

### **Newman Quarrying Pty Ltd**

Quarry Expansion at Lot 2 DP 1055044, Tullymorgan-Jackybulbin Road, Mororo

**Biodiversity and Rehabilitation Management Plan** 

May 2017

### **Table of contents**

1.	Introd	uction	.1
	1.1	Aim	.1
	1.2	Objectives	.1
	1.3	Targets	.1
	1.4	Consultation	.2
2.	Enviro	onmental requirements	4
	2.1	Legislation	.4
	2.2	Conditions of approval	.4
3.	Existi	ng environment and impacts	.8
	3.1	Existing environment	.8
	3.2	Impacts	14
4.	Enviro	onmental control measures	15
5.	Monit	oring and reporting	19
	5.1	Environmental inspections and monitoring	19
	5.2	Contingency plan	19
	5.3	Reporting	20
6.	Revie	w and improvement	21

### **Table index**

Table 2-1	Consent conditions relevant to the BRMP	4
Table 3-1	Blackbutt-bloodwood dry heathy open forest species list	8
Table 3-2	Blackbutt-Turpentine dry heathy forest species list	9
Table 3-3	Threatened flora with potential habitat in the study area	11
Table 3-4	Threatened fauna with the potential to occur within the study area	13
Table 3-5	Impacts per Stage	14
Table 3-6	Impacts	14
Table 4-1	Environmental controls and mitigation measures	15
Table 5-1	Typical BRMP monitoring program	19
Table 5-2	Contingency plan	19

### **Figure index**

	Figure 1-1
	Figure 3-1
Pty Ltd - Quarry Expansion at Lot 2 DP 1055044, Tullymorgan-Jackybulbin Road,	GHD
Mororo, 22/17528   i	

Figure 3-2	Threatened species record	d within the study area	12
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### **Appendices**

Appendix A – Agency consultation

Appendix B – Rehabilitation Plan

### 1. Introduction

This Biodiversity and Rehabilitation Management Plan (BRMP) forms part of the Environmental Management Strategy (EMS) for Sly's Quarry located at Lot 2 DP 1055044, Tullymorgan – Jackbulbin Road, Mororo. This BRMP has been prepared to meet the requirements of the Ministers Conditions of Approval (CoA) outlined in Development Consent SSD 6624, the mitigation measures outlined in the Environmental Impact Statement (EIS) for Sly's Quarry and all relevant legislation.

The BRMP does not include the Biodiversity Offset Strategy (BOS), as referred to in the CoA. The BRMP concentrates on the operation of the quarry and areas disturbed by the quarry, while the BOS is focused on the offset area subject to a Biobanking Agreement. A letter to the Department of Planning and Environment (DPE) explaining this and requesting the BOS be submitted at a later stage, in accordance with Condition 5, Schedule 5, was sent 12 April 2017. A copy of the letter is in Appendix A.

Figure 1-1 shows the areas subject to the BRMP and BOS.

#### 1.1 Aim

The aim of this BRMP is to describe the rehabilitation and biodiversity management strategies, procedures, controls and monitoring programs to be implemented to prevent or minimise impacts and facilitate effective rehabilitation of Sly's Quarry during operational and post-operational phases.

#### 1.2 **Objectives**

To achieve this aim, Newman Quarrying will undertake the following:

- Detail the controls to be implemented to minimise impacts to biodiversity as a result of clearance activities for approved disturbance areas, remnant vegetation and fauna habitat features
- Address the relevant conditions of the Development Consent
- Establish management techniques associated with the clearing of vegetation for the approved quarry
- To rehabilitate the site after quarrying activities have ceased to achieve a safe, stable and non-polluting site that integrates into the surrounding landscape
- Establish monitoring requirements
- Detail the requirement for reporting any biodiversity related incidents to the relevant stakeholders

#### **1.3 Targets**

The following targets have been established for the management of biodiversity during the operational lifetime of Sly's Quarry:

- Ensure full compliance with the relevant legislative requirements and CoA
- No fauna fatalities
- No unapproved disturbance of vegetation
- No new occurrences of weeds or pathogens on site

Additional targets/completion criteria are included in the Rehabilitation Plan in Appendix B.

#### **1.4 Consultation**

Consultation was undertaken with the local community during preparation of the EIS. Any concerns identified by relevant stakeholders were addressed in the EIS and mitigation measures developed which have been incorporated into this BRMP.

As per CoA 31(a), Schedule 3, the Office of Environment and Heritage (OEH) and Clarence Valley Council (CVC) were consulted in relation to the BRMP. Evidence of the consultation is provided in Appendix A.



SLYS QUARRY	

BRMP AND BOS AREAS

BRMP

BOS

Figure 1-1

### 2. Environmental requirements

### 2.1 Legislation

Legislation relevant to biodiversity and rehabilitation management includes:

- Environmental Planning and Assessment Act 1979 (EP&A Act)
- National Parks and Wildlife Act 1974 (NPW Act)
- NSW Threatened Species and Conservation Act 1995 (TSC Act)
- Fisheries Management Act 1994 (FM Act)
- Noxious Weeds Act 1993 (NW Act)
- Pesticides Act 1999
- Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth) (EPBC Act)

Further discussion of the above legislation is covered in Section 2 of the EMS, as well as the EIS.

#### 2.2 Conditions of approval

The consent conditions relevant to this BRMP are listed in Table 2-1. A cross reference is also included to indicate where the condition is addressed in this BRMP or other environmental management documents.

Condit ion No.	Requirement		Reference
29	The Applicant mu Secretary. This reh rehabilitation strate in Appendix 3 and Feature Site (as a whole) Surface Infrastructure	st rehabilitate the site to the satisfaction of the abilitation must be generally consistent with the egy in the EIS and the conceptual rehabilitation plan must comply with the objectives in Table 6. Objective • Safe, stable and non-polluting • Final landform integrated with surrounding natural landforms as far as is reasonable and feasible, and minimising visual impacts when viewed from surrounding land • Decommissioned and removed, unless otherwise agreed by the Secretary	Appendix B
	benches and pit floor (Site A) Past sand	Returned to the pre-development ground level	
	mining sites (Sites B and C)	<ul> <li>Landscaped and revegetated using native tree and understorey species</li> </ul>	
	Final Void	<ul> <li>Minimise the size, depth and slope of the batters of the final void</li> <li>Minimise the drainage catchment of the final void</li> </ul>	

#### Table 2-1 Consent conditions relevant to the BRMP

Condit ion No.	Requirement	Reference
30	The Applicant must rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation.	Section 4, Appendix B and AQMP
31	The Applicant must prepare a Biodiversity and Rehabilitation Management Plan for the development to the satisfaction of the Secretary. This plan must:	
	<ul><li>(a) Be prepared in consultation with OEH and Council.</li><li>(b) Be submitted to the Secretary for approval within 6 months of the date of this consent, unless the Secretary agrees otherwise.</li></ul>	Appendix A Noted
	(c) Be approved by the Secretary, prior to commencing quarrying operations in Stages 2 or 3 (refer Appendix 2), unless the Secretary agrees otherwise.	Noted
	(d) Provide details of the conceptual final landform and associated land uses for the site.	Appendix B and Appendix C of the EMS
	(e) Describe how the implementation of the Biodiversity Offset Strategy would be integrated with the overall rehabilitation of the site.	Section 1
	(f) Include detailed performance and completion criteria for evaluating the performance of the Biodiversity Offset Strategy and rehabilitation of the site, including triggers for any necessary remedial action.	Appendix B
	<ul> <li>(g) Describe the short, medium and long term measures that would be implemented to:</li> <li>Manage remnant vegetation and habitat on site, including within the Biodiversity Offset Strategy area.</li> <li>Ensure compliance with the rehabilitation objectives and progressive rehabilitation and habitat on site.</li> </ul>	Section 4, Appendix B, SWMP and AQMP
	<ul> <li>(h) Include a detailed description of the measures that would be implemented over the next 3 years (to be updated for each 3 year period following initial approval of the plan) including the procedures to be implemented for:</li> <li>Maximising the salvage of environmental resources within the approved disturbance area, including tree hollows, vegetative and soil resources, for beneficial reuse in the enhancement of the offset area or site rehabilitation</li> </ul>	Section 4 and Appendix B
	Restoring and enhancing the quality of native vegetation and fauna habitat in the biodiversity offset and rehabilitation areas through assisted natural regeneration, targeted vegetation establishment and the introduction of fauna habitat features.	
	Protecting and conserving habitat for the Bordered Guinea Flower (Hibbertia marginata). Protecting vegetation and fauna habitat outside the approved disturbance area on-site. Minimising the impacts on native fauna, including undertaking pre-	
	clearance surveys. Establishing vegetation screening to minimise the visual impacts of	
	the site on surrounding receivers. Ensuring minimal environmental consequences for threatened species, populations and habitats.	

Condit ion No.	Requirement	Reference
	Avoiding and minimising the spread of Exotic Rust Fungi of the order Uredinales pathogenic on plants of the family Myrtaceae (Myrtle Rust), Phytophthora cinnamomi (Phytophthora) and Chytridfungus; Collecting and propagating seed. Controlling weeds and feral pests. Controlling erosion. Ensuring no obstruction of legal public access along the Crown public road referred to as 'Slys Road' in accordance with public rights of access under the Roads Act 1993. Controlling access to Slys Road, including managing public safety risks associated with rights of access over Slys Road by installing appropriate fencing and signage. Managing bushfire risk.	
	(i) Include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria.	Section 0 and Appendix B
	(j) identify the potential risks to the successful implementation of the Biodiversity Offset Strategy, and include a description of the contingency measures that would be implemented to mitigate these risks.	Appendix B
	(k) include details of who would be responsible for monitoring, reviewing, and implementing the plan.	Section 4
32	The Applicant must implement the approved Biodiversity and Rehabilitation Management Plan as approved from time to time by the Secretary.	Noted
33	<ul> <li>Within 6 months of the approval of the Biodiversity and Rehabilitation Management Plan, the Applicant must lodge a Biodiversity and Rehabilitation Bond with the Department to ensure that the Biodiversity Offset Strategy and rehabilitation of the site are implemented in accordance with the performance and completion criteria set out in the plan and relevant conditions of this consent. The sum of the bond must be determined by:</li> <li>(a) calculating the cost of implementing the Biodiversity Offset Strategy over the next 3 years.</li> </ul>	Noted
	<ul><li>(b) calculating the cost of rehabilitating the site, taking into account the likely surface disturbance over the next 3 years of quarrying operations.</li><li>(c) employing a suitably qualified quantity surveyor or other expert to verify the calculated costs.</li></ul>	
	to the satisfaction of the Secretary.	
34	<ul> <li>Within 3 months of each Independent Environmental Audit (see condition 10 of Schedule 5), the Applicant must review, and if necessary revise, the sum of the Conservation and Rehabilitation Bond to the satisfaction of the Secretary. This review must consider the:</li> <li>(a) Effects of inflation.</li> <li>(b) Likely cost of implementing the Biodiversity Offset Strategy and rehabilitating the site (taking into account the likely surface disturbance over the next 3 years of the development).</li> </ul>	Noted
	(c) Performance of the implementation of the Biodiversity Offset Strategy and rehabilitation of the site to date.	
Sched ule 5, Condit	The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:	
ion 3	(a) Detailed baseline data.	Section 0

Condit ion No.	Requirement	Reference
	<ul> <li>(b) A description of:</li> <li>The relevant statutory requirements (including any relevant approval, licence or lease conditions).</li> <li>Any relevant limits or performance measures/criteria.</li> <li>The specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures.</li> </ul>	Section 2.1 Section 0 and Appendix B Section 0
	(c) A description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria.	Section 4
	<ul><li>(d) A program to monitor and report on the:</li><li>Impacts and environmental performance of the development; and</li><li>Effectiveness of any management measures (see (c) above).</li></ul>	Section 5.1 and Appendix B
	(e) A contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible.	Section 5.2 and Appendix B
	(f) A program to investigate and implement ways to improve the environmental performance of the development over time.	Section 6
	<ul> <li>(g) a protocol for managing and reporting any:</li> <li>Incidents;</li> <li>Complaints.</li> <li>Non-compliances with statutory requirements.</li> <li>Exceedances of the impact assessment criteria and/or performance criteria.</li> </ul>	Section 6 of the EMS
	<ul> <li>(h) a protocol for periodic review of the plan.</li> <li>Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.</li> </ul>	Section 6

## 3. Existing environment and impacts

#### 3.1 Existing environment

#### 3.1.1 Flora

Two plant communities occur within Stages 2 and 3 study area (Stage 1 was not considered because this area has an existing approval), these communities are described below and their location is shown on Figure 3-1.

## Blackbutt - bloodwood dry heathy open forest on sandstones of the northern North Coast (NR114)

Blackbutt-bloodwood dry heathy open forest is a tall open forest that occurs on deep sands of old dune systems along the NSW North Coast. The dominant species are listed in Table 3-1.

Stratum	Species	Stratum Height (m)
Overstorey	Pink Bloodwood (Corymbia intermedia),	25
	Tallowwood (Eucalyptus microcorys)	
	Blackbutt (Eucalyptus pilularis)	
	Angophora paludosa	
Midstorey	Acacia leiocalyx	10
	Red Ash (Alphitonia excelsa)	
	Logon Apple (Acronychia imperforata)	
	Salwood (Acacia disparrima)	
Understorey	Coffee Bush (Breynia oblongata)	5
	Cheese Tree (Glochidion ferdinandi)	
	Tree Heath (Trochocarpa laurina)	
Groundcover	Many-flowered Mat-rush (Lomandra multiflora)	1
	Blue Flax Lily (Dianella cerulea var. producta)	
	Rough Saw Sedge (Gahnia aspera)	
	Spear Grass (Austrostipa pubescens)	
	Creeping Beard Grass (Oplismenus imbecillis)	

 Table 3-1 Blackbutt-bloodwood dry heathy open forest species list

## Blackbutt - Turpentine dry heathy open forest on sandstones of the lower Clarence of the North Coast (NR123)

Blackbutt-Turpentine dry heathy forest is a tall open forest that occurs on sandstone geologies of the Clarence-Moreton Basin from the southern Richmond Range east to the Coast Range. The dominant species are listed in Table 3-2.

Stratum	Species	Stratum Height (m)
Overstorey	Blackbutt ( <i>Eucalyptus pilularis</i> ) Turpentine ( <i>Syncarpia glomerata</i> ) Red Mahogany ( <i>Eucalyptus resinifera</i> ) <i>Angophora woodsiana</i>	25
Midstorey	Acacia leiocalyx Red Ash (Alphitonia excelsa) Tree Heath (Trochocarpa laurina) Flaky-barked Tea-tree (Leptospermum trinervium) Persoonia conjuncta Cheese tree (Glochidion ferdinandiana) Blackthorn (Bursaria spinosa)	8
Understorey	Handsome Flat Pea ( <i>Platylobium formosum</i> ) <i>Hibbertia marginate</i> <i>Leucopogon lanceolatus</i> Coffee Bush ( <i>Breynia oblongata</i> )	2
Groundcover	<ul> <li>Wire Grass (<i>Entolasia stricta</i>)</li> <li>Grass Trees (<i>Xanthorrhoea</i> sp)</li> <li>Spiny-headed Mat-rush (<i>Lomandra longifolia</i>)</li> <li>Rough Saw-sedge (<i>Gahnia aspera</i>)</li> <li>Common Bracken (<i>Pteridium esculentum</i>)</li> <li>Crinkle Bush (<i>Lomatia silaifolia</i>)</li> <li>Blue Flax-lily (<i>Dianella cerulea</i>)</li> <li><i>Lepidosperma laterale</i></li> </ul>	1
Vines	Wonga Wonga Vine ( <i>Pandorea pandorana</i> ) Lawyer vine ( <i>Smilax australis</i> ) Sweet Sarsaparilla ( <i>Smilax glyciphylla</i> ) Molucca Bramble ( <i>Rubus moluccanus var. trilobus</i> ) Stiff Jasmine ( <i>Jasminum volubile</i> )	

#### Table 3-2 Blackbutt-Turpentine dry heathy forest species list



#### LEGEND



#### 10m contour

cadastre

Blackbutt - Turpentine dry heathy open forest on sandstones

Blackbutt - bloodwood dry heathy open forest on Quaternary sands

Swamp Mahogany swamp forest of the coastal lowlands

Cleared



One threatened flora species (Bordered Guinea Flower (*Hibbertia marginata*) listed under the EPBC Act and TSC Act occurs within the study area. Bordered Guinea Flower is restricted to the southern Richmond Range between Casino and Grafton and grows in grassy or shrubby dry open eucalypt forest at low altitudes on sandstone. A total of 1,120 individuals of Bordered Guinea Flower were identified within the subject site during targeted searches for the species. The locations where this species was identified is shown on Figure 3-2.

Based on the presence of suitable habitat there is also a possibility that a further two flora species listed under these Acts may occur, as listed in Table 3-3 below.

	Table 3-3	Threatened	flora w	vith p	otential	habitat	in t	the	study	area
--	-----------	------------	---------	--------	----------	---------	------	-----	-------	------

Species Name	Common Name	TSC Act status	EPBC Act status
Paspalidium grandispiculatum	A Grass	V	V
Polygala linariifolia	Native Milkwort	E	-

The codes used in this table are; E - endangered; V - vulnerable

#### Noxious and environmental weeds

One flora species declared as noxious under the NW Act occurs within the study are. This species (Lantana (*Lantana camara*)) is a class 4 noxious weed which in accordance with the NW Act must be managed in a manner that continuously inhibits the ability of the plant to spread.

Within the study area Lantana occurs as small isolated patches scattered through the site.

#### 3.1.2 Fauna

The study area would be expected to support a moderately high diversity of native fauna species. Habitat values within the study area are somewhat lower than might be expected due to the previous selective logging that has occurred at the site. However, the study area contains a range of habitat features which would provide shelter and foraging resources for a variety of native fauna.

A total of 20 fauna species were recorded within the study area including 19 birds and one reptile. These species were recorded incidentally during the site visit and no targeted surveys for fauna were undertaken. It is likely that the site would be utilised by a range of other fauna species not recorded during the survey.

A total of 22 threatened fauna species are considered to have the potential to occur at the site based on local records and the presence of suitable habitat which are listed in Table 3-4.

The presence of primary feed trees for Koala at the site suggests there is suitable habitat for this species within the study area.



#### LEGEND



Papar Siza A3	1 1		Newman Quarrying Job Numb	er   22-17528
0 10 20 40 60 80	Ņ		Sly's Quarry Environmental Impact Statement Revision	n A
			Biodiversity Assessment Da	e   18 Feb 2015
Metres Map Projection: Transverse Mercator		GILD	Threatened species recorded	
Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56			within study area	gure 3-2

NAU/Coffs Harbour/Projects/22/17528/GIS/Waps/Deliverables/22\_17528\_2005\_Threatened\_Species.mxd
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O preleness or sultability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tori or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred
by any partic. NSW Department of Lands: Cadastre - Jan 2014; Geoscience Australia: 250k Data - Jan 2014; NSW Department of Primary Industry - Jan 2014; Google image Jan 2014. Created by: gichung

Table 3-4	Threatened	fauna	with	the	potential	to	occur	within	the	study	area

Species name	Common Name	TSC Act Status	EPBC Act status
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	-
Coracina lineata	Barred Cuckoo-shrike	V	-
Daphoenositta chrysoptera	Varied Sittella	V	-
Glossopsitta pusilla	Little Lorikeet	V	-
Lophoictinia isura	Square-tailed Kite	V	-
Ninox connivens	Barking Owl	V	-
Ninox strenua	Powerful Owl	V	-
Tyto novaehollandiae	Masked Owl	V	-
Chalinolobus nigrogriseus	Hoary Wattled Bat	V	-
Dasyurus maculatus	Spotted-tailed Quoll	V	E
Miniopterus australis	Little Bentwing-bat	V	-
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	V	-
Mormopterus norfolkensis	Eastern Freetail-bat	V	-
Nyctophilus bifax	Eastern Long-eared Bat	V	-
Petaurus australis	Yellow-bellied Glider	V	-
Petaurus norfolcensis	Squirrel Glider	V	-
Phascogale tapoatafa	Brush-tailed Phascogale	V	-
Phascolarctos cinereus	Koala	V	V
Planigale maculata	Common Planigale	V	-
Pteropus poliocephalus	Grey-headed Flying-fox	V	V
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-

The codes used in this table are: CE - critically endangered; E - endangered; V - vulnerable;, M- migratory

One migratory bird species (Rainbow Bee-eater) listed under the EPBC Act was recorded during surveys. There is also potential habitat for the Fork-tailed Swift, White-throated Needletail and Satin Flycatcher.

No threatened fauna species listed under the FM Act are likely to occur in the study area, or downstream of the study area.

### 3.2 Impacts

Stages 2 and 3 includes clearing approximately 10.5 hectares of native vegetation, which comprises 4.23 hectares of Blackbutt - Bloodwood dry heathy open forest and 6.27 hectares of Blackbutt - Turpentine dry heathy open forest. Vegetation clearing in these communities would involve removal of a moderately diverse range of non-threatened native plants, including mature trees, as well as potential habitat for threatened biota.

#### Table 3-5 Impacts per Stage

Stage	Blackbutt - Bloodwood dry heathy open forest (Ha)	Blackbutt - Turpentine dry heathy open forest (Ha)	<i>Hibbertia marginata</i> (individuals)
Stage 2 - North	-	2.68	291
Stage 2 - South	1.36	1.23	216
Stage 3 - North	-	2.10	610
Stage 3 - South	2.87	0.26	3
Total	4.23	6.27	1,120

The proposal may result in direct and indirect impacts on threatened biota listed under the TSC Act including the removal of 1,120 occurrences of the threatened plant, *Hibbertia marginata;* and the removal of habitat for up to 22 threatened fauna species that may occur in the study area.

The clearing and other impacts, the species impacted and reference to the relevant mitigation measures are presented in Table 3-6.

#### **Table 3-6 Impacts**

Impact	Mitigation measure
Clearing	B2, B7
Fragmentation and barrier effects	B2, B4,
Fauna injury and mortality	B5, B6, B11, B12, B13, B14
Degradation of aquatic habitats	Refer to SWMP
Edge effects	B4
Introduction or spread of weeds	B4, B11
Pests and pathogens	B17
Erosion, dust generation and sedimentation	Refer to SWMP and AQMP
Soil and water pollution	Refer to SWMP
Noise and vibration	Refer to NMP

### 4. Environmental control measures

Environmental requirements and control measures are identified in the Conditions of Approval and the EIS. Specific measures and requirements to address biodiversity and rehabilitation are outlined in Table 4-1.

EMS Ref.	Environmental Management Measure	Timing	Responsibility
B1	All employees and subcontractors will undergo site induction training relating to flora and fauna management issues, including:	Pre-operation	Quarry Manager
	Pre-clearing requirements		
	Fauna rescue requirements		
	Weed control measures		
	No-go areas		
	Unexpected finds procedure		
	Control of pathogens		
B2	Stage the clearing so the impact of the proposal on areas with high biodiversity values are minimised wherever possible.	Pre-operation	Quarry Manager
В3	Prepare and implement a Rehabilitation Plan for the former sand quarry area known as "Area C" and the quarry approved by SSD6624 (refer to Appendix B).	Pre-operation	Quarry Manager/Bush Regenerator
B4	Implement weed control as described in the Rehabilitation Plan (refer to Appendix B) prior to clearing and within 20 m from the edge of clearing.	Pre-operation and post- operation	Quarry Manager
B5	Restrict vehicle movements to operational (daylight) hours.	Operation	Quarry Manager
B6	Implement and enforce appropriate speed limits for vehicles traversing the site.	Operation	Quarry Manager
B7	The limits of clearing are to be clearly marked by protective fencing (i.e. 'no-go' areas).	Operation	Quarry Manager
B8	Prior to clearing, collect seed for use in rehabilitation works, especially <i>Hibbertia marginate</i> .	Operation	Quarry Manager/Bush Regenerator
B9	Six months prior to clearing, engage an experienced ecologist to undertake a pre-clearing survey and prepare a Nest Box Management Plan (NBMP), in consultation with OEH. This is to include:	Pre-operation	Quarry Manager/Ecologist
	Identifying the number and size of hollows to be lost within the clearing footprint		
	• Determining the number, size and location of nest boxes to be installed		
	<ul> <li>Mapping and marking any significant habitat features (large woody debris or hollow logs) for relocation into adjacent habitat areas</li> </ul>		
	<ul> <li>Identifying areas of weeds to be controlled prior to clearing</li> </ul>		

#### Table 4-1 Environmental controls and mitigation measures

EMS Ref.	Environmental Management Measure	Timing	Responsibility
	<ul> <li>Identifying suitable areas for the relocation of habitat features</li> </ul>		
	• Pre-clearing surveys for threatened plants not identified during the EIS		
B10	Nest boxes specified in the NBMP are to be installed prior to removal of hollow bearing trees	Pre-operation	Quarry Manager/Ecologist
B11	Engage a qualified and experienced ecologist to undertake preclearing surveys of flora and fauna habitat within 48 hours of clearing. The pre- clearing survey scope will include:	Operation	Quarry Manager/Ecologist
	<ul> <li>Inspecting habitat trees for resident fauna, including inspections of hollows, nests and under exfoliating bark</li> </ul>		
	<ul> <li>Active searches for reptiles, including checking of exfoliating rock, rock crevices, and woody debris within the proposal footprint</li> </ul>		
	<ul> <li>Mapping and marking any significant habitat features (large woody debris or hollow logs) for relocation into adjacent habitat areas</li> </ul>		
	• Pre-clearing surveys for threatened plants not identified during the EIS		
	<ul> <li>Remove large woody debris and rock fragments using excavator grabs or manual handling if practicable</li> </ul>		
	Place intact large woody debris within adjacent areas of intact vegetation		
	Scrape and stockpile leaf litter and topsoil separately from deeper fill material		
	Inspection for plant pathogens		
B12	The hollow-bearing/habitat tree clearance protocol will include the following measures:	Operation	Quarry Manager/Ecologist
	Habitat trees will be retained for at least 48 hours after initial clearing.		
	<ul> <li>Ecologist to supervise felling of all hollow- bearing trees.</li> </ul>		
	• Rotating grabs must be used to assist in the gentle lowering of hollow-bearing trees .		
	• Where possible, retain and relocate hollow bearing tree sections into areas adjacent to the quarry footprint.		
	<ul> <li>Ecologists representative to check hollows once the tree has been placed safely on the ground and relocate fauna, as required.</li> </ul>		
	• Wildlife should not be handled wherever possible. Quarry staff should only handle wildlife in an emergency situation but snakes should never be handled. Uninjured wildlife should be gently encouraged to leave the site by the ecologist representative. Injured wildlife would be taken to a veterinarian for treatment and care if necessary.		

EMS Ref.	Environmental Management Measure	Timing	Responsibility
	<ul> <li>Nocturnal animals are to be released on or after dusk, close to the point of capture within retained vegetation.</li> </ul>		
B13	Clearing is to be supervised by an experienced ecologist and a Clearing Report prepared (see Section 5.3).	Operation	Quarry Manager/Ecologist
B14	Prior to clearing, contact the local veterinarian to warn them their assistance may be required if any wildlife are injured during clearing.	Operation	Quarry Manager
B15	Cleared vegetation will be mulched and stockpiled onsite for revegetation works. Mulch stockpiles will be constructed with an impervious perimeter bund at least 300 mm high, a sump capable of capturing 75 mm of rainfall and a stable outlet.	Operation	Quarry Manager
B16	Mulch stockpiles contaminated by weeds or pathogens will be managed in accordance with . The pasteurised garden organics exemption 2016	Operation	Quarry Manager
B17	Implement hygiene measures prior to entering and when leaving non-operational areas of the site (i.e. outside of access tracks, work area and quarry pit) to control weeds, Myrtaceae (Myrtle Rust), <i>Phytophthora cinnamomi</i> (Phytophthora) and Chytrid fungus. Measures include:	Operation	Quarry Manager
	<ul> <li>Limiting the number of access points and using existing access tracks</li> </ul>		
	Wash down vehicles		
	Wash down boots and equipment		
	Scheduling works to occur in dry conditions		
	All soil and plant materials brought onto the site be certified free of weeds and pathogens		
	Additional controls for Myrtle Rust are:		
	• Vehicles are to be washed with Truckwash (or equivalent)		
	<ul> <li>Personnel working in an infected site should shower and launder clothes (especially hats) before moving to another bushland site</li> </ul>		
	<ul> <li>Footwear and equipment to be sprayed with 70% methylated spirits in 30% water</li> </ul>		
	Additional controls for Chytrid are:		
	<ul> <li>Footwear and equipment to be sprayed with benzalkonium (Toilet Duck) or 70% methylated spirits in 30% water</li> </ul>		
	• Disinfect hands or change gloves between the handling of individual frogs and between each site		
	Only handle frogs when necessary. Use the one bag-one frog approach		

EMS Ref.	Environmental Management Measure	Timing	Responsibility
B18	<ul> <li>If an unexpected threatened species (i.e. not considered in the EIS) or unexpected impact on a threatened species (i.e. not considered in the EIS) is identified within the site:</li> <li>Stop work</li> <li>Contact an ecologist to undertake an assessment</li> <li>Gain appropriate approval, if required</li> </ul>	Operation	Quarry Manager/Ecologist
B19	At the end of the quarry life all infrastructure will be decommissioned and removed, unless otherwise agreed by the Secretary	Decommissioning	Quarry Manager

### 5. Monitoring and reporting

#### 5.1 Environmental inspections and monitoring

General environmental inspection requirements are detailed in Section 8 of the EMS. Inspections, monitoring and reporting specific to the BRMP that will be implemented during operation of the quarry are listed below in Table 5-1, along with who is responsible.

Additional monitoring is outlined in the Rehabilitation Plan (Appendix B).

#### Table 5-1 Typical BRMP monitoring program

Aspect	Details	Responsibility
Weekly monitoring	Site-wide inspection to identify any ad-hoc flora and fauna issues such as weed and pest infestations, injured wildlife, unapproved clearing, build-up of fuel loads, or the condition of bushfire access tracks.	Quarry Manager
Ecological monitoring during clearing	Monitoring of clearing activities to ensure all clearing is undertaken in accordance with the requirements of the BRMP i.e. identified habitat features to be retained are left intact, wildlife is safely relocated or handed over to a local wildlife rescue organisation for treatment (as required)	Ecologist
Post-clearing inspection	Inspection of cleared areas to confirm clearing has been undertaken within the approved disturbance footprint and any maintenance requirements for environmental control measures are identified and addressed	Ecologist

#### 5.2 Contingency plan

If the above monitoring detects an impact, a contingency plan or trigger and response plan is to be implemented, as shown below.

#### Table 5-2 Contingency plan

Aspect	Trigger	Response
Weekly monitoring	Injury to fauna as a result of vehicle strike	Contact a veterinarian
	Weed or pest species identified	Contact local weeds and pest officer for advice on the best form of control and implement the required controls.
Ecological monitoring during clearing	Injured fauna during clearing	Cease clearing activities Contact a veterinarian
	Identification of pathogens during pre- clearance surveys	Contact local weeds and pest officer for advice on the best form of control
Post-clearing inspection	Unapproved clearing of vegetation	Cease clearing immediately and commence incident reporting and investigation in accordance with the EMS. DPE must be notified as soon as unapproved clearing has occurred.

### 5.3 Reporting

The general reporting requirements are described in Section 8.5 of the EMS. In relation to the BRMP, routine weekly monitoring will be recorded on the *Environmental Inspection Checklist*.

A report will be prepared by the ecologist following clearing. This is to include, as a minimum:

- The date(s) of the clearing
- The area of clearing
- Number and type of hollow bearing trees cleared and the number of nest boxes installed
- Any fauna observed or injured
- Any threatened species identified
- Weed species

The Revegetation Plan (Appendix B) has additional reporting requirements.

A summary of these results will be presented in the Annual Report (refer to Section 8.5 of the EMS). All records will be:

- Maintained in a legible form
- Kept for at least 4 years
- Produced to any authorised officer of the EPA upon request

### 6. **Review and improvement**

Continuous improvement of this BRMP will be achieved in accordance with Section 9 of the EMS, through the ongoing evaluation of environmental management performance against environmental policies, objectives and targets.

The continuous improvement process is designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any nonconformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement; and make comparisons with objectives and targets

### **Appendices**

GHD | Report for Newman Quarrying Pty Ltd - Quarry Expansion at Lot 2 DP 1055044, Tullymorgan-Jackybulbin Road, Mororo, 22/17528 **Appendix A** – Agency consultation



Our Ref: DOC17/11929 Your Ref: e-mail dated 10/01/2017

> Mr Ben Luffman GHD PO Box 1340 Coffs Harbour NSW 2450

Ben Dear <del>Mr Luffman</del>

#### Re: Sly's Quarry – Biodiversity and Rehabilitation Management Plan

Thank you for your e-mail dated 10 January 2017 seeking additional comments from the Office of Environment and Heritage (OEH) on the Biodiversity and Rehabilitation Management Plan (BRMP) for the expansion of Sly's Quarry. I appreciate the opportunity to provide further input.

We have reviewed Revision D of the Sly's Quarry Expansion BRMP as prepared by GHD in February 2017 and advise you that the OEH is satisfied that Revision D of the BRMP meets the requirements of the Minister's Condition of Approval No. 31 and mitigation measures pertaining to flora and fauna management as specified in the project Environmental Impact Statement.

In conclusion, we would like to thank GHD for involving us in the preparation of the BRMP. If you have any questions or would like any further advice on the BRMP, Mr Don Owner, Regional Operations Officer, Regional Operations, OEH, can be contacted on 6659 8233 or at don.owner@environment.nsw.gov.au.

Yours sincerely

22 February 2017

DIMITRI YOUNG Senior Team Leader Planning, North East <u>Regional Operations</u>

Contact officer: DON OWNER 6659 8233

> Locked Bag 914 Coffs Harbour NSW 2450 Federation House, Level 8, 24 Moonee Street Coffs Harbour NSW 2450 Tel: (02) 6659 8200 Fax: (02) 6659 8281 ABN 30 841 387 271 www.environment.nsw.gov.au





Reference SSD6624 ECM: 1805601 Contact: Pat Ridgway

16 November 2016

Ben Luffman Senior Environmental Scientist/Planner GHD PO Box 1340 Coffs Harbour NSW 2450 Email: <u>ben.luffman@dhd.com</u>

#### RE: Consultation regarding Environmental Management Strategy, Biodiversity and Rehabilitation Management Plan & Traffic Management plan, as required under Sly's Quarry Expansion Project, approved under SSD6624, Lot 2 DP 1055044

Thank you for the opportunity to comment on the draft reports provided to Council 31 October & 14 November 2016. Council's comments are provided under the headings below.

#### Environmental Management Strategy

- It is noted that you have provided a copy of an Environmental Management Plan (EMP); it is assumed that this document is intended to be the Environmental Management Strategy (EMS) as described in Schedule 5 of the consent.
- Comments are provided to the Traffic Management Plan and Biodiversity and Rehabilitation Management Plan; Appendices F & J of the EMP.
- It is noted that Section 4.1.2 refers to a Fauna & Flora Management Plan in Appendix F, this should be amended to reference the Biodiversity and Rehabilitation Management Plan.

#### **Biodiversity and Rehabilitation Management Plan**

- Part 8.2 of the EMP refers to Environmental Monitoring Schedule for the Biodiversity and Rehabilitation Management Plan (BRMP), being weekly, during and post clearing and quarterly monitoring. It is considered that Quarterly monitoring will provide a useful benchmarking as to rehabilitation no detail is provided in the BRMP in regard to how or what happens during quarterly monitoring.
- The plan talks generally conceptually like the EIS and needs to specify specific details. The essential document of concern to Council is the Rehabilitation Plan Appendix B of the BRMP. The Draft Rehabilitation Plan does no meet the requirements of the consent, Schedule 3 condition 31 in that:
  - There is no detail of conceptual land forms, existing or final desired outcome for the different sites.
  - It is not clear how it integrates with the Biodiversity Offset Strategy of the consent.

 Page 1 of 2

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- The plan only refers to weed species with the potential to occur at each of the sites/zones. There is no mapping of weeds or existing vegetation at each site. This should be provided to benchmark the success of the rehabilitation from the onset and including stage 1 area.
- Identification, the location and extent of weed infestation would dictate the removal methods (cut paste, foliage spray, high pressure or back pack etc.) and anticipated stages and timeframe of weed removal and management on the different areas to be rehabilitated.
- When weeds are removed the cleared areas should be revegetated. If seeding is propsed the seeds could be sourced from native vegetation on the site.

#### Traffic Management Plan

- Condition 24 of Schedule 3 requires that the intersection at the entrance on Tullymorgan-Jackybulbin Road be surveyed and required the works to be scheduled. There is no schedule provided in the plan.
- It is noted that the plan is also to be prepared in consultation with the RMS; Council has previously provided comments regarding concerns intersection of Tullymorgan – Jackybulbin Road and the Pacific Highway.

Council thanks you for this opportunity to provide comment. If you require further information please contact Pat Ridgway Council's Environment Planning and Regulatory Services on 6643 0288.

Yours faithfully,

Pat Ridgway Senior Development Planner



12 April 2017

Mr Colin Phillips Department of Planning and Environment GPO Box 39 SYDNEY NSW 2001 Our ref:

22/17528

17051

Dear Colin

#### SSD 6624 - Slys Quarry Expansion Request to stage the submission of the Biodiversity and Rehabilitation Management Plan

Condition 31, Schedule 3 of SSD 6624 requires the inclusion of details from the Biodiversity Offset Strategy (BOS) in the Biodiversity and Rehabilitation Management Plan (BRMP). Condition 28, Schedule 3 allows a timeframe of 18 months to make appropriate arrangements for the long-term security of the BOS. We are currently in the process of establishing a BioBanking Agreement with the Office of Environment and Heritage (OEH) for the BOS. Until the BioBanking Agreement is complete, the details of the BOS are unknown. It is therefore requested the BRMP be submitted on a staged basis, as permitted by Condition 5, Schedule 5, with the agreement of the Secretary, as follows:

- The initial BRMP will address all the requirements of Condition 31, Schedule 3 other than the details of the BOS
- Once the BioBanking Agreement is complete, a revised BRMP will be submitted which includes details of the BOS.

I trust the above is sufficient to consider the request but if you have any questions, regarding this request, please contact the undersigned.

Sincerely GHD Pty Ltd

Ren

Ben Luffman Senior Environmental Scientist/Planner 02 6650 5600

**Appendix B** – Rehabilitation Plan





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#### Aim

To rehabilitate the site after quarrying activities have ceased to achieve a safe, stable and non-polluting site that integrates into the surrounding landscape.

#### Objectives

The objectives of the rehabilitation plan are to

Feature Site (as a whole)	<ul> <li>Objective</li> <li>Safe, stable and non-polluting</li> <li>Final landform integrated with surrounding natural landforms as far as is reasonable and feasible, and minimising visual impacts when viewed from surrounding land</li> </ul>
Surface Infrastructure	<ul> <li>Decommissioned and removed, unless otherwise agreed by the Secretary</li> </ul>
Quarry benches and pit floor (Site A)	Landscaped and vegetated using native tree and understorey species
Past sand mining sites (Sites B and C)	<ul> <li>Returned to the pre-development ground level</li> <li>Landscaped and revegetated using native tree and understorey species</li> </ul>
Final Void	<ul> <li>Minimise the size, depth and slope of the batters of the final void</li> <li>Minimise the drainage catchment of the final void</li> </ul>

#### Responsibility

The implementation of the Rehabilitation Plan is the responsibility of the Quarry Manager but the works are to be undertaken by a suitably qualified and experienced bush regenerator

#### **Topsoil Stripping and Stockpiling**

The following measures will be adopted for soil stripping and stockpiling:

- · Soils will be stripped when in a moist condition (neither too dry nor wet) thus reducing dust generation and deterioration in topsoil guality
- · Topsoil will be stockpiled only when disturbed areas are not available for immediate rehabilitation
- Soil stockpiles will be constructed to minimise the stockpile area in a discrete two metre high (maximum) pile, with a working face battered down at 30 degrees
- Stockpiles will be trimmed, deep ripped to 500 mm, immediately sown with permanent pasture species, and fertilised

#### Rehabilitation

The area to be revegetated has been divided into two stages and three zones. The extent of the stages and zones is to be confirmed onsite based on site conditions, prior to commencing rehabilitation works

#### Stage 1

Stage 1 is the former Area C used as a sand quarry in the past. This has already been topsciled and is revegetating naturally. It is expected that this will continue to revegetate naturally, so the priority will be weed control and monitoring. The works for this area are:

Maintenance and monitoring

#### Stage 2

Stage 2 is the area of the quarry approved by SSD 6624 and will be implemented once the quarry is no longer operating or an area of the quarry is no longer actively used. This area has been divided into three zones:

- Zone A is the area of the quarry pit
- Zone B are the areas outside the quarry pit
- · Zone C are the areas outside the guarry pit but subject to inundation

Zones A and B have the same species mix but Zone B may not need the Site Preparation (see below) required for Zone A because it is not part of the quarry pit and will not have a rock surface. Zone C is also unlikely to require Site Preparation but will have a different species mix to Zones A and B because it is subject to inundation. The works required in these zones are:

- Site Preparation (Zone A only)
- Seeding/Planting
- Maintenance and monitoring
- Reporting

Details of the works for each Stage and Zone are provided below.

#### Site Preparation

- The top of the benches will be fenced for safety and to exclude fauna where possible. Fencing should include 'one-way fauna gates' which allow mobile fauna to escape from the former quarry area should they enter the site
- Temporary fencing will be installed to delineate the restoration area, until restoration is completed. No machines will be allowed inside the restoration area other than for works associated with the planting and weeding program
- Benches will be constructed with in fall drainage, a non-erodible longitudinal grade (approximately 1%) and stable down drains (refer to detail)
- The benches are to be ripped/roughed to a depth of 250mm to key in topsoil
- Topsoil stripped from the site prior to the quarry operations commencing will be respread across the benches to form a minimum of 100mm deep layer
- Place fauna habitat (eg logs and large woody debris) randomly across the area
- Sediment and erosion controls will be maintained until the site is stable

#### Seeding

Seed is to be purchased from local suppliers and/or collected locally. All seed collection, management, cleaning and storage will be in accordance with Guideline 5: Seed Collection from Woody Plants for Local Revegetation (FloraBank, 1999).

Seeding should be done prior to planting. Seed broadcasting is to be done by hand or mechanical means at the sowing rates indicated below. The seed should be raked following sowing to cover the seed and improve success rates. The seed should be watered weekly until established

#### Planting

Ideally, planting should be done at the start of autumn but due to the mild climate of the area, planting at any time during the year should not cause a significant problem. The tube stock or hiko cells, where possible, should be sourced from nurseries that use local seed stock, ideally from within the Clarence Valley area.

The planting method includes

- Soak all plants before planting
- Make a hole large enough for the tube stock
- Add water crystals and a slow release fertiliser suitable for native species
- Remove the plant from the container being careful not to damage the roots
- Insert the plant into the hole so that the base of the stem is a little below the surrounding ground
- Firm the soil around the root ball to remove air gaps
- Water the plant with at least 2L of water Mulch the plant using native tree mulch, weed mats or saw dust. Make sure the
- mulch is not against the stem of the plant Install a protective guard using wooden/bamboo stakes or milk carton on canopy and
- mid storey species
- Water weekly for the first month. Further watering may be required if there is no rain.

#### Species List

Recommended species and planting densities are provided below. The recommended species are based on those to be removed. If the recommended species are unavailable consult CVC for suitable replacement species.

#### Recommended Species for Stage 2 – Zones A and B

#### Species List

Upper storey/canopy Blackbutt (Eucalyptus pilul

Red Mahogany (Eucalyptus Pink Bloodwood (Corymbia Turpentine (Syncarpia glor Tallowwood (Eucalyptus m Mid storey Black Wattle (Acacia leioca

Red Ash (Alphitonia excels Cheese Tree (Glochidion f Lower storev/aroundcov Blue Flax-lily (Dianella cael Rough Saw Sedge (Gahnia Many-flowered Mat-rush (L Sterile Cover Crop Rye (Lolium rigidum) - if a Japanese Millet (Echinochi Spring/Summer

This relates to the storey not the individual species.

#### Species List

Upper storey/canopy Swamp Mahogany (Eucaly Brush box (Lophostemon Broad Leaved-paperbark Turpentine (Syncarpia glor Tallowwood (Eucalyptus m Mid storey

Cheese Tree (Glochidion f Lily Pilly (Acmena smithii) Cabbage Palm (Livistona

Red Ash (Alphitonia excels Lower storey/groundcove Saw-sedge (Gahnia clarkii, Rainbow Fern (Calochlae)

Harsh Ground Fern (Hypol

Sterile Cover Crop Rye (Lolium rigidum) - if a

Japanese Millet (Echinoch

Spring/Summer

This relates to the storey not the individual species.

#### Maintenance and Monitoring

Regular maintenance activities will include:

- Follow-up watering
- Repairing damaged tree guards
- the densities above



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- 0	Seed Rate <sup>1</sup>	Plant Number <sup>1, 2</sup>	Desired Density <sup>1</sup>
aris) s resinifera) a intermedia) nerata) icrocorys)	2 kg/ha	2030	1/15m²
alyx) sa) erdinandi)	2 kg/ha	3040	1/10m <sup>2</sup>
er rulea) a aspera) .omandra multiflora)	4 kg/ha	6080	1/5m²
pplied in Autmun/Winter loa esculenta) – if applied in	10 kg/ha	NA	NA

<sup>2</sup> This assumes half the desired density will be achieved by seeding.

#### Recommended Species for Stage 2 - Zone C

	Seed Rate <sup>1</sup>	Plant Number <sup>1, 2</sup>	Desired Density <sup>1</sup>
rptus robusta) suaveolens) Melaleuca quinquenervia) merata) nicrocorys)	2 kg/ha	125	1/15m <sup>2</sup>
erdinandi) australis) Sa)	2 kg/ha	190	1/10m <sup>2</sup>
er ) ha dubia) lepis muelleri)	4 kg/ha	380	1/5m²
pplied in Autmun/Winter loa esculenta) – if applied in	10 kg/ha	NA	NA

<sup>2</sup> This assumes half the desired density will be achieved by seeding

Monitoring survival rates and installing replacement plants where required to achieve

· Weed control and continued follow-up spot spraying, hand removal, etc as required

#### **CONTINUE ON FIGURE 3**

Job Number | 22-17528 Revision C Date JAN 2017 Figure 2

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#### Weed Control

Weed control is vital to the success of the rehabilitation program. The noxious and environmental weed species with the potential to occur at the site and their recommended control method are provided below.

Scientific Name	Common Name	Noxious	Control Methods					
			Cut and Paint <sup>1</sup>	Scape and Paint <sup>1</sup>	Direct Inject <sup>1</sup>	Spot Spraying <sup>1</sup>	Manual Remove	
Ageratina adenophora	Crofton Weed	Class 4				V <sup>2, (4+7)</sup>	v	
Ageratum houstonianum	Blue Billy Goat Weed					v	v	
Baccharis halimifolia	Grounsel Bush	Class 3	v <sup>4</sup>			v <sup>7</sup>	v <sup>3</sup>	
Bidens pilosa	Farmers Friends					v	v	
Cinnamomum camphora	Camphor Laurel	Class 4	v		v			
Eragrostis curvula	African Love Grass	Class 4				v		
Ipomea indica	Morning Glory			V <sup>4</sup>		v	v	
Lantana camara	Pink/Red Lantana	Class 4	v			v	v	
Ligustrum lucidum	Large Leaf Privet	Class 4	v <sup>4</sup>		v <sup>4</sup>	v <sup>2,8</sup>	v <sup>2</sup>	
Ligustrum sinense	Small Leaf Privet	Class 4	V <sup>4</sup>		v <sup>4</sup>	v <sup>2,8</sup>	V <sup>2</sup>	
Rubus fruticosus	Blackberry	Class 3				v <sup>8</sup>		
Senecio madagascariensis	Fireweed					v <sup>11</sup>	v	
Senna pendula var. glabrata	Eastern Cassia/Senna		v		v <sup>4</sup>	v <sup>5</sup>		
Solanum mauritianum	Tobacco Bush		v					
Sporobolus indica var. major	Giant Parramatta Grass	Class 3				V <sup>5</sup>	V <sup>6</sup>	

<sup>1</sup> Glyphosphate unless specified; <sup>2</sup> Seedlings; <sup>3</sup> Saplings; <sup>4</sup> Mature plants; <sup>5</sup> Large infestations; <sup>6</sup> Small infestations; <sup>7</sup> Grazon; <sup>8</sup> Metsulfuron-methyl; <sup>9</sup> Glyphosate & Metasulfuron-methyl mix, <sup>10</sup> Penetrant, <sup>11</sup> Bromoxynil

#### Reporting

Reporting for each Stage will be required at:

- Completion of initial planting (Stage 2 only)
- After each maintenance and monitoring period
- At completion of maintenance and monitoring period

#### **Rehabilitation Schedule**

The following table provides an indicative schedule for the rehabilitation works for each Stage. Stage 1 is to commence within 6 months of the BRMP being approved, while Stage 2 is to commence within 6 months of the quarry no longer operating or an area of the quarry is no longer operating. Maintenance and monitoring may continue for longer than 5 years depending on the success of the rehabilitation.

Task*	Y	ear 1**	Year 2		Year 3		 Year 4			 Year 5				
Site Preparation														
Seeding/Planting														
Maintenance/Monitoring														

\* See details for requirements of each task

\*\* Not applicable for Stage 1

#### Completion criteria and contingency

Rehabilitation will be considered complete once the densities in the species table have been achieved and sustained for 2 years. Density is to be determined using one randomly placed 20m x 20m quadrat per hectare. If the desired density is not being achieved, a contingency plan or trigger and response plan is to be implemented, as shown below.

Trigger	Response					
Infestation of noxious and/or environmental weeds	<ul> <li>Control infestation</li> <li>Revise control actions</li> <li>Increase maintenance frequency</li> </ul>					
Low plant densities/survival rates	<ul> <li>Engage a qualified bush regenerator to identify cause</li> <li>Address cause accordingly</li> <li>Replant or seed to desired density</li> </ul>					
Low species diversity	<ul> <li>Engage a qualified bush regenerator to identify cause</li> <li>Address cause accordingly</li> <li>Replant or seed to desired density</li> </ul>					



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Figure 3

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**Document Status** 

Revision	Author	Reviewer		Approved for Issue					
		Name	Signature	Name	Signature	Date			
0	B. Luffman	D. Williams	Dil Will	S. Lawer	Jan)	03/05/2017			
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