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Boral Quarries

Peppertree Quarry **AIR QUALITY MANAGEMENT PLAN**

May 2020



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Change History

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1	Thursday, 5 April 2012	ERM	Sharon Makin (Boral)	First revision AQMP based on November 2011 requirements
2	Wednesday, 18 April 2012	ERM	Sharon Makin (Boral)	Preliminary Final AQMP revision
3	Thursday, 17 April 2012	ERM	Sharon Makin (Boral)	Final AQMP revision
4	Friday 18 May 2012	ERM	Sharon Makin (Boral)	Final AQMP submitted
5	22 nd November 2016	Sharon Makin (Boral)	Angus Shedden (Boral)	Revision based upon Modification 4 requirements
6	8 th April 2017	Sharon Makin (Boral)	Angus Shedden (Boral)	Final AQMP submitted (including DP&E and EPA comments)
7	December 2019	Todoroski Air Sciences	Sharon Makin (Boral)	Revision based upon Modification 5 requirements.
8	May 2020	Sharon Makin (Boral)	Michael Higgins (Boral)	Revision based upon Modification 6 requirements.

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Introduction

1.1 BACKGROUND

Boral Resources (NSW) Pty Ltd (Boral) own and operates Peppertree Quarry (the Quarry), a hard rock quarry located in Marulan South, New South Wales. In February 2007, Boral was granted Project Approval (06_0074) to establish and operate the Peppertree Quarry under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Construction of the Quarry was completed in 2013 with commercial extraction operations having commenced in 2014.

The existing Quarry operations have been constructed and operated in accordance with the Project Approval (with modifications in 2009, 2011, 2012, 2016 and 2019) and an Environment Protection Licence (EPL No. 13088).

The 2007 Project Approval required the preparation and implementation of a number of management plans detailing environmental commitment, controls and performance objectives at the Quarry throughout its operational life. In accordance with the Conditions of Approval (CoA), an Air Quality Management Plan (AQMP) was first prepared by ERM for Boral in 2011 and subsequently revised by Todoroski Air Sciences in 2019.

In October 2019, the Project Approval was modified for the fifth time (hereafter referred to as Modification 5) under Section 75W of the EP&A Act, to allow the development of a new overburden area (South-West Overburden Emplacement – SWOE) south of the existing Western Overburden Emplacement (WOE) in the north-western corner of the Limestone Mine and extension of the consent boundary to the south to encompass the SWOE along with construction of new infrastructure to link with the SWOE.

This was followed in April 2020, with the Project Approval modified for the sixth time (hereafter referred to as Modification 6) under Section 4.55 (1A) of the EP&A Act, to allow the replacement of the existing air filtration network with two baghouse air filtration units and associated ducting attached to the existing and approved secondary and tertiary processing facilities (i.e. crushing and screening plant). The baghouses are located within the current operating plant footprint.

This document is a revised version of the initial 2011 AQMP and incorporates changes associated with Modification 5, Modification 6, recommendations from the Independent Audit undertaken in November 2018 and actions identified from the 2018 Annual Review outlining air quality management associated with current quarry activities. The AQMP will continue to remain a dynamic document which will be updated as required over the life of quarry operations until the Project Approval end date of December 2038.

1.2 OVERVIEW OF OPERATIONS

The Quarry has an identified resource area of approximately 250 million tonnes, which dependent upon extraction rates, would allow quarrying for 70 years or more over an area of approximately 104 hectares (ha), within a 650 ha parcel of land owned by Boral.

The Quarry produces granodiorite aggregate products and manufactured sand. All quarry products and materials are transported by rail to a number of Boral rail terminals for distribution by trucks into the Sydney metropolitan area.

Typical quarrying operations involve the stripping of overburden and the extraction of hard rock using open-cut drill and blast techniques.

Overburden is stripped by dozer, loaded onto trucks using excavators and/or front end loaders and transported to the overburden emplacement areas, where it is spread and shaped by dozer.

Traditional drill and blast methods are then used to break up the hard rock. A drill rig stationed on top of each production bench drills a series of holes that are later charged with explosives, detonators and delays. Boral apply standard practice of limiting the maximum instantaneous charge to stay within the relevant noise and vibration criteria.

Blasted rock is then processed on-site using various crushers and screens to obtain the desired product. Material is initially crushed in a primary mobile crusher located within the pit, which is currently fed by an excavator, front end loaders and trucks. The mobile crusher/conveyor system can be positioned close to the extraction location, thereby facilitating in-pit works to be “truck-less”. Blasted rock is fed directly into the primary mobile crusher by excavator. After passing through the primary crusher, the crushed material is taken from the pit along a series of conveyors to the first set of screens located to the northwest of the pit and material is stockpiled in a surge pile. Material in the surge pile is reclaimed and conveyed to the main processing area where it undergoes further crushing and screening. Product material is stored in the various covered storage bins prior to being dispatched off-site by train.

The proposed layout of the project is shown in Figure 1.

1.3 SCOPE AND OBJECTIVES

This AQMP applies to all activities undertaken by the Quarry including quarrying, crushing, screening, stockpiling and transportation of quarry products, maintenance activities; and associated service and support functions.

The AQMP provides the framework and guidance for the Quarry activities to be conducted in a manner whereby appropriate control measures are implemented to minimise the potential for adverse impacts on air quality and meet compliance requirements of the CoA of the Project Approval.

Specific objectives of the AQMP are to:

- implement best reasonable and feasible management practices to minimise off-site odour, fume and dust emissions for the project;
- minimise visual air pollution generated by the project;
- identify triggers for implementation of additional management response measures where required;
- assess the effectiveness of air quality control measures;
- quantify changes to air quality at residences and private properties near the site;
- ensure dust concentrations and deposition levels remain below relevant air quality criteria at the nearest residences;
- obtain information to provide a basis for assessing the ongoing impact of Peppertree Quarry on air quality; and
- Provide data suitable to demonstrate compliance with the CoA of the Project Approval and subsequent modifications.

The AQMP is prepared for a mixed audience of consent authorities, environmental regulators and site personal; the latter of which are responsible for implementing this plan as part of day-to-day operations.

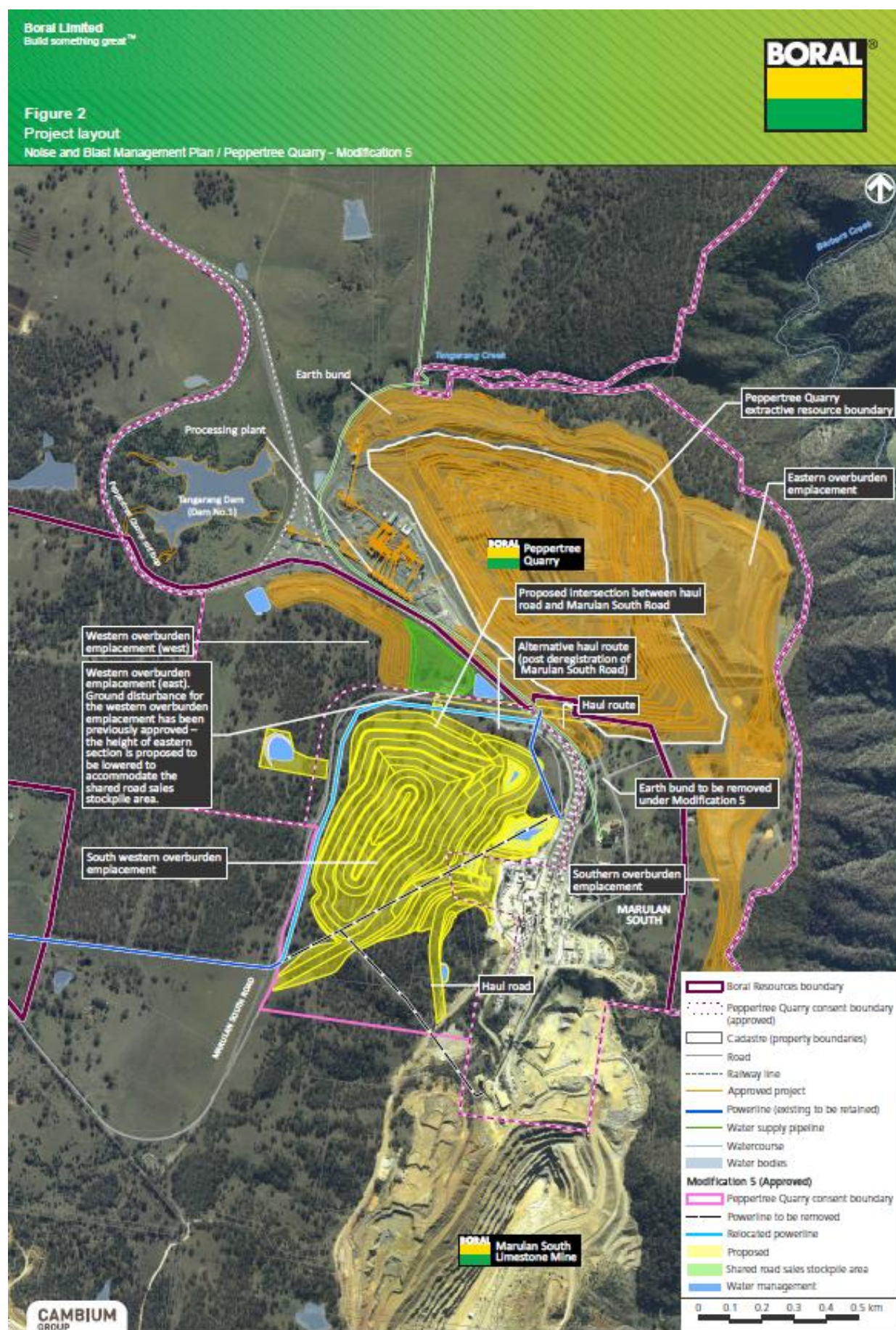


Figure 1: Site Layout

1.4 RESPONSIBILITY FOR IMPLEMENTATION

The Quarry Manager carries ultimate responsibility for the implementation of this AQMP and providing the necessary resources as required. The site Environmental Officer is responsible for carrying out and/or coordinating the monitoring and reporting requirements of this plan.

Operations personnel (Quarry Supervisors) are responsible for responding to adverse site air quality conditions and adjusting quarry operations as appropriate to minimise impacts on neighbouring properties. Other site personnel are responsible for reporting adverse site air quality conditions and reporting them to the shift Supervisor.

1.5 CONSULTATION

In accordance with the requirements of CoA A17 and B23 (b), consultation has been undertaken with the Environment Protection Authority (EPA), in the revision of this plan.

A meeting was held with the EPA on Wednesday 18th December 2019 to review the draft Noise and Blast Management Plan.

Discussions highlighted that the Management Plan needed to include...

- the EPL requirements around incident reporting into the Section on Incident reporting on both reports,
- consider a definition of air quality Impact and when reporting would be required outside of non-compliance, exceedances or an incident, if required and
- EPA to receive a copy of the Annual Return

A copy of the email correspondence following the meeting is included in Appendix 1.

1.6 ALIGNMENT WITH OTHER PLANS

This document is a revised version of the AQMP initially prepared by ERM (2011) and subsequently revised by Todoroski Air Sciences in 2019. In support of the AQMP, a Biodiversity and Rehabilitation Management Plan (2017) and Noise and Blast Management Plan (draft May 2020) have been prepared for the Quarry. These plans have aspects of managing air quality and will be applied in combination with the AQMP where relevant.

1.7 DOCUMENT STRUCTURE

The structure of the Management plan is outlined in Table 1.

Table 1: Structure of the Management plan

section	Content
1	Provides an overview of the project, and objectives of the plan
2	Details the statutory requirements as outlined in the conditions of consent dated March 2020
3	Describes the existing environment of the site

Peppertree Quarry: Air Quality Management Plan

4	Describes the air quality management actions in place and to be implemented in the operation of the quarry
5	Requirements of modification 5 and Modification 6 Air quality management
6	Air quality monitoring protocols
7	Air quality assessment criteria
8	Outlines incident planning and responses
9	Financial provisions for the work required
10	Specifies training requirements
11	Outlines the reporting and review requirements
12	Lists references used in the plan preparation

2 STATUTORY REQUIREMENTS

2.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The project was declared a 'major development' under the provisions of Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act) and State Environmental Planning Policy (SEPP Major Development) 2005. Since Project Approval was granted in 2007, there have been five approved modifications (with conditions), as detailed below:

- Modification 1 (2009): approved for exploratory blasting and test pitting in order to verify the design of the processing plant;
- Modification 2 (2011): approved for the construction of a new rail line rather than use the existing rail facilities to the Limestone Mine; and
- Modification 3 (2012): approved the construction of a high voltage power line from an existing substation to the processing plant and to provide a rail siding near the junction with the Main Southern Railway Line.
- Modification 4 (2016): approved for the extension of daily in-pit operating hours and Establishment of a new overburden emplacement area.
- Modification 5 (2019): approved for the development a new overburden area (SWOE) south of the existing WOE in the north-western corner of the Limestone Mine.
- Modification 6 (2020) approved for the replacement of existing dust extraction units with two baghouses and associated duct work.

The quarrying operations will continue to be subject to the provisions of the EP&A Act for any subsequent changes or modifications to the operations. Additionally, the operations will need to be able to demonstrate compliance against the current CoA of the Project Approval relevant to air quality issued under the provisions of the EP&A Act (refer to Table 2).

Table 2: Conditions of Approval (Project Approval – Modification 5 and Modification 6)

CoA	Condition of Project Approval	Addressed in Section
A17	Evidence of Consultation Where conditions of this approval require consultation with an identified party, the Proponent must: (a) consult with the relevant party prior to submitting the subject document; and (b) provide details of the consultation undertaken including: (i) the outcome of that consultation, matters resolved and unresolved; and (ii) details of any disagreement remaining between the party consulted and the Proponent and how the Proponent has addressed the matters not resolved.	Section 1.5 Annex A
B19	<u>Odour</u> The Proponent must ensure that no offensive odours, as defined under the POEO Act, are emitted from the site.	Section 4.1

CoA	Condition of Project Approval	Addressed in Section																			
B20	<u>Air Quality Criteria</u> The Proponent must ensure that particulate matter emissions generated by the project do not cause exceedances of the criteria in Table 6 at any residence on privately-owned land, or on more than 25 percent of any privately owned land. Table 6: <i>Air quality criteria</i> <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>^d 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 project plus background concentrations due to all other sources). ^b Incremental impact (i.e. incremental increase in concentrations due to the project 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	^d Deposited dust	Annual	^b 2 g/m ² /month ^a 4 g/m ² /month	Section 3.1 Section 7
Pollutant	Averaging period	Criterion																			
Particulate matter < 10 µm (PM ₁₀)	Annual	^{a, c} 25 µg/m ³																			
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^d Deposited dust	Annual	^b 2 g/m ² /month ^a 4 g/m ² /month																			
B21	The air quality criteria in Table 6 do not apply if the Proponent has an agreement with the owner/s of the relevant residence or infrastructure to exceed the air quality criteria, and the Proponent has advised the Department in writing of the terms of this agreement.	Section 7																			
B22	<u>Air Quality Operating Conditions</u> The Proponent must: (a) take all reasonable steps to: (i) minimise odour, fume and particulate matter (including PM₁₀ and PM_{2.5}) emissions of the development, paying particular attention to minimising wheel-generated haul road emissions; (ii) improve energy efficiency and reduce greenhouse gas emissions of the development; (iii) minimise any visible off-site air pollution generated by the project; and (iv) minimise the extent of potential dust generating surfaces exposed on the site at any given point in time; (b) operate an air quality management system to guide the day to day planning of quarrying operations and implementation of both proactive and reactive air quality mitigation measures to ensure compliance with the relevant conditions of this approval;	Section 4 Section 5																			

CoA	Condition of Project Approval	Addressed in Section
	© minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events	Section 4.5
	(d) take all reasonable steps to minimise the cumulative air quality impacts generated by the project and the Marulan South Limestone Mine;	Section 4
	(e) carry out regular air quality monitoring to determine whether the project is complying with the relevant	Section 4.1
	(f) regularly assess meteorological and air quality monitoring data and relocate, modify or stop operations on the site to ensure compliance with the relevant conditions of this approval.	Section 4.5
B23	Air Quality and Greenhouse Gas Management Plan The Proponent must prepare a detailed Air Quality Management Plan for the project to the satisfaction of the Secretary. This plan must:	
	(a) be prepared by a suitably qualified and experienced person/s;	Section 1
	((b) be prepared in consultation with the EPA;	Section 1.5
	(c) describe the measures to be implemented to ensure: (i) compliance with the air quality criteria and operating conditions in this approval; (ii) best practice management is being employed (including in respect of minimisation of greenhouse gas emissions from the site and energy efficiency); and (iii) air quality impacts of the project are minimised during adverse meteorological conditions and extraordinary events;	Section 4
	(d) describe the air quality management system; and	Section 5
	(e) include an air quality monitoring program, undertaken in accordance with the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007), that: (i) is capable of evaluating the performance of the project against the air quality criteria; (ii) uses a combination of high volume samplers and dust deposition gauges to evaluate the performance of the project; (iii) adequately supports the air quality management system; (iv) includes a protocol for identifying any air quality-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of these events; and (v) provides for the use of real-time monitoring measures, if directed by the Secretary.	Section 6

CoA	Condition of Project Approval	Addressed in Section
B24	The Proponent must submit the Air Quality and Greenhouse Gas Management Plan for approval by the Secretary, within three months of the approval of Modification 5.	Section 11.4
B25	The Proponent must implement the Air Quality and Greenhouse Gas Management Plan as approved by the Secretary.	Section 11.4
B26	Meteorological Monitoring Prior to the commencement of construction and for the life of the project, the Proponent must ensure that there is a suitable meteorological station operating in close proximity to the site that: (a) complies with the requirements in the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007); and (b) is capable of measuring meteorological conditions in accordance with the NSW Noise Policy for Industry (EPA, 2017), unless a suitable alternative is approved by the Secretary following consultation with the EPA.	Section 6.4 Section 6.4
C1	Notification of Exceedances As soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of any noise, blasting or air quality criterion in PART B of this consent, the Applicant must provide the details of the exceedance to any affected landowners and/or tenants. For any exceedance of any air quality criterion in PART B of this consent, the Applicant must also provide to any affected land owners and tenants a copy of the fact sheet entitled "Mine Dust and You" (NSW Health, 2017).	Section 8.3.1
C2	Independent Review If a landowner considers the project to be exceeding any noise, blasting or air quality criterion in PART B of this approval, they may ask the Secretary in writing for an independent review of the impacts of the project on their land.	Section 8.3.2
C3	If the Secretary is not satisfied that an independent review is warranted, the Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review.	Section 8.3.2
C4	If the Secretary is satisfied that an independent review is warranted, within 3 months, or as otherwise agreed by the Secretary and the landowner, of the Secretary's decision, the Proponent must: (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to: (i) consult with the landowner to determine their concerns;	Section 8.3.2

CoA	Condition of Project Approval	Addressed in Section
	(ii) conduct monitoring to determine whether the project is complying with the relevant criteria in PART B of this approval; and (iii) if the project is not complying with that criteria, identify measures that could be implemented to ensure compliance with the relevant criteria; and	
	(b) give the Secretary and landowner a copy of the independent review; and	Section 8.3.2
	(c) Comply with any written requests made by the Secretary to implement any findings of the review.	Section 8.3.2
C5	If the independent review determines that the quarrying operations are complying with the relevant criteria in PART B, then the Proponent may discontinue the independent review with the approval of the Secretary.	Section 8.3.2
C6	If the independent review determines that the quarrying operations are not complying with the relevant criteria in PART B, and that the quarry is primarily responsible for this non-compliance, then the Proponent must:	
	(a) implement all reasonable and feasible mitigation measures, in consultation with the landowner and appointed independent expert, and conduct further monitoring until the project complies with the relevant criteria; or	Section 8.3.2
	(b) secure a written agreement with the landowner to allow exceedances of the relevant impact assessment criteria, to the satisfaction of the Secretary.	Section 8.3.2
	If the independent review determines that the project is not complying with the relevant acquisition criteria, and that the project is primarily responsible for this non-compliance, then upon receiving a written request from the landowner, the Proponent must acquire all or part of the landowner's land in accordance with the procedures in conditions C8 and C9 below.	Section 8.3.2
C7	If the independent review determines that the relevant criteria are being exceeded, but that more than one quarry/mine is responsible for this exceedance, then together with the relevant quarry/mine/s, the Proponent must:	
	(a) implement all reasonable and feasible mitigation measures, in consultation with the landowner and appointed independent expert, and conduct further monitoring until there is compliance with the relevant criteria; or	Section 8.3.2
	(b) secure a written agreement with the landowner and other relevant mine/s to allow exceedances of the relevant impact assessment criteria, to the satisfaction of the Secretary.	Section 8.3.2
	If the independent review determines that the project is not complying with the relevant acquisition criteria in Part B, but that more than one mine is responsible for this non-compliance, then upon receiving a written request from the landowner, the Proponent must acquire all or part of the landowner's land on as equitable a basis as possible with the relevant quarries/mine/s, in accordance with the procedures in conditions C8 and C9 below.	Section 8.3.2

CoA	Condition of Project Approval	Addressed in Section
C8	Land Acquisition Within 3 months of receiving a written request from a landowner with acquisition rights, the Proponent must make a binding written offer to the landowner based on:	
	(a) the current market value of the landowner's interest in the property at the date of this written request, as if the land was unaffected by the project the subject of the project application, having regard to the: (i) existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and (ii) presence of improvements on the land and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date;	Section 8.3.2
	(b) the reasonable costs associated with: (i) relocating within the Goulburn Mulwaree local government area, or to any other local government area determined by the Secretary; and (ii) obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is required; and	Section 8.3.2
	(c) reasonable compensation for any disturbance caused by the land acquisition process.	Section 8.3.2
	However, if at the end of this period, the Proponent and landowner cannot agree on the acquisition price of the land, and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Secretary for resolution. Upon receiving such a request, the Secretary will request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer to: (a) consider submissions from both parties; (b) determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in paragraphs (a)-(c) above; (c) prepare a detailed report setting out the reasons for any determination; and (d) provide a copy of the report to both parties. Within 14 days of receiving the independent valuer's report, the Proponent must make a binding written offer to the landowner to purchase the land at a price not less than the independent valuer's determination. However, if either party disputes the independent valuer's determination, then within 14 days of receiving the independent valuer's report, they may refer the matter to the Secretary for review. Any request for a review must be accompanied by a detailed report setting out the reasons why the party disputes the independent valuer's determination. Following consultation with the independent valuer and both parties, the Secretary will determine a fair and reasonable acquisition price for the land, having regard to the matters referred to in paragraphs (a)-(c) above, the independent valuer's	Section 8.3.2

CoA	Condition of Project Approval	Addressed in Section
	report, the detailed report of the party that disputes the independent valuer's determination and any other relevant submissions. Within 14 days of this determination, the Proponent must make a binding written offer to the landowner to purchase the land at a price not less than the Secretary's determination. If the landowner refuses to accept the Proponent's binding written offer under this condition within six months of the offer being made,	
C9	The Proponent must pay all reasonable costs associated with the land acquisition process described in condition C8 above, including the costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of this plan at the Office of the Registrar-General.	Section 8.3.2
D4	Management Plan Requirements The Proponent must ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
	(a) a summary of relevant background or baseline data;	Section 3.1
	(b) details of: (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions); (ii) any relevant limits or performance measures and criteria; and (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;	Section 2 Section 7 Section 4.1
	(c) any relevant commitments or recommendations identified in the document/s listed in condition(c);	Section 2
	(d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 4
	(e) a program to monitor and report on the: (i) impacts and environmental performance of the project; and (ii) effectiveness of the management measures set out pursuant to condition D4(d);	Section 6
	(f) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 8
	(g) a program to investigate and implement ways to improve the environmental performance of the project over time;	Section 11
	(h) a protocol for managing and reporting any: (i) incident, non-compliance or exceedance of the impact assessment criteria or performance criteria;	Section 8

CoA	Condition of Project Approval	Addressed in Section
	(ii) complaint; or (iii) failure to comply with statutory requirements;	
	(i) public sources of information and data to assist stakeholders in understanding environmental impacts of the development;	Section 11
	(j) a protocol for periodic review of the plan; and	Section 11
	(k) a document control table that includes version numbers, dates when the management plan was prepared and reviewed, names and positions of people who prepared and reviewed the management plan, a description of any revisions made and the date of the Secretary's approval.	Document Control Page
D5	Adaptive management The Proponent must assess and manage project-related risks to ensure that there are no exceedances of the criteria and/or performance measures in PART B. Any exceedance of these criteria and/or performance measures constitutes a breach of this approval 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 Proponent must, at the earliest opportunity: (a) take all reasonable and feasible measures to ensure that the exceedance ceases and does not re-occur; (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.	Section 8
D6	Revision of Strategies, Plans & Programs Within three months of: (a) the submission of an incident report under condition D9; (b) the submission of an Annual Review under condition D11; (c) the submission of an Independent Environmental Audit under condition D13; (d) the approval of any modification of the conditions of this approval (unless the conditions require otherwise); (e) notification of a change in project stage under condition A15; or (f) the issue of a direction of the Secretary under condition A2(b) which requires a review, the suitability of existing strategies, plans and programs required under this approval must be reviewed by the Proponent.	Section 8 Section 11

CoA	Condition of Project Approval	Addressed in Section
D7	If necessary, to either improve the environmental performance of the project, cater for a modification or comply with a direction, the strategies, plans and programs required under this approval must be revised, to the satisfaction of the Secretary and submitted to the Secretary for approval within six weeks of the review. Note: This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the project.	Section 11.4
D8	The Proponent must continue to apply existing management plans, strategies or monitoring programs approved prior to the determination of Modification 5, until the approval of a similar plan, strategy or program following the determination of Modification 5.	Section 11.4
D9	Reporting and Auditing Incident Notification The Proponent must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing to compliance@planning.nsw.gov.au and identify the project (including the project application number and name) and set out the location and nature of the incident.	Section 11.2
D10	Non-Compliance Notification Within seven days of becoming aware of a non-compliance, the Proponent must notify the Department of the noncompliance. The notification must be in writing to compliance@planning.nsw.gov.au and identify the project (including the project application number and name), set out the condition of this approval that the project is noncompliant 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. Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.	Section 11
D11	Annual Review By the end of March in each year after the commencement of project, or other timeframe agreed by the Secretary, a report must be submitted to the Department reviewing the environmental performance of the project, to the satisfaction of the Secretary. This review must: (a) describe the project (including any rehabilitation) that was carried out in the previous calendar year, and the project 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 project over the previous calendar year, including a comparison of these results against the: (i) relevant statutory requirements, limits or performance measures/criteria; (ii) requirements of any plan or program required under this approval;	Section 11.2

CoA	Condition of Project Approval	Addressed in Section
	(iii) monitoring results of previous years; and (iv) relevant predictions in the documents listed condition A2(c). (c) identify any non-compliance or incident which occurred in the previous calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence; (d) evaluate and report on: (i) the effectiveness of the noise and air quality management systems; and (ii) compliance with the performance measures, criteria and operating conditions in this approval; (e) identify any trends in the monitoring data over the life of the project; (f) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and (g) describe what measures will be implemented over the next calendar year to improve the environmental performance of the project.	
D12	Copies of the Annual Review must be submitted to Council and made available to the CCC and any interested person upon request.	Section 11.2
D13	Independent Environmental Audit Within three years of the date of the commencement of construction, and every three years after, unless the Secretary directs otherwise, the Proponent must commission and pay the full cost of an Independent Environmental Audit of the project. The audit must: (a) be led by a suitably qualified, experienced and independent auditor whose appointment has been endorsed by the Secretary; (b) be conducted by a suitably qualified, experienced and independent team of experts (including any expert in field/s specified by the Secretary) whose appointment has been endorsed by the Secretary; (c) be carried out in consultation with the relevant agencies and the CCC; (d) assess the environmental performance of the project and whether it is complying with the relevant requirements in this approval, any relevant EPL, water licences and mining leases for the project (including any assessment, strategy, plan or program required under these approvals); (e) review the adequacy of any approved strategy, plan or program required under the abovementioned approvals and this approval; (f) recommend appropriate measures or actions to improve the environmental performance of the project and any assessment, strategy,	Section 11.3

CoA	Condition of Project Approval	Addressed in Section
	plan or program required under the abovementioned approvals and this approval; and (g) be conducted and reported to the satisfaction of the Secretary. Within three months of commencing an Independent Environmental Audit, or within another timeframe agreed by the Secretary, the Proponent must submit a copy of the audit report to the Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the Secretary.	
D14	Monitoring and Environmental Audit Any condition of this approval that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit. For the purposes of this condition, as set out in the EP&A Act, “monitoring” is monitoring of the project to provide data on compliance with the approval or on the environmental impact of the project, and an “environmental audit” is a periodic or particular documented evaluation of the project to provide information on compliance with the approval or the environmental management or impact of the project.	Section 11
D15	Noise, blast and air quality monitoring under this consent may be undertaken at suitable representative monitoring locations instead of at privately-owned residences or other locations listed in Part B, providing that these representative monitoring locations are set out in the respective management plan/s.	Section 3
	Appendix 8 – Incident Notification and Reporting Requirements Written Incident Notification Requirements A written incident notification addressing the requirements set out below must be emailed to the Department at the following address: compliance@planning.nsw.gov.au within seven days after the Proponent becomes aware of an incident. Notification is required to be given under this condition even if the Proponent fails to give the notification required under condition D9 or, having given such notification, subsequently forms the view that an incident has not occurred.	

2.1.1 Statement of Commitments

The EA for Peppertree Quarry recommends a range of measures to avoid, manage, mitigate, offset and/or monitor the environmental impacts of the project, as set out in the Statement of Commitments. Commitments that relate to air quality management are set out in Table 3 below.

Table 3: Statement of Commitments (EA, 2006)

Statement of Commitment	Referenced in AQMP
Measures to minimise and mitigate dust emissions will be put in place to ensure that no significant air quality impacts occur to surrounding residential and recreational receivers as a result of the proposed operations. • covering of conveyors; • enclosing the tertiary crushing and screening plant and installing a dust suppression system; • fitting of scraper for cleaning conveyor belts; • operating dust suppression sprays on the primary crusher; • fitting drills with either water sprays or dry dust collection devices; • watering stockpiles of fine material; • confining traffic to identified and watered haul roads; • removal and rehabilitation of unnecessary roads; • keeping exposed areas to a minimum; • cleaning of areas which could become sources of wind erosion dust due to build-up of settled fine material; • reviewing meteorological conditions prior to blasting to minimise the exposure of residences to dust emissions; and • daily assessment of meteorological conditions to identify wind conditions that may be conducive to excessive dust generation – for example, very high winds	Section 4
Air quality monitoring will determine changes to air quality beyond the boundary of the site. This will determine whether mitigation measures are effective in ensuring that annual average dust concentrations and dust deposition levels, and short-term (24-hour average) air quality impacts remain below relevant air quality criteria at the nearest residences.	Section 6

2.1.2 Overview of Modification 5 and Modification 6

Modification 5 was approved in October 2019, allowing a new overburden area (SWOE) south of the existing WOE in the north-western corner of the Limestone Mine to be developed. The consent boundary has been extended to the south to encompass the SWOE. The modification also incorporates a new haul road from the pit to the SWOE and construction of a new intersection at Marulan South Road. The modification includes the amendment of the design of the WOE and relocation of the powerline along the eastern and southern side of Marulan South Road to the intersection with Cooper Crescent, then divert south into the Limestone Mine's infrastructure area.

An Air Quality Impact Assessment (AQIA) was conducted as part of the Modification 5 approval application which considered the potential impacts associated with the SWOE. The AQIA concluded that with the implementation of the existing Peppertree Quarry Air Quality Management Plan and associated management measures, all relevant air quality criteria would be met at all identified sensitive receivers.

Modification 6 was approved in April 2020, allowing for the removal of existing air filtration systems and installation of two baghouse extraction units and ducting to remove excess particulate matter (i.e. fines) associated with the operation of the crushing and screening plant.

An Air Quality Assessment (AQA) was conducted as part of the Modification 6 approval application which considered the potential impacts associated with the baghouse operations. The AQA concluded that installation and operation of the baghouses "would not generate any unacceptable additional dust emissions and overall, it is reasonable to conclude that the Modification would reduce dust generated from

the operation and is unlikely to cause any adverse impact at any surrounding privately owned receptor locations relative to the approved Quarry”

As such, this revised AQMP remains substantially consistent with the initial 2011 version with additional detail reflecting CoA within Modification 5 and 6 and current quarry activities as of 2020.

2.2 PROTECTION OF ENVIRONMENT OPERATIONS ACT 1997

The objectives of the *Protection of Environment Operations Act 1997* (POEO Act) are to protect, restore and enhance the quality of the environment. Some of the mechanisms that can be applied, under the POEO Act, to achieve these objectives include reduction of pollution at source, monitoring and reporting of environmental quality.

Based on annual production volumes, Peppertree Quarry has been determined to be a ‘Scheduled Activity’ under Schedule 1 of the POEO Act which requires site operations to be the subject of an Environmental Protection Licence (EPL No. 13088).

The EPL has the following compliance conditions relevant to air quality management:

- Condition P1.1: Details the locations of two high volume air samplers and three dust deposition gauges across the Quarry.
- Condition O3.1: Requires the premises to be maintained in a condition which minimises or prevents the emission of dust from the premises.
- Condition M2.1: Requires results of monitoring to be recorded and retained.
- Condition M2.2: Monitoring requirements associated with the high volume air samplers and dust deposition gauges.

2.3 BORAL COMMITMENTS TO AIR MANAGEMENT

2.3.1 Integrated Management System

2.3.1.1 Continual Improvement

The Quarry operates under a Boral integrated Health, Safety, Environment and Quality Management System (HSEQMS). The HSEQMS has commitments to the Boral Environmental Policy through established standards and procedures which require internal conformance to high levels of environmental performance with continual improvement objectives.

Boral have an established corporate and divisional risk-based audit program that periodically assess operational sites for conformance with HSEQMS requirements. In addition, the Quarry must be the subject of an Independent Audit every three years.

The HSEQMS Air Standard (GRP-HSEQ-8-06) requires each Boral operation quarry to undertake activities in accordance with the following commitments in relation to point and fugitive sources of air emissions:

2.3.1.2 *Fugitive Sources*

- adoption of the best practicable technology when designing new or upgrading existing plant and equipment – apply general principles of emission control and management in the design process;
- air quality impacts and prevention measures are to be considered when preparing and conducting workplace assessments, Job Safety and Environmental Analysis (JSEA), Safe Work Method Statements (SWMS) and site inspections;
- major sources of emissions to air must be included in the site's Environmental Aspects and Impacts Register (also refer to the GRP-HSEQ-8-01 Environmental Aspects and Impacts Standard);
- monitoring of emissions to air is to be carried out according to the requirements specified in the site's Environment Protection Licence and other applicable legislation;
- written calibration procedures for monitoring equipment such as dust monitors and gas analysers are to be maintained to ensure monitoring results are as accurate as possible;
- written operating and maintenance procedures are to be maintained for all plant and equipment to ensure these are operated as efficiently as possible;
- strategies are to be developed and implemented to reduce the frequency of process upsets which could adversely affect emissions to air; and
- adequacy of existing procedures should be verified – where they are not adequate, new procedures should be developed and implemented

2.3.1.3 *Point Sources*

- selection and installation of bag filters and other dust control devices to reduce solid particulate emissions;
- selection of suitable technologies to reduce emissions of other air contaminants;
- conveyor design to reduce chute drop-height and the number of transfer points to reduce dust emissions; and
- equipment enclosure.

2.3.1.4 *Incident Management*

The HSEQMS Air Standard (GRP-HSEQ-8-06) has a roles and responsibilities protocol for the management of any air emission related incident that requires the following actions when any incident involving excessive emissions to air occurs:

- Identification and reporting: All personnel are trained to recognise and report excessive air emissions to Quarry Manager, Site Environmental Officer or Shift Supervisor;
- Take immediate action to prevent or minimise the air emission incidents which may involve ceasing operations completely and applying dust minimisation controls (i.e. water cart and Sprays);
- Continue to monitor operations and meteorological conditions to ensure emissions to air are maintained within approved levels;
- If necessary, report the incident to relevant stakeholders in accordance with the site's Pollution Incident Response Management Plan
- Only resume operations when the cause of the incident has been investigated and mitigated; and
- Investigate the contributing factors associated with the incident and apply any learnings through communication, additional controls and revision of management plans/procedures.

3 AIR QUALITY OVERVIEW

3.1 AMBIENT AIR QUALITY

The main sources of air emissions in the wider area of the Quarry include extractive industries, commercial and industrial operations, agricultural activities, emissions from local anthropogenic activities (such as motor vehicle exhaust, dust from dirt roads, and domestic wood heaters) and various other rural activities.

Ambient air quality monitoring has previously been conducted in the vicinity of the site and provides background pre-quarry dust concentrations and deposition levels.

High volume air samplers were operated at two locations, over four months in 2005/2006, to provide information on existing air quality, for the Environmental Assessment (EA) for the project. Concentrations of total suspended particulates (TSP) and particles with an equivalent aerodynamic diameter of less than 10µm (PM₁₀) were monitored. The results are presented in the original project EA (ERM 2006).

As part of its operation at Peppertree quarry, an air quality monitoring network is operated and includes two High Volume Air Samplers (HVAS) measuring TSP or PM₁₀ respectively and three dust deposition gauges (Refer to Figure 2). The monitors have been in operation in the same locations prior to the Quarry being constructed and becoming operational. HVAS and dust deposition data during the years between 2011 and 2019 against relevant criteria is presented in Tables 4, 5 and 6 below.

It can be seen from Table 4 that that annual average PM₁₀ levels at these monitors are below the criteria of 30µg/m³ at all sites. It is noted that the Project Approval for Modification 5 (October 2019) and 6 (April 2020), the annual average PM₁₀ criteria is 25µg/m³. The maximum 24-hour average PM₁₀ concentrations were on occasion above the criteria of 50µg/m³ during the monitoring period. The HVAS is positioned close to mining activities which is likely to influence the results on occasions and it is also possible that events such as bushfires and wind storms may also have contributed to the elevated concentrations in 2011 and 2019.

Table 5 indicates that the available TSP concentrations between 2011 and 2019 measured at the HVAS monitor were considerably below the criterion of 90µg/m³.

PM₁₀ forms a fraction of the Total Suspended Particulates (TSP). When the annual average levels are compared over the 8 years data there is an approximate ratio of 2:1 TSP to PM₁₀ respectively, i.e. PM₁₀ would appear to be 50% of the makeup of the TSP.

Table 6 indicates the dust gauges typically recorded annual average insoluble deposition levels below the criterion of 4g/m²/month after commencement of quarry operations in 2014. As previously noted, the dust gauges that recorded generally higher levels are likely to be influenced by their close location relative to the mining and quarrying activities and are not likely to be representative of levels beyond the Quarry boundaries. Samples are also often contaminated with bird droppings and/or insects which can increase the insoluble solid content.

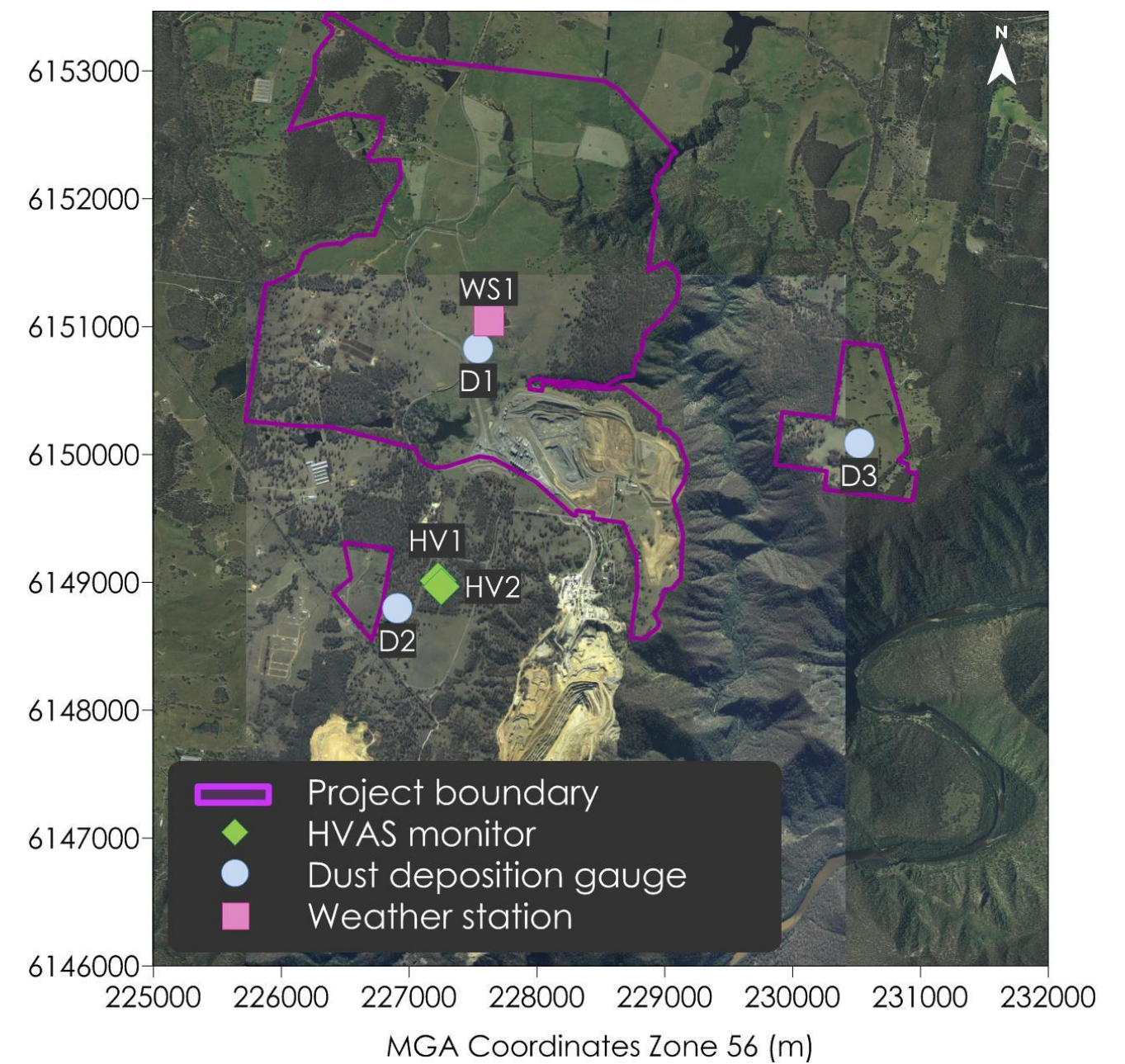


Figure 2: Existing Air Quality Monitoring Locations

Table 4: PM₁₀ levels from HV2 HVAS monitoring (µg/m³)

Year	Annual Average	Annual Average PM ₁₀ Criterion	Max 24-hr Average	24-hour Average PM ₁₀ Criterion
2011⁽¹⁾	-	30	37.5	50
2012	15.9	30	70.4	50
2013	13.8	30	42.2	50
2014	17.9	30	50.5	50
2015	23.7	30	158.3	50
2016	16.8	30	58.2	50
2017	19.7	30	80.9	50
2018	26.0	30	114.5	50
2019	24.64	25 ⁽³⁾	124.15 ⁽²⁾	50

Data sourced from: Air Quality Impacts Assessment – Modification 5 (Todoroski Air Sciences, 2018) and updated monitoring data

⁽¹⁾Data available from July 2011

⁽²⁾ Associated with bushfire

⁽³⁾Annual average criterion of 25µg/m³ in affect following approval of Modification 5 in October 2019

Table 5: TSP levels from HV1 HVAS monitoring (µg/m³)

Year	Annual Average	Annual Average TSP Criterion
2011⁽¹⁾	32.1	90
2012	31.4	90
2013	28.3	90
2014	39.2	90
2015	46.6	90
2016	38.8	90
2017	41.9	90
2018	54.5	90
2019	65.53	90

Data sourced from: Air Quality Impacts Assessment – Modification 5 (Todoroski Air Sciences, 2018) and updated monitoring data

⁽¹⁾Data available from July 2011

Table 6: Annual average dust deposition (insoluble solids - g/m²/month)

Year	Dust Deposition Gauge - Annual Average			Annual Average Criterion
	D1	D2	D3	
2012	6.8	1.9	2.3	4
2013	4.2	2.2	2.8	4
2014	4.5	1.8	2.8	4
2015	-	2.6	-	4
2016	-	2.5	-	4
2017	5.7	3.1	4.7	4
2018	7.8	3.9	4.5	4
2019	2.94	2.3	3.04	4

Data sourced from: Air Quality Impacts Assessment – Modification 5 (Todoroski Air Sciences, 2018)

4 AIR QUALITY MANAGEMENT CONTROLS

4.1 AIR MANAGEMENT OBJECTIVES AND PERFORMANCE CRITERIA

The primary objectives of this Air Quality Management Plan are to provide guidance and direction for Quarry activities to be conducted in a manner whereby appropriate control measures are implemented to minimise the potential for adverse impacts on air quality and offsite disturbances and to meet compliance requirements of the CoA of the Project Approval.

Due to the nature of the quarry activities odours are not generated.

The performance criteria will be used to assess the success of the management actions and are outlined in Table 7.

Table 7: Air Quality management objectives and performance criteria

Objective	Performance criteria
Compliance with regulatory requirements including Project Approval and EPA Environment Protection Licence	No non compliances
implement best reasonable and feasible management practices to minimise off-site odour, fume and dust emissions	Management controls in the AQMP in place
minimise visual air pollution generated by the activities	Management controls in the AQMP in place
identify triggers for implementation of additional management response measures where required	SOP in place regarding dust suppression activities
implement best reasonable and feasible management practices to minimise off-site odour, fume and dust emissions	Management controls in the AQMP in place
assess the effectiveness of air quality control measures	Monthly review of air monitoring data including complaints
quantify changes to air quality at residences and private properties near the site	Undertake monitoring as outlined in AQMP
ensure dust concentrations and deposition levels remain below relevant air quality criteria at the nearest residences	Monthly review of air monitoring data including complaints Management controls in the AQMP in place
obtain information to provide a basis for assessing the ongoing impact of Peppertree Quarry on air quality;	Monitoring undertaken as per the AQMP

4.2 ASPECTS AND IMPACTS

In accordance with HSEQMS requirements, the Quarry has developed an aspects and impacts register which aligns with Australian & New Zealand Standard AS/NZS 31000:2009 Risk Management - Principles and Guidelines. The register has identified, risk assessed and applied appropriate controls to activities with potential for adverse air quality impacts, some of which include.

- drilling and blasting of rock;
- vehicles and plant travelling on unpaved surfaces;
- loading and unloading of material to crushers, stockpiles, trains and trucks;
- crushing and screening of rock; and
- wind erosion from stockpiles and unpaved exposed areas.

The Aspects and Impacts registered is reviewed on an annual basis, when changes are made to the operations or when a non-compliance arises.

4.3 BEST PRACTICE AIR QUALITY MANAGEMENT

The Independent Audit undertaken in 2018, recommended that the AQMP includes a section on best practice management in the industry and the application at the quarry if relevant.

The relevant best practise methodologies have been extrapolated from Australian Government Department of Industry, Innovation and Science Leading Practice - *Sustainable Development Program for the Mining Industry Handbook for Airborne Contaminants, Noise and Vibration* (Commonwealth of Australia 2009) and *NSW Coal Mining Benchmarking Study: best practice measures to prevent and/or Minimise Emissions of Particulate Matter from Coal Mining* (Office of Environment and Heritage June 2011).

Table 8 outlines the best practice methodologies, the section in which each methodology is addressed in the AQMP, and its application at Peppertree Quarry.

Table 8 Peppertree Quarry – Best Practice Methodologies

Best Practice		Addressed in Section	Peppertree Quarry application
Haul roads	- Haul Road Watering - Road sweeping - Road Grading - Permanent sealing site roads - Maintain all sealed roads - Minimise haul distances - Chemical dust suppressant on unsealed roads - Well defined haul routes - Speed limits on haul roads - Watering during peak activity periods (shift changes) - Vegetating obsolete haul roads - Truck wash	Section 4.4, 4.5, 4.6	- Implemented as part of operations. Procedure in place for design, construction and management of haul roads. - Suppressants used as required. - Watering in place - Car wash in place as no product despatch by rail.

Best Practice		Addressed in Section	Peppertree Quarry application
Disturbed land / wind erosion	Water exposed areas/active areas Topsoil stripping when moisture is elevated but not sodden Minimise area of disturbance Chemical dust suppressants Stockpile moisture content measured and controlled Wind barriers Suppressant on ROM stockpiles Progressive rehabilitation Use of ameliorants to improve soil Hydraulic mulch seeding Use of Organic Growth Medium (OGM) Rehabilitation Strategy	Section 4.4, 4.5, 4.6	Areas are watered. Topsoil stripping not undertaken if windy No suppressants used but rock mulch as applicable No ROM stockpile. Other stockpiles are limited as product stored in silos. Rehabilitation strategy in place which includes range of actions used as required
Blasting	No Blasting during adverse weather conditions Blast during day only Advise local residents of blasting times Gravel stemming blast holes Blast protocol Coordination with surrounding mines Drill rigs have dust curtains Water sprays on the drill Fabric filters on the drill No drilling in adverse weather Drill area moistened	Section 4.4, 4.5	Implemented as part of operations. Procedure in place for blasting operations.
Load and Dump	water sprays or boom spray on water cart Automatic water sprays Minimise drop height Suspension or modification of operations during adverse weather No dumping on high emplacements in strong winds	Section 4.4, 4.5	Implemented as part of operations. Limited load and dump operations due to mobile in pit crusher
Conveyors and transfer points	Conveyor wind shielding - roof Conveyor wind shielding - one or two sides Water sprays at transfers Enclosed transfers Soft-loading chutes	Section 4.4, 4.5	Implemented as part of operations during design phase.
Crushing and screening	Water sprays or boom spray on water cart for mobile screens Active site area cleaned regularly Variable height stacker or tripper with chute/windshield	Section 4.4, 4.5	Implemented as part of operations during design phase.

Best Practice		Addressed in Section	Peppertree Quarry application
	Dust extractor system for fixed operations		
Management tools	Meteorological monitoring Dust deposition gauges TEOMs HVAS Directional gauge Continuous, non-standard particulate measurement method GPS in trucks aid dust controls SMS alarm system during high winds Ceasing or modifying activities on dry windy days considering monitoring information	Section 4.6	Implemented as part of operations with procedure in place

4.4 PLANNING CONTROLS

Having been constructed and becoming operational between 2011 and 2014 respectively, the environmental aspects of the Quarry have benefited by procurement of modern equipment and controls which align with best practice and ability to plan site layout design to minimise potential for adverse incremental and total impacts associated with quarry activities generated by the project. Some examples of these benefits are:

- The ability to progressively relocate the primary crusher into the quarry pit with construction of fixed conveyors, which has significantly reduced the haulage of materials from extraction areas. This results in a reduction of fuel usage and air emissions (i.e. noise, dust and exhaust) due to the reduction in truck movements;
- Reduced dust through fully enclosed conveyors delivering final product sizes to the enclosed silos;
- Use of rail as the primary transport of products into the Sydney market has significantly reduced air emissions impacts and congestion on road networks;
- Use of modern technology in monitoring meteorological conditions for proactive management of operations;
- Purchase of buffer land surrounding prior to commencement of operations.

4.5 ENGINEERED CONTROLS

A range of engineering controls have been incorporated into the design and operation of the quarry to minimise the potential for dust generation resulting in offsite disturbances.

The range of engineering controls now available to the operations include:

- 2 baghouse extraction systems associated with the main crushing and screening plant,
- Covering of conveyors and transfer points;

- Enclosure of crushing and screening plant with dust extraction system fitted;
- Fitting of scrapers for cleaning conveyor belts;
- Dust suppression sprays on the primary crusher and conveyors such as CV199
- Fitting drills with either water sprays and/or dry dust collection devices;
- Enclosure of train loading facilities;
- Conveyors instead of truck haulage of aggregate from the main pit;
- Haul roads and processing areas to be compacted and suitably constructed
- Reduction in disturbed areas by progressive rehabilitation;
- Location of primary crusher within the pit rather than processing plant area;
- Containment of aggregate materials within silos limiting the need to stockpile materials; and
- Controlling stockpiles of fine material with water sprays.
- Application of dust suppressants in the screening and crushing operations
- Use of Vacuum system and sucker trucks to remove dust build up
- Use of cool fog systems at key locations (main screen house and Train load out)
- Installation and use of a loading cone at the Train load out
- Operation of a pug mill at the filler silo to handle fine dusts

The Boral Electronic Asset Management (EAM) system is utilised to ensure engineering controls are maintained on a regular basis.

4.6 OPERATIONAL PROTOCOLS

In addition to the HSEQMS Standards, the Quarry has developed and implemented a range of site-specific operational management protocols with allocated responsibilities for the 'day-to-day' control of air emissions (refer to Table 9). The control of air emissions through this range of protocols will minimise disturbances offsite. An air management procedure is in place.

Table 9: Site-Specific Management Protocols

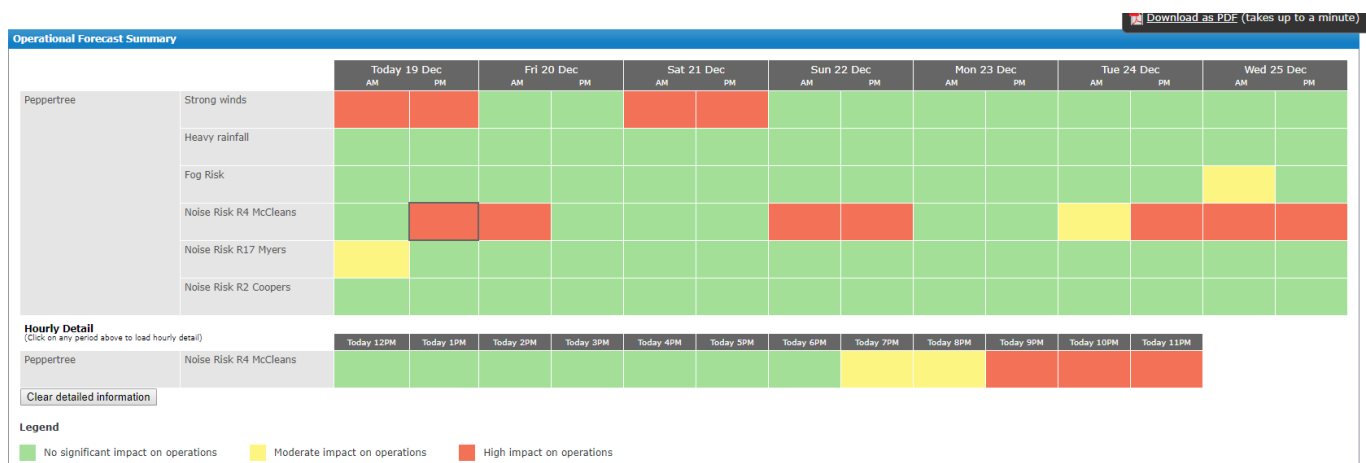
Control Measure	Implementation	Responsibility
Implementation of the requirements of this AQMP	Throughout Operations	Site Manager
Ongoing monitoring and reporting as described in this AQMP	Throughout Operations	Environmental Officer
Reviewing meteorological conditions regularly to guide quarry operations	Daily	Site Supervisor
Overburden haulage and placement will be guided by ambient weather conditions	Daily	Site Supervisor
Reviewing of meteorological conditions prior to blasting and amendment of plans if excessive dust generation is anticipated	Prior blasting	Site Supervisor
Topsoil stripping when moist either naturally or through application of water	Overburden Stripping	Site Supervisor

Control Measure	Implementation	Responsibility
Traffic restrictions to pre-determined haul routes and laydown areas	Throughout Operations	Site Manager
Exposed areas are to be kept to a minimum	Throughout Operations	Site Manager
Progressive rehabilitation of all noise bunds and spoil dumps wherever practicable	Throughout Operations	Environmental Officer
Watering of haul roads	As required	Site Supervisor
Use of suppressants on haul roads or unsealed areas where watering or rehabilitation is not effective or possible	As required	Site Supervisor
Restrictions on speed of vehicles on site	Ongoing	Site supervisor
Cleaning up of areas which could become sources of wind erosion dust due to build-up of settled fine material	As required	Site Supervisor
Education of staff through inductions	As required	Site Supervisor
Routine audits of pollution control equipment	As required	Site Supervisor
Onsite water cart	As required	Site Supervisor

4.6.1 Extreme weather control

In 2015, the Quarry commenced the utilisation of a commercially available weather forecasting dashboard which uses local weather data in providing predictions of meteorological conditions that may generate extreme dust and rain events (Refer to Figure 3). The Quarry has trained staff and developed procedures to take appropriate levels of action based on the dashboard predictions. Based on the level of an alert the Quarry can ensure controls and contingencies for dust management are effectively and efficiently implemented.

Figure 3: Weather Forecast and Predicted Impacts on Operations



5 MODIFICATIONS 5 AND 6 – AIR QUALITY MANAGEMENT

The Air Quality Impact Assessment conducted for Modifications 5 and 6, considered the potential impacts of the modifications on nearby sensitive residential receivers.

Relative to the existing operations, the proposed modification 5 is unlikely to contribute to any significant change in existing dust levels at identified sensitive receivers. This is supported by the modelling (AQIA) undertaken for the modification, which predicts that there would be no exceedances of NSW EPA air quality criteria at any privately owned receiver due to the modified Quarry operations and background sources (including the Limestone Mine).

Given this, and the demonstrated performance of existing operations via the implemented air quality monitoring regime, it is considered that the continued implementation of the approved *Peppertree Quarry Air Quality Management Plan* and associated management would be adequate to manage potential air quality impacts from the modified Quarry operations as part of Modification 5 proposal.

In regards to the installation and operation of the baghouses as per Modification 6, in general the operations of the quarry would not be altered with the exception of how captured fines are stored, prior to emplacement. The change to storage of the fines has the potential to reduce wind dispersion of the fines.

It was concluded that as the baghouses are located within the operating plant area and are designed to reduce dust levels relative to the current approved plant that predicted dust levels at the privately owned receptors would decrease in response to improved dust control measures on site.

6 AIR QUALITY MONITORING

This section details the air quality sampling program, including the monitoring sites, equipment and frequency of monitoring.

The Quarry monitors dust deposition and particulate matter (TSP, PM₁₀) concentrations on and in the vicinity of the site in accordance with the Project Approval CoAs and EPL requirements.

Two high volume samplers have been established to monitor TSP and PM₁₀ at a nearby residence. Three dust deposition gauges have been established at site boundaries and at nearby residences, supplemented by Boral Cement limestone mine's dust deposition gauges.

Modification 5 Approval now requires the monitoring of PM_{2.5}.

The Quarry are currently considering the use of two small, portable real-time dust monitors or a permanent stationary PM_{2.5}. HVAS. The portable real time monitors would be capable of continuously measuring concentration of particulates including TSP, PM₁₀ and PM_{2.5} fractions and allow for effective real-time reactive management. The monitors are portable and can be moved as required for operational air quality management purposes. They would be positioned at upwind/downwind locations to enable a quantifiable assessment of the relative particulate contribution downwind from the operations.

The stationary PM_{2.5}.HVAS would be located with the existing TSP and PM₁₀ HVAS.

Pursuant to the NSW Protection of the Environment Operation (Clean Air) Regulation 2010, the baghouse stack emissions are identified as belonging to Group 6 emissions standards and thereby have a solid particles (total) standard of concentration of emissions of 20mg/m³.

An on-site weather station has been installed to provide real-time monitoring of meteorological conditions throughout the quarry operations. In addition, the Quarry utilises a commercially available weather forecasting dashboard which uses local weather data in providing predictions of meteorological conditions that may generate extreme dust and rain events

A summary of air monitoring to be conducted is provided in Table 10. Siting and operation of air quality monitoring equipment is in accordance with Australian Standard methodology.

Table 10: Summary of Monitoring Program

Site	Parameter	Averaging Period	Sampling Period ¹	Sample Collection	Equipment
D1	Deposited Dust	1 Month	Continuous	Every 30 days (± 2 days)	Dust Deposition Gauge
D2	Deposited Dust	1 Month	Continuous	Every 30 days (± 2 days)	Dust Deposition Gauge
D3	Deposited Dust	1 Month	Continuous	Every 30 days (± 2 days)	Dust Deposition Gauge
HV1	TSP	24 hours	24± 1 hours (for one day in six)	Every 6 days	High Volume Air Sampler
HV2	PM ₁₀	24 hours	24± 1 hours (for one day in six)	Every 6 days	High Volume Air Sampler fitted with size selective inlet

Site	Parameter	Averaging Period	Sampling Period ¹	Sample Collection	Equipment
HV3 (to be determined)	PM _{2.5}	24 hours	24± 1 hours (for one day in six)	Every 6 days	High Volume Air Sampler fitted with size selective inlet
OR RT Dust 1 (to be determined)	TSP, PM ₁₀ and PM _{2.5}	24 hours	Continuous	Every 10 minutes	Portable real-time dust monitor
OR RT Dust 2 (to be determined)	TSP, PM ₁₀ and PM _{2.5}	24 hours	Continuous	Every 10 minutes	Portable real-time dust monitor
Baghouses	Solid particles (total)	NA	continuous	Real time	Probe in stack
Baghouses	Solid particles (total)	NA	To be determined	annual	Aust Standard Sampling train in stack
WS1	Meteorological Conditions	n/a	Continuous	n/a – automatic download to PC	Weather Station
1. Continuous monitoring excludes periods for instrument calibrations/ maintenance and extended periods of data downloads.					

6.1 DUST DEPOSITION

6.1.1 Introduction

Airborne dust has the potential to cause nuisance impacts by deposition on surfaces. Air dispersion modelling by Holmes (2006) as part of the original Environment Assessment indicated that some increase to off-site dust deposition levels would occur due to operation of Peppertree Quarry. Modelling (AQIA) undertaken by Todoroski Air Sciences (2018), associated with Modification 5 showed there was likely to be no significant change.

As a result, dust deposition criteria to protect against nuisance impacts are set out in Table 11.

6.1.2 Monitoring Equipment

Dust deposition gauges measure the rate at which dust settles onto a surface. The dust deposition gauge consists of a 150 ± 10 mm diameter glass funnel supported by a rubber or plastic stopper in the neck of a glass jar which has a minimum volume of four litres. The stopper has a groove or outlet pipe which allows water to overflow in the event of excessive rain. The gauge is set up on a stand, in such a way that the top of the funnel is horizontal and positioned approximately 2 +/- 0.2 m above ground level.

Over the sampling period (usually 30 ± 2 days) dust particles that settle out from the ambient air collect in the jar, together with any rainwater.

The three dust deposition gauges established for Peppertree Quarry (D1 - D3) will be operated and maintained in accordance with *AS/NZS 3580.10.1:2003 Methods for sampling and analysis of ambient air: Determination of particulate matter—Deposited matter—Gravimetric method*.

The sampling inlet should be positioned giving consideration to AS/NZS 3580.1.1:2007, including:

- height above ground level: 2m $\pm$ 0.2;
- distance from source: $\geq$ 5 m;
- clear sky angle above sampling inlet: 120°;
- unrestricted airflow around sampling inlet: 360°;
- distance from drip line of trees: 10 m; and
- no extraneous sources nearby.

6.1.3 Sample Analysis

On completion of the sampling period (usually 30 ± 2 days), the jar is removed, sealed, labelled and sent to a NATA accredited laboratory as soon as possible, and within 30 days of collection, for analysis in accordance with *AS/NZS 3580.10.1:2003*. It must be kept in a cool, dark environment prior to analysis.

The mass deposition rate of insoluble deposited matter is determined at the laboratory, taking into account the mass of insoluble solids collected, the funnel cross-sectional area and the exposure period. The results are reported in $\text{g/m}^2/\text{month}$ or $\text{mg/m}^2/\text{day}$.

6.1.4 Timing

Each dust deposition gauge is to be replaced on the first day of each month (or as near as possible to the first day of each month) i.e. on a 30 ± 2 days cycle.

6.2 PARTICULATE MATTER CONCENTRATIONS

6.2.1 Introduction

Particulate matter has the potential to have nuisance impacts, and small particles can affect visibility and human health. Air dispersion modelling conducted by Holmes (2006) as part of the initial Environment Assessment indicated that some increase to off-site particulate matter concentrations would occur due to operation of the quarry. Todoroski Air Sciences (2018 and 2019) confirmed the findings in regards to changes in operation for the Modifications 5 and 6 application.

TSP, PM_{10} and $\text{PM}_{2.5}$ criteria to therefore protect against human health and nuisance impacts are provided in Table 12.

6.2.2 Monitoring Equipment

During quarry operation, particulate matter concentrations will be monitored by two high volume air samplers set up side-by-side at the location shown on Figure 3. One of the high volume samplers (HV1) measures TSP and the other (HV2) is fitted with a PM_{10} size selective inlet (SSI), to measure PM_{10} .

High volume samplers consist of a filter holder, a motorised fan, a shelter, an air flow measuring device and an elapsed time meter that measures the sampling duration.

6.2.2.1 Total Suspended Particulates

Over the sampling period (usually 24 ± 1 hours), a high volume sampler draws in ambient air through a TSP inlet, which effectively acts as a hood to prevent precipitation and debris from falling onto the filter. The air is drawn in at a constant flow rate through a pre-weighed and conditioned filter, on which TSP collect.

The sampler is operated and maintained in accordance with *AS/NZS 3580.9.3 - 2003 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – Total suspended particulate matter (TSP) – High volume sampler gravimetric method* and the instrument operating manual.

6.2.2.2 PM₁₀ / PM_{2.5}

A high volume sampler is fitted with a size selective inlet operates in the same way as set out above, however the ambient air also passes through a size selective inlet, which only allows the PM₁₀ fraction to pass through to the filter. The PM₁₀ and / or PM_{2.5} fraction of suspended particulate matter is collected on the prepared filter.

The sampler is operated and maintained in accordance with *AS/NZS 3580.9.6 - 2003 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM₁₀ high volume sampler with size selective inlet – Gravimetric method* and the instrument operating manual.

6.2.3 Sample Analysis

At the conclusion of the sampling period (24 ± 1 hours), the filters in the high volume samplers are replaced. The removed filters will be individually folded so that only surfaces with collected particulate matter are in contact. They will then be placed in separate, suitably labelled, dustproof containers and sent to a NATA accredited laboratory for preparation and weighing. The TSP and PM₁₀ concentrations will be determined at the laboratory by dividing the mass of collected particulate matter by the total volume of air drawn in the sampling period. The results are reported in µg/m³.

6.2.4 Timing

The high volume samplers are programmed to operate concurrently and continuously for 24 ± 1 hours on a one-day-in-six cycle. As soon as practical after the completion of a sampling period, the filter will be collected and a new filter inserted. The used filter will be sent to a NATA accredited laboratory for analysis as soon as possible.

6.2.5 Real-time monitors

The high volume air samplers may be supplemented with portable real-time dust monitors used to measure concentrations of particulates including TSP, PM₁₀ and PM_{2.5} fractions.

The real-time monitors are a light scattering laser photometer monitor (or equivalent), powered by solar panels and portable monitor capable of being deployed at different locations as required. The monitors would be positioned for upwind/downwind measurement of dust levels relative to the Quarry and allow for the quantification of dust levels leaving the site towards receptors.

The real-time dust levels would inform the reactive management of the Quarry.

Prior to the installation, the real-time monitors need to be calibrated against the existing HVAS monitor to determine a k-factor for each monitor. How to input the k-factor into the settings of the instrument is detailed in the operation manual of the monitor.

6.3 MODIFIED MONITORING NETWORK

The monitoring network for the Peppertree Quarry has been modified to reflect the requirements for Modification 5, improve the performance of the existing monitoring network and assist with the proactive and reactive management of the operations. The modified monitoring network is shown in Figure 4.

The location of air quality monitoring devices are shown on Figure 4. The locations of the devices were selected in consideration of:

- predominant wind directions;
- locations of residences and private properties predicted to experience the highest dust concentrations due to operation of Peppertree Quarry;
- geographic and logistical considerations e.g. accessibility, security, power supply and setbacks from roads and items which could restrict airflow e.g. trees and buildings, as determined from analysis of aerial photography, site visits and a topographic map;
- quarry progression; and
- AS 3580.1.1:2007 and AS 2923-1987.

For ease of access, all three dust deposition gauges are located on Boral owned land. D1 and D3 are recommended to be relocated closer to privately-owned residences. The gauges would be sited to comply with Australian standards.

Two high volume samples are set up side-by-side to measure TSP and PM₁₀ respectively. These are located in a cleared area giving consideration to power sources, potential noise impacts associated with equipment operation and the requirements of AS/NZS 3580.1.1:2007, including ensuring a minimum clear sky angle of 120° above the sampling inlet and that there are no extraneous sources nearby. The stationary PM_{2.5} HVAS would be located in line with these monitors if determined that this is the best option for monitoring.

The real-time dust monitors (if identified as the preferred monitoring method) are recommended to be located on the western and eastern sides of the Quarry, representative of the nearest privately-owned residences. These locations account for the dominant wind trends and would capture both upwind and downwind levels. These monitors are portable and would be moved as required for effective management purposes.

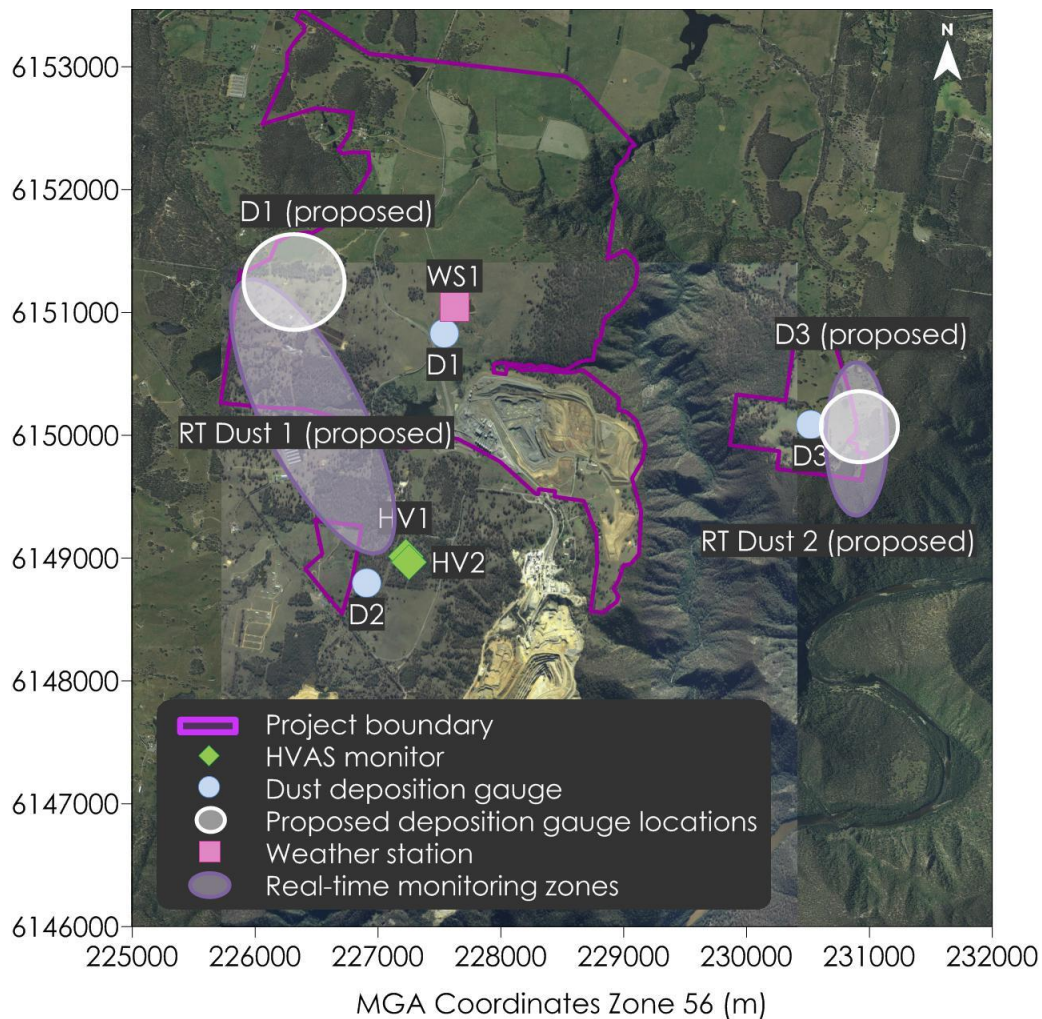


Figure 4: Modified Air Quality Monitoring Locations

6.4 BAGHOUSE STACK CONCENTRATIONS

Continuous stack monitoring will be undertaken in both baghouse emission stacks. This will be done by way of real time inline probes with readings available at the quarry control room.

Annual stack testing will be undertaken by a consultant to independently verify the emission performance.

6.5 VISUAL AIR POLLUTION

Opportunistic visual inspections are conducted for evidence of site dust moving beyond the site boundary, and is used to formulate reactive management strategies for quarry operations.

6.6 METEOROLOGICAL CONDITIONS

6.6.1 Introduction

Real-time measurements of meteorological conditions are taken to support dust monitoring and to identify weather conditions which may trigger the need to modify operations. For instance conditions that may be conducive to excessive dust generation and/ or movement of dust onto neighbouring properties, e.g. strong north-easterly winds, may trigger overburden dumping to cease temporarily.

6.6.2 Monitoring Equipment

A solar-powered weather station (WS1) is maintained at the location shown on Figure 3. This station consists of solar panels, a weatherproof enclosure which contains a data logger (which reads the sensors) and power supply, and sensors which continuously measure:

- rainfall;
- wind speed and direction (measured at three metres above ground level);
- relative humidity;
- temperature; and
- solar radiation.

The station will be equipped with a digital cell phone kit which retrieves data from the logger and transmits it directly to a computer at the site office. Loggernet software is used for automatically downloading the data and to create monitoring programs e.g. for calculations of evaporation and temperature inversion. The equipment facilitates real-time monitoring of weather conditions.

On June 5 2019 the Peppertree Quarry weather station was relocated approximately 1.7km to the north-northwest due to the progress of the Quarry (Refer to Figure 2).

6.7 CALIBRATION AND MAINTENANCE

Inspection, calibration, cleaning and maintenance of air monitoring equipment is scheduled and performed to NATA requirements and in accordance with AS/NZS 3580.9.3 - 2003 and AS/NZS 3580.9.6 – 2003 and the manufacturer's specifications as applicable. Dust deposition gauges are checked monthly with any ongoing maintenance of gauge equipment and parts to be undertaken at this time.

HVAS's are calibrated and maintained every 2 months by an independent contractor.

The Weather Station is calibrated and maintained on a quarterly basis.

7 ASSESSMENT CRITERIA

To meet the objectives set out in Section 1.3 and the conditions of Project Approval, monitoring data is analysed as set out in this section. It is noted that monitoring results will include dust contributions from operation of Peppertree Quarry and from other sources. Air quality goals supplied in this section relate to either the total dust burden in the area or incremental impact from the Project alone as specified.

7.1 DUST DEPOSITION

Dust deposition monitoring results are assessed by comparison against the Project Approval air quality criteria set out in Table 11. The Project Approval does not permit exceedance of these criteria at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

Table 11: Air Quality Criteria – Deposited Dust

Pollutant	Averaging period	Incremental increase in deposited dust level (due to the Project on its own)	Total deposited dust level (due to the Project plus background)
Deposited dust (insoluble solids)	Annual	2 g/m ² /month	4 g/m ² /month

To assist in determining compliance with the impact assessment criteria in Table 11, assessment of the ‘ash’ component of the dust sample will also be undertaken. Due to the nature and composition of the hard rock resource, and the many pollutants that can make up ‘insoluble solids’, ash will be used as an indicator of quarry dust contribution. This will ensure that organic pollutants such as bird dropping, pollen, wind-blown vegetation and the like will not be confused with the inorganic dust contribution.

Monitoring results will also be assessed against previous monitoring results, including pre-quarry background levels established by ERM (2006), to identify changes or trends to dust deposition over time.

7.2 TSP AND PARTICULATE MATTER CONCENTRATIONS

TSP, PM₁₀ and PM_{2.5} monitoring results will be assessed by comparison against the air quality criteria set out in Table 12. The Project Approval does not permit exceedance of these criteria at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

It is noted that measured concentrations in the atmosphere are expressed in terms of average concentrations over a given period of time. This is to account for fluctuations in pollutant concentrations in the atmosphere over time e.g. in response to weather.

Table 12: Air Quality Criteria - TSP, PM₁₀ and PM_{2.5} Concentrations

Pollutant	Averaging period	Criteria	Application
TSP	Annual average	90 µg/m ³	Total impact, excludes extraordinary events

Pollutant	Averaging period	Criteria	Application
PM ₁₀	Annual average	25 µg/m ³	Total impact, excludes extraordinary events
	24-hour average	50 µg/m ³	Incremental impact
PM _{2.5}	Annual average	8 µg/m ³	Total impact, excludes extraordinary events
	24-hour average	25 µg/m ³	Incremental impact

Monitoring results will also be assessed against previous monitoring results, including pre-quarry background levels established by ERM (2006), to identify changes or trends to particulate matter concentrations over time.

7.3 LAND ACQUISITION CRITERIA

If particulate matter emissions generated by the project exceed the criteria in Tables 13, at any residence on privately-owned land, or on more than 25 percent of any privately owned land, then upon written request for acquisition from the landowner, the Proponent must acquire the land in accordance with the procedures in CoA conditions C8-9.

Table 13: Air quality criteria for land acquisition

Pollutant	Averaging period	Criteria	Application
TSP	Annual average	90 µg/m ³	Total impact, excludes extraordinary events
PM ₁₀	Annual average	25 µg/m ³	Total impact, excludes extraordinary events
	24-hour average (short term impact - total)	50 µg/m ³	Incremental impact
PM _{2.5}	Annual average	8 µg/m ³	Total impact, excludes extraordinary events
	24-hour average	25 µg/m ³	Incremental impact
Deposited dust (insoluble solids)	Annual average (maximum total increase)	4 g/m ² /month	Total impact, excludes extraordinary events
	Annual average (maximum increase)	2 g/m ² /month	Incremental impact

7.4 BAGHOUSE STACK CONCENTRATIONS

Stack monitoring results are assessed by comparison against the Group 6 emissions standard for solid particles (total) standard of concentration of emissions of 20mg/m³.

7.5 VISUAL AIR POLLUTION

Formal analysis of visual monitoring will not be required. However, visual observations of excessive dust generation will feed into site management responses to minimise air quality impacts on privately owned land. Instances of dust observed moving off-site will be documented as set out in Section 8.

7.6 METEOROLOGICAL CONDITIONS

Real-time meteorological data will be reviewed regularly by site personnel, including prior to any blasting, to identify triggers for implementing changes to operations e.g. high wind speeds.

Meteorological conditions will be monitored on a daily basis to guide overburden haulage operations. This includes consideration of cessation of overburden haulage to the overburden emplacement areas when the wind direction is from the north-east or north-west and air borne particulates are not able to be managed.

Meteorological data will also be reviewed in conjunction with dust monitoring results, to identify potential influences on monitoring results obtained.

8 AIR QUALITY RESPONSE PLAN

8.1 INTRODUCTION

The objective of this section is to provide procedures for responding to impacts identified by the monitoring program and by routine monitoring of air quality management systems.

It is also designed to act as a response plan for taking action in the unlikely event that an unforeseen incident occurs at the site; eg. Failure of dust suppression equipment, visual wind borne dust

Responding to identified impacts will be the responsibility of the Quarry Supervisor.

Schedule 2, Condition D9 and D10 of the Project Approval details the reporting requirements for identified impacts/incidents and states that:

“D9. The Proponent must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing to compliance@planning.nsw.gov.au and identify the project (including the project application number and name) and set out the location and nature of the incident.

D10. Within seven days of becoming aware of a non-compliance, the Proponent must notify the Department of the noncompliance. The notification must be in writing to compliance@planning.nsw.gov.au and identify the project (including the project application number and name), set out the condition of this approval that the project is noncompliant 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.

Note: *A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.”*

An incident as defined in the Approval is deemed to be “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.”

The response plans for incidents are detailed below.

8.2 AIR QUALITY MONITORING EXCEEDANCE / NON-COMPLIANCE RESPONSE

Air quality monitoring exceedances may result due to activities at the quarry or due to the surrounding environmental conditions and other activities. Exceedances are notified once the samples have been analysed and supplied by the NATA accredited laboratory.

Should an exceedance / non-compliance be identified the following actions will be taken:

- the Department and NSW EPA will be notified of the exceedance / non-compliance within seven days of its identification;
- an investigation will be undertaken to establish the root cause. This will include checking weather conditions at the time of the exceedance / non-compliance, Peppertree Quarry operations and other possible impacts. Other associated data such as Ash content or Calcium carbonate identification should be considered in the investigation;
- subject to the findings of the investigation actions will be taken to minimise any reoccurrence of the exceedance/ non-compliance where possible and
- the identified cause of the impact and the selected response will be formally documented in an incident response report and electronically recorded in the Boral incident management system.

8.3 AIR QUALITY LAND ACQUISITION CRITERIA EXCEEDANCE RESPONSE

The objective of this section is to provide a summary for procedures relating to the notification of exceedances. It summarises the protocol for the independent review and land acquisition process. These procedures will be followed as outlined in detailed in Section 2, Table 2 C1 – C9.

8.3.1 NOTIFICATION OF EXCEEDANCES

As soon as practicable and no longer than seven days after obtaining monitoring results showing an exceedance of any air quality criterion identified in Section 7 above, Boral must provide the details of the exceedance to any affected landowners and/or tenants.

The NSW Health fact sheet entitled “Mine Dust and You” will be sent to the affected landowners and/or tenants of the land.

8.3.2 INDEPENDENT REVIEW AND LAND ACQUISITION

If an owner of privately-owned land considers the quarry to be exceeding air quality criteria, they may ask the Secretary in writing for an independent review of the impacts on their land.

If the Secretary is satisfied that an independent review is warranted, within 3 months, or as otherwise agreed by the Secretary and the landowner an independent review is to be carried out in accordance with Conditions C2 to C7.

Within 3 months of receiving a written request from a landholder with acquisition rights, Boral shall make a binding written offer as detailed in C8 and pay all reasonable costs associated with the land acquisition process as per Condition C9.

8.4 AIR QUALITY INCIDENT RESPONSE

Adverse air quality impacts are likely to be associated with malfunction of the site air quality engineering controls or operational procedures, resulting from an incident. This would potentially include:

- Wind borne dust from stockpiles;
- Dust from product in rail wagons;
- fire; and
- failure of operating equipment or infrastructure

Once it is identified that air quality may be impacted by the operations and result in an offsite disturbance or cause an incident as defined in section 8.1 the following actions will be taken:

- Impacted operations to be stopped if necessary until appropriate control systems can be implemented or repaired;
- the Department and NSW EPA will be notified of the incident/impact/potential impact immediately once an incident has been identified;
- an investigation will be undertaken to establish the root cause of the incident.

- subject to the findings of the investigation actions will be taken to repair, replace or change the identified cause of the air quality impacts. These actions will be completed by appropriately qualified personnel or consultants; and
- the identified cause of the impact and the selected response will be formally documented in an incident response report.
- Training will be undertaken, if changes are required to procedures or operations.

9 FINANCING AND PROVISION

Funding of works associated with the AQMP will be from operational and capital budgets associated with the quarry operations.

10 TRAINING

10.1 INDUCTION

Every employee and contractor working onsite must be inducted. The Peppertree Quarry induction covers the controls associated with managing potential impacts to air.

10.2 SITE SPECIFIC TRAINING

Where identified by management representatives, additional site specific training may be developed and implemented and delivered to relevant personnel and contractors.

Appropriate staff will be trained in the relevant standard operating procedures.

11 REPORTING AND REVIEW

11.1 REGULATORY COMPLIANCE

The Site will be aware of regulatory air quality limits to ensure the necessary controls and monitoring is carried out for the purpose of verifying compliance.

Regulatory documents such as the following should be periodically reviewed for site compliance with air quality management obligations:

- environmental licences and
- planning consents

Compliance with relevant air quality criteria will be managed by appropriate operational management, which includes:

- timely clean-up of any spills;
- maintenance and inspection of pollution controls associated with air quality management;
- application of procedures; and
- Monitoring.

11.2 REPORTING

11.2.1 Annual Review (AR)

The site environmental officer is responsible for managing the environmental reporting program and arranging specialist consultants to prepare reports, as required. The activities and performance outcomes of the AQMP will be presented in the Annual Review (AR). This will include detailed assessment of monitoring results collected over the course of the AQMP, an evaluation of any trends occurring across the site, any community/stakeholder complaints or non-conformances with licences/criteria and recommendations for management actions.

By the end of March in each year after the commencement of project, or other timeframe agreed by the Secretary, a report must be submitted to the Department reviewing the environmental performance of the project, to the satisfaction of the Secretary. This review must:

- (describe the project (including rehabilitation) that were carried out in the previous calendar year, and the project that are proposed to be carried out over the current calendar year;
- include a comprehensive review of the monitoring results and complaints records of the project over the previous calendar year, which includes a comparison of these results against the:
 - relevant statutory requirements, limits or performance measures/criteria;
 - requirements of any plan or program required under this approval;
 - monitoring results of previous years; and
 - relevant predictions in MOD5;
- identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence;
- evaluate and report on:
 - the effectiveness of the noise and air quality management systems; and
 - compliance with the performance measures, criteria and operating conditions in this approval;
- identify any trends in the monitoring data over the life of the project;

- identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the next calendar year to improve the environmental performance of the project.
- Copies of the Annual Review are submitted to Council and made available to the CCC and any interested person upon request.

A copy of the Annual Review will also be submitted to the EPA.

11.2.2 EPL Data and Annual Return

In accordance with EPL No. 13088, all data associated with monitoring of dust, noise and blasting events is posted onto the following dedicated website for the Quarry:

<https://www.boral.com.au/locations/boral-marulan-south-operations>

In addition, an EPL Annual Return which provides a statement of compliance with the licence conditions within 60-days after the end of each reporting period, is issued to the EPA.

11.2.3 Internal Reporting

In accordance with the HSEQMS and corporate divisional requirements a regular report on environmental compliance and performance is prepared by the site environmental officer which is presented to the site management team for review for provision of additional resources that may be required to mitigate a significant environmental issue. The Boral Group Environmental Advisor is also provided with an overview of any significant matters which may be escalated to Board level.

11.2.4 Incident Reporting

Incidents as defined in Section 8.1 must be immediately notified to the Department and any other relevant agencies immediately after Boral becomes aware of an incident as per Condition D9 of the approval.

Non-compliances must be notified to the Department within seven days of Boral becoming aware of a non-compliance as per Condition D10 of the approval.

Incidents and non-compliances are to be identified in the Annual Review with a description of what actions were taken to rectify the non-compliance and avoid reoccurrence.

Incident reporting will also be undertaken in accordance with Condition R2 of the EPA Environment Protection Licence which states *“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.”*

In accordance with Appendix 8 of the Approval and Condition R3 of the EPA EPL, written incident notification and reporting must be undertaken once Boral becomes aware that an incident has taken place, within 7 days of becoming aware of the incident.

Under Part 5.7A of the *Pollution of the Environment Operations Act 1997* (POEO Act), a Pollution Incident Response Management Plan (PIRMP), which also requires immediate reporting of incidents, has been implemented at the Quarry. This PIRMP outlines incidents that have the potential to cause material harm and therefore the actions to prevent and manage such incidents.

The POEO Act requires:

- Identifying and risk assessing the likelihood of hazards;
- Actions for preventing and responding to incidents;
- A site specific inventory of all potential pollutants;
- Equipment to be used in an incident response;
- Plan to minimise environmental and human harm by the implementation of actions to be taken during or immediately after a pollution incident;
- Consideration of how an incident may impact neighbours;
- Immediate reporting and ongoing communication an incident to ARAs and neighbours;
- Staff training on their roles and responsibilities under the PIRMP; and
- Annual testing and review of the PIRMP.

The Quarry Manager (or nominated Boral Authority) has the responsibility of ensuring all PIRMP reviews, revisions, training, testing and internal and external notifications are undertaken in compliance with POEO Act requirements.

11.3 AUDITING

Boral has an established corporate and divisional risk-based audit program that periodically assess operational sites for conformance with HSEQMS requirements.

In accordance with the requirements of CoA D13 (Schedule 2), within 3 years of the date of the commencement of construction and every 3 years thereafter, unless the Secretary directs otherwise, Boral will commission and pay the full cost of an Independent Environmental Audit of the project. The adequacy of this AQMP will be included in the Environmental Audit.

11.4 REVIEW OF MANAGEMENT PLAN

The AQMP is to be reviewed in in line with Condition D6 and D7 of the Project Approval which requires a review within 3 months of:

- the submission of an incident report;
- the submission of an Annual Review;
- the submission of an Independent Environmental Audit;
- the approval of any modification of the conditions of this approval (unless the conditions require otherwise);
- notification of a change in project stage; or
- the issue of a direction of the Secretary which requires a review

If necessary, to either improve the environmental performance of the project, cater for a modification or comply with a direction, this plan must be revised, to the satisfaction of the Secretary and submitted to the Secretary for approval within six weeks of the review. The proponent will continue to apply existing management plans, strategies or monitoring programs prior to the determination of a modification until the approval of a similar plan, strategy or program.

11.4.1 Review Objectives

This AQMP will be reviewed periodically by suitably qualified persons to determine the efficacy of the Plan and ensure it continues to fulfil its intended purpose. This will allow for and promote adaptive management through progressive stages of future quarry operations.

Air quality management actions and performance will be measured through regular environmental performance reviews. These will be based on the measurable outcomes identified in this management

plan and key performance criteria outlined in Section 4. The reviews will be used to assess progress in meeting AQMP objectives and performance criteria and will be undertaken by the site environmental officer:

- In response to new or revised Boral Project approvals.
- In response to major changes in site conditions or work methods.

12 REFERENCES

This AQMP has been prepared in consultation with the Environment Protection Authority and with consideration to:

- Conditions of Project Approval (PA 06_0074) Modification 4;
- ERM (2006) *Marulan South Quarry Environmental Assessment Report*;
- ERM (2007) *Marulan South Quarry Submissions Report*;
- ERM (2011) Boral Peppertree Quarry Section 75W Modification Report and response to submissions;
- EMM (2012) Peppertree Quarry Modification 3;
- Environmental Assessment;
- Holmes (2006) Air Quality Impact Assessment: Proposed Marulan South Hard Rock Quarry;
- Todoroski Air Sciences (2018) Air Quality Impact Assessment Peppertree Quarry Modification 5
- Todoroski Air Sciences (2019) Air Quality Impact Assessment Peppertree Quarry Modification 6
- Australian Standards:
 - *AS/NZS 3580.10.1:2003 Methods for sampling and analysis of ambient air: Determination of particulate matter—Deposited matter—Gravimetric method*;
 - *AS/NZS 3580.9.6 - 2003 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM10 high volume sampler with size selective inlet – Gravimetric method*;
 - *AS/NZS 3580.9.3 - 2003 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – Total suspended particulate matter (TSP) – High volume sampler gravimetric method and the instrument operating manual*;
 - *AS 3580.1.1:2007 Methods for sampling and analysis of Ambient Air- Guide to Siting Air Monitoring Equipment*;
 - *AS 2923-1987, Guide for the Measurement of Horizontal Wind for Air Quality Applications*;
- National Environment Protection Council (Ambient Air Quality) Measure Guideline Paper No. 8, Annual Reports for AAQ NEPM; and
- NSW EPA (2017) Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, NSW Environment Protection Authority, January 2017.

13 APPENDICES

Appendix 1 EPA correspondence

APPENDIX 1

EPA CORRESPONDENCE



Makin, Sharon <sharon.makin@boral.com.au>

Review of the Peppertree Quarry Noise & Blast and Air Quality Management Plans

2 messages

Makin, Sharon <sharon.makin@boral.com.au>

18 December 2019 at 15:12

To: Mike Hienes <michael.heinze@epa.nsw.gov.au>, Janine Goodwin <Janine.Goodwin@epa.nsw.gov.au>

Michael, Janine,

thank you for your time today to review and discuss the drafted Noise and Blast and Air Quality Management plans for Peppertree Quarry required as part of the Modification 5 approval.

As we discussed I will modify the plans to include...

- the EPL requirements around incident reporting into the Section on Incident reporting on both reports,
- consider a definition of air quality Impact and when reporting would be required outside of non compliance, exceedances or an incident,
- EPA to receive a copy of the Annual Return and
- modify the noise and blast impact response section to consider non compliances.

your time and review was very much appreciated.

kind regards

SHARON MAKIN

Stakeholder and Environment Advisor - Marulan South

Telephone: 02 48411701

Mobile: 0401894185

Email: Sharon.Makin@boral.com.au



Peppertree Quarry

843 Marulan South Road, Marulan NSW 2579

www.boral.com.au

Janine Goodwin <Janine.Goodwin@epa.nsw.gov.au>

19 December 2019 at 10:12

To: "Makin, Sharon" <sharon.makin@boral.com.au>, Michael Heinze <Michael.Heinze@epa.nsw.gov.au>

Hi Sharon

Many thanks for your time yesterday, and we note your proposal below as per our discussions.

Kind regards

Janine