

Holcim (Australia) Pty Limited

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**Lynwood Quarry Environmental  
Monitoring Program  
Revision 2**

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June 2010



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## 1.0 Introduction

Holcim (Australia) Pty Limited (Holcim – formerly Readymix) was granted development consent (DA 128-5-2005) in December 2005 by the Minister for Planning for the construction and operation of Lynwood Quarry west of Marulan in the Southern Tablelands region of NSW. This Environmental Monitoring Program outlines the monitoring required to be undertaken by Holcim to address the relevant statutory requirements for environmental monitoring at Lynwood Quarry. The program addresses the requirements contained in Lynwood Quarry's modified development consent (DA-128-5-2005) and the Lynwood Quarry Environment Protection Licence (EPL) no. 12939.

In accordance with the requirements of Schedule 3 of the development consent, Holcim has prepared the following environmental monitoring programs for the development:

- a Noise Monitoring Program;
- a Blast Monitoring Program;
- an Air Quality Monitoring Program;
- a Surface Water Monitoring Program; and
- a Groundwater Monitoring Program.

This Environmental Monitoring Program consolidates all of Lynwood Quarry's environmental monitoring programs to provide an overall framework for the environmental monitoring of the project. This plan satisfies Condition 3, Schedule 5 of the Lynwood development consent (refer to **Section 1.2**).

### 1.1 Purpose

The purpose of this Environmental Monitoring Program is to define the environmental monitoring framework to be implemented at the Lynwood Quarry, to minimise potential impacts on the surrounding environment and community, and to comply with statutory requirements.

### 1.2 Development Consent Conditions

This Environmental Monitoring Program has been developed to satisfy conditions 3 and 4 of Schedule 5 of the development consent. The requirements of these conditions and the relevant sections in which they are addressed in this plan are outlined in **Table 1.1**.

**Table 1.1 - Development Consent Conditions**

<b>Consent Condition</b>	<b>Relevant Section of Environmental Monitoring Program</b>
<i>3. Prior to carrying out any development, the Applicant shall prepare an Environmental Monitoring Program for the development, in consultation with the relevant agencies, and to the satisfaction of the Director-General. This program must consolidate the various monitoring requirements in schedule 3 of this consent into a single document.</i>	Entire Program
<i>4. Within 3 months of the completion of each Independent Environmental Audit (see Condition 7 below), the Applicant shall review, and if necessary update, the program to the satisfaction of the Director General.</i>	Section 7.0

## **2.0 Environmental Monitoring Limits**

Monitoring will be undertaken to determine compliance with the environmental limits defined in Schedule 3 of the development consent. Schedule 3 outlines environmental limits for noise, blasting, air quality, and surface water discharge and these limits have been included in the relevant monitoring programs.

## **3.0 Monitoring Standards**

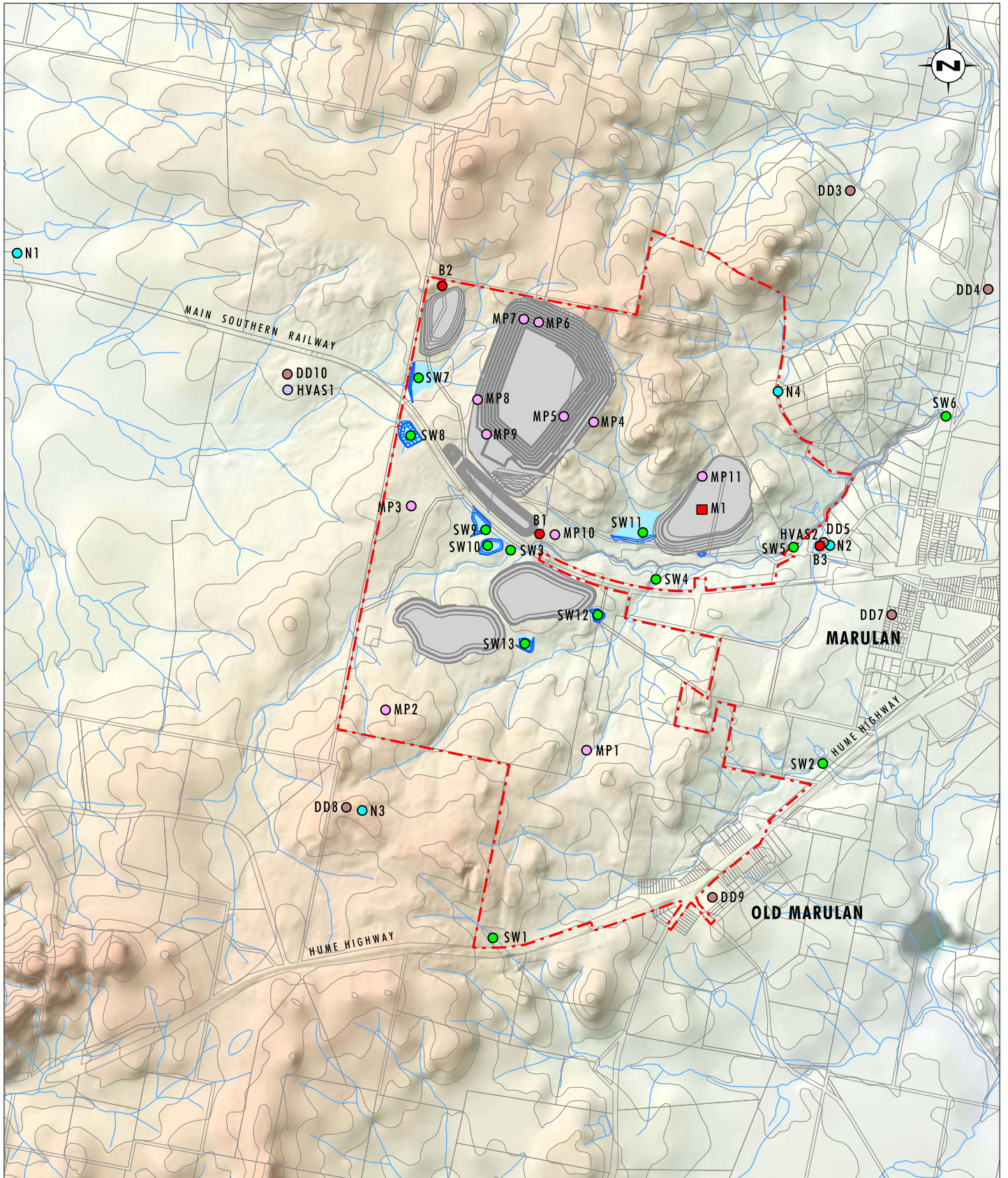
Environmental monitoring at the Lynwood Quarry will be undertaken in accordance with relevant Australian Standards, legislation and NSW Office of Environment and Heritage (OEH) approved methods for sampling, as outlined in the relevant monitoring programs.

## **4.0 Monitoring Program**

Environmental monitoring at the Lynwood Quarry is to be undertaken in accordance with this Environmental Monitoring Program and the following respective monitoring programs:

- Noise Monitoring Program;
- Blast Monitoring Program;
- Air Quality Monitoring Program;
- Surface Water Monitoring Program; and
- Groundwater Monitoring Program.

**Table 4.1** below summarises the monitoring requirements for the project. Monitoring locations are shown on **Figure 1**.



Base Source: LPI 2004

0 0.5 1 1.5 km  
1:36 000

**Legend**

- - - Project Area
- Noise Monitoring Location
- Blasting Monitoring Location
- Depositional Dust Monitoring Location
- PM10 Dust Monitoring Location
- Surface Water Monitoring Location
- Groundwater Monitoring Location
- Meteorological Station

**FIGURE 1**  
**Environmental Monitoring Locations**

**Table 4.1 - Summary of Environmental Monitoring Requirements for the Lynwood Quarry**

Monitoring Program	Consent Conditions	Monitoring Locations	Parameters Monitored	Units of Measure	Averaging Period	Monitoring Frequency	Responsibility	Reporting
Air Quality	12, 14	DD3, DD4, DD5, DD7, DD8, DD9, DD10,	Deposited dust	g/m <sup>2</sup> /month	Monthly, annual	Monthly	Lynwood Quarry Environmental Officer/Monitoring Contractors	Internally quarterly, Annual Environmental Management Report (AEMR), Environment Protection Licence (EPL) return
	12, 14	HVAS1, HVAS2	PM <sub>10</sub> (TSP will be calculated from PM <sub>10</sub> )	µ/m <sup>3</sup>	24 hour, annual	24 hours, every 6 days	Lynwood Quarry Environmental Officer/Monitoring Contractors	Internally quarterly, AEMR, EPL return
Surface Water	20, 23	SW1 to SW6	pH TSS oil and grease EC TP TN flow faecal coliforms - (only if treated sewage used on site)	pH mg/L mg/L µS/cm mg/L mg/L observation colonies/100mL	Monthly, annual	Monthly	Lynwood Quarry Environmental Officer/Monitoring Contractors	Internally quarterly, AEMR, EPL return

**Table 4.1 - Summary of Environmental Monitoring Requirements for the Lynwood Quarry (cont)**

Monitoring Program	Consent Conditions	Monitoring Locations	Parameters Monitored	Units of Measure	Averaging Period	Monitoring Frequency	Responsibility	Reporting
	17, 20, 23	monitoring of active discharge from a site dam	pH TSS oil and grease EC TP TN faecal coliforms - (only if dam surrounds reused water application area)	pH mg/L mg/L $\mu\text{S/cm}$ mg/L mg/L colonies/100mL	Monthly, annual	Prior to discharge and every 24 hours during active discharge	Lynwood Quarry Environmental Officer/Monitoring Contractors	Internally quarterly, AEMR, EPL return
<b>Groundwater</b>	20, 24	MP-1 to MP-11	Water level + analytes outlined in <b>Appendix 1</b>	Depth to water level (metres) + units outlined in <b>Appendix 1</b>	3 monthly, 6 monthly, annual	Water level - 3 monthly, other analytes – 6 monthly	Lynwood Quarry Environmental Officer / Monitoring Contractors	Internally 3 and 6 monthly, AEMR, EPL return
<b>Noise</b>	3, 6	N1 to N4	Day/evening time noise from Lynwood Quarry	$L_{\text{Aeq}}(15 \text{ minute})$	N/A	7 days, quarterly including attended monitoring a minimum of two 15 min periods over 2 days	Lynwood Quarry Environmental Officer/Monitoring Contractors	Internally quarterly, AEMR, EPL return
			Night time noise from Lynwood Quarry	$L_{\text{Aeq}}(15 \text{ minute}),$ $L_{\text{A1}}(1 \text{ minute})$	N/A	7 days, quarterly including attended monitoring a minimum of two 15 min periods over 2 days	Lynwood Quarry Environmental Officer/Monitoring Contractors	Internally quarterly, AEMR, EPL return

**Table 4.1 - Summary of Environmental Monitoring Requirements for the Lynwood Quarry (cont)**

<b>Monitoring Program</b>	<b>Consent Conditions</b>	<b>Monitoring Locations</b>	<b>Parameters Monitored</b>	<b>Units of Measure</b>	<b>Averaging Period</b>	<b>Monitoring Frequency</b>	<b>Responsibility</b>	<b>Reporting</b>
<b>Blast</b>	7, 8, 11	B1 to B3	Airblast overpressure level Peak particle velocity	dB(Lin Peak) mm/s	N/A	Each blast	Lynwood Quarry Environmental Officer/Monitoring Contractors	Internally after each blast, AEMR, EPL return

In addition to the monitoring outlined in **Table 4.1** above, meteorological monitoring will be undertaken in accordance with condition 15, Schedule 3 of the consent. A meteorological station was established during the development assessment phase of the project and meteorological conditions will continue to be monitored at this location (refer to **Figure 1**). The weather station will eventually need to be moved to a new location due to construction of the eastern overburden emplacement area and this monitoring program will be revised in consultation with OEH and the Department of Planning and Infrastructure (DP&I) to discuss the revised location prior to the station being relocated. The meteorological station will monitor the parameters outlined in **Table 4.2** below.

**Table 4.2 - Meteorological Monitoring**

Parameter	Units of Measure	Averaging Period	Frequency	Method*
Wind speed @ 10 m	m/s	1-hour	Continuous	AM-2 & AM-4
Wind direction @ 10 m	Degrees	1-hour	Continuous	AM-2 & AM-4
Sigma theta @ 10 m	Degrees	1-hour	Continuous	AM-2 & AM-4
Temperature @ 2 m	K	1-hour	Continuous	AM-4
Temperature @ 10 m	K	1-hour	Continuous	AM-4
Total solar radiation @ 10 m	W/m <sup>2</sup>	1-hour	Continuous	AM-4
Rainfall	mm	24-hour	Continuous	AM-4
Siting	-	-	-	AM-1 & AM-4

\* Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales DEC (EPA) 2001.

Meteorological monitoring data will be compared with environmental monitoring results to assist in the interpretation of monitoring results and to determine potential relationships as necessary.

## 5.0 Reporting and Review of Results

Monitoring results will be reviewed on a quarterly basis by the Lynwood Quarry Environmental Officer to assess compliance with limits outlined in the relevant environmental monitoring program. Should any exceedances of the limits be identified the Environmental Officer will report the exceedance to the DP&I, OEH and any other relevant agencies within seven days. Monitoring results will also be reported as required in the Annual Environmental Management Report (AEMR) and, as required, in the EPL Annual Return.

### 5.1 Complaints Response

In accordance with the Environmental Management Strategy, the Environmental Officer will maintain a centralised location to record communication records with relevant external stakeholders.



As described in the Environmental Management Strategy, Lynwood Quarry will utilise a Community Contact Line, which will be maintained and advertised regularly for the duration of the project. Complaints will be recorded and investigated by the Environmental Officer. All other complaints, via letter, in person or by fax, will also be recorded and investigated by the Environmental Officer. The Environmental Officer will ensure that complaints are responded to in a timely and efficient manner.

Follow up correspondence with the complainant will be made explaining the outcome of complaint investigations.

## 5.2 Corrective Action

**Table 5.1** summarises the potential environmental monitoring related issues that may arise and the appropriate corrective action to be taken.

**Table 5.1 - Corrective Actions**

<b>Problem</b>	<b>Corrective Action</b>
Exceedance of EPL or Development Consent conditions for environmental monitoring criteria	Investigation of exceedance, undertaking mitigating measures where applicable. Report exceedance to DP&I, OEH and senior management, as required.
Community complaints	Investigation of complaint, undertaking mitigating measures where applicable and provide feedback to complainant. Report complaint to senior management. Provide feedback to quarry planning and production personnel, where relevant.

## 6.0 Responsibility

The Lynwood Quarry Environmental Officer will be responsible for managing the Environmental Monitoring Program. This includes assessing Lynwood Quarry's compliance with the environmental monitoring limits listed in the development consent and EPL, once obtained.

If a contractor is engaged to undertake environmental monitoring on behalf of Holcim, all monitoring undertaken by the contractor will be in accordance with the relevant monitoring programs.

## 7.0 Program Review

The Lynwood Quarry Environmental Officer will review this program annually or more often as the need arises, including review of monitoring locations and frequency. If any significant changes to the program are required as an outcome of the review, OEH will be consulted and the revised program submitted to the DP&I for approval.

Reviews of the Environmental Monitoring Program will be undertaken in accordance with Condition 4, Schedule 5 of the development consent (refer to **Table 1.1**), which requires that the program is reviewed and updated (if necessary) within three months of the completion of each Independent Environmental Audit.

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## 8.0 References

DEC, 2001. *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*. Revised 5 January 2007. Department of Environment and Conservation NSW, Sydney South.

Umwelt (Australia) Pty Limited, 2005. *Environmental Impact Statement, Readymix Holdings Pty Ltd, Proposed Lynwood Quarry, Marulan*.

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