



## **Karuah Hard Rock Quarry**

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



**For the Period: November 2018**

## 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* (October 2013). 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 2018 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 1:** Dust is assessed as insoluble solids as defined by AS 3580.10.1-2003.

SLR Consulting Australia Pty Ltd (SLR) undertakes 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 2324	32° 37' 30.87"S 152°01'10.18"E

**Appendix 1** Illustrates the air quality monitoring locations at Karuah Quarry.

Air quality monitoring was undertaken during the period 26 October 2018 to 23 November 2018 at the locations detailed in **Table 4**. Depositional dust gauge (g/m<sup>2</sup>/month) results for this month and the year to date are shown in **Table 4**.

**Table 4 – Insoluble Solids (g/m<sup>2</sup>/month) for the Year to Date**

EPL		11569		
Date Sampled		23 November 2018		
Date	DDG 1	DDG 2	DDG 3	DDG 4
25/9/2014 to 24/10/2014	1.2	1.0	0.8	0.6
24/10/2014 to 22/11/2014	1.3	1.2	1.1	1.1
22/11/2014 to 22/12/2014	2.2	2.2	0.5	2.9
22/12/2014 to 20/1/2015	0.9	1.2	0.7	0.6
20/1/2015 to 17/2/2015	0.6	0.7	0.1	1.1
17/2/2015 to 18/3/2015	0.8	2.5	0.6	1.2
18/3/2015 to 15/4/2015	1.0	3.0	0.8	1.1
15/4/2015 to 14/5/2015	1.7	3.7	1.1	1.2
14/5/2015 to 12/6/2015	0.3	1.0	0.4	0.8
12/6/2015 to 10/7/2015	0.5	0.3	0.2	0.3
10/7/2015 to 7/8/2015	1.6	0.9	0.7	0.7
7/8/2015 to 7/9/2015	1.4	0.4	0.6	2.1
7/9/2015 to 8/10/2015	0.8	0.4	0.3	0.3
8/10/2015 to 6/11/2015	1.3	1.2	0.6	0.5
6/11/2015 to 8/12/2015	2.1	0.8	2.8	4.1
8/12/2015 to 8/1/2016	6.4	0.9	0.6	1.2
8/1/2016 to 8/2/2016	1.4	0.9	1.1	1.2
8/2/2016 to 3/3/2016	4.0	0.7	0.6	0.9
3/3/2016 to 4/4/2016	3.1	0.3	1.0	2.0
4/4/2016 to 6/5/2016	1.5	1.1	0.4	3.2
6/5/2016 to 3/6/2016	1.0	0.9	0.7	0.4
3/6/2016 to 4/7/2016	0.4	1.6	0.5	0.3
4/7/2016 to 1/8/2016	1.4	0.7	0.3	0.5
1/8/2016 to 31/8/2016	2.7	3.0	0.8	0.7
31/8/2016 to 28/9/2016	2.1	1.6	0.8	0.8
28/9/2016 to 26/10/2016	0.8	0.6	0.8	0.5
26/10/2016 to 23/11/2016	0.7	1.0	1.3	2.3
23/11/2016 to 21/12/2016	1.3	0.5	0.9	1.0
21/12/2016 to 18/01/2017	0.4	0.8	0.7	2.5
18/01/2017 to 16/02/2017	1.3	0.9	1.2	1.2
16/02/2017 to 20/03/2017	0.4	1.4	0.5	3.8
20/03/2017 to 21/04/2017	0.6	0.7	0.5	0.8
21/04/2017 to 23/05/2017	0.6	0.6	1.1	0.8
23/05/2017 to 20/06/2017	0.5	1.3	0.9	1.2
20/06/2017 to 18/07/2017	0.4	0.2	0.5	1.2
18/07/2017 to 17/08/2017	0.6	0.5	0.6	0.5
17/08/2017 to 14/09/2017	1.4	0.2	1.4	1.5
14/09/2017 to 12/10/2017	1.1	0.1	1.2	1.8
12/10/2017 to 9/11/2017	1.7	0.5	0.9	1.0

EPL		11569		
Date Sampled		23 November 2018		
Date	DDG 1	DDG 2	DDG 3	DDG 4
9/11/2017 to 7/12/2017	1.0	1.8	0.7	1.8
7/12/2017 to 8/01/2018	1.3	0.6	1.1	1.7
8/01/2018 to 5/02/2018	1.5	0.8	1.3	1.0
5/02/2018 to 5/03/2018	1.6	1.0	1.0	1.5
5/03/2018 to 3/04/2018	0.6	0.6	1.1	2.6
3/04/2018 to 1/05/2018	0.8	1.0	1.0	1.7
1/05/2018 to 30/05/2018	0.9	0.5	0.7	1.1
30/05/2018 to 27/06/2018	0.6	0.5	0.4	0.9
27/06/2018 to 26/07/2018	0.7	0.6	1.2	0.6
26/07/2018 to 23/08/2018	0.9	0.9	0.9	1.3
23/08/2018 to 20/09/2018	1.6	1.0	0.6	0.7
20/09/2018 to 26/10/2018	1.2	0.9	0.6	1.0
26/10/2018 to 23/11/2018	<b>1.5</b>	<b>3.4</b>	<b>1.1</b>	<b>1.1</b>
<b>Rolling Annual Average</b>	1.1	1.0	0.9	1.3

Monitoring results indicate that for the period 26 October 2018 to 23 November 2018 the insoluble solid levels recorded at DDG1 to 4 monitoring locations were below the project criterion of 4 g/m<sup>2</sup>/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:*

- 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*
- 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:*

- 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*
- 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 2018 blasting results.

**Table 5: November 2018 Blast Monitoring Results**

Date and time	Overpressure and Vibration	Nearest Residence
19/11/2018 1:45 pm	Overpressure dB(L)	112.6
	Vibration(mm/s)	1.32
30/11/2018 11:44 am	Overpressure dB(L)	111.8
	Vibration(mm/s)	1.22

As shown in **Table 5**, two blasting events were undertaken during November 2018. The overpressure and ground vibration recorded during these blasting events were below the criterion at the nearest residence

#### 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) 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

#### 4.1 Operator Attended Monitoring Results

The results of the operator attended noise surveys are presented in **Table 8**. Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds and quarry operations.

**Table 8 – Operator Attended Noise Survey Results**

Location	Date/Start Time/ Weather	Primary Noise Descriptor (dBA re 20 $\mu$ Pa)					Description of Noise Emissions and Typical Maximum Noise Levels (dBA)
		L <sub>Amax</sub>	L <sub>A1</sub>	L <sub>A10</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>	
NM1 Lot 3 DP785172	22/11/2018 7:00am Wind: 1 m/s SSE Temp 18°C	77	76	70	56	67	Pacific Highway 50-77 Insects 50-53 Birds 45-55 <b>Karuah Quarry inaudible</b>
		Contribution not measurable above background noise.					
NM2 Lot 3 DP785172	22/11/2018 7:23am Wind: 1 m/s SE Temp 18°C	72	69	56	53	61	Pacific Highway 53-72 Insects 50-52 Birds 58-62 <b>Karuah Quarry inaudible</b>
		Contribution not measurable above background noise.					
NM3 Lot 22 DP102431	22/11/2018 7:52am Wind: 1 m/s SSE Temp 21°C	67	66	63	53	59	Pacific Highway 55-67 Insects 53 Birds 56-65 <b>Karuah Quarry inaudible</b>
		Contribution not measurable above background noise.					

## 4.2 Unattended Continuous Noise Monitoring

Unattended noise monitoring results for locations NM1 and NM3 are presented in **Table 9**.

**Table 9 – Unattended Continuous Monitoring Ambient Noise Levels**

INP Period	L <sub>A1</sub>	L <sub>A10</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>
<b>NM1</b>				
Daytime during Operational Hours <sup>1</sup>	73	69	57	66
Daytime outside Operational Hours <sup>2</sup>	73	69	56	66
Evening <sup>3</sup>	75	69	52	65
Night <sup>4</sup>	74	68	42	64
<b>NM2</b>				
Daytime during Operational Hours <sup>1</sup>	67	63	52	60
Daytime outside Operational Hours <sup>2</sup>	67	62	51	60
Evening <sup>3</sup>	68	63	47	59
Night <sup>4</sup>	68	63	38	58
<b>NM3</b>				
Daytime during Operational Hours <sup>1</sup>	67	64	52	61
Daytime outside Operational Hours <sup>2</sup>	68	64	55	61
Evening <sup>3</sup>	68	64	53	60
Night <sup>4</sup>	68	64	52	63

Note: 1. Daytime - 7.00 am to 5.00 pm Monday to Friday, 8.00 am to 12.00 pm Saturday, not operational on Sunday  
2. Daytime - 5.00 pm to 6.00 pm Monday to Friday, 12.00 pm to 6.00 pm Saturday, 8.00 am to 6.00 pm Sunday  
3. Evening - 6.00 pm to 10.00 pm  
4. Night - 10.00 pm to 7.00 am Monday to Saturday, 10.00 pm to 8.00 am Sunday.

### 4.3 Noise Results Summary

Operator attended and unattended noise monitoring was conducted at the three nearest residences to determine noise levels produced by Karuah Quarry operations during November 2018.

The noise contribution of Karuah Quarry operations was found to be significantly lower than that from the road traffic on the Pacific Highway during all attended noise surveys. The monitoring results indicate that compliance with the consent conditions were achieved at all noise monitoring locations during all periods.

Results from the ambient unattended measurements at locations NM1, NM2 and NM3 were also consistent with site observations which indicate that Karuah Quarry is not a major contributor to ambient noise levels at each of these locations.

## 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).

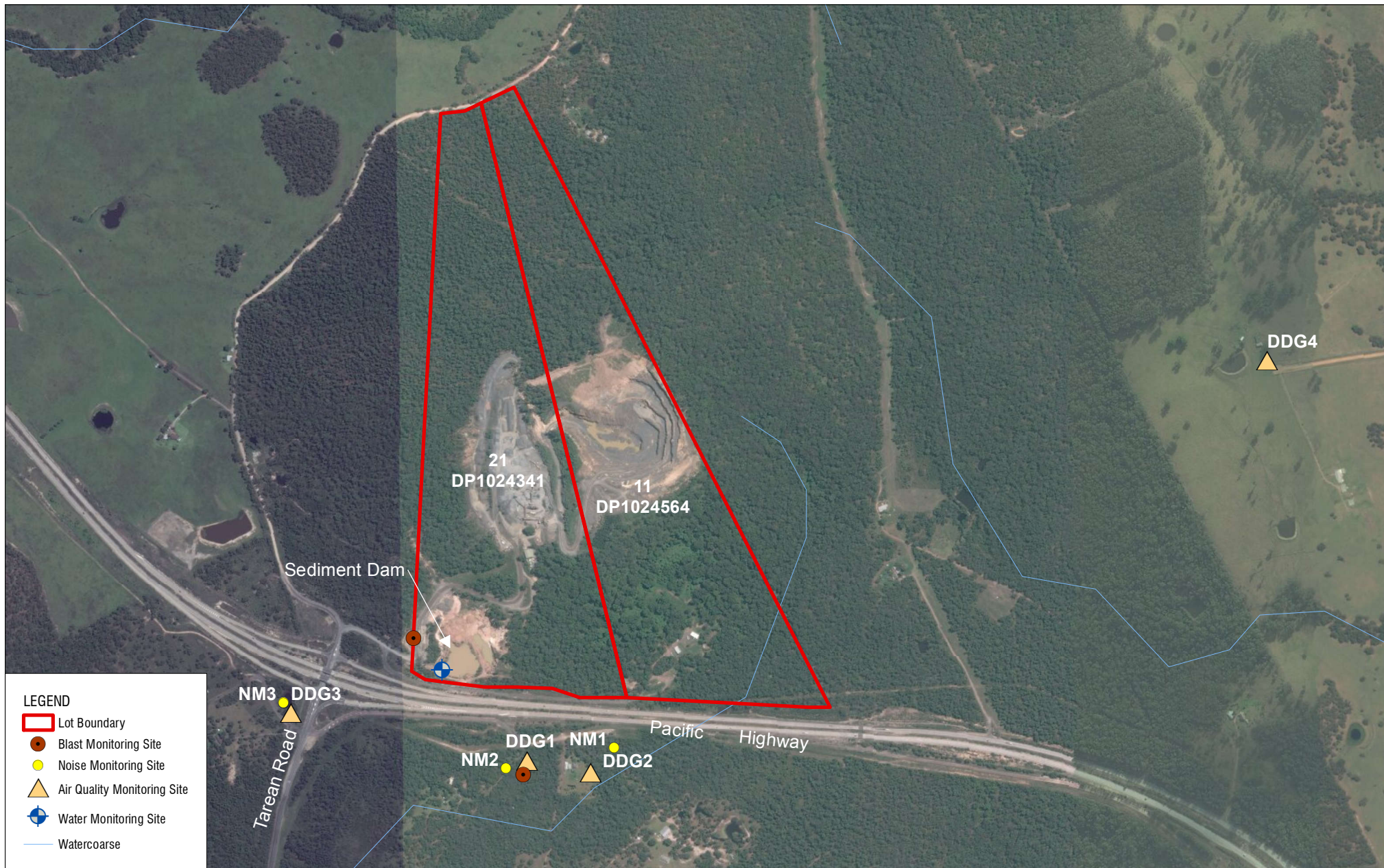
**Table 10** summarises discharge monitoring at Karuah Quarry.

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

Sampling Point	Monitoring Frequency	Pollutant	Measurement	EPL Limit
LDP001	During Discharge	pH	<i>No discharge during November 2018</i>	6.5 – 8.5
		TSS		50

# **APPENDIX 1**

## **Monitoring Locations**



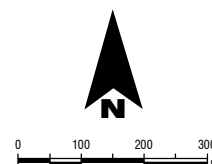
#### LEGEND

- Lot Boundary
- Blast Monitoring Site
- Noise Monitoring Site
- ▲ Air Quality Monitoring Site
- ⊕ Water Monitoring Site
- Watercourse



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Project No.:	633.HQP00.0030
Date:	23/06/2014
Drawn by:	LH
Scale:	1:12,000
Sheet Size:	A4
Projection:	GDA 1994 MGA Zone 56



Hunter Quarries Pty Ltd

Environmental Services and Support

**Karuah Hard Rock Quarry  
Environmental Monitoring Locations**

FIGURE 1