



## **Karuah Hard Rock Quarry**

### **Summary of Environmental Monitoring Data**



**For the Period: November 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 November 2013 is covered in this report.

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

**Table 1 – Licence Information**

<b>Environmental Protection Licence Number</b>	11569
<b>Licensee's Name</b>	Hunter Quarries Pty Ltd
<b>Licensee's Address</b>	Licensee Postal Address: PO Box 3284 Thornton NSW 2322.  Premises Address: Karuah Quarry, Corner of Andesite Road and The Branch Lane, Karuah NSW 2324.
<b>Link to Full Licence on the EPA Website</b>	<a href="#">EPL 11569</a>

## 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**

<b>Averaging Period</b>	<b>Maximum Increase in Deposited Dust Level<sup>1</sup></b>	<b>Maximum Total Deposited Dust Level<sup>1</sup></b>
Annual	2 g/m <sup>2</sup> /month	4 g/m <sup>2</sup> /month

**Note**<sup>1</sup>: Dust is assessed as insoluble solids as defined by AS 3580.10.1-2003.

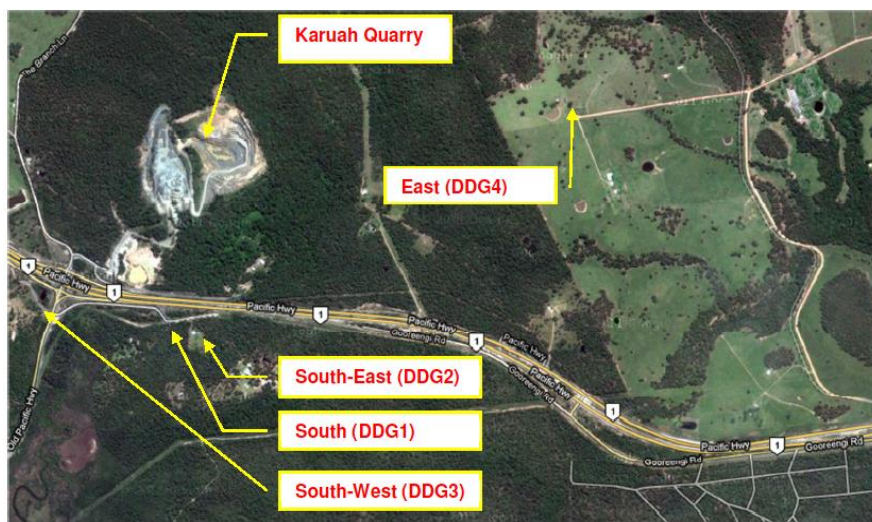
SLR Consulting Australia Pty Ltd undertakes the depositional dust monitoring at Karuah Quarry. Monitoring is completed at the locations listed in **Table 3** below.

**Table 3 – Air Quality Monitoring Locations for the Karuah Quarry**

<b>Site ID</b>	<b>Location</b>	<b>Address</b>	<b>GPS Coordinates</b>
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 17/10/2013 to 18/11/2013 at the locations detailed in Table 4. Depositional dust gauge ( $\text{g}/\text{m}^2/\text{month}$ ) results for November 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	18 November 2013			
Obtained by Hunter Quarries	18 December 2013			
Published by Hunter Quarries	19 December 2013			
Date	DDG 1	DDG 2	DDG 3	DDG 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 <sup>1</sup>
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
26/6/2013 to 24/7/2013	0.7	0.6	0.4	0.2
24/7/2013 to 21/8/2013	0.8	0.7	0.4	0.6
21/8/2013 to 18/9/2013	1.2	0.9	0.7	0.4
18/9/2013 to 17/10/2013	1.9	1.4	1.5	2.1
<b>17/10/2013 to 18/11/2013</b>	<b>0.5</b>	<b>1.8</b>	<b>0.7</b>	<b>9.5</b>
<b>Average</b>	<b>1.4</b>	<b>1.3</b>	<b>1.2</b>	<b>0.9</b>
<b>Rolling Annual Average</b>	<b>1.6</b>	<b>1.0</b>	<b>0.8</b>	<b>1.3</b>

<sup>1</sup> No result as dust gauge was damaged on site.

Monitoring results indicate that for the period 17/10/2013 to 18/11/2013, the insoluble solid and ash residue levels recorded at DDG1, DDG2 and DDG3 were below the project criterion of 4 g/m<sup>2</sup>/month.

DDG4 exceeded the project criterion 4 g/m<sup>2</sup>/month, with the high levels likely to be due to the bushfires in the area on 17<sup>th</sup> October 2013.

### 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 November 2013 blasting results.

**Table 5 – November 2013 Blast Monitoring Results**

<b>Date and Time</b>	<b>Overpressure and Vibration</b>	<b>Monitor 1</b>	<b>Monitor 2</b>
1/11/2013	Overpressure dB(L)	113.8	107.5
	Vibration(mm/s)	1.11	0.743

The blasting results from November, 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 Results

**Table 8 – Attended Noise 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	Lamin	
NM1 Lot 3 DP785172 Northern Boundary (16-203-531)	14/11/2013 10:32 pm Wind: S 2.5m/s Temp 21.7°C	76	73	68	55	65	47	Pacific Highway ~ 55-76  Quarry inaudible
		<b>Contribution not measurable above background noise.</b>						
		<b>Estimated Quarry 45 LAeq(15minute)<sup>1</sup></b>						
NM2 Lot 2 DP 785172 Northern Boundary (20666)	14/11/2013 10:14 am Wind: S 2.5m/s Temp 21.7°C	74	69	63	51	60	45	Pacific Highway ~ 51-74  Quarry inaudible
		<b>Contribution not measurable above background noise.</b>						
		<b>Estimated Quarry 41 LAeq(15minute)<sup>1</sup></b>						
NM3 Lot 22 DP 1024341 Northern Boundary (16-203-509)	14/11/2013 9:55 am Wind: S 2.5m/s Temp 21.7°C	86	64	60	49	57	44	Pacific Highway ~ 57- 64 Noise monitoring Operator 86  Quarry 49
		<b>Estimated Quarry Contribution</b>						
		<b>LAeq(15minute) 46 dBA</b>						

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 audible at measurement location NM3, The estimated contribution was LAeq (15minute) 46 dBA and therefore below the consent criteria of 48 dBA.

The quarry was inaudible at measurement locations NM1 and NM2. Typically noise sources that are inaudible are at least 10 dB below the LA90 noise level. For this reason it is expected that the quarry noise contribution at Locations NM1 and NM2 is at least 10 dB below the recorded minimum noise level of 47 dBA at NM1 and 45 dBA at NM2 and therefore well below the consent criteria of 48 dBA.



## Unattended Noise Results

**Table 9 – Unattended Noise Results – Karuah Quarry**

INP Period	LA1	LA10	LA90	LAeq
<b>NM1</b>				
Daytime during Operational Hours	73	67	52	64
Daytime outside Operational Hours	73	69	56	63
Evening	74	68	49	64
Night	75	67	39	63
<b>NM2</b>				
Daytime during Operational Hours	64	60	48	58
Daytime outside Operational Hours	65	61	50	58
Evening	66	61	44	55
Night	67	61	36	55
<b>NM3</b>				
Daytime during Operational Hours	65	61	48	58
Daytime outside Operational Hours	66	62	51	57
Evening	66	62	49	59
Night	66	63	44	58

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.

### NM1

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.

### NM2

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.

### 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 November 2013.

**Table 10 - Surface Water Discharge Monitoring Results**

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