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Cooma Road Quarry
Blast Management Plan
September 2019

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Table 1 Document Control

Version No.	Review Date	Reviewed By	Reviewer Position	Changes Made	Approved
1	27/03/2014	Holcim Australia	N/A	Development of Plan	Holcim Australia
2	30/07/2019	Shilpa Shashi	Planning and Environment Coordinator NSW / ACT	General update in accordance with Development Consent	Submitted to DPIE
3	24/09/2019	Shilpa Shashi	Planning and Environment Coordinator NSW / ACT	Update with Department comments	Submitted to DPIE

1.0 Introduction

1.1 Background

Holcim (Australia) Pty Ltd (Holcim Australia) operates Cooma Road Quarry, an existing hard rock quarry located approximately 6 kilometres south of Queanbeyan New South Wales (NSW) (refer to **Figure 1-1**). Cooma Road Quarry has been operating at the site since 1959. The previous Development Consent for Cooma Road Quarry was granted on 26 October 1995 and expired in October 2015. To enable continued quarrying operations, Holcim Australia sought a Development Consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for an extension of the approved quarry life until 31 October 2035. The Cooma Road Quarry Development Consent (SSD_5109) (Development Consent) was granted on 27 September 2013 by the NSW Minister for Planning and Infrastructure. Modification 1 was approved by the Department of Planning, Industry and Environment (DPIE) in August 2016 and included the addition of the importation of Virgin Excavated Natural Material (VENM) to be utilised for backfilling and progressive rehabilitation of the terminal quarry faces. Modification 2 was approved in April 2019 and included the addition of the importation of Excavated Natural Material (ENM) for backfilling purposes.

The Development Consent allows for continued operations of the existing Cooma Road Quarry and enables the extraction of additional hard rock resources within the approved extraction area (refer to **Figure 1-2**).

Holcim Australia is committed to implementing continued quarrying operations in the context of updated and contemporary environmental management requirements. This Blast Management Plan (BMP) has been prepared in accordance with Condition 13 of Schedule 3 of the Development Consent.

1.2 Project Description

The Development Consent provides for the following:

- extraction of the remaining resources within the existing approved quarry pit area;
- extension of the approved extraction boundary to the north covering an area of approximately 3.5 hectares;
- increasing the maximum annual production limit from 1 Mtpa to 1.5 Mtpa;
- allowance to receive quarry materials from other sites for crushing and screening (as required) and then sale. Total product (including from both material quarried from the site and from materials imported to the site) will be maintained within the total production limit of 1.5 Mtpa;
- allowance to receive VENM and ENM products to be used for back filling and progressive rehabilitation of terminal quarry faces in accordance with the Development Consent and quarry rehabilitation objectives;
- relocation of the existing workshop, truck parking and temporary stockpiles;
- addition of a mobile pug mill; and
- recycling of clean concrete on site for re-use as product.

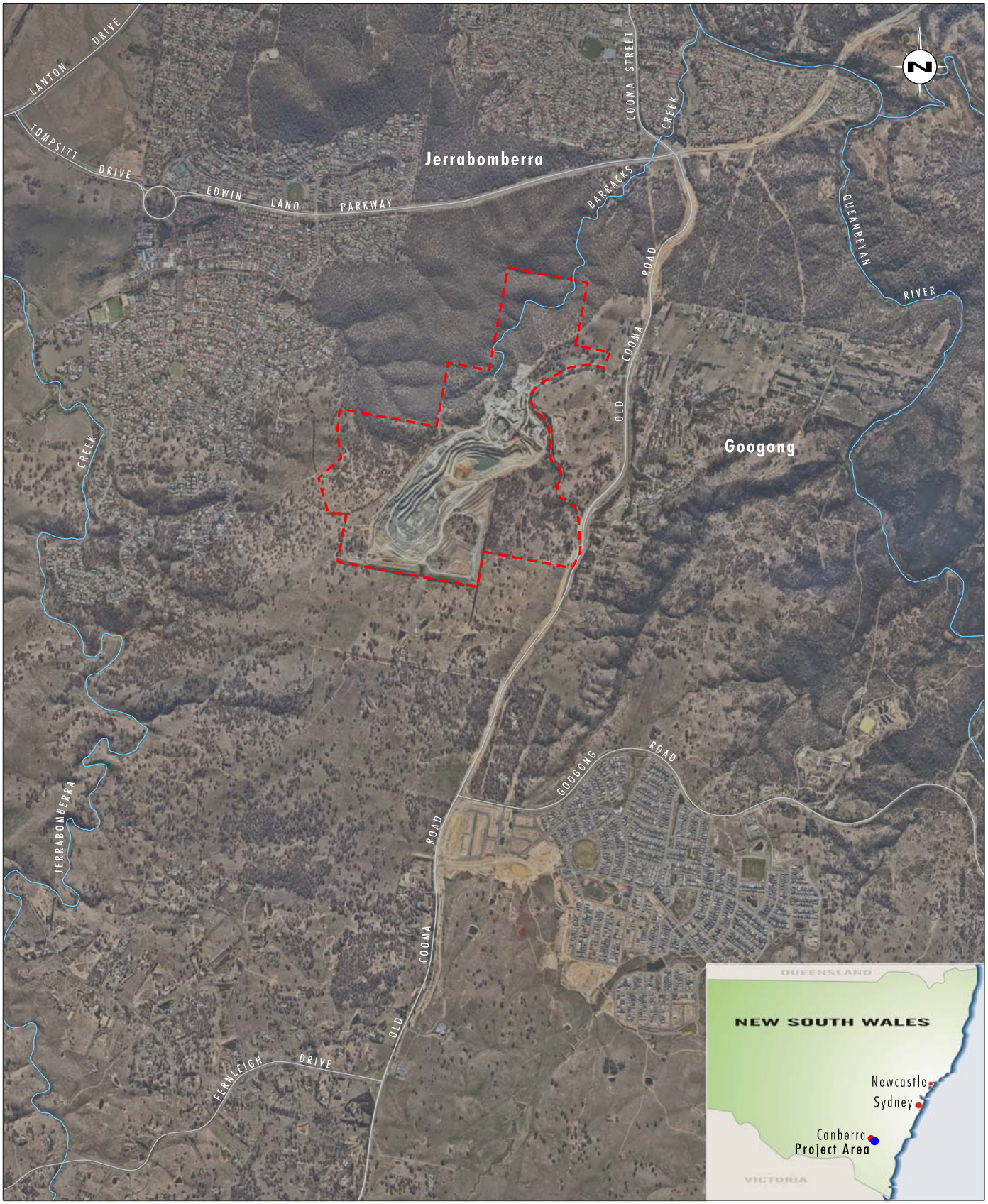

Image Source: Nearmap (May 2019)
Data Source: Holcim (2019)

0 0.5 1.0 1.5km
1:35 000

Legend

Approved Project Area

FIGURE 1.1

Locality Map

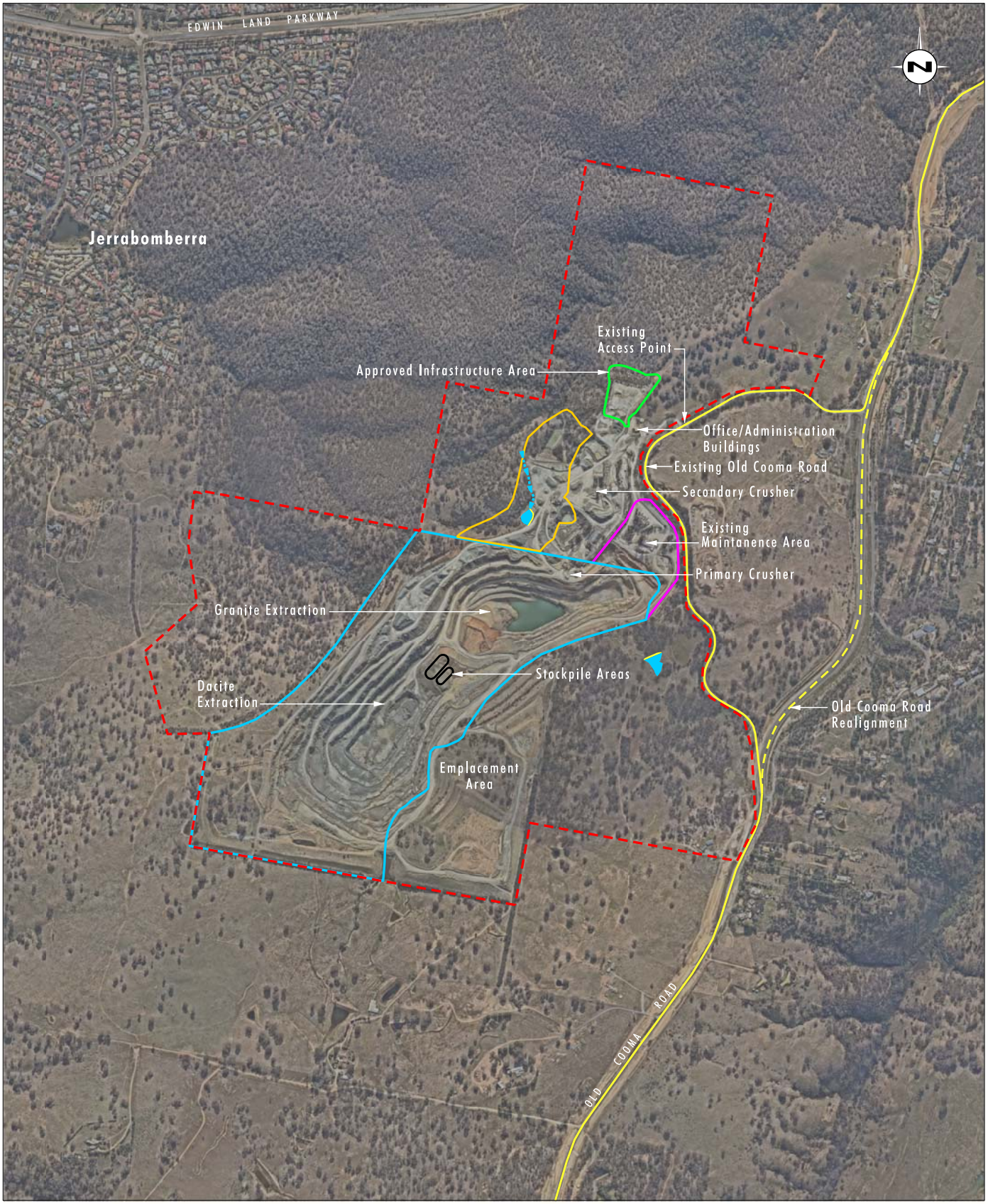

Image Source: Nearmap (May 2019)
Data Source: Holcim (2019)

0 0.25 0.5 0.75km
1:15 000

Legend

- Approved Project Area
- Approved Extraction Area
- Approved Additional Extraction Area
- Approved Disturbance Area - Workshop
- Approved Disturbance Area - Overburden Emplacement
- Approved Dam
- Clean Drain
- Old Cooma Road
- Old Cooma Road Realignment

FIGURE 1.2

Cooma Road Quarry
Continued Operations Project

File Name (A4): R07/4649_007.dgn
20190708 15.36

1.3 Purpose and Scope

The purpose of this BMP is to provide a description of the measures to be implemented by Holcim Australia to manage blasting operations at Cooma Road Quarry and to detail the blast monitoring requirements associated with the operation. This BMP also provides a mechanism for assessing blast monitoring results against the relevant blast impact assessment criteria.

This BMP also addresses the requirements detailed in the Development Consent. The Development Consent conditions relevant to this plan are provided in **Section 2.1**, including a checklist of where each condition has been addressed within this document.

The BMP outlines the control measures to be implemented as part of the continued operations at Cooma Road Quarry to minimise the potential blast related impacts on the local community.

1.4 Objectives

The objectives of this BMP include:

- establishing a blast monitoring system to assess the blast and vibration impact on surrounding receivers with the management of blasting to consider 'best management practice' principles;
- detailing the controls to be implemented to minimise blasting impacts from the site, including potential impacts from blast fume generation;
- providing a blast protocol to assess monitoring results against blast impact assessment criteria to evaluate compliance;
- managing blast-related community complaints in a timely and effective manner; and
- detailing the procedure for reporting blast criteria exceedances to relevant stakeholders.

2.0 Regulatory Requirements

2.1 Development Consent

The Development Consent was assessed under the Environmental Planning and Assessment Act 1979 (EP&A Act). Approval for the project was granted by the NSW Planning and Infrastructure (P&I) Director-General on 27 September 2013. The requirement for this BMP arises from Condition 13 of Schedule 3 of the Development Consent. A table detailing the blast management plan requirements from the Development Consent and where these requirements are addressed within this document is provided in **Table 2**.

Table 2 Development Consent Conditions

<table>
<tr><th>Approval Condition</th><th>Section Addressed</th></tr>
<tr><td>Schedule 3 Environmental Performance Conditions</td><td></td></tr>
<tr><td>Blasting Criteria
9. The Applicant must ensure that the blasting on the site does not cause exceedances of the criteria outlined below (Table 3 of Development Consent):
<table>
<tr><th>Location</th><th>Airblast overpressure (dB(Lin Peak))</th><th>Ground vibration (mm/s)</th><th>Allowable exceedance</th></tr>
<tr><td rowspan="2">Any residence on privately-owned land</td><td>120</td><td>10</td><td>0%</td></tr>
<tr><td>115</td><td>5</td><td>5% of the total number of blasts over a period of 12 months</td></tr>
</table>
However, these criteria do not apply if the Applicant has a written agreement with the relevant owner or infrastructure</td><td>Section 4.0</td></tr>
</table>

Approval Condition	Section Addressed
provider/owner, and the Applicant has advised the Department in writing of the terms of this agreement.	
Blasting Hours 10. The Applicant must: (a) not carry out blasting on site on weekends or public holidays; and (b) only carry out blasting on site between 9 am and 3 pm Monday to Friday.	**Section 5.1**
Blasting Frequency 11. The Applicant may carry out a maximum of 1 blast a day, unless an additional blast is required following a blast misfire. Note: For the purposes of this condition, a blast refers to a single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the mine.	**Section 5.2**
Operating Conditions 12. During blasting operations, the applicant shall: a) not cause any adverse blasting impacts to the Moses Morleys Kiln site	**Section 4.0** and **5.2**
b) implement best management practice to: • protect the safety of people and livestock in the surrounding area;	**Section 5.2**
• protect public or private infrastructure/property in the surrounding area from any damage; and	**Section 5.2**
• minimise the dust and fume emissions of any blasting.	**Section 5.2** and **5.3**
c) operate a suitable system to enable the public to get up-to date information on the proposed blasting schedule on site to the satisfaction of the Secretary.	**Section 7.1**
Blast Management Plan 13. The applicant shall prepare and implement a Blast Management Plan for the development to the satisfaction of the Secretary. This plan must: d) be prepared in consultation with Council and the EPA, and be submitted to the Secretary for approval within 6 months of this consent.	**Section 2.2**
e) describe the measures that would be implemented to ensure: • best management practice is being employed	**Section 5.0**
• the protection of road users and infrastructure when blasting within 500 metres of Old Cooma Road; and	**Section 5.0**
• compliance with the relevant conditions of this consent.	**Sections 4.0** to **8.0**
f) include a specific blast fume management protocol to demonstrate how emissions will be minimised including risk management strategies if blast fumes are generated; and	**Section 5.3**
g) include a monitoring program for evaluating the performance of the development including: • compliance with the blasting criteria; and • minimising blast fume emissions from the site. The Applicant must implement the approved management plan as approved from time to time by the Secretary	**Section 6.0**

Management controls for potential blast impacts associated with quarrying and ancillary activities are provided in **Section 5.0**. Blast monitoring to be undertaken is outlined in **Section 6.0**.

In addition, Condition 2 of Schedule 5 of the Development Consent provides an overview of Development Consent conditions applicable to all management plans. A table summarising where these conditions are addressed in the document are included in **Appendix 1**.

2.2 Stakeholder Consultation Regarding this Document

Copies of this BMP were provided to Queanbeyan City Council and the EPA for comment on 14 March 2014. EPA provided a letter stating that the BMP appeared adequate and that the EPA had no specific comments to make regarding the BMP. Queanbeyan City Council provided comment on 25 March 2014 indicating that the BMP was considered to have been developed in accordance with the requirements of the Development Consent, refer to **Appendix 2**.

DPIE advised on 7 August 2019 that the update of this management plan could occur without the need to consult with nominated agencies in the Development Consent.

3.0 Baseline Data – EIS Blast Modelling Predictions

The predicted ground vibration and airblast levels at the nearest residential receiver location as a result of the Project's blasting activities are summarised in **Table 3**. N67 is the closest resident that does not have a private agreement with Holcim. These predictions reflect the worst case airblast and vibration levels potentially experienced at the location as a result of Cooma Road Quarry operations and are based on the historical maximum instantaneous charge (MIC) values. These predictions were completed for the Blasting Impact Assessment in the EIS, using industry standards.

Table 3 Predicted Blasting Emissions at Residence N67

Receiver Location	Distance (m)	MIC (kg)	Predicted Blasting Level		Blasting Emissions Criteria	
			Airblast/ SPL* (dBL)	Ground Vibration/PVS* (mm/s)	Airblast/ SPL (dBL)	Ground Vibration/PVS (mm/s)
N67 – (Lot 105 DP 754881, 509 Cooma Road, Googong)	790	337	116	2.77	115	5

Note 1: Distance measured from edge of Project boundary.

SPL- Sound Power Level

PVS – Peak Vector Sum

The results presented in **Table 3**, indicate that the predicted ground vibration levels from a maximum 337 kilogram MIC would comply with the Development Consent conditions at the nearest residential receivers(without an existing agreement in place), however, at this MIC, a minor exceedance of 1dB of the air blast criteria could be expected.

Details regarding blast design measures incorporated in ongoing operations to mitigate potential impacts are provided in **Section 5.0**.

4.0 Blast Impact Assessment Criteria

The Development Consent requires compliance with specific blasting criteria at residences on privately owned land (refer to **Table 4**). These limits in relation to both ground vibration and airblast overpressure are provided in **Table 4**.

Table 4 Blasting Emissions Criteria

Location	Airblast overpressure (dBL)	Ground Vibration (mm/s)	Allowable Exceedance
Any residence on privately-owned land	120	10	0%
	115	5	5% of the total number of blasts over a 12 month period

In accordance with the Development Consent, these criteria do not apply if Holcim Australia has a written agreement with the relevant owner and Holcim Australia has advised DPIE in writing of the terms of this agreement. Holcim Australia has existing agreements with stakeholders in the region of Cooma Road Quarry.

No site specific blast criteria are prescribed in the Development Consent for the Moses Morleys Kiln site, a locally-listed historic heritage site adjacent to the operating quarry. In accordance with the requirements of the Development Consent, Holcim Australia conducts 6 monthly survey monitoring of the site to determine if there is any movement or impacts to the Moses Morleys Kiln Site from blasting. Visual inspections of the Kiln Site are also undertaken at regular intervals to identify whether there has been any impacts to the site from blasting. There is limited blasting undertaken in the vicinity of the Kiln site due to the majority of the operations now being undertaken in the Dacite Pit, which is further away from the Kiln Site than blasting which has been undertaken in the Granite Pit. Visual monitoring and surveys of the Kiln Site have not indicated any impacts from blasting operations. Further details regarding the management of the Moses Morley's Kiln site are provided in the Cooma Road Quarry Heritage Management Plan.

5.0 Blast Management Controls

Holcim Australia is committed to implementing reasonable and feasible best practice blast impact mitigation measures at Cooma Road Quarry. The relevant blast controls for the operation are detailed in the sections below and will be reviewed to confirm their applicability on an ongoing basis through the process outlined in **Section 8.0**.

5.1 Hours of Operation

Impacts to public amenity for sensitive receivers in the vicinity of Cooma Road Quarry has initially been managed through the design of the operation, including the restrictions on the hours of operation for the facility. The hours of operation for Cooma Road Quarry are prescribed in Table 2 of the Development Consent (Condition 5 of Schedule 3) and are reproduced in **Table 5** below. Cooma Road Quarry continues to operate in accordance with the hours of operation defined in **Table 5**.

Table 5 Hours of Operation

Receiver Area	Operating Hours		
	Monday - Friday	**Saturday**	**Sundays and Public Holidays**
Primary Crushing, Laden Truck Movements	6 am – 6 pm	6 am – 6 pm	None
Construction Operations	7 am – 6 pm	8 am – 1 pm	
Unladen Truck Movements	6 am – 8 pm	6 am – 8 pm	
Other Operations	6 am – 10 pm	6 am – 10 pm	

Note: maintenance activities may occur at any time provided they are inaudible at privately-owned residences

In accordance with Condition 10 of Schedule 3 of the Development Consent, blasting activities can only be undertaken between the hours of 9.00 am and 3.00 pm, Monday to Friday, and must not be carried out on weekends or public holidays. In the event that blasting is required to be undertaken outside of the hours of 9.00 am and 3.00 pm Monday to Friday for safety reasons or when the amenity of local residents would be impacted by delaying the blast, Holcim Australia will request approval from DPIE and EPA prior to undertaking such blasting activities.

5.2 Operational Controls

Holcim Australia will implement the following blast management practices over the life of the Cooma Road Quarry Project:

- Blasting at the Cooma Road Quarry will only occur on Monday to Friday between 9.00 am and 3.00 pm. No blasting will be undertaken on weekends, public holidays or at any other time.
- Blasting will be undertaken at a maximum of one blast per day unless an additional blast is required following a mis-fire, in accordance with Condition 11 of Schedule 3 of the Development Consent.
- Detailed design will be undertaken for each blast in order to maximise the blast efficiency, minimise dust, fumes, ground vibration and airblast, the potential for flyrock and to ensure compliance with site specific blasting conditions.
- An exclusion zone will be established for each blast to protect the safety of people, and livestock.
- Holcim Australia will monitor blasts as quarrying progresses (refer to **Section 6.0**), so that blast prediction site laws can be further refined and future blast designs can be optimised based on more detailed site information. By adopting this approach, in conjunction with the adoption of improved blasting products and methods, as they are introduced, it is anticipated that blast emissions criteria can be met without imposing any significant constraints on blast designs throughout the operation of the Cooma Road Quarry. Holcim Australia will design all blasts to comply with the project specific vibration and airblast criteria and to protect public and private infrastructure and property from any damage as a result of flyrock. Future updates of this plan will include any additional management requirements, taking into account the results of blast monitoring undertaken.
- The blasting site law will be constantly updated using site-specific blast monitoring data. This process will provide Holcim Australia with flexibility to design blasts to best meet production requirements while complying with relevant criteria for residential receivers.
- Holcim Australia will provide contact details on the Holcim Australia website (http://www.holcim.com.au) so residents and stakeholders can obtain proposed blast dates and times from Cooma Road Quarry personnel. Close residents will be informed via personal message of blasting occurances. Blast monitoring results will also be provided on the Holcim Australia website (http://www.holcim.com.au).

5.2.1 Road Closure During Blasting Events

The works to realign Old Cooma Road adjacent to Cooma Road Quarry have been undertaken and as such, road closures are not anticipated to be required during blasting events at Cooma Road Quarry as blasting will not be undertaken within 500 metres of Old Cooma Road.

5.3 Blast Fume Management Protocol

In accordance with the requirements of Condition 13(f) of Schedule 3 of the Development Consent, Holcim Australia are required to implement a blast fume protocol to minimise blast fumes emanating from the Cooma Road Quarry operations. The following management controls should be undertaken:

- use of appropriately qualified personnel, including an assessment of whether the contractor is appropriately trained to undertake the drill and blast works;
- use of appropriate blast design as approved by the site drill and blast coordinator or their delegate;
- appropriate dewatering of drill hole prior to loading;
- minimisation of ‘sleep time’ between loading and blasting, where practical;
- prior to blasting, a visual weather assessment of meteorological conditions will be undertaken by the Quarry Manager in consultation with Holcim Australia environmental personnel to confirm that weather conditions are not conducive to fume migration; and
- all blasts will be video recorded to confirm whether any blast fume has been generated by the blast. In the event that blast fume generated by the blast, an investigation into the causes of the blast fume will be undertaken (refer to **Section 7.0**).

6.0 Blast Monitoring

Blast monitoring undertaken by the Quarry is detailed in the following sections.

6.1 Blast Monitoring Program

To ensure compliance with Development Consent and EPL conditions, monitoring of blasts will be undertaken. Blast monitoring for airblast and vibration will be undertaken at the nearest private residence (N67)(see **Figure 6-1**). This monitoring location may change depending on the nearest private residences and the establishment of blast agreements with receivers in the area.

6.1.1 Blast Data

Data collected in relation to each blast will include:

- measured vibration;
- measured overpressure;
- maximum instantaneous charge;
- number of holes;
- blast type; and
- meteorological conditions.

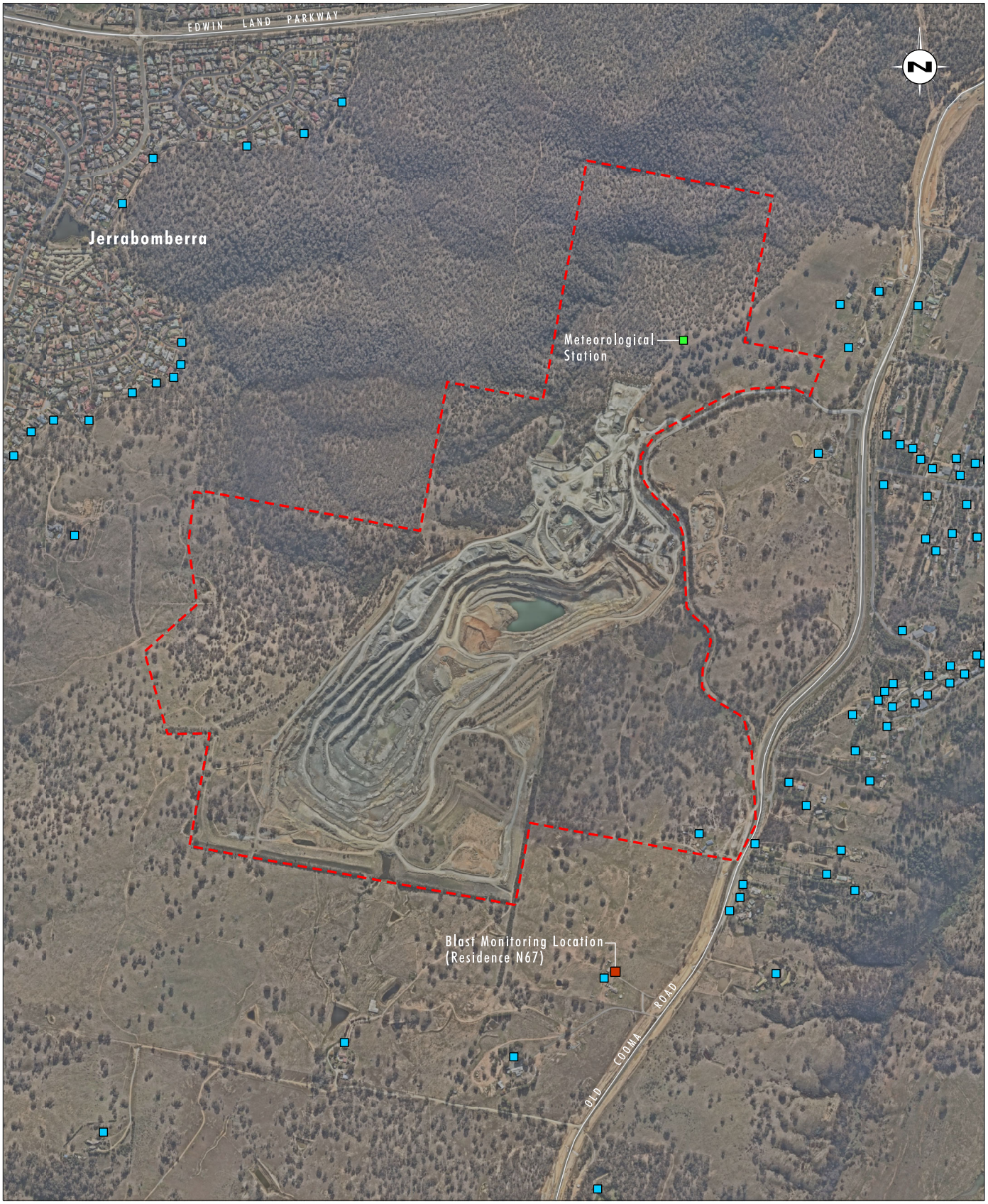

Image Source: Nearmap (May 2019)
Data Source: Holcim (2019)

0 0.25 0.5 0.75km
1:15 000

Legend

- Approved Project Area
- Indicative Dwelling Location
- Blast Monitoring Location
- Meteorological Station

FIGURE 6.1

Blast Monitoring Locations

6.2 Blast Fume Monitoring

Fume monitoring and post blasting investigation into fume events will be undertaken at Cooma Road Quarry. Fume monitoring requirements include:

- Visual assessment and analysis of each blasting event to determine whether excessive fume was generated as a result of the blast. All blasts undertaken at Cooma Road Quarry are video recorded to provide a record of the blast.
- In the event that any blast at Cooma Road Quarry leads to the development of excessive fume an analysis of the blast will be undertaken to determine the cause of the blast fume development and whether the blast fume travelled off site.

6.3 Meteorological Monitoring

A meteorological station has been installed at Cooma Road Quarry as detailed on **Figure 6-1** The meteorological monitoring data obtained from the station will be utilised to inform the pre-blast assessment.

6.4 Standards Relevant to Blast Monitoring/Management

Meteorological monitoring is to be undertaken in accordance with the EPA's *'Approved methods for the sampling and analysis of air pollutants in NSW'* (EPA 2001) which refers to Australian Standard AS 2923 - 1987 (Guide for measurement of horizontal wind for air quality applications).

Holcim Australia will undertake blast monitoring at Cooma Road Quarry in accordance with the policies, principles, regulation and guidelines contained within:

- *Protection of the Environment Operations Act 1997* (PoEO Act);
- EP&A Act administered by the DPIE;
- AS 2187.2-2006 'Explosives – Storage and Use – Use of Explosives';
- OHS Amendment (Dangerous Goods) Act 2005 and Explosives Act 2003 administered by WorkCover;
- Prevention and Management of Blast Generated NOx Gases in Surface Blasting – Code of Good Practice (AEISG 2011); and
- ANZECC 'Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration'.

6.5 Contingency Plan

In accordance with Condition 2e) of Schedule 5, Holcim Australia will implement a Trigger Action Response Plan (TARP) in order to manage any unpredicted impacts and their consequences as they may arise. These TARPs are designed to ensure that blast related impacts are minimised at surrounding sensitive receptors as conditions change onsite. The TARP includes a set of triggers that are based on site observations and monitoring data. Exceedances will be managed in accordance with **Section 7.2**.

Table 6 Blast Trigger Action Response Plan (TARP)

Trigger	Trigger Detail	Response/Actions
Presence of blast fume following blast	• Blast fume detected via video monitoring.	• Review video monitoring to determine extent of fume developed. • Review blasting undertaken to determine whether controls in **Section 5.3** were implemented during blasting. • Identify whether any changes to blast design and management controls are required to be undertaken. • Implement changes and update plan if necessary.
Blast / Vibration monitoring results elevated but within criteria levels (Allowable Exceedance)	• Monitoring results within allowable exceedance criteria in less than 5% of blasts in the last 12 months. • Ground Vibration exceeds 5mm/s • Air blast pressure exceeds 115dbL	• Review and amend blast design and parameters. • Identify whether any changes to blast design and management controls are required to be undertaken including location of blast, material blasted, explosive utilised. • Consider results of assessment for future blasts.
Blast / Vibration Monitoring Results exceed criteria levels	• Monitoring within allowable exceedance criteria but recorded in over 5% of blast in the last 12 months. • Ground Vibration exceeds 10mm/s • Air blast pressure exceeds 120dbL	• Report and investigate exceedance thoroughly. Consult external blast expert in investigation process. • Review and amend blast design and parameters. Have review peer reviewed by external blast expert. • Manage exceedances in accordance with **Section 7.2**.

In accordance with Conditions 9e) of Schedule 5 of the Development Consent, any discrepancies between the predicted and actual impacts of the development will be analysed during the Annual Review process and on a monthly basis. Monthly environmental monitoring data can be found on the Holcim Australia website (https://www.holcim.com.au/sustainability/environment/pollution-monitoring-data).

7.0 Reporting

The range of blast management and monitoring reporting undertaken by the Quarry is detailed in the following sections.

7.1 External Reporting

A summary of blast monitoring results will be provided in the Cooma Road Quarry Annual Review. The following information will be reported in the Annual Review in accordance with Condition 9 of Schedule 5 of the Development Consent:

By the end of March each year, or other timing as may be agreed by the Secretary, the Applicant (Holcim Australia) must submit a report to the satisfaction of the Secretary. This review must:

- describe the development (including rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;

- include a comprehensive review of the monitoring results and complaints records of the development 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 consent;
    - the monitoring results of previous years; and
    - the relevant predictions in the documents listed in condition 1(a) of Schedule 2;
- identify any non-compliance over the last calendar year, and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the monitoring data over the life of the development;
- identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the current calendar year to improve the environmental performance of the development.

In addition, in accordance with *Protection of the Environment Legislation Amendment Act 2011* (Amendment Act) and Condition 8 of Schedule 5 of the Development Consent, Holcim Australia will provide contact details on the Holcim Australia website (http://www.holcim.com.au) so residents and stakeholders can obtain proposed blast dates and times from Cooma Road Quarry personnel. Blast monitoring results will also be provided on the Holcim Australia website (http://www.holcim.com.au).

Performance monitoring, which includes an assessment of the effectiveness of blast monitoring and compliance with the relevant Development Consent and EPL conditions, may be discussed at Community Consultative Committee (CCC) meetings.

7.2 Blast Criteria Exceedance Reporting Protocol

Exceedances of blast criteria will be classified as a non-compliance and will be managed in accordance with the requirements of the Cooma Road Quarry Environmental Management Strategy (EMS). In accordance with this procedure, all non-compliances will be investigated by the Cooma Road Quarry Manager in consultation with Holcim Australia environmental personnel. Additional controls will be implemented where required, based on the outcomes of the investigation. All non-compliances will be reported annually in the Annual Review.

7.2.1 Incident Notification

An incident is 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.

In accordance with Condition 7 Schedule 5 of the Development Consent, Holcim Australia shall notify DPIE 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 Cooma Road Quarry, the Development Consent number, the location and nature of the incident. Incidents are also to be reported in accordance with the requirements of the Protection of the Environment Operations Act 1997, EPL 1453 and the Cooma Road Quarry Pollution Incident Response Management Plan (PIRMP).

7.2.2 Non-Compliance Notification

A non-compliance is an occurrence, set of circumstances or development that is a breach of the Development Consent. Within seven days of becoming aware of non-compliances, Holcim Australia must also notify DPIE of the non-compliance and identify:

- the condition the development is noncompliant with;
- the way in which it does not comply and the reasons for the non-compliance (if known); and

- what actions have or will be undertaken to address the non-compliance.

7.2.3 Adaptive Management

In accordance with Condition 5 of Schedule 5 of the Development Consent, Holcim Australia will assess and manage blast related risks to ensure compliance with the criteria outlined in **Section 4.0**.

Where an exceedance relating to a blast impact has occurred, Holcim Australia will, to the satisfaction of the Secretary of DPIE:

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

Holcim Australia will also report on the effectiveness of the remediation measures implemented at the site within the Annual Review.

7.3 Complaint Response

Complaints relating to blasting at Cooma Road Quarry are managed in accordance with the requirements of the Cooma Road Quarry EMS. A summary of complaints is published on the Holcim Australia website on a quarterly basis and provided in the Annual Review.

7.4 Independent Review

In the event that a landowner considers that Cooma Road Quarry is exceeding blast criteria at his or her property, the landowner may request an independent review of the blast impacts at the property. The independent review will be conducted in accordance with the procedure described in Condition 2 of Schedule 4 of the Development Consent.

8.0 Review and Improvement

Ongoing monitoring and review on the performance and implementation of this BMP will be undertaken in accordance with Cooma Road Quarry EMS.

In accordance with Condition 4 of Schedule 5, Holcim Australia shall review, and if necessary revise, the strategies, plans, and programs required under Development Consent to the satisfaction of the Secretary of DPIE, within 3 months of the submission of:

a) an annual review;
b) an incident report;
c) an audit report; and
d) any modifications to the Development Consent.

In accordance with Condition 3 Schedule 5, to ensure the strategies, plans or programs under this consent are updated on a regular basis, and that they incorporate any appropriate mitigation measures to improve the environmental performance of the development, Holcim Australia may submit revised strategies, plans or programs to the Secretary for approval at any time.

The Quarry Manager in consultation with Holcim Australia environmental personnel will review and if necessary, revise this BMP and resubmit to DPIE every year or earlier if required. Any changes made to the BMP as a result of the review will be made in consultation with EPA and Council if required. A copy of the

revised BMP will be supplied to the Secretary of DPIE for approval. The BMP will reflect changes in environmental requirements, technology and operational procedures. Updated versions of the approved BMP will be made publicly available on the Holcim Australia website (http://www.holcim.com.au/).

9.0 Definitions

The terminology utilised within this BMP is defined in **Table 7** below.

Table 7 Terminology Utilised Within the BMP

Term	Definition
Airblast/ Overpressure	An airborne shock wave resulting from detonation of explosives. An airblast may be caused by blasted material movement or the release of expanding gas into the air.
Blasting	Any activity involving the use of explosives for the purpose of producing an explosion to fragment rock for mining.
Flyrock	Rock that is propelled outside of the blasting area through the air or along the ground as a result of the detonation of explosives.
Ground vibration	The movement of the ground caused by the blast wave emanating from the blast.
Particle Velocity	A measure of ground vibration. Particle velocity describes the velocity at which a particle of ground vibrates when excited by a seismic wave.
Blast Exclusion Window	The arc of prevailing wind direction calculated on an individual blast basis and designed to minimise the risk of adverse dust or fume impacts.
Sleep time	The time taken between the drill hole being loaded with explosive and detonation of the explosive

10.0 Roles and Responsibilities

Relevant roles and responsibilities associated with this BMP are presented in **Table 8** below.

Table 8 Roles and Responsibilities

Role	Responsibilities
Holcim Australia District Manager	• Provide adequate resources for the implementation of this BMP. • Authorise the implementation of specific management measures to minimise blast impacts in accordance with this plan. • Ensuring that the outcomes of monitoring are systematically evaluated as part of ongoing quarry planning. • Authorise internal and external reporting requirements as well as subsequent revisions of this BMP.
Cooma Road Quarry Manager	• Oversee the implementation of the BMP. • Ensure the drill pattern is drilled in accordance with the blast design. • Ensure that the blast is loaded with the correct quantity and quality of explosive and stemmed in accordance with the blast design. • Record drill status, including hole depths, pattern and relevant information. • Coordinate blast monitoring in accordance with this BMP. • Implementation of BMP TARPS. • Regularly review blast design parameters on the basis of blast monitoring records. • Notify regulatory authorities and affected landholders of any blasting related exceedance and undertake associated reporting; manage blasting related complaints in accordance with the complaints management procedure. • Coordinate periodic reviews of this BMP.

Role	Responsibilities
Planning and Environment Coordinator NSW / ACT	• ensure that the results of monitoring are systematically evaluated and reported to relevant personnel for consideration as part of ongoing quarry planning • undertake investigations into blasting exceedances, incidents or complaints • assist with the review of this plan.

11.0 References

AEISG 2011. Prevention and Management of Blast Generated NOx Gases in Surface Blasting – Code of Good Practice.

Australian and New Zealand Environment and Conservation Council ANZECC 1990. Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration.

EMM Consulting 2016. Cooma Road Quarry*, Modification to Development Consent Environmental Assessment,* prepared for Holcim (Australia) Pty Ltd*.*

EMM Consulting 2019. Cooma Road Quarry*, Statement of Environmental Effects: Modification 2 to Development Consent,* prepared for Holcim (Australia) Pty Ltd*.*

EPA 2001. 'Approved methods for the sampling and analysis of air pollutants in NSW' which refers to Australian Standard AS 2923 -1987 (Guide for measurement of horizontal wind for air quality applications).

Standards Australia, AS 2187.2 1993 Explosives – Storage, Transport and Use.

Standards Australia, AS 2187.2-2006 Explosives – Storage and Use – Use of Explosives

Appendix 1 – General Management Plan Requirements from Development Consent

Schedule 5	Section Number
Management Plan Requirements 1. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
a) detailed baseline data	3.0
b) a description of: • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures/criteria; • the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;	2.0 4.0 3.0, 6.0
c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	5.0
d) a program to monitor and report on the: • impacts and environmental performance of the project; • effectiveness of any management measures (see (c) above);	5.0, 6.0
e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	6.5
f) a program to investigate and implement ways to improve the environmental performance of the project over time;	8.0
g) a protocol for managing and reporting any: • incidents; • complaints; • non-compliances with conditions of this approval and statutory requirements; and • exceedances of the impact assessment criteria and/or performance criteria	7.2.1 7.3 7.2.2 7.2
h) a protocol for periodic review of the plan.	9.0

NSW GOVERNMENT | Planning, Industry & Environment

Energy & Resources
Planning & Assessment
Contact: Colin Phillips
Telephone: 9274 6483
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Ms Shilpa Shashi
Planning and Environment Coordinator NSW / ACT
Holicim (Australia) Pty Ltd
Level 8 Tower B - 799 Pacific Highway
CHATSWOOD NSW 2067

Dear Ms Shashi

Cooma Road Quarry Air Quality Expert (SSD 5109)

I refer to your letter of 30 July 2019 seeking the Secretary's approval of Mr Luke Bettridge of Umwelt as a suitably qualified person to update the quarry's Air Quality Management Plan, required by condition 16 of Schedule 3 of the quarry's consent.

The Secretary has approved the appointment of Mr Bettridge.

In accordance with condition 3 of Schedule 5, the Secretary has agreed that the company's revision of management plans, triggered by the approval of Modification 2, may occur without consulting the agencies nominated in the relevant conditions of consent. The exception is that the company must consult with Queanbeyan Council during the preparation of the Transport Management Plan.

Please contact Colin Phillips on the details above if you have any questions.

Yours sincerely

Howard Reed 7.8.19
Howard Reed
Director, Resource Assessments
Energy and Resource Assessments
As the Secretary's nominee

Our reference: EF13/3083: DOC13/69830-03
Contact: Kirsty Pearson 02 6229 7002

Mr Luke Bettridge
Senior Environmental Scientist
Umwelt (Australia) Pty Limited
75 York Street
TERALBA NSW 2284

24 March 2014

Dear Mr Bettridge

Re: Draft Environmental Management Plans for Cooma Road Quarry - Development Consent (SSD_5109) - Environment Protection Licence No. 1453

Thank you for your email 14 March 2014 inviting the Environmental Protection Authority's (EPA) comment on the draft Environmental Management Plans developed for the Cooma Road Quarry expansion project.

As you are aware, the Department of Planning and Infrastructure has issued an approval under Part 4 of the *Environmental Planning and Assessment Act* 1979 for the continued operation of the existing Cooma Road Quarry. The EPA understands the current development consent for Cooma Road Quarry will expire in October 2015 and the Project has been given approval to continue operation of the quarry for a further 20 years. The Project involves extending the approved extraction area and relocating some of the infrastructure components to allow for this extension. The revised Cooma Road Quarry Project Approval (SSD_5109) extends hours of operation for certain activities from 6pm to 10pm; increases production capacity from 1 to 1.5 million tonnes per annum; relocates the existing workshop, truck parking and temporary stockpiles; includes the addition of a mobile pug mill; incorporates recycling of clean concrete on site for re-use; and extends the approved extraction boundary to the north covering an additional area of about 3.5 ha.

As previously advised by the EPA, a variation to Environment Protection Licence (EPL) No. 1453 issued under the *Protection of the Environment Operations Act 1997* (POEO Act) will be required to accommodate the expansion project.

It is not the role of the EPA to approve or endorse such management plans. The EPA's role is to regulate compliance with the conditions of the EPL for the premises. Notwithstanding this, the EPA has conducted a brief review of the draft Environmental Management Plans including the Noise Management Plan, Blast Management Plan, Water Management Plan and Air Quality Management Plan prepared by Umwelt (Australia) Pty Ltd.

The plans appear adequate and the EPA has no specific comments to make at this stage. The installation of the meteorological station at the Cooma Road Quarry is a good tool for assisting in the management and mitigation of potential impacts related to operation as well as complaints investigation. The EPA supports this initiative.

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We remind the proponent, Holcim, of its responsibility to ensure the EPL is appropriately varied prior to the commencement of construction activities for the Quarry extension.

I trust this information is of assistance. Should you have any queries or wish to discuss the EPA's response, please contact me or Kirsty Pearson on Ph: 6229 7002.

Yours sincerely

JULIAN THOMPSON
Unit Head – South East Region
NSW Environment Protection Authority

PF990489
C1434774

25 March 2014

Luke Bettridge
Senior Environmental Scientist
Umwelt (Australia) Pty Limited
lbettridge@umwelt.com.au

Dear Luke

RE: Cooma Road Quarry – Environmental Management Plans - Review
Thank you for the opportunity to review Environmental Management Plans for the Cooma Road quarry prior to submitting them to the Department. The timeframe was short and as such not all of the plans were able to be reviewed in detail by your deadline of 25 March 2014. However, the following comments are provided for your consideration:

Heritage Management Plan
To ensure the long term protection of the lime kiln it is recommended that a Weed Management Program be provided to address 4.1.1 dot point 3 (p. 6). This would give further clarification of weed poisoning over a stipulated time period. This would then commit the applicant to this program. Our Parks & Recreation section are happy to provide some information on a weed management program, however, the time frame of 25 March is not achievable for them.

Noise Management Plan, Blast Management Plan and Air Quality Management Plan
These plans have been reviewed by our Environmental Health section and they are satisfied that they have complied with the condition of approval.

Transport Management Plan
Additional time is requested to review this plan in detail.

Council will take the opportunity to provide further comment on the Transport Management Plan during the time that NSW Planning and Infrastructure are reviewing the Plans.

Yours sincerely,

Lorena Blacklock

Lorena Blacklock
Manager Development Control
Sustainability and Better Living
02 6285 6244