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# Hodgson Quarries and Plant Pty Ltd

## Operational Environmental Management Plan for the Sand Quarry, Roberts Rd Maroota, NSW

Prepared by:

**VGT Environmental Compliance Solutions Pty Ltd**

in conjunction with:

**Hodgson Quarries and Plant Pty Ltd**

Project Site	Sand Quarry Robert Rd, Maroota
Report Title	Operational Environmental Management Plan

### Revision Table

Date	Version		Author	Client Approval
13/07/2016	R0	Updated from 2011	LT	MH
22/11/2017	R1	Revision of Table 7	LT	MH
14/12/2017	R2	Update following independent audit	LT	MH
26/07/2018	R3	Review following Annual Review 2017 acceptance	LT	SR

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# Table of Contents

	Page No.
<b>1. Introduction</b>	<b>1</b>
1.1. Background	1
1.2. Project Site	1
1.3. Scope	1
1.4. Context of this Document	2
1.5. Document Control and Revision	3
<b>2. Consents, Leases and Licences</b>	<b>4</b>
2.1. Department of Planning and Environment	4
2.2. Environment Protection Authority (EPA)	4
2.3. NSW Office of Water	4
2.4. Policies, Guidelines and Standards	6
<b>3. Description of Site Works</b>	<b>8</b>
3.1. Requirement to Comply	8
3.2. Commencement of Works	8
3.3. Completion of Works	8
3.4. Construction Works and Environmental Controls	8
3.4.1. Dam Construction	8
3.4.2. Extraction	9
3.4.3. Rehabilitation Works	9
3.4.4. Rate of Extraction	9
3.4.5. Depth of Extraction	9
3.4.6. Life of Operation	10
3.4.7. Hours of Operation	10
<b>4. Environmental Objectives and Targets</b>	<b>11</b>
<b>5. Emergency Response</b>	<b>13</b>
5.1. Definition of a Pollution Incident (POEOA)	13
5.2. Definition of Material Harm (POEOA)	13
5.3. Procedures	13
<b>6. Monitoring Reporting and Response</b>	<b>13</b>
6.1. Monitoring and Auditing Program	13
6.2. Inspection	16
6.3. Auditing	23
6.4. Environmental Reporting	23
6.5. Complaints Management and Incident Response	24
<b>7. Responsibilities and Training</b>	<b>25</b>
7.1. Responsibilities	25
7.1.1. Plant Manager	25
7.1.2. Environmental Manager	25
7.1.3. General Staff	25
7.2. Training	25
<b>8. References</b>	<b>26</b>

## List of Tables

Table 1.	OEMP Update Summary	3
Table 2.	OEMP Document Distribution	3
Table 3.	Water Licences – Monitoring Bores	5
Table 4.	Water Licences – Plant Bore	5
Table 5.	Water Licences – Surface Dams and Nursery Bores	5
Table 6.	Legislative Requirements	6
Table 7.	Relevant Policies, Guidelines and Standards	7
Table 8.	Key Issues, Environmental Objectives and Targets	12
Table 9.	Summary of Monitoring Requirements	14
Table 10.	Trigger Action Response Plan	17

## List of Sub-Plans

Sub-Plan A	Air Quality Management Plan
Sub-Plan B	Water Management Plan
Sub-Plan C	Operation and Road Noise Management Plan
Sub-Plan D	Flora and Fauna Management Plan
Sub-Plan E	Construction Environmental Management Plan
Sub-Plan F	Rehabilitation Plan
Sub-Plan G	Pollution and Incident Response Management Plan
Sub-Plan H	Induction Package

# 1. Introduction

## 1.1. Background

The Maroota area is known for the production of sand from a palaeochannel system, and represents a valuable resource to the building industry. The sand is obtained from two main sources, the Maroota Sand which overlies the weathered profiles of the Hawkesbury Sandstone. Clay beds deposited by the meandering of the palaeochannels are common throughout the Maroota Sand formation.

The site has approval to extract 479,050 tonnes per annum at a maximum rate of 50 laden trucks per day. Extraction of the sand is contingent upon a water supply dam in order to wash the clay from the material won. The project supplies graded sand and gravel products suitable for use in the construction industry and specialty markets.

The site has been operational since the 1990's and construction of a water supply dam commenced in or around the 1970's. The site was formerly known as Sun-A-Rise Quarry, where construction of a water supply dam commenced around 1970. Consent from the Minister for Urban Affairs and Planning was granted for extraction and processing of sand, clay and pebble material in 2000 and the continued construction of the dam which is located on the northern boundary of the site. The original consent was modified in November 2000, August 2015 and March 2016. Hodgson Quarries and Plant Pty Ltd (the client) took over operations on the site in 2004.

This Operational Environmental Management Plan (OEMP), which forms part of the Environmental Management Strategy (EMS) has been updated and reviewed as required by the 2016 (Modification 2) consent conditions (NSW Department of Planning and Environment, March 2016), see *Appendix A of the EMS*. The target and objectives will be in line with the original EIS and the Environmental Assessments for the subsequent modifications (Nexus Environmental Planning Pty Ltd, November 1999), (Nexus Environmental Planning Pty Ltd, May 2015), (Nexus Environmental Planning Pty Ltd, September 2015).

## 1.2. Project Site

The project site is located on Roberts Road near Old Northern Road, Maroota, New South Wales. Maroota is approximately 50 kilometres North West of Sydney see *Figure 1 of the EMS*. The property description is Lots 1 & 2, DP 228308 and Lot 2 312327, located in the Parish of Maroota, County of Cumberland. The site is zoned RU1 Primary Production by the Hills Shire Council.

## 1.3. Scope

This document has been prepared using information provided by the client and covers the operations by Hodgson Quarries and Plant Pty Ltd at the Roberts Rd, Maroota Quarry. Documents relevant to this OEMP include the following:

- Operational Environmental Management Plan (September 2011 and November 2016), VGT
- Environmental Management Plan (June 2001), ERM
- DPE (Department of Planning and Environment) consent S98/00772, Modification 2 of DA 267-11-99 (18 March 2016)
- EPA Licence 6535

This OEMP has been prepared to review environmental objectives and procedures for managing and mitigating potential environmental impacts associated with the operation. It includes those objectives and procedures set out in the original OEMP as well as addressing the additional requirements of the 2016 consent and subsequent reviews.

The reviewed and updated OEMP is discussed in the following sections. This document, to be retained on site, also provides information on relevant environmental legislative requirements, licences and guidelines, site environmental responsibilities and monitoring requirements.

Modification 2 of Consent S98/00772 contains the following consent conditions regarding OEMP.

*“18. The Applicant shall prepare a Construction Environmental Management Plan (EMP) to the satisfaction of the [Secretary](#) prior to commencement of construction. The Construction EMP shall contain appropriate measures which demonstrate how the environmental objectives for the project will be achieved, including objectives stated in this Consent; and contain a monitoring, reporting and response program.*

*The Applicant shall implement the approved management plan as approved from time to time by the [Secretary](#).*

*19. The Applicant shall prepare an Operational Environmental Management Plan (EMP) in consultation with the relevant authorities and to the satisfaction of the [Secretary](#), prior to the commencement of extraction under this Consent. The EMP shall incorporate and integrate environmental management for the existing extraction areas, as well as the areas approved under this Consent.*

*20. The Operational EMP shall include, but not be limited to:*

- (a) environmental objectives for the site;*
- (b) the Air Quality Management Plan (Condition 29);*
- (c) the [Water Management Plan \(Condition 42\)](#);*
- (d) the Noise Management Plan (Condition 46);*
- (e) the Road Noise Management Plan (Condition 48);*
- (f) the Flora and Fauna Management Plan (Condition 55); and*
- (g) the Rehabilitation Plan (Condition 58).*

*21. The Applicant shall make copies of both EMPs available to Council, EPA and [DPI-Water](#) within 14 days of approval by the [Secretary](#). The Applicant shall also make a current copy of the EMPs available for inspection by the public or these agencies, for the duration of the Consent.*

*22. The Applicant shall, in consultation with the [Secretary](#), the EPA and the [DPI-Water](#), update the Operational EMP from time to time in order to ensure continuing compliance with the Conditions of this Consent and all relevant approvals and licenses. The EMP shall be responsible for determining if any significant changes to the Operational EMP should be referred to the [Secretary](#) for approval.”*

## 1.4. Context of this Document

ERM <sup>Ref. 10</sup> prepared an Operational Environmental Management Plan (OEMP) for Hytech Sands in June 2001 prior to the client acquiring the property. The OEMP was reviewed during an independent audit prepared by Umwelt Pty Ltd in December 2008 which found that certain operations had changed and therefore the OEMP required updating. This requirement was reinforced during an inspection by the Department of Planning on 1 July

2009. The OEMP was updated in September 2009 by VGT Pty Ltd to incorporate the required changes. An independent audit was undertaken by Umwelt Australia Pty Ltd in July 2011, which led to a further review of the OEMP by VGT in 2011. An update, triggered by the change in consent approved in March 2016 was undertaken in November 2017. Further reviews were undertaken following an Independent audit in 2017 and after acceptance of the Annual Review in 2018.

**Table 1. OEMP Update Summary**

Reason for Review	Reviewed	Approval by DPE
Consent modification 1, November 2000	ERM (June 2001)	14 <sup>th</sup> August 2011
Independent Audit, December 2008	VGT (September 2009)	14 <sup>th</sup> August 2011
Independent Audit, July 2011	VGT (September 2011)	Pending. Permission to forward the report to the relevant agencies obtained August 2013
Consent Modification 2, March 2016	VGT (May 2016)	Comments received 14/10/16 regarding changes required
Changes required by DPE	VGT (November 2016)	Pending. Review of rehabilitation plan not yet received.
Independent Audit, September 2017	VGT (November 2017)	Updated to include additional approved plans, no major changes to this document
Annual Review and Compliance Report 2017 accepted with comments July 2018	VGT (July 2018)	This document

## 1.5. Document Control and Revision

To ensure the correct environmental procedures and plans are used on site, issue of this Operation Environmental Management Plan (OEMP) is to be controlled using a document register retained on site. A copy of the most recent OEMP is to be held by those indicated in *Table 2*.

Any major revision of the OEMP will be forwarded to the Department of Planning and Environment (DPE) for approval prior to implementation, with a copy lodged with the persons/authorities listed in *Table 2*.

**Table 2. OEMP Document Distribution**

Responsibility/ Agency	Contact Person/ Office
Landowner	Dr LS Martin
Hodgson Quarries and Plant Pty Ltd (Quarry Operator)	Stuart Reed hodgsonquarries@gmail.com
Department of Planning and Environment NSW (DPE)	compliance@planning.nsw.gov.au
NSW EPA	Alexander Spaller Alexander.spaller@epa.nsw.gov.au
Natural Resources Access Regulator (formerly DPI-Water)	Water.compliance@dpi.nsw.gov.au Water.referrals@dpi.nsw.gov.au
The Hills Shire Council (Council)	Kristine McKenzie council@thehills.nsw.gov.au

## 2. Consents, Leases and Licences

This section details the approvals and licences held for the site, as well as relevant legislative requirements that the owner, operator and site workers should be aware of. Policies, guidelines and standards that should be used for site operations have also been included. This chapter will be reviewed annually to ensure information remains up to date with legislative and policy changes. Additional documents referenced for review and preparation of this report have been listed in *section 8*.

### 2.1. Department of Planning and Environment

Development approval, with conditions of consent was issued by the then Department of Urban Affairs and Planning (S98/00772) on the 31<sup>st</sup> of May 2000. Modification 3 was made to DA 267-11-99 on 18 August 2015, and Modification 2 was made on 18 March 2016 (see *EMS Appendix A*). This consent expires 31<sup>st</sup> May 2025.

### 2.2. Environment Protection Authority (EPA)

Environmental Protection Licence 6535 (see *EMS Appendix B*) has been issued under the *Protection of the Environmental Operations Act, 1997* for Crushing, Grinding or Separating Works and Dredging Works. It is renewed annually on the 12<sup>th</sup> of March.

### 2.3. NSW Office of Water

The site holds a number of licences issued under the *Water Management Act 2000*, for the operation of groundwater bores as well as dams. Location of these bores and dams can be found in *EMS Figure 2*. A summary of the active bore details is shown in *Table 3*.

The licences shown in **bold** are active and relevant to the quarry operations. The remaining licences described are in use by the landowner.



**Table 3. Water Licences – Monitoring Bores**

Water Access Licence Number (WAL)	Water Approval and Reference Number	Licence	Identification	Purpose	Allocation	Expiry	Bore Status	Comments
-	-	<b>10BL158808</b>	PT84MW1, PT84MW5	Monitoring	-	perpetuity	In use for monitoring	Installed 20/10/1998. Installed March 2013, collapsed Sept 2017, replaced by MW8.
-	-	<b>10BL605696</b>	PT84MW6	Monitoring	-	perpetuity	In use for monitoring	Installed January 2015. To replace PT84MW4
-	-	<b>10BL605795</b>	MW8, 9, 13	Monitoring	-	perpetuity	In use for monitoring	Installed December 2016.
-	-	<b>10BL605797</b>	MW11	Monitoring	-	perpetuity	In use for monitoring	Installed December 2016.
-	-	<b>10BL605798</b>	MW10	Monitoring	-	perpetuity	In use for monitoring	Installed December 2016.
-	-	<b>10BL605799</b>	MW7, 12	Monitoring	-	perpetuity	In use for monitoring	Installed December 2016.

**Table 4. Water Licences – Plant Bore**

Water Access Licence Number (WAL)	Water Approval and Reference Number	Licence	Identification	Purpose	Allocation	Expiry	Bore Status	Comments
<b>24163</b>	<b>10WA114817/ 10AL114816</b>	Was 10BL159748, 10PT901430 (converted to WAL 2011)	PT84PB1	Extraction	45.0 ML per year	14/06/2025	Converted to WAL	Located on lot 1 DP228308. Can extract at a rate of 3L/sec.

**Table 5. Water Licences – Surface Dams and Nursery Bores**

Water Access Licence Number (WAL)	Water Approval and Reference Number	Licence	Identification	Purpose	Allocation	Expiry	Bore Status	Comments
<b>26163</b>	<b>10CA104888/ 10AL104887</b>	10SL045324	Dams and Pumps	<i>Irrigation</i>	264ML per year	16/02/2026	Current. Converted to WAL	Located on Lot 2/228308. <i>Allocation too large to be Dams 3 and 4 only, therefore taken to include Dam 1</i>
24157	10CA114819/ 10AL114818	10BL157595 10PT901431	PT84PB2	<i>Irrigation</i>	6.0ML per year	14/06/2025	Current. Converted to WAL	Located on Lot 2/228308 Installed 1999. Located adjacent to Dam 4.

## 2.4. Policies, Guidelines and Standards

Other legislation relevant to site operations is listed in *Table 6*. This information has been included so that the operator and staff are aware of their various legislative obligations, for example, in the event of a pollution incident or uncovering a heritage item during operations.

**Table 6. Legislative Requirements**

Legislation	Relevance to site operations
Environmental Planning and Assessment Act, inc amendments and regulations	Consent lapses 31 May 2025. Any changes to operations should not occur without regard to whether a modification to the consent is required.
Protection of the Environment Operations Act, inc amendments and regulations	Site operations to comply with licence conditions. Licence to be reviewed if any changes to operations are made to determine whether change complies with licence. Annual return to EPA to be submitted with statement of compliance and monitoring and complaints summary. EPA to be notified in the event of pollution. Action may be taken by the EPA in the event of a pollution event. Fines apply
National Parks and Wildlife Act, inc amendments and regulations	NPWS to be immediately advised of any disturbance to Aboriginal or heritage relics or sites. Work to stop if artefacts are uncovered.
Local Government Act, 1993 (Building Code of Australia)	Any new temporary or permanent structures on the site are to be approved by Council.
Water Management Act, 2000	Licence required for operation of groundwater bores and for dams. Compliance with licence conditions required.
Protection of the Environment Operations (Waste) Regulation 2005 and Waste Avoidance and Resource Recovery Act 2001	Waste products from site are to be disposed at controlled waste facilities. Recycling is to be maximised and transfer of certain wastes to be carried out by licensed operator.
Rural Fires Act 1997	Any burning on site requires prior notice to be given to the Council. Burning during bushfire danger period requires a permit from Council.
Environmentally Hazardous Chemicals Act, 1985	Storage and distribution of some chemicals may require a licence. A list of all chemicals used on site is to be retained on site.

**Table 7. Relevant Policies, Guidelines and Standards**

Policy, Guideline or Standard	Relevance to site operations
The Hills Local Environmental Plan 2012, as amended	Works to have regard to the various requirements of DCP that relate to extractive industries. Submission to Council of detailed engineering plans in accordance with the guidelines prior to Council issuing a Construction Certificate for any new structures or buildings.
Sydney Regional Environmental Plan (SREP) 20 - Hawkesbury-Nepean River	Plans required in accordance with guidelines. New works/development to have regard to SREP 20.
Managing Urban Storm water - Soils and Construction	Management techniques to be implemented during construction and operation to manage stormwater.
Noise Policy for Industry, 2017	Sets criteria for operational noise, details monitoring requirements for existing development
Australian Water Quality Guidelines for Fresh and Marine Waters (ANZECC 2000)	Use criteria to set targets for water quality monitoring on site.
AS 3580.9.3 Particulate Matter - Determination of Total Suspended Particulates (TSP)	Australia Standard for sampling and analysis of air pollutants (TSP).
AS 3580.9.6 Suspended Particulate Matter - PM10 high volume air sampler with size selective inlet-gravimetric method.	Australian Standard for sampling and analysis of air pollutants (PM10).
AS 3580.9.14 Suspended Particulate Matter – PM2.5 high volume air sampler with size selective inlet-gravimetric method.	Australian Standard for sampling and analysis of air pollutants (PM2.5).
AS 3580.10.1 Determination of particulate matter – Deposited matter – Gravimetric method.	Australian Standard for sampling and analysis of air pollutants (Dust Deposition Gauges).
AS3580.1.1 Ambient Air - Guide for the Siting of Sampling Units	Australian Standard Guide to siting air monitoring equipment.
National Environment Protection (Ambient Air Quality) Measure	Standard against which ambient air quality can be assessed

## 3. Description of Site Works

### 3.1. Requirement to Comply

Item 2 of the conditions of consent requires the following:

*The Applicant shall:*

- (a) Carry out the development generally in accordance with the EIS, Modification 1, Modification 3 and Modification 2 of Development Application 267-11-99, and;
- (b) Comply with the conditions of this consent.

These documents provide a description of the operation, which is summarised in the following sections.

Prior to altering any of the following aspects of the development, or any other part of the development, the quarry operator should seek advice as to whether the alteration requires modification to the existing development consent. If a modification is required, an application will need to be made to the Department of Planning and Environment (DPE), supported by an assessment of environmental impact that may be associated with the modification.

### 3.2. Commencement of Works

*Condition 8* of the Consent states that no extraction shall commence in **areas that are not currently subject to extraction** until the following has been completed:

- (a) construction of the bund walls at the corner of Roberts Road and Old Northern Road;
- (b) submission of the Conditions Compliance Report required under *Condition 6* and
- (c) obtained all licences necessary for the commencement of extraction (refer *Section 2*).

The operator currently has all required licences.

### 3.3. Completion of Works

*Condition 9* of the Consent requires that rehabilitation of all disturbed areas be completed within six months of completion of extraction.

### 3.4. Construction Works and Environmental Controls

Extraction is to occur generally in accordance with the sequence outlined on *Figure 3 of the EMS*.

#### 3.4.1. Dam Construction

The approved dam will be constructed in three stages, as described in the Modification 2 Environmental Assessment, (Nexus Environmental Planning Pty Ltd, September 2015). Water management details are included in *Sub-Plan B: Water Management Plan*.

### 3.4.2. Extraction

The material is extracted using an excavator, loaded onto a dump truck, then transported to the processing area, where the material is washed then stockpiled prior to transportation off site. Air Quality will be managed according to *Sub-Plan A: Air Quality Management Plan*, and noise impacts will be managed as detailed in *Sub-Plan C: Operation and Road Noise Management Plan*.

### 3.4.3. Rehabilitation Works

As with the majority of quarries there are very few finished portions of the site that will allow rehabilitation works to be undertaken, however the client will endeavour as a part of this plan to reduce the amount of disturbed areas by:

- Constructing the dams; and
- Stabilising and revegetating the northern face.

The dam will be 2 hectares in size once complete. The northern face stabilisation will ensure there will be no works within 15 metres of the boundary fence as well as providing a surface to commence revegetation works.

The existing perimeter vegetation will be maintained as a visual barrier and conservation measure. Vegetation under the powerlines will be necessarily limited to grasses and low shrubs.

Details of the rehabilitation works are included in *Sub-Plan D: Flora and Fauna Management Plan* and *Sub-Plan F: Rehabilitation Plan*.

### 3.4.4. Rate of Extraction

Approval has been provided for fifty laden truck movements from the site per day at a maximum of 20 movements per hour, with extraction occurring 5.5 days per week. This equates to around 479,050 tonnes per annum, which is the maximum annual extraction rate permitted by the consent.

### 3.4.5. Depth of Extraction

Condition 17 of the consent is the following:

*“The Applicant shall ensure that extraction does not take place below a level 2 metres above the wet weather high groundwater level of the aquifer, as measured and mapped on the site (see Conditions 39(d) and 44).*

Condition 39(d) states the following:

*“Within six weeks of the date of approval of Modification 2, the Application shall commission a comprehensive groundwater study of the site. This study must... (d) develop an interim contour map of the wet weather high groundwater level of the regional aquifer, based on all available records.*

Condition 44 states the following:

*“The results of the Groundwater Monitoring Program shall be reported the Department and DPI-Water, using contour plans depicting the surface topography, updated contour maps of the wet weather high groundwater level of the regional aquifer and proposed depth of extraction for each extraction Phase. Reporting is to occur on a six monthly basis for the duration of extractive operations, and throughout rehabilitation of the site, unless otherwise agreed with the Secretary.*

*The Applicant shall implement the Groundwater Monitoring Program as approved from time to time by the Secretary.”*

The Groundwater Study Report and Groundwater Monitoring Program are included in *Sub-Plan B*.

### 3.4.6. Life of Operation

The consent expires on 31 May, 2025.

### 3.4.7. Hours of Operation

Unless prior written approval from the EPA is obtained, the hours of operation are (condition of consent 16):

- Construction: 7.00 am to 6.00 pm Monday to Friday
- Extraction and Processing: 7.00 am to 6.00 pm Monday to Friday and 7.00 am to 1.00 pm Saturdays
- Vehicle loading: 6.00 am to 6.00 pm Monday to Friday and 6.00 am to 1.00 pm Saturdays

No works shall be undertaken on Sundays or Public Holidays.

These restrictions do not apply to routine maintenance work such as the repair of machinery, provided the work does not result in exceedance of noise limits (refer *Sub-Plan C: Operation and Road Noise Management Plan*).

## 4. Environmental Objectives and Targets

Documents listed in *Section 2* have been used to identify key environmental issues for the development. *Table 8* lists these key issues together with environmental objectives and targets to manage each issue. The targets are the specific and measurable performance requirements that the operation will aim to achieve. These objectives and targets form the basis of the monitoring, reporting and response program summarised in *Section 6*, and detailed in the *Sub-Plans*.

Implementation of controls and actions to be undertaken to meet the stated objectives and targets are described in the various management plans provided as annexes to this OEMP.

**Table 8. Key Issues, Environmental Objectives and Targets**

Key Issue	Environmental Objective (from EIS/EA)	Environmental Targets	OEMP Reference
Air Quality	To ensure minimal dust generation as a result of the extraction operation	No complaints received and monitoring shows criteria being met.	Sub-Plan A
Groundwater level and quality	To ensure the extraction process does not have a significant and adverse impact on the regional groundwater of the Maroota area	Measurements of groundwater depths undertaken as required by consent or licence agreements to guide extraction depths, and to ensure groundwater quality criteria is met.	Sub-Plan B
Surface water quality	Management of the quality of runoff to minimise the possibility of polluted runoff from the site. To maximise re-use of runoff water in site processes.	Any site runoff (not expected) to meet criteria of 50mg/L Total Suspended Solids	Sub-Plan B
Noise	To ensure noise emanating from the extraction operation does not adversely impact on land uses in the environs of the site	Noise monitoring to show criteria being met. Works only during approved hours of operation; work outside set hours only with EPA permission. No community complaints or EPA/Council investigations	Sub-Plan C
Traffic	To minimise impact on the local road network by quarry trucks.	Only 50 laden trucks per day leave the site, maximum of 20 movements per hour	Sub-Plan C
Flora and Fauna	To ensure correct procedures are applied in the event of threatened flora or fauna species being identified on the site	Annual inspection of flora and fauna to ensure minimal impact.	Sub-Plan D
Archaeology	To prevent destruction of heritage items and archaeological material	Correct procedures are followed in the event any heritage or Aboriginal archaeological item is located during works.	Sub-Plan G
Rehabilitation	To ensure that revegetation of the site is undertaken progressively as allowed by the completion of earthworks To ensure the visual impact of the facility is limited' and 'to provide for a more pleasant working environment and a screen to the development from outside the site	Rehabilitation undertaken in accordance with the Rehabilitation Plan.	Sub-Plan F
Emergency response	To ensure that in the event of an environmental accident the necessary procedures are put in place to mitigate the impact on the environment'	Documented evidence that all employees are trained in emergency response procedures within one month of commencement on site. Procedures followed in the event of an environmental emergency.	Sub-Plan H  Sub-Plan G



## 5. Emergency Response

### 5.1. Definition of a Pollution Incident (POEOA)

Pollution Incident means an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.

Other types of incidents that require planned action include safety incidents, bushfires, and unexpected finds of heritage or environment significance.

### 5.2. Definition of Material Harm (POEOA)

#### **Part 5.7: Duty to notify pollution incidents**

##### **147 Meaning of material harm to the environment**

(1) For the purposes of this Part:

(a) harm to the environment is material if:

(i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or

(ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and

(b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

(2) For the purposes of this Part, it does not matter that harm to the environment is caused only in the premises where the pollution incident occurs.

### 5.3. Procedures

Safety response procedures are outlined in the Mine Safety Management Plan. Other emergency response procedures are detailed in *Sub-Plan G: Pollution and Incident Response Management Plan*.

## 6. Monitoring Reporting and Response

### 6.1. Monitoring and Auditing Program

A monitoring program will be implemented to check that environmental targets are being met. Monitoring procedures are described in each management plan, with a summary provided in *Table 9*.

**Table 9. Summary of Monitoring Requirements**

Parameter	Method	Sampling Period / Interval	Location (see Figure Two unless specified)	Performance Criteria
Insoluble Solids g/m <sup>2</sup> /month	As per NATA accreditation of laboratory	30 ± 2 days / continuous	D1A, D2, D3	≤ 4 annual average
TSP µg/m <sup>3</sup>	As per NATA accreditation of laboratory	24 hrs every 6 days for 12 months	D1A	≤ 90 annual average
PM10 µg/m <sup>3</sup>	As per NATA accreditation of laboratory	24 hrs every 6 days for 12 months	D1A	≤ 50 over 24 hrs, ≤ 30 annual average
PM2.5 µg/m <sup>3</sup>	As per NATA accreditation of laboratory	24 hrs every 6 days for 12 months	D1A	None required
Native Vegetation	Visual inspection of permanent rehabilitation and conservation areas by suitably qualified ecologist using random meander techniques	Annual spring or summer in permanently rehabilitated areas and conservation areas for first 3 years	Rehabilitated and conservation areas	As outlined in Sub-Plan D
Fauna	Visual inspection of permanent rehabilitation by suitably qualified ecologist using random meander techniques	Annual spring or summer	Rehabilitated areas and conservation areas	As outlined in Sub-Plan D
Groundwater Levels	Data logger	Continuous, checked monthly	Monitoring Bores MW1, MW6-13	As outlined in Sub-Plan B
Groundwater Quality	As per NATA accreditation of laboratory	6-monthly for pH, EC, TDS, annually for O&G	Monitoring Bores MW1, MW6-13	As outlined in Sub-Plan B
Groundwater Inflow	Observation	Daily observation. If observed sample for water quality and monitor volumes weekly	In open excavations	As outlined in Sub-Plan B
Surface Water Levels	Data logger	Continuous, checked monthly	Dams 1-4	As outlined in Sub-Plan B
Surface Water Quality	As per NATA accreditation of laboratory	Dam water quality tested quarterly for 2 years to 2020, then reviewed	Dam 1,3 and 4	As outlined in Sub-Plan B

Parameter	Method	Sampling Period / Interval	Location (see Figure Two unless specified)	Performance Criteria
Truck Movements	Weighbridge docketts	Hourly and daily	Weighbridge	Maximum 50 laden trucks per day, 10 laden trucks per hour
Operational Noise	Hand held noise meter by AS 1055-1997	Annually	Locations A, B and C	<ul style="list-style-type: none"> <li>• an LAeq,15 min noise emission criterion of 43dBA (7am to 6pm) Monday to Saturday;</li> <li>• an LAeq,15 min noise emission criterion of 40dBA (6am to 7am) Monday to Saturday; and</li> <li>• an LA1,1 min noise emission criterion of 50dBA (6am to 7am) Monday to Saturday.</li> </ul>
Road Noise	Hand held noise meter or unattended logging by AS 1055-1997 and measurements validated in accordance with CORTN.	Annually or when <ul style="list-style-type: none"> <li>• Significant alterations or changes to off-site truck movement;</li> <li>• Unique projects that arise which may require campaign trucking;</li> <li>• Community complaints are received regarding excessive off-site truck noise; and</li> <li>• When the Action Response Plan (Noise) is triggered.</li> </ul>	Location R	Traffic noise from the development does not exceed (LAeq(1 hr)) 55dBA between 7am and 10pm and 50dBA between 10pm and 7am at any affected residence under adverse weather conditions. Where ambient LAeq levels already exceed these criteria, the Applicant shall ensure that traffic noise from the development does not result in an increase of more than 2dBA.

## 6.2. Inspection

A regular site inspection by the Plant Manager or delegate will check that environmental procedures are being carried out correctly and note any areas where changes may be required to mitigate impact. The following table summarises actions to be implemented following an unplanned event.

**Table 10. Trigger Action Response Plan**

Event	Potential Adverse Outcome	Trigger Level	Actions to be Implemented	Evidence/Reference	Responsibility
<b>Air Quality Impacts</b>					
24 hour Air Quality Goal exceeded	Dust impacts on surrounding communities	PM10 >50µg/m <sup>3</sup>	1 <sup>st</sup> month of exceedance: investigate circumstances, ensure dust mitigation measures have been followed, increase use of water cart	(NSW Department of Planning and Environment, March 2016)	Plant Manager, Lab staff
			2 <sup>nd</sup> consecutive month of exceedance: if source is stockpiles, install sprinkler system; if source is traffic add polymer to water cart, if source is disturbed area, implement planting program		
Annual average Air Quality Goals exceeded	Dust impacts on surrounding communities	Insoluble Solids >4g/m <sup>2</sup> /month	1 <sup>st</sup> month of exceedance: investigate circumstances, ensure dust mitigation measures have been followed, increase use of water cart	(NSW Department of Planning and Environment, March 2016)	Plant Manager, Lab staff
		TSP >90µg/m <sup>3</sup>	2 <sup>nd</sup> consecutive month of exceedance: if source is stockpiles, install sprinkler system; if source is traffic add polymer to water cart, if source is disturbed area, implement planting program		
		PM10 >30µg/m <sup>3</sup>			
Mud tracked onto road	Dust impacts on surrounding communities	Visible mud on Roberts Rd	Trucks off site to cease until sealed area of haul road cleaned off. If water cart in use – cease, if rain is cause, cease all unnecessary traffic until weather has eased	(NSW EPA, 2015)	All drivers
Dust emitting from loaded vehicles	Dust impacts on surrounding communities	Loaded truck not covered	Driver to be stopped and load covered	(NSW Department of Planning and Environment, March 2016) (NSW EPA, 2015)	All staff
Visible dust emitting from disturbed areas	Dust impacts on surrounding communities	Visible dust travelling off site	Ensure water cart has been used appropriately. Cease all non-essential earth-moving activities and reduce truck speeds. Review monitoring to ensure no exceedances have occurred.	(NSW Department of Planning and Environment, March 2016)	Plant Manager, quarry workers
				(NSW EPA, 2015)	

Event	Potential Adverse Outcome	Trigger Level	Actions to be Implemented	Evidence/Reference	Responsibility
<b>Noise Impacts</b>					
New plant item introduced to site	Elevated off-site noise levels and potential non compliance	Complete in field observations to identify if new plant is audible in off-site locations or if sound power level of items is greater than an equivalent plant items listed in Table 1 of NMP	Measures plant item in question to determine sound power level. If louder than equivalent item in Table 1 of NMP, replace with quieter unit or implement noise controls (ie mufflers etc)	(NSW Department of Planning and Environment, March 2016) (NSW EPA, 2015)	Plant Manager
Community complaint regarding noise emissions	Noncompliance with noise limits	Community reaction to noise from site	See Section 4.3.	(NSW Department of Planning and Environment, March 2016) (NSW EPA, 2015)	Plant Manager
			-Log details of complaint		
			- relocate or eliminate the noise source in question		
			-confirm with complainant that amelioration measures are effective		
			- the results will also be discussed with the complainant to ensure a resolution is reached		
			- if a resolution cannot be reached the EPA DPE will be contacted		
- where required, the quarry plant manager may need to engage a suitably qualified acoustic consultant to complete attended compliance testing to validate compliance					
Noisy trucks (exhaust noise)	Generating on-site and off-site elevated noise levels	Check serviceability of exhaust system	Where faulty muffler or exhaust is identified organise repairs to rectify noise emissions	(NSW Department of Planning and Environment, March 2016) (NSW EPA, 2015)	Plant Manager/ All drivers
Using air brakes (site ingress)	Generating off-site elevated noise levels with tonal and low frequency components	Instruct drivers minimise the use of air brakes when possible and minimise air brake usage when entering site via Roberts Road	Re-iterate this management strategy during inductions, and regularly communicate the importance of reducing non and off-site noise emissions	(NSW Department of Planning and Environment, March 2016) (NSW EPA, 2015)	Plant Manager/ All drivers

Event	Potential Adverse Outcome	Trigger Level	Actions to be Implemented	Evidence/Reference	Responsibility
<b>Surface Water and Erosion Impacts</b>					
<p>Visible erosion on final rehab. slopes, or long term topsoil / overburden stockpiles</p>	<ul style="list-style-type: none"> <li>• Excessive sediment build up in on-site dams.</li> <li>• Re-vegetation unable to establish.</li> <li>• Loss of topsoil for rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>• Slopes in rehabilitated areas observed to be greater than 3 horizontal to 1 vertical.</li> <li>• Slope lengths in rehabilitated areas shall not exceed 20m for a 3H: 1V batter.</li> <li>• Slope lengths in rehabilitated areas shall not exceed 30m for a 4H: 1V batter.</li> <li>• Slope lengths in rehabilitated areas shall not exceed 40m for batters &gt;4H: 1V.</li> <li>• Visual inspection shows evidence of excessive rilling or gullying on rehabilitation slopes.</li> <li>• Visual inspection shows established rehabilitated areas lose vegetation coverage or are unable to establish adequate vegetation coverage i.e. &lt;70% coverage.</li> <li>• Visual inspection shows spread topsoil on areas awaiting revegetation is eroding.</li> </ul>	<ul style="list-style-type: none"> <li>• Install catch drains or earth banks on slopes where slope lengths exceed recommendations.</li> <li>• Review rehabilitation areas to determine where slopes and catch drains need maintenance or repair or reworking.</li> <li>• Reseeding/replant areas that require increased vegetation cover.</li> <li>• Replace/ rework topsoil as required</li> <li>• Review topsoil and overburden stockpiles to determine where maintenance or repair is required.</li> </ul>	<p>Annual review report &amp; photographic evidence/ Managing Urban Stormwater- Soils and Construction- Volume 2E Mines and Quarries &amp; SWMP</p>	<p>Plant Manager, quarry workers</p>

Event	Potential Adverse Outcome	Trigger Level	Actions to be Implemented	Evidence/Reference	Responsibility
Water discharging from the site is laden with sediment	Sediment is not contained within the on-site dams and is observed as uncontrolled discharge.	<ul style="list-style-type: none"> <li>• Review of SWMP finds on-site dams are found to be a smaller size than indicated as reviewed by aerial survey and/or on-site measurements.</li> <li>• Expansion of the quarry or changes to the mining sequence that may impact the current water management system.</li> <li>• Clean or dirty water drains observed to be blocked or damaged.</li> <li>• Inspection during rainfall events shows dirty water egressing the site via drain overflow</li> <li>• Inspection during rainfall events shows additional drains required to redirect dirty water to on-site dams.</li> <li>• Sediment leaves the site due to the failure of the dam wall due to not being designed for the design storm flows.</li> <li>• Sediment leaves the site due to the erosion of the dam wall.</li> <li>• Inspection during a 5 day rainfall event of &lt;69.4mm shows overtopping of the on-site dams.</li> <li>• Erosion or tunnelling on the dam walls observed.</li> <li>• Dam wall failure.</li> <li>• Inspections shows dam walls (earth embankments) are not adequately vegetated.</li> </ul>	<ul style="list-style-type: none"> <li>• Dam sizes are to be verified against current catchments.</li> <li>• Dams are to be enlarged to meet the required capacity.</li> <li>• Review of site and SWMP to determine water management requirements.</li> <li>• No work will commence in new areas or changes to the mining sequence until the SWMP is reviewed and appropriate water management structures are constructed.</li> <li>• Dam walls and batters to be measured to ensure they are not too steep i.e.&gt;3H:1V</li> <li>• Replace vegetation on eroded surfaces if required.</li> <li>• Repair dams as required</li> </ul>	Annual review report, photographic evidence. Managing Urban Stormwater- Soils and Construction- Volume 2E Mines and Quarries & SWMP	Plant Manager, quarry workers



Event	Potential Adverse Outcome	Trigger Level	Actions to be Implemented	Evidence/Reference	Responsibility
Clean water (surplus to requirements) is diverted onto the site	Capacity for dirty water is impacted causing overtopping of dams	Inspection during rainfall events shows additional drains required to redirect clean water around the site.	Repair or install diversion drains	Annual review report, photographic evidence. Managing Urban Stormwater- Soils and Construction- Volume 2E Mines and Quarries & SWMP	Plant Manager, quarry workers
<b>Groundwater Impacts</b>					
Prolonged visible water seepage	Depletion of MTSGS groundwater	Visible seepage in quarry floor or face.	Investigate to determine if perched or regional groundwater. If regional groundwater, revise extraction plans accordingly.	Ongoing observation / monitoring. Lack of persistent seepage. Quarterly reporting of monitoring data. Six monthly updates of wet weather high GW level contours.	Plant Manager, quarry workers, Lab staff.
Extraction levels below consented depth	Depletion of MTSGS groundwater	Current quarry extraction depth found to be below 2m above revised wet weather high GW level	Revise extraction plans. Backfill any excess excavation if necessary. Drill additional monitoring bores in future extraction areas to provide advance confirmation of groundwater levels. Investigate necessity to replace any monitoring bore lost to future extraction, and replace if deemed necessary.	Six-monthly reporting Report on any new monitoring bores	Plant Manager, Lab staff.
Change to quality of ground water	Adverse impact on ground water quality beneficial use values	EC increase by more than 20% above previously recorded values. pH change by more than 10% from previous range	Investigate to determine cause of quality change. If changes not due to natural factors, develop response strategy in consultation with DPI-Water.	Reporting to DPI-Water and DPE. Lab analysis reports	Plant Manager, Lab staff
Pollution of ground water by quarry operations	Adverse impact on ground water quality beneficial use values	Detection of Oil & Grease 20% above previous levels	Response detailed in SWMP. Review site practices, including vehicle wash-down, fuel/chemical storage, equipment maintenance, etc.	Lab analysis reports. Reporting to DPI-W and DPE	Plant Manager, Lab staff.

Event	Potential Adverse Outcome	Trigger Level	Actions to be Implemented	Evidence/Reference	Responsibility
Community complaint regarding ground water supply	Interruption to other users' water supply	Complaint from neighbour. Drawdown in MW11 more than 2m below lowest recorded level Change in EC / pH at MW11 more than 10% outside historical monitoring	Investigate to determine whether the quarry is the cause of loss of yield or quality. Make good provision- if quarry causes a loss of yield or adverse change in quality in a neighbour's water supply, provide a replacement water supply, either direct supply by quarry or provision of a new bore, or other agreed alternative.	Post-response monitoring to demonstrate return to ambient water quality. Reporting to DPI-W, DPE.	Plant Manager
<b>Flora, Fauna and Rehabilitation Impacts</b>					
Stock or vehicular impact on vegetation	<ul style="list-style-type: none"> <li>Perimeter bunds have a less than effective visual screen.</li> <li>Quality of existing vegetation is impacted</li> </ul>	<ul style="list-style-type: none"> <li>Stock gain access to restricted areas due to inadequate fencing.</li> <li>Vehicles or equipment impact on quality of existing or rehabilitated vegetation</li> </ul>	<ul style="list-style-type: none"> <li>Suitable fencing to be maintained around critical vegetation.</li> <li>If vegetation found to be adversely impacted, implement planting regime.</li> </ul>	Annual monitoring reports / consent and FFMP	Plant Manager
Weeds or pests impact on vegetation	Rehabilitation objectives not achieved	<ul style="list-style-type: none"> <li>Weed cover more than 25% over a 3 year monitoring period within any given areas where revegetation has occurred. Note that non-native species purposefully planted to control erosion are excluded from this target.</li> <li>Detection of an increase in the number of new pests and feral animal species within and surrounding the site.</li> </ul>	Investigate causes and eradication methods based on type of infestation discovered. Deploy weed or pest eradication program as appropriate.	Annual reviews and reports	Plant Manager, specialist consultant.
Final Rehabilitation Criteria not met	Rehabilitation objectives not achieved. Security bond cannot be returned	Closure criteria not met as outlined in Rehabilitation and Landscape Plan	Undertake actions outlined by Landscape and Rehabilitation Plan	Sub-plan F	Plant Manager

### 6.3. Auditing

*Condition 70* requires an independent environmental audit to be conducted by a suitably qualified, experienced and independent team of experts, at the following times:

- every three years from the date of consent;
- at the completion of works under the Consent;

The audit will evaluate the environmental performance of the development and assess whether it is complying with the requirements in this Consent and any relevant EPL (including any assessment, plan or program required under these approvals), review the adequacy of strategies, plans or programs required under the abovementioned approvals; and recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under the abovementioned approvals.

An independent audit was undertaken by Umwelt Australia Pty Ltd in July 2011 which was accepted by the Department of Planning and Environment (DPE) in a letter dated 5<sup>th</sup> October 2011.

An independent audit was undertaken on the 28<sup>th</sup> of May 2014 by Newport Technical and acceptance of this audit is pending from the DPE.

The DPE conducted a site audit on the 3<sup>rd</sup> of August 2015 and provided a report to the client. The findings of this audit were addressed in the Annual Review for 2015 and incorporated in the 2016 OEMP review.

An independent audit was commissioned in March 2017, and undertaken during June 2017. The final report was received and submitted to the DPE in September 2017, along with a response. An email was received 29/9/17 requesting further information, which was supplied on 11/10/17. No formal acceptance or further communications have been received regarding the independent audit as of December 2017.

### 6.4. Environmental Reporting

*Condition 6* of the consent requires a Conditions Compliance Report to be prepared and submitted to the DPI Secretary prior to commencement of extraction in areas not previously subject to extraction, and annually for the first three years of extraction in these areas. *Condition 66* requires an Annual Review containing the following:

*(a) describe the development (including any rehabilitation) that was carried out in the past calendar year, and the development that is proposed to be carried out over the current calendar year;*

*(b) include a comprehensive review of the monitoring results and complaints records of the development over the past year, which includes a comparison of these results against the:*

- *relevant statutory requirements, limits or performance measures/criteria;*
- *monitoring results of previous years; and*
- *relevant predictions in the EIS, Modification 1 and Modification 2;*

*(c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;*

*(d) identify any trends in the monitoring data over the life of the development;*

*(e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and*

(f) describe what measures will be implemented over the next year to improve the environmental performance of the development.

A letter was received from the DPE allowing these reports to be combined dated 30/6/16. The report is to cover the calendar year, and to be submitted to the DPE in March. Further reporting required is detailed in *section 4.2 of the EMS*.

## 6.5. Complaints Management and Incident Response

*Conditions 10 to 14* of the Consent provide requirements for complaints procedures and dispute resolution. The following complaints management procedures have been developed to comply with these conditions.

- Prior to commencement of construction, a complaints telephone number will be publicised on the front gate of the site and in the various local newspapers. The postal address will also be included for written complaints.
- A log book will be retained on site to record details of all complaints received and actions taken in response to complaints. The log book will be inspected by the Plant Manager regularly as part of the site inspection. The log books will be made available for inspection on request by DPE, EPA or Council and a summary of complaints received will be included in the Annual Review.
- The person who lodged the complaint will be contacted with an explanation of an initial response within 24 hours of receipt of the complaint. The complaint will then be investigated and all reasonable attempts to determine the cause of concern undertaken within two working days. Immediate action will be undertaken where an environmental emergency applies, as defined in section 5.
- If adverse impacts are identified, all practicable measures to modify the activity which may be causing the impacts will be undertaken.
- If the response does not satisfy the complainant within six weeks, the operator will inform the DPE Secretary and take any action as directed by the Secretary. An independent investigation may be required, in accordance with *Condition 14* of the Consent.

## 7. Responsibilities and Training

### 7.1. Responsibilities

#### 7.1.1. Plant Manager

The nominated management representative is the Plant Manager, Martin Hodgson of Hodgson Quarries and Plant Pty Ltd.

This person is responsible for:

- Ensuring operations on the site follow the procedures described within the EIS, EA, consent and management plans;
- Ensuring all staff are trained in the relevant procedures and plans;
- Overseeing the receipt of, and response to, complaints about the environmental performance of the development; and
- Liaising with the community on environmental issues.

#### 7.1.2. Environmental Manager

The Environmental Manager is responsible for ensuring the various management plans are prepared and updated as required.

#### 7.1.3. General Staff

Staff are responsible for undertaking and/or complying with relevant environmental procedures for their area of operation. Compliance with these procedures will be a condition of employment.

## 7.2. Training

All staff, contractors and sub-contractors engaged in construction, operation or rehabilitation works on the site are to undertake induction training within one month of commencement at the site.

This induction will include:

- occupational, health and safety;
- information on the key environmental issues, objectives and targets;
- relevant procedures and monitoring they will be responsible for, to ensure targets are met;
- environmental emergency procedures;
- information on relevant penalties and fines in the event they do not follow procedures.

In the event that procedures are changed, staff will be provided with revised training within one month of the alteration.

The induction has been updated to include an Environmental Induction Checklist (see *Sub-Plan H*).

## 8. References

- Ref. 1.** NSW Department of Planning and Environment File No S98/00772, DA No 267-11-99 , March 2016 Consolidated Consent
- Ref. 2.** NSW EPA Licence number 6535
- Ref. 3.** NSW Department of Primary Industries, Water, licences WAL24163, 10BL158808, 10BL605696.
- Ref. 4.** Nexus Environmental Planning, EIS (1999)
- Ref. 5.** Nexus Environmental Planning, SoEE (2000)
- Ref. 6.** Nexus Environmental Planning, EA (May 2015)
- Ref. 7.** Nexus Environmental Planning, EA (September 2015)
- Ref. 8.** NSW Department of Planning and Environment Assessment Report, Roberts Road Quarry, (March 2016)
- Ref. 9.** NSW Department of Environment and Climate Change, Managing Urban Stormwater – Soils and Construction
- Ref. 10.** ERM Australia, Environmental Management Plan (June 2001)
- Ref. 11.** VGT Pty Ltd, Operational Environmental Management Plan (November 2011)
- Ref. 12.** Umwelt (Australia), Environmental Compliance Audit HB Maroota, 2003-2006 (December 2008)
- Ref. 13.** Umwelt (Australia), Environmental Compliance Audit HB Maroota, 2006-2011 (July 2011)
- Ref. 14.** Newport Technical Services Pty Ltd, Environmental Compliance Audit, Maroota Sand Quarry 2011 – 2014 (May 2014)
- Ref. 15.** NSW Department of Planning and Environment, Roberts Road Sand Quarry Compliance Audit as part of State Sand Quarries Campaign (May-August 2015), (December 2015)
- Ref. 16.** DIPNR, Guideline for the Preparation of Environmental Management Plans, 2004.

# Sub-Plan A: Air Quality Management Plan

## Sub-Plan B: Water Management Plan



## Sub-Plan C: Operation and Road Noise Management Plan

## Sub-Plan D: Flora and Fauna Management Plan



# Sub-Plan E: Construction Environmental Management Plan

## Sub-Plan F: Rehabilitation Plan

# Sub-Plan G: Pollution and Incident Response Management Plan

## Sub-Plan H: Environmental Induction and Checklist