

Landscaping and Vegetation Management Plan

For Woodlawn Bioreactor

Document Code: PLA-NSW-XXX-XXX-1

Date: 25.08.2016

Veolia Australia and New Zealand NSW Resource Recovery – Woodlawn Bioreactor Cnr Unwin and Shirley Streets Rosehill NSW 2142 www.veolia.com.au

Tel: 02 9841 2500



Page 2 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

Landscaping and Vegetation Management Plan

QUALITY INFORMATION

Document Revision Register

Rev	Revision Details	Prepared by	Review By	Authorised By	Date
1	Initial draft for internal review	Stephen Bernhart NSW Resource Recovery Project Manager	Ramona Bachu NSW Environment Officer		30 March 2016
Signatures		5. Bernhast	Harh		
2	Final draft for submission to DPE	Stephen Bernhart NSW Resource Recovery Project Manager	Ramona Bachu NSW Environment Officer	Henry Gundry Woodlawn Facilities Manager	14 April 2016
Signatures		5. Bernhast	Harh	they	
3	Revision 1 with OEH comments	Stephen Bernhart NSW Resource Recovery Project Manager		Stephen Bernhart NSW Resource Recovery Project Manager	25 August 2016
Signatures		5. Bernhast		5. Bernhast	



Page:	
Document:	
Date:	

Page 3 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

PLAN

Landscaping and Vegetation Management Plan

Contents

Quality In	formation	1	2
Definition	s/Abbrev	iations	4
Section 1	Introduc	tion	5
	1.1 1.2 1.3 1.4	Overview Scope and Objectives Legal and Other Requirements Stakeholder Consultation	5 6
Section 2	Goals of	the LVMP	9
	2.1	Roles and Responsibilities	9
Section 3	Existing	Environment and Operational Impacts	10
	3.1 3.1.1 3.1.2 3.1.3 3.1.4 3.1.5 3.1.6 3.1.7 3.2	Existing Environment. Existing Landscape Existing Vegetation. Existing Fauna. Pest and Weed Management . Tree Planting Programs. Mine Site Rehabilitation. Exposure of Heritage Items. Predicted Landscaping and Vegetation Impacts .	10 10 11 11 12 12 13
Section 4	Landsca	ping and Vegetation Management Measures	.14
	4.1 4.1.1 4.1.2 4.1.3 4.1.4 4.1.5 4.1.6 4.1.7	Landscaping Control Measures Maintain existing visual screening Protection of topsoil resources Continue tree planting programs Complete inspections and maintenance of flora and fauna Continue existing pest management practices Rehabilitation of defined areas at the Eco-Project site Consultation with National Parks and Wildlife Service	14 14 15 15 15
Landscap	ing and V	egetation Monitoring and Reporting	16
Reference	4.2 4.3 4.4 4.5	Monitoring Program Performance Reporting and Review Exceedances and Corrective Actions Publishing of Monitoring Data	16 16 16



Page:	
Document:	
Date:	

Page 4 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

Landscaping and Vegetation Management Plan

Definitions/Abbreviations

AEMR	Annual Environmental Management Report		
COC	Conditions of Development Consent		
CLC	Community Liaison Committee		
DA	Development Application		
DPE	NSW Department of Planning and Environment		
EA	Environmental Assessment		
EP&A	Environmental Planning and Assessment (Act and Regulations)		
EPA	NSW Environment Protection Authority		
EPL	Environment Protection Licence		
GDR	Great Dividing Range		
ha	Hectares		
Heron	Heron Resources Limited Pty Ltd		
km	Kilometres		
LVMP	Landscaping and Vegetation Management Plan		
mAHD	Metres Australian Height Datum		
MOP	Mining Operations Plan		
NIMS	National Integrated Management System		
NPWS	NSW National Parks and Wildlife Service		
PA	Project Approval – Woodlawn Expansion Project (10_0012)		
POEO	Protection of the Environment Operations (Act and Regulations)		
RIVO	Incident and Compliance Management System		
SHEQ	Safety, Health, Environment & Quality		
SML20	Special (Crown & Private Lands) Mining Lease 20		
TADPAI	Tarago and District Progress Association Incorporated		
tpa	Tonnes per annum		
Veolia	Veolia Australia and New Zealand		



Page:	
Document:	
Date:	

Page 5 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

Landscaping and Vegetation Management Plan

Section 1 Introduction

1.1 Overview

PLAN

Veolia Australia and New Zealand (Veolia) own and operate the Woodlawn Eco Project Site (the Eco Project Site), which is located in the Southern Highlands of NSW, approximately 250 kilometres (km) South West of Sydney.

The Eco Project Site consists of two properties on approximately 6,000 hectares (ha) of land, namely Woodlawn and Pylara and includes the area of the Special (Crown & Private Lands) Lease 20 (SML 20), encompassing the Woodlawn Mine, a former lead, copper and zinc mine which ceased mining operations in 1998. The first stage of the Eco Project Site developed by Veolia was the Woodlawn Bioreactor (the Bioreactor), which commenced operations in September 2004 and is located in the void of the former Woodlawn Mine.

The Bioreactor has considerable capacity to receive putrescible waste generated from both Sydney and surrounding areas of regional NSW. On the basis of this, a modification application was sought by Veolia to remove the arbitrary annual waste input limits into the Bioreactor, and in response to the *Wright Corporate Strategies' Public Review – Landfill Capacity and Demand* (the Wright Review, 2009). The Wright Review was an independent review commissioned by the Minister for Planning to examine critical issues such as the continuing need for putrescible waste landfill capacity and demand.

On 16 March 2012, the Department of Planning and Environment (DPE) granted approval for the Bioreactor to increase its annual maximum input rate from 500,000 tonnes per annum (tpa) to 1,130,000 tpa, referred to hereon as the expanded operations.

This Landscaping and Vegetation Management Plan (LVMP) has been prepared in accordance with the regulatory requirements pertaining to the Bioreactor. This plan details potential impacts on vegetation and visual amenity from landscaping from Veolia's operations and details the relevant mitigation measures to be undertaken to minimise the chances of the impacts occurring. This plan incorporate pest, vermin and noxious weed management measures.

1.2 Scope and Objectives

The objective of the LVMP is to document how Veolia intend to manage landscaping and vegetation, including pest, vermin and noxious weeds, at the Bioreactor so that any potential impacts from Veolia's operations are minimised.

The key goals of the LVMP are to:

- Facilitate compliance with the relevant State legislations, regulations and/or approvals.
- Detail measures to minimise vegetation loss at the Bioreactor
- Detail measures to enhance vegetation through tree planting at the Eco-Project site
- Detail landscaping at the Bioreactor, with consideration of visibility from public vantage points
- Detail ongoing maintenance and rehabilitation at the Eco-Project site.



Page:	Page 6
Document:	PLA-N
Date:	25.08.2

Page 6 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

Landscaping and Vegetation Management Plan

The management strategies detailed within the LVMP shall be reviewed in accordance with condition 9 of schedule 7 of the conditions of the Woodlawn Expansion Project – Project Approval.

1.3 Legal and Other Requirements

The following regulatory framework applies to this LVMP:

- Project Approval Woodlawn Expansion Project (10-0012) issued under the Environmental Planning and Assessment Act 1979 (PA)
- Environment Protection Licence 11436 issued under the Protection of the Environment Operations (POEO) Act 1997 (EPL)
- Water Access Licence: Willeroo Borefield (# 40BL106422-106425)
- Licence to Operate an Onsite Sewerage Treatment Plant Goulburn Mulwaree
 Council
- Development Consent (DA-31-02-99) issued under the Environmental Planning and Assessment Act 1979 (DA)

1.3.1 Project Approval 10-0012

The relevant conditions of consent (COC) from the PA are provided in Table 1.1.

Relevant COC	Requirement	LVMP Reference
FLORA AN	D FAUNA	
23	 Vegetation Management Plan The Proponent shall prepare and implement a Landscaping and Vegetation Management Plan for the Landfill. This plan must: (a) be prepared in consultation with OEH and NOW by a suitably qualified and experienced expert; (b) be approved by the Director-General prior to the commencement of expanded operations; (c) include measures to minimise such vegetation loss and additional tree planting to offset this loss; (d) detail any landscaping treatments at the Landfill, with particular attention to minimising the visibility of the site/s from residences and public vantage points; (e) describe the on-going maintenance regime for rehabilitation and vegetation management in the rehabilitation area/s. This plan must be documented in the Landfill EMP (see condition 3 in schedule 7). 	3.1.5 4.1.1 4.1.4
24	Pest, Vermin & Noxious Weed Management The Proponent shall: (a) implement suitable measures to manage pests, vermin and declared noxious weeds on site; and (b) inspect the site on a regular basis to ensure that these measures are working effectively, and that pests, vermin or noxious weeds are not present on site in sufficient numbers to pose an environmental hazard, or cause the loss of amenity in surrounding area. <i>Note: For the purposes of this condition, noxious weeds are those</i> <i>species subject to an order declared under the Noxious Weed Act 1993.</i> These measures must be documented in the Landfill EMP (see condition 3 in schedule 7).	3.1.4, 4.1.5 5.1



Page:	Page 7 of 19
Document:	PLA-NSW-XXX-XXX-1
Date:	25.08.2016

Landscaping and Vegetation Management Plan

1.3.2 Veolia's Statement of Commitments

No statement of commitments made by Veolia are relevant to the LVMP.

1.3.3 Development Consent (DA-31-02-99)

The relevant COC from the development consent are provided in Table 1.2. Where conditions are similar to the PA, the PA takes precedence.

Relevant COC	Requirement	LVMP Reference
149	The Applicant shall prepare a Landscaping and Vegetation Management Plan for both the Waste Management Facility and Intermodal Facility sites. The Plan shall be prepared by a suitably qualified person and shall address, but not be limited to, the following matters: (a) details of likely vegetation loss, means to minimise such loss and additional tree planting to offset this loss; (b) proposed plant species; and (c) details on landscaping treatment at the intermodal facility site, with particular attention to minimising the visibility of the facility from residences and public vantage points.	Refer to PA (Sch 4 Cond 23)
150	The Plan shall be prepared to the satisfaction of the Director-General and Council and shall be submitted at least three months prior to the commencement of landfilling operations	Noted
153	FLORA AND FAUNA Terrestrial Flora and Fauna The Applicant shall consult with NPWS on measures to conserve the population of the vulnerable orchard (<i>Diuris aequalis</i> – Buttercup Doubletail) in retained natural woodland on land within the Woodlawn mine site that is subject to the DA or areas potentially affected by the operation of the waste management facility.	4.1.7
154	Aquatic Flora and Fauna The Applicant shall consult NSW Fisheries prior to the commencement of any works (including, but not limited to channel realignment, dredging, reclamation, culverts, road crossings, pipelines and weirs) in or adjacent to aquatic habitats.	Noted
155	The Applicant shall undertake all practicable measures to maintain and, where possible, enhance existing habitat features in the Mulwaree River and Crisps Creek, including gravel beds, riffles, pools, snags and aquatic and riparian vegetation.	Noted
156	The Applicant shall, in consultation with NSW Fisheries, ensure that the bridge from the Intermodal Facility over Mulwaree River is designed so that fish passage, instream flow and stream bed continuity are maintained.	Noted
157	Non-Aboriginal Heritage In the event that any items potentially of non-Aboriginal heritage significance are identified on the subject land during the carrying out of works, the Applicant shall arrange for a suitably qualified archaeologist to inspect the item/s, determine the level of significance of the item/s and advise on appropriate management measures	3.1.7

Table	1.2 –	DA	Conditions
Iabio			00110110110

1.3.4 Environment Protection Licence

No relevant conditions from EPL 11436 are relevant to the LVMP.



Page:	Page 8
Document:	PLA-NS
Date:	25.08.2

Landscaping and Vegetation Management Plan

Page 8 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

1.4 Stakeholder Consultation

Veolia is committed to meaningful stakeholder engagement and has worked in Veolia is committed to meaningful stakeholder engagement and has worked in collaboration with relevant government agencies and the local community in the township of Tarago since the commencement of operations of the Bioreactor to resolve issues that impact local environmental amenity, as a result of operations at the Bioreactor.

1.4.1 <u>Government Agencies</u>

The following government agencies have been consulted with in association with the operations of the Bioreactor pertaining to leachate management:

- NSW Environment Protection Authority;
- NSW Department of Primary Industries Water (NSW Office of Water).

1.4.2 <u>Community Consultation</u>

Veolia has formed a Community Liaison Committee (CLC), which acts as an interface between the residents of Tarago and Veolia to proactively resolve issues that potentially impact on local amenity from operations at the Bioreactor.

The key objectives of the communication and consultation program include:

- Educating stakeholders regarding key aspects of the Bioreactor; and
- Informing community groups and neighbours to help Veolia understand concerns.

Community consultation activities include:

- A dedicated Veolia webpage, offering general information on the Bioreactor;
- A community telephone line to provide a central point of contact for community enquiries;
- Proving regular updates in the local newspaper, Tarago Times, which is nonprofit community service, published monthly by the Tarago Sporting Association Inc. It is distributed throughout Tarago, Lake Bathurst, Mayfield, Boro, Taylors Creek and the surrounding district.

Active participation in the Tarago and District Progress Association Incorporated (TADPAI), which is a community group aimed at promoting the district and assisting the community in the development and maintenance of a rural lifestyle.



Page:	
Document:	
Date:	

Page 9 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

Landscaping and Vegetation Management Plan

Section 2 Goals of the LVMP

The goals of the LVMP are:

- Detail the vegetation that exists at the Bioreactor
- Detail how vegetation is to be protected during operations at the Bioreactor
- Detail tree planting and re-vegetation programs
- Detail landscaping to screen the Bioreactor from public vantage points
- Detail maintenance measures related to rehabilitation and vegetation management
- Detail measures taken to control and minimise pests and vermin
- Detail programs to control and minmise noxious weeds

2.1 Roles and Responsibilities

Table 2.1 outlines the responsibilities of Veolia personnel with respect to leachate management.

Action	Responsibility
Overall implementation of the LVMP	Woodlawn Facilities Manager and Operational Personnel
Implement measures to protect vegetation	Woodlawn Facilities Manager and Operational Personnel
Manage revegetation and tree planting programs	Woodlawn Environmental Officer
Implement and maintain landscaping actions	Woodlawn Facilities Manager and Operational Personnel
Undertake maintenance measures to rehabilitated and vegetated areas	Woodlawn Facilities Manager / Woodlawn Environmental Officer / Operational Personnel
Implement pest and vermin control measures	Woodlawn Facilities Manager / Woodlawn Environmental Officer
Implement programs to control noxious weeds	Woodlawn Facilities Manager / Woodlawn Environmental Officer
Identify non-conformances and notify Facility Manager/ Safety Health Environment Quality (SHEQ) Representative	Woodlawn Environmental Officer / Operational Personnel
Authorise and confirm the implementation of mitigation measures	Woodlawn Facilities Manager
Liaise with government agencies and regulators,	Woodlawn Facilities Manager / Woodlawn Environmental Officer

Table 2.1 – LVMP Responsibilities

PLAN



Page 10 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

PLAN

SECTION 3 Existing Environment and Operational Impacts

3.1 Existing Environment

The footprint of the Bioreactor will not change as a result of the expansion operations. All operations associated with the proposal will take place in areas that have been previously disturbed by mining activities. The areas have been surveyed and all vegetation has been previously assessed in a flora and fauna study completed for the original Environmental Impact Statement. Therefore, no additional impacts on Indigenous cultural heritage or on flora and fauna are projected.

3.1.1 Existing Landscape

The average elevation of the Woodlawn Site is approximately 800 metres above Australian Height Datum (mAHD), with a range in elevation from 760 mAHD in the north-east corner of the Site to 1000 mAHD along the ridgeline of the Great Dividing Range (GDR). The region generally comprises rolling undulating pastoral plains with the GDR running through the Site in a north–south direction.

The Bioreactor and immediate surrounds are comprised steep slopes and remnant embankments resulting from mining activities. The Bioreactor is shielded from view by a series of trees running along the Eco-Project boundary along Collector Road (Figure 1).



Figure 1: View of Bioreactor at entrance from Collector Road

3.1.2 Existing Vegetation

Vegetation within the Bioreactor is highly fragmented with large expanses of cleared land surrounding predominantly isolated remnants along the rocky ridges and roadsides.

Derived Grassland is the most abundant vegetation community, particularly on the mid to lower slopes and areas of the valley floor containing rocky and shale loam soils. Vegetation is dominated by a variety of exotic and native pasture grasses, and has been significantly modified by historical earth movement and agricultural activities, including clearing, grazing and pasture improvement through the introduction of exotic and non-endemic grasses.

A summary of existing vegetation at the Bioreactor includes:

- No vegetation is present within the footprint of the Bioreactor, the power station or at Evaporation Dam 3.
- The former waste rock dump located approximately 200 metres to the south of the Bioreactor has been rehabilitated and comprises a low woodland of native and introduced species of grasses, shrubs and small trees.



Page:	l
Document:	
Date:	1

Page 11 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

Landscaping and Vegetation Management Plan

- An area immediately to the east of the rehabilitated waste rock dump comprises a relatively undisturbed low woodland dominated by small trees and grasses.
- The office area is a landscaped area with thick coverage of grass surrounding footpaths through to the office building. Major tree species include *Banksia ericifolia* and a number of species of Eucalypt.
- Serrated Tussock is present on the Eco-Project site but has not been detected at the Bioreactor.
- Plans showing the location and species list of vegetation within the project approval area are as per the plans the original plans developed for the Bioreactor (Appendix A).

3.1.3 Existing Fauna

Due to the sparse vegetation, the Bioreactor is unable to support a diverse range of grassland reptiles, mammals and does not attract many native birds. A summary of fauna encountered within the Bioreactor area include:

- Eastern Tiger Snake (Notechis scutatus)
- Red-bellied Black Snake (Pseudechis porphyriacus)
- Eastern Brown Snake (Pseudonaja textilis)
- Eastern Grey Kangaroo (Macropus giganteus)
- Common Wombat (Vombatus ursinus)
- European Red Fox (*Vulpes vulpes*)
- Deer (Cervinae Cervus)
- Black fly (species not identified)

3.1.4 Pest and Weed Management

Existing pest and weed management practices include:

- Establishment of rodent bait traps around the perimeter of the Bioreactor, office, workshop, power station and other buildings. Bait traps are inspected and re-established monthly.
- Spraying of flies within the Bioreactor, as required
- Fox baiting programs occur in surrounding areas to the Bioreactor
- Herbicide is applied to Serrated Tussock on an annual basis

Should new pests be identified onsite, inspections will be implemented to detect if new management measures need to be adopted.

3.1.5 <u>Tree Planting Programs</u>

Veolia undertake vegetation monitoring and tree planting programs at the Eco-Project site. Tree planting aims to increase native species, which in turn creates new habitats for native fauna. Tree planting programs may include the following activities:

- Identification of suitable locations for planting;
- Assessment of existing vegetation and trees;
- Purchase of native saplings;



Page:	Р
Document:	Ρ
Date:	2

Page 12 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

PLAN

Landscaping and Vegetation Management Plan

- Planting of saplings, generally with local volunteer groups
- Funding of tree planting program
- Installation of sapling tubes / tree guards
- Application of fertiliser and/or mulch as required

3.1.6 Mine Site Rehabilitation

Veolia is committed to progressive rehabilitation of the following areas at Woodlawn (as shown in Appendix B):

- Mine void Rehabilitation through landfill
- Plant Area An options assessment has been completed for the rehabilitation of the Plant Area.
- Evaporation Dam 3

Other areas of the mine site are subject to a current development approval by Heron Resources Limited Pty Ltd (Heron). Under the approved development, Heron are proposing to undertake further underground mining and reprocessing over various areas of the mine site. Rehabilitation of other areas, will be the responsibility as identified in Heron Mining Operations Plan (MOP).

3.1.7 Exposure of Heritage Items

In the event potential heritage items or artefacts are uncovered at the site, the following process is followed:

- All works must cease in the immediate vicinity
- The area is demarcated and protected, where appropriate
- A suitably qualified archaeologist is contacted to assess the items / objects and recommend appropriate management measures Any management measures recommended must be approved by DPE

3.1.8 Woodlawn Aquaponics Project

The Woodlawn Aquaponics System is an aquaculture and hydroponic project. This system is accredited with Department of Primary Industries for the sale of fish and is located within a dedicated building opposite the workshop. The aquaponics process includes:

- Growing fish such as Silver Perch and Barramunid within a dedicated tank farm. Fish are distributed by age from fingerling, through to juvenile and adult fish.
- Temperature of the water is optimised for fish growth by utilising heat from the landfill gas power station to maintain water temperature, at 28°C. Water from the tanks is constantly cycled past a heat exchanger to facilitate the heat transfer
- Fish are fed using automatic feeding systems based on timers
- Fish growing tanks are continuously aerated to maintain suitable Oxygen levels for fish growth. Dissolved Oxygen levels are monitored continuously.



Page:	
Document:	
Date:	

Page 13 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

Lands

- Plants are used to filter the water using a 'floating raft' to situate the plants on the water surface. Water is continuously cycled to this tank for nutrient extraction
- Adult fish are sold to market via a wholesaler

3.2 Predicted Landscaping and Vegetation Impacts

No additional impacts on heritage items or on flora and fauna are projected.



Page 14 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

Section 4 Landscaping and Vegetation Management Measures

Mitigation measures that have been incorporated into the operations of the Bioreactor to minimise the risk and consequences associated with the landscaping and vegetation management, including pests, vermin and noxious weeds, are summarised below:

- Maintain existing visual screening
- Protection of topsoil resources
- Continue tree planting programs
- Complete inspections and maintenance of flora and fauna
- Continue existing pest management practices
- Rehabilitation of Bioreactor operational areas
- Consultation with National Parks and Wildlife Service

4.1 Landscaping Control Measures

4.1.1 Maintain existing visual screening

Existing vegetation that provides visual screening of the Bioreactor from Collector Road will be maintained. Inspections of vegetation will be undertaken to identify the health of the vegetation over the life of Bioreactor operations.

4.1.2 Protection of topsoil resources

Where topsoil is available within the Bioreactor operational areas, these areas will be protected and excluded from activities which may cause loss of topsoil, where practical. Vegetation growth in these areas will be encouraged and/or enhanced through planting programs.

4.1.3 <u>Continue tree planting programs</u>

Tree planting programs will continue to be undertaken to enhance native vegetation at the Eco-Project site.

- All planting is installed as tubestock, unless otherwise advised, to increase plant survival and ongoing vigour.
- Planting is undertaken by hand or using small machinery to minimise disturbance to the erodable soils.
- Organic matter is utilised to improve soil fertility and should be dug into the planting area prior to planting. Compost material from the Mechanical Biological Treatment Facility will be considered to assist in this process.
- Application of slow release fertiliser is applied at the time of planting.
- Selection of native plants is completed in consultation with local bushcare/rehabilitation groups and/or Goulburn-Mulwaree Council.



Page:	Page 15 of 19
Document:	PLA-NSW-XXX-XXX-1
Date:	25.08.2016

Landscaping and Vegetation Management Plan

4.1.4 Complete inspections and maintenance of flora and fauna

<u>Flora</u>

Inspection, monitoring and maintenance includes:

- Inspection and maintenance is undertaken frequently for a period of 12 months following establishment of trees in a defined area.
- Ongoing maintenance will be less intensive than the establishment period and will be limited to occasional plant replacement, and slashing the grassed areas to reduce fire hazard and weed proliferation.
- Undertake noxious weed spraying, where required

Fauna

Inspection, monitoring and maintenance includes:

- Undertake rodent baiting programs
- Undertake fox baiting programs

4.1.5 Continue existing pest management practices

Existing pest management practices will be continued. Should pest species be identified at within the bioreactor operational area, a review will be undertaken and pest management practices will be revised as needed.

4.1.6 Rehabilitation of Bioreactor operational areas

Rehabilitation of the mine void through landfilling is a continuous process. Final rehabilitation works shall be completed in accordance with the closure and rehabilitation plan. The areas to be rehabilitated include:

- The Bioreactor
- Plant Area
- Evaporation Dam 3
- Power Station; and
- Office and car park areas

Veolia will consult with OEH on the final rehabilitation plans and plant species to be adopted within the rehabilitation areas, once a suitable rehabilitation design is selected and additional detail is developed.

4.1.7 Consultation with National Parks and Wildlife Service

Veolia consult with National Parks and Wildlife Service (NPWS) where required in relation to threatened species identified and/or for controlling noxious weeds.



Landscaping and Vegetation Monitoring and Reporting

4.2 Monitoring Program

Veolia undertake a monitoring program in accordance with Table 5.1.

Parameter	Monitoring Location(s)	Frequency
Rodent Baiting	Perimeter of Bioreactor Buildings	Monthly
Inspections of flora, including noxious weeds	Bioreactor site	Monthly

Table 0.1 – LVMP Monitoring Schedule

4.3 **Performance Reporting and Review**

All data collected is presented in a consolidated Annual Environmental Management Report (AEMR) which is submitted to DPE, EPA and other relevant stakeholders.

4.4 Exceedances and Corrective Actions

All incidents are investigated, and corrective actions assigned to prevent future occurrences.

An incident may involve any action or activity deemed to be in non-compliance with this LVMP, other management plans as well as actual or potential Material or Serious Environmental Harm.

All incident reporting will be recorded in RIVO, which forms part of Veolia's National Integrated Management System (NIMS).

4.5 Publishing of Monitoring Data

Where required, Veolia publishes the results of any environmental monitoring required under the EPL on the following website:

http://www.veolia.com.au/sustainable-solutions/environmental-compliance/nswenvironmental-monitoring-data



Page: Document: Date: Page 17 of 19 PLA-NSW-XXX-XXX-1 25.08.2016

PLAN

Landscaping and Vegetation Management Plan

References

1. Heron (2014). *Mining Operations Plan*



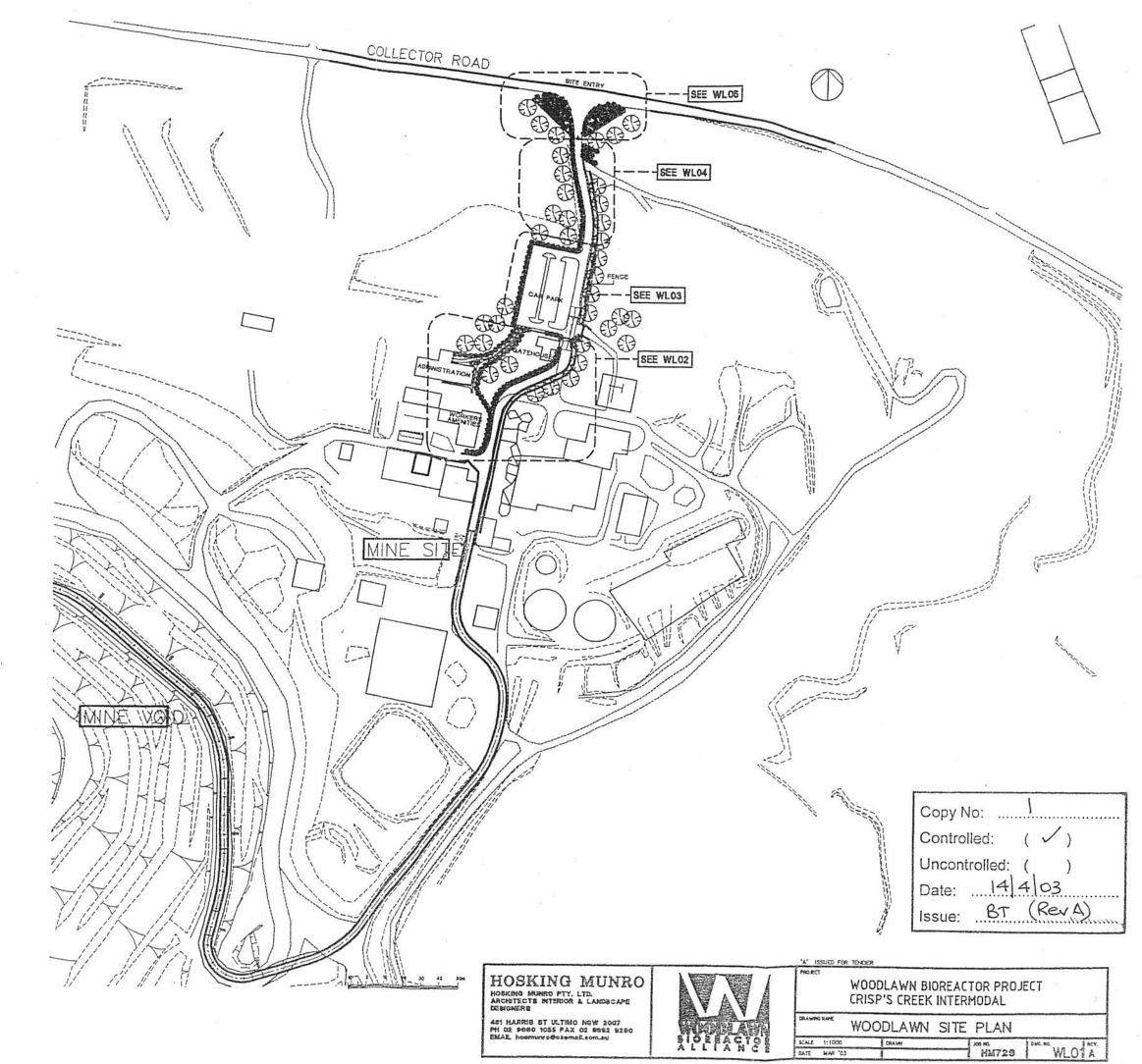
Page:	Page 18 of 19
Document:	PLA-NSW-XX
Date:	25.08.2016

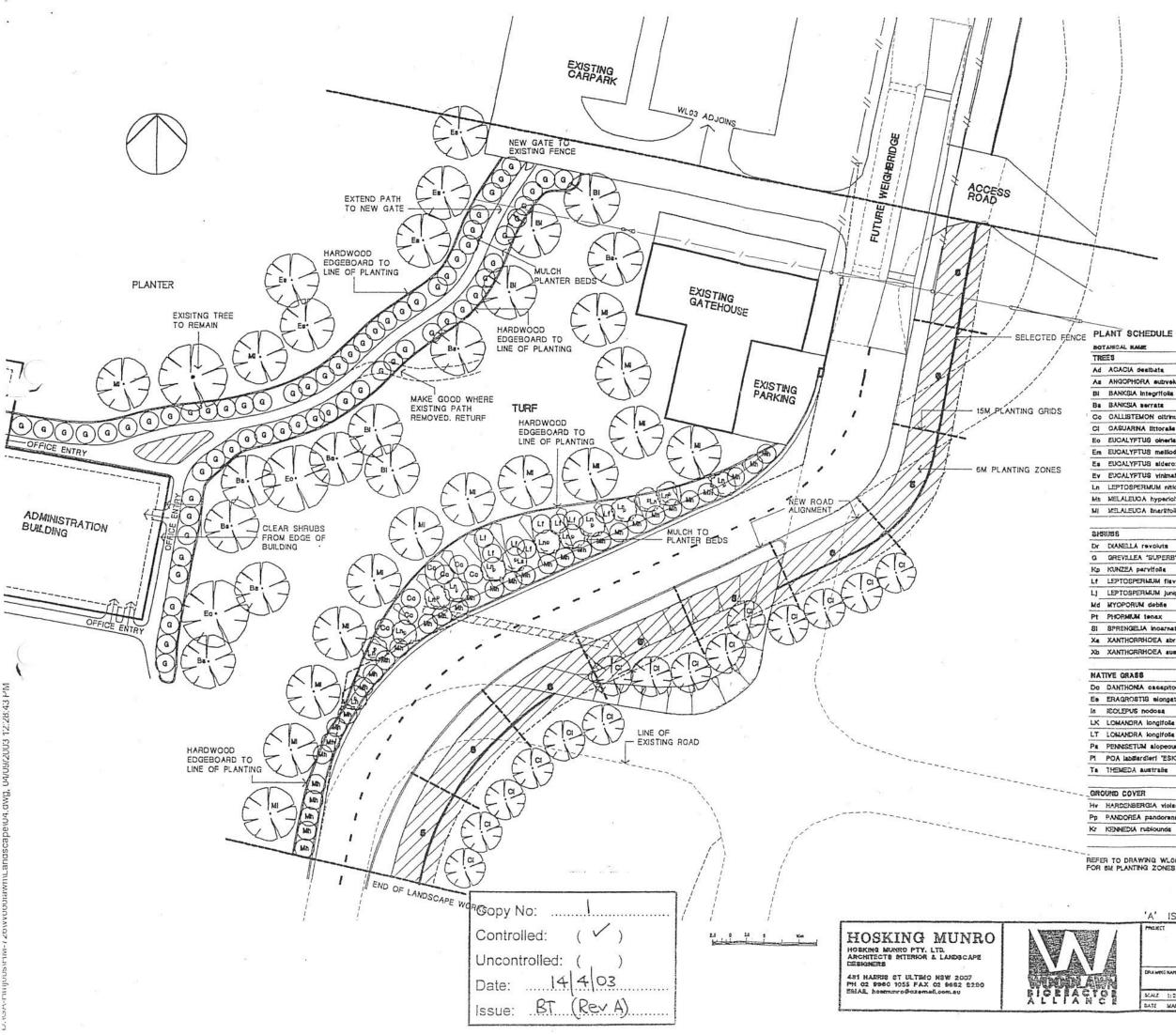
XX-XXX-1

PLAN

Landscaping and Vegetation Management Plan

Appendix A – Existing Vegetation Plans





i			
1			
į			
į			
1			
i			

NOTE PLANT SCHEDULE REFERS TO PLANTINGS ON THIS SECTION ONLY

NATIVE GRASSES: V.T DENOTES VIRO-TUBE - SUPPLIER: ABULK LOT 3 CUPITTS LANE CLARENDON 2766 PH: (02) 4677 5912

H DENOTE SPECIES USED, SPECIES TO BE EVENLY MIXED IN 5M STRIPS EACH.

PLANTING RATES FOR NATIVE GRASSES USING VIRO-TUBE

٨.	7 SQM
B.	18 SQM
C.	& SOM
D.	4 8QM
E.	5 SQM
F.	8 BQM
G.	10 SQM
H	5 SQM

USCAL NAME	COMMON NAME	ADV BUT	NO.	SCRE	BTAKING
8					
ACACIA desibats	SLVER WATTLE	5m x 4m	-	351	x 2
ANGOPHORA subvelutina	BROAD LEAVED APPLE	7m x 5m	-	75L	x 3
BANKSIA Integritolia	COAST BANKSIA	6m x 4m	5	25L	x 2
BANKSIA serrate	SAW BANKSIA	6m x 4m	7	25L	x 2
CALLISTEMON oltrinue	CRIMSON BOTTLEBRUSH	3m x 2m	7	25L	x 2
CASUARINA littorale	BLACK SHE OAK	6m x 3m	16	25L	x 2
EUCALYFTUS oineria	ARGYLE APPLE	7m x 4m	2	75L	× 3
EUCALYPTUS melliodore	YELLOW BOX	12m x 6m	-	75L	x 3
EUCALYFTUS alderoxyton	RED RON BARK	12m x 7m	5	76L	x 3
EUCALYPTUS vinimalie	RIBBON QUM	15m x 8m	1793	75L	× 3
LEPTOSPERMUM nitidum	SHINY TEA TREE	3m x 3m	14	261	x 2
MELALEUOA hyperiolfolia	RED FLOWERING PAPER BARK	3m x 2m	33	25L	x 2
MELALEUCA Inerlitoise	BNOW IN BUIMMER	7m x 4m	15	25L	x 2
	¥ 2			- Maria	-
188					
			1.000		

DIANELLA revoluta	BLUE FLAX LILY	1.5m x 1m	-	200	x	1
GREVILLEA 'SUPERB'	GREVILLEA	tm x tm	67	200	×	1
KUNZEA parvitoña	VIOLET KUNZEA	tm x 1m	-	200	x	1
LEPTOSPERMUM flavesoons	COMMON TEA TREE	2m x 1.5m	8	200	×	1
LEPTOSPERMUM juniperium	PRICKLY TEA TREE	15m x 16m	-	200	×	1
MYOPORUM debite	SPRAWLING MYOPORUM	0.8m × 1m	-	200	x	1
PHORMUM tenax	NZ FLAX	2m x 2m	-	200	x	1
SPRENGELIA Incarnate	PINK SWAMP HEATH	0.5m x 0.5m	-	200	×	1
XANTHORRHOEA abrores	FOREST GRASS TREE	2m x 1m	-	200	×	1
XANTHORRHOEA australia	AUSTRAL GRASS TREE	1.5m x 1m	-	200	x	1

DANTHONA oscepitosa	WALLABY GRASS			٨	VT	•	
ERAGROSTIS siongets	ELVERA LAVENDER GRASS		聚	в	VT		
ECLEPUS nodosa	KNOBBY CLUB RUSH	-	-	C	VT		
LOMANDRA longitoile "KATRINUS"	SPINY MAT-RUSH	•		D	VT .	-	
LOMANDRA longifolis TANIKA	SPINY MAT-RUSH	-		E	VT	-	
PENNISETUM alopeouroides	SWAMP FOX TAL			F	VT	-	
POA labdardieri "ESKDALE"	BLUE TUSSOCK GRASS	-	聚	G	VT	•	
THEMEDA australia	KANGAROO GRASS	-	崁	н	٧T	•	
5000000							

GROUND COVER Hy HARDENBERGIA violaces 140mm -NATIVE VIOLET -140mm -Pp PANDOREA pandorane WONGA WONGA VINE -Kr KENNEDIA rublound DUSKY CORAL PEA 140mm --

REFER TO DRAWING WLOS FOR PLANTING SCHEDULES FOR BM PLANTING ZONES

MOJECT		1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 -			
	WOODLAWN BIOR	FACTOR PRO IFCT			
	CRISP'S CREEK IN	TERMUDAL			
WOODLAWN ENTRY ROAD PLatettouse					
	WUUDLAWN EP	VIRY ROAD R	LGAREHOUSE		
SCALE 1:250	CRAWK M.V	JOS NO. DWO.	WLO2 A		

PLANT SCHEDULE

BOTANICAL NAME		ICAL NAME COMMON NAME ADV B		NC.	81212	BTAICH
TR	EE8					
Ad	ACACIA dealbata	SLVER WATTLE	6m x 4m	2	361	x 2
Ae	ANGOPHORA subvelutize	BROAD LEAVED APPLE	7m x 6m		75L	x 3
Bł	BANKSIA Integrifolia	COAST BANKSIA	6m x 4m		251	x 2
Be	BANKSIA serrata	SAW BANKSIA	6m x 4m		251	x 2
Co	CALLISTEMON oltrinua	CRIMSON BOTTLEBRUSH	3m x 2m		251	x 2
а	CASUARINA Ittorets	BLACK SHE OAK	6m x 3m		251	x 2
Eo	EUOALYPTUS cineria	ARGYLE APPLE	7m x 4m	3	75L	x 3
Em	EUCALYPTUS melliodora	YELLOW BOX	12m x 6m	4	75	x 3
Es	EUCALYPTUS alderoxylon	RED IRON BARK	12m x 7m	2	75L	x 3
E٧	EUCALYPTUS vinimalia	RIBBON GUM	15m x 8m	1	751	x 3
Ln	LEPTOSPERMUM nitidum	SHINY TEA TREE	3m x 3m		251	x 2
Mh	MELALEUCA hyperiolfolia	RED FLOWERING PAPER BARK	3m x 2m		251	x 2
M	MELALEUCA Institolia	GNOW IN SUMMER	7m x 4m	12	25L	x 2
SHF	1086			-		
Dr	DIANELLA revolute	BLUE FLAX LILY	1.5m x 1m		200	x 1
3	GREVILLEA 'SUPERB'	GREVILLEA	tm x tm		200	x 1
φ	KUNZEA parvifolia	VIOLET KUNZEA	tm x tm	20	200	x 1
.1	LEPTOSPERMUM flavesoens	COMMON TEA TREE	2m x 1.5m	25	200	x 1
1	LEPTOSPERMUM juniperium	PRICKLY TEA TREE	15m x 15m	20	200	x 1
Ad	MYOPORUM debbe	SPRAWLING MYCPORUM	0.8-n x 1m		200	x 1
Pt	PHORMUM tenax	NZ FLAX	2m x 2m		200	x 1
-		the second se	and the second se		Concernance of the local division of the loc	and the second se

 ~~~~~

SI SPRENGELIA Incernate

Xe XANTHORRHOEA abrores

Xb XANTHORRHOEA australia

NA	TIVE ORABB						
Do	DANTHONIA secepitosa	WALLABY GRASS			٨	VT	
Es	ERAGROSTIS elongate	ELVERA LAVENDER GRASS	•	凝	в	VT	
h	ISOLEPUS nodosa	KNOBBY CLUB RUSH			C	VT	
LK	LOMANDRA longitolia 'KATRINUS'	SPNY MAT-RUSH			D	VT	
LT	LOMANDRA longifolia 'TANIKA'	SPINY MAT-RUSH			E	VT	
Pa	PENNISETUM atopeouroides	SWAMP FOX TAL			F	VT	
Pl	POA labliardiari "ESKDALE"	BLUE TUBSOCK GRASS		業	Q	VT	
Te	THEMEDA australia	KANGAROO GRASS	-	新		YT	

PINK SWAMP HEATH

FOREST GRASS TREE

AUSTRAL GRASS TREE

0.5m x 0.5m - 200 x 1

1.5m x 1m - 200 x 1

2 m x 1m -

200

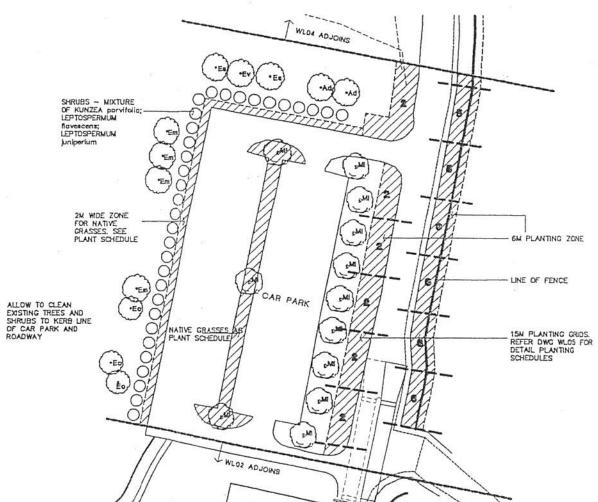
x 1

#### GROUND COVER

Hv	HARDENBERGIA violaces	NATIVE VIOLET		140mm	
Pp	PANDOREA pandorana	WONGA WONGA VINE		140mm	
Kr	KENNEDIA rubiounda	DUSKY OORAL PEA		14 0mm	

NOT	TE PLANT SOHEDULE REF SECTION ONLY	ERS TO PLANTINGS ON THIS
NAT	TVE GRASSES	
V.T	DENOTES VIRO-TUBE -	SUPPLERI ABULK LOT 3 CUPITTS LANE CLARENDON 2766 PH (02) 4577 5812
滋	DENOTE SPECIES USED. IN SM BTRIPS EACH.	SPECIES TO BE EVENLY MIXED
PLA	NTING RATES FOR NATIVE	GRASSES USING VIRO-TUBE
٨.	7 804	
	15 BOM	
	6 BOM	
	4 BQM	
	5 BOM	
	5 SQM	
	10 5QM	
H.	5 SQM	

REFER TO DRAWING WLOS FOR PLANTING SCHEDULES FOR 6M PLANTING ZONES



#### 8 0 8 10 15 30 35m

# HOSKING MUNRO HOBELIKG MUNRO PTY. LTE. ARCHITECTS INTERIOR & LANDRCAPE DEBNGNERS

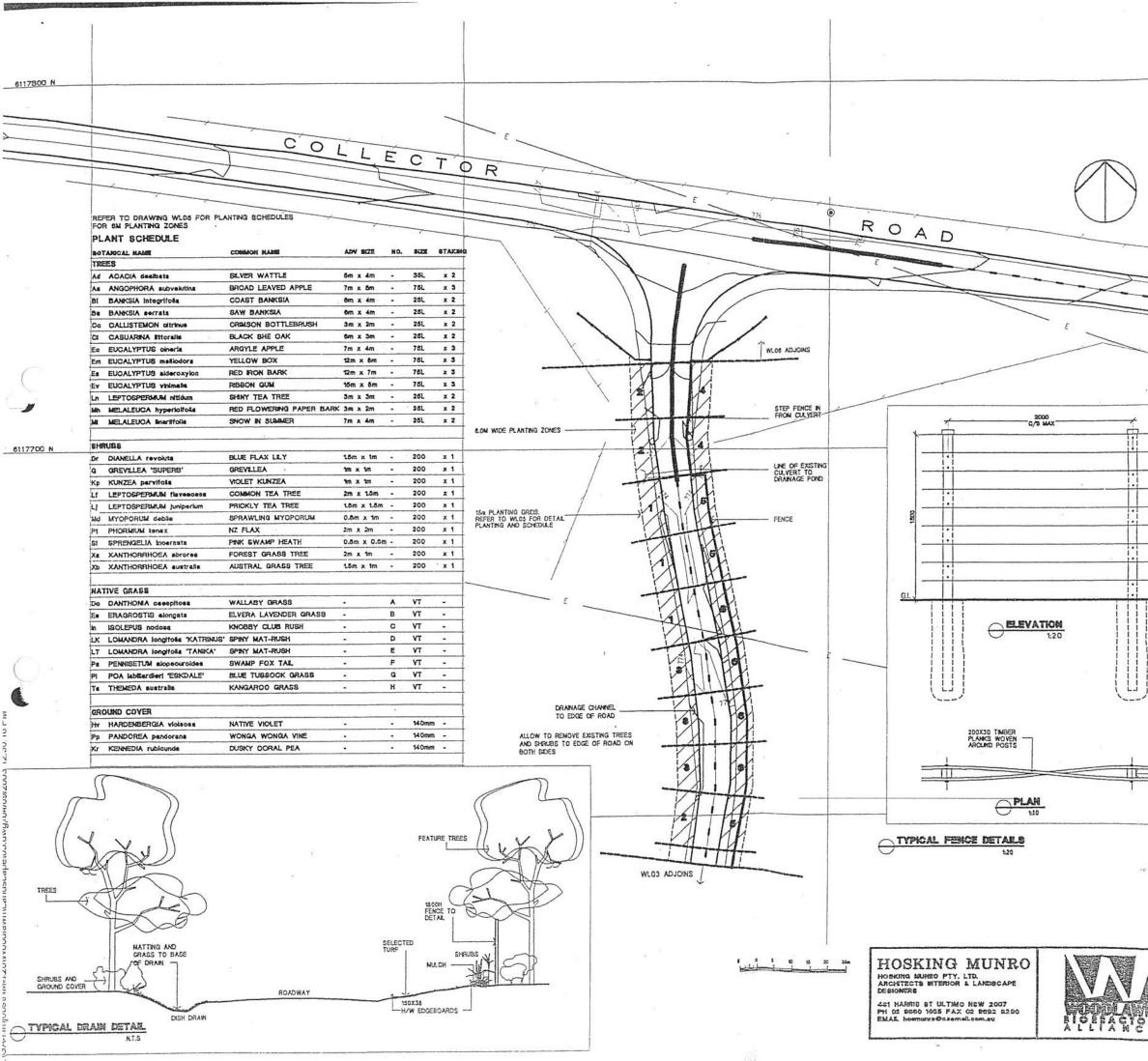
481 HARRID ST ULTIMO NSW 2007 PH 02 9860 1065 FAX 02 8682 5290 EMAIL heiminro@ozemail.com.sv



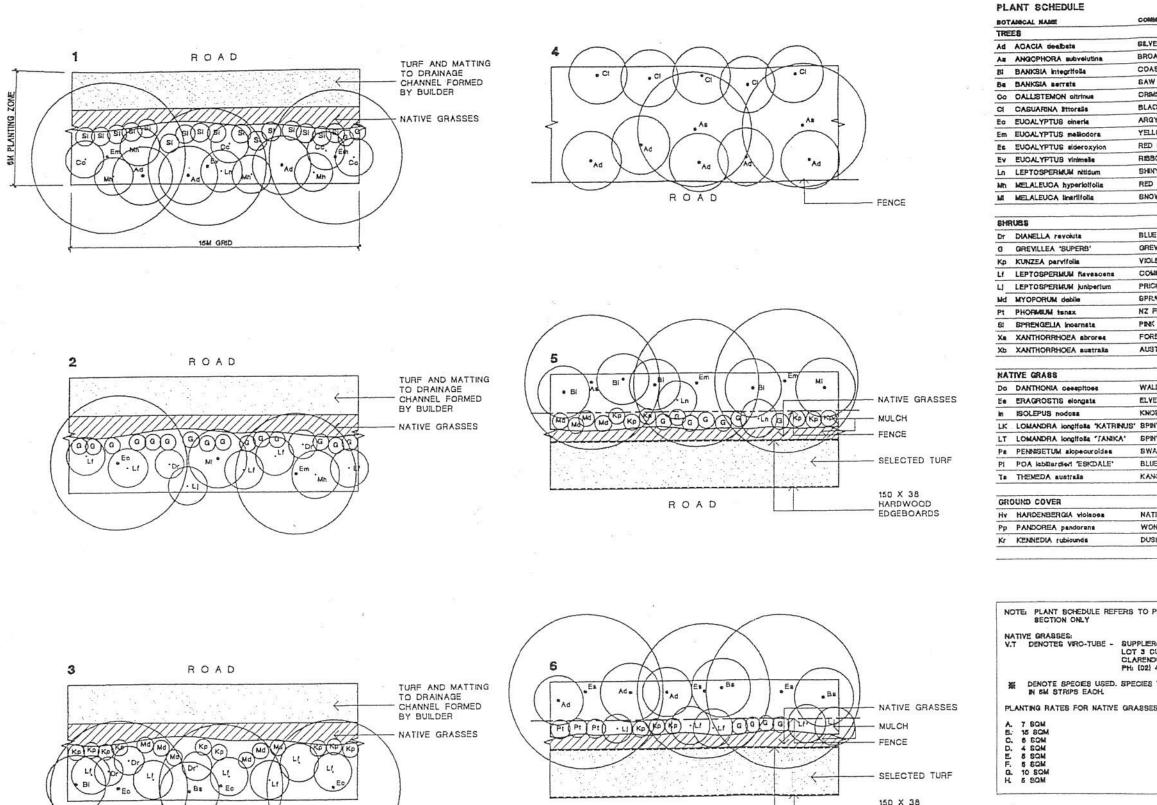
í,	1	c	1
	۱	F,	•

Copy N Contro		( )	/ )	
Uncon		(	)	
Date:	14	40	3	
Issue:	BT	(Re	(A V.	

	PROJECT					
		WOOD	AWN I	BIORFAC	TOR PROJ	FCT
1				K INTER		
		LRISP	SLKED	IN INTER	MUDAL	
And in case of the local division of the loc	DRAWING NAME	CAR	PAR	C PLAN	1	
1	SCALE 1: 500		DRAWK N	.v	JOD NO	DWG NO
					1 HM726	



	NOTE: PLANT SOMEDULE REFERS TO PLANTINGS ON THIS SECTION ONLY
4	NATIVE GRABSES:         V.T       DENOTES VERO-TUBE - SUPPLER: ABULK LOT 3 CUPITTS LANE CLARENDON 2746 PH. (02) 4677 5912         M       DENOTE SPECIES USED. SPECIES TO BE EVENLY MEXED IN 6M STREPS EACH.         PLANTING RATES FOR NATIVE GRASSES USING VIRO-TUBE         A. 7 SOM         B. 15 SOM         C. 6 SOM         D. 4 SOM         E. 6 SOM
	G. 10 SQM H. 5 SCM
	174
,	
	CAPPING CAPPING 2XEDIA GALVANSED BOXITS AT POSITS ( C C C C C C C C C C C C C
10 	C 200X30 TIMBER C 200X30 TIMBE
	POSTS TO BE SET 1000 NTO GROUND MASS CONFIETE FOOTING
100 STE	X100 GALVANISED 2XEDIA GALVANISED EL POSTS BOLTS AT POSTS
	Copy No:
	Controlled: () Uncontrolled: () Date: 14]403 Issue: BT (Rev A)
1	'A' ISSUED FOR TENDER WOODLAWN BIOREACTOR PROJECT
	CRISP'S CREEK INTERMODAL
a la contra de la	DRAVING KAVE WOODLAWN MAIN ENTRY ROAD PLAN SCALL 1: 5000; 1: 20 DRAVIN KLV X08 MC. DATE MAR '03 DWL MA. WLO4 A
	the second s

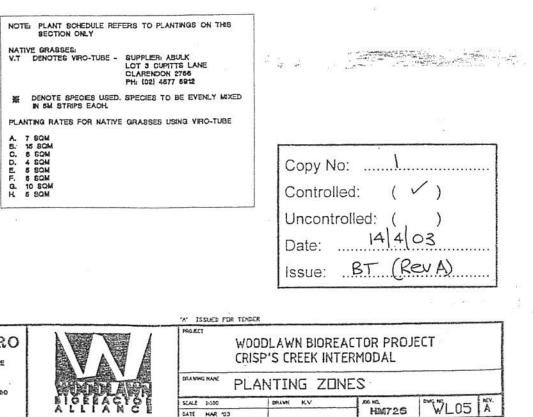


ROAD

HOSKING MUNRO HOSKNG MUNRO PTY. LTD. ARCHITECTS INTERIOR & LANDGCAPE DESIGNERS 451 HARRIS &T ULTIMO NEW 2007 PH 02 SPECI 1052 FAX 02 SES2 5250 EMAL hogmutro@czemall.com.ev

HARDWOOD

EDGEBOARDS



MON NAME	ADY SIZE	1	20	12 H	4	6	6	DIZE	BTAKING
					-		3	36L	x 2
	ôm x 4m	3	-	•	-6	•	-	75L	x 3
	7m x 6m	•	-	-	3	1	-	251	x 2
IST BANKSIA	6m x 4m	-	-	2	•	4	÷		
BANKSIA	6m x 4m	-	-	1	•		3	25L	x 2
SON BOTTLEBRUSH	3m x 2m	4	-	•	•	•	•	26L	x 2
CK SHE OAK	6m x 3m	-	<u>.</u>	•	5	•	•	26L	x 2
YLE APPLE	7m x 4m	•	1	3	-	•	-	76L	x 3
OW BOX	12m x 6m	2	1	•	•	2	•	751	x 3
ROH BARK	12m x 7m	•		•	•	•	3	76L	x 3
ON GUM	15m x 8m	1	-	•	-	•	•	76L	x 3
Y TEA TREE	3m x 3m	1	•	•	•	1	•	25L	x 2
FLOWERING PAPER BARK	3m x 2m	4	1	-	-	•	-	25L	x 2
W IN SUMMER	7m x 4m	•	3	•	•	1	-	25L	x 2
FLAX ULY	1.5m x 1m	-	2	3	-	•		200	x 1
VILLEA	tim x tim	2	15			7	4	200	x 1
ET KUNZEA	1m x 1m			D		8	3	200	x 1
NON TEA TREE	2m x 1.5m	-	5	8			3	200	x 1
KLY TEA TREE	1.5m x 1.5m	-	1		-		- 2 .	200	× 1.
	0.6m x 1m	10.	••	8		1		200	x.1
	2m x 2m	-	-				3	200	x 1
LAX	0.5m x 0.5m		-	-	-			200	x 1
BWAMP HEATH	2m x 1m	-		-	-			200	x 1
EST GRASS TREE	1.5m x 1m	-	-	•	-	-	•	200	x 1
		-	A	٨		٨		VT	
LABY GRASS		B		*B		B	-	VT	
RA LAVENDER GRASS	-	C		素の	-	数0		VT	
BBY CLUB RUSH	•	-		D	-	D	-	VT	
Y MAT-RUSH							新日期日	VT	
Y MAT-RUGH	•	_	業E	_	•			VT	
MP FOX TAL	-		然F			迷F			· ·
TUESOOK GRASS	•	茶G				₩G		YT	· ·
SAROD GRASS	•	祭H	н	Жн	-	ЖH	н	YT	<u>.</u>
IVE VIOLET		-	-	•	-		30	140mm	n -
NGA WONGA VINE	-	-	3	o -			-	14 Omr	n -
KY CORAL PEA	•	-	•	50	) -	20	0 -	140mm	n -

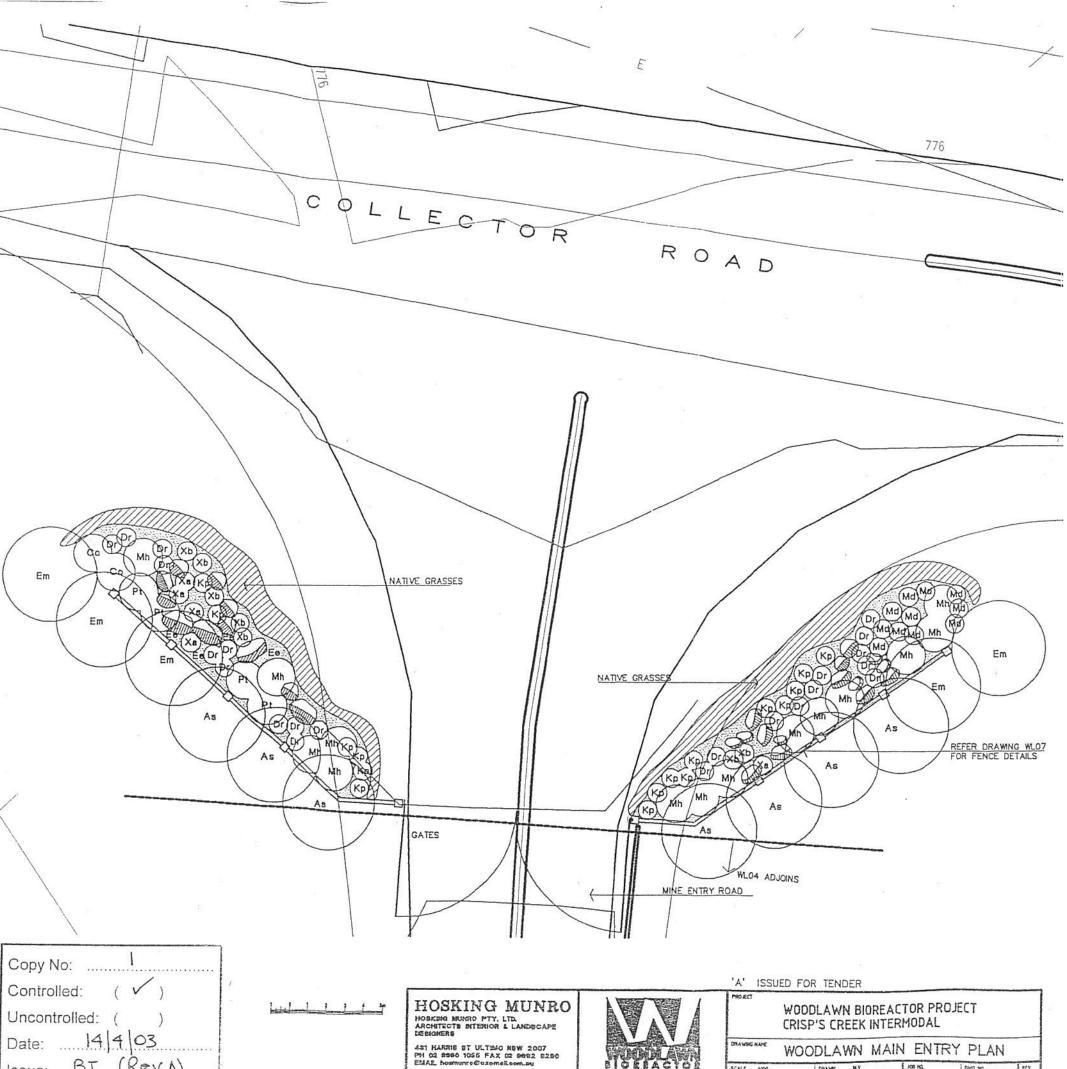
	10		
NOT	E PLANT SCHEDULE REF	ERS TO PLANTINGS ON THIS	
	SECTION ONLY		
NAT	IVE GRASSES		
V.T		CIDOINED, ADIII M	
•••	Faile Les Luce Less	LOT 3 CUPITTS LANE	
		CLARENDON 2756	
		PH (02) 4577 5912	
¥	DENOTE SPECIES USED. IN 5M STRIPS EACH.	SPECIES TO BE EVENLY MIXED	
PLA	TING RATES FOR NATIVE	GRASSES USING VIRO-TUBE	6
Α.	7 801		T
B.	IS SOM		1
D.	5 SQM		
	4 SQM		
	5 SQM		
	MO3 8		
	10 SQM		
	5 SQM		

***	TANKAL NAME	COMMON NAME	ADV BIZE	NO.	BIZE	STA
18	EE8					
Ad	ADACIA desbata	SILVER WATTLE	5m x 4m		351	x 2
As	ANGOPHORA subveluting	BROAD LEAVED APPLE	7m x 5m	7	75L	x 3
BI	BANKSIA Integrifolia	COAST BANKSIA	6m x 4m		251	x 2
Be	BANKSIA serrata	SAW BANKSIA	Om x 4m		251	x 2
Co	OALLISTEMON ottrinus	ORMSON BOTTLEBRUSH	3m x 2m	2	251	x 2
CI	CASUARINA Ittoralis	BLACK SHE OAK	6m x 3m		251	x 2
Eo	EUCALYPTUS oliveria	ARGYLE APPLE	7m x 4m		751	x 3
Em	EUCALYPTUS methodors	YELLOW BOX	12m x 6m	5	751	x 3
Es	EUGALYPTUS sideroxyion	RED IRON BARK	12m x 7m		75L	x 3
Ev	EUCALYPTUS vinimalia	RIBBON GUM	10m x &m		75L	x 3
Ln	LEPTOSPERMUM Nitidum	SHINY TEA TREE	3m x 3m		251	x 2
Mh	MELALEUCA hypericitole	RED FLOWERING PAPER BARK		14	254	x 2
M	MELALEUOA Enartifolis	SNOW IN SUMMER	7m x 4m		251	× 2
SHP	1088					
Dr	DIANELLA revoluta	BLUE FLAX LILY	1.5m x 1m	22	200	x 1
Q	GREVILLEA 'SUPERB'	GREVILLEA	1m x fm	-	200	x 1
Kp	KUNZEA pervitoša	VIOLET KUNZEA	1m x 1m	15	200	x 1
LI	LEPTOSPERMUM flavesoons	COMMON TEA TREE	2m x 1.6m		200	x 1
LJ	LEPTOSPERMUM Juniperium	PRIOKLY TEA TREE	1.5m x 1.5m	-	200	× 1
Md		SPRAWLING MYOPORUM	0.5m x 1m	11	200	× 1
Pt	PHORMUM tenex	NZ FLAX	2m x 2m	4	200	x 1
51	SPRENGELIA incernets	PINK SWAMP HEATH	0.5m x 0.5m		200	
Xa	XANTHORRHOEA abrora	FOREST GRASS TREE	2m x 1m	6		× 1
Xb	XANTHORRHOEA australia	AUSTRAL GRASS TREE			200	x 1
		AUGTRAL GRADA TREE	1.5m x 1m	7	200	× 1
MAT	IVE GRABS				E.	
	DANTHONIA caespitosa	WALLABY GRASS			100	
Ea	ERAGROSTIS elongata	ELVERA LAVENDER GRASS	•	70	-	-
'n	ISOLEPUS nodosa	KNOBBY CLUB RUSH	-		140mm	•
_	LONANDRA longitolia 'KATRINUS'		·	•		•
	LOMANDRA longifolia 'TANKA'	SPINY MAT-RUSH	•	60	140mm	•
	PENNISETUM Biopeouroides	DWILLIS FOR THE	•	100	140mm	•
	POA labilarderi "ESKDALE"			•	•	•
	THEMEDA sustrais			100	140mm	•
18	THEMELOA BUSTTENS	KANGAROO GRASS		70	140mm	•
090	UND COYER					1000
			- Q			
	HARDENBERGIA violacea		•	60	140mm	•
	PANDOREA pandorana KENNEDIA rubiounda	DUSKY CORAL PEA	·	- 30	140mm	•

Issue: BT (Rev A)

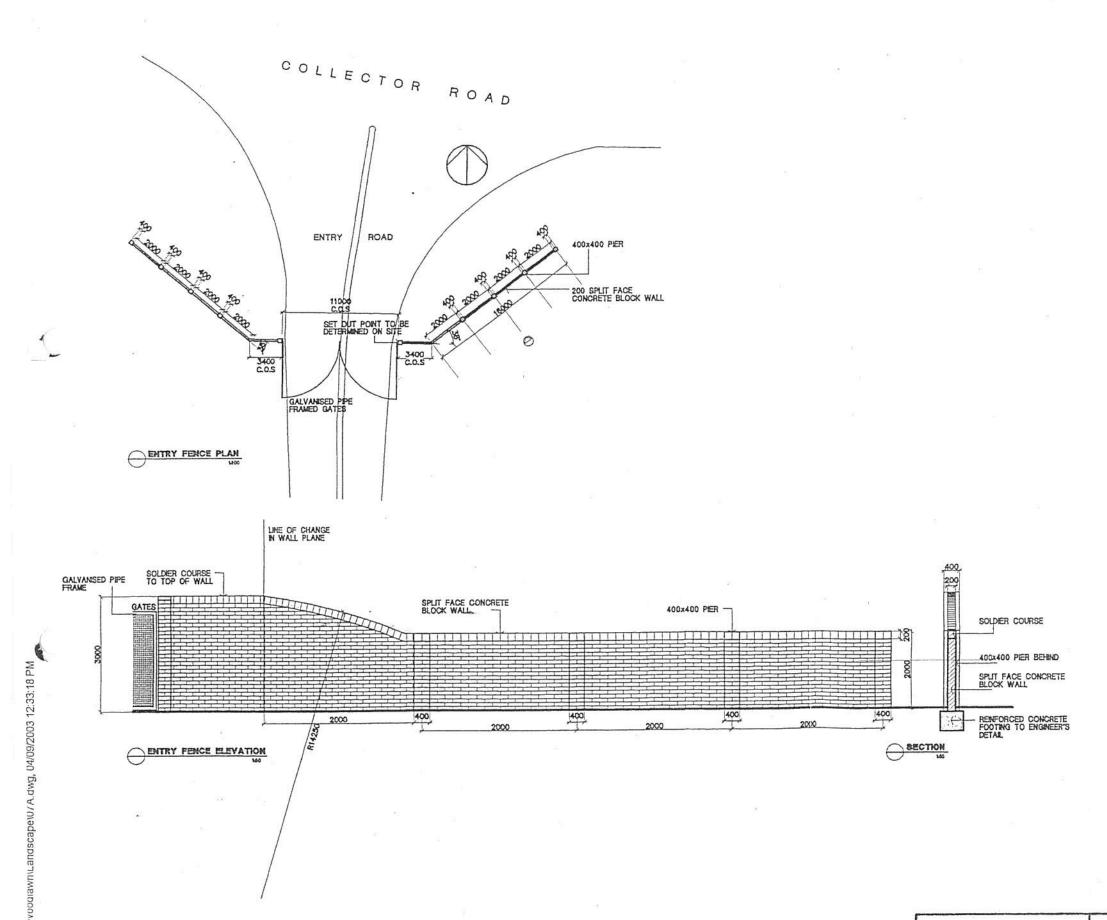
REFER TO DRAWING WLOS FOR PLANTING SCHEDULES FOR SM PLANTING ZONES





ALLIA

WODDLAWN BIOREACTOR PROJECT CRISP'S CREEK INTERMODAL								
DRAWING NAME	WOOD	LAWN	MAIN	ENTRY	PLAN			
SCALE HOS		RAWN MAY		жы. Ны726	WLOG A			



HOSKING MUNRO HOBKING MUNRO PTY, LTL ARCHTECTS INTERIOR & LANDGCAPE DESIGNERS



451 HARRIS ET ULTEMO HEW 2007 PH 02 5580 1055 FAX 02 9852 5250 EMAL hermunro@szemek.com.au

Copy No: Controlled: V Uncontrolled: ( Date: 14 4 03 Issue: BT (Rev A)

1	MOLECT								
			MOOR	DLAW	<b>/N BIOR</b>	EAC	TOR PROJ	ECT	
I			CRISE	'S C	REEK IN	TER	MODAL		
	DRAMIN	INANE	ENTR	RY FENCE -			DETAIL	S	
SCALE 1:200, 1:50		1:50	DRAWK M.V			DH GOL	WL07		
1	DATE	MAR 'D	3	1			1 184726	WLU/	1



Page:Page 19 of 19Document:PLA-NSW-XXX-XXX-1Date:25.08.2016

PLAN

Landscaping and Vegetation Management Plan

**Appendix B – Bioreactor Boundaries Plan** 

