

July 2023

Air Quality Management Plan for Hodgson Quarries and Plant Pty Ltd Roberts Road Quarry, Maroota NSW

www.vgt.com.au

*We offer a personalised,
Professional and complete service
Tailored to meet individual needs.*

Summary Table	
Consent Number	267-11-99
Name of Quarry	Robert Road Quarry
Name of Quarry Operator (s)	Hodgson Quarries and Plant Pty Ltd
Name and Contact Details of the Quarry Manager	Martin Hodgson PO Box 355 Glenorie NSW 2157
Name and Contact Details of the Environmental Representative	Stuart Reed 0418 277 871 hodgsonquarries@gmail.com

Revision Table

Date	Version	Author	Reviewed	Approved
5/5/2016	R0 LT Draft for Internal Review	LT	MH/SR	LT
11/05/2016	R1 TO/LT incorporating internal edits	LT/TO	MH/SR	LT
20/06/2016	R2 Incorporating client changes	LT	MH/SR	LT
22/06/2016	R3 Removed background data to Annual Review	LT	MH/SR	LT
7/11/2016	R4 Changes following DPE review 14/10/16	LT	MH/SR	H. Reed, Director Resource Assessments 19/12/2016
14/12/2017	R5 Changes following review triggered by independent audit	LT	MH/SR	Insufficient changes for Secretary's assessment
26/07/2018	R5- review following Annual Review 2017 acceptance	LT		
July 2019	R5 – reviewed, no changes	Lt		
July 2020	R5 – reviewed, no changes	Lt		
July 2021	R5 – reviewed, no changes	Lt		
July 2022	R5 – reviewed, no changes	Lt		
21/07/2023	R6 Changes for Mod 4 and IEA	LT/TO	Draft for client review	

NOTE – This is a tracked version – with changes from version R5 given in [blue text](#).

COPYRIGHT

© VGT Environmental Compliance Solutions Pty Ltd
and
© Hodgson Quarries and Plant Pty Ltd

All intellectual property and copyright reserved.

Apart from any fair dealing for the purpose of the private study, research, criticism or review, as permitted under the Copyright Act 1968, no part of this report may be reproduced, transmitted, stored in a retrieval system or adapted in any form or by any means (electronic, mechanical, photocopying, recording or otherwise) without written permission. Enquiries should be addressed to VGT Environmental Compliance Solutions Pty Ltd.

DISCLAIMER

This report was prepared in accordance with the scope of services set out in the contract between VGT Environmental Compliance Solutions Pty Ltd (VGT) ABN 26 621 943 888 and the Client and is not to be reproduced except in full. To the best of our knowledge, the report presented herein accurately reflects the Client's intentions when the document was printed. However, the application of conditions of approval or impacts of unanticipated future events could modify the outcomes described in this document. In preparing the report, VGT used data, surveys, analyses, designs, plans and other information provided by individuals and organisations referenced herein. While checks were undertaken to ensure that such materials were the correct and current versions of the materials provided, except as otherwise stated, VGT did not independently verify the accuracy or completeness of these information sources.

Contents

1	Introduction	1
1.1	Site Description	1
1.2	Scope	1
1.3	Consultation and Review	5
1.4	Objectives	8
1.5	Targets	8
1.6	Air Quality Goals and Statutory Requirements	8
1.6.1	Department of Planning and Environment	8
1.6.2	National Environmental Protection Measure	9
1.6.3	NSW EPA	9
2	Existing and Potential Sources of Dust	10
2.1	Definitions	10
2.2	Climate	10
2.3	Surrounding Environment	14
2.4	Site Activities	14
2.4.1	Baseline Data	14
2.4.2	EIS Predictions	19
2.5	Potential Dust Sources	22
3	Air Quality Monitoring Plan	22
3.1	Monitoring Criteria and Methods	23
3.1.1	Calculation of TSP	23
3.2	Monitoring Locations	24
3.3	Monitoring Intervals	24
3.3.1	Dust Deposition Gauges	24
3.3.2	High Volume Air Samplers	25
3.4	Monitoring Records	25
3.5	Sampling Training	25
4	Dust Suppression Measures	27
4.1	Reactive Dust Management	27
4.2	Extraction, Processing, and Material Placement	27
4.3	Transportation	27
4.4	Wind Breaks and Bunds	28
4.5	Progressive Rehabilitation	28
5	Trigger Action Response Plan	29
6	Reporting and Review	31
6.1	Monitoring Review	31
6.2	Annual Reporting and Review	31
6.3	Air Quality Monitoring Review	31
7	References	32

Figures

Figure One. Figure B1: Air Quality Monitoring Locations

26

Tables

Table 1.	Relevant Consent Conditions	1
Table 2.	Air Quality Management Plan Consultation	5
Table 3.	Changes from Draft AQMP	5
Table 4.	Changes made 2017	6
Table 5.	Changes made 2023	6
Table 6.	Air Quality Monitoring Review Recommendations 2021 to 2022	7
Table 7.	Air Quality Criteria	8
Table 8.	NEPM Air Quality Standards	9
Table 9.	Site Climate Data 2016 - 2022	13
Table 10.	Annual Average Particulate Emissions for Richmond Monitoring Station (1994-2019)	18
~~Insoluble Solids Annual Averages~~		18
~~Particulate Matter (PM10)~~		19
Table 11.	Predicted Annual Average TSP Concentrations ($\mu\text{g}/\text{m}^3$)	19
Table 12.	Predicted Annual Average PM10 Concentrations ($\mu\text{g}/\text{m}^3$)	20
Table 13.	Predicted Annual Average PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)	20
Table 14.	Predicted Annual Average Deposited Matter Concentrations ($\text{g}/\text{m}^2/\text{month}$)	21
Table 15.	Monitoring Criteria	23

Appendices

Appendix A	Email Approval of sites from EPA
Appendix B	Consultation with DPE
Appendix C	Dust Management Procedure
Appendix D	Sampling Procedures
Appendix E	Air Quality Monitoring Review

1 Introduction

Hodgson Quarries and Plant Pty Ltd are obliged to prevent and minimise harm to the environment throughout the life of the project. All practicable measures will be taken to prevent and minimise harm that may result from the construction, operation and decommissioning of the development.

All activities on the site, including those undertaken by contractors and sub-contractors will be carried out generally in accordance with the EIS, Modifications 1 to 4 and the conditions of the development consent. This plan will be implemented to ensure that all activities on the premises will be carried out in a manner that will minimise emissions of dust from the premises.

1.1 SITE DESCRIPTION

Hodgson Quarries and Plant Pty Ltd (the client) operate a sand quarry on Roberts Road at Maroota, NSW. The site comprises lots 1 and 2 DP 228308 and lot 2 DP 312327 in The Hills Shire Council (see Figure One in the OEMP). The development application number 267-11-99 was for extraction and on-site processing of sand, clay, and pebble; and construction of a bund wall.

The development has been in operation continuously since the 1970's. This Air Quality Management Plan is intended to be included in the OEMP.

1.2 SCOPE

This report is intended to satisfy the following conditions ~~20 (b), 29 and 65~~ of the consent:

Table 1. Relevant Consent Conditions

Consent Condition	Where Addressed
20. The Operational EMP shall include, but not be limited to:	
(b) the Air Quality Management Plan (Condition 29);	This report
Air Quality Air Quality Criteria	-
28. The Applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria in.	Section 4
29.	
30. Table at any residence on privately-owned land.	

Consent Condition	Where Addressed																			
Table 1: Air quality criteria <table><tr><th>Pollutant</th><th>Averaging period</th><th>Criterion</th></tr><tr><td rowspan="2">Particulate matter < 10 µm (PM₁₀)</td><td>Annual</td><td>^{a, c} 25 µg/m³</td></tr><tr><td>24 hour</td><td>^b 50 µg/m³</td></tr><tr><td rowspan="2">Particulate matter < 2.5 µm (PM_{2.5})</td><td>Annual</td><td>^{a, c} 8 µg/m³</td></tr><tr><td>24 hour</td><td>^b 25 µg/m³</td></tr><tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>^{a, c} 90 µg/m³</td></tr><tr><td>^a Deposited dust</td><td>Annual</td><td>^b 2 g/m²/month ^a 4 g/m²/month</td></tr></table> Notes: ^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources). ^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own). ^c Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary. ^d Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.	Pollutant	Averaging period	Criterion	Particulate matter < 10 µm (PM ₁₀)	Annual	^{a, c} 25 µg/m ³	24 hour	^b 50 µg/m ³	Particulate matter < 2.5 µm (PM _{2.5})	Annual	^{a, c} 8 µg/m ³	24 hour	^b 25 µg/m ³	Total suspended particulate (TSP) matter	Annual	^{a, c} 90 µg/m ³	^a Deposited dust	Annual	^b 2 g/m ² /month ^a 4 g/m ² /month	
Pollutant	Averaging period	Criterion																		
Particulate matter < 10 µm (PM ₁₀)	Annual	^{a, c} 25 µg/m ³																		
	24 hour	^b 50 µg/m ³																		
Particulate matter < 2.5 µm (PM _{2.5})	Annual	^{a, c} 8 µg/m ³																		
	24 hour	^b 25 µg/m ³																		
Total suspended particulate (TSP) matter	Annual	^{a, c} 90 µg/m ³																		
^a Deposited dust	Annual	^b 2 g/m ² /month ^a 4 g/m ² /month																		
28A. The air quality criteria in A1 Table do not apply if the Applicant has an agreement with the owner/s of the relevant residence or infrastructure to exceed the air quality criteria, and the Applicant has advised the Department in writing of the terms of this agreement.	No agreements at this time																			
Air Quality Management																				
29./31. The Applicant shall prepare an Air Quality Management Plan as part of the EMP. The Air Quality Management Plan shall:																				
(a) identify existing and potential sources of dust deposition, TSP and fine particulates (PM ₁₀ and PM _{2.5}) and specify appropriate monitoring intervals and locations. The purpose of the monitoring is to evaluate, assess and report on these emissions and the ambient impacts with the objective of understanding the development's contribution to levels of dust deposition, TSP and fine particulates in ambient air around the site;	Section 2 Sections 3.3, 3.2, Section 6																			
(b) provide a monitoring plan having regard to local meteorology and the relevant Australian Standards, identifying the methodologies to be used, including justification for monitoring intervals, weather conditions, seasonal variations, selecting locations, periods and times of measurements;	Section 3																			
(c) provide details of dust suppression measures for all sources of dust from the development, including a planting and watering regime to ensure that ~~no more than 3 hectares of the site are exposed and active at any one time~~ areas of the site which are exposed and active at any one time are minimised to the greatest extent practicable. The use of a polymer in the water to minimise dust impacts shall be investigated as part of this Plan;	Section 4																			
(d) provide details of actions to ameliorate impacts if they exceed the relevant criteria; and	Section 5																			
(e) provide the design of the reactive management system intended to reduce the day-to-day impacts of dust and fine particulates due to the development.	Section 4.1																			
29A. The Applicant must commission an expert review of air quality monitoring at the site. This review must:	-																			

Consent Condition	Where Addressed
a) be undertaken by a suitably qualified and experience person(s) whose appointment has been endorsed by the Secretary;	Section 6.3
b) review the accuracy of air quality monitoring at the site over a 12-month period, in general accordance with the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007) and with a particular focus on PM2.5 monitoring;	Section 6.3
(c) provide recommendations (where required) to improve the accuracy of air quality monitoring at the site; and	Section 6.3
(d) be undertaken in consultation with the EPA.	Section 6.3
29B. A copy of the expert review report along with a timetable for implementing any recommendations arising from the review required under condition 29A of this Schedule, must be submitted by 1 October 2022, or as otherwise agreed by the Planning Secretary. The Applicant must implement the recommendations of the expert review to the satisfaction of Secretary.	Section 1.3 Appendix E
32. Activities occurring at the premises must be carried out in a manner that will minimise emissions of dust from the premises. ¹ ¹ Environment Protection Authority General Term of Approval	Section 4
33. The Applicant shall cease offending work at such times when the operations are resulting in visible dust emissions blowing in a direction so as to cross onto public roads or lands not owned by the Applicant.	Section 4.1
34. The Applicant shall install, operate and maintain a sprinkler system to adequately water all cleared areas and stockpiles so as to minimise dust emissions to acceptable levels.	Section 4.1
35. The Applicant shall ensure that all vehicular movements on unsealed areas are restricted to specific routes and that all vehicles within the subject site keep to a speed limit of 30 km/h.	Section 4.3
36. The Applicant shall ensure that trucks are covered when entering and leaving the premises carrying loads of potentially dust generating material.	Section 4.3
Management Plan Requirements	-
65. The Applicant shall ensure that the management plans required under this Consent are prepared in accordance with any relevant guidelines, and include:	
(a) detailed baseline data;	Section 2.4.1
(b) a description of:	
the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 1.6
any relevant limits or performance measures/criteria;	Section 1.6 Section 3.1

Consent Condition	Where Addressed
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;	Section 5
(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	Section 4
(d) a program to monitor and report on the:	
impacts and environmental performance of the development;	Section 3
effectiveness of any management measures (see c above);	Section 6
(e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 5
(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 6
(g) a protocol for managing and reporting any:	Section 6
incidents;	
complaints;	
non-compliances with statutory requirements; and	
exceedances of the impact assessment criteria and/or performance criteria; and	
(h) a protocol for periodic review of the plan.	Section 6

An Air Quality Impact Assessment was prepared by Wilkinson Murray to accompany the Environment Assessment document in support of the 2016 consent modification. That report provided baseline data and predictive modelling in support of the modification application.

[Umwelt \(May 2020\)](#), [Jacobs \(2019\)](#) and [Benbow \(September 2020\)](#) prepared documents in response to request for further information regarding the Modification 4 application. These documents are available from the Major Projects website and the controls have been included in this document.

1.3 CONSULTATION AND REVIEW

The following summarises the consultation undertaken in preparation of this report.

Table 2. Air Quality Management Plan Consultation

Date	Originator	Recipient	Description	Where addressed in this Plan
30/3/16	VGT	EPA	Approval for gauges locations sought and received. EPA advised that they have no comments or requirements for AQMP.	Appendix A
15/7/16	VGT	DPE	Draft Air Quality Management Plan submitted	
10/10/16	DPE	Proponent	Review of EMS Attachment A (black text, Table 2)	Appendix B
10/10/16	VGT	DPE	Response to review of EMS (green text, Table 2)	Appendix B
14/10/16	DPE	Proponent	Attachment A_14 Oct (red text, Table 2)	Table 2

Table 3. Changes from Draft AQMP

Air Quality Management Plan – condition 29, Schedule 2	Satisfactory (Yes/ No)	Comment	Action Required
The Applicant shall prepare an Air Quality Management Plan as part of the EMP. The Air Quality Management Plan shall:			
a. identify existing and potential sources of dust deposition, TSP and fine particulates (PM10 and PM2.5) and specify appropriate monitoring intervals and locations. The purpose of this monitoring is to evaluate, assess and report on these emissions and the ambient impacts with the objective of understanding the development's contribution to levels of dust deposition, TSP and fine particulates in ambient air around the site;	No	The frequency of monitoring for TSP, PM10 and PM2.5 has been specified as 24 hours every 6 days for 12 months. This frequency is acceptable however, the MP does not specify the schedule of monitoring following this 12 month period. <i>Response: Section 3.2.2: A correlation will be developed for the site between the varying size fractions using a high-volume air sampler method and the overall dust collected in the dust deposition gauges. This correlation will be presented to the DPE in the 2016 Annual Review with the aim of ensuring compliance using dust deposition gauges alone.</i> <i>It is the intention that the form of the ongoing monitoring will be decided following consultation with DPE.</i>	The MP should specify ongoing monitoring arrangements for TSP, PM10 and PM 2.5. <i>Response: Please include this information in the management plan.</i>
Where addressed in this report?			Section 3.2.2

An independent audit undertaken in 2017 triggered a review of all management plans. The following changes were made to this plan as a result of the 2017 review.

Table 4. Changes made 2017

Change	Section
This table added	1.3
"Hire" removed from proponent name	Throughout document
Inclusion of PM ₁₀ standards from NEPM	1.6.2

An independent audit undertaken in 2023 triggered a review of all management plans. The following changes were made to this plan as a result of the 2023 review.

Table 5. Changes made 2023

Change	Section
NC-09 - An exceedance of site PM_{2.5} dust criteria occurred in September 2021 as a result of a local grassfire. - The exceedance was not reported to DPE in accordance with Condition 68. The Trigger Action Response Plan has been updated to ensure compliance with Condition 68 to report incidents.	Section 5
NC-10 Non-compliances identified in the 2021 Annual Review had not been submitted. The Trigger Action Response Plan has been updated to ensure compliance with Condition 68A to report non-compliances.	Section 5

An expert review of the air quality monitoring, as required by Condition 29A of the Mod 4 Consent, was undertaken by VGT, in January 2023, for the period 1 September 2021 to 1 September 2022. The review concluded that during the review period the air quality monitoring is fit for purpose and as accurate as can reasonably be expected and exceeds those of the sites nearest comparable operators.

The review also made the following recommendations.

Table 6. Air Quality Monitoring Review Recommendations 2021 to 2022

Change	Section
Ensure site conditions and observations for the monitoring period are included on the sample sheet for all air quality samples, along with name of the technician, date and time sampled, and compliance with the siting and instrument requirements of the relevant method. To be checked by Environmental Manager after each sampling event, or monthly at a minimum.	Section 3.4 Appendix D
Ensure that the procedure for sampling is documented and that all sampling technicians are trained in it regularly. Procedure for sampling to be included in updated AQMP (see next point for timing). Training records to be maintained by the site and updated, as required, by staff changes.	Section 3.5 Appendix D
Update the site Air Quality Management Plan (AQMP) to include the modification 4 requirements. The author recommends that, in consultation with the DPE, monitoring for TSP be discontinued as this is a less critical parameter, and instead replaced by a ratio calculation from PM10 based on monitoring data collected from the site over as long a period as possible, without including the extraordinary events of the 2019-2020 bushfires. The explanation for how this is to be calculated would be included in the updated AQMP. It is recommended that the AQMP be updated within 3 months + 4 weeks (in accordance with Schedule 2 condition 67) following submission of the Annual Report and Independent Environmental Audit whichever is later, to ensure all outcomes from those reviews are included.	See Table 1 for where Mod 4 updates have been addressed in this report. Section 3.1 This AQMP has been updated within the required period.

1.4 OBJECTIVES

The objectives of the Air Quality Management Plan are to prevent adverse impacts on the surrounding environment from dust and plant emissions generated from the operation and ensure compliance with relevant guidelines and statutory requirements.

1.5 TARGETS

The targets of the Air Quality Management Plan are to receive no reasonably preventable complaints from members of the public or statutory authorities regarding air quality emissions from the site, and for monitoring to show that air quality criteria are being met.

1.6 AIR QUALITY GOALS AND STATUTORY REQUIREMENTS

Air Quality Criteria

Parameter	Criteria	Units	Averaging Period	Source
Total Suspended Particulates (TSP)	90	µg/m³	Annual	DA Sched 2-28
PM10	50	µg/m³	24 hours	DA Sched 2-28
PM10	30	µg/m³	Annual	DA Sched 2-28
Insoluble Solids	4	g/m²/month	Annual	DA Sched 2-28

1.6.1 Department of Planning and Environment

Schedule 2, Condition 28 of the consent states:

“The Applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria in TABLE at any residence on privately-owned land.”

“28. The Applicant shall take all practical steps to manage the development so that the ambient air quality goals for total suspended particles (TSP) of 90 µg/m³ (annual average), particulate matter (PM10) of 50 µg/m³ (24 hours average) and 30 µg/m³ (annual average) and the dust deposition goal of 4gm/m² (annual average) are not exceeded as a result of the development, when measured at any monitoring location specified in the Air Quality Management Plan.”

Table 7. Air Quality Criteria

Table 1: Air quality criteria		
Pollutant	Averaging period	Criterion
Particulate matter < 10 µm (PM ₁₀)	Annual	^{a, c} 25 µg/m³
	24 hour	^b 50 µg/m³
Particulate matter < 2.5 µm (PM _{2.5})	Annual	^{a, c} 8 µg/m³
	24 hour	^b 25 µg/m³
Total suspended particulate (TSP) matter	Annual	^{a, c} 90 µg/m³
^c Deposited dust	Annual	^b 2 g/m²/month ^a 4 g/m²/month

Notes:

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).

^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own).

^c Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary.

^d Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.

1.6.2 National Environmental Protection Measure

The National Environmental Protection Council (NEPC) amended the National Environmental Protection Measure (NEPM) for Ambient Air Quality in [May 2021](#). The following are relevant standards for this site.

Table 8. NEPM Air Quality Standards

Pollutant	Averaging Period	Maximum Concentration Standard	Maximum Allowable Exceedences
Particles as PM ₁₀	1 day	50 µg/m ³	None
	1 year	25 µg/m ³	None
Particles as PM _{2.5}	1 day	25 µg/m ³	None
	1 year	8 µg/m ³	None

1.6.3 NSW EPA

The site operates under NSW Environment Protection Licence number 6535 for the scheduled activities of Crushing, Grinding or Separating and Extractive Activities. There are no licenced discharge points and the following conditions relating to Air Quality:

“O3 Dust

O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

O3.2 All loaded trucks entering or leaving the premises must have their loads covered.

O4 Other operating conditions

O4.1 The licensee must prevent any tracking of mud on to public roads by vehicles leaving the premises.”

2 Existing and Potential Sources of Dust

2.1 DEFINITIONS

Insoluble solids, also known as dust deposition, are measured using the EPA approved AS3580.10.1 and represent particles that settle from the ambient air into a container along with rainwater. The samples are usually collected over a 30 ± 2 day period and are reported in g/m²/month.

Total Suspended Particulates (TSP) are particles having an approximate Equivalent Aerodynamic Diameter (EAD) of less than 50 µm and are therefore usually suspended in the atmosphere due to their small size. Ambient air is drawn through a filter at a known rate by a high-volume air sampler. The TSP inlet hood acts to prevent the ingress of rainfall and debris. TSP is measured using AS3580.9.3 which superseded the EPA approved AS2724.3.

Particulate Matter with an EAD less than 10 µm is known as PM₁₀. The NSW EPA approved Australian Standard for measuring PM₁₀ is AS3580.9.6 and uses a high-volume air sampler in a similar manner to TSP, except that a size selective inlet replaces the hood. PM_{2.5} may also be measured using a high-volume air sampler with a different size selective inlet, according to AS3580.9.14.

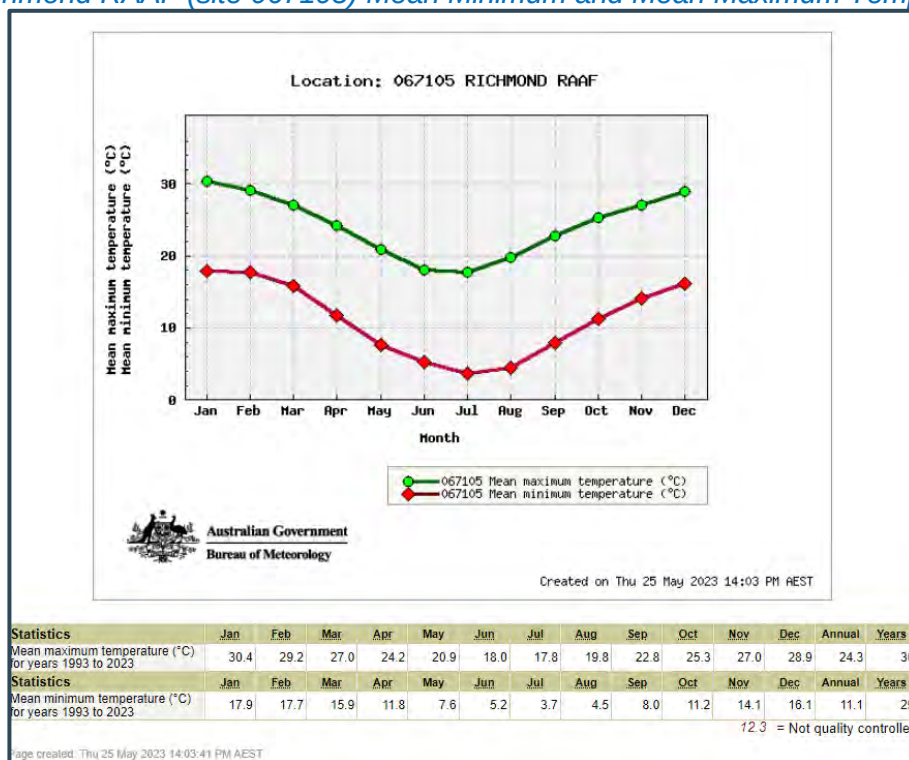
All high-volume air samplers are typically sampled on a 6-day cycle for 24 hours. This averages out diurnal variations, operational changes over the week, and seasonal changes. All ambient air monitoring sites are located according to AS3580.1.1.

2.2 CLIMATE

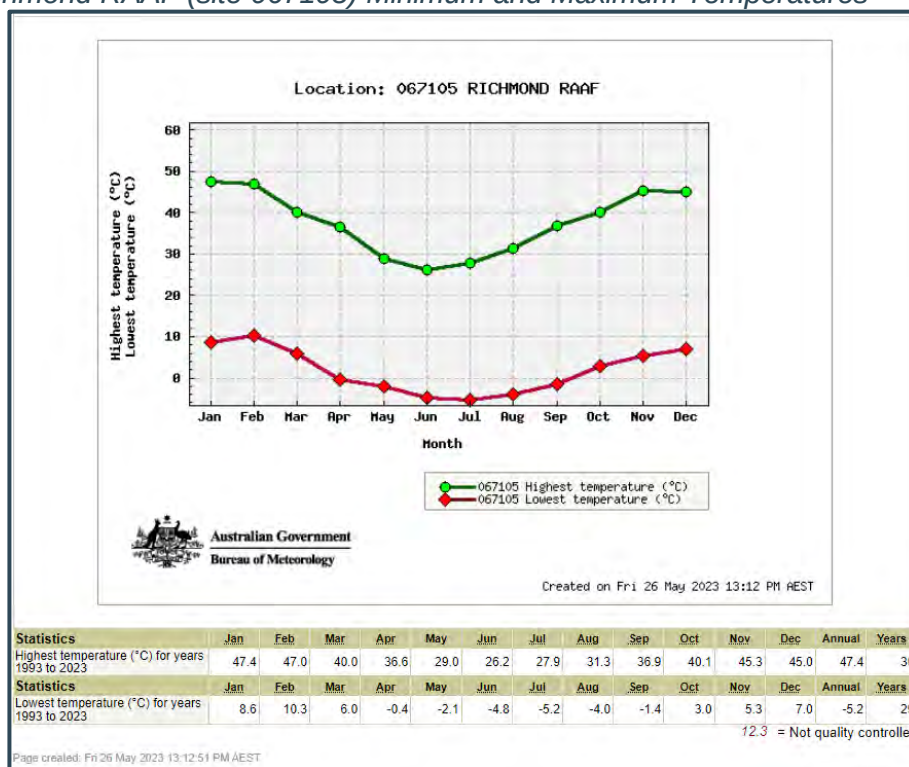
The climate of the region can be characterised using data from the Richmond RAAF weather station of the Bureau of Meteorology ([site 067105](#)), approximately 20km south-west of the site. In summary, January is the hottest month (mean maximum temperature of 30°C) and July the coldest (mean minimum of 4.3°C). Rainfall occurs mostly in the summer and early spring, with February being the wettest month (average of 116 mm over 12 days) and August the driest month (average of 32mm over 6 days).

Key weather observations obtained from BOM are reproduced below.

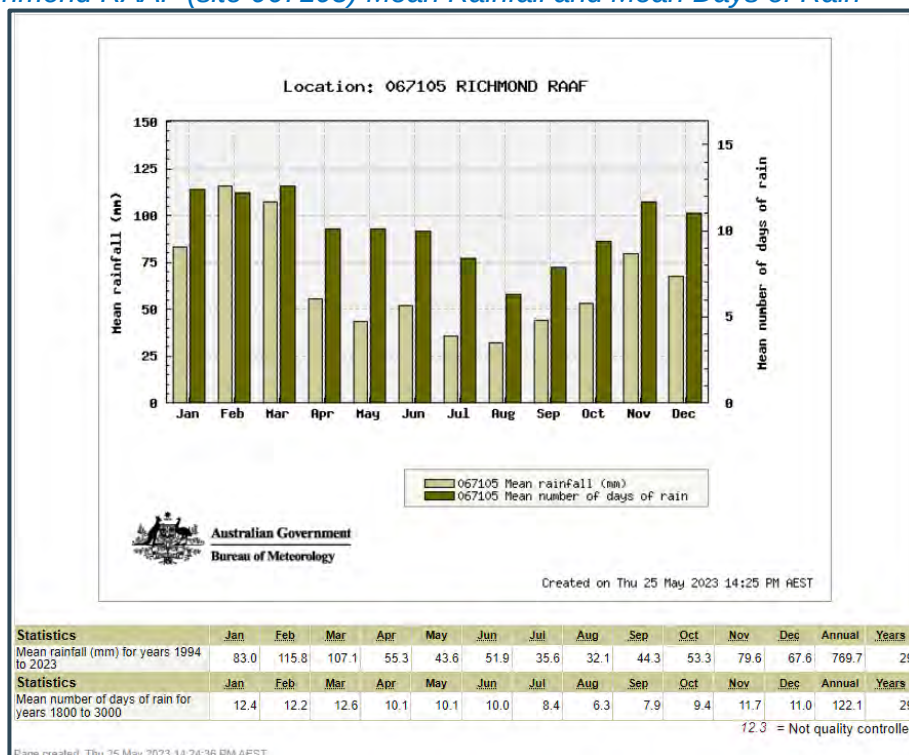
Graph 1. Richmond RAAF (site 067105) Mean Minimum and Mean Maximum Temperatures



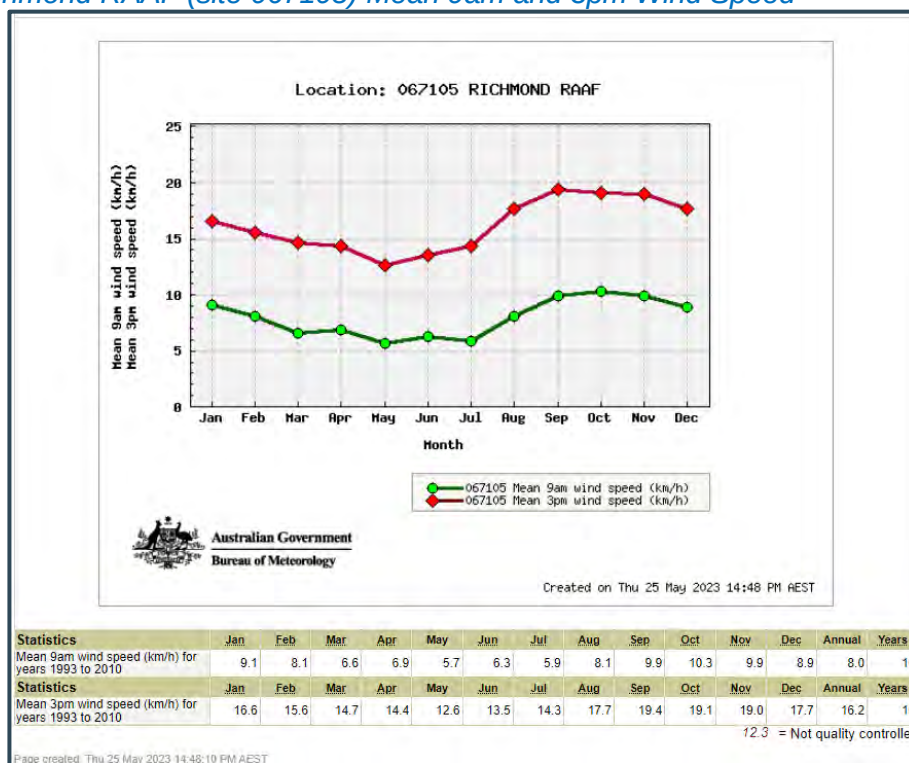
Graph 2. Richmond RAAF (site 067105) Minimum and Maximum Temperatures



Graph 3. Richmond RAAF (site 067105) Mean Rainfall and Mean Days of Rain



Graph 4. Richmond RAAF (site 067105) Mean 9am and 3pm Wind Speed



The weather monitored at the site between 2016 and 2022 is summarised in the table following. The hottest day in this time period was 44.8 °C in February 2017 and the coldest was 0.3 °C in July 2021. The maximum wind speed recorded was 37 Km/h in November 2022 and the average for the time period was 3.6 Km/h. Rainfall was received on 41% of the recorded days. The low wind speeds and high number of rain days ensures the site is at low risk of producing dust impacts off site.

Table 9. Site Climate Data 2016 - 2022

Precipitation													
Cal Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
2016	260.4	13.2	31.4	8.2	10.4	142.6	50.0	58.4	49.6	32.6	61.8	57.0	775.6
2017	46.2	80.8	252.6	18.0	15.4	87.6	0.8	13.2	1.6	46.6	32.2	57.2	652.2
2018	14.4	69.0	66.2	20.2	7.6	49.2	3.0	3.8	28.6	163.0	61.6	70.4	557.0
2019	76.2	37.2	146.2	22.2	7.4	42.2	24.6	64.8	94.6	30.6	13.0	0.4	559.4
2020	70.8	396.0	154.0	25.4	55.6	8.6	164.6	51.8	33.2	118.4	46.4	152.8	1,277.6
2021	45.6	77.2	408.8	19.2	57.0	46.4	22.0	73.4	21.4	43.8	181.8	132.2	1,128.8
2022	119.0	252.0	477.6	96.4	89.8	5.0	254.2	30.4	87.8	125.6	19.6	53.4	1,610.8
Total	632.6	925.4	1,536.8	209.6	243.2	381.6	519.2	295.8	316.8	560.6	416.4	523.4	6,561.4

Weather Station - Minimum Temperature													
Cal Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
2016	12.0	15.2	11.8	10.4	2.1	1.6	1.7	2.5	5.3	6.1	8.5	12.9	1.6
2017	16.3	14.9	13.2	11.3	1.5	3.7	1.4	4.4	3.9	8.2	9.1	13.2	1.4
2018	11.9	12.7	9.9	16.0									9.9
2020					7.2	3.5	3.2	2.7	5.2	9.7	9.3	11.2	2.7
2021	12.2	14.4	11.7	5.9	4.6	3.8	0.3	3.2	4.4	7.1	9.3	11.9	0.3
2022	15.6	13.8	13.7	9.7	5.6	2.6	2.9	4.6	6.2	6.8	8.2	10.9	2.6
Total	11.9	12.7	9.9	5.9	1.5	1.6	0.3	2.5	3.9	6.1	8.2	10.9	0.3

Weather Station - Maximum Temperature													
Cal Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
2016	39.2	39.9	34.1	33.7	26.8	20.3	23.8	23.2	23.8	31.0	35.3	38.9	39.9
2017	42.1	44.8	33.6	24.4	23.7	19.4	21.1	24.6	34.3	33.3	30.6	40.2	44.8
2018	43.7	37.4	38.1	33.8									43.7
2020					21.0	21.2	21.6	24.3	29.6	32.7	39.4	37.1	39.4
2021	38.7	33.8	34.1	28.3	24.6	21.7	23.4	26.3	28.6	32.4	28.6	36.3	38.7
2022	33.4	35.7	31.0	28.1	27.7	19.2	19.1	22.3	23.2	27.6	31.4	33.7	35.7
Total	43.7	44.8	38.1	33.8	27.7	21.7	23.8	26.3	34.3	33.3	39.4	40.2	44.8

Weather Station - Average Temperature													
Cal Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
2016	21.7	22.6	21.0	18.7	15.9	12.5	12.1	12.0	15.0	17.2	20.3	22.9	17.6
2017	24.5	23.4	20.3	15.2	13.9	11.5	11.0	12.2	16.1	18.1	18.4	22.8	17.5
2018	24.0	22.7	21.5	21.9									22.7
2020					13.6	11.8	11.6	12.1	15.7	17.9	20.1	20.0	15.6
2021	21.7	20.6	19.5	16.6	13.9	11.4	11.2	12.8	15.1	17.1	17.4	20.1	16.4
2022	22.1	20.6	19.7	17.3	14.3	10.8	10.8	12.7	14.0	16.7	17.7	19.1	16.3
Total	22.3	21.2	20.0	17.2	14.2	11.4	11.3	12.5	15.1	17.3	18.5	20.2	16.5

Weather Station - Average Wind Speed Km/h													
Cal Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
2016	3.3	3.2	2.7	2.2	4.1	5.1	4.9	3.2	4.9	6.3	4.3	4.1	4.0
2017	4.0	3.8	3.3	2.5	1.9	1.9	3.9	5.0	6.0	3.6	3.5	3.9	3.7
2018	4.1	3.7	3.1	2.9	3.0	3.3	4.8	5.4	3.9	3.2	5.0	3.4	3.8
2020					1.5	2.5	2.7	6.3	4.7	3.6	4.0	3.5	3.9
2021	2.9	2.6	3.0	2.3	2.2	3.6	5.3	4.4	4.8	4.6	4.1	3.1	3.6
2022	2.7	2.4	2.1	1.7	1.8	4.2	2.8	3.9	2.9	3.5	5.6	3.9	3.2
Total	3.1	2.8	2.8	2.1	2.3	3.5	3.8	4.8	4.3	4.0	4.5	3.6	3.6

2.3 SURROUNDING ENVIRONMENT

The surrounding landuses are dominated by agriculture and quarrying. Although some areas to the east of the site are well vegetated, the adjoining properties are cleared for farming and sand quarrying activities. Sources of dust and particulate matter in the region include:

- Traffic on sealed and unsealed roads;
- Exhaust fumes;
- Quarrying and earth moving activities;
- Agricultural activities;
- Fires: including bushfires, operation of fireplaces and wood stoves, and agricultural burning;
- Local building and construction, and
- Animal grazing.

2.4 SITE ACTIVITIES

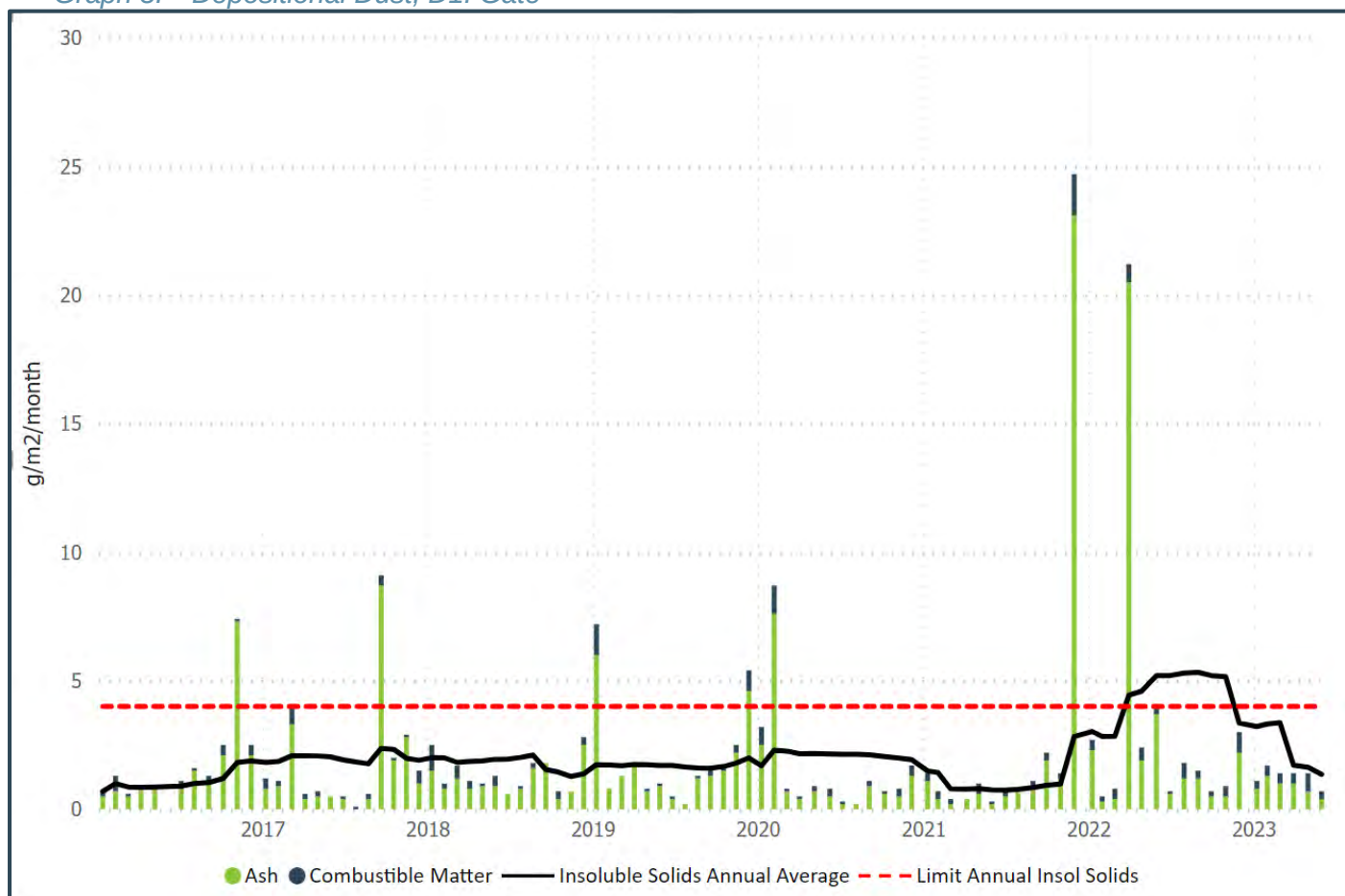
Activities within the site that have the potential to cause dust and particulate matter include:

- Dozers ripping sandstone;
- Loading and unloading of raw material [and/or ENM/VENM](#) using dump trucks;
- Loading the hopper;
- Screening;
- Loading processed material into trucks;
- [Placement of ENM/VENM materials](#);
- Traffic on unsealed haul road;
- Operation of diesel-powered plant and equipment; and
- Wind erosion from extraction and processing areas.

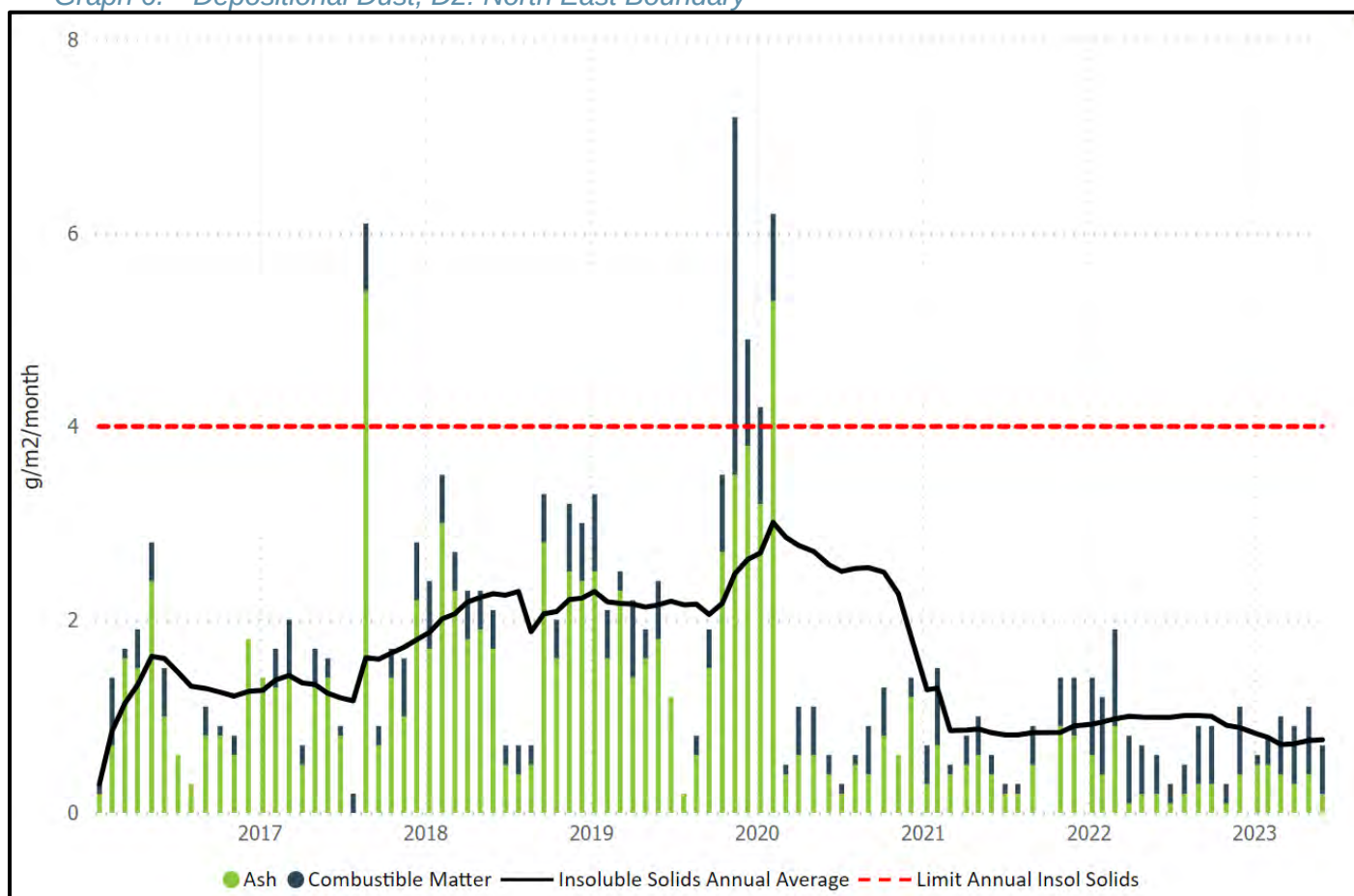
2.4.1 Baseline Data

Past results for depositional dust and particulate matter less than 10 microns (PM10) are summarised in the following graphs. [Air quality has been measured at the site since 2008. Results after 2016 are included below. Results from the Richmond Air Quality Monitoring Station are tabulated in *Table 10*](#)

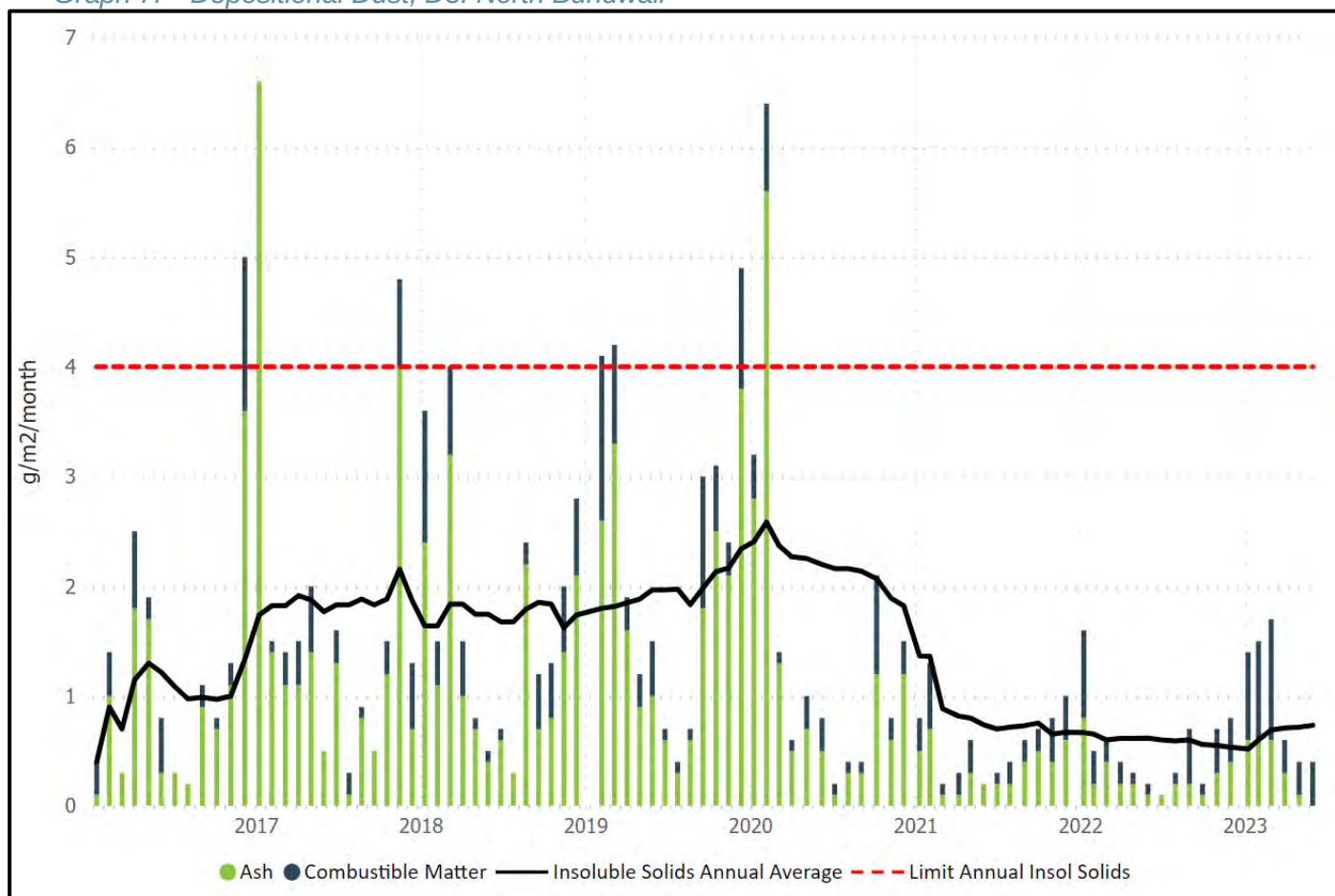
Graph 5. Depositional Dust, D1: Gate



Graph 6. Depositional Dust, D2: North East Boundary



Graph 7. Depositional Dust, D3: North Bundwall



Graph 8. Particulate Matter

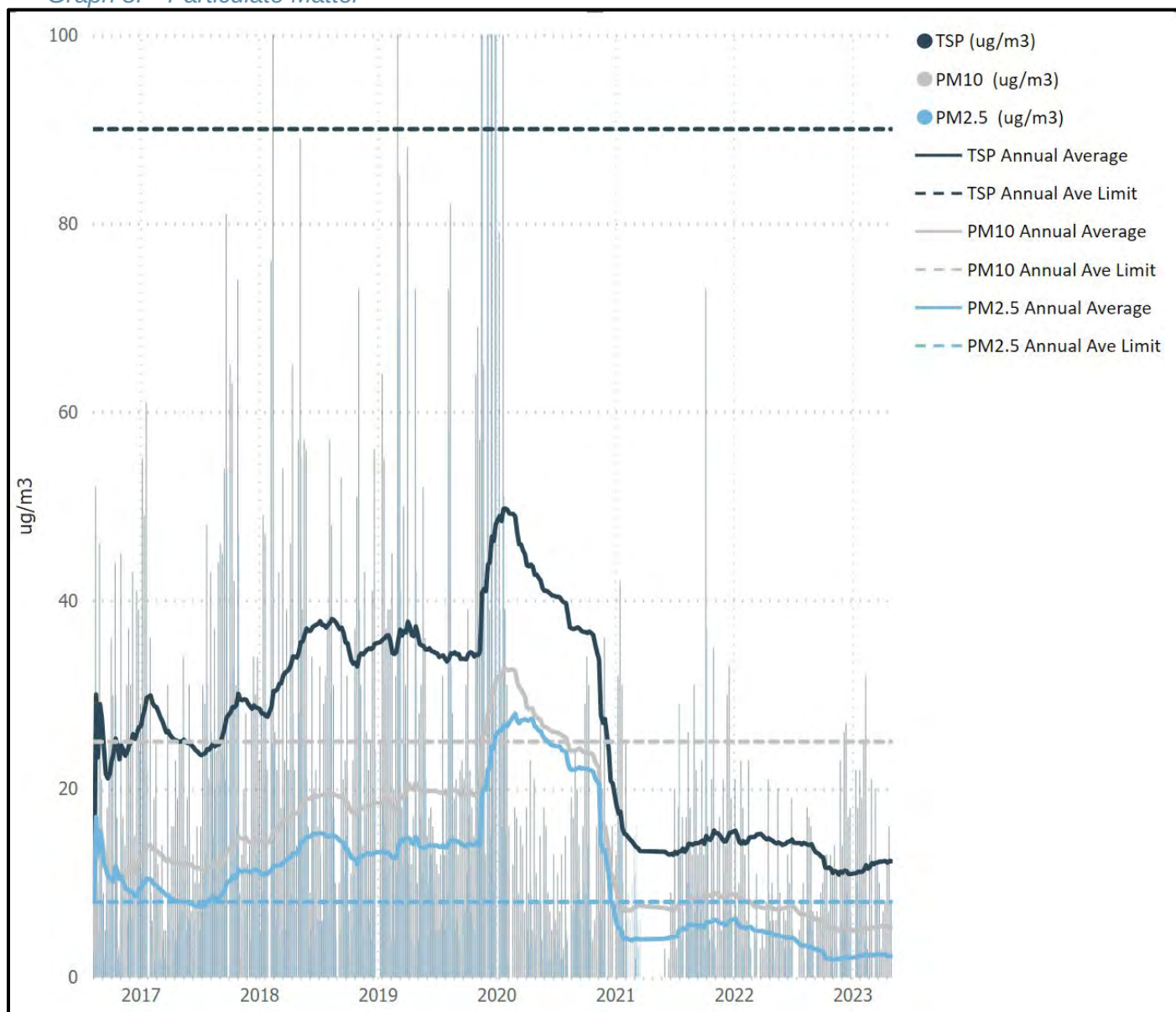


Table 10. Annual Average Particulate Emissions for Richmond Monitoring Station (1994-2019)

Year	PM _{2.5} Annual Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)
1994	-	23.2
1995	-	17.3
1996	-	14.7
1997	4.6	17.7
1998	3.5	-
1999	3.5	13.7
2000	4	14.9
2001	-	17.4
2002	-	21.7
2003	6.6	18.2
2004	6.5	18.4
2005	5.8	16.7
2006	5.9	17.4
2007	-	14.9
2008	7.3	13
2009	5.8	21.5
2010	4.2	13.1
2011	4.7	13.2
2012	5.3	15.1
2013	8.4	17.4
2014	6.7	15.4
2015	7.7	12.8
2016	7.9	16
2017	7	16
2018	8.1	18.7
2019	13.1	24.2
Average	6.3	16.9

Insoluble Solids have been measured according to AS3580.10.1 continuously at three sites around the quarry since 2008. PM10 was measured according to AS3580.9.6 during 2008, and from October 2011 to February 2013. The locations of these past monitoring sites are given on Figure B1.

All previous results are within recommended guidelines and specified consent criteria. The past site activities have presented a low impact from dust generation, and existing dust mitigation measures have been effective.

Insoluble Solids Annual Averages

Annual Average Insoluble Solids g/m ² /month				
Location	2012	2013	2014	2015
D1 SE	0.8	2.0	1.5	1.0
D2 E	1.2	1.1	1.5	1.0
D3 N	2.0	1.7	2.0	1.9

Condition 28 Criteria	4.0	4.0	4.0	4.0
------------------------------	------------	------------	------------	------------

Particulate Matter (PM10)

Particulate Matter <10µm µg/m³		
Location	Maximum 24 hour	Annual Average for 2012
East	26	7.3
West	44	7.8
Condition 28 Criteria	50	30
Richmond Average*	99.2	15.1

* From NSW Office of Environment and Heritage Air Quality Data

2.4.2 EIS Predictions

The air quality impacts of the site were assessed by Jacobs in the document titled “Air Quality Impact Assessment for Proposed Modification 4”, dated 18/03/2020 and the predicted impacts are tabulated below.

Table 11. Predicted Annual Average TSP Concentrations (µg/m³)

ID	Due to Quarry			Background	Cumulative		Criteria
	Existing	Proposed Modification (North)	Proposed Modification (South)		Proposed Modification (North)	Proposed Modification (South)	
1	1	1	1	32	32	32	90
2	1	1	1	32	32	32	90
3	3	7	3	32	36	32	90
4	2	3	2	32	33	32	90
5	2	3	2	32	33	32	90
6	3	6	3	32	35	32	90
7	2	2	2	32	32	32	90
8	4	9	5	32	37	33	90
9	2	4	3	32	34	33	90
10	4	8	6	32	36	34	90
11	3	5	4	32	34	33	90
12	4	6	7	32	34	35	90
13	3	4	5	32	33	34	90

Table 12. Predicted Annual Average PM10 Concentrations ($\mu\text{g}/\text{m}^3$)

ID	Due to Quarry			Background	Cumulative		Criteria
	Existing	Proposed Modification (North)	Proposed Modification (South)		Proposed Modification (North)	Proposed Modification (South)	
1	<u>1</u>	<u>1</u>	<u>1</u>	17	<u>17</u>	<u>17</u>	25
2	<u>1</u>	<u>1</u>	<u>1</u>	17	<u>17</u>	<u>17</u>	25
3	<u>2</u>	<u>3</u>	<u>2</u>	17	<u>18</u>	<u>17</u>	25
4	<u>1</u>	<u>1</u>	<u>1</u>	17	<u>17</u>	<u>17</u>	25
5	<u>1</u>	<u>2</u>	<u>1</u>	17	<u>18</u>	<u>17</u>	25
6	<u>2</u>	<u>3</u>	<u>2</u>	17	<u>18</u>	<u>17</u>	25
7	<u>1</u>	<u>1</u>	<u>1</u>	17	<u>17</u>	<u>17</u>	25
8	<u>2</u>	<u>4</u>	<u>2</u>	17	<u>19</u>	<u>17</u>	25
9	<u>1</u>	<u>2</u>	<u>1</u>	17	<u>18</u>	<u>17</u>	25
10	<u>2</u>	<u>3</u>	<u>3</u>	17	<u>18</u>	<u>18</u>	25
11	<u>1</u>	<u>2</u>	<u>2</u>	17	<u>18</u>	<u>18</u>	25
12	<u>2</u>	<u>2</u>	<u>3</u>	17	<u>17</u>	<u>18</u>	25
13	<u>1</u>	<u>2</u>	<u>2</u>	17	<u>18</u>	<u>18</u>	25

Table 13. Predicted Annual Average PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)

ID	Due to Quarry			Background	Cumulative		Criteria
	Existing	Proposed Modification (North)	Proposed Modification (South)		Proposed Modification (North)	Proposed Modification (South)	
1	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	13.5	<u>13.5</u>	<u>13.5</u>	8
2	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	13.5	<u>13.5</u>	<u>13.5</u>	8
3	<u>0.2</u>	<u>0.4</u>	<u>0.2</u>	13.5	<u>13.7</u>	<u>13.5</u>	8
4	<u>0.1</u>	<u>0.2</u>	<u>0.1</u>	13.5	<u>13.6</u>	<u>13.5</u>	8
5	<u>0.1</u>	<u>0.2</u>	<u>0.1</u>	13.5	<u>13.6</u>	<u>13.5</u>	8
6	<u>0.2</u>	<u>0.4</u>	<u>0.2</u>	13.5	<u>13.7</u>	<u>13.5</u>	8
7	<u>0.1</u>	<u>0.2</u>	<u>0.1</u>	13.5	<u>13.6</u>	<u>13.5</u>	8
8	<u>0.3</u>	<u>0.5</u>	<u>0.3</u>	13.5	<u>13.7</u>	<u>13.5</u>	8
9	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	13.5	<u>13.5</u>	<u>13.5</u>	8
10	<u>0.3</u>	<u>0.4</u>	<u>0.3</u>	13.5	<u>13.6</u>	<u>13.5</u>	8
11	<u>0.2</u>	<u>0.3</u>	<u>0.2</u>	13.5	<u>13.6</u>	<u>13.5</u>	8
12	<u>0.2</u>	<u>0.3</u>	<u>0.4</u>	13.5	<u>13.6</u>	<u>13.7</u>	8
13	<u>0.2</u>	<u>0.2</u>	<u>0.3</u>	13.5	<u>13.5</u>	<u>13.6</u>	8

Table 14. Predicted Annual Average Deposited Matter Concentrations (g/m²/month)

ID	Due to Quarry			Background	Cumulative		Criteria
	Existing	Proposed Modification (North)	Proposed Modification (South)		Proposed Modification (North)	Proposed Modification (South)	
2	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	1.9	<u>1.9</u>	<u>1.9</u>	4
3	<u>0.4</u>	<u>0.8</u>	<u>0.4</u>	1.9	<u>2.3</u>	<u>1.9</u>	4
4	<u>0.2</u>	<u>0.3</u>	<u>0.2</u>	1.9	<u>2</u>	<u>1.9</u>	4
5	<u>0.2</u>	<u>0.4</u>	<u>0.3</u>	1.9	<u>2.1</u>	<u>2</u>	4
6	<u>0.3</u>	<u>0.6</u>	<u>0.4</u>	1.9	<u>2.2</u>	<u>2</u>	4
7	<u>0.2</u>	<u>0.3</u>	<u>0.2</u>	1.9	<u>2</u>	<u>1.9</u>	4
8	<u>0.5</u>	<u>0.9</u>	<u>0.6</u>	1.9	<u>2.3</u>	<u>2</u>	4
9	<u>0.3</u>	<u>0.4</u>	<u>0.4</u>	1.9	<u>2</u>	<u>2</u>	4
10	<u>0.5</u>	<u>0.9</u>	<u>0.7</u>	1.9	<u>2.3</u>	<u>2.1</u>	4
11	<u>0.3</u>	<u>0.5</u>	<u>0.5</u>	1.9	<u>2.1</u>	<u>2.1</u>	4
12	<u>0.4</u>	<u>0.5</u>	<u>0.7</u>	1.9	<u>2</u>	<u>2.2</u>	4
13	<u>0.3</u>	<u>0.4</u>	<u>0.5</u>	1.9	<u>2</u>	<u>2.1</u>	4

2.5 POTENTIAL DUST SOURCES

The dust generating activities on the site will not differ from past practices, and will include:

- Dozers ripping sandstone;
- Loading and unloading of raw material using dump trucks;
- Loading the hopper;
- Screening;
- Loading processed material into trucks;
- Traffic on unsealed haul road;
- Wind erosion from extraction and processing areas;
- Importation of ENM/VENM materials onto site;
- Application of ENM/VENM to backfill spent quarry portions;
- Truck movements in and out of the site; and
- Use of vehicles and equipment for grading and levelling ENM/VENM materials.

~~The Air Quality Impact Assessment (Wilkinson Murray Pty Ltd, June 2015) used software modelling to predict the impact assessment on sensitive receptors surrounding the operation. The relevant tables are reproduced below:~~

~~The impact assessment predicts that the operation will comply with recommended guidelines and development conditions at the nearest sensitive receptors:~~

~~*“Dispersion modelling results for the three worst case future extraction scenarios indicated that the continued operation of the site is unlikely to impact on sensitive receptors providing that the application of dust mitigation measures identified in the existing air quality management plan continues.”*~~

~~(Wilkinson Murray Pty Ltd, June 2015)~~

3 Air Quality Monitoring Plan

All monitoring equipment will be installed and operational prior to commencement of construction.

Management practices and application of the control methods will be utilised onsite to control dust risk areas and reduce potential impacts to offsite receivers.

A Dust Management Procedure has been included in this AQMP in *Appendix C*. The procedure is a daily checklist for site staff to review and ensure that appropriate reactive and preventative control measures have been implemented.

The **checklist is to be categorically completed at the start and end of each day** (approximately 9am and 3pm). Daily observations and comments are to be noted and reviewed by site management. Issues or failings in dust management controls or mitigation measures are to be rectified as soon as practicably possible.

3.1 MONITORING CRITERIA AND METHODS

Table 15. Monitoring Criteria

Parameter	Method	Sampling Period / Interval	Location (see Figure One)	Performance Criteria
Insoluble Solids g/m²/month	AS3580.10.1	30 ± 2 days / continuous	D1A D2 D3A	≤ 4 g/m ² /month annual average ^a ≤ 2 g/m ² /month incremental annual average ^b
TSP µg/m³	AS3580.9.3 By Calculation from PM10 i.e. 1.79 times the PM10 result from correlation data.	24 hrs every 6 days for 12 months	D1A	≤ 90 µg/m ³ annual average ^{a, c}
PM10 µg/m³	AS3580.9.6	24 hrs every 6 days for 12 months	D1A	≤ 50 µg/m ³ over 24 hrs ^b ≤ 30 25 µg/m ³ annual average ^{a, c}
PM2.5 µg/m³	AS3580.9.14	24 hrs every 6 days for 12 months	D1A	~~None required~~ ≤ 25 µg/m ³ over 24 hrs ^b ≤ 8 µg/m ³ annual average ^{a, c}
Wind speed and direction	Not specified	Not specified	D1A	Not required

^a Total impact (i.e. incremental increase in concentration due to the development plus background concentrations due to all other sources).

^b Incremental impact (i.e. incremental increase in concentration due to the development on its own).

^c Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary.

The air quality criteria in *Table 15* do not apply if the Applicant has an agreement with the owner/s of the relevant residence or infrastructure to exceed the air quality criteria, and the Applicant has advised the Department in writing of the terms of this agreement. At this stage no agreements have been made.

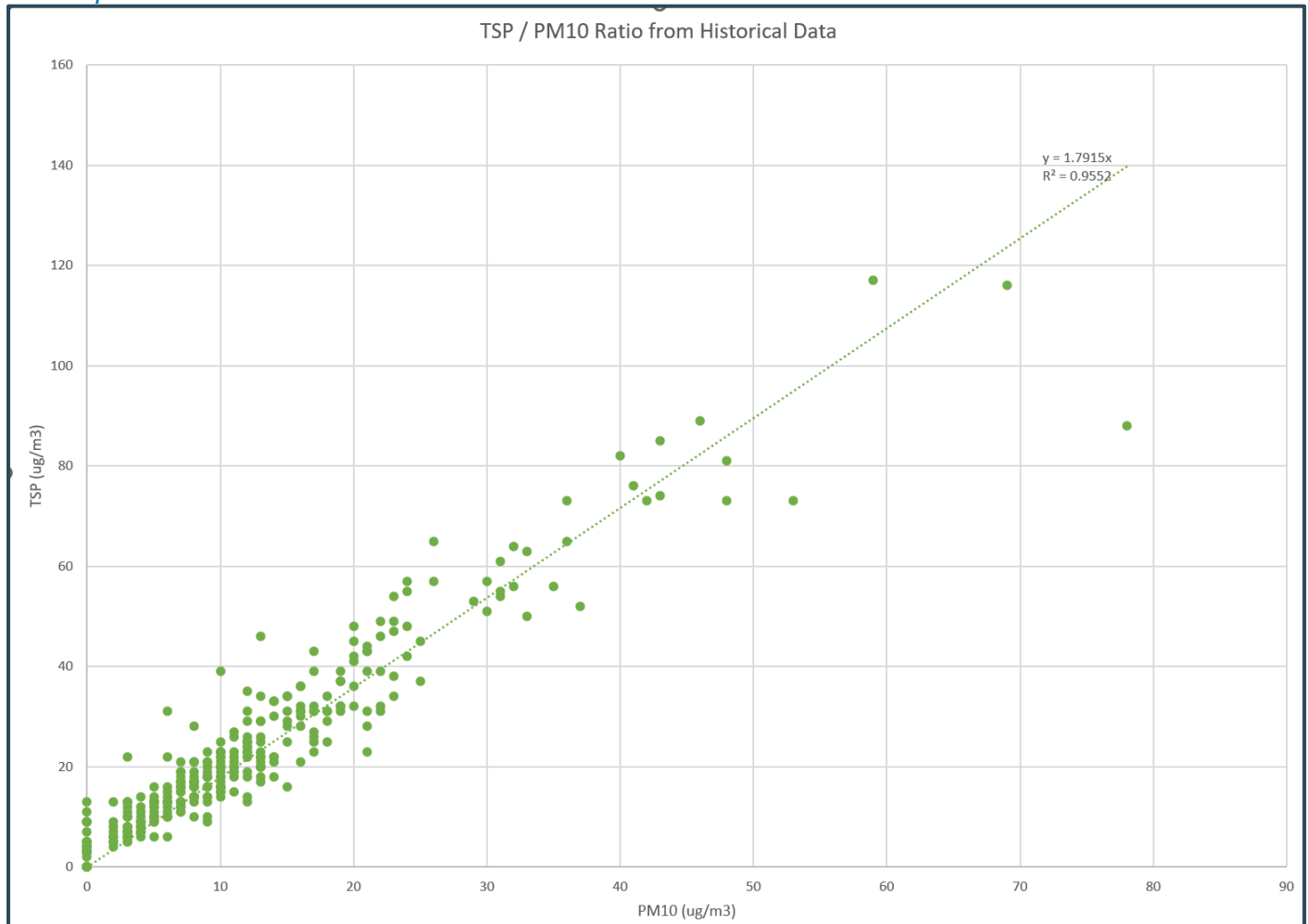
3.1.1 Calculation of TSP

As recommended in the Air Quality Monitoring Review (*Section 6.3*), TSP will be calculated from the PM₁₀ results, based on the data received from the historical site monitoring, excluding the bushfire season of 2019-2020. It has been determined that any potential impacts can be assessed adequately from PM₁₀ monitoring, being the more critical particle size, and that TSP monitoring does not provide any additional useful information.

Equation 1:

$$\text{TSP } (\mu\text{g}/\text{m}^3) = 1.7915 \times \text{PM}_{10} (\mu\text{g}/\text{m}^3)$$

Graph 9. TSP / PM10 Ratio from Historical Data



3.2 MONITORING LOCATIONS

The Air Quality Impact Assessment (Jacobs) investigated the local meteorology and seasonal impacts and identified sensitive receptors. The report also predicted that dust impacts on these receptors would be minimal. The monitoring of dust deposition gauges will continue at three sites (north, east and south) on the perimeter of the operation, as shown on *Figure One*. Due to security and power availability, High Volume Air Samplers will be located adjacent to D1 near the office area and the weather monitoring equipment.

These monitoring locations have been approved by the NSW EPA, as advised by email on 30/3/2016 (*Appendix A*). The email also states that the EPA do not approve Air Quality Monitoring Plans, although they do require a site to have one.

The sites also comply with AS3580.1.1 Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment. The ongoing compliance of the locations and general condition of the gauges will be checked on a monthly basis and any non-compliances reported on the Sampling Report.

3.3 MONITORING INTERVALS

3.3.1 Dust Deposition Gauges

The dust deposition gauges will be sampled every 30 days $\pm$ 2 days as recommended in AS3580.10.1. The gauges contain 2.5L bottles, which are large enough to collect the highest average monthly rainfall of 123mm (equivalent to 2.1L). Continuous monitoring will provide a total amount of dust present on the perimeter of the development in all seasons and weather conditions. Past trends indicate that even in the dry July months, the dust levels have been, and are predicted to remain, below air quality goals.

3.3.2 High Volume Air Samplers

The particulates (~~TSP~~, PM10 and PM2.5) will be monitored weekly ~~for twelve continuous months~~ to allow for seasonal variations and a variety of weather conditions. They will collect ambient air for 24 hours on a 6-day cycle as recommended in AS3580.9.3, AS3580.9.6 and AS3580.9.14. ~~TSP will be calculated from the PM10 results using the equation developed from historical results. (see section 3.1.1).~~

Equation 1:

$$\text{TSP } (\mu\text{g}/\text{m}^3) = 1.7915 \times \text{PM}_{10} (\mu\text{g}/\text{m}^3)$$

~~Following the initial twelve-month period, a correlation will be developed for the site between the varying size fractions using a high-volume air sampler method and the overall dust collected in the dust deposition gauges. This correlation will be presented to the DPE in the Annual Review with the aim of ensuring compliance using dust deposition gauges alone.~~

3.4 MONITORING RECORDS

All site conditions and observations for the monitoring period are to be included on the sample sheet for all air quality samples, along with name of the technician, date and time sampled, and compliance with the siting and instrument requirements of the relevant method. This will be checked by the Environmental Manager after each sampling event, or monthly at a minimum.

3.5 SAMPLING TRAINING

The sampling procedures will be documented (see *Appendix D*), and all sampling technicians will be trained in the procedure. Training records will be maintained by the site. The Environmental Officer will be responsible for ensuring that only trained personnel collect samples.

4 Dust Suppression Measures

The following dust suppression measures have been described in previous Air Quality Monitoring Plans and recommended in the EA and EIS. Past monitoring indicates that the measures have been effective, and the Air Quality Impact Assessment recommends their continuation.

4.1 REACTIVE DUST MANAGEMENT

Visually assess activities during adverse weather conditions and modify activities as required to minimise dust, including:

- Notification will be sent to site management during heightened wind speeds (>6 m/s or >20 km/h). When this alert is triggered, the management controls below will be implemented where practical and relevant;
 - o Increase use of the water cart in dry weather;
 - o Sprinklers installed over exposed or disturbed areas, ENM/VENM emplacement areas and stockpiles will operate during dry weather and high wind periods;
 - o Any offending works shall cease when operations are resulting in visible dust emissions blowing in a direction so as to cross onto public roads or lands not owned by the operation;
 - o Delaying non-essential earth-moving activities during periods of high wind; and
 - o Reducing truck speeds and limiting non-essential vehicle movements.

4.2 EXTRACTION, PROCESSING, AND MATERIAL PLACEMENT

~~No more than 3 hectares is to be exposed and active at any one time~~ Areas of the site which are exposed and active at any one time are minimised to the greatest extent practicable (condition 29 (c)).

- Damping Down
 - o Hardstand and manoeuvring areas are to be kept in a sufficient state of dampness so as to minimise dust raised into the air by the passing of vehicles.
 - o Water is applied by water cart. Frequency of water application shall be as often as required so as to prevent dust rising into the air under the prevailing conditions.
 - o Water should be applied so that the top layer is sufficiently damp. When done correctly, this should form a crust when dry
 - o Potential dust generating material is to be processed and stored in a damp condition.

4.3 TRANSPORTATION

- All vehicles are restricted to a speed limit of 30km/h.
- Trucks are covered when entering and leaving the premises carrying loads of potentially dust generating material.
- All vehicle movements on unsealed areas are to be restricted to internal haul roads and working areas.
- Water cart regime will be implemented on unsealed roads at the beginning of each day prior to vehicle movements on site.
- Watering will be sufficient enough to form a crust on the road and adequately cover all unsealed roads within the site.
- Unsealed roads and ENM/VENM surfaces will be inspected during the initial water cart route and also during wind events of greater than 6m/s or 20km/hr average from the north-west.
- Where these surfaces have been disturbed by site activities or environmental factors, they require spraying to ensure a surface crust is present at all times.

4.4 WIND BREAKS AND BUNDS

Wind breaks of natural vegetation around the boundary of the site are to be established and maintained in accordance with the *Rehabilitation Plan*.

- Bund walls ~~are to be~~ have been constructed at the corner of Roberts Road and Old Northern Road.
- Wind break vegetation will be augmented in areas along Roberts Rd where wind blown dust could impact neighbouring properties.

4.5 PROGRESSIVE REHABILITATION

The site will be progressively rehabilitated to minimise the area exposed to wind erosion and dust generation (Refer to *Rehabilitation Plan* for planting and watering details).

The application of ENM/VENM to disturbed areas on site will reduce potential dust emissions by covering finer, looser dust particles with coarser, larger materials; effectively smothering smaller materials with larger ones. In addition to using the ENM/VENM as a cover, water spraying the ENM/VENM as it is deposited will increase the effectiveness of the materials as a screen, and ensure that finer materials are covered by the application of courser ENM/VENM materials.

Once ENM/VENM has been deposited, the following practices should be conducted to prevent dust:

- Materials will be sufficiently wet down with water sprays to crust the surface layer;
- Filled areas are to be inspected daily and included in the daily water cart route to ensure adequate observations are made; and
- Where surfaces have been disturbed by further vehicle movements or additional ENM/VENM application, water spraying will be undertaken to ensure a surface crust is present at all times.

5 Trigger Action Response Plan

Event	Potential Adverse Outcome	Trigger Level	Actions to be Implemented	Evidence/Reference	Responsibility
Site weather station indicates via alarm that wind is greater than 6m/s from the NW	Wind blown dust may impact on sensitive receptors off site	Wind speed greater than 6m/s (20km/H) from the NW)	Dust suppression sprays, water cart and/or sprinklers are to be deployed immediately over any dust-producing disturbed areas.	Dust Procedure checklist	All staff
24-hour Air Quality Goal exceeded	Dust impacts on surrounding communities	PM10 >50µg/m ³ PM2.5 >25µg/m ³	1st month of exceedance: investigate circumstances, ensure dust mitigation measures have been followed, increase use of water cart 2nd 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 Incident Notification The DPE and any other relevant agencies will be notified immediately after the operator becomes aware of an incident. The notification must be in writing via the Major Projects Website and identify the DA and name and set out the location and nature of the incident. Non- Compliance Notification Within 7 days of becoming aware of a non-compliance, the DPE will be notified. The notification must be in writing via the Major Projects Website and identify the DA and name and set out the consent that the site is not compliant with, the way on which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.	Laboratory results / Consent	Plant Manager
Annual average Air Quality Goals exceeded	Dust impacts on surrounding communities	Insoluble Solids >4g/m ² /month Insoluble Solids >2 g/m ² /month incremental annual average TSP >90µg/m ³ PM10 >25 µg/m ³ PM2.5 >8µg/m ³	1st month of exceedance: investigate circumstances, ensure dust mitigation measures have been followed, increase use of water cart 2nd 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. Incident Notification: The DPE and any other relevant agencies will be notified immediately after the operator becomes aware of an incident. The notification must be in writing via the Major Projects	Laboratory results / Consent	Plant Manager

Event	Potential Adverse Outcome	Trigger Level	Actions to be Implemented	Evidence/Reference	Responsibility
			Website and identify the DA and name and set out the location and nature of the incident. Non- Compliance Notification: Within 7 days of becoming aware of a non-compliance, the DPE will be notified. The notification must be in writing via the Major Projects Website and identify the DA and name and set out the consent that the site is not compliant with, the way on which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance		
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	Visible inspection / EPA	All drivers
Dust emitting from loaded vehicles	Dust impacts on surrounding communities	Loaded truck not covered	Driver to be stopped and load covered	Visible inspection / Drivers Code of Conduct	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.	Visible inspection	Plant Manager

6 Reporting and Review

Copies of this plan, along with the complete Environmental Management Plan, will be available to Council, EPA, DPIE Water and on a publicly available website within 14 days of approval by the Secretary.

Any incidents, complaints, non-compliances or exceedances will be managed and reported according to the procedures outlined in the OEMP and the Pollution Incident Response Management Plan (PIRMP) required by the EPA.

6.1 MONITORING REVIEW

The laboratory will present the client with monthly reports on all dust monitoring sampling and analysis. The plant manager will review the results monthly to determine whether there are any exceedances or trends. Any exceedances will be investigated and actioned as outlined in Section 5.

6.2 ANNUAL REPORTING AND REVIEW

Results will be summarised in the Annual Review and Conditions Compliance Report and compared to assessment criteria and performance expectations, as presented in Section 1.6 and Table 15. Any exceedances will be investigated and actioned as outlined in Section 5. An interpretation of the effectiveness of the management measures described in Section 4, any plans developed to investigate environmental performance improvements, and an assessment of the impacts of the development will be presented annually in the Annual Review and Conditions Compliance Report.

A review of the Air Quality Management Plan will be undertaken as required by Condition 6 and 67:

"67. Within 3 months of the submission of:

(a) an annual review under Condition 66 above;

(b) an incident report under Condition 68 below;

(c) an audit report under Condition 70 below; or

(d) any modification to the conditions of this Consent (unless the conditions require otherwise),

the Applicant shall review, and if necessary revise, the strategies, plans, and programs required under this Consent to the satisfaction of the Secretary.

Where this review leads to revisions in any such document, then within 4 weeks of the review, unless the Secretary agrees otherwise, the revised document must be submitted to the Secretary for approval."

It is the responsibility of the Environmental Manager to determine whether any significant changes to the MP should be referred to the Secretary for approval.

6.3 AIR QUALITY MONITORING REVIEW

In addition to the above review, the air quality monitoring will be reviewed in accordance with Condition 29A and 29B of the consent as follows:

29A The Applicant must commission an expert review of air quality monitoring at the site. This review must:

- a) Be undertaken by a suitably qualified and experienced person(s) whose appointment has been endorsed by the Secretary;
- b) Review the accuracy of air quality monitoring at the site over a 12-month period, in general accordance with the Approved Methods for Sampling and Analysis of Air Pollutants in NSW (DEC, 2007) and with a particular focus on PM_{2.5} monitoring;
- c) Provide recommendations (where required) to improve the accuracy of air quality monitoring at the site; and
- d) Be undertaken in consultation with the EPA.

29B A copy of the expert review report along with a timetable for implementing any recommendations arising from the review required under condition 29A of this Schedule, must be submitted by 1 October 2022, or as otherwise agreed by Planning Secretary.

The Applicant must implement the recommendations of the expert review to the satisfaction of the Secretary.

This review was undertaken and is available in *Appendix E* and at www.vgt.com.au/hodgsons. Revision 1 of the Review was approved 28/2/2023 (*Appendix B*).

7 References

- Ref 1 Nexus Environmental Planning Pty Ltd. (May 2015). *Environmental Assessment Section 75W Mod 3*.
- Ref 2 Nexus Environmental Planning Pty Ltd. (November 1999). *Environmental Impact Statement*.
- Ref 3 Nexus Environmental Planning Pty Ltd. (September 2015). *Environmental Assessment Section 75W Mod 2*.
- Ref 4 NSW Department of Planning and Environment. (March 2016). *DA 267-11-99*.
- Ref 5 NSW EPA. (2015). *Environment Protection Licence 6535*.
- Ref 6 Wilkinson Murray Pty Ltd. (June 2015). *Air Quality Impact Assessment*.
- Ref 7 Umwelt Australia Pty Ltd (December 2019), *Roberts Road Quarry Modification 4 SEE*
- Ref 8 Benbow Environmental (September 2020), *Air Quality Management Plan*
- Ref 9 Jacobs (June 2019), *Air Quality Impact Assessment for Proposed Modification 4*.

Appendix A

Email Approval of sites from EPA

Lisa Thomson

From: Alexander Spaller <Alexander.Spaller@epa.nsw.gov.au>
Sent: Wednesday, 30 March 2016 2:00 PM
To: Lisa Thomson
Subject: RE: Ambient air testing for PM 10 and PM 2.5 - HB Maroota sand mine

Hi Lisa

The EPA has reviewed your requested information and provides the following comments. Based on the information provided, the EPA approves those proposed monitoring locations. The EPA has no objections to points 2, 3 and 4. However, in relation to points 5, 6 and 7 the EPA advises that it will not approve an Air Quality Management Plan but we do require you to have one in place.

Regards

Alexander Spaller

Regional Operations Officer - Sydney Industry Section

Metropolitan Branch, NSW Environment Protection Authority
+61 2 9995 5894 +61 452 100 366

Alexander.Spaller@epa.nsw.gov.au www.epa.nsw.gov.au [@EPA_NSW](https://twitter.com/EPA_NSW)

Report pollution and environmental incidents 131 555 (NSW only) or +61 2 9995 5555



From: Lisa Thomson [mailto:Lisa@vgt.com.au]
Sent: Friday, 26 February 2016 3:51 PM
To: Alexander Spaller
Subject: RE: Ambient air testing for PM 10 and PM 2.5 - HB Maroota sand mine

Alex,

Thank you for your phone call this morning. As I mentioned, our client has the following condition within their Department of Planning and Environment consent:

36. A meteorological station measuring wind speed and direction must be installed and operated by the Applicant at a site determined in consultation with the EPA.

Further, a DPE audit noted the following as a non-compliance:

Confirm the change in monitoring locations for air quality monitoring with the EPA, and revise DDG location D2 against AS/NZS 3580.10.1:2003 to ensure the equipment collect representative samples.

The non compliance was against the following condition:

28. The Applicant shall prepare and implement an Air Quality Management Plan as part of the EMP. The Air Quality Management Plan shall:

(a) identify existing and potential sources of dust deposition, TSP and fine particulates (PM10 and PM2.5) and specify appropriate monitoring intervals and locations. The purpose of the monitoring is to evaluate, assess and report on these emissions and the ambient impacts with the objective of understanding the development's contribution to levels of dust deposition, TSP and fine particulates in ambient air around the site;

There had been vegetation that had grown greater than 2m tall surrounding the D2 gauge site which has since been removed. In all other aspects, the gauge complies with AS3580.1.1 and AS3580.10.1, it is intended to relocate this gauge to within the weather monitoring compound. The attached figure shows a map of the site, and the location of the existing Dust Deposition gauges (in green). The pink triangle shows the location of the weather monitoring equipment, and is the proposed locations for the monitoring equipment for the TSP, PM10 and PM2.5 particulates.

- 1) Is it possible for the EPA to approve the locations of this monitoring equipment?
- 2) Can we please receive clarification that the siting of the dust monitoring equipment would be according to "AS3580.1.1:2007 Methods for sampling and analysis of ambient air - Guide to siting air monitoring equipment" rather than the superceded AS2922-1987 as mentioned in the Approved Methods for Sampling and Analysis of Ambient Air Pollutants in NSW (AM1)?
- 3) Is it possible to use "AS 3580.14:2014 Methods for sampling and analysis of ambient air – Metrological monitoring for ambient air quality monitoring applications" rather than USEPA EPA 454/R-99-005 for the determining the compliance of the weather monitoring equipment (AM4)?
- 4) Is it possible to use "AS3580.10.1:2003(R2014) Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method" rather than the superceded AS3580.10.1-1991 (AM-19)
- 5) Is it possible to use "AS3580.9.3:2015 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - Total suspended particulate matter (TSP) - High volume sampler gravimetric method" rather than the superceded AS2724.3-1984 (AM-15)?
- 6) Is it possible to use "AS3580.9.9:2006 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM10 low volume sampler - Gravimetric method rather than AS3580.9.6-1990 (now version 2015)?
- 7) Since there is no Approved Method for PM2.5, would it be possible to use this method: "AS3580.9.10:2006 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM 2.5 low volume sampler - Gravimetric method"

In short, our client uses a NATA accredited laboratory to undertake all sampling and testing according to the most up-to-date Australian Standards. Is this practice compliant with NSW EPA requirement for air monitoring?

Regards,
Lisa Thomson,
VGT Pty Ltd

Ph: 02 4028 6412
Mob: 0427 334471
Fax: 02 4028 6413
Web: www.vgt.com.au

[Have your say! Click here and fill in a short survey so we can improve for you!](#)



Please consider the environment before printing my email

From: Alexander Spaller [<mailto:Alexander.Spaller@epa.nsw.gov.au>]
Sent: Friday, 26 February 2016 10:30 AM
To: Lisa Thomson <Lisa@vgt.com.au>
Subject: Ambient air testing for PM 10 and PM 2.5 - HB Maroota sand mine

Greetings Lisa

As discussed

Which method have you used for the siting of the sampling units? Please provide the sampling units as well as any other supporting documentation.

Regards

Alexander Spaller

Regional Operations Officer - Sydney Industry Section

Metropolitan Branch, NSW Environment Protection Authority

+61 2 9995 5894 +61 452 100 366

Alexander.Spaller@epa.nsw.gov.au www.epa.nsw.gov.au [@EPA_NSW](https://twitter.com/EPA_NSW)

Report pollution and environmental incidents 131 555 (NSW only) or +61 2 9995 5555



----- Original Message -----

From: Lisa Thomson [lisa@vgt.com.au]

Sent: 22/02/2016 15:27

To: info@environment.nsw.gov.au

Subject: Approval of methodology and siting for ambient air monitoring

Dear Cathy Graham,

Thankyou for your time on the phone today. As discussed, I am enquiring on behalf of HB Maroota Pty Ltd (EPL 6535). HB Maroota have been asked by the Department of Planning and Environment to undertake ambient air monitoring for TSP, PM10 and PM2.5 particulates, as well as Insoluble Solids. They have been given the goals of achieving TSP < 90 ug/m3 (annual average), Insoluble Solids < 4 g/m2.month (annual average), PM10 < 50 ug/m3 in 24 hrs and <30 ug/m3 annual average.

Does the NSW EPA consider the Australian Standard "AS3580.9.9 Determination of suspended particulate matter – PM10 low volume sampler – gravimetric method" suitable for undertaking PM10 and PM2.5 testing?

Further, HB Maroota have been asked for NSW EPA approval for the siting of their monitoring points. Do you have a contact to whom we could send in some air photography with location points marked?

Regards,

Lisa Thomson

Principal Environmental Consultant

02 4028 6412

0427 334471

Plan of:	HB Maroota Quarry Conditions Compliance Report - Meteorological Station and Static Dust Gauge Locations	Location:	Maroota Quarry, Roberts Road, Maroota, NSW	Source:	Photomapping - Image Date December 2013	Our Ref:	2469_HMA M_CCR_C004_V0_F4.cdr
Figure:	FOUR	Council:	Hills Shire Council	Survey:	Photomapping - Image Date December	Plan By:	TO/JD
Sheet:	1 of 1	Tenures:	N/A	Projection:	MGA	Project Manager:	GVT
Version/Date:	V0 27/01/2016	Client:	Hodgson Quarry Products Pty Ltd	Contour Interval:	1m	Office:	Thornton

This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.



LEGEND	
	Property Boundary
	30metre Buffer
	Contours
	Weather Station Location
	Dust Gauge Location

Director: Greg Thomson
Signed:
Date: 29/01/2016
Project Manager: Tara O'Brien
Signed:
Date: 29/01/2016

Appendix B

Consultation with DPE

From: genevieve.seed@planning.nsw.gov.au
To: [Lisa Thomson](#)
Cc: Jessie.Evans@planning.nsw.gov.au
Subject: RE: Roberts Road Sand Quarry - Management Plan Review
Date: Friday, 14 October 2016 2:44:04 PM
Attachments: [image001.jpg](#)
[image002.jpg](#)
[image003.jpg](#)
[image004.jpg](#)
[image005.jpg](#)
[Response to review comments_14 Oct.pdf](#)
[Attachment A_14 Oct.docx](#)
[Attachment B.docx](#)

Hi Lisa

Please find the attached response to your review comments. I have also attached comments in relation to the Groundwater Monitoring Program.

Have a nice weekend.

Kind regards,

Gen

From: Lisa Thomson [mailto:Lisa@vgt.com.au]
Sent: Wednesday, 12 October 2016 1:54 PM
To: Gen Seed <genevieve.seed@planning.nsw.gov.au>
Cc: Jessie Evans <Jessie.Evans@planning.nsw.gov.au>
Subject: RE: Roberts Road Sand Quarry - Management Plan Review

Hi Genevieve and Jessie,
I have attached our comments on your responses. I hope this clarifies some of your issues.

Regards,
Lisa Thomson,
VGT Pty Ltd

Ph: 02 4028 6412
Mob: 0427 334471
Fax: 02 4028 6413
Web: www.vgt.com.au

[Have your say! Click here and fill in a short survey so we can improve for you!](#)



Please consider the environment before printing my email

From: genevieve.seed@planning.nsw.gov.au [<mailto:genevieve.seed@planning.nsw.gov.au>]
Sent: Friday, 7 October 2016 12:45 PM
To: Lisa Thomson <Lisa@vgt.com.au>
Cc: Jessie.Evans@planning.nsw.gov.au
Subject: RE: Roberts Road Sand Quarry - Management Plan Review

Hi Lisa

I have attached the document in word format.

Hope this helps.

Kind regards,

Gen

From: Lisa Thomson [<mailto:Lisa@vgt.com.au>]
Sent: Friday, 7 October 2016 10:07 AM
To: Gen Seed <genevieve.seed@planning.nsw.gov.au>
Cc: Jessie Evans <Jessie.Evans@planning.nsw.gov.au>
Subject: RE: Roberts Road Sand Quarry - Management Plan Review

Thanks Ladies,
Would it be possible to have attachment A in a spreadsheet format?

Regards,
Lisa Thomson,
VGT Pty Ltd

Ph: 02 4028 6412
Mob: 0427 334471
Fax: 02 4028 6413
Web: www.vgt.com.au

[Have your say! Click here and fill in a short survey so we can improve for you!](#)



Please consider the environment before printing my email

From: genevieve.seed@planning.nsw.gov.au [<mailto:genevieve.seed@planning.nsw.gov.au>]
Sent: Friday, 7 October 2016 9:49 AM
To: Lisa Thomson <Lisa@vgt.com.au>
Cc: Jessie.Evans@planning.nsw.gov.au
Subject: Roberts Road Sand Quarry - Management Plan Review

Good Morning Lisa

Please find the attached review comments for the Roberts Road Quarry Management Plans.

Kind regards,

Gen

Genevieve Seed
Planning Officer
Resource Assessments

Attachment A
Roberts Road Sand Quarry Management Plan Review
Air Quality Management Plan Comments Only

Green Text: VGT comments

Red text: Department comments

Air Quality Management Plan – condition 29, Schedule 2	Satisfactory (Yes/No)	Comment	Action Required
<i>The Applicant shall prepare an Air Quality Management Plan as part of the EMP. The Air Quality Management Plan shall:</i>			
(a) identify existing and potential sources of dust deposition, TSP and fine particulates (PM10 and PM2.5) and specify appropriate monitoring intervals and locations. The purpose of this monitoring is to evaluate, assess and report on these emissions and the ambient impacts with the objective of understanding the development's contribution to levels of dust deposition, TSP and fine particulates in ambient air around the site;	No	The frequency of monitoring for TSP, PM10 and PM2.5 has been specified as 24 hours every 6 days for 12 months. This frequency is acceptable however, the MP does not specify the schedule of monitoring following this 12 month period. <i>Response: Section 3.2.2: A correlation will be developed for the site between the varying size fractions using a high volume air sampler method and the overall dust collected in the dust deposition gauges. This correlation will be presented to the DPE in the 2016 Annual Review with the aim of ensuring compliance using dust deposition gauges alone. It is the intention that the form of the ongoing monitoring will be decided following consultation with DPE.</i>	The MP should specify ongoing monitoring arrangements for TSP, PM10 and PM 2.5 <i>Response: Please include this information in the management plan.</i>
(b) provide a monitoring plan having regard to local meteorology and the relevant Australian Standards, identifying the methodologies to be used, including justification for monitoring intervals, weather conditions, seasonal variation, selecting locations, periods and times of measurements;	Yes	Monitoring locations approved by EPA. Refer to comment above re: monitoring intervals	n/a
(c) provide details of dust suppression measures for all sources of dust from the development, including a planting and watering regime to ensure that no more than 3 hectares of the site are exposed and active at any one time. The use of a polymer in the water to minimise dust impacts shall be investigated as part of this Plan;	Yes	-	n/a
(d) provide details of actions to ameliorate impacts if they exceed the relevant criteria; and	Yes	Section 5	n/a
(e) provide the design of the reactive management system intended to reduce the day-to-day impacts of dust and fine particulates due to the development.	Yes	Section 4.1	n/a



Lisa Thomson
Principal Environmental Consultant
Vgt Environmental Compliance Solutions
PO Box 2335
GREENHILLS NSW 2323

Dear Ms Thomson

**Roberts Road Sand Quarry (DA 267-11-99)
Management Plans**

I refer to your email dated 25 November 2016 submitting revised management plans for the Roberts Road Sand Quarry including the:

- Noise Management Plan, dated November 2016 (condition 46, Schedule 2);
- Air Quality Management Plan, dated November 2016 (condition 29, Schedule 2);
- Construction Environmental Management Plan, dated July 2016 (condition 18, Schedule 2);
- Road Noise Management Plan, dated November 2016 (condition 48, Schedule 2);
- Flora and Fauna Management Plan, dated November 2016 (condition 55, Schedule 2);
- and
- Environmental Management Strategy, dated July 2016 (condition 63, Schedule 2).

The Department has reviewed these plans and considers that they meet the conditions of consent. As such, the Secretary has approved these plans.

The Department notes that you have also submitted the Operations Environmental Management Plan (condition 19, Schedule 5). This plan is required to include the Water Management Plan (WMP) and Rehabilitation Management Plan (RMP), which have not yet been approved by the Secretary. Consequently, the Department will await the approval of the WMP and RMP before approving this plan.

If you have any enquiries about this matter, please contact Genevieve Seed.

Yours sincerely

Howard Reed
Director

9.12.16

Resource Assessments
As nominee of the Secretary

Appendix C

Dust Management Procedure



DAILY DUST MANAGEMENT PROTOCOL CHECKLIST

Item no.	Action Required	Yes/No	Comments/Observations	Corrective Actions Taken	Initial
1	BOM Weather Forecast		Max Wind Speed _____ (High Alert: 6 m/s or >20 km/hr) Wind Direction from NW: Y / N If yes, time: _____ Dry Conditions Y / N Comment:		
2	Weather station & DUST HAZARD alert system with threshold (6 m/s or >20 km/h from NW) is working and in effect?				
3	Is water cart being used for haul road watering?		Previous time(s) of use: Scheduled time(s) of use:		
4	Is visible dust being generated?		Description (source, time, action):		
5	Is visible dust leaving the site?		Description (source, time, location):		
6	Are ENM/VENM deliveries occurring for today?		Time: Weather:		
7	Are water sprays used for unloading activities?				
8	Are trucks maintaining low speed limits?				
9	Are trucks covered when entering and leaving?				
10	Is the sealed entrance/exit driveway washed down?				
11	Any earth berm/vegetation maintenance works scheduled/being undertaken?				

Reviewed by:

.....
Name

.....
Signature

.....
Date/time

Appendix D

Sampling Procedures



WORK INSTRUCTION

Work Instruction Title: **DUST SAMPLING**

Quality Procedure Number: **VGTLAB-QWI15**

Amend. No	Date	Description of Amendment
0	19/5/03	Issue A
1	15/3/2005	Add figures, spelling errors, page formatting
2	9/11/05	As per Oct 2005 NATA assessment findings
3	28/2/06	As per NATA letter 23/2/06
4	19/3/2007	New logo
5	16/9/07	AS3580.1.1
6	14/05/2008	As per Audit 21
7	22/04/09	As per Audit 23
8	19/07/13	As per Audit 38
9	28/5/15	As per Audit 43
10	7/6/16	As per Audit 49
11	06/04/2021	As per Audit 75, formatting

THIS IS AN UNCONTROLLED COPY IF PRINTED.

1. Scope

This method is adapted from the Australian Standard AS3580.10.1. It sets out the sampling of particulate matter, which is deposited from the atmosphere for determination of insoluble solids, ash, and combustible matter. It provides a means for measuring the mean concentration of particulate matter in air over a sampling period, normally one month.

2. Principle

Over a given sampling period, particles, which settle from the ambient air, are collected in a vessel and retained together with any rainwater. The sample is sieved to remove any extraneous matter and the filtrate containing the deposited matter is quantitatively transferred to a filtration apparatus whereby determination of insoluble solids, ash, and combustible matter can be made.

3. References

- AS3580.10.1 Determination of particulates- Deposited Matter-Gravimetric method
- AS3580.1.1 Methods for sampling and analysis of ambient air Part 1.1 Guide to siting air monitoring equipment
- VGTLAB-QW14 – Determination of Dusts
- VGTLAB-QW11- Site Visits /Site specific Appendix (online Onenote)

4. Apparatus

4.1. *Deposit Gauge*

Comprising of a 150mm $\pm$ 10mm diameter funnel (nominal angle of cone sides 60 degrees) of glass, or other demonstrably unreactive material, supported in the neck of a glass bottle of minimum volume 2L, in such a way as to remain horizontal and to allow water overflow under excessive rainfall conditions. (An indicative design is given in Figure 1)

4.2. *Lid*

The gauge shall have a tight fitting lid for sealing the bottle during transport. The lid shall be made of an impermeable material, which does not react with the collected, deposited matter.

4.3. *Stand*

The stand shall support the deposit gauge such that the funnel face is between 1.8 and 2.2m above ground level. The stand generally incorporates a container or beaker to protect the bottle contents from sunlight, which can accelerate algal growth. This container or beaker is provided with a drainage hole at the base to prevent rainwater build-up. The stand should be sufficiently rugged to prevent any noticeable sway and shall ensure that the funnel aperture plane is maintained in horizontal position. A typical stand is illustrated in Figure 2.

4.4. **Bird Ring (optional)**

Shall be made of inert and corrosion resistant metal wire having a diameter of 4 mm to 6 mm and of suitable design to prevent birds perching on the funnel. See Figure 2.

Other bird deterrent methods (such as cable ties around the ring) can be employed as long as they do not interfere with sample collection zone.

4.5. **Copper Sulphate Solution**

Dissolve 7.8g of copper sulphate pentahydrate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) in 1 litre tap water. This acts as an algicide. There is no requirement to accurately measure this as Total Solids is not included in this scope.

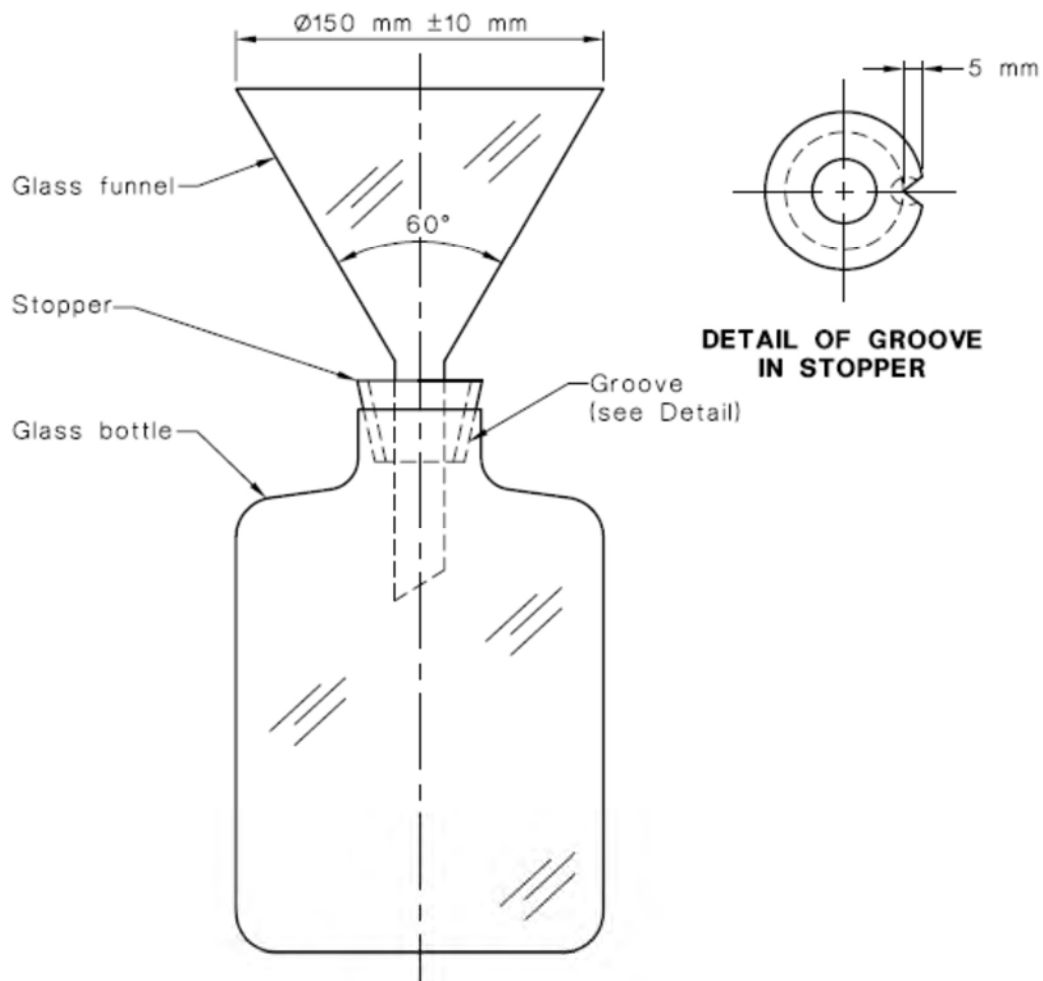


FIGURE 1 TYPICAL STANDARD DEPOSIT GAUGE

(Source: AS3580.10.1)

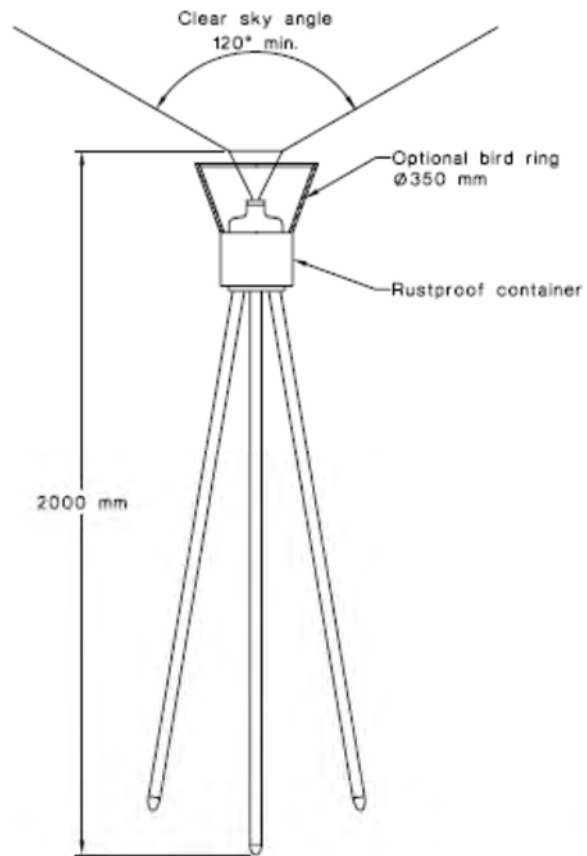


FIGURE 2 TYPICAL STAND WITH DEPOSIT GAUGE

(Source: AS3580.10.1)

5. Safety

VGT staff must at all times follow the safety directions of site managers and site safety protocols. This includes consultation with the client prior to entering the premises. Laboratory safety begins with a safe attitude. The following must be considered before proceeding.

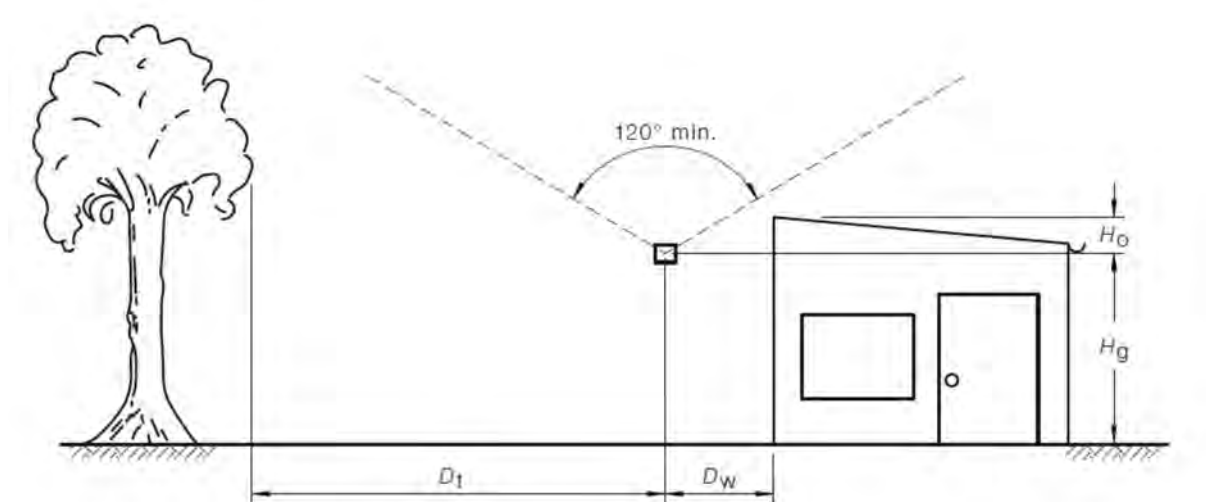
- Become familiar with the physical properties and potential dangers of materials you plan to use. Consider how they may react in combination
- Consider the limitations of the equipment you plan to use.
- Think through any potential hazards associated with your work and plan your response *before* commencing an experiment.
- If in doubt ask your supervisor for assistance.
- Wear the appropriate protective clothing when working in the field.
- Wear appropriate footwear and personal protection.
- If you are working alone, always let someone know your whereabouts and schedule.
- All chemicals should be disposed of as stated in the MSDS.
- Treat each sample as if it is potentially hazardous.
- Inspect any glass or equipment for breakage or sharp edges prior to handling. Do not pick up bottles by the lids, particularly Winchesters of 2L capacity or more. Place a hand under the base of the bottles whilst lifting
- Dispose of broken glassware into the appropriate container, ensuring any contamination hazard is considered.
- Care should be taken when cleaning or drying glassware.
- If glass tubing or rod is to be passed through a bung, lubricate the glass before insertion. The bung should never be held in the palm of the hand while inserting the tube. If any significant force is required to push the tube through the bung, the hole should be enlarged.

6. Procedure

6.1. Location and Positioning

The sampling site should be selected in accordance with the guidelines given in AS3580.1.1 Methods for sampling and analysis of ambient air Part 1.1 Guide to siting air monitoring equipment. In particular, the following points should be considered:

- The site shall be level ground, free, as far as practicable, from such foreign (to the case in hand) sources of pollution such as chimneys, traffic, incinerators, trees, dusty ground and road traffic. If a local foreign source exists in the area, it shall be noted and mapped.
- The nearest obstacles shall not be closer than twice their height. Therefore if the obstacle is 3m high, the gauge must be no closer than 6m.
- As a general rule, a sampling inlet should be located away from any nearby structure to the extent that the sampling inlet has a minimum clear sky angle of 120°.
- There should be an unrestricted air flow of 360° around the sampling inlet.
- The sample inlet shall be horizontal and between 1.8 and 2.2m above ground level.
- The gauge must greater than 5m from source road and 10m from any object taller than the gauge inlet and 10m from the dripline of any trees.



(Source: AS3580.1.1)

H_g = Height of top of funnel above ground = $2 \pm 0.2\text{m}$

H_o = Height of nearby obstacle above sampling inlet – $2H_o \leq D_w$

D_t = Distance to nearby tree $\geq 10\text{m}$ from drip-line

D_w = Distance to wall or supporting structure $\geq$ minimum 1m

120° = Minimum clear sky angle above sampling inlet

6.2. Recommended Minimum Distances between Stations and Roads

For sites significantly influenced by motor vehicle emissions, the following criteria require a statement in the monitoring data if not met. (Distances are for particle measurement)

Estimated No of Vehicles per day	Min Distance between site and road (m)
<10,000	50
20,000	75
40,000	100

6.3. Period of Exposure

In general the period of exposure shall be 30 ± 2 days.

6.4. Gauge Preparation

During preliminary cleaning, washing agents which do not attack the inside surface of the deposit gauge and lid may be used to clean the deposit gauge bottle. After each preliminary cleaning, the deposit gauge bottle shall be rinsed with water in order to remove any remaining extraneous matter. To prevent algal growth in the deposit gauge, 10mL of copper sulphate solution (4.5) shall be measured into the deposit gauge bottle and the bottle tightly sealed. The gauge and prepared assembly should be packed for transport to the sampling site. Before exposure, all extraneous matter adhering to the deposit gauge and lid shall be removed.

6.5. Gauge Exchange

Where a gauge has overflowed, or where the sampling site doesn't comply with AS3580.1.1, or any other details that may affect the results, this should be noted on the sampling report, and the client made aware that the results may be invalid. The volume of liquid in the gauge should be recorded as it gives an indication of the rainfall for the exposure period. The gauge exchange procedure shall be as follows:

- At the end of the exposure period, wash any deposited matter adhering to the funnel into the deposit gauge bottle using a minimum volume of distilled water from a wash bottle.
- Inspect the gauge from the base to ensure no spiders or other harmful insects are present in the gauge prior to placing hands within the apparatus. Observe whether any broken glass is present.
- Remove bottle carefully lifting from the base where possible. Use gloves to avoid cuts from any broken funnels or bottles if required.
- Remove the funnel and attached stopper and seal the bottle with a lid. If the bottle is broken, carefully and clearly label as broken to warn staff of the risk of cuts when handling. Identify the bottle with a label detailing the site location and period of exposure. Return the bottle to the laboratory for analysis.
- Insert the clean funnel with attached stopper into a fresh bottle containing algicide (10mL of copper sulphate solution) and leave exposed for the next sampling period.
- Ensure that the funnel is firmly held in the neck of the bottle and that the funnel aperture plane is horizontal.

NOTE: When on site to exchange dust gauges ensure that you have the appropriate safety equipment and follow all safety instructions given by the relevant company/landowner operating the site. For further instructions see relevant safety procedures and Safe Work Method Statements.

6.6. Storage

Analysis of the deposited matter should be performed at the earliest opportunity and completed within 30 days of collection. During storage, deposit gauges shall be tightly sealed and kept cool to prevent the growth of algae, fungi and other micro-organisms.

6.7. Documentation

The sampling details are recorded on the dust sampling form. Any customer-requested deviations, additions or exclusions from the documented sampling procedure are recorded and communicated to the appropriate personnel. The following details are to be recorded for reporting:

- Location of gauge, including co-ordinate or map reference, height above ground, classification of area (eg industrial, residential, agricultural or urban).
- Any non-conformance to AS3580.1.1 or AS3580.10.1, such as proximity of objects, overflow of gauge, funnel size or angle not compliant.
- Date and time of sampling and name of technician
- Relevant data that may include weather conditions, proximity of bush fires, farming or earth-moving activities, traffic on unsealed roads

This is recorded on VGTLAB-QFM46 Dust Sampling Sheet each month. Static information is stored in LIMS/sample point fields along with the Site Specific Appendix.



Dust Sampling Field Sheet

Emergency Contact List

Greg Thomson 0428 279 023

Lisa Thomson 0427 334 471

Terry Walker 0427 466 561

Risk Assessment

Have you contacted the site supervisor and signed in? _____

Are you inducted? _____

Have you got the radio channel? _____

Have you checked the site map? _____

Does your vehicle have your flashing light and flag? _____

Has anything changed? _____

Have you checked in? _____

Are you working near water bodies? _____

Is there any dangerous wildlife activity? _____

Are there any blasts scheduled for today? _____

Is it safe? _____

Are there active heavy vehicles? _____

How can this activity be improved? _____

Client : _____

Date Sampled: _____

Site: _____

Technician: _____

Weather Conditions: _____

Activities On-site: _____

Dust Sampling Method: AS3580.10.1 (VGT WI14) and AS3580.1.1 (VGT WI15)

Conformance of Dust Gauge to AS3580.10.1 and AS3580.1.1

Sample ID	Description	Time Sampled	Location / GPS Co-ords	Comments	Stand Height 2.0m +/-0.2m and level	Funnel 150mm +/- 10mm and horizontal	Clear Sky angle 120 degree min	Gauge set min 10m from nearest dripline or obstacle



WORK INSTRUCTION

WORK INSTRUCTION TITLE: HVAS OPERATION AND SAMPLING

QUALITY PROCEDURE NUMBER: VGTLAB-QWI57

Amend. No	Date	Description of Amendment
0	16/02/2023	Issue A
1		
2		
3		
4		
5		
6		
7		
8		

THIS IS AN UNCONTROLLED COPY IF PRINTED.

HVAS OPERATION & SAMPLING

Where to find what to record:

1. Run Time:

Do this when putting paper on and when taking paper off.

Press SELECT to enter menu (figure 2.).

Press SELECT again (Status screen).

Use down arrow until "Runtime min" appears on screen (figure 3).

Record runtime in 'Start Hrs Run'/'End Hrs Run'.

Press EXIT to return to front menu.

Display should be in standby with next run time displayed.

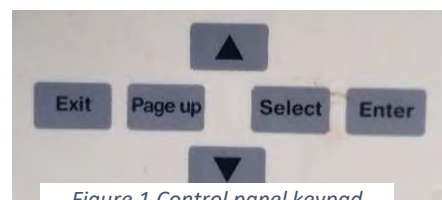


Figure 1. Control panel keypad



Figure 2. Menu



Figure 3. "RunTime Min" screen

2. Swapping Out Papers:

Record details

Unscrew hood (figure 4.)

Carefully remove paper.

FOLD PAPER -dust to the inside

Put in envelope.

Place new paper between blue screen.

How to place filter on screen:

1. Number facing DOWN.
2. Paper on mesh
3. Spongy lid on top



Figure 4. Unscrewing lid

Avoid excessive touching of paper.

Handle papers with clean hands.

Do not crease paper before placing on machine.

4. Close lid.
5. Check next 'run time'
6. Lock up.

Finished.

3. Record:

Technician Name: *Name of person placing/removing filter paper.*

Weather: *e.g. rainy, overcast, sunny.*

Temperature On: *Temperature on the day paper is placed.*

Initial Flow Rate: *Operate the sampler for 5 min and record the initial flow indicated. (Usually between 67-69)*

Start Hrs: *Number displayed after "RunTime min" recorded before paper is placed.*

Date and Time On: *Date and time paper is placed on HVAS.*

Date Operating: *Date HVAS is running.*

Temperature Off: *Temperature on the day paper is removed.*

Final Flow Rate: *Operate the sampler for 5 min and record the initial flow indicated. (Usually between 67-69)*

End Hrs: *Number displayed after "RunTime min", recorded after paper is removed. (There should be a difference of 1439-1441 between Start and End numbers)*



Figure 5. Fold dust to the INSIDE

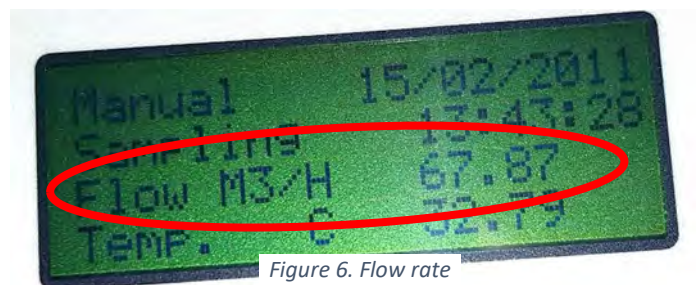


Figure 6. Flow rate

Date and Time Off: *Date and time paper is removed from HVAS*

Activities on site during operating period: *E.g. truck movement levels-high, low. Mowing, hazard reduction burns etc.*

Laboratory
Sample ID



High Volume Air Sampler Papers

Lab Use Only

Box	56
Paper no	A00814
Client	ABC Quarry
Site	Mars

Complete Prior Placing Paper

Instrument location and operational conditions compliant?	☒ Yes/No
HVAS Size Selective Inlet:	TSP / <u>PM10</u> / PM2.5
Technician Name	Joe Bloggs
Weather	Light showers
Temperature On (°C)	29.3
Initial Flow Rate (m³/min)	67.9
Start Hrs Run	115237
Date and Time On	21/03/2015 14:30
Date Operating (Sampling)	24/03/2015

Complete After Removing Paper

Temperature Off (°C)	26.1
Final Flow Rate (m³/min)	67.8
End Hrs Run	116677
Date and Time Off	26/03/2015 11:59
Activities on site during sampling period (i.e. truck movements, grass cutting, hazard reduction burns)	slashing, screening, trail bikes nearby

Figure 7. Example of Filled in Envelope

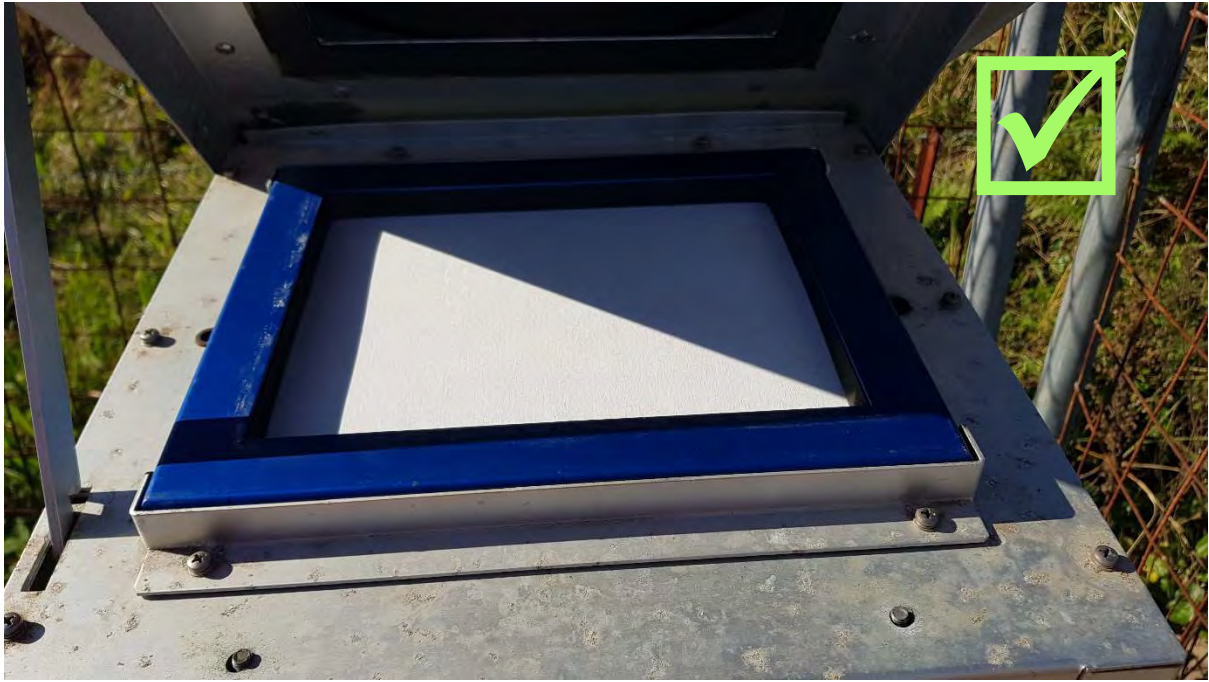


Figure 8. A correctly installed HVAS filter paper

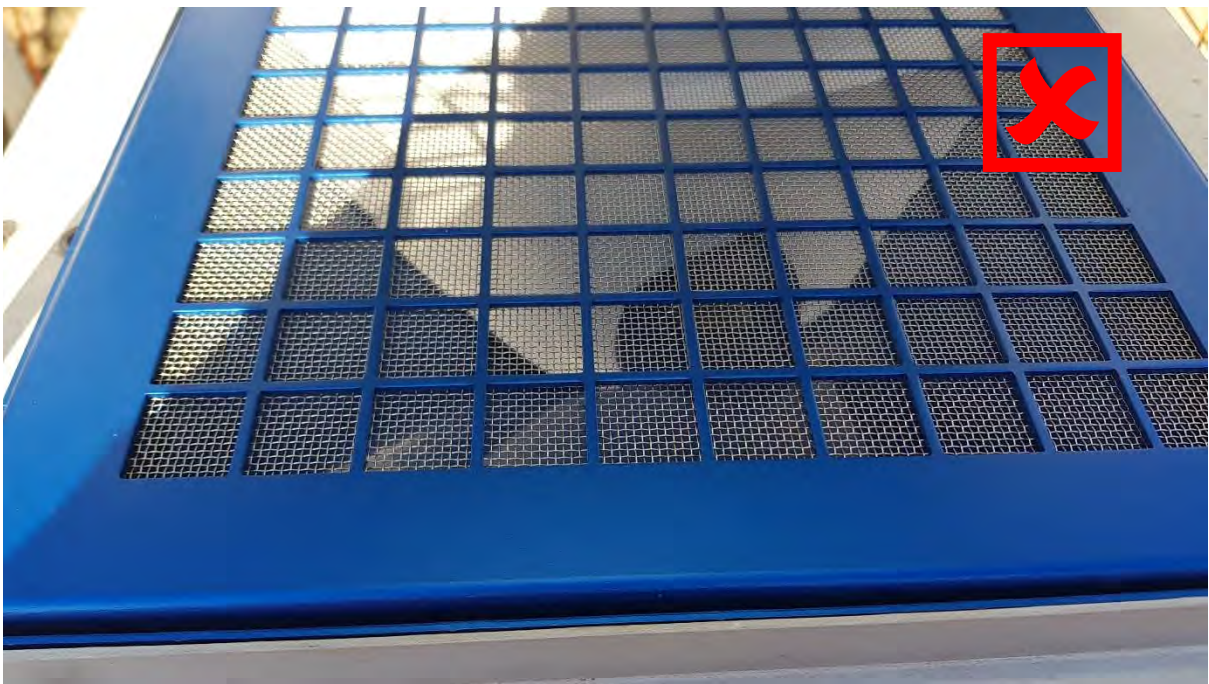


Figure 9. An example of an incorrectly installed HVAS filter paper.

Laboratory
Sample ID



High Volume Air Sampler Filter

Lab Use Only

Box	
Paper no	
Client	
Site	

Complete Prior Placing Filter

Instrument location and operational conditions compliant?	Yes / No
HVAS Size Selective Inlet:	TSP / PM10 / PM2.5
Technician Name	
Weather	
Temperature On (°C)	
Initial Flow Rate (m ³ /min)	
Start Hrs Run	
Date and Time On	
Date Operating (Sampling)	

Complete After Removing Filter

Temperature Off (°C)	
Final Flow Rate (m ³ /min)	
End Hrs Run	
Date and Time Off	
Activities on site during sampling period i.e. truck movements, grass cutting, hazard reduction burns	

Appendix E

Air Quality Monitoring Review

January
2023

Air Quality Monitoring Review
1/09/2021 to 1/09/2022
DA 267-11-99
EPL 6535

Image © 2022 Maxar Technologies

Document details

Date	Revision	Author	Date of Expert Approval	Details
28/11/2022	0	Lisa Thomson BAppSc(Chem)Hons, MRACI, MIQA, CChem	8/03/2022 Appendix A	
30/01/2023	1	Lisa Thomson Changes required by DPE 18/01/2023		Appendix G: DPE Request for Additional Information 18/1/23; Appendix H: PM2.5 Results 09/10/2021; Section 6: Conclusions and Recommendations

26/07/2023

Reviewed following AR and IEA 2023. No changes required

COPYRIGHT

© VGT Environmental Compliance Solutions Pty Ltd
and
© Hodgson Quarries and Plant Pty Ltd

All intellectual property and copyright reserved.

Apart from any fair dealing for the purpose of the private study, research, criticism or review, as permitted under the Copyright Act 1968, no part of this report may be reproduced, transmitted, stored in a retrieval system or adapted in any form or by any means (electronic, mechanical, photocopying, recording or otherwise) without written permission. Enquiries should be addressed to VGT Environmental Compliance Solutions Pty Ltd.

DISCLAIMER

This report was prepared in accordance with the scope of services set out in the contract between VGT Environmental Compliance Solutions Pty Ltd (VGT) ABN 26 621 943 888 and the Client and is not to be reproduced except in full. To the best of our knowledge, the report presented herein accurately reflects the Client's intentions when the document was printed. However, the application of conditions of approval or impacts of unanticipated future events could modify the outcomes described in this document. In preparing the report, VGT used data, surveys, analyses, designs, plans and other information provided by individuals and organisations referenced herein. While checks were undertaken to ensure that such materials were the correct and current versions of the materials provided, except as otherwise stated, VGT did not independently verify the accuracy or completeness of these information sources.

Contents

1	Introduction	1
1.1	Scope	1
1.2	Background	1
1.3	Licences and Conditions	1
1.4	Consultation	2
2	Review Methodology	2
2.1.1	Critical Criteria from AS3580.19 Table 5	3
3	Site Air Quality Monitoring	4
3.1	Air Quality Monitoring Plan	4
3.2	Deposited Dust Results for Site	6
3.3	Particulate Matter Results for Site	9
3.4	Invalidated Results	11
3.4.1	Depositional Dusts	11
3.4.2	Particulate Matter	11
3.5	Audit of Results	11
3.5.1	Sampling	11
3.5.2	Testing	11
4	Concurrent Data from Other Sites	11
4.1	Depositional Dust Comparison	11
4.2	Particulate Matter Comparison	12
5	Statistics Summary and Interpretation	17
5.1	Depositional Dusts Statistics	17
5.2	Particulate Matter Statistics	17
6	Conclusions and Recommendations	18
7	References	19

Figures

Figure One.	Monitoring Locations	5
-------------	----------------------	---

Tables

Table 1.	Document details:	2
Table 2.	Air Quality Monitoring Summary	4
Table 3.	Deposited Dust D1	6
Table 4.	Deposited Dust D2	7
Table 5.	Deposited Dust D3	8
Table 6.	Particulate Matter	9
Table 7.	Depositional Dust Result Summary	17
Table 8.	High Volume Air Sampler Result Summary	17
Table 9.	Depositional Dust External Site Comparison	11
Table 10.	Particulate Matter External Site Comparison	12

Graphs

Graph 1.	Deposited Dust D1	6
Graph 2.	Deposited Dust D2	7
Graph 3.	Deposited Dust D3	8
Graph 4.	Particulate Matter	9
Graph 5.	Depositional Dust External Site Comparison	12
Graph 6.	PM10 Comparison – Site v Richmond	13
Graph 7.	PM10 Comparison – Site v Dixon Sand	14
Graph 8.	PM10 Comparison – Dixon Sand v Richmond	15
Graph 9.	PM2.5 Comparison – Site v Richmond	16

Appendices

Appendix A	Letter regarding approval of expert
Appendix B	Response to Submissions EPA
Appendix C	Notice of Modification and Consolidated Consent Conditions
Appendix D	EPA Licence
Appendix E	EPA Consultation
Appendix F	Laboratory Scope of Accreditation
Appendix G	DPE Request for Additional Information 18/1/23
Appendix H	PM2.5 Results 09/10/2021

Glossary and Abbreviations

BAM	Beta Attenuated Method
DPE	NSW Department of Planning and Environment
EPA	NSW Environment Protection Authority
HVAS	High Volume Air Sampler
PM10 or PM ₁₀	Particulate Matter less than 10 micron in diameter
PM2.5 or PM _{2.5}	Particulate Matter less than 2.5 micron in diameter
R2 or R ²	Pearsons Correlation Coefficient
TEOM	Tapered Element Oscillating Microbalance

1 Introduction

1.1 SCOPE

VGT Environmental Compliance Solutions Pty Ltd has been engaged by Hodgson Quarries and Plant Pty Ltd to prepare a report in accordance with condition 29A and 29B, DA267/11/99 Mod 4 for the sand quarry at Roberts Road Maroota:

29A. The Applicant must commission an expert review of the air quality monitoring system at the site. This review must:

- (a) be undertaken by a suitably qualified and experience person(s) whose appointment has been approved by the Secretary;*
- (b) review the accuracy of the air quality monitoring system at the site over a 12 month period, in general accordance with the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007) and with a particular focus on PM_{2.5} monitoring;*
- (c) provide recommendations (where required) to improve the accuracy of air quality monitoring system at the site; and*
- (d) be undertaken in consultation with the EPA.*

29B. A copy of the expert review report along with a timetable for implementing any recommendations arising from the review required under condition 29A of this Schedule, must be submitted by 30 November 2022, or as otherwise agreed by the Planning Secretary.

Note that this condition is taken from the Notice of Modification document, as the Consolidated Consent has only been provided as a draft with errors.

Lisa Thomson from VGT Environmental Compliance Solutions Pty Ltd (VGT) was approved by the nominee of the Planning Secretary to review the air monitoring system in accordance with the above reproduced condition on the 8/03/2022, see [Appendix A](#).

1.2 BACKGROUND

The sand quarry at Roberts Road Maroota (the site) has been operating continuously since the 1990's. A fourth modification to the consent conditions for the operations was sought in 2020 and approved on the 13th August 2021. The modification was to:

- Import up to 320,000 tonnes per annum of VENM and ENM to backfill the excavation
- Onsite processing of selected imported materials for sale
- Increase truck movements to 140 per day
- Extend the quarry life to 31 May 2030
- Remove a condition limiting the area of exposed and active quarry area to allow for backfill and rehabilitation activities.

During the modification process, the EPA requested clarification of the Air Quality Impact Assessment and cast doubt on the accuracy of the onsite PM_{2.5} monitoring. The EPA recommended that the licensee commission an expert review of the air quality monitoring system, with specific focus on the PM_{2.5} monitoring. The Response to Submissions detailing the EPA requirements is included in [Appendix B](#).

1.3 LICENCES AND CONDITIONS

Development approval (DA267-11-99), with conditions of consent was first issued by the then Department of Urban Affairs and Planning on the 31st of May 2000. A Modification to Consent (Mod 4) was submitted in November 2019 and approved on 13th August 2021, see [Appendix C](#).

An Environment Protection Licence number 6535 has been issued for the site and is included in [Appendix D](#).

1.4 CONSULTATION

The EPA was approached by the author for comments on the report. Copies of the EPA reply are included in [Appendix E](#), however the EPA had no comments.

2 Review Methodology

This review is required to evaluate 12 month's worth of monitoring data, with particular emphasis on the accuracy of the PM2.5 results.

Terminology used throughout the report is consistent with the Australian Standard series of methods for sampling and analysis of ambient air. In particular, the report is written in the context of AS3580.19 Ambient air quality data validation and reporting. A full list of the standards referenced is included in [Section 5](#).

AS3580.19 section 2.5.2 outlines how manual data systems shall be examined for anomalies, outliers and inconsistencies. The following table contains a list recommended as a base for examination and corresponding comments on the site's system.

Table 1. *AS3580.19 Section 2.5.2 Data Examination Items*

Item	Comments on Site System
Audit and inter-laboratory results	All site results are covered by the scope of accreditation number 20375 of the laboratory and are therefore audited by NATA. (Section 3.1).
Concurrent data from other ambient air quality monitoring stations in the immediate vicinity of the station under examination	Section 4 .
Concentration ratios for pollutants from a known source	Table 8 .
Emission source locations and meteorological data	Where results from the site have been invalidated due to these factors, it has been discussed in Section 3.3 .
Seasonal and diurnal variations in pollution concentrations	No obvious seasonal or daily trends have been noted.
Time period corresponding to known unusual events	There were no known bushfires during the review period, however there were periods of heavy rain.
Historical records	This review covers a 12 month period from 1/9/2021 to 1/9/2022.
Statistical Analysis	Section 5
Graphical representations	Graph 1 to Graph 9
Observations reported by the site.	Not available for inclusion in this report.

Due to availability of concurrent data from other ambient air quality monitoring stations in the immediate vicinity of the station under examination, the period 1st September 2021 to 1st September 2022 was chosen.

The external sites available for comparison of results are given in the table below.

Table 2. *External Sites*

Site	Description	Distance from Site	Type of Monitoring
DPE Air Quality Monitoring Site Richmond https://www.environment.nsw.gov.au/topics/air/monitoring-air-quality/sydney	University of Western Sydney, Hawkesbury	Approx 40km	BAM PM10 and PM2.5
Dixon Sand, Old Northern Rd Maroota http://www.dixonsand.com.au/	Sand Quarry	Approx 3km	TEOM PM10
PF Formations, Old Northern Rd Maroota https://pfformation.com.au/	Sand Quarry	Approx 200m	Depositional Dust <i>Only 2021 available</i>

2.1.1 Critical Criteria from AS3580.19 Table 5

AS3580.19 lists critical criteria for each method in section 2.8.2, Table 5. Note that not all critical criteria in the Table have been assessed, as not all are relevant to the current review. Individual results were not checked for each criteria, rather the method was checked as to whether the critical criteria are met, and NATA audits ensure compliance.

Table 3. *Depositional Dusts Critical Criteria*

Criteria	Conformance
Equipment conforms to specified dimensions	Yes
Funnel aperture plane within 10° of horizontal 2 ± 0.2m above ground	Yes
Algicide added to gauges	Yes
Test sieve of 1mm	Yes
Conformance with specified temperatures	Yes
Conformance with analytical balance requirements	Yes

Table 4. *Particulate Matter Critical Criteria*

Criteria	Conformance
Equipment conforms to specified requirements	Yes
Sampler operation within allowable tolerance of selected time period	Yes
HVAS exhaust directed away from sampler and ground	Yes
Conformance with analytical balance requirements	Yes
Filter weighing environment within the specified temperature and humidity requirements	Yes

Criteria	Conformance
Laboratory blank filter weight change within the specified limits	Yes
No sample loss during filter folding and sample recovery	Not noted on sample comments
Sample flow rate as required	Yes
Sample inlet sized as specified	Yes

3 Site Air Quality Monitoring

3.1 AIR QUALITY MONITORING PLAN

The air quality is monitored on the site in accordance with an Air Quality Management Plan available for download https://www.vgt.com.au/client_images/2039728.pdf. The current version is R4 7/11/2016.

Table 5. Air Quality Monitoring Summary

Parameter	Method	Sampling Period / Interval	Location (Figure One)	Performance Criteria
Insoluble Solids g/m²/month	AS3580.10.1	30 +/- 2 days / continuous	D1, D2, D3	<= 4 as Annual Average
Total Suspended Particulates (TSP) µg/m³	AS3580.9.3	24 hrs every 6 days	D1	<= 90 as Annual Average
Particulate Matter less than 10 micron (PM10) µg/m³	AS3580.9.6	24 hrs every 6 days	D1	<= 25 as Annual Average <= 50 as 24 hour Average
Particulate Matter less than 2.5 micron (PM2.5) µg/m³	AS3580.9.14	24 hrs every 6 days	D1	<= 8 as Annual Average <= 25 as 24 hour Average

The site results for the review period are given in the tables and graphs on the following pages. The monitoring locations are given on [Figure One](#).

Figure One. Monitoring Locations



Legend

- Property Boundary
- Monitoring Wells
- Dust & HVAS
- Attended Noise
- Road Noise Monitoring

Water SamplingDust GaugeWeather StationSprinkler

3.2 DEPOSITED DUST RESULTS FOR SITE

Graph 1. Deposited Dust D1

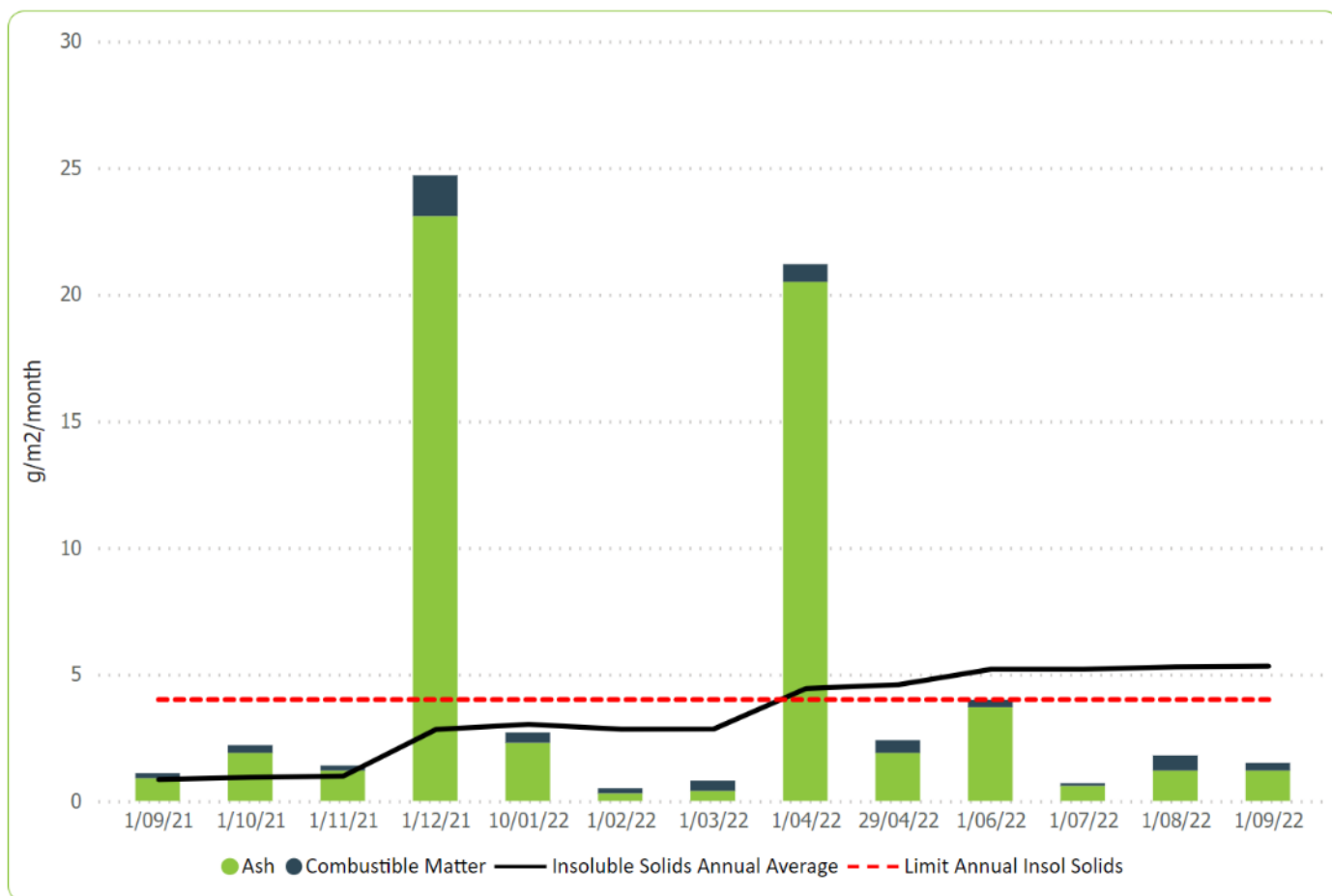


Table 6. Deposited Dust D1

Date On	Comments	Date Sampled	Days On	Insoluble Solids	Ash	Combustible Matter	Calculated Rain
30/07/21		1/09/21	33	1.1	0.9	0.2	63
1/09/21		1/10/21	30	2.2	1.9	0.3	25
1/10/21		1/11/21	31	1.4	1.2	0.2	50
1/11/21	Sampled by Melissa Mass	1/12/21	30	24.7	23.1	1.6	116
1/12/21	Sampled by Melissa Mass	10/01/22	40	2.7	2.3	0.4	115
10/01/22	Sampled by Melissa Mass	1/02/22	22	0.5	0.3	0.2	47
1/02/22	Sampled by Melissa Mass	1/03/22	28	0.8	0.4	0.4	116
1/03/22	Sampled by Melissa Mass	1/04/22	31	21.2	20.5	0.7	116
1/04/22	Sampled by Melissa Mass	29/04/22	28	2.4	1.9	0.5	110
29/04/22	Sampled by Melissa Mass	1/06/22	33	4.0	3.7	0.3	98
1/06/22	Sampled by Melissa Mass	1/07/22	30	0.7	0.6	0.1	7
1/07/22	Sampled by Melissa Mass. Flooding rainfall event during July.	1/08/22	31	1.8	1.2	0.6	114
1/08/22	Sampled by Melissa Mass.	1/09/22	31	1.5	1.2	0.3	32

Graph 2. Deposited Dust D2

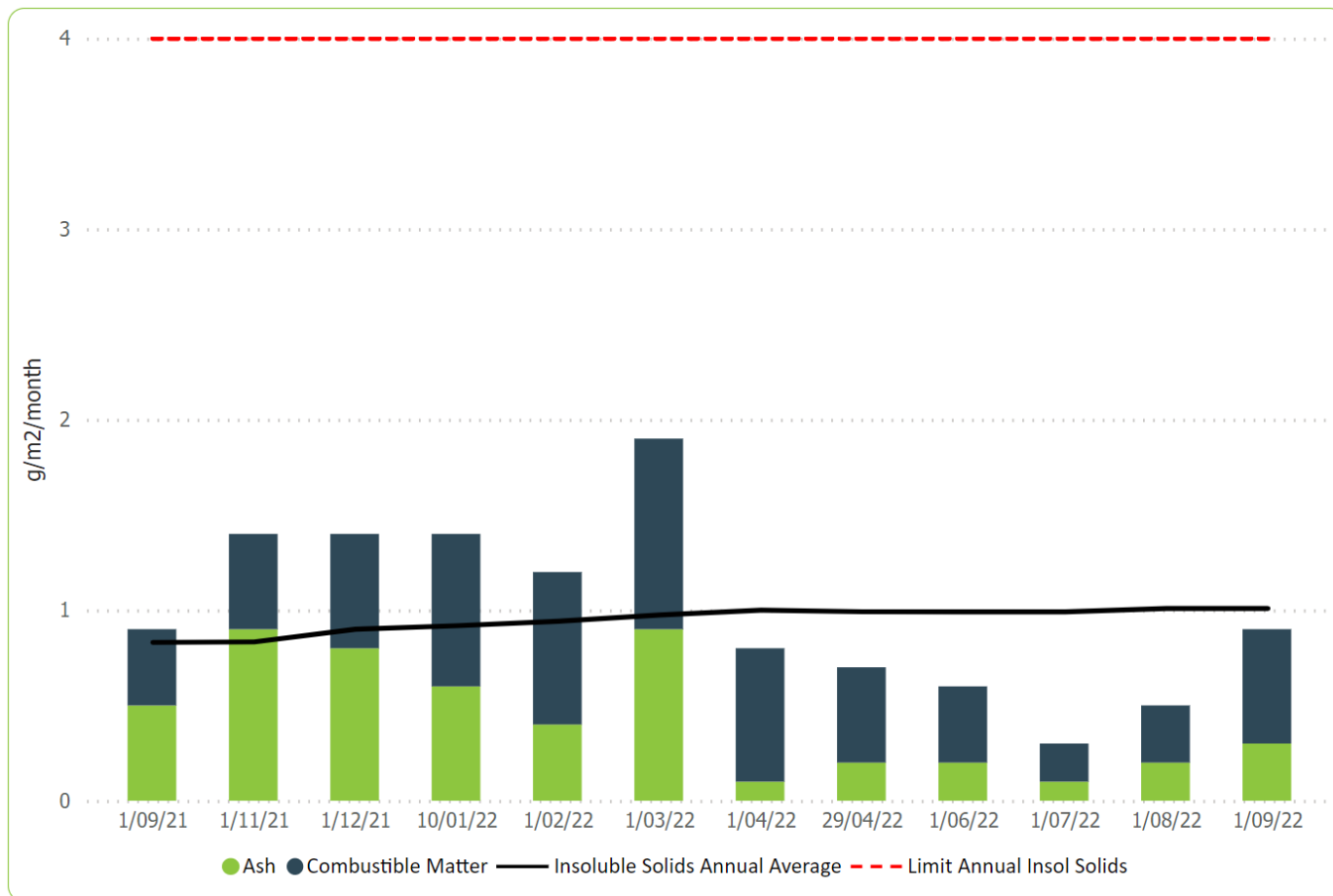


Table 7. Deposited Dust D2

Date On	Comments	Date Sampled	Days On	Insoluble Solids	Ash	Combustible Matter	Calculated Rain
30/07/21		1/09/21	33	0.9	0.5	0.4	54
1/10/21		1/11/21	31	1.4	0.9	0.5	41
1/11/21	Sampled by Melissa Mass.	1/12/21	30	1.4	0.8	0.6	115
1/12/21	Sampled by Melissa Mass.	10/01/22	40	1.4	0.6	0.8	115
10/01/22	Sampled by Melissa Mass.	1/02/22	22	1.2	0.4	0.8	33
1/02/22	Sampled by Melissa Mass	1/03/22	28	1.9	0.9	1.0	115
1/03/22	Sampled by Melissa Mass	1/04/22	31	0.8	0.1	0.7	115
1/04/22	Sampled by Melissa Mass	29/04/22	28	0.7	0.2	0.5	88
29/04/22	Sampled by Melissa Mass	1/06/22	33	0.6	0.2	0.4	85
1/06/22	Sampled by Melissa Mass	1/07/22	30	0.3	0.1	0.2	4
1/07/22	Sampled by Melissa Mass.	1/08/22	31	0.5	0.2	0.3	115
	Flooding rainfall event during July.	1/09/22	31	0.9	0.3	0.6	26
1/08/22	Sampled by Melissa Mass.						

Graph 3. Deposited Dust D3

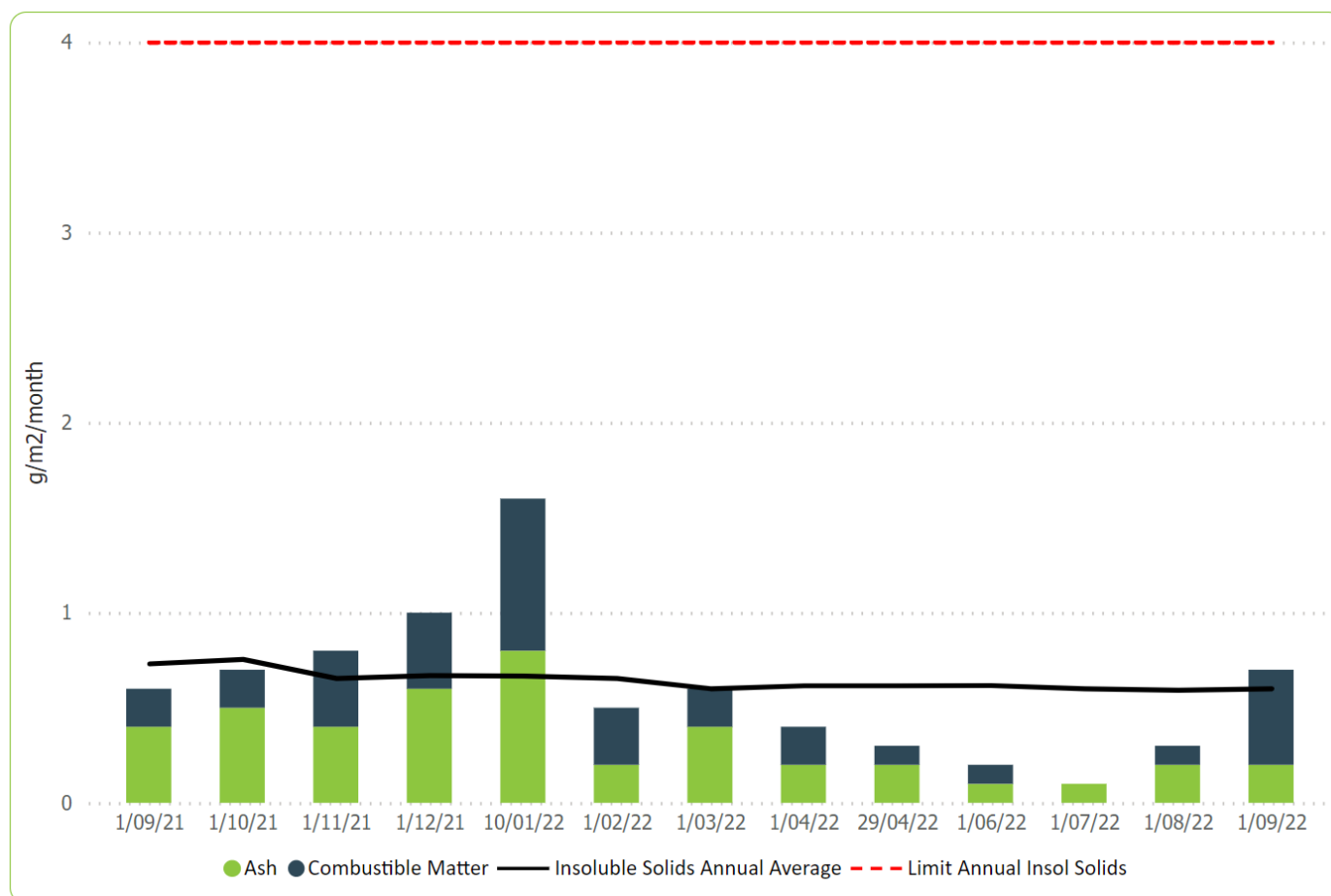


Table 8. Deposited Dust D3

Date On	Comments	Date Sampled	Days On	Insoluble Solids	Ash	Combustible Matter	Calculated Rain
30/07/21		1/09/21	33	0.6	0.4	0.2	66
1/09/21		1/10/21	30	0.7	0.5	0.2	22
1/10/21		1/11/21	31	0.8	0.4	0.4	38
1/11/21	Sampled by Melissa Mass	1/12/21	30	1.0	0.6	0.4	114
1/12/21	Sampled by Melissa Mass	10/01/22	40	1.6	0.8	0.8	115
10/01/22	Sampled by Melissa Mass	1/02/22	22	0.5	0.2	0.3	44
1/02/22	Sampled by Melissa Mass	1/03/22	28	0.6	0.4	0.2	116
1/03/22	Sampled by Melissa Mass	1/04/22	31	0.4	0.2	0.2	116
1/04/22	Sampled by Melissa Mass	29/04/22	28	0.3	0.2	0.1	108
29/04/22	Sampled by Melissa Mass	1/06/22	33	0.2	0.1	0.1	94
1/06/22	Sampled by Melissa Mass	1/07/22	30	0.1	0.1	0.0	7
1/07/22	Sampled by Melissa Mass. Flooding rainfall event during July.	1/08/22	31	0.3	0.2	0.1	114
1/08/22	Sampled by Melissa Mass.	1/09/22	31	0.7	0.2	0.5	31

3.3 PARTICULATE MATTER RESULTS FOR SITE

Graph 4. Particulate Matter

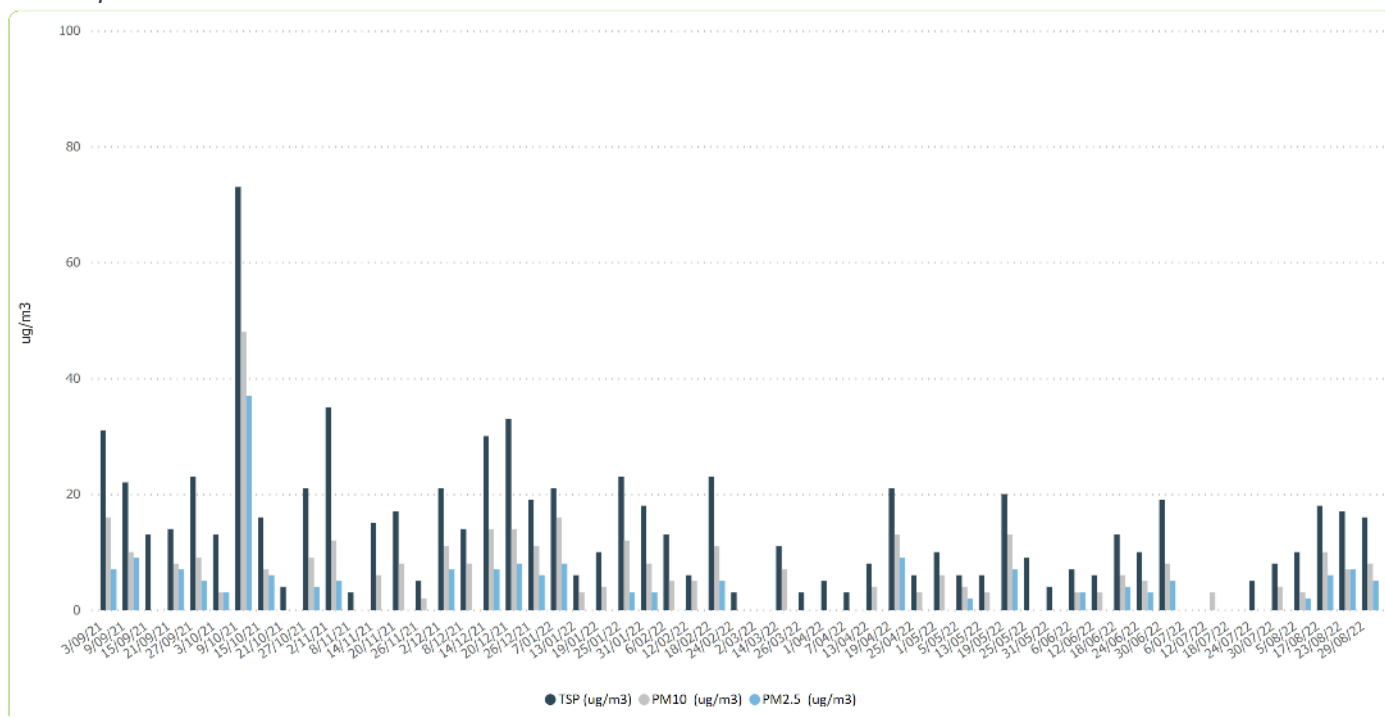


Table 9. Particulate Matter Results and Ratios

Date	TSP (ug/m3)	PM10 (ug/m3)	PM2.5 (ug/m3)	Ratio TSP/PM10	Ratio PM10/PM2.5
3/09/2021	31	16	7	1.94	2.29
9/09/2021	22	10	9	2.20	1.11
15/09/2021	13	<2	<2		
21/09/2021	14	8	7	1.75	1.14
27/09/2021	23	9	5	2.56	1.80
3/10/2021	13	3	3	4.33	1.00
9/10/2021	73	48	37	1.52	1.30
15/10/2021	16	7	6	2.29	1.17
21/10/2021	4	<2	<2		
27/10/2021	21	9	4	2.33	2.25
2/11/2021	35	12	5	2.92	2.40
8/11/2021	3	<2	<2		
14/11/2021	15	6	<2	2.50	
20/11/2021	17	8	<2	2.13	
26/11/2021	5	2	<2	2.50	
2/12/2021	21	11	7	1.91	1.57
8/12/2021	14	8	<2	1.75	
14/12/2021	30	14	7	2.14	2.00
20/12/2021	33	14	8	2.36	1.75
26/12/2021	19	11	6	1.73	1.83

Date	TSP (ug/m3)	PM10 (ug/m3)	PM2.5 (ug/m3)	Ratio TSP/PM10	Ratio PM10/PM2.5
7/01/2022	21	16	8	1.31	2.00
13/01/2022	6	3	<2	2.00	
19/01/2022	10	4	<2	2.50	
25/01/2022	23	12	3	1.92	4.00
31/01/2022	18	8	3	2.25	2.67
6/02/2022	13	5	<2	2.60	
12/02/2022	6	5	<2	1.20	
18/02/2022	23	11	5	2.09	2.20
24/02/2022	3	<2	<2		
2/03/2022	<2	<2	<2		
14/03/2022	11	7	<2	1.57	
26/03/2022	3	<2	<2		
1/04/2022	5	<2	<2		
7/04/2022	3	<2	<2		
13/04/2022	8	4	<2	2.00	
19/04/2022	21	13	9	1.62	1.44
25/04/2022	6	3	<2	2.00	
1/05/2022	10	6	<2	1.67	
5/05/2022	6	4	2	1.50	2.00
13/05/2022	6	3	<2	2.00	
19/05/2022	20	13	7	1.54	1.86
25/05/2022	9	<2	<2		
31/05/2022	4	<2	<2		
6/06/2022	7	3	3	2.33	1.00
12/06/2022	6	3	<2	2.00	
18/06/2022	13	6	4	2.17	1.50
24/06/2022	10	5	3	2.00	1.67
30/06/2022	19	8	5	2.38	1.60
6/07/2022	<2	<2	<2		
12/07/2022		3	<2		
18/07/2022		<2	<2		
24/07/2022	5	<2	<2		
30/07/2022	8	4	<2	2.00	
5/08/2022	10	3	2	3.33	1.50
17/08/2022	18	10	6	1.80	1.67
23/08/2022	17	7	7	2.43	1.00
29/08/2022	16	8	5	2.00	1.60

3.4 INVALIDATED RESULTS

3.4.1 Depositional Dusts

There were no depositional dust results invalidated in accordance with recommendations in AS3580319.

The chosen date range included 13 sets of results from 3 sampling sites, totalling 36 results. On 4 occasions the sampling range was inconsistent with the requirements of AS3580.10.1, being 30 +/- 2 days. The August 2021 set were sampled from 30/7/2021 to 1/9/2021, being 33 days. The December 2021 set were sampled from 1/12/2021 until 10/1/2022 due to the Christmas holiday period, a period of 40 days. The following period was correspondingly shortened: 10/1/2022 to 1/2/2022, being 22 days. The May 2022 set of results had a sampling period of 29/4/2022 to 1/6/2022, being 33 days. In each of these cases, the calculations were adjusted to allow for number of days. All results were flagged, but none required invalidation.

3.4.2 Particulate Matter

On the 8th March 2022 the PM10 showed results higher than the TSP, however the PM10 filter paper contained rust stains and had been contaminated after removal from the instrument. The result was invalidated due to post-sampling contamination and removed from the data set. The TSP instrument did not operate between 12th July and 20th July 2022 due to an electrical fault.

3.5 AUDIT OF RESULTS

3.5.1 Sampling

The sampling of the deposition gauges is undertaken by a site contractor and the changing of the HVAS filter papers is undertaken by site employees. These activities are not covered by the NATA scope accreditation and are therefore not subject to external independent auditing. There was only one result where the test was invalidated due to sampling error (8/3/22, PM10). The sampling procedures were not sighted for this review.

3.5.2 Testing

A review of the laboratory reports obtained from the site shows that all of the analytes listed in [Table 4](#) and tested under the site's AQMP are covered by the scope of accreditation of the laboratory undertaking the testing, VGT Laboratories Pty Ltd accreditation number 20375. The NATA accreditation ensures that the organisation performing the testing has been assessed by independent auditors as technically competent to perform all of the tests listed in [Appendix F](#).

4 Concurrent Data from Other Sites

4.1 DEPOSITIONAL DUST COMPARISON

Depositional dust results from the site were compared to PF Formation (PFF) results published on their website. Only 4 months of data was available for comparison. Methods of testing are the same.

Table 10. *Depositional Dust External Site Comparison*

Sample Period	D1	D2	D3	Average Roberts Rd	PFF Maroota School	PFF Hitchcock Rd	PFF Jurds	PFF Josh	PFF Lodge	Average PFF
Sep-21	2.2	0.9	0.7	1.27	0.79	1.3	1.4	0.6	0.4	0.90
Oct-21	1.4	1.4	0.8	1.20	1.4	2.1	1.6	1.3	1.5	1.58
Nov-21	24.7	1.4	1	9.03	2.1	3.3	3.8	4.4	2	3.12
Dec-21	2.7	1.4	1.6	1.90	1.4	1.7	2.9	1.4	0.8	1.64

Graph 5. *Depositional Dust External Site Comparison*

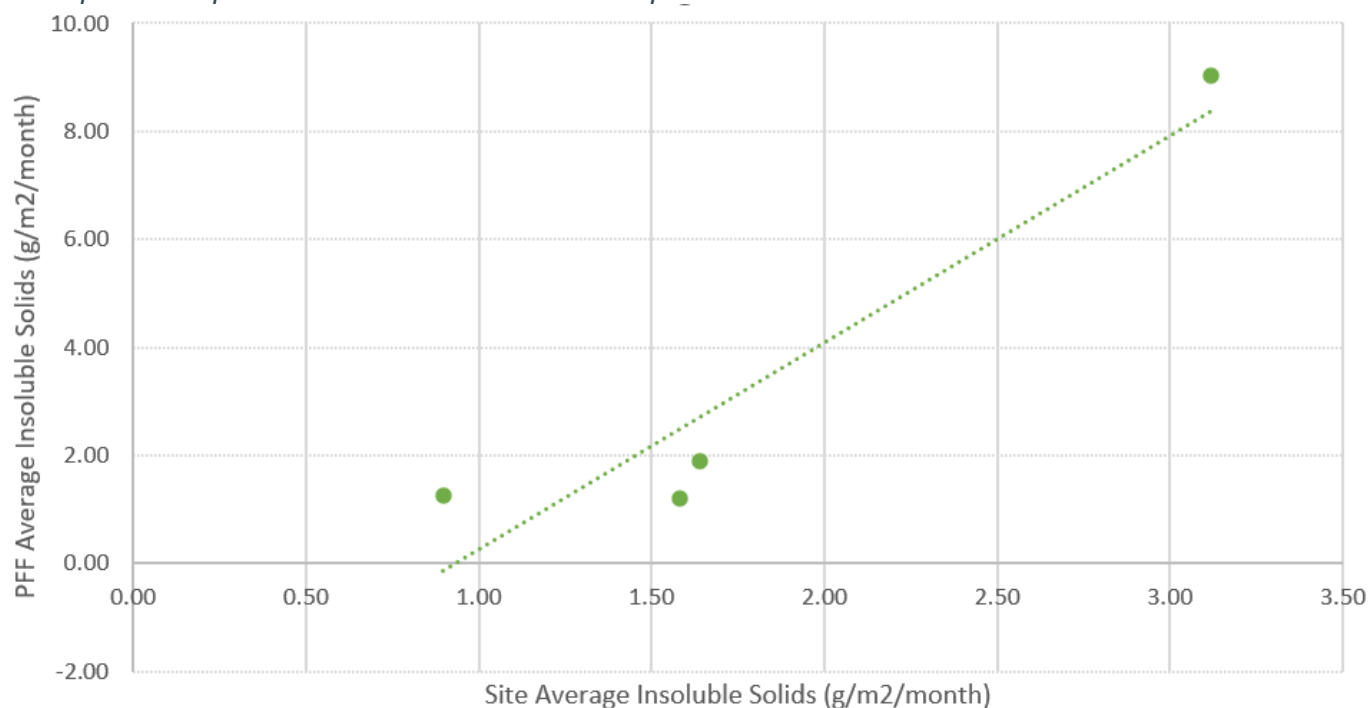


Table 11. *Deposited Dust Comparison Statistics*

Parameter	Value
Average Site result / Average Comparison result Period Sept 2021 to Dec 2021	13.4 / 7.2
R ² coefficient (Graph 5)	0.90

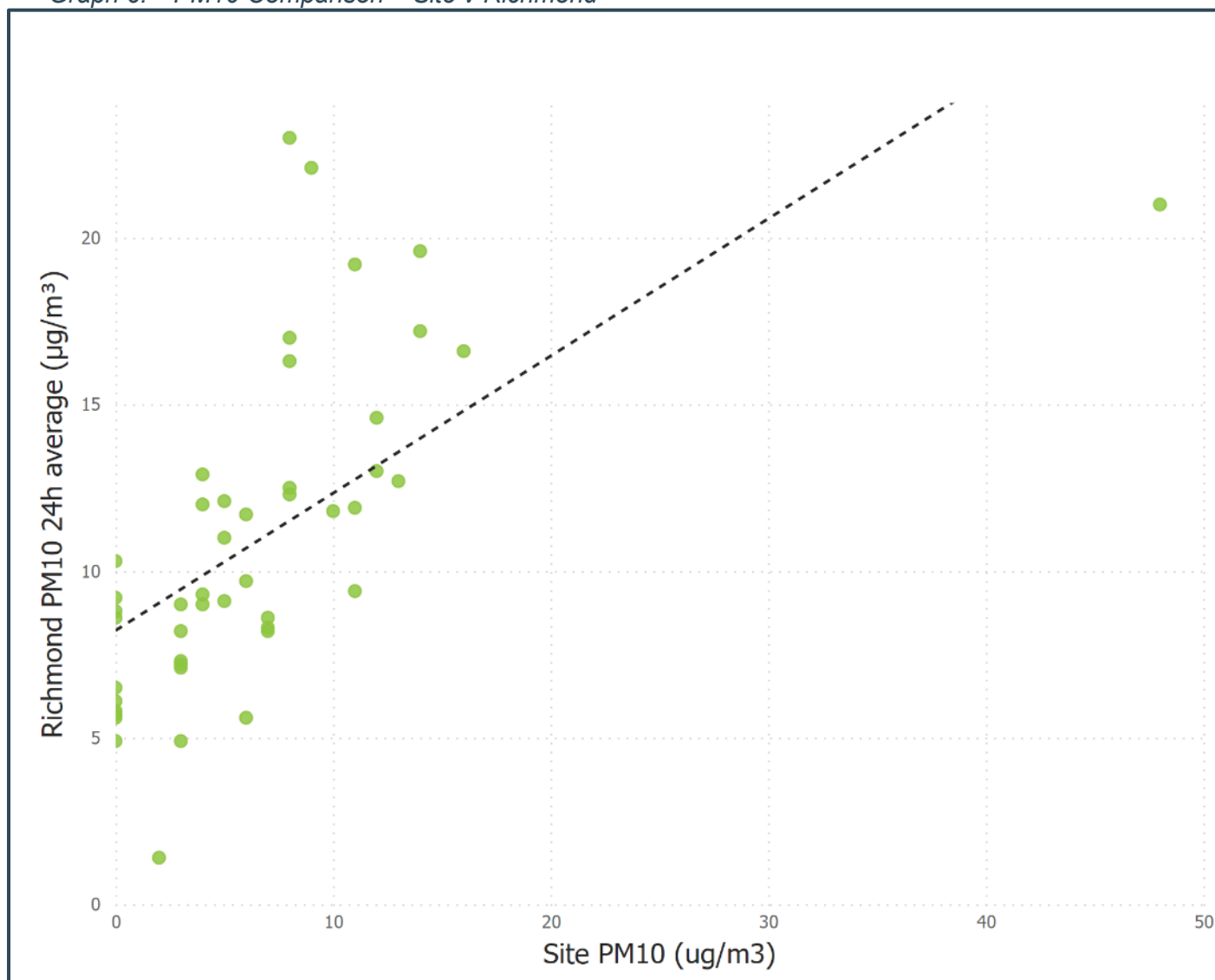
4.2 PARTICULATE MATTER COMPARISON

Particulate matter results from the site were compared to 2 different sources – NSW DPE site (BAM) for both PM10 and PM2.5, and Dixon Sand (TEOM) for PM10 only. Twelve months of data was available for comparison. Methods of testing are different. Dixon Sand is only required to monitor PM10, not TSP or PM2.5. PFF is not required to monitor either TSP, PM10 or PM2.5.

Table 12. *Particulate Matter External Site Comparison*

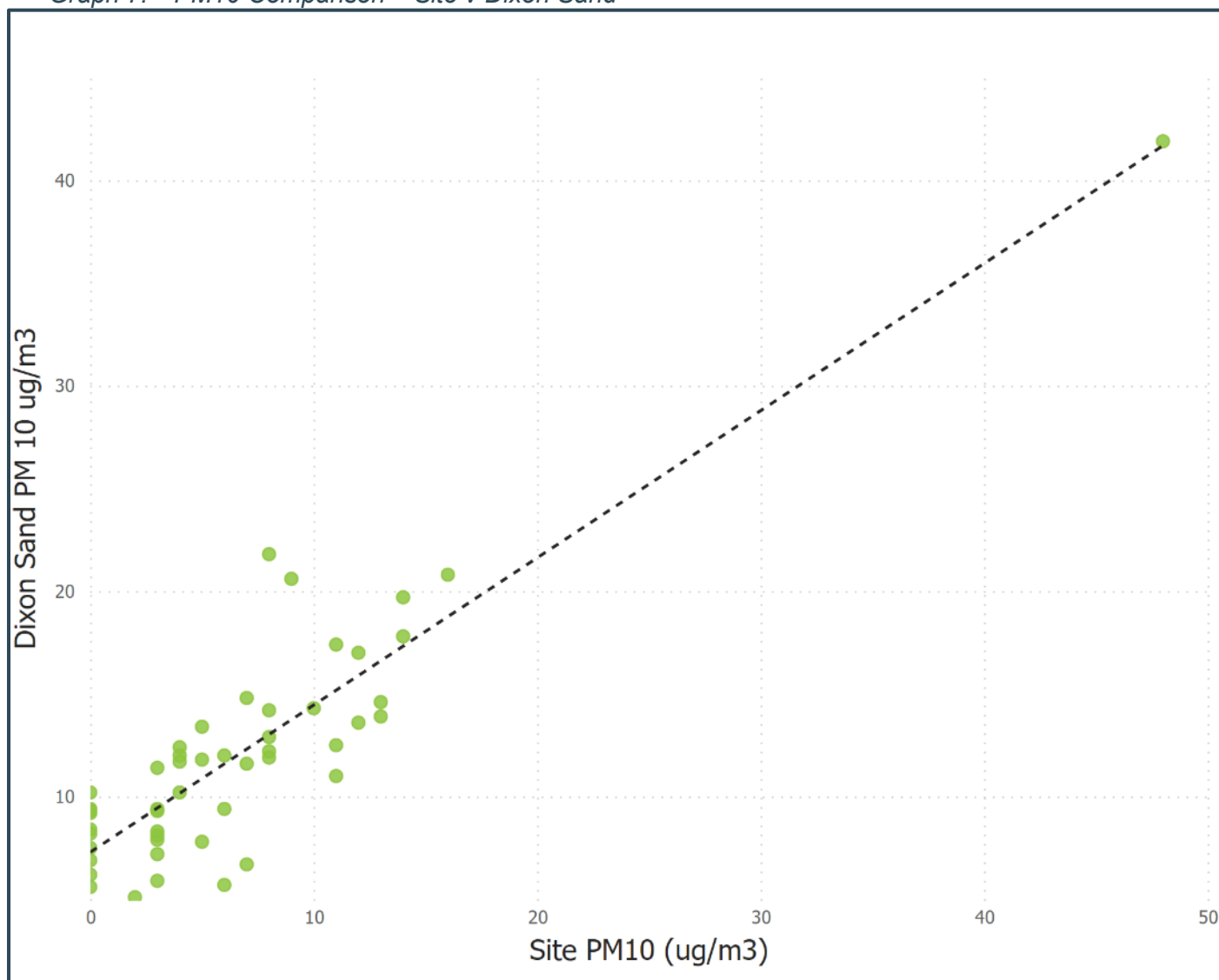
Site	Average PM10	Average PM2.5	No of Readings	R ² v BAM PM10	R ² v BAM PM2.5	R ² v TEOM PM10
Roberts Rd	6.5	3.2	57	0.42 (Graph 6)	0.17 (Graph 9)	0.77 (Graph 7)
Richmond BAM	10.9	5.0	366	-	-	0.62 (Graph 8)
Dixon Sand TEOM	12.1	NR	366	0.62 (Graph 8)	NR	-

Graph 6. PM10 Comparison – Site v Richmond



$R^2 = 0.42$

Graph 7. PM10 Comparison – Site v Dixon Sand



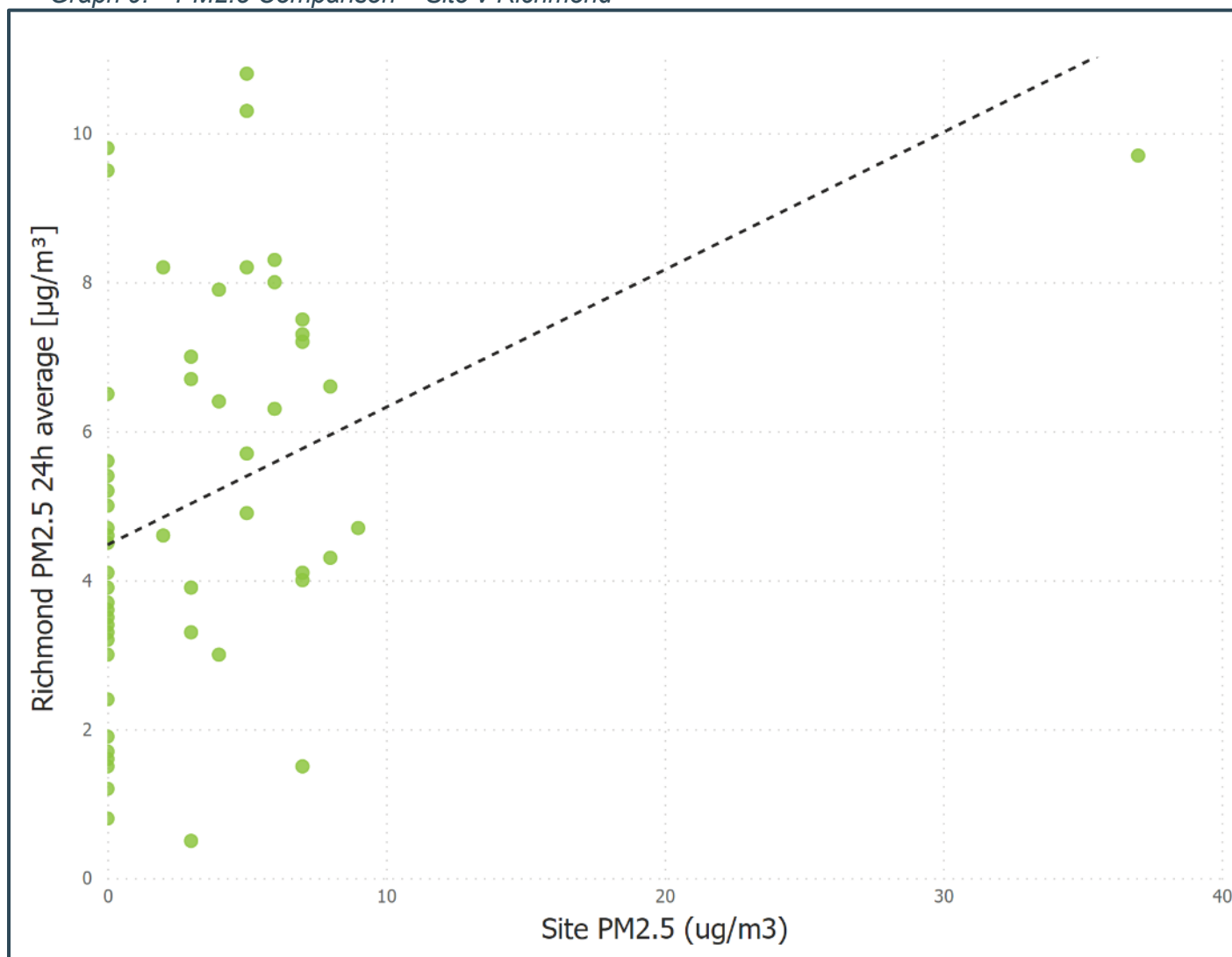
$R^2 = 0.77$

Graph 8. PM10 Comparison – Dixon Sand v Richmond



$R^2 = 0.62$

Graph 9. PM2.5 Comparison – Site v Richmond



5 Statistics Summary and Interpretation

5.1 DEPOSITIONAL DUSTS STATISTICS

All of the expected Insoluble Solids results from the site's depositional dust gauges were available for review for the period chosen. There were no invalidated results, although several were flagged due to sampling times not adhering to the method. This did not affect accuracy of the testing results.

Four months of results were available from a nearby monitoring site (PFF) for comparison of results. The results from each operation were averaged and compared for each of 4 months, then plotted against each other to obtain a Pearson's correlation coefficient (R^2). The R^2 value of 0.90 shows that despite one high result from one of the site monitors, the results compared very well to the independent comparison site.

Table 13. *Depositional Dust Result Summary*

	D1	D2	D3	Site Average	PFF Average
Count	13	13	13	4 comparison months	4
% of Expected Results	100%	100%	100%		
Insoluble Solids Average (g/m²/month)	5.6 Annual	1.0 Annual	0.6 Annual	13.4 (4 comparison months only)	7.2 (4 comparison months only)
R² coefficient (Graph 5)				0.90	

5.2 PARTICULATE MATTER STATISTICS

Greater than 90% of the expected High Volume Air Sampler results from the site were available for the review. One result for the period was invalidated due to post-sampling contamination of the filter paper. The TSP instrument did not operate between 12th July and 20th July 2022 due to an electrical fault.

The ratio of TSP to PM10 and PM10 to PM2.5 was examined and found to be consistent and within expected values for a sand quarry. The particulate matter fractions for the site were plotted against each other to obtain a Pearson's correlation coefficient (R^2). The R^2 values of 0.90 and 0.88 respectively show that the ratios are well within expected ranges. There were no anomalous results in the review period.

Table 14. *High Volume Air Sampler Site Result Summary*

	TSP	PM10	PM2.5	Ratio TSP/PM10	Ratio PM10/PM2.5
Count	55	57	57		
% of Expected Results	90%	94%	94%		
Annual Average (ug/m³)	14.3	6.5	3.2	1.63	0.87
R² Coefficient				0.90	0.88

Twelve months of results were available from two external monitoring sites (Richmond and Dixon Sand) for comparison of results. The results from each site were plotted against each other to obtain a Pearson's correlation coefficient (R^2). The results highlight the expected differences between testing procedures and geographical locations. The Richmond site is too far away to be used as a valid comparison site, as shown by the R^2 against both the site HVAS (0.42) and the Dixon TEOM (0.62). This shows that the Richmond site cannot be reliably compared for the PM2.5 testing either ($R^2 = 0.17$). The low R^2 is exacerbated by the large number of low or not detectable results. This does not reflect on the accuracy of the testing, but rather highlights that the Richmond site is not a suitable comparison site.

The Pearson's correlation coefficient between the site HVAS and Dixon Sand TEOM for PM10 was 0.77. Given the differences in methodology and the number of not detectable readings, this is considered an acceptable result, confirming the accuracy of the sites HVAS testing. As Dixon Sand is not required to monitor TSP or PM2.5, no comparison can be made.

PF Formations is not required to monitor particulate matter at all, therefore no comparison can be made.

Table 15. *Particulate Matter Correlation Summary*

Correlation	Value
PM10 Site HVAS vs Richmond BAM	0.42
PM10 Site HVAS vs Dixon Sand TEOM	0.77
PM10 Dixon Sand TEOM vs Richmond BAM	0.62
PM2.5 Site HVAS vs Richmond BAM	0.17

6 Conclusions and Recommendations

Based on the relevant criteria set out in AS3580.19 Methods for sampling and analysis of ambient air, Method 19: Ambient air quality data validation and reporting, and upon review of the results from 1/09/2021 to 1/9/2022, the air quality monitoring at the Roberts Rd Maroota Sand Quarry is fit for purpose, as accurate as can be reasonably expected, and exceeds those of the site's nearest neighbours.

The following recommendations are proposed to assist in improving the site's air quality monitoring system:

- Ensure site conditions and observations for the monitoring period are included on the sample sheet for all air quality samples, along with name of the technician, date and time sampled, and compliance with the siting and instrument requirements of the relevant method.
 - To be checked by Environmental Manager after each sampling event, or monthly at a minimum.
- Ensure that the procedure for sampling is documented and that all sampling technicians are trained in it regularly.
 - Procedure for sampling to be included in updated AQMP (see next point for timing). Training records to be maintained by the site, and updated as required by staff changes.
- Update the site Air Quality Management Plan (AQMP) to include the modification 4 requirements. The author recommends that, in consultation with the DPE, monitoring for TSP be discontinued as this is a less critical parameter, and instead replaced by a ratio calculation from PM10 based on monitoring data collected from the site over as long a period as possible, without including the extraordinary events of the 2019-2020 bushfires. The explanation for how this is to be calculated would be included in the updated AQMP.
 - It is recommended that the AQMP be updated within 3 months + 4 weeks (in accordance with Schedule 2 condition 67) following submission of the Annual Report and Independent Environmental Audit whichever is later, to ensure all outcomes from those reviews are included.

7

References

- Ref 1 AS3580.19, Methods for sampling and analysis of ambient air, Method 19: Ambient air quality data validation and reporting.
- Ref 2 AS3580.1.1, Methods for sampling and analysis of ambient air, Method 1.1 – Guide to siting air monitoring equipment.
- Ref 3 AS3580.10.1, Methods for sampling and analysis of ambient air, Method 10.1 – Determination of particulate matter - Deposited Dust – Gravimetric method.
- Ref 4 AS3580.9.3, Methods for sampling and analysis of ambient air, Method 9.3 – Determination of suspended particulate matter – Total suspended solid matter – High volume air sampler gravimetric method.
- Ref 5 AS3580.9.6, Methods for sampling and analysis of ambient air, Method 9.6 – Determination of suspended particulate matter – PM10 High volume air sampler with size selective inlet - gravimetric method.
- Ref 6 AS3580.9.14, Methods for sampling and analysis of ambient air, Method 9.14 – Determination of suspended particulate matter – PM2.5 High volume air sampler with size selective inlet - gravimetric method.

Appendix A: Letter regarding approval of expert



Department of Planning and Environment

Mr Stuart Reed
Environmental Officer
Hodgson Quarries and Plant Hire Pty Ltd
PO Box 1778
Gosford
New South Wales 2250

08/03/2022

Dear Mr Reed

**Roberts Road Quarry (DA267-11-99)
Review of air quality monitoring system**

I refer to your nomination of Ms Lisa Thompson as a suitably qualified person to undertake a review of the air quality monitoring system in accordance with condition of consent 29A of Schedule 2 for the Roberts Road Quarry.

I have reviewed Ms Thompson's resume and the additional information dated 10 January 2022 detailing her relevant experience. Accordingly, I approve Ms Thompson as a suitably qualified person in accordance with conditions of consent 29A of Schedule 2.

If you have any questions you may contact Carl Dumpleton on
carl.dumpleton@planning.nsw.gov.au / 9274 6283.

Yours sincerely

Jessie Evans
Director, Resource Assessments
Resource Assessments

As nominee of the Planning Secretary

Appendix B: Response to Submissions EPA

Recommended Conditions of Consent - EPA Comments



Notice No. - 1600632

DEPARTMENT OF PLANNING INDUSTRY AND ENVIRONMENT
ABN 20 770 707 468
4 PARRAMATTA SQUARE, 12 DARCY STREET
PARRAMATTA NSW 2150

Attention: Melissa Anderson

Notice Number 1600632
File Number EF13/3063
Date 22-Sep-2020

EPA Response - SSD Modification - Roberts Road Quarry - DA267/11/99 Mod 4

I refer to the application by Hodgson Quarries and Plant Pty Ltd to modify development consent DA267-11-99 and the accompanying additional information provided to the Environment Protection Authority (EPA) on 25 March 2020, 25 May 2020 and 11 September 2020. The EPA has reviewed the additional information provided relating to Air.

Hodgson Quarries and Plant Pty Ltd (the proponent) operates the Roberts Road Quarry located on the corner of Roberts Road at Maroota NSW (the premises). The proponent is seeking to modify the development consent (DA 267-11-99) for the premises to allow for importation of Virgin Excavated Natural Material (VENM) and Excavated Natural Material (ENM) for backfilling the extraction area to construct a free-draining final landform, and to undertake processing and blending.

The modification of consent is sought to:

- import Virgin Excavated Natural Material (VENM) and Excavated Natural Material (ENM), to backfill the extraction area and create a final landform. Up to 320,000 tonnes per annum of VENM/ENM is proposed to be imported;
- On-site processing of selected, high sand content VENM and ENM for sale or blending with sand produced from the in-situ resources;
- Increase in the number of traffic movements permitted each day from 100 to 140. Up to 40 additional truck movements per day are associated with the proposed importation of VENM and ENM;
- An extension of the approved quarry life from 31 May 2025 to 31 May 2030;
- Removal of a condition limiting the area of exposed and active quarry extents to allow for backfill and rehabilitation of the completed sections of the Quarry with VENM and ENM.

The EPA has issued Environment Protection Licence No 6535 (EPL) under the *Protection of the Environment Operations Act 1997* (Act) to HB Maroota Pty Ltd in respect of the site located at Cnr Roberts and Old Northern Roads, Maroota, NSW 2756, Lot 1 DP 228308, Lot 2 DP 228308 and Lot 2 DP 312327 (premises). The EPL permits the following scheduled activities:

- extractive activities (up to 500,000T tpa)
- crushing, grinding, or separating activities (each permitted up to 500,000T tpa)

Recommended Conditions of Consent - EPA Comments



Notice No. - 1600632

If the proposed increase in the amount of VENM and ENM is approved the EPL will require variation under s.58 of the Act to update the limits of the ancillary activity 'Receipt and processing of VENM and ENM' under EPL condition L2.1. This will limit the amount of VENM and ENM received, as approved by any conditions of consent. The applicant will need to apply separately to the EPA to vary the licence.

The licensee will also be required to comply with the conditions of *The excavated natural material order 2014* and *The excavated natural material exemption 2014* (made under Clause 93 of the *Protection of the Environment Operations (Waste) Regulation 2019*).

Please note that, in accordance with EPA's documents *The excavated natural material order 2014* (ENM Order) and *The excavated natural material exemption 2014* (ENM Exemption), ENM cannot be processed or blended with other material, it can only to be imported for the purposes of application to land as engineering fill or for use in earthworks.

The EPA has reviewed the additional information provided and is of the view that if the current activity is modified, EPL No. 6535 should be varied to effectively regulate the modified activity. The applicant will need to apply separately to the EPA to vary this licence. The EPL variation will also include changes to conditions, where relevant, around Air, Water and Noise.

Background

On 3 February 2020 the EPA provided a response (DOC20/6390) which identified issues with:

- the Air Quality Impact Assessment (AQIA), a revised AQIA to address the issues identified was requested,
- the Noise Impact Assessment (NIA), a revised NIA in line with the Noise Policy for Industry (NPfI) was requested,
- potential water pollution risks - a water impact assessment was requested with requirements provided along with recommended conditions to address the residual water pollution risks.

On 15 April 2020 the EPA provided a response (DOC20/249727-8) following a review of the additional information provided, which resulted in additional information being requested:

- *Air* - Revised AQIA, issues identified with the air quality impact assessment have been adequately addressed the referenced site-specific monitoring data for annual average PM2.5 is significantly above the annual average impact assessment criteria of 8 ug/m3. The EPA recommended that, prior to project determination, the proponent investigate the source of the elevated annual average PM2.5 impacts from current operations, and if required, propose mitigation and rectification measures to reduce these impacts. The EPA will consider requiring these measures to be implemented via a pollution reduction program or special condition on the licence. In Umwelt's response dated 20 May 2020, it was advised that "the requirement for a Pollution Reduction Program is not warranted".

- *Noise* - March 2020 Response to Submissions (RtS) did not address the EPA's concerns. The EPA also noted that the EPL was not updated following approval of MOD 3, therefore different metrics were used to assess noise-related monitoring limits (L10 vs. Leq). The EPA requested that the NIA be revised in line with the NPfI, as requested in previous letters to Umwelt on 24 April 2020 and DPIE on 3 February 2020.

- *Water* - The RtS clarified that no discharges are expected to occur during operational quarrying, however the RtS indicated that discharges may be required during construction of final landform. No further assessment is required at this stage given that no licensed discharge point is currently proposed. A recommended condition of approval was provided. In Umwelt's response dated 20 May 2020, it was advised that "the Applicant does not object to this condition".

On 30 April 2020 a teleconference between representatives from the EPA and Umwelt was held. During the teleconference the EPA discussed the issues raised, relating to Noise, in their response to DPIE (letter dated 15 April 2020) to assist Umwelt to understand the issues and request for an updated NIA in line with the NPfI.

Recommended Conditions of Consent - EPA Comments



Notice No. - 1600632

On 24 June 2020 the EPA provided the recommended licence conditions - Noise, refer to the EPA's response Notice Number 1596266 (Attachment A). The EPA also requested a further teleconference to discuss resolution of the remaining outstanding issues relating to Air as follows:

- the EPA was unable to reconcile the predicted cumulative ground level concentrations of PM_{2.5} (annual average) on the basis that PM_{2.5} monitoring data collected at the premises was utilised to characterise predicted impacts from the proposal, and there were questions regarding the quality of the referenced PM_{2.5} monitoring data.

On 15 July 2020 a teleconference between representatives from the EPA and Umwelt was held. During the teleconference the EPA discussed the issues relating to Air, in their response to DPIE (letter dated 24 June 2020) to assist Umwelt in understanding the issues and resolution of issues. The EPA met with the proponent to discuss the issue. The EPA advised that the residual issue could be resolved through a further review of the site specific PM_{2.5} monitoring data (specifically on the quality of the data collected) and a commitment to implement reactive management strategies to manage particulate matter emissions at the premises.

Recommendation

The EPA provides the following in response to the additional information provided on 11 September 2020.

The additional analysis of site specific PM_{2.5} monitoring data indicates issues with the quality of the monitoring data which are likely causing an overestimation of cumulative PM_{2.5} impacts presented in the AQIA

The AQIA adopted an annual average PM_{2.5} background of 13 ug/m³, which is significantly greater than the EPA's impact assessment criteria and likely to be an unrealistic characterisation of the existing environment. As such, the EPA recommends additional analysis to investigate the integrity of the monitoring data used in the assessment.

The additional analysis provided compares PM₁₀ to PM_{2.5} ratios from on site monitoring data, with ratios derived from other monitoring stations, and literature values for activities that could be considered similar in nature to the activities undertaken at the premises. Whilst the analysis does not completely resolve issues around the quality of PM_{2.5} monitoring at the premises, it does provide sufficient information to give a good indication that there are accuracy issues with onsite PM_{2.5} monitoring data, likely resulting in unrealistically elevated concentration being reported.

Incremental impact PM_{2.5} from the proposal is predicted to be low

The air quality impact assessment predicts a 0.2 ug/m³ change in annual average PM_{2.5} concentration compared with current operations. This represents 2.5 % of the applicable cumulative assessment criteria. As such there is unlikely to be an appreciable change in observed annual average PM_{2.5} concentrations as a result of the proposal.

The EPA has not completed a detailed review of the Air Quality Management Plan- insufficient detail provided

The proponent has provided an *Air Quality Management Plan prepared for Hodgson Quarries & Plant Pty Ltd Roberts Road Quarry, Maroota NSW 2756*, prepared by Benbow Environmental dated 10 September 2020 (the Air Quality Management Plan). The EPA has not conducted a detailed review of the Air Quality Management Plan, however, a screening level review indicates that the plan is not sufficiently detailed to assure management measures will be effectively and rigorously implemented in an auditable manner.

The EPA recommends the management plan be revised and has included a recommended condition of approval in this regard.

The residual issue can be resolved through conditions of approval

Recommended Conditions of Consent - EPA Comments



Notice No. - 1600632

Factoring in the additional analysis provided, the incremental predictions in annual average PM_{2.5}, and a commitment to implement proactive and reactive management strategies, the EPA considers that the residual issue can be resolved through conditions of approval.

The EPA recommends conditions of approval as **Attachment A**, including a condition requiring that the Air Quality Management Plan for the premises be explicit on triggers for implementing reactive management, and those triggers be auditable and reviewed on an ongoing basis for continual improvement purposes.

Further, the EPA recommends that the licensee commission an expert review and audit of current and past air quality monitoring and conduct a campaign of PM_{2.5} monitoring (in accordance with relevant Australian Standards) to accurately confirm ambient PM_{2.5} concentrations.

The EPA also requests that if the modification is approved, that a condition of consent be included requiring HB Maroota Pty Ltd ensure that it holds an EPL that is appropriate for the scheduled activities being undertaken under the *Protection of the Environment Operations Act 1997*.

In the event that the proposal is further modified by the applicant prior to the granting of consent or by DPIE as a result of the conditions proposed to be attached to the consent, the EPA requests that DPIE consult with the EPA about the changes before modifying the consent. This will enable EPA to determine whether the proposed licence conditions need to be modified in light of the changes.

If you have any questions, or wish to discuss this matter further please contact Lisa Crambrook on (02) 8837 6079 or email lisa.crambrook@epa.nsw.gov.au.

Yours sincerely

A handwritten signature in black ink, appearing to be 'Lara Barrington', written over a horizontal dotted line.

Lara Barrington

Unit Head - Regulatory Operations Metropolitan West

(by Delegation)

Attachment A - Recommended licence conditions - Air

Recommended Conditions of Consent - EPA Comments



Notice No. - 1600632

Attachment A - Recommended licence conditions - Air

Consent Conditions

1. The premises must be maintained in a condition which minimises or prevents the emission of air pollution (including dust) from the premises
2. All operations and activities undertaken at the premises must be conducted in a manner which minimises or prevents the emission of air pollution (including dust) from the premises
3. The proponent must implement methods for application of wet suppression to the source feed material for screening activities. The wet suppression must be implemented to prevent or minimise visible dust emissions occurring from screening activities.
4. The proponent must prepare and implement an Air Quality Management Plan (the AQMP) that includes both proactive and reactive management strategies. The AQMP must include, but is not limited to
 - a. Key performance indicators
 - b. Continuous PM₁₀ monitoring
 - c. Monitoring methods, including location frequency and duration of monitoring
 - d. Triggers for the implementation of reactive management strategies. Triggers must be clearly articulated, and auditable.
 - e. Methods for ongoing review of the AQMP (including the reactive triggers) for informing continual improvement
 - f. Complaint handling procedures
 - g. Methods for documenting the implementation of both proactive and reactive mitigation measures.
 - h. Methods for compliance reporting

EPL conditions

1. The licensee must engage a suitably qualified independent expert, with experience in ambient air quality monitoring of particulate matter, to conduct an independent audit of the current and past air quality monitoring undertaken at the premises. The audit must consider, but is not limited to the following:
 - The methods for collection and analysis;
 - Quality assurance and quality control practices; and
 - Method accuracies

Within <X> months, the licensee must submit a report to the EPA that details the audit undertaken, the findings of the audit, and any recommendations made by the person(s) undertaking the audit.

2. The licensee must undertake a monitoring campaign of PM_{2.5}. The campaign must include monitoring of PM_{2.5} continuously for a minimum of a 12 month period using a method consistent with an Australian Standard. Within 3

Recommended Conditions of Consent - EPA Comments



Notice No. - 1600632

months of completion of the 12 month monitoring period, the licensee must submit a report to the EPA. The report must include, but is not limited to:

- A description of the monitoring undertaken, including the method(s) implemented, and conformance to the Australian Standard referenced for undertaking the monitoring;
- A summary of the data obtained during the monitoring period; and
- Analysis and interpretation of the data obtained during the monitoring period.

Appendix C: Notice of Modification and Consolidated Consent Conditions

Notice of Modification

Section 4.55(2) of the *Environmental Planning and Assessment Act 1979*

As delegate for the Minister for Planning and Public Spaces, I modify the development consent referred to in Schedule 1, as set out in Schedule 2.



Carl Dumbleton
A/Director Resource Assessments

Sydney

13 August 2021

SCHEDULE 1

The Development Consent (DA 267-11-99) for the Roberts Road Quarry, granted by the Minister for Urban Affairs and Planning on 31 May 2000.

SCHEDULE 2

1. In the list of definitions, delete "Department", "DPI Water", "National Parks and Wildlife Service" and insert the following in alphabetical order:

BCD	Biodiversity and Conservation Division within the Department
Calendar year	A period of 12 months from 1 January to 31 December
Department	Department of Planning, Industry and Environment
DPIE Water	The Water Group within the Department
ENM	Excavated Natural Material, as defined in the EPA's resource recovery orders and exemptions clauses 91, 92 and 93 of the <i>Protection of the Environment Operations (Waste) Regulation 2014</i>
EPL	Environment Protection Licence under the POEO Act
Heritage NSW	Heritage NSW within the Department of Premier and Cabinet
Incident	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance
INP	<i>NSW Industrial Noise Policy (NSW EPA, 2000)</i>
Laden Trucks	Trucks transporting quarry products from the site and/or trucks transporting VENM/ENM to the site
MEG	Regional NSW – Mining, Exploration and Geoscience
Minister	NSW Minister for Planning and Public Spaces, or delegate
Modification 4	Modification application DA 267-11-99 MOD 4 and Statement of Environmental Effects titled: <i>Roberts Road Quarry Modification 4</i> , dated December 2019 prepared by Umwelt Environmental Consulting and Submissions Report titled: <i>Roberts Road Quarry Modification 4, Response to Submissions</i> , dated March 2020 prepared by Umwelt Environmental Consulting, and additional information supporting the Response to Submissions, including: • revised noise assessment titled: <i>Noise Impact Assessment Rev 1</i>, dated May 2020 prepared by Umwelt Environmental Consulting; • letter from Umwelt Environmental Consulting, dated 20 May 2020; and • letter from Benbow Environmental, dated 10 September 2020.
Non-compliance	An occurrence, set of circumstances or development that is a breach of this consent
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Quarrying products	Includes all saleable quarry products, but excludes tailings, other wastes and material needed for rehabilitation
Secretary	Planning Secretary under the EP&A Act, or nominee
TfNSW	Transport for NSW

VENM
Waste

Virgin Excavated Natural Material, as defined in the POEO Act
Has the same meaning as the definition of the term in the Dictionary to the POEO Act

2. Delete all references to "DPI-Water" and replace with "DPIE Water".
3. Delete all references to "National Parks and Wildlife Service", "NPWS" and "Heritage Office" and replace with "Heritage NSW".
4. In condition 2(a) of Schedule 2, delete "Modification 3 and Modification 2" and replace with "Modification 2, Modification 3 and Modification 4".
5. In the heading of condition 8 of Schedule 2, delete "Commencement and duration" and replace with "Limits on Approval".
6. In condition 9 of Schedule 2 delete "2025" and replace with "2030".
7. After condition 9, of Schedule 2 insert the following:
 - 9A. The Applicant must not:
 - (a) process or dispatch more than 480,000 tonnes of quarrying products at the site in any calendar year;
 - (b) receive more than 320,000 tonnes of VENM and ENM (in total) at the site in any calendar year;
 - (c) import more than 3 million tonnes of VENM and ENM to the site; and
 - (d) import VENM and ENM beyond 31 May 2030.

8. After condition 17 insert the following:

PRODUCTION DATA

17A. The Applicant must provide MEG with annual quarry production data, covering a full calendar year, by no later than 30 January for the following calendar year.

17B. The data must be provided using the relevant standard form and a copy of the data must be included in the Annual Review (required under condition 66).

9. In condition 20 of Schedule 2:
 - a. delete the "g" in clause 20(g) and replace with "h";
 - b. delete the "f" in clause 20(f) and replace with "g"; and
 - c. after condition 20(e), insert "(f) the Traffic Management Plan (Condition 50A)".
10. Before condition 27 insert the following:

Importation of VENM and ENM

26. The applicant must:
 - (a) ensure only verified VENM and ENM is received at the site;
 - (b) collect data on the VENM and ENM received including details of the origin, date, and quantity received; and
 - (c) include a copy of this data in the Annual Review.
11. In condition 27, delete the contents of the condition and replace with:
 27. No other materials classified as waste under the EPA's *Waste Classification Guidelines 2009* (or its latest version) may be received or processed on the site, except as expressly permitted in an applicable EPL, specific resource recovery order or exemption under the *Protection of the Environment Operations (Waste) Regulation 2014*.
12. In condition 28 of Schedule 2, delete the contents of the condition and replace with:
 28. The Applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria in Table 1 at any residence on privately-owned land.

Table 1: Air quality criteria

Pollutant	Averaging period	Criterion
Particulate matter < 10 µm (PM ₁₀)	Annual	^{a, c} 25 µg/m ³
	24 hour	^b 50 µg/m ³
Particulate matter < 2.5 µm (PM _{2.5})	Annual	^{a, c} 8 µg/m ³
	24 hour	^b 25 µg/m ³
Total suspended particulate (TSP) matter	Annual	^{a, c} 90 µg/m ³
^d Deposited dust	Annual	^b 2 g/m ² /month ^a 4 g/m ² /month

Notes:

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).

^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own).

^c Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary.

^d Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: *Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method*.

13. After condition 28 of Schedule 2, insert the following:

28A. The air quality criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or infrastructure to exceed the air quality criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

14. In condition 29(c) of Schedule 2, after “to ensure that areas”, insert “of the site which are exposed and active at any one time are minimised to the greatest extent practicable”.

15. After condition 29 of Schedule 2, insert the following:

29A. The Applicant must commission an expert review of the air quality monitoring system at the site. This review must:

- be undertaken by a suitably qualified and experience person(s) whose appointment has been approved by the Secretary;
- review the accuracy of the air quality monitoring system at the site over a 12 month period, in general accordance with the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007)* and with a particular focus on PM_{2.5} monitoring;
- provide recommendations (where required) to improve the accuracy of air quality monitoring system at the site; and
- be undertaken in consultation with the EPA.

29B. A copy of the expert review report along with a timetable for implementing any recommendations arising from the review required under condition 29A of this Schedule, must be submitted by 30 November 2022, or as otherwise agreed by the Planning Secretary.

The Applicant must implement the recommendations of the expert review to the satisfaction of the Secretary.

16. Delete the contents of condition 47 of Schedule 2 and insert the following:

Noise Operating Conditions

47. The Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 2 at any residence on privately-owned land.

Table 2: Operational noise criteria dB(A)

Receiver	Day (7am-6pm) Monday to Saturday L_{Aeq} (15 min)	6am-7am Monday to Saturday L_{Aeq} (15 min)	6am-7am Monday to Saturday L_{A1} (1 min)
Receiver B	44	40	50
All other receivers	43	40	50

^aThe Noise Assessment Locations referred to in Table 2 are shown in Appendix 2

17. Delete the contents of Condition 50 of Schedule 2 and insert the following:

The Applicant must ensure that truck movements associated with the development do not exceed 70 outbound and 70 inbound per day and does not exceed 10 outbound and 10 inbound per hour.

18. After Condition 50 of Schedule 2, Insert the following:

Traffic Management Plan

50A. The Applicant must prepare a Traffic Management Plan that must:

- (a) be prepared by suitably qualified and experienced person/s whose appointment has been endorsed by the Secretary;
- (b) be prepared in consultation with TfNSW and Council;
- (c) include a Drivers' Code of Conduct that contains procedures to ensure that drivers:
 - (i) adhere to posted speed limits or other required travelling speeds;
 - (ii) adhere to designated transport routes;
 - (iii) implement safe and quiet driving practices; and
 - (iv) minimise potential conflict with school buses.
- (d) describe the measures to be put in place to ensure compliance with the Drivers' Code of Conduct; and
- (e) propose measures to minimise the transmission of dust and tracking of material onto the surface of public roads from vehicles exiting the site.

The Applicant must submit the Traffic Management Plan for the approval of the Secretary by the 31 October 2021, or as otherwise agreed by the Secretary. The Applicant must implement the Traffic Management Plan as approved.

19. In condition 58 of Schedule 2:

- after "rehabilitate the site", insert "in a manner that is consistent with the final landform designs in Appendix 1,";
- After "satisfaction of the Secretary." delete "This" and replace with "All"; and
- In Table 1: Rehabilitation Objectives, delete the row and contents for "Quarry Benches".
- In Table 1: Rehabilitation Objectives, add the following row as the last row:

Water Quality	• Water retained on the site is fit for the intended post-mining land use/s • Water discharged from the site is suitable for receiving waters and fit for aquatic ecology and riparian vegetation
---------------	---

20. In condition 68 of Schedule 2, delete the contents of the condition and replace with:

REPORTING AND AUDITING

Incident Notification

68. The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing via the Major Projects Website and identify the development (including the development application number and name) and set out the location and nature of the incident.

21. After condition 68 of Schedule 2, insert the following:

Non-Compliance Notification

- 68A. Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing via the Major Projects Website and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

22. After condition 72 of Schedule 2 insert the following:

APPENDIX 1 FINAL LANDFORM DESIGN

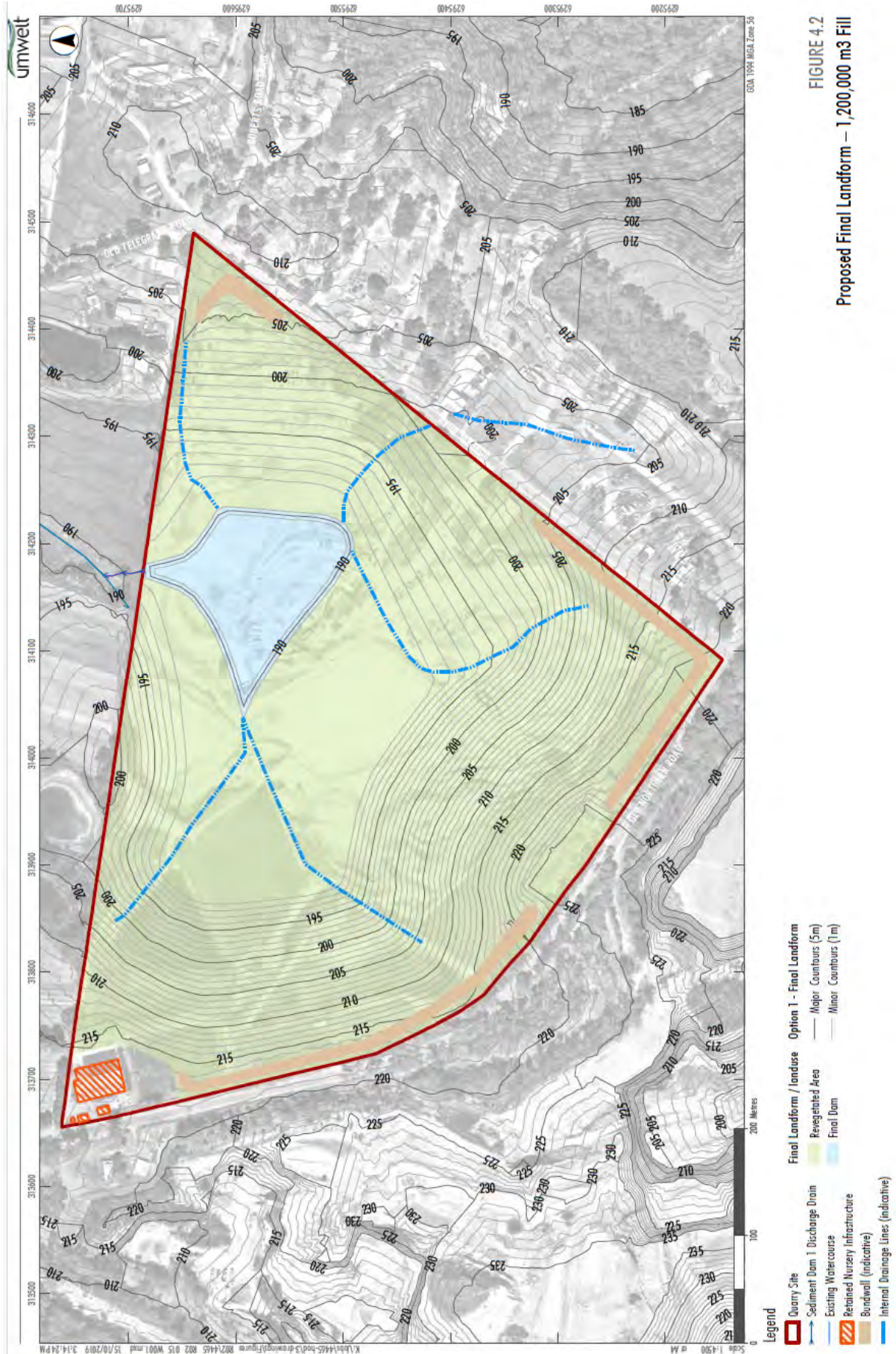


FIGURE 4.2
Proposed Final Landform – 1,200,000 m3 Fill

Figure 1: Final Landform Concept 1

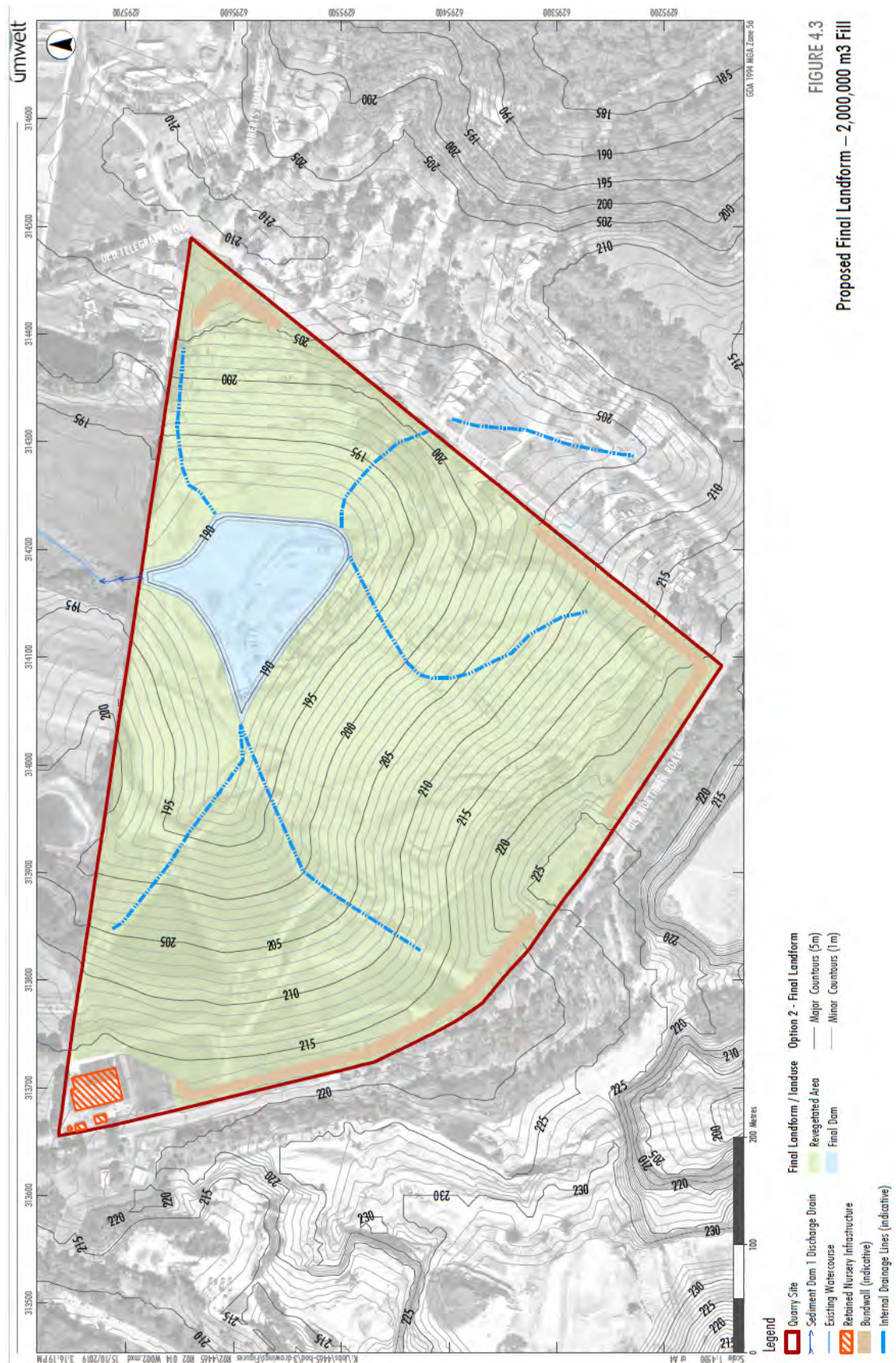


FIGURE 4.3
Proposed Final Landform – 2,000,000 m3 Fill

Figure 2: Final Landform Concept 2

APPENDIX 2
RECEIVER LOCATION PLAN



I, the Minister for Urban Affairs and Planning, under Section 80(1) of the Environmental Planning and Assessment Act, 1979 (the Act), determine the Development Application referred to in Schedule 1 by granting consent to the Application, subject to the conditions set out in Schedule 2.

The reason for the imposition of conditions is to minimise any adverse environmental effects of the development, consistent with the objectives of the Act.

Andrew Refshauge MP
Minister for Urban Affairs and Planning

Sydney 2000  File No. S98/00772

SCHEDULE 1

Application made by: Dr L. S. Martin ('the Applicant').

To: The Minister for Urban Affairs and Planning ("the Minister").

In respect of: Lots 1 and 2 DP 228308, Lot 2 DP 312327, Roberts Road, Maroota, in the Baulkham Hills Local Government Area.

For the following: Extraction and on-site processing of sand, clay and pebble; construction of a bund wall.

Development Application: DA No. 267-11-99 lodged with the Department of Urban Affairs and Planning on 22 November 1999, accompanied by a Environmental Impact Statement prepared by Nexus Environmental Planning Pty Ltd. and dated November 1999.

Determination:

- 1) To ascertain the date upon which the consent becomes effective, refer to Section 83 of the Act.
- 2) To ascertain the date upon which the consent is liable to lapse, refer to Section 95 of the Act.
- 3) Section 97 of the Act confers on an applicant who is dissatisfied with the determination of a consent authority a right of appeal to the Land and Environment Court exercisable within 12 months after receipt of notice.

This instrument includes changes made by DA 267-11-99 Mod 4 in 13 August 2021 (marked purple).

SCHEDULE 2**Conditions of Development Consent****DEFINITIONS**

The Act	<i>Environmental Planning and Assessment Act 1979</i> , as amended
Approval from EPA	means approved in writing by the EPA or as specified as a condition of a licence
BCA	Building Code of Australia
BCD	Biodiversity and Conservation Division within the Department
Calendar year	A period of 12 months from 1 January to 31 December
Conditions of this consent	The conditions set out in this Schedule
Construction	Construction of the bund wall
Council	The Hills Shire Council
DA	Development Application
DCP 500	Baulkham Hills Shire Council Development Control Plan No. 500 – Extractive Industry
Department	Department of Planning, Industry and Environment
DPIE Water	The Water Group within the Department
EIS	Development application DA 267-11-99 and supporting documentation including the Environmental Impact Statement prepared by Nexus Environmental Planning Pty Ltd, dated November 1999, including the attached landscaping plan; the fax from Holmes Air Sciences dated 21 December 1999; the letter from Nexus Environmental Planning Pty Ltd dated 21 December 1999 and attachments; the letter from Woodward-Clyde dated 21 December 1999; the letter from Woodward-Clyde dated 16 December 1999; the letter from Dick Benbow and Associates Pty Ltd dated 5 January 2000 and attachments; the letter from Dick Benbow and Associates Pty Ltd dated 27 January 2000; and the two faxes from Dick Benbow and Associates Pty Ltd dated 17 February 2000 and attachments, except as modified by the report of Dick Benbow and Associates (Report No 10065 Issue 1) dated 26 June 2000
EMP	Environmental Management Plan
ENM	Excavated Natural Material, as defined in the EPAs resource recovery orders and exemptions clauses 91, 92 and 93 of the <i>Protection of the Environment Operations (Waste) Regulation 2014</i> .
EPA	Environment Protection Authority
EPL	Environment Protection Licence under the POEO Act
GTA	General Term of Approval
Heritage NSW	Heritage NSW within the Department of Premier and Cabinet
Incident	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance
INP	<i>NSW Industrial Noise Policy (NSW EPA, 2000)</i>
L _{A10} (15 minute)	is the sound pressure level that is exceeded for 10% of the time when measured over a 15 minute period
Laden Trucks	Trucks transporting quarry products from the site and/or trucks transporting VENM/ENM to the site
m AHD	metres Australian Height Datum
MEG	Regional NSW – Mining, Exploration and Geoscience
Minister	NSW Minister for Planning and Public Spaces, or delegate
Modification 1	Modification application 07-00M1 to DA 267-11-99 and supporting SEE titled Amendment to Method of Extraction and Related Acoustic Bund

	Wall, dated 17 July 2000 and prepared by Nexus Environmental Planning Pty Ltd
Modification 2	Modification application DA 267-11-99 Mod 2 and supporting documentation titled: <i>Environmental Assessment Section 75W Modification (2): DA 267-11-99, Hodgson Quarries and Plant Pty Ltd: Roberts Road: Maroota</i> (Volumes 1 and 2), dated 23 September 2015 and prepared by Nexus Environmental Planning Pty Ltd; Response to Submissions <i>75W Modification (2): DA 267-11-99, Hodgson Quarries and Plant Pty Ltd: Roberts Road: Maroota</i> , dated 3 December 2015 and prepared by Nexus Environmental Planning Pty Ltd; and email correspondence from Nexus Environmental Planning Pty Ltd to the Department, dated 12 February 2016, 16 February 2016 and 24 February
Modification 3	Modification application DA 267-11-99 Mod 3 and supporting documentation titled <i>Environmental Assessment Section 75W Modification (3): DA 267-11-99, Hodgson Quarry Products Pty Ltd: Roberts Road: Maroota</i> , dated 17 May 2015 and prepared by Nexus Environmental Planning Pty Ltd
Modification 4	Modification application DA 267-11-99 MOD 4 and Statement of Environmental Effects titled: <i>Roberts Road Quarry Modification 4</i> , dated December 2019 prepared by Umwelt Environmental Consulting and Submissions Report titled: <i>Roberts Road Quarry Modification 4, Response to Submissions</i> , dated March 2020 prepared by Umwelt Environmental Consulting, and additional information supporting the Response to Submissions, including: • Revised noise assessment titled: <i>Noise Impact Assessment Rev 1</i>, dated May 2020 prepared by Umwelt Environmental Consulting; • Letter from Umwelt Environmental Consulting, dated 20 May 2020; and • Letter from Benbow Environmental, dated 10 September 2020.
Non-compliance	An occurrence, set of circumstances or development that is a breach of this consent
PCA	Principal Certifying Authority
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Process Water Dam	The process water dam located in the north-eastern corner of the site
Quarrying products	Includes all saleable quarry products, but excludes tailings and other wastes and rehabilitation material
Secretary	Planning Secretary under the EP&A Act, or nominee
Subject Site	Lots 1 and 2 DP 228308, Lot 2 DP 312327, Roberts Road, Maroota, in the Baulkham Hills Local Government Area
TfNSW	Transport for NSW
VENM	Virgin Excavated Natural Material, as defined in the POEO Act
Waste	Has the same meaning as the definition of the term in the Dictionary to the POEO Act
Wet weather high groundwater level	The rolling average of all recorded groundwater level measurements at any monitoring location on the site, as first recorded following any rainfall event of at least 50 mm over any 24-hour period, and as contour mapped using this data

INTEGRATED DEVELOPMENT

Integrated development is development (not being complying development) that, in order for it to be carried out, requires development consent and one or more of the approvals set out in the Act. The subject proposal is integrated development, as it requires development consent and the approval of the Environment Protection Authority under the *Protection of the Environment Operations Act 1997* and, the approval of the Department of Land and Water Conservation under Parts 2 and 5 of the *Water Act 1912*. The general terms of approval of both the EPA and the [DPIE Water](#) therefore form part of this Consent.

GENERAL

Obligation to Prevent and Minimise Harm to the Environment

1. There is an obligation on the Applicant to prevent and minimise harm to the environment throughout the life of the project. This requires that all practicable measures are to be taken to prevent and minimise harm that may result from the construction, operation and, where relevant, the decommissioning of the development.

Adherence to Terms of DA and EIS

2. The Applicant shall:
 - (a) carry out the development generally in accordance with the EIS, Modification 1, Modification 2, Modification 3 and Modification 4; and
 - (b) comply with the conditions of this consent.

If there is any inconsistency between the documents in Condition 2(a), the most recent documents shall prevail to the extent of the inconsistency. The conditions of this consent shall prevail over documents in Condition 2(a) to the extent of any inconsistency.

Compliance

3. The Applicant shall comply with all reasonable requirements of the [Secretary](#) in respect of the implementation of the Conditions of this Consent, within such time as the [Secretary](#) agrees. The [Secretary](#) may order the Applicant to cease work until non-compliance has been addressed to the [Secretary's](#) satisfaction.
4. The Applicant shall ensure that all contractors and sub-contractors are aware of, and comply with, the Conditions of this Consent.
5. The Applicant shall comply with all relevant conditions prescribed in Part 7 of the *Environmental Planning and Assessment Regulation 1994*, as required by Section 80A (11) of the Act.
6. The Applicant SHALL submit a Conditions Compliance Report to the [Secretary](#) prior to the commencement of extraction in areas that are not currently subject to extraction. Subsequent reports will be submitted annually for the first three years of extraction in areas not currently subject to extraction. Further reports SHALL be submitted as required by the [Secretary](#).

To enable ready comparison with the EIS's predictions, diagrams and tables, the Conditions Compliance Reports shall include, but not be limited to, the following matters:

- (a) a compliance audit of the performance of the project against conditions of Consent and statutory approvals;
- (b) a review of the effectiveness of the environmental management of the development;
- (c) the results of environmental monitoring required under this Consent or other approvals, including interpretations and discussion by a suitably qualified person;

- (d) a listing of any variations obtained to approvals applicable to the DA since the last report;
 - (e) a record of all complaints and the actions taken to mitigate all such complaints;
 - (f) a report detailing the rehabilitation measures undertaken since the last report; and
 - (g) environmental management targets and strategies for stages of the development yet to be completed.
7. The [Secretary](#) may, after considering a Conditions Compliance Report, notify the Applicant of any reasonable requirements for compliance with this Consent. The Applicant SHALL comply with those requirements within such time as the [Secretary](#) may direct.

Note: The Applicant is obliged to ensure that all statutory requirements, including all relevant legislation, Regulations, Australian Standards, Codes, Guidelines and Notices, Conditions and Directions of the Councils and relevant government agencies are met and approvals obtained.

Limits on Approval

8. No extraction shall commence in areas that are not currently subject to extraction, until the Applicant has:
- (a) **constructed the bund walls at the corner of Roberts Road and Old Northern Road;**
 - (b) submitted the Conditions Compliance Report required under Condition 6; and
 - (c) obtained all licences necessary for the commencement of extraction.
9. The duration of extraction under this Consent is **until 31 May 2030**. The Applicant shall ensure that rehabilitation of all disturbed areas is completed within six months of completion of extraction.
- 9A. The Applicant must not:
- (a) process or dispatch more than 480,000 tonnes of quarrying products at the site in any calendar year;
 - (b) receive more than 320,000 tonnes of VENM and ENM (in total) at the site in any calendar year;
 - (c) import more than 3 million tonnes of VENM and ENM to the site; and
 - (d) import VENM and ENM beyond 31 May 2030.

Complaints Procedures

10. Prior to commencement of construction, the Applicant shall:
- (a) publicise a telephone number on which complaints about the subject development can be registered during the hours of operation in Condition 16; and
 - (b) publicise a postal address where written complaints may be lodged.
- The telephone number and postal address shall be displayed on the property where it can be read from a public road, for the duration of the development.
11. The Applicant shall record details of all complaints received and actions taken in response to complaints in an up-to-date log book. The log book shall be made available for inspection upon request by the [Secretary](#), the EPA or the Council; and a summary of complaints received shall be included in the Conditions Compliance Reports under Condition 6.
12. The Applicant shall ensure that an initial response to complaints is provided to the complainant within 24 hours of receipt. The Applicant shall then:
- (a) investigate the concerns raised by the complainant and undertake all reasonable attempts to determine the cause of concern; and
 - (b) if adverse impacts are identified, undertake all practicable measures to modify the activity which may be causing the impacts.
13. If the Applicant's response does not address the complaint to the satisfaction of the complainant within six weeks, the Applicant shall inform the [Secretary](#) and take any action as directed by the [Secretary](#).

This may include a requirement to carry out independent investigations of noise and/or dust at the cost of the Applicant, in accordance with Condition 14.

14. If the [Secretary](#) is satisfied that an independent investigation is required, the Applicant shall:
- appoint a qualified independent person or team to plan and implement an investigation to qualify the impact and determine the sources of the impact; and
 - bear the cost of the independent investigation and make available plans, programs and other information necessary for the independent person to form an appreciation of the past, present and future works and their effects on dust and/or noise emissions.

This investigation is to be carried out in accordance with a documented Plan. The Plan shall be designed and implemented to measure and/or compute (with appropriate calibration by measurement) the relevant noise and/or dust levels at the complainant's property, that are emitted by the development; and specify a monitoring period and reporting schedule.

The independent person or team, the Plan and the timing of its implementation, shall be approved by the [Secretary](#). The independent person or team shall report to the [Secretary](#) and the Applicant.

Further independent investigations shall cease if the [Secretary](#) is satisfied that the relevant levels are not being exceeded and are unlikely to be exceeded in the future.

Dispute Resolution

15. In the event that the Applicant, Council, the PCA, or a government authority other than the Department, cannot agree on the specification or requirements applicable under this Consent, the matter shall be referred by either party to the [Secretary](#) or, if not resolved, to the Minister, whose determination of the disagreement shall be final and binding on the parties.

HOURS OF OPERATION

16. Unless prior written approval of the EPA is obtained, the hours of operation are:
- construction: 7.00am to 6.00pm Monday to Friday
 - extraction and processing of material: 7.00am to 6.00pm, Monday to Friday and 7.00am to 1.00pm on Saturdays
 - vehicle loading: 6.00am to 6.00pm, Monday to Friday and 6.00am to 1.00pm on 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 the noise limits in Condition 47.

DEPTH OF EXTRACTION

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

PRODUCTION DATA

- 17A. Each year the Applicant must provide MEG with annual quarry production data, covering a full calendar year, by no later than 30 January the following calendar year.
- 17B. The data must be provided using the relevant standard form and a copy of the data must be included in the Annual Review (required under condition 66).

ENVIRONMENTAL MANAGEMENT PLAN

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 Traffic Management Plan \(Condition 50A\)](#);
- (g) [the Flora and Fauna Management Plan \(Condition 55\)](#); and
- (h) [the Rehabilitation Plan \(Condition 58\)](#).

21. The Applicant shall make copies of both EMPs available to Council, EPA and [DPIE 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 [DPIE 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.

The Applicant shall implement the approved management plan as approved from time to time by the Secretary.

23. *Deleted.*

24. *Deleted.*

25. *Deleted.*

Importation of VENM and ENM

26. The applicant must:

- (a) ensure only verified VENM and ENM is received at the site
- (b) collect data on the VENM and ENM received including detail of the origin, date, and quantity received; and
- (c) include a copy of this data in the Annual Review.

WASTE

27. No other materials classified as waste under the EPA's *Waste Classification Guidelines 2009* (or its latest version) may be received or processed on the site, except as expressly permitted in an applicable EPL, specific resource recovery order or exemption under the *Protection of the Environment Operations (Waste) Regulation 2014*.

AIR QUALITY

Air Quality Criteria

28. The Applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria in
- 29.
30. TABLE at any residence on privately-owned land.

Table 1: Air quality criteria

Pollutant	Averaging period	Criterion
Particulate matter < 10 µm (PM ₁₀)	Annual	^{a, c} 25 µg/m ³
	24 hour	^b 50 µg/m ³
Particulate matter < 2.5 µm (PM _{2.5})	Annual	^{a, c} 8 µg/m ³
	24 hour	^b 25 µg/m ³
Total suspended particulate (TSP) matter	Annual	^{a, c} 90 µg/m ³
^d Deposited dust	Annual	^b 2 g/m ² /month ^a 4 g/m ² /month

Notes:

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).

^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own).

^c Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary.

^d Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: *Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method*.

- 28A. The air quality criteria in

A1.

Table do not apply if the Applicant has an agreement with the owner/s of the relevant residence or infrastructure to exceed the air quality criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Air Quality Management

31. The Applicant shall prepare an Air Quality Management Plan as part of the EMP. The Air Quality Management Plan shall:
- identify existing and potential sources of dust deposition, TSP and fine particulates (PM₁₀ and PM_{2.5}) and specify appropriate monitoring intervals and locations. The purpose of the monitoring is to evaluate, assess and report on these emissions and the ambient impacts with the objective of understanding the development's contribution to levels of dust deposition, TSP and fine particulates in ambient air around the site;

- (b) provide a monitoring plan having regard to local meteorology and the relevant Australian Standards, identifying the methodologies to be used, including justification for monitoring intervals, weather conditions, seasonal variations, selecting locations, periods and times of measurements;
- (c) provide details of dust suppression measures for all sources of dust from the development, including a planting and watering regime to ensure that areas of the site which are exposed and active at any one time are minimised to the greatest extent practicable. The use of a polymer in the water to minimise dust impacts shall be investigated as part of this Plan;
- (d) provide details of actions to ameliorate impacts if they exceed the relevant criteria; and
- (e) provide the design of the reactive management system intended to reduce the day-to-day impacts of dust and fine particulates due to the development.

The Applicant shall implement the approved management plan as approved from time to time by the Secretary.

- 29A. The Applicant must commission an expert review of air quality monitoring at the site. This review must:
- (a) be undertaken by a suitably qualified and experienced person(s) whose appointment has been endorsed by the Secretary;
 - (b) review the accuracy of air quality monitoring at the site over a 12 month period, in general accordance with the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007) and with a particular focus on PM_{2.5} monitoring;
 - (c) provide recommendations (where required) to improve the accuracy of air quality monitoring at the site; and
 - (d) be undertaken in consultation with the EPA.

- 29B. A copy of the expert review report along with a timetable for implementing any recommendations arising from the review required under condition 29A of this Schedule, must be submitted by 1 October 2022, or as otherwise agreed by the Planning Secretary.

The Applicant must implement the recommendations of the expert review to the satisfaction of the Secretary.

- 32. Activities occurring at the premises must be carried out in a manner that will minimise emissions of dust from the premises.¹
- 33. The Applicant shall cease offending work at such times when the operations are resulting in visible dust emissions blowing in a direction so as to cross onto public roads or lands not owned by the Applicant.
- 34. The Applicant shall install, operate and maintain a sprinkler system to adequately water all cleared areas and stockpiles so as to minimise dust emissions to acceptable levels.
- 35. The Applicant shall ensure that all vehicular movements on unsealed areas are restricted to specific routes and that all vehicles within the subject site keep to a speed limit of 30 km/h.
- 36. The Applicant shall ensure that trucks are covered when entering and leaving the premises carrying loads of potentially dust generating material.

Air Quality Monitoring

- 37. All monitoring equipment is to be installed and operational prior to commencement of construction.
- 38. Operation of dust deposition gauges and monitoring must be carried out in accordance with;

¹ Environment Protection Authority General Term of Approval

- (a) Australian Standard 3580.10. 01 (1991) Particulates – Deposited Matter – Gravimetric Method. Approved method AM-19 referred to in *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*, December 1999.
 - (b) Australian Standard 2724.3 (1984) Particulate Matter – Determination of Total Suspended Particulates (TSP) - High Volume Sampler Gravimetric Method. Approved method AM 15 referred to in *Approved Methods for the sampling and Analysis of Air Pollutants in New South Wales*, December 1999.
 - (c) Australian Standard 3580.9.6 (1990) for Suspended Particulate Matter – PM10 High Volume Sampler with Size Selective Inlet-Gravimetric Method. Approved method AM-18 referred to in *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*, December 1999.²
39. A meteorological station measuring wind speed and direction must be installed and operated by the Applicant at a site determined in consultation with the EPA.³

SOIL AND WATER

Note: The Applicant is required to obtain the necessary water licences for the development under the Water Act 1912 and/or Water Management Act 2000.

Limits on Extraction

40. The Applicant shall not extract:
- (a) below a depth of 182 m AHD in the footprint of the Process Water Dam, if not already extracted as at the date of Modification 2; and
 - (b) below a depth of 186.1 m AHD in all other areas of the site; unless in accordance with Condition 17, and following written notification to the Secretary and DPIE Water.

Groundwater Study and Remediation Works

41. Within six weeks of the date of approval of Modification 2, the Applicant shall commission a comprehensive groundwater study of the site. This study must:
- (a) be prepared by suitably qualified and experienced person/s whose appointment has been endorsed by the Secretary and DPIE Water;
 - (b) consult with DPIE Water;
 - (c) examine all existing records of groundwater levels at the site;
 - (d) develop an interim contour map of the wet weather high groundwater level of the regional aquifer, based on all available records (see also Condition 44); and
 - (e) provide advice and recommendations on the Groundwater Monitoring Program as set out in Condition 43.
42. Unless otherwise agreed by the Secretary, the Applicant shall submit a report of the study to the Secretary and DPIE Water within six months of commissioning the study. The report must be accompanied by a Groundwater Management Improvement Program, based on the study's findings and recommendations which includes a program of proposed timeframes for implementation. Should the Applicant propose not to implement any of the report's recommendations, it must provide detailed justification to this effect.

² Environment Protection Authority General Term of Approval

³ Environment Protection Authority General Term of Approval

The Groundwater Management Improvement Program must be prepared and implemented to the satisfaction of the Secretary. Progress against the Program shall be reported through Annual Reviews and considered as part of the Independent Environmental Audit.

43. Within six months of the submission of the Groundwater Study and accompanying documents (see Conditions 39 and 40), the Applicant must infill any area of the site identified as being below the wet weather high groundwater level to at least that level as mapped (see Condition 39(d)).

Within six months of any update of the groundwater level contour map, the Applicant must infill any area of the site identified as being below the wet weather high groundwater level to at least that level as mapped (see Condition 44).

Water Management Plan

44. The Applicant shall prepare a Water Management Plan for the development to the satisfaction of the Secretary. This plan must be prepared in consultation with **DPiE Water** by suitably qualified and experienced person/s whose appointment has been approved by the Secretary, and be submitted to the Secretary for approval by 31 December 2016. The plan must be updated on an annual basis in consultation with **DPiE Water** for three years from the date of approval of Modification 2 and thereafter as agreed with by the Secretary.

In addition to the standard requirements for management plans (see Condition 65), this plan must include a:

- (a) Site Water Balance that:
 - includes details of:
 - sources and security of water supply, including contingency planning;
 - water use on site;
 - water management on site, including groundwater inflows to the quarry voids and site discharges; and
 - audit and reporting procedures, including comparisons of the site water balance each calendar year; and
 - describes the measures that would be implemented to minimise clean water use on site and maximise recycling opportunities;
- (b) Surface Water Management Plan, that includes:
 - a detailed description of the surface water management system on site, including the:
 - clean water diversion systems;
 - erosion and sediment controls;
 - effluent irrigation system;
 - water transfers from the extraction areas;
 - water storages; and
 - discharge points;
 - design objectives and performance criteria for proposed:
 - erosion and sediment control structures;
 - water storages, including quarry voids;
 - site discharges; and
 - control of water pollution from rehabilitated areas of the site;
 - performance criteria, including trigger levels for investigating any potentially adverse impacts for surface water quality;
 - a program to monitor:
 - the effectiveness of the water management system;
 - site discharge water quality; and
 - surface water level and quality in the Process Water Dam, including the quantification of rainfall inflow, groundwater inflow and evaporation;

- a plan to respond to any exceedances of the performance criteria, and mitigate and/or offset any adverse surface water impacts of the project;
 - long term water quality management objectives and the measures to achieve these objectives;
 - a plan that ensures surface stormwater runoff from the disturbed areas is directed to the sedimentation dam(s);
 - a plan that ensures tailgate drainage does not discharge into or onto any adjoining public or Crown road, any other persons land, any Crown land, any river, creek or watercourse, any groundwater aquifer, any native vegetation as described under the *Native Vegetation Conservation Act 1997* and any wetlands of environmental significance;
 - a detailed description of design and construction criteria for the Process Water Dam based on a feasibility study of:
 - capacity to construct multiple cells within the overall dam footprint (ie a two stage or three stage dam);
 - whether the dam floor and walls are able to be effectively lined with compacted clay (especially for multiple cells);
 - whether effective hydraulic separation can be achieved between such cells;
 - rehabilitating such cells to create a single dam within the final landform; and
 - the appropriateness of diverting runoff received from off-site around the dam;
 - a strategy for the decommissioning of water management structures, including storage, sedimentation and leachate dams once extraction is complete; and
 - audit and reporting procedures, including comparisons of the monitoring results each calendar year and quarterly reporting of surface water monitoring results;
- (c) Groundwater Management Plan that takes into account the *Web-based Reporting Guideline* (DPE 2015) and *Groundwater Monitoring and Modelling Plans – Information for Prospective Mining and Petroleum Exploration Activities* (DPI 2014), and includes:
- detailed baseline data on groundwater yield and quality in groundwater bores on privately-owned land, that could be affected by the project;
 - a program to undertake surveyed probe testing of all extracted areas where clay fines have been deposited to:
 - accurately determine the depth of extraction and depth of clay fines;
 - identify any ongoing intersection or other interaction between clay fines and the regional groundwater aquifer;
 - identify any geotechnical characteristics of the emplaced clay fines which may pose risks to workplace safety or implementation of the process water dam design or the final landform; and
 - identify measures which can be successfully used in rehabilitating these areas;
 - a program to monitor potential groundwater quality impacts to the regional aquifer from receiving off-site runoff water in the Process Water Dam;
 - groundwater assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts, in accordance with the *NSW Aquifer Interference Policy*;
 - a program to monitor:
 - the impacts of the project on:
 - groundwater inflows to water storages;
 - any groundwater bores on privately-owned land that could be affected by the project; and
 - seepage from water storages or backfilled voids on site;
 - a plan to respond to any exceedances of the groundwater assessment criteria;
 - emergency contingency plans for implementation in the event that the groundwater is encountered during excavation; and
 - audit and reporting procedures, including comparisons of the monitoring results each calendar year and quarterly reporting of groundwater monitoring results,

The Applicant shall implement the approved management plan as approved from time to time by the Secretary.

Groundwater Monitoring

45. The Applicant shall prepare a Groundwater Monitoring Program for the development to the satisfaction of the Secretary. This program must:
 - (a) be prepared in consultation with **DPIE Water** and be submitted to the Secretary for approval within four months of the date of approval of Modification 2;
 - (b) include proposed construction of a network of at least five active monitoring bores around the south-eastern, southern, western and north-western boundaries of the extraction area (but outside of the overall extraction footprint) in proximity to extraction Phases 1 to 6 as identified in Modification 2, to collect continuous groundwater level monitoring data from the regional aquifer;
 - (c) include proposed construction to deepen (or replace) PT84MW1 in order that a bore in that general location monitors the regional aquifer; and
 - (d) include proposed construction of active monitoring bores within the largest components of at least the two forthcoming extraction Phases (on a rolling basis), each to collect at least 2 years of continuous baseline groundwater monitoring data prior to extraction commencing with that Phase.
46. The results of the Groundwater Monitoring Program shall be reported the Department and **DPIE 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.

Process Water Dam Design and Construction

47. The Applicant must ensure that the Process Water Dam is designed and constructed in a manner that satisfies the design and construction criteria for the Process Water Dam as developed under the Surface Water Management Plan (see condition 42(b) above).

NOISE

Noise Management Plan

48. The Applicant shall prepare a Noise Management Plan as part of the EMP.

The Noise Management Plan shall:

- (a) identify existing and potential noise sources and their relative contribution to noise impacts from the development;
- (b) specify appropriate intervals for noise monitoring to evaluate, assess and report noise emission levels due to construction and normal operations of the development under prevailing weather conditions;
- (c) outline the methodologies to be used, including justification for monitoring intervals, weather conditions, seasonal variations, selecting locations, periods and times of measurements, the design of any noise modelling or other studies, including the means for determining the noise levels emitted by the development;
- (d) specify measures to be taken to document any higher level of impacts or patterns of temperature inversions, and detail actions to quantify and ameliorate enhanced impacts if they occur;

- (e) provide details of noise amelioration measures, including measures to be used to reduce the impact of intermittent, low frequency and tonal noise (including truck reversing alarms) and reactive management responses for particular noise sources; and
- (f) contingency measures to be implemented should noise complaints be received.
- (g) provision for the notification of adjoining property owners of the commencement and duration of works adjoining the boundary;
- (h) construction of temporary noise shielding to residences affected by short-term noise impacts, including the bund recommended under Modification 2, and include an assessment of the effectiveness of this measure in reducing noise levels; and
- (i) include a noise reduction strategy for typical operations to ensure the noise levels from these operations do not exceed the noise criteria specified in Condition 47.

The Applicant shall implement the approved management plan as approved from time to time by the Secretary.

Noise Operating Conditions

49. The Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence on privately-owned land.

Table 1: Operational noise criteria dB(A)

Receiver	Day (7am-6pm) Monday to Saturday <i>L_{Aeq} (15 min)</i>	6am-7am Monday to Saturday <i>L_{A1} (1 min)</i>	6am-7am Monday to Saturday <i>L_{Aeq} (15 min)</i>
Receiver B	44	50	40
All other receivers	43	50	40

^aThe Noise Assessment Locations referred to in Table 1 are shown in Appendix 2

Noise generated by the development is to be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy* (as may be updated or replaced from time-to-time).

However, these criteria do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to generate higher noise levels, and the Applicant has advised the Department in writing of the terms of this agreement."

- 47(a) The excavator to be used is to be fitted with acoustic mufflers to achieve a noise level of approximately 76dB(A) when measured at 7 metres.
- 47(b) The on-site generator is to be fitted with an acoustic enclosure to ensure that noise levels less than 44dB(A) at 30m are achieved.
- 47(c) A noise compliance investigation is to undertaken within one month of the installation of the equipment to demonstrate compliance with the noise level limits stated in Conditions 47(a) and 47(b). The results of the compliance investigation are to be provided for the approval of the Secretary within 14 days of the completion of the investigations.
- 47(d) The Applicant must ensure works associated with atypical operations, as described in Modification 2, only occur:
 - (a) for a maximum of 24 days in a year, and only between 8 am to 5 pm on those days, Monday to Saturday;
 - (b) after an investigation of options for avoiding multiple atypical operations at any one time so as to limit noise levels at affected receptors, and the outcomes of this investigation are detailed in the Noise Management Plan; and

- (c) at least 24 hours after notifying potentially affected receptors, with such notification to include information on the duration and extent of works, the likely noise to be experienced, and a contact telephone number.

TRAFFIC AND TRANSPORT

Road Noise Management Plan

50. The Applicant shall ensure that traffic noise from the development does not exceed (L Aeq(1 hr)) 55 dB(A) between 7 am and 10 pm and 50 dB(A) between 10 pm and 7 am at any affected residence under adverse weather conditions. Where ambient Leq levels already exceed these criteria, the Applicant shall ensure that traffic noise from the development does not result in an increase of more than 2 dB(A).

Note: Adverse weather conditions means in the presence of winds up to 3 metres per second and/or temperature inversions of up to 4 degrees Centigrade per 100 metres.

51. The Applicant shall prepare a Road Noise Management Plan as part of the EMP. The Plan shall document measures to be taken to meet the criteria, including a monitoring, reporting and response program; and methods for educating drivers in the reduction of road noise impacts.

The Applicant shall implement the approved management plan as approved from time to time by the Secretary.

Truck movements

52. The Applicant must ensure that truck movements associated with the development do not exceed 70 outbound and 70 inbound per day and does not exceed 10 outbound and 10 inbound per hour.

Traffic Management Plan

- 50A. The Applicant must prepare a Traffic Management Plan that must:

- (a) be prepared by suitably qualified and experienced person/s whose appointment has been endorsed by the Secretary;
- (b) be prepared in consultation with TfNSW and Council;
- (c) include a Drivers' Code of Conduct that contains procedures to ensure that drivers:
 - (i) adhere to posted speed limits or other required travelling speeds;
 - (ii) adhere to designated transport routes;
 - (iii) implement safe and quiet driving practices; and
 - (iv) minimise potential conflict with school buses.
- (d) describe the measures to be put in place to ensure compliance with the Drivers' Code of Conduct; and
- (e) propose measures to minimise the transmission of dust and tracking of material onto the surface of public roads from vehicles exiting the site.

The Applicant must submit the Traffic Management Plan as approved by the Secretary by the 31 October 2021, or otherwise agreed by the Secretary. The Applicant must implement the Traffic Management Plan as approved by the Secretary.

Section 94A Contributions

53. The Applicant shall pay to Council a contribution under Section 94A of the Act at the rate of \$0.65 per tonne of all extracted/ processed material transported from the subject site.

The following conditions apply to the payment of this contribution:

- (A) The contribution will be calculated and paid monthly from the date of this Consent;
- (b) The contribution will be indexed and adjusted annually as from the date of Consent, in accordance with the Consumer Price Index. This adjustment will be applicable to each financial year for the duration of this Consent and shall take effect from and including July each year, commencing 1 July 2000;
- (c) On or before the fourteenth day of each month for the duration of the Consent, the Applicant shall deliver to Council weighbridge records showing the true quantities of extracted/processed material transported from the property during the immediately preceding month and the Council will then, as soon as it can conveniently do so, issue an invoice to the Applicant, to be paid within fourteen days;
- (d) The Council has the right to inspect and have the original records relating to any extraction/processing material, including numbers and types of laden trucks, trailers and load quantities transported from the property audited, at any time when Council makes a written request to do so;
- (e) The Council will pay all the said contribution payments into a specially identified account for payment towards the rehabilitation, restoration, repair and/or maintenance of Old Northern and Wisemans Ferry Roads within the Baulkham Hills Shire boundary.

Note: This condition has been imposed in accordance with Council's Contributions Plan No. 6 – Extractive Industries. A copy of this plan may be inspected at the Customer Service Centre, Council's Administration Complex, corner of Carrington and Showground Roads, Castle Hill, between the hours of 8:30 am and 4:30 pm weekdays.

FLORA AND FAUNA

54. *Deleted.*

- 55. The Applicant shall not clear the strip of remnant vegetation along the southern fence line (Old Northern Road) and the vegetation to the north of the site entrance (Roberts Road) containing Blue Mountains Mahogany (*Eucalyptus notabilis*). This area shall be fenced off to prevent vehicles entering the area.
- 56. **In construction of the bund walls at the corner of Roberts Road and Old Northern Road, the Applicant shall minimise disturbance to existing native vegetation.**

Flora and Fauna Management Plan

- 57. The Applicant shall prepare a Flora and Fauna Management Plan as part of the EMP. The Plan shall be prepared in consultation with National Parks and Wildlife Service and Council, and shall:
 - (a) describe the characteristics and location of species, populations and communities that the proposal may impact upon;
 - (b) consider the feasibility and practicality of salvaging trees removed for the development for relocation to conserved or rehabilitated areas, for the purposes of reconstructing habitat for ground fauna
 - (c) contain a program for the active management and maintenance of all conserved and rehabilitated vegetation (as detailed in the EIS and required under this Consent) including consideration of:
 - post-extraction land use objectives for the site;
 - utilisation of local endemic species or species naturally occurring in the Maroota area;
 - planting around the conservation area to further buffer this area and enhance its long term viability as a bushland ecosystem;

- connection of existing areas and future areas of revegetation to form a network of wildlife corridors throughout site and to adjoining lands to facilitate species recruitment through natural immigration;
 - provision of rocks of varying sizes to provide refuge and basking sites for herpetofauna;
 - fencing of revegetated areas to prohibit grazing by stock; and
 - provision of artificial nest boxes for a range of arboreal fauna.
- (d) mitigation measures to be implemented should operations compromise the significant flora and fauna communities identified in the EIS;
- (e) an ongoing monitoring program of the existing and proposed revegetated areas to assess their floristical structure and diversity, resilience and robustness to disturbance, and fauna species diversity. The information obtained from the monitoring shall be used to guide future revegetation and management efforts; and
- (f) include detailed performance and completion criteria for evaluating the performance of the flora and fauna management measures and rehabilitation of the site, including triggers for any necessary remedial action.
58. The Applicant shall maintain the revegetated areas for the duration of the Consent. Maintenance may include:
- replanting failed or unsatisfactory areas
 - repairing erosion problems
 - fire management – fire suppression or fire encouragement
 - pest and weed control
 - control of feral animal populations
 - maintain and repair fencing
 - fertiliser application
 - watering plants in drier areas, especially in the establishment phase
 - application of lime or gypsum to control pH and improve soil structure.

HERITAGE

59. If, during the development, the Applicant becomes aware of any heritage or archaeological material, all work likely to affect the material shall cease immediately and the relevant authorities consulted about an appropriate course of action prior to recommencement of work. The relevant authorities may include [Heritage NSW](#), and the Local Aboriginal Land Councils. Any necessary permits or consents shall be obtained and complied with prior to recommencement of work.

LANDSCAPE AND REHABILITATION

Rehabilitation Objectives

60. The Applicant shall rehabilitate the site in a manner that is generally consistent with the final landform designs in Appendix 1, to the satisfaction of the Secretary. All rehabilitation must comply with the objectives in Table 1:

Table 1: Rehabilitation Objectives

Feature	Objective
Site (as a whole)	• 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 •
Surface Infrastructure	• Decommissioned and removed, unless the Secretary agrees otherwise

Quarry Pit Floor	Landscaped and revegetated using improved pasture species, native trees and understorey species
Final Void	- Minimise the height and slope of batters - Minimise the drainage catchment
Community	- Ensure public safety - Minimise the adverse socio-economic effects of quarry closure

Progressive Rehabilitation

59. The Applicant shall 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.

Note: It is accepted that parts of the site that are progressively rehabilitated may be subject to further disturbance in future.

Landscape and Rehabilitation Management Plan

60. The Applicant shall prepare a Landscape and Rehabilitation Management Plan for the development to the satisfaction of the Secretary. This plan must:
- be submitted to the Secretary for approval by 30 June 2017, unless otherwise agreed by the Secretary;
 - provide details of the conceptual final landform and associated land uses for the site;
 - describe the short, medium and long-term measures that would be implemented to ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this consent;
 - 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 the 3 years covered by the initial approval of the plan) including the procedures to be implemented for:
 - maximising the salvage of environmental resources within the approved disturbance area for beneficial reuse;
 - protecting vegetation and fauna habitat outside the approved disturbance area on-site;
 - minimising the impacts on native fauna;
 - landscaping the site to minimise visual and lighting impacts;
 - reviewing improved pasture species and application rates;
 - controlling weeds and feral pests;
 - controlling erosion;
 - controlling access; and
 - bushfire management;
 - include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;
 - include a mass balance calculation to ensure that appropriate volumes of material are available to implement the final landform as described in this plan;
 - provide for the construction and maintenance of the process water dam in accordance with the approved design and construction criteria (see Condition 42(b));
 - identify the potential risks to the successful rehabilitation of the site, and include a description of the contingency measures that would be implemented to mitigate these risks; and
 - include details of who would be responsible for monitoring, reviewing, and implementing the plan.

The Applicant shall implement the management plan as approved from time to time by the Secretary

Conservation and Rehabilitation Bond

61. By 31 December 2017, the Applicant shall lodge a Conservation and Rehabilitation Bond with the Department to ensure that the management of biodiversity and the rehabilitation of the site are implemented in accordance with the performance and completion criteria set out in the Flora and Fauna Management Plan and Landscape and Rehabilitation Plan. The sum of the bond shall be determined by:
- (a) calculating the cost of rehabilitating the site taking into account the likely surface disturbance over the following 3 years of quarrying operations; and
 - (b) employing a suitably qualified quantity surveyor or other expert to verify the calculated costs, to the satisfaction of the Secretary.

Note: If the rehabilitation of the site is completed to the satisfaction of the Secretary, then the Secretary will release the bond. If the rehabilitation of the site is not completed to the satisfaction of the Secretary, then the Secretary will call in all or part of the bond, and arrange for the completion of the relevant works.

62. Within 3 months of each Independent Environmental Audit (see Condition 70), the Applicant shall review, and if necessary revise, the sum of the Conservation and Rehabilitation Bond to the satisfaction of the Secretary. This review must consider the:
- (a) effects of inflation;
 - (b) likely cost of rehabilitating the site (taking into account the likely surface disturbance over the next 3 years of the development); and
 - (c) performance of the implementation of the rehabilitation of the site to date.

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

63. The Applicant shall prepare an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must:
- (a) be submitted to the Secretary for approval by 30 June 2016;
 - (b) provide the strategic framework for environmental management of the development;
 - (c) identify the statutory approvals that apply to the development;
 - (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
 - (e) describe the procedures that would be implemented to:
 - keep the local community and relevant agencies informed about the operation and environmental performance of the development;
 - receive, handle, respond to, and record complaints;
 - resolve any disputes that may arise during the course of the development;
 - respond to any non-compliance;
 - respond to emergencies; and
 - (f) include:
 - copies of any strategies, plans and programs approved under the conditions of this consent; and
 - a clear plan depicting all the monitoring required to be carried out in relation to the development.

The Environmental Management Strategy is to include a copy of the sequence of extraction as updated under Modification 2, with all dam areas on the site clearly labelled and described.

The Applicant shall implement the approved strategy as approved from time to time by the Secretary.

Adaptive Management

64. The Applicant shall assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in this Consent. Any exceedance of these criteria and/or performance measures constitutes a breach of this Consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:

- (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
- (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
- (c) implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.

Management Plan Requirements

65. The Applicant shall ensure that the management plans required under this Consent are prepared in accordance with any relevant guidelines, and include:
- (a) detailed baseline data;
 - (b) a description of:
 - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
 - any relevant limits or performance measures/criteria;
 - 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;
 - (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
 - (d) a program to monitor and report on the:
 - impacts and environmental performance of the development;
 - effectiveness of any management measures (see c above);
 - (e) a contingency plan to manage any unpredicted impacts and their consequences;
 - (f) a program to investigate and implement ways to improve the environmental performance of the development over time;
 - (g) a protocol for managing and reporting any:
 - incidents;
 - complaints;
 - non-compliances with statutory requirements; and
 - exceedances of the impact assessment criteria and/or performance criteria; and
 - (h) a protocol for periodic review of the plan.

Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

Annual Review

66. By the end of March each year (or as otherwise agreed by the Secretary), the Applicant shall review the environmental performance of the development for the previous calendar year to the satisfaction of the Secretary. This review must:
- (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.

Revision of Strategies, Plans and Programs

67. Within 3 months of the submission of:
- (a) an annual review under Condition 66 above;
 - (b) an incident report under Condition 68 below;
 - (c) an audit report under Condition 70 below; or
 - (d) any modification to the conditions of this Consent (unless the conditions require otherwise),
- the Applicant shall review, and if necessary revise, the strategies, plans, and programs required under this Consent to the satisfaction of the Secretary.

Where this review leads to revisions in any such document, then within 4 weeks of the review, unless the Secretary agrees otherwise, the revised document must be submitted to the Secretary for approval.

Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.

REPORTING AND AUDITING

Incident Notification

68. The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing via the Major Projects Website and identify the development (including the development application number and name) and set out the location and nature of the incident.

Non-Compliance Notification

- 68A. Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing via the Major Projects Website and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

Regular Reporting

69. The Applicant shall provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this Consent.

INDEPENDENT ENVIRONMENTAL AUDIT

70. Every 3 years from the date of this consent and at the completion of works under this consent, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
- be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
 - include consultation with the relevant agencies;
 - assess 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.

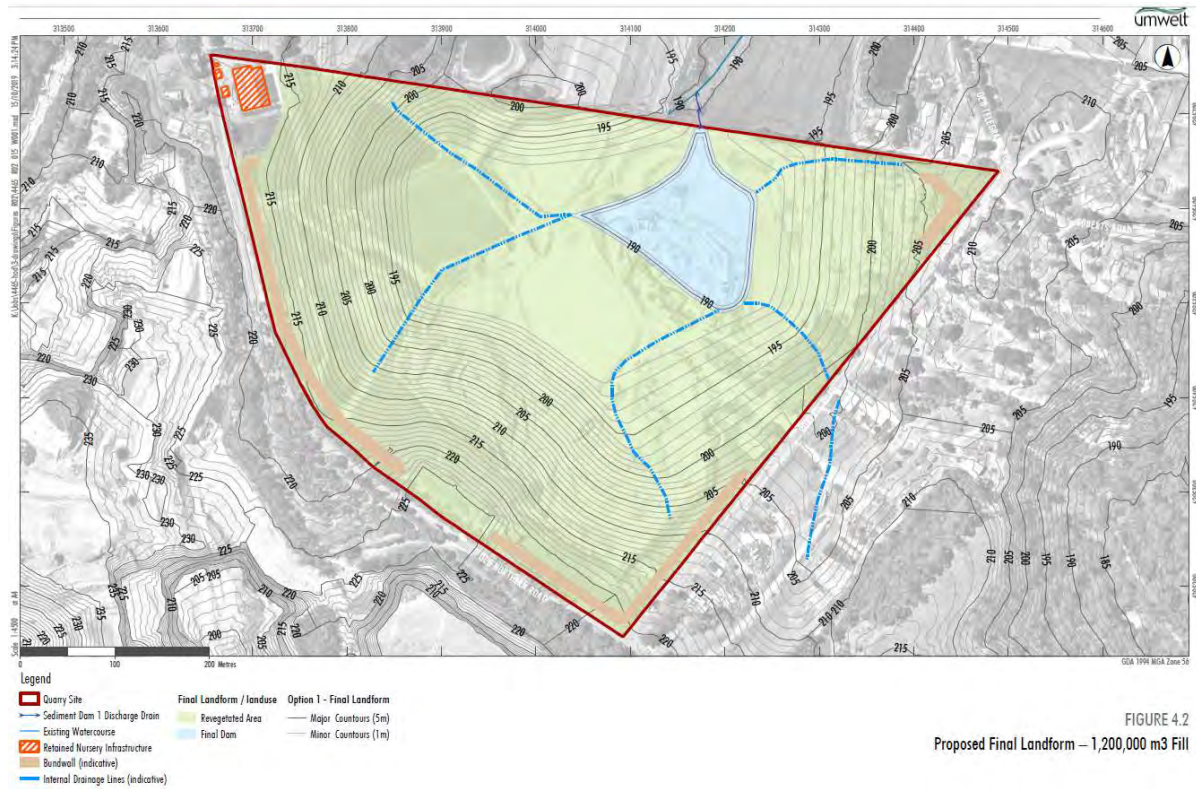
Note: This audit team must be led by a suitably qualified auditor and include experts in any field specified by the Secretary.

71. Within 6 weeks of the completion of this audit, unless the Secretary agrees otherwise, the Applicant shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.

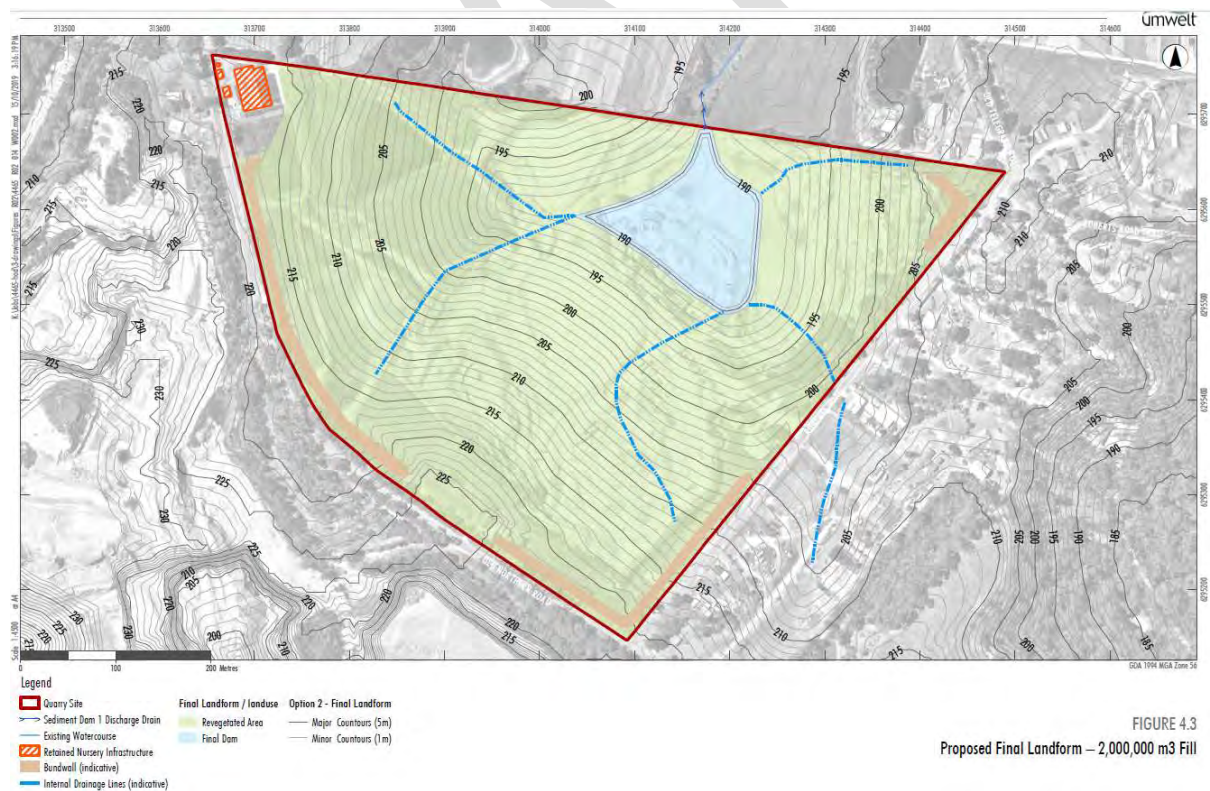
ACCESS TO INFORMATION

72. By 30 June 2016 the Applicant shall:
- make copies of the following publicly available on its website:
 - the documents identified in Condition 2(a) above;
 - current statutory approvals for the development;
 - approved strategies, plans and programs required under the conditions of this Consent;
 - a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this Consent, or any approved plans and programs;
 - a complaints register, which is to be updated monthly;
 - the annual reviews of the development (for the last 5 years, if applicable);
 - any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit;
 - any other matter required by the Secretary; and
 - keep this information up-to-date, to the satisfaction of the Secretary.'

APPENDIX 1 FINAL LANDFORM DESIGN



Final Landform Concept 1



Final Landform Concept 2

APPENDIX 2 RECEIVER LOCATION PLAN



Appendix D: EPA Licence



Environment Protection Licence

Licence - 6535

<u>Licence Details</u>	
Number:	6535
Anniversary Date:	12-March

<u>Licensee</u>
HB MARROOTA PTY LTD
PO BOX 1778
GOSFORD NSW 2250

<u>Premises</u>
HB MARROOTA PTY LTD
CNR ROBERTS & OLD NORTHERN ROADS
MARROOTA NSW 2756

<u>Scheduled Activity</u>
Crushing, grinding or separating
Extractive activities

<u>Fee Based Activity</u>	<u>Scale</u>
Crushing, grinding or separating	> 100000-500000 T annual processing capacity
Extractive activities	> 100000-500000 T annually extracted or processed

<u>Region</u>
Metropolitan West - Sydney
4 Parramatta Square, 12 Darcy Street
PARRAMATTA NSW 2150
Phone: (02) 9995 5000
Fax: (02) 9995 6900
Locked Bag 5022
PARRAMATTA NSW 2124

Environment Protection Licence

Licence - 6535



INFORMATION ABOUT THIS LICENCE	3
Dictionary	3
Responsibilities of licensee	3
Variation of licence conditions	3
Duration of licence	3
Licence review	3
Fees and annual return to be sent to the EPA	3
Transfer of licence	4
Public register and access to monitoring data	4
1 ADMINISTRATIVE CONDITIONS	5
A1 What the licence authorises and regulates	5
A2 Premises or plant to which this licence applies	5
A3 Information supplied to the EPA	6
2 DISCHARGES TO AIR AND WATER AND APPLICATIONS TO LAND	6
P1 Location of monitoring/discharge points and areas	6
3 LIMIT CONDITIONS	7
L1 Pollution of waters	7
L2 Noise limits	7
4 OPERATING CONDITIONS	7
O1 Activities must be carried out in a competent manner	7
O2 Maintenance of plant and equipment	7
O3 Dust	7
O4 Other operating conditions	7
5 MONITORING AND RECORDING CONDITIONS	8
M1 Monitoring records	8
M2 Recording of pollution complaints	8
M3 Telephone complaints line	8
6 REPORTING CONDITIONS	9
R1 Annual return documents	9
R2 Notification of environmental harm	10
R3 Written report	10
7 GENERAL CONDITIONS	11
G1 Copy of licence kept at the premises or plant	11

Environment Protection Licence

Licence - 6535



DICTIONARY	-----	12
General Dictionary	-----	12

Environment Protection Licence

Licence - 6535



Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

Licence - 6535



The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

HB MARROOTA PTY LTD
PO BOX 1778
GOSFORD NSW 2250

subject to the conditions which follow.



Environment Protection Licence

Licence - 6535

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Crushing, grinding or separating	Crushing, grinding or separating	> 100000 - 500000 T annual processing capacity
Extractive activities	Extractive activities	> 100000 - 500000 T annually extracted or processed

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
HB MAROOTA PTY LTD
CNR ROBERTS & OLD NORTHERN ROADS
MAROOTA
NSW 2756
LOT 1 DP 228308, LOT 2 DP 228308, LOT 2 DP 312327

A2.2 The premises location is shown on the map below.



Environment Protection Licence

Licence - 6535



L1 Pollution of waters

- L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Noise limits

- L2.1 Noise from the premises must not exceed the sound pressure level expressed as LA10 (15 minute) of 45 dB(A), except as expressly provided by this licence.
- L2.2 Noise from the premises is to be measured or computed at any point within one metre of any residential boundary, or at any point within 30 metres of the dwelling where the dwelling is more than 30 metres from the boundary, to determine compliance with the noise level limits in Condition L2.1.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

- O1.1 Licensed activities must be carried out in a competent manner.
This includes:
- a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
 - b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

- O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
- a) must be maintained in a proper and efficient condition; and
 - b) must be operated in a proper and efficient manner.

O3 Dust

- O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.
- O3.2 All loaded trucks entering or leaving the premises must have their loads covered.

O4 Other operating conditions

- O4.1 The licensee must prevent any tracking of mud on to public roads by vehicles leaving the premises.

Environment Protection Licence

Licence - 6535



5 Monitoring and Recording Conditions

M1 Monitoring records

- M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.
- M1.2 All records required to be kept by this licence must be:
- a) in a legible form, or in a form that can readily be reduced to a legible form;
 - b) kept for at least 4 years after the monitoring or event to which they relate took place; and
 - c) produced in a legible form to any authorised officer of the EPA who asks to see them.
- M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
- a) the date(s) on which the sample was taken;
 - b) the time(s) at which the sample was collected;
 - c) the point at which the sample was taken; and
 - d) the name of the person who collected the sample.

M2 Recording of pollution complaints

- M2.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.
- M2.2 The record must include details of the following:
- a) the date and time of the complaint;
 - b) the method by which the complaint was made;
 - c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
 - d) the nature of the complaint;
 - e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
 - f) if no action was taken by the licensee, the reasons why no action was taken.
- M2.3 The record of a complaint must be kept for at least 4 years after the complaint was made.
- M2.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M3 Telephone complaints line

- M3.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.
- M3.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a

Environment Protection Licence

Licence - 6535



complaints line so that the impacted community knows how to make a complaint.

M3.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

R1.3 Where this licence is transferred from the licensee to a new licensee:

- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
- b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:

- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
- b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:

- a) the licence holder; or

Environment Protection Licence

Licence - 6535



b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:

- a) where this licence applies to premises, an event has occurred at the premises; or
- b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence, and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:

- a) the cause, time and duration of the event;
- b) the type, volume and concentration of every pollutant discharged as a result of the event;
- c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
- d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
- e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
- f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
- g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the

Environment Protection Licence

Licence - 6535



EPA within the time specified in the request.

7 General Conditions

G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

Environment Protection Licence

Licence - 6535

Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 6535

flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .

Environment Protection Licence

Licence - 6535



TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non - putrescible), special waste or hazardous waste

Mr Nigel Sargent

Environment Protection Authority

(By Delegation)

Date of this edition: 14-June-2000

Environment Protection Licence

Licence - 6535

End Notes

- 1 Licence varied by change to Common Name field, issued on 15-Oct-2001, which came into effect on 15-Oct-2001.
- 2 Licence transferred through application 140865, approved on 29-Oct-2001, which came into effect on 24-Sep-2001.
- 3 Licence varied by notice 1012523, issued on 21-May-2002, which came into effect on 15-Jun-2002.
- 4 Licence varied by correction to EPA Sub Region data record, issued on 20-Sep-2002, which came into effect on 20-Sep-2002.
- 5 Licence transferred through application 141899, approved on 23-Apr-2003, which came into effect on 21-Apr-2003.
- 6 Licence varied by notice 1034428, issued on 13-Dec-2004, which came into effect on 07-Jan-2005.
- 7 Licence varied by notice 1081877, issued on 10-Mar-2008, which came into effect on 10-Mar-2008.
- 8 Licence varied by Change to schedule 1, issued on 07-May-2008, which came into effect on 07-May-2008.
- 9 Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
- 10 Licence varied by notice 1111632, issued on 01-Apr-2010, which came into effect on 01-Apr-2010.
- 11 Licence varied by notice 1527501 issued on 09-Mar-2015
- 12 Licence varied by notice 1529566 issued on 03-Jun-2015
- 13 Licence varied by notice 1603067 issued on 26-Nov-2020

Appendix E: EPA Consultation

From: [Lisa Thomson](#)
To: info@epa.nsw.gov.au
Cc: [hodgsonquarries](#)
Subject: Roberts Road Quarry - EPL 6535 DA267/11/99 Mod 4
Date: Tuesday, 1 November 2022 2:13:00 PM
Attachments: [Notice of Modification Mod 4.pdf](#)
[Consolidated Consent Mod 4.pdf](#)
[EPA Response - 22_09_2020.pdf](#)
[image002.png](#)
Importance: High

To whom it may concern.

As part of a modification to consent number 267-11-99, the operators of the Robert Rd Sand Quarry at Maroota are required to commission an expert review of the air quality monitoring system at the site. See the reproduced condition of consent below. For your background information, the Notice of Modification, Consolidated Consent and the EPA Notice No 1600632 providing background into the requirement are attached.

29A. The Applicant must commission an expert review of the air quality monitoring system at the site. This review must:

- (a) be undertaken by a suitably qualified and experience person(s) whose appointment has been approved by the Secretary;
- (b) review the accuracy of the air quality monitoring system at the site over a 12 month period, in general accordance with the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007)* and with a particular focus on PM_{2.5} monitoring;
- (c) provide recommendations (where required) to improve the accuracy of air quality monitoring system at the site; and
- (d) be undertaken in consultation with the EPA.

29B. A copy of the expert review report along with a timetable for implementing any recommendations arising from the review required under condition 29A of this Schedule, must be submitted by 30 November 2022, or as otherwise agreed by the Planning Secretary.

The Applicant must implement the recommendations of the expert review to the satisfaction of the Secretary.

As a suitably qualified expert in air quality monitoring, I was approved to undertake this investigation by the Dept of Planning and Environment earlier this year (a copy of the approval can be provided on request).

The review is due **prior to the 30th November 2022**, and is to be undertaken **in consultation with the EPA**.

Please let me know as soon as possible, any requirements you have for inclusion in the review.

Regards,
Lisa Thomson
BAppSc, CChem

Phone: (02) 4028 6412 | Mobile: 0427 334471
www.vgt.com.au



From: [Evan Guyatt](#)
To: [Lisa Thomson](#)
Subject: RE: Roberts Road Quarry - DA2671199 Mod 4 - HB Maroota Pty Ltd
Date: Wednesday, 16 November 2022 3:59:57 PM
Attachments: [image001.png](#)
[Roberts Road Quarry - DA2671199 Mod 4 - HB Maroota Pty Ltd - No Comment Response.pdf](#)

Dear Lisa

Thank you for your email regarding Roberts Road Quarry EPL 6535 (DA267/11/99 Mod 4) – HB Maroota Pty Ltd.

The NSW EPA has no comment to provide towards the expert review of the air quality monitoring systems at the site.

Kind Regards,
Evan

Evan Guyatt
Operations Assistant
Regulatory Operations – Metropolitan West
NSW Environment Protection Authority
D 02 9995 6220



www.epa.nsw.gov.au @NSW_EPA

The EPA acknowledges the Traditional Custodians of the land, waters and sky where we work.
As part of the world's oldest surviving cultures we pay our respect to Aboriginal Elders past, present and emerging.

I work on Burramattagal Country of the Dharug Nation.



Report pollution and environmental incidents 131 555 or +61 2 9995 5555

This email is intended for the addressee(s) named and may contain confidential and/or privileged information.
If you are not the intended recipient, please notify the sender and then delete it immediately.
Any views expressed in this email are those of the individual sender except where the sender expressly and with authority states them to be the views of the Environment Protection Authority.

PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING THIS EMAIL

Appendix F: Laboratory Scope of Accreditation

Scope of Accreditation

VGT Laboratories Pty Ltd

Site

VGT Laboratory

Accreditation No.	Site No.	Date of Accreditation
20375	15825	05 May 2006

Address

Unit 4, 30 Glenwood Drive
Thornton, NSW 2322
Australia

vgt.com.au

Contact

Mr Anthony Crane
P: +61 (02) 40286412
lisa@vgt.com.au

Availability

Services available to external clients

VGT Laboratory

ISO/IEC 17025 (2017)

Environment

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE
Analysis for physical and chemical characteristics	Air - Ambient	Suspended particulate matter - Total	Gravimetric	in-house method VGT WI/44
		Ash; Combustible matter; Solids - Insoluble	Gravimetric	AS 3580.10.1, NSW EPA AM-19 and in-house method VGT WI/14
		Particulate matter - PM10; Particulate matter - PM2.5	Gravimetric	in-house method VGT WI/44
	Fresh waters; Ground waters; Industrial waters - Treated; Irrigation and stock waters; Steam-raising waters; Surface waters	Conductivity - In-situ	Direct reading instrument	APHA 2510 B and in-house method VGT WI/02

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE
		Solids - Total suspended	Gravimetric	AS 3550.4 and in-house method VGT WI/03A
		Turbidity	Nephelometry	APHA 2130 B and in-house method VGT WI/04
		Oil and grease	Gravimetric	APHA 5220 B
		Biochemical oxygen demand (BOD)	Direct reading instrument	APHA 5210 B
		Conductivity	Direct reading instrument	APHA 2510 B and in-house method VGT WI/02
		Dissolved oxygen (DO) - In-situ	Dissolved oxygen (DO) analyser	APHA 4500 O-G
		pH	Direct reading instrument	APHA 4500 H-B and in-house method VGT WI/01
		Solids - In-situ, total suspended	Gravimetric	in-house method VGT WI/03B
		pH - In-situ	Direct reading instrument	APHA 4500 H-B and in-house method VGT WI/01
		Solids - Total dissolved (TDS)	Gravimetric	AS 3550.4 and in-house method VGT WI/49
Soils		Turbidity - In-situ	Nephelometry	APHA 2130 B and in-house method VGT WI/04
		Foreign matter	Sieve analysis	RMS T276

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE
Sample collection	Air - Ambient	Not applicable	Deposit gauge	AS 3580.10.1, NSW EPA AM-19 and in-house method VGTWI/15
	Fresh waters; Ground waters; Industrial and steam-raising waters; Irrigation and stock waters; Surface waters	Not applicable	Grab; Manual by hand	AS 5667 parts 1, 4, 6, 11 and in-house method VGT-WI/10

ISO/IEC 17025 (2017)

Food and Beverage

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE
Analysis of physical and nutritional characteristics	Waters for potable and domestic purposes	Solids - Total dissolved (TDS)	Gravimetric	AS 3550.4 and in-house method VGT WI/49
		Turbidity	Nephelometry	APHA 2130 B and in-house method VGT WI/04
		Conductivity - In-situ	Direct reading instrument	APHA 2510 B and in-house method VGT WI/02
		Oil and grease	Gravimetric	APHA 5220 B
		Dissolved oxygen (DO) - In-situ	Direct reading instrument	APHA 4500 O-G
		Solids - In-situ, total suspended	Gravimetric	in-house method VGT WI/03B
		Turbidity - In-situ	Nephelometry	APHA 2130 B and in-house method VGT WI/04
		pH	Direct reading instrument	APHA 4500 H-B and in-house method VGT WI/01
		Conductivity	Direct reading instrument	APHA 2510 B and in-house method VGT WI/02
		pH - In-situ	Direct reading instrument	APHA 4500 H-B and in-house method VGT WI/01
		Biochemical oxygen demand (BOD)	Direct reading instrument	APHA 5210 B

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE
		Solids - Total suspended	Gravimetric	AS 3550.4 and in-house method VGT WI/03A
Sample collection	Waters for potable and domestic purposes	Not applicable	Grab; Manual by hand	AS 5667 parts 1, 4, 6, 11 and in-house method VGT-WI/10

The only data displayed is that deemed relevant and necessary for the clear description of the activities and services covered by the scope of accreditation.

Grey text appearing in a SoA is additional freetext providing further refinement or information on the data in the preceding line entry.

Accreditation No.	Site No.	Print date
20375	15825	21 Nov 2022

END OF SCOPE

Appendix G: DPE Request for Additional Information 18/1/23

Department of Planning and Environment

Mr Stuart Reed
Environmental Officer
PO Box 1778
Gosford New South Wales, 2250
18/01/2023

Dear Mr Reed

Roberts Road Quarry, Air Quality Monitoring Review - Request for Additional Information

I refer to your submission dated 28/11/2022 to the Department of Planning and Environment (the Department) titled Air Quality Monitoring Review, as required under the conditions of consent DA267-11-99.

After careful consideration, the Department is requesting that you provide the following additional information.

- Please provide a timetable for implementing the recommendations made in section 6 of the review.
- Please provide an explanation regarding the exceedance of PM2.5 on the 09/10/2021 noted in table 9, as part of the explanation please consider relevant consent conditions including but not limited to condition 68A.

Please provide this information by 3/02/2023.

If you have any questions, please contact Paul-James Caruana, who can be contacted on 8229 2900 or via email at paul-james.caruana@dpie.nsw.gov.au.

Yours sincerely



Carl Dumbleton
Team Leader
Resource Assessments

29A.	The Applicant must commission an expert review of air quality monitoring at the site. This review must	(a) be undertaken by a suitably qualified and experience person(s) whose appointment has been endorsed by the Secretary;	Appendix A Letter regarding approval of expert	Yes	Appendix A is an approval of expert Lisa Thomson, who is the Author of the review provided.
		(b) review the accuracy of air quality monitoring at the site over a 12-month period, in general accordance with the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007) and with a particular focus on PM2.5 monitoring;	Entire document	Yes	Report reviews 12 months of data against the approved methods and standards. Report makes the following assessment of accuracy "The air quality monitoring at the Roberts Rd Maroota Sand Quarry is fit for purpose, as accurate as can be reasonably expected" However, it does not acknowledge the exceedance PM2.5 09/10/2021.
		(c) provide recommendations (where required) to improve the accuracy of air quality monitoring at the site; and	Section 6 Conclusion Recommendations	Yes	Following recommendations made Ensure site conditions and observations for the monitoring period are included on the sample sheet for all air quality samples, along with name of the technician, date and time sampled, and compliance with the siting and instrument requirements of the relevant method. Ensure that the procedure for sampling is documented and that all sampling technicians are trained in it regularly. Update the site Air Quality Management Plan (AQMP) to include the modification 4 requirements. The author recommends that, in consultation with the DPE, monitoring for TSP be discontinued as this is a less critical parameter, and instead replaced by a ratio calculation from PM10 based on monitoring data collected from the site over as long a

					period as possible, without including the extraordinary events of the 2019-2020 bushfires. The explanation for how this is to be calculated would be included in the updated AQMP
		(d) be undertaken in consultation with the EPA.	Appendix B Response to Submissions EPA Appendix E EPA Consultation	Yes	Evidence of EPA consultation is provided in email form, EPA provided no comment.
29B.	A copy of the expert review report along with a timetable for implementing any recommendations arising from the review required under condition 29A of this Schedule, must be submitted by 1 October 2022, or as otherwise agreed by the Planning Secretary.	The Applicant must implement the recommendations of the expert review to the satisfaction of the Secretary.		Partially	Please provide a timetable for implementing the recommendations made in section 6 of the review. Alternatively, please provide updated Air Quality Management Plan incorporating the recommendations if available.

Appendix H: PM2.5 Results

09/10/2021

Explanation of Particulate Matter Less than 2.5 µm Results 9/10/2021

Excerpt from Annual Report and Compliance Review 2021:

6.3.3 Interpretation and Effectiveness of Controls

6.3.3.1 Interpretation of Monitoring Results

Dust deposition (Insoluble Solids), Total Suspended Particulates (TSP) and PM_{2.5} and PM₁₀ Annual Averages for 2021 were compliant with DA criteria. Particulate Matter less than 2.5 µm in diameter (PM₁₀) exceeded the Mod 4 24-hour criteria on one occasion in October 2021 during a local grass fire. This does not represent a non-compliance as it was not due to site activities.

Particulate Matter less than 2.5 µm in diameter (PM_{2.5}) for the 2021 report period was below the Mod 4 annual limit, despite the elevated result in October.

All air quality monitoring results show the results as fairly stable when compared with the previous reporting period. Dust Gauge 1A Site Office results have stabilised since the December 2021 elevated reading and continue to have a 12-month average under 4g/m²/month.

Excerpt from Modification 4 consent:

Table 1: Air quality criteria

Pollutant	Averaging period	Criterion
Particulate matter < 10 µm (PM ₁₀)	Annual	^{a, c} 25 µg/m ³
	24 hour	^b 50 µg/m ³
Particulate matter < 2.5 µm (PM _{2.5})	Annual	^{a, c} 8 µg/m ³
	24 hour	^b 25 µg/m ³
Total suspended particulate (TSP) matter	Annual	^{a, c} 90 µg/m ³
^d Deposited dust	Annual	^b 2 g/m ² /month ^a 4 g/m ² /month

Notes:

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).

^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own).

^c Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary.

^d Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: *Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method*.

Note that point (b) above states that the PM_{2.5} 24 hour criteria of 25 µg/m³ applies to an **incremental increase due to the development alone**. Since the result recorded on the 9th October 2021 was due to a local grass and not due to the development, this result does not represent a non-compliance, and therefore does not require notification in accordance with condition 68A.



Beyond Compliance

VGT Environmental Compliance Solutions Pty Ltd
ABN 26 621 943 888

Unit 4, 30 Glenwood Drive Thornton NSW 2322
PO Box 2335, Greenhills NSW 2323

Ph: (02) 4028 6412
E: mail@vgt.com.au

www.vgt.com.au