



Karuah Hard Rock Quarry

Environmental Monitoring Report



December 2020

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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* (EPA, 2013). This report summarises the required monitoring data under *Environmental Protection Licence 11569* (the EPL) (see Table 1) and *Development Consent 265-10-2004* (the Consent) (see Table 2) for the Karuah Hard Rock Quarry (the Quarry).

Table 1 Environmental Protection Licence 11569 information

Environmental Protection Licence Number	11569
Licensee's Name	Hunter Quarries Pty Limited
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

Table 2 Development Consent 265-10-2004 information

Development Application	DA 265-10-2004
Applicant	Hunter Quarries Pty Limited
Consent Authority	Minister for Infrastructure, Planning and Natural Resources
Land	Lot 21 DP1024341, Lot 11 DP1024564 & Lot 12 DP1024564

A summary of the environmental monitoring data for December 2020 is covered in this report.

Tables throughout this report provide key monitoring information from the EPL and the Consent, such as:

- location of monitoring;
- pollutant;
- unit of measurement; and
- monitoring frequency required.

Monitoring locations are identified in in Appendix 1.

2 AIR QUALITY MONITORING

Dust emissions generated by the Quarry operation must not cause additional exceedances of ambient air quality criterion outlined in *Schedule 3, Condition 14* of the Consent (see Table 3, Table 4 and Table 5). Deposited dust and TSP/PM₁₀ monitoring is undertaken at the locations listed in Table 6.

Table 3 DA 265-10-2004 Long Term Assessment Criteria for Deposited Dust

Pollutant	Averaging Period	Maximum Increase in Deposited Dust Level ¹	Maximum Total Deposited Dust Level ¹
Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month

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

Table 4 DA 265-10-2004 Long Term Impact Assessment Criteria for Particulate Matter

Pollutant	Average period	Criterion
Total suspended particulate (TSP) matter	Annual	90 µg/m ³
Particulate matter <10 µm (PM ₁₀)	Annual	30 µg/m ³

Table 5 DA 265-10-2004 Short Term impact Assessment Criterion for Particulate Matter

Pollutant	Averaging period	Criterion
Particulate matter <10 µm (PM ₁₀)	24 hours	50 µg/m ³

Table 6 Air quality monitoring locations

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

All dust monitoring is undertaken in accordance with the *Approved Methods of Sampling and Analysis of Air Pollutants in NSW* (EPA, 2007).

2.1 DEPOSITED DUST MONITORING

Deposited dust results for December 2020 and the year to date (YTD) from the EPL anniversary (16 January) are shown in Table 7.

Table 7 Deposited dust monitoring results.

Date On	Date Off	DDG 1	DDG 2	DDG 3	DDG 4
13/02/2020	12/03/2020	1.7	1.5	0.7	0.9
12/03/2020	9/04/2020	0.8	0.8	0.5	0.1
9/04/2020	7/05/2020	1.2	0.9	1.0	1
7/05/2020	4/06/2020	0.2	0.3	0.3	0.7
4/06/2020	2/07/2020	0.1	0.2	0.3	0.3
2/07/2020	31/07/2020	0.2	0.1	0.2	0.6
31/07/2020	1/09/2020	0.4	0.2	0.4	1.0
1/09/2020	1/10/2020	0.6	0.5	0.4	1.0
1/10/2020	2/11/2020	0.2	0.1	1.3	0.7
2/11/2020	3/12/2020	0.2	0.1	1.3	0.7
3/12/2020	04/01/2021	0.3	0.5	0.1	0.4
YTD average from the EPL anniversary (16 January)		0.8	0.6	0.7	0.9

Monitoring results indicate that for the period 3 December 2020 to 4 January 2021 the insoluble solid levels recorded at DDG 1 to DDG 4 monitoring locations were below the project criterion of 4 g/m²/month.

2.2 HIGH VOLUME AIR SAMPLING

The TSP and PM₁₀ results for December 2020, the report average and a rolling annual average are shown in are shown in Table 8.

Table 8 High Volume Air Sampling (µg/m³) results

Run Date	HVAS TSP (µg/m ³)	HVAS PM ₁₀ (µg/m ³)
3/01/2020	49	26
9/01/2020	45	30
15/01/2020	32	14
21/01/2020	66	32
27/01/2020	47	25
2/02/2020	57	29
8/02/2020	26	16
14/02/2020	22	15
20/02/2020	31	16
26/02/2020	36	16
3/03/2020	34	14
9/03/2020	21	7
15/03/2020	23	10
21/03/2020	38	18
27/03/2020	20	9
2/04/2020	51	17
8/04/2020	13	10
14/04/2020	27	12
20/04/2020	18	11

26/04/2020	27	15
2/05/2020	15	7
8/05/2020	29	16
14/05/2020	9	4
20/05/2020	16	8
26/05/2020	15	8
1/06/2020	12	6
7/06/2020	15	11
13/06/2020	8	3
19/06/2020	17	8
25/06/2020	5	1
1/07/2020	32	21
7/07/2020	13	7
13/07/2020	5	4
19/07/2020	5	3
25/07/2020	12	6
31/07/2020	18	12
6/08/2020	13	5
12/08/2020	9	4
18/08/2020	8	2
24/08/2020	13	4
30/08/2020	15	14
5/09/2020	15	10
11/09/2020	7	3
17/09/2020	27	17
23/09/2020	25	13
29/09/2020	10	8
5/10/2020	29	16
11/10/2020	16	9
17/10/2020	40	20
23/10/2020	25	13
29/10/2020	9	7
4/11/2020	14	10
10/11/2020	8	7
16/11/2020	36	21
22/11/2020	24	19
28/11/2020	27	16
04/12/2020	28	16
10/12/2020	33	17
16/12/2020	47	16
22/12/2020	10	8
28/12/2020	22	15
24hr Average Criteria¹	N/A	50
Annual Average Criteria¹	90	30

Report Average	28.0	14.4
Rolling Annual Average²	29.5	14.7

Note: ¹ Criteria as specified in DA 265-10-2004.

² The rolling average is from 01/01/2020 to 28/12/2020, this is not a measure of compliance.

All HVAS monitoring results, to the end of December 2020 were compliant with the long term and short term impact assessment criteria outlined in *Schedule 3 Condition 14* of the Consent (see Table 3, Table 4 and Table 5).

3 BLAST MONITORING

The following conditions from the EPL 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.*

There was one blast in the monitoring period of December 2020, see Table 9 for monitoring results.

Table 9 Blast monitoring results

Date	Time	Overpressure (dB(L))	Vibration (mm/s)
Monday, 14 December, 2020	11:00 AM	n/t	n/t

4 NOISE MONITORING

Noise generated by the Quarry operation must not exceed the criteria specified in *Schedule 3, Condition 14* of the Consent (see Table 10) at the locations identified in Table 11.

Table 10 Noise impact assessment criteria

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 11 Noise monitoring locations

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

4.1 ATTENDED MONITORING

Attended noise monitoring is required to be undertaken at the two nearest residences (NM1 and NM2) biannually. Attended noise monitoring was last conducted in November 2020. See the November monitoring results in Table 12.

Table 12 Attended noise monitoring results

Location	Date/Start Time/ Weather	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emissions and Typical Maximum Noise Levels (dBA)
		LA _{max}	LA1	LA10	LA90	LA _{eq}	
NM1 Lot 3 DP785172	04/11/2020 1:20 pm W = Calm	66	62	55	41	49	Pacific Highway 60 Karuah Quarry Inaudible
NM2 Lot 2 DP785172	04/11/2020 11:35 am W = Calm	75	70	66	57	63	Pacific Highway 55 - 65 Birds 40 - 50 Karuah Quarry Inaudible

The results of the attended monitoring (Table 12) show ambient noise levels include noise sources such as traffic from the nearby Pacific Highway, wildlife such as insects and birds, and farm activities. The Quarry operation was inaudible at location NM1 and NM2.

4.2 UNATTENDED NOISE MONITORING

Unattended noise monitoring is required to be undertaken at the two nearest residences (NM1 and NM2) biannually.

Unattended noise monitoring was last conducted in November 2020. See the most recent monitoring results for NM1 in Table 13 and NM2 in Table 14.

Table 13 NM1 - Unattended noise monitoring results

INP Period	L _{A1}	L _{A10}	L _{A90}	L _{AEQ}
Day	64	60	51	57
Evening	66	62	49	59
All other times	66	63	47	58

Table 14 NM2 - Unattended noise monitoring results

INP Period	L _{A1}	L _{A10}	L _{A90}	L _{AEQ}
Day	70	67	54	63
Evening	71	66	52	63
All other times	71	66	47	62

The attended noise monitoring conducted during November 2020 identified that the Quarry was not audible at location NM1 and NM2. Determined compliant for the monitoring completed in November 2020.

5 SURFACE WATER MONITORING

Condition L2 of the EPL outlines the requirement to monitor surface water discharges from the Quarry via the licensed discharge point (LDP001), see Table 15.

Table 15 EPL 11569 - Pollutant concentration limits

Pollutant	Units of Measure	Concentration Limit
Oil and Grease	Visible	5 &/or non-visible
pH	pH units	6.5 – 8.5
Total suspended solids	Milligrams per litre	50

There were no controlled or uncontrolled discharges from licensed discharge point LDP001 in December 2020.

Appendix 1 – Monitoring Locations

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Source: Nearmap (June 2020)

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GDA 1994 MGA Zone 56

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