



Karuah Hard Rock Quarry

Summary of Environmental Monitoring Data



For the Period: August 2012

1. Introduction

This report has been completed to meet the requirements of Section 66(6) of the *Protection of the Environment Operations Act 1997* and the NSW Environmental Protection Authority's (EPA) *Requirements for Publishing Pollution Monitoring Data* (March 2012). This report summarises the required monitoring data under Environmental Protection Licence (EPL) 11569 for the Karuah Hard Rock Quarry (Karuah Quarry). This report also includes some monitoring requirements under Development Application 265-10-2004.

A summary of the licence information is provided in the tables in the report.

Table 1 – Licence Information

Environmental Protection Licence Number	11569
Licensee's Name	Hunter Quarries Pty Ltd
Licensee's Address	Licensee Postal Address: PO Box 3284 Thornton NSW 2322 Premises Address: Karuah Quarry, Corner of Andesite Road and The Branch Lane, Karuah NSW 2324
Link to Full Licence on the EPA Website	http://www.environment.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=30942&SYSUID=1&LICID=11569

2. Dust Monitoring Results

There are no specific dust criteria listed in the EPL, but the following dust criteria are listed in Schedule 3 Condition 14 of DA 265-10-2004.

Table 2 - OEH Dust Deposition Criteria for the Karuah Quarry

Averaging Period	Maximum Increase in Deposited Dust Level¹	Maximum Total Deposited Dust Level¹
Annual	2 g/m ² /month	4 g/m ² /month

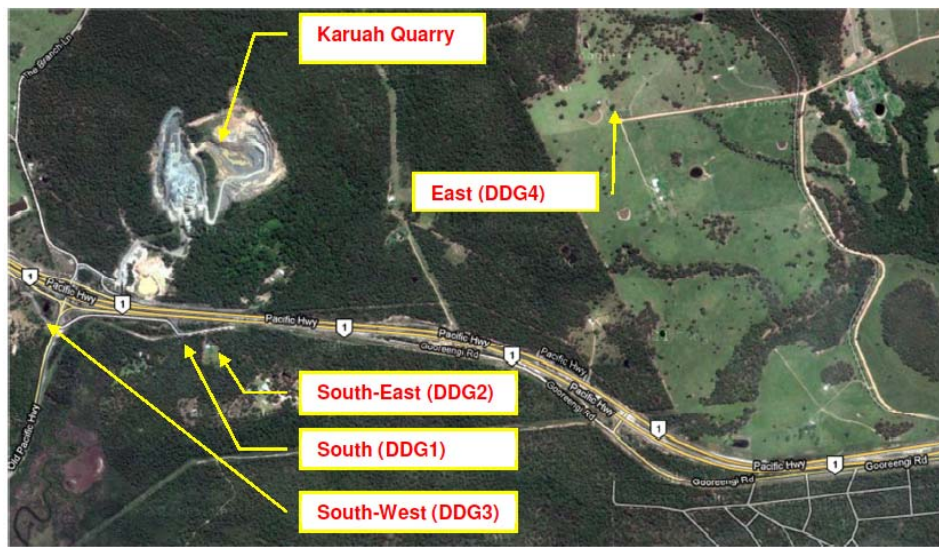
Note¹: Dust is assessed as insoluble solids as defined by AS 3580.10.1-2003.

SLR Consulting Australia Pty Ltd undertakes the depositional dust monitoring at Karuah Quarry. Monitoring is completed at the locations listed in **Table 3** below.

Table 3 – Air Quality Monitoring Locations for the Karuah Quarry

Site ID	Location	Address	GPS Coordinates
South (DDG1)	South of the Karuah Quarry	5760 Pacific Hwy, Karuah NSW 2324	32°38'04"S 151°59'58"E
South-East (DDG2)	South of the Karuah Quarry	5770 Pacific Hwy, Karuah NSW 2324	32°38'02"S 152°00'09"E
South-West (DDG3)	South-West of the Karuah Quarry	DP 1024341, Karuah	32°37'57"S 151°59'41"E
East (DDG4)	East of the Karuah Quarry	21 Halloran Rd North Arm Cove NSW 2324	32° 37' 30.87"S 152°01'10.18"E

Figure 1 illustrates the air quality monitoring locations at Karuah Quarry.



Source: Google Earth

Figure 1 - Air Quality Monitoring Locations

Air Quality Monitoring was undertaken during the period 26 July 2012 to 22 August 2012 at the locations detailed in Table 4. Depositional dust gauge ($\text{g}/\text{m}^2/\text{month}$) results for August 2012 and the year to date are shown in Table 4.

Table 4 – Insoluble Solids ($\text{g}/\text{m}^2/\text{month}$) for the Year to Date

EPL		11569		
Date Sampled		22 August 2012		
Obtained by Hunter Quarries		10 September 2012		
Published by Hunter Quarries		30 October 2012		
Date	DDG1	DDG2	DDG3	DDG4
10/01/2012 to 6/02/2012	0.2	0.1	0.8	0.4
6/02/2012 to 6/03/2012	0.7	4.5	0.9	0.3
6/03/2012 to 3/04/2012	1.2	2.4	0.8	0.5
3/04/2012 to 2/05/2012	1.2	0.5	0.4	0.7
2/05/2012 to 30/05/2012	2.2	1.7	0.7	0.4
30/05/2012 to 27/06/2012	1.5	0.6	0.4	0.3
27/06/2012 to 26/07/2012	0.6	0.9	0.5	0.5
26/07/2012 to 22/08/2012	2.6	1.1	0.8	0.8
Year to Date Average	1.28	1.48	0.66	0.49

Dust monitoring results have been consistently lower than $4\text{g}/\text{m}^2/\text{month}$ in 2012. All monitoring locations in August 2012 were below $4\text{g}/\text{m}^2/\text{month}$.

3. Blast Monitoring Results

The following conditions in EPL 11569 refer to blast management.

M6.1 The licensee must monitor all blasts carried out in or on the premises at or near the nearest residence or noise sensitive location (such as a school or hospital) that is likely to be most affected by the blast and that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee relating to alternative blasting limits.

L4.1 Blasting in or on the premises must only be carried out between 0900 hours and 1500 hours, Monday to Friday. Blasting in or on the premises must not take place on weekends or Public Holidays without the prior approval of the EPA.

L4.2 The overpressure level from blasting operations carried out in or on the premises must not:

- a) exceed 115 dB(L) for more than 5% of the total number of blasts carried out on the premises within the 12 months annual reporting period; and*
- b) exceed 120 dB(L) at any time*

at any residence or noise sensitive location (such as a school or hospital) that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee as to an alternative overpressure level.

L4.3 The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not:

- a) exceed 5mm/second for more than 5% of the total number of blasts carried out on the premises within the 12 months annual reporting period; and*
- b) exceed 10mm/second at any time at any residence or noise sensitive location (such as a school or hospital) that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee as to an alternative ground vibration level.*

Table 5 summarises the August 2012 blasting results.

Table 5 – August 2012 Blast Monitoring Results

Date and Time	Overpressure and Vibration	Monitor 1	Monitor 2
6/8/2012 12:30pm	Overpressure dB(L)	109.2	No trigger
	Vibration(mm/s)	1.4	No trigger
28/8/2012 12:15pm	Overpressure dB(L)	109.2	111.5
	Vibration(mm/s)	0.519	0.344

Due to access restrictions blasts are carried out at Monitors 1 and 2 which are located closer to the quarry than the nearest residents. Blast results during August 2012 were below vibration and overpressure criteria outlined in the EPL.

4. Noise Monitoring Results

Condition 1 of the Development Consent requires Hunter Quarries to ensure noise generated by the development does not exceed criteria outlined in **Table 6** at any residence, or any noise sensitive receptor on privately owned land.

Table 6 – Development Consent Noise Impact Criteria – Karuah Quarry

Time Period	Noise Limit (dBA) 1 LAeq(15minute)
Day 7:00am to 6:00pm Monday to Friday 7:00am to 1:00pm Saturday	48
Evening 6:00pm to 10:00pm Monday to Friday	47
At All Other Times	46

Table 7 illustrates the operator attended and unattended noise monitoring locations at Karuah Quarry.

Table 7 – Development Consent Noise Impact Criteria – Karuah Quarry

Noise Monitoring Location	Property Name	Distance from Karuah Quarry
NM1	Lot 3 DP785172 5772 Pacific Hwy, Karuah	317 metres South of the Karuah Quarry
NM2	Lot 2 DP 785172 5760 Pacific Hwy, Karuah	200 metres South of the Karuah Quarry
NM3	Lot 22 DP 1024341	370 metres South West of the Karuah Quarry

Figure 2 below illustrates the noise monitoring locations at Karuah Quarry.



Figure 2 - Noise Monitoring Locations

SLR Consulting Australia Pty Ltd was engaged by Hunter Quarries to prepare and implement a noise monitoring program for the Karuah Quarry in accordance with the Conditions of Development Consent for the operation. This report presents the bi-annual noise monitoring survey for the period up to the end of May 2012 as a part of this noise monitoring program. There was no noise monitoring completed in August 2012. The next noise monitoring survey is due in December 2012.

Published by Hunter Quarries	30 October 2012
Licensee	Hunter Quarries Pty Ltd
EPL No.	11569

Table 8 outlines Operator Attended Noise Survey Results for Karuah Quarry.

Table 8 – Operator Attended Noise Survey Results

Location (Serial No.)	Date/Start Time/ Weather	Primary Noise Descriptor (dBA re 20 µPa)						Description of Noise Emissions and Typical Maximum Noise Levels (dBA)
		LAMAX	LA1	LA10	LA90	LAeq	Lmin	
NM1 Lot 3 DP785172 Northern Boundary (16-203-531)	28/05/2012 1:06 PM Wind: S 4m/s Temp18°C	75	72	67	56	64	48	Pacific Highway ~ 67-75 Birds 48 Quarry inaudible
		Estimated Quarry LAeq(15minute) Contribution not measurable above background noise.						
NM2 Lot 2 DP 785172 Northern Boundary (16-306-039)	28/05/2012 12:48 PM Wind: S 4m/s Temp18°C	71	67	62	53	59	48	Pacific Highway ~ 62-71 Birds 48 Quarry inaudible
		Estimated Quarry LAeq(15minute) Contribution not measurable above background noise.						
NM3 Lot 22 DP 1024341 Northern Boundary (16-301-473)	28/05/2012 12:26 AM Wind: S 4m/s Temp18°C	70	64	58	49	55	45	Pacific Highway ~ 58-70 Birds 45 Quarry inaudible
		Estimated Quarry LAeq(15minute) Contribution not measurable above background noise.						

Table 9 outlines unattended continuous monitoring results for Karuah Quarry.

Table 9 - Unattended Continuous Monitoring Results

INP Period	LA1	LA10	LA90	LAeq
NM1				
Daytime during Operational Hours	72	68	54	64
Daytime outside Operational Hours	72	67	54	64
Evening	74	68	51	63
Night	73	67	37	61
NM2				
Daytime during Operational Hours	66	62	51	58
Daytime outside Operational Hours	66	63	54	59
Evening	66	62	49	59
Night	67	63	38	56
NM3				
Daytime during Operational Hours	66	61	50	57
Daytime outside Operational Hours	66	61	50	57
Evening	66	61	45	57
Night	66	61	33	54

Note: Periods used for the Industrial Noise Policy (INP) are defined as Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.

SLR Consulting Australia Pty Ltd completed an assessment of the noise monitoring results. Both operator attended and unattended noise monitoring were conducted at the three (3) nearest residences (**Figure 2**) to determine noise levels produced by Karuah Quarry operations.

The noise contribution of Karuah Quarry operations remained insignificant compared to road traffic noise from the Pacific Highway during all attended noise surveys. The Karuah Quarry operations contribution ($L_{Aeq(15\text{minute})}$) was estimated to be less than 38 dBA, at NM1 and NM2 and 35 dBA at NM3 and therefore in compliance with the consent criteria of 48 dBA $L_{Aeq(15\text{minute})}$ at all monitoring locations.

Results from the ambient unattended noise logger measurements conducted at three (3) noise monitoring locations indicate that the main contributors to ambient noise levels at all three locations are considered to be the result of traffic along the Pacific Highway and birds/insects.

5. Surface Water Monitoring Results

Condition L2 of the EPL outlines the requirement to monitor surface water discharges from Karuah Quarry via the licensed discharge point (LDP001).

Table 10 summarises discharge monitoring at Karuah Quarry.

Table 10 - Surface Water Discharge Monitoring Results

Sampling Point	Monitoring Frequency	Pollutant	Measurement	EPL Limit
LDP001	During Discharge	pH	<i>No discharge during August 2012</i>	6.5 – 8.5