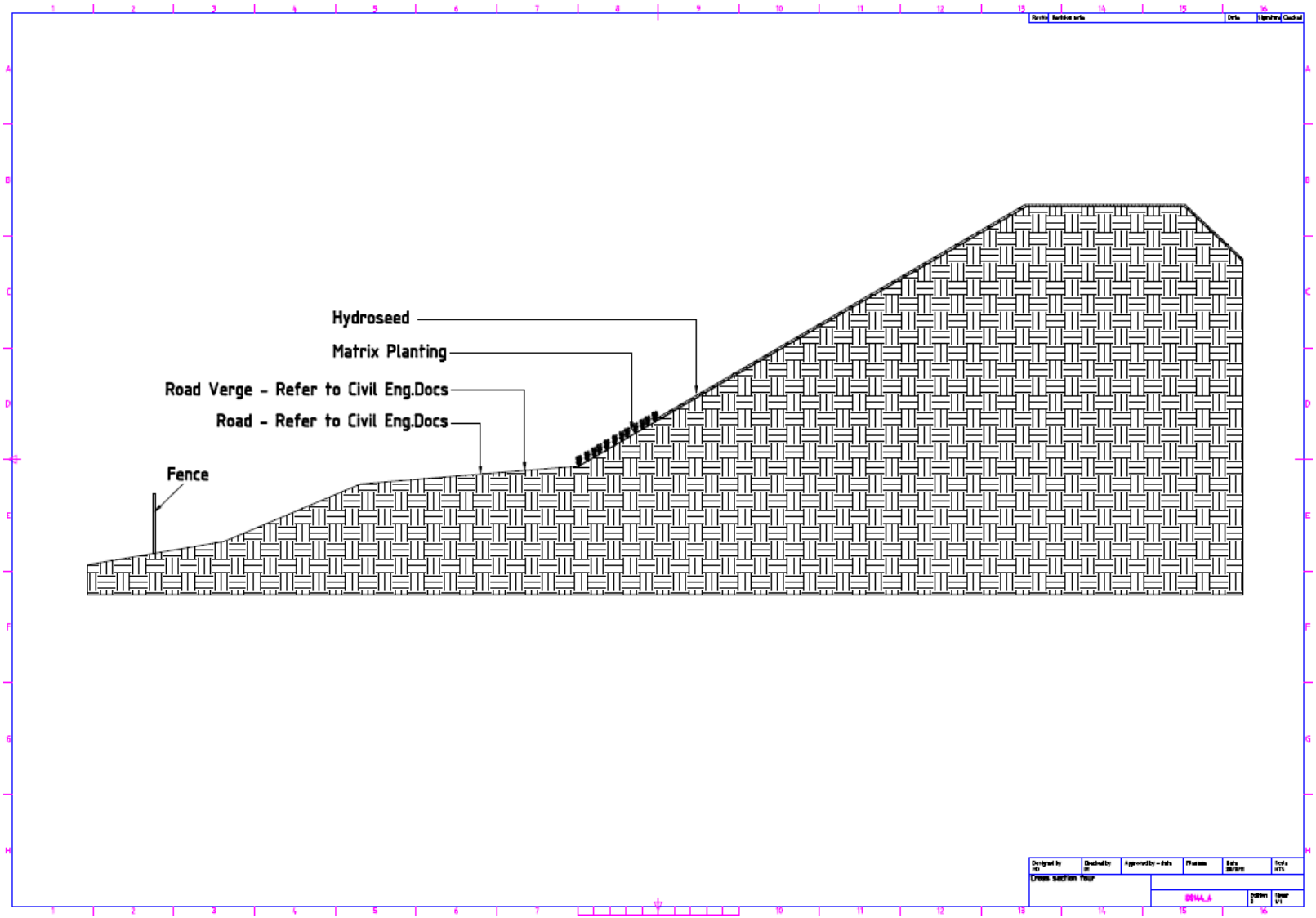
Matrix Planting-Type 1

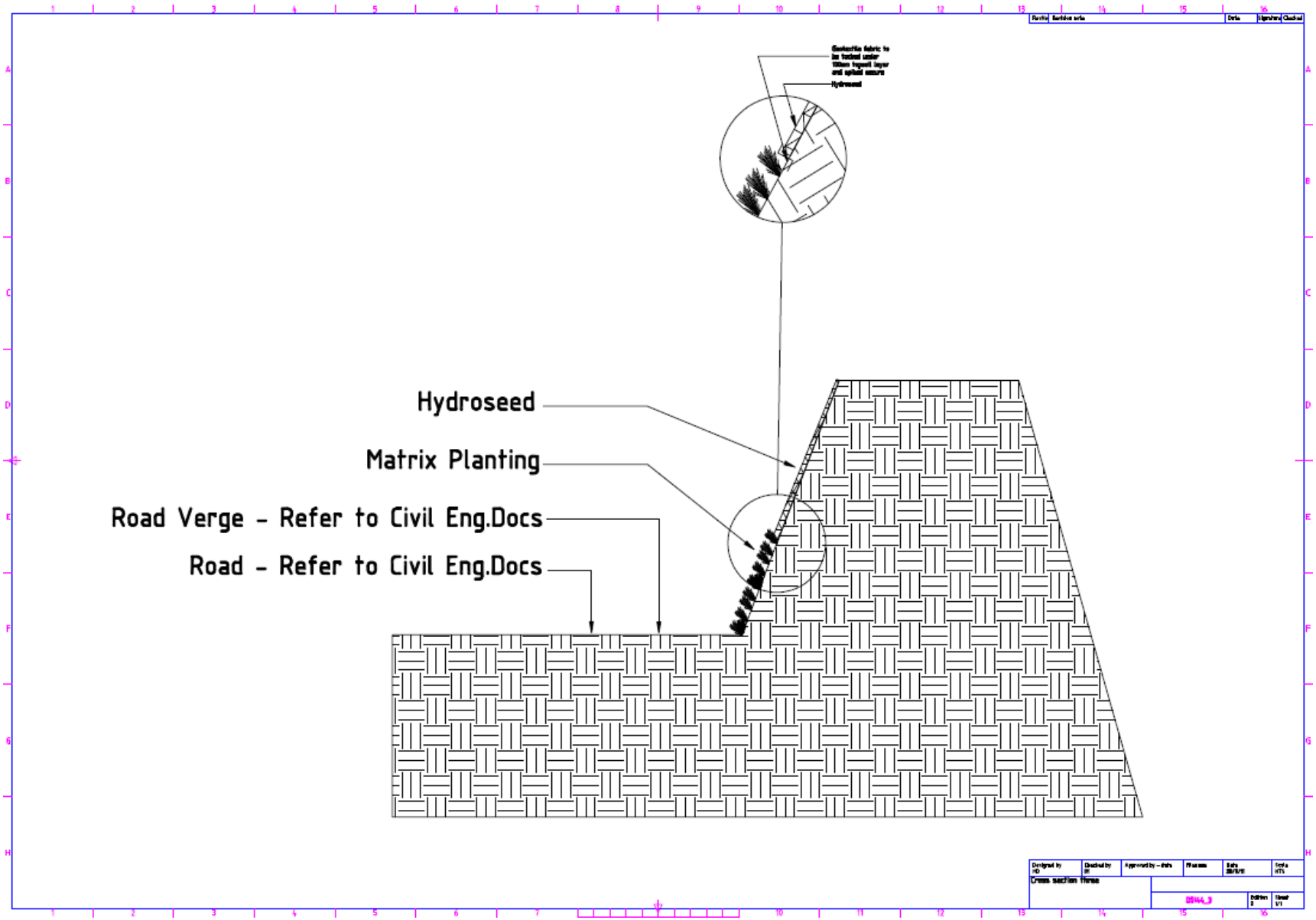


Matrix Planting-Type 2



Typical Matrix Planting


Hydroseed
Matrix Planting
Road Verge - Refer to Civil Eng.Docs
Road - Refer to Civil Eng.Docs
Fence


Hydroseed
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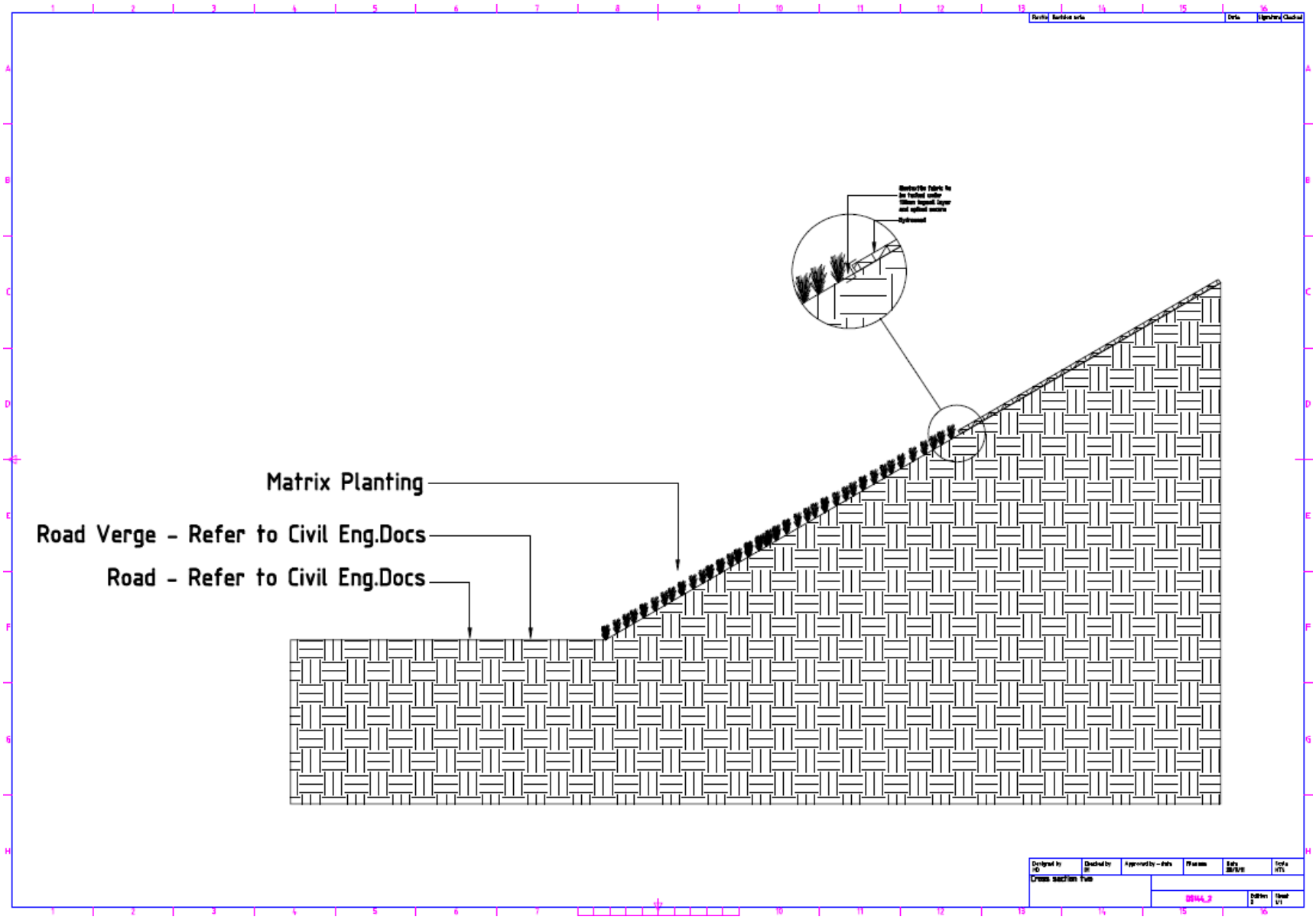
Road - Refer to Civil Eng.Docs


Matrix Planting
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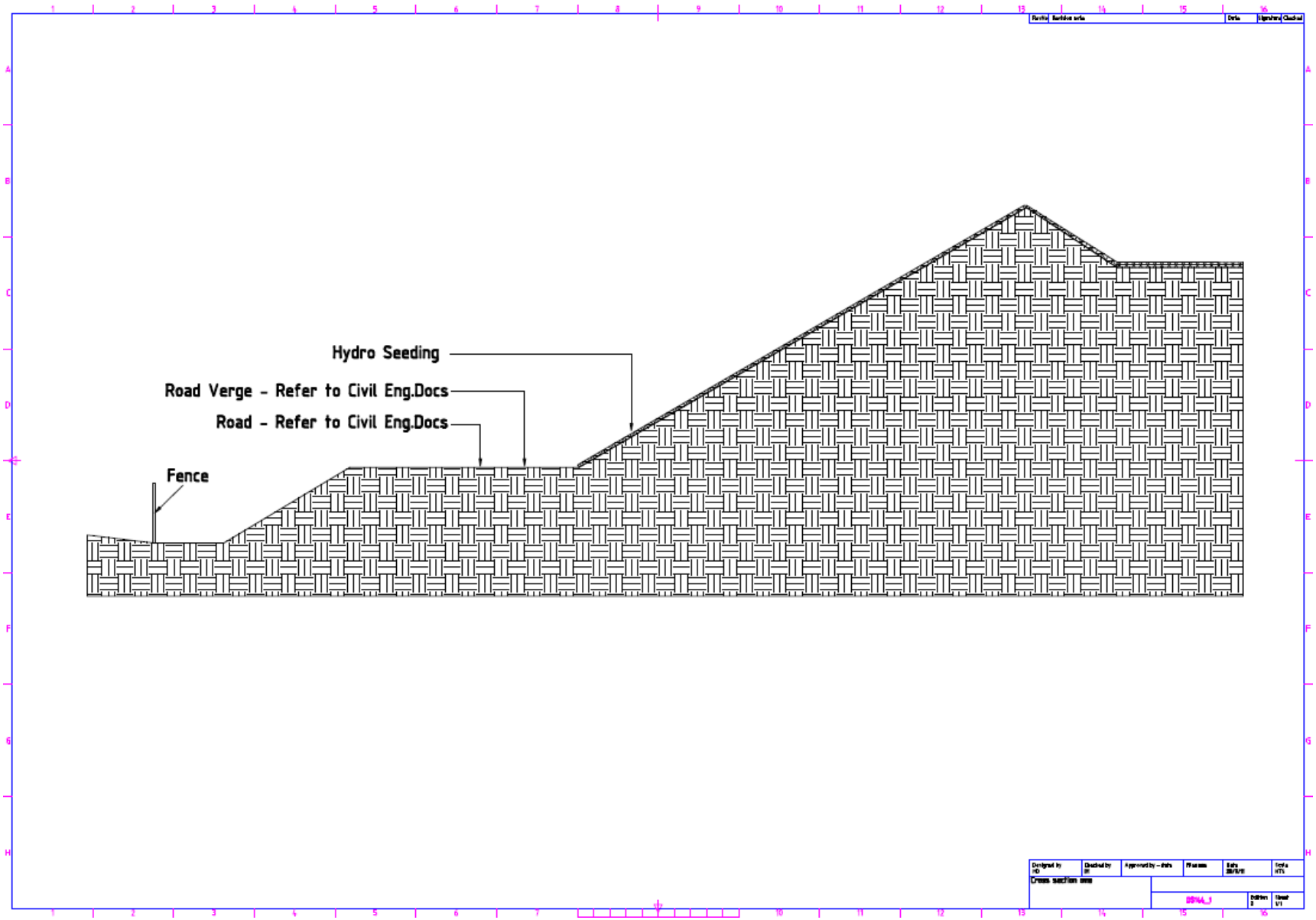
Road - Refer to Civil Eng.Docs


Hydro Seeding
Road Verge - Refer to Civil Eng.Docs
Road - Refer to Civil Eng.Docs
Fence

APPENDIX C GENERAL GUIDELINES FOR WEED CONTROL

Adapted from Appendix 4 of the *Vegetation Management Plan*, prepared by Abel Ecology (October 2009)

General Guidelines for Weed Control

Treatment	Description
General	• Comprehensive treatment of all weeds in an area is to be carried out prior to planting. • Maintenance weeding of all areas is to be carried out prior to seed set. • All weed propagules are to be bagged and removed from site.
Herbicide use	• The manufacturers' safety and application directions must be followed at all times. Contractors are required to obtain all necessary approvals and complete all necessary notifications before using herbicides, particularly near waterways.
Hand Removal	• The removal of weeds by hand is the preferred method and is most suitable for the removal of seedlings, herbaceous weeds, and many grasses. • Always place seeds and or fruit into a plastic bag before pulling out the rest of the plant. • Dispose of the contents of the bag and the plant off-site to avoid the further spread of the weed. • Wherever possible take advantage of favourable seasonal conditions, e.g. work after good rain when soil moisture conditions allow for easier removal.
Treatment of weeds with underground reproductive parts	• The most effective treatment for weeds with underground reproductive parts is to carefully dig up the entire plant with all tubers, bulbs and corms intact. • The reproductive parts must then be bagged and removed from site. • Spraying with herbicide can be employed where no native species are present. • This will kill above ground vegetative growth and some underground reproductive parts but subsequent hand removal of the remaining underground parts is often necessary. • Spraying with herbicide is most effective between flowering and seed set.
Treatment of exotic vines	• Most exotic vines can either be dug up by hand or sprayed with herbicide to remove vegetative growth above the ground and then followed up with hand removal of re-shooting nodes.
Treatment of exotic grasses and herbs	• Most exotic grasses and herbs can be hand removed or 'crowned' with a knife. • Where no native species are present they can be sprayed with diluted herbicide. • The slashing of tall herbaceous weeds and the spraying of regrowth can also be used to reduce the amount of herbicide used. • Debris from slashing will contain weed propagules and must be raked up and removed from site. • Some exotic grasses and herbs can be extremely difficult to eradicate by hand removal. • It is important that these species are controlled prior to planting, as the ability to spray herbicide after planting will be greatly reduced.

Treatment	Description
Cut and paint treatment for woody weeds	• The following cut and paint treatment is appropriate for most woody weeds: – Woody weeds are to be cut as close to the ground as possible and at an angle horizontal to the ground to prevent herbicide running off the stump. – Undiluted herbicide must be applied to the stumps immediately. – On large stumps only the outer (sapwood) rim of the stump requires poisoning • Debris from woody weeds that is capable of re-shooting (e.g. Small Leaf Privet) must never be left in contact with the ground. • Such debris is either to be removed from site or piled on temporary 'rafts' until dead.
Scrape and poison treatment for woody weeds	• Scrape and poison treatment is required for weeds where relatively small stem diameters do not permit enough herbicide to penetrate large rootstock for cut and poison treatment to be effective. – Long scrapes are to be made with a knife along either side of each stem to expose the sapwood. – Care must be taken not to scrape around the entire stem. – Undiluted herbicide is to be applied to scrapes immediately. – Plants must then be left *in situ* until dead.
Herbicide injection of large trees	• Herbicide injection of large trees must, ideally, occur during periods of active growth (Spring). • For deciduous trees treatment must occur between late Summer and early Autumn to ensure an effective 'take-down' of herbicide. • Only adequately trained and experienced personnel are permitted to carry out this procedure to ensure safe and effective treatment. – Holes are to be drilled into the base of the tree trunk at 10 cm intervals, evenly spaced around the entire trunk and at a downwards angle to hold the herbicide. – Holes must be drilled to penetrate the phloem (sapwood) of the tree and no further. – Herbicide must be applied to the holes immediately after drilling. – Injected trees must be left undisturbed for at least six months to ensure an effective 'kill'