



Karuah Hard Rock Quarry

Summary of Environmental Monitoring Data



For the Period: June 2013

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 Consent (DA 265-10-2004).

A summary of the environmental monitoring data for June 2013 is covered in this report.

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	EPL 11569

2. Dust Monitoring Results

There are no specific dust criteria listed in the EPL, but the following dust criteria (**Table 2**) are listed in Schedule 3 Condition 14 of DA 265-10-2004.

Table 2 - DA 265-10-2004 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

Note ¹: Dust is assessed as insoluble solids as defined by AS 3580.10.1-2003.

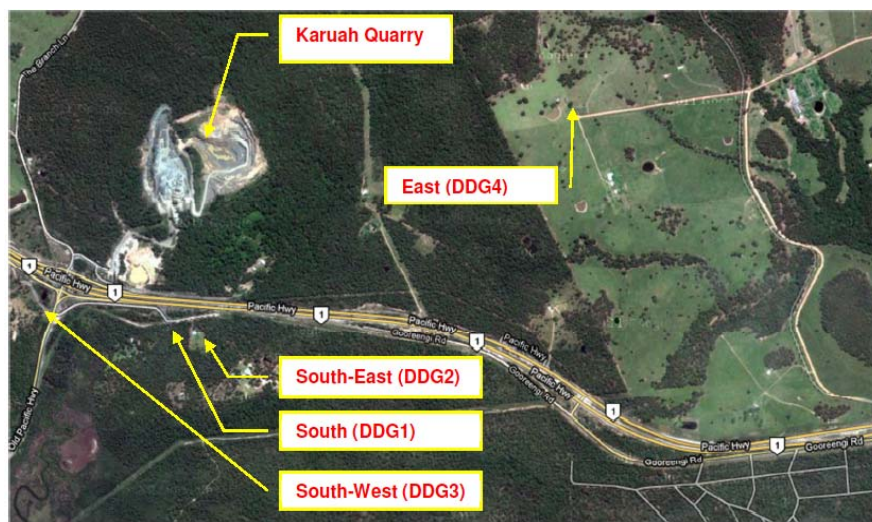
SLR Consulting Australia Pty Ltd undertakes the depositional dust monitoring at Karuah Quarry. Monitoring is completed at the locations listed in **Table 3** below.

Table 3 – Air Quality Monitoring Locations for the Karuah Quarry

Site ID	Location	Address	GPS Coordinates
South (DDG 1)	South of the Karuah Quarry	5760 Pacific Hwy, Karuah NSW 2324	32°38'04"S 151°59'58"E
South-East (DDG 2)	South of the Karuah Quarry	5770 Pacific Hwy, Karuah NSW 2324	32°38'02"S 152°00'09"E
South-West (DDG 3)	South-West of the Karuah Quarry	DP 1024341, Karuah	32°37'57"S 151°59'41"E
East (DDG 4)	East of the Karuah Quarry	21 Halloran Rd North Arm Cove NSW	32° 37' 30.87"S 152°01'10.18"E

Site ID	Location	Address	GPS Coordinates
		2324	

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 24 May 2013 to 26 June 2013 at the locations detailed in **Table 4**. Depositional dust gauge ($\text{g}/\text{m}^2/\text{month}$) results for June 2013 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		26 June 2013		
Obtained by Hunter Quarries		26 July 2013		
Published by Hunter Quarries		2 August 2013		
Date	DDG 1	DDG 2	DDG 3	DDG 4
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
22/08/2012 to 19/09/2012	1.6	1.2	0.7	0.7
19/09/2012 to 19/10/2012	1.3	0.5	0.6	0.4
19/10/2012 to 20/11/2012	0.6	0.5	0.7	0.4
20/11/2012 to 19/12/2012	0.6	0.9	1.1	No result ¹
19/12/2012 to 17/01/2013	1.1	1.7	0.6	0.8
17/1/2013 to 18/2/2013	0.8	1.5	0.6	0.6
18/2/3013 to 22/3/2013	1.9	1.0	3.2	0.4
22/3/2013 to 22/4/2013	5.1	1.0	0.2	0.2
22/2/4013 to 24/5/2013	2.8	0.4	0.3	0.3
24/5/2013 to 26/6/2013	1.6	0.4	0.3	0.2
Average	1.4	1.3	1.2	0.5
Rolling Annual Average	1.7	1.0	0.8	0.4

¹ No result as dust gauge was damaged on site.

Monitoring results indicate that for the period 24/5/2013 to 26/6/2013, the insoluble solid and ash residue levels recorded at DDG1, DDG2, DDG3 and DDG4 were below the project criterion of 4 g/m²/month. Rainfall was greater than the monthly average in June which resulted in low dust levels.

It should be noted that the annual average soluble solid and ash residue levels recorded at all monitoring locations are below the annual project criterion of 4 g/m²/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 June 2013 blasting results.

Table 5 – June 2013 Blast Monitoring Results

Date and Time	Overpressure and Vibration	Monitor 1	Monitor 2
18/6/2013 12:25pm	Overpressure dB(L)	107.0	106.0
	Vibration(mm/s)	2.55	1.19

The blasting results from 18 June, 2013 indicate that the blast was below the EPL criteria.

4. Noise Monitoring Results

Schedule 3 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

Operator Attended Monitoring

An operator attended noise survey was conducted at each of the three (3) monitoring locations on 21 June 2013. The purpose of the noise surveys was to verify the unattended logging results and to determine the character and contribution of noise sources to the total ambient noise level. The Operator Attended Noise Monitoring Results are outlined in **Table 8** below.

Table 8 – Operator Attended Noise Survey Results – Karuah Quarry

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)	21/06/2013 2:19 pm Wind: SSW 3.6m/s Temp 15°C	74	71	69	59	65	53	Pacific Highway ~ 53-74 Quarry inaudible
		Estimated Quarry LAeq(15minute) Contribution not measurable above background noise.						
NM2 Lot 2 DP 785172 Northern Boundary (20666)	21/06/2013 1:53 pm Wind: SSW 3.6m/s Temp 15°C	71	68	63	54	60	48	Pacific Highway ~ 63-81 Quarry inaudible
		Estimated Quarry LAeq(15minute) Contribution not measurable above background noise.						
NM3 Lot 22 DP 1024341 Northern Boundary (16-203-509)	21/06/2013 1:29 pm Wind: SSW 3.6m/s Temp 15°C	69	65	61	52	58	47	Pacific Highway ~ 66- 75 Quarry inaudible
		Estimated Quarry LAeq(15minute) Contribution not measurable above background noise.						

Noise generated by traffic on the Pacific Highway and natural noise sources such as birds and insects dominated ambient noise levels at all noise monitoring locations (NM1, NM2 and NM3).

The quarry was inaudible at all measurement locations. Typically noise sources that are inaudible are at least 10 dB below the minimum noise level. For this reason it is expected that the quarry noise contribution at Locations NM1, NM2 and NM3 is at least 10 dB below the recorded minimum noise level of 53 dBA at NM1, 48 dBA at NM2 and 47 dBA at NM3 and therefore well below the consent criteria of 48 dBA.

Unattended Monitoring

The Unattended Noise Monitoring Results are outlined in **Table 9** below.

Table 9 – Unattended Continuous Noise Survey Results – Karuah Quarry

INP Period	LA1	LA10	LA90	LAeq
NM1				
Daytime during Operational Hours	72	67	55	64
Daytime outside Operational Hours	72	67	55	64
Evening	73	67	50	63
Night	73	65	38	60
NM2				
Daytime during Operational Hours	67	62	51	61
Daytime outside Operational Hours	66	62	50	58
Evening	68	62	43	63
Night	67	60	35	56
NM3				
Daytime during Operational Hours	66	62	52	59
Daytime outside Operational Hours	66	63	54	59
Evening	67	63	48	59
Night	67	61	37	56

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 to 10.00 pm; Night - 10.00 pm to 7.00 am Monday to Saturday, 10.00 pm to 8.00 am Sunday.

Location NM1

Ambient noise levels during the daytime period outside the quarry's operational hours are consistent with those during operational hours. The main contributors to ambient noise levels at this monitoring location are considered to be the result of traffic along the Pacific Highway and natural sources such as birds and insects.

Location NM2

Ambient noise levels during the daytime period outside the quarry's operational hours are consistent with those during operational hours. The main contributors to ambient noise levels at this monitoring location are considered to be the result of traffic along the Pacific Highway and natural sources such as birds and insects.

Location NM3

Ambient noise levels during the daytime period outside the quarry's operational hours are consistent with or higher than those during operational hours. The main contributors to ambient noise levels at this monitoring location are considered to be the result of traffic along the Pacific Highway and natural sources such as birds and insects.

5. Surface Water Monitoring Results

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

Table 10 summarises discharge monitoring at Karuah Quarry. There were no surface water discharges in June 2013.

Table 10 - Surface Water Discharge Monitoring Results

Sampling Point	Monitoring Frequency	Pollutant	Measurement	EPL Limit
LDP001	During Discharge	pH	<i>No discharge during June 2013</i>	6.5 – 8.5