



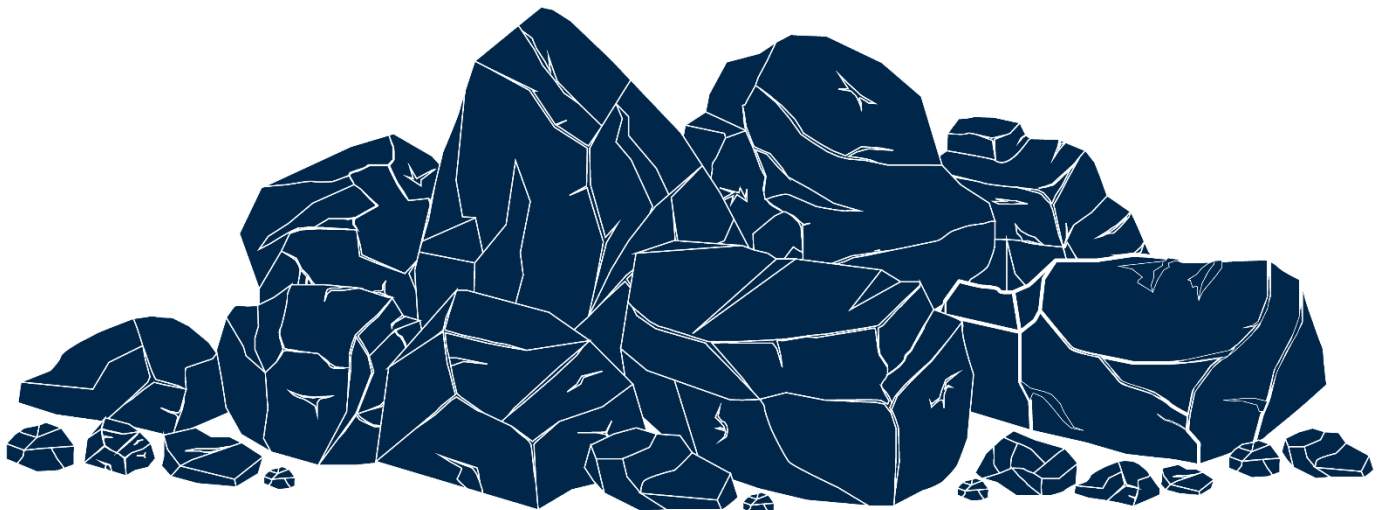
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Karuah Hard Rock Quarry

Environmental Monitoring Report

August 2023



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1.0 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) and Development Consent for the Karuah Quarry (the Quarry) as summarised by **Table 1** and **Table 2** respectively.

Table 1 *Summary of Environment Protection Licence, EPL 11569*

EPL Number:	EPL 11569
Licensee's Name:	Hunter Quarries Pty Limited
Licensee's Address:	Karuah Hard Rock Quarry 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 *Summary of Project Approval, DA 265-10-2004*

Project Approval:	DA 265-10-2004
Applicant:	Hunter Quarries Pty Limited
Consent Authority:	Minister for Infrastructure, Planning and Natural Resources
Link to Full Project Approval on the DPE website:	Development Consent DA 265-10-2004

A summary of the environmental monitoring data for August 2023 is covered in this report. Tables throughout this report provide key monitoring information from the EPL and the Consent, including:

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

Monitoring locations are illustrated by the site plan provided by **Appendix 1**.

2.0 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 13 of the Consent and summarised by **Table 3**, **Table 4** and **Table 5**.

Deposited dust monitoring is undertaken at the locations listed in **Table 6**, in accordance with the Approved Methods of Sampling and Analysis of Air Pollutants in NSW (EPA, 2022).

Table 3 Long-term Assessment Criteria for Deposited Dust (MP09-0175).

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

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

Table 4 Long-term Assessment Criteria for Particulate Matter (MP09-0175).

Pollutant	Averaging Period	Criterion
Total Suspended Particulates	Annual	90 µg/m ³
Particulate Matter < 10 µm (PM10)	Annual	30 µg/m ³

Table 5 Short-term Assessment Criteria for Particulate Matter (MP09-0175).

Pollutant	Averaging Period	Criterion
Particulate Matter < 10 µm (PM10)	24-hour	50 µg/m ³

Table 6 Air Quality Monitoring Locations (EPL 11569).

Site Monitoring Point ID	EPL Monitoring Point ID	Location	Address	Coordinates
DDG 1	4	South-West of Karuah Hard Rock Quarry	54 Mill Hill Close, Karuah NSW 2324	32°38'04"S 151°59'58"E
DDG 2	5	South-West of Karuah Hard Rock Quarry	64 Mill Hill Close, Karuah NSW 2324	32°38'02"S 152°00'09"E
DDG 3	6	South-West of Karuah Hard Rock Quarry	Lot 251 DP1092111, Karuah NSW 2324	32°37'57"S 151°59'41"E
DDG 4	7	East of Karuah Hard Rock Quarry	21 Halloran Road, North Arm Cove NSW 2324	32° 37' 30.87"S 152°01'10.18"E

Deposited dust results for the 12-months prior-to and including August 2023 are summarised by **Table 7**.

Table 7 *Deposited dust monitoring results.*

Reporting Period	Start Date	End Date	Days	DDG 1 EPL ID 4	DDG 2 EPL ID 5	DDG 3 EPL ID 6	DDG 4 EPL ID 7
Sep-22	2/09/2023	4/10/2022	32	0.5	0.2	0.6	0.3
Oct-22	4/10/2022	3/11/2022	30	0.2	0.5	0.5	0.3
Nov-22	3/11/2022	5/12/2022	32	0.8	0.8	0.7	1.2
Dec-22	5/12/2022	5/01/2023	31	0.7	0.7	0.3	0.6
Jan-23	5/01/2023	3/02/2023	29	0.2	0.4	0.8	0.1
Feb-23	3/02/2023	5/03/2023	31	0.9	0.7	0.2	0.3
Mar-23	5/03/2023	5/04/2023	30	1.1	1.5	1.1	1.1
Apr-23	5/04/2023	4/05/2023	29	0.3	0.5	0.3	0.2
May-23	4/05/2023	5/06/2023	32	0.2	0.3	0.3	0.4
Jun-23	6/06/2023	4/07/2023	28	0.6	2.5	1.8	–
Jul-23	4/07/2023	3/08/2023	30	0.4	0.9	1.2	1.1
Aug-23	3/08/2023	4/09/2023	32	0.7	0.3	0.5	0.5
Progressive Annual Average				0.6	0.8	0.7	0.6

Monitoring results for the August 2023 reporting period at four DDG monitoring sites are within the long-term annual deposited dust limit of 4 g/m²/month.

It should be noted that DDG 4 sample in the June 2023 reporting period become contaminated with vegetation matter and are therefore discounted from averaging. This failure to monitor event was reported to the NSW Department of Planning & Environment (DPE), the NSW EPA and surrounding landholders in accordance with the relevant conditions of the Consent and EPL.

3.0 Blast Monitoring

Blast monitoring is undertaken for all blasts at the Quarry at the nearest residential location (EPL Monitoring Point 11) to ensure that air blast overpressure and ground vibration remain within the compliance limits, as summarised by **Table 9**.

There were no blasts within the August 2023 reporting period.

Table 9 *Blasting Airblast Overpressure and Ground Vibration Criteria (DA 265-10-2004 & EPL 11569).*

Location	Airblast Overpressure (dB(L))	Ground Vibration (mm/s)	Allowable Exceedance
Private Residence B	120	10	0%
	115	5	5% over 12-month reporting period.

Table 10 *Blasting Monitoring Results*

Date	Time	Location	Airblast Overpressure (dB(L))	Ground Vibration (mm/s)
-	-	-	-	-

*Not triggered = n/t
Ground Vibration < 0.5 mm/s
Overpressure < 108 dB(L)

4.0 Noise Monitoring

Noise monitoring is undertaken in accordance with the EPL and DPE approved Environmental Monitoring Program, which requires attended and unattended noise monitoring to be conducted on a 6 monthly basis.

No noise monitoring was conducted during the August 2023 reporting period.

5.0 Surface Water Monitoring

Water monitoring is undertaken in accordance with the EPL and DPE approved Water Management Plan, which includes 6 monthly surveillance sampling and daily sampling during discharge events, results summarised in **Table 11** and **Table 12** respectively.

Surveillance monitoring was undertaken on 7 August 2023 with the results summarised by **Table 11**.

Table 11 *Surface Water Monitoring Results.*

Parameter	Units	EPL Discharge Limits	Sed Dam 2
Oil and Grease	mg/L	5 and/or non-visible	NV
pH	pH	6.5 – 8.5	7.9
Total Suspended Solids	mg/L	50	86
Parameter	Units	ANZECC Guidelines ¹	Sed Dam 2
Conductivity	µS/cm	125 – 2200	335

¹ Key default trigger values presented in ANZECC 2000 for slightly disturbed upland rivers in NSW. Heavy metals based on hard water (120-179 mg CaCO₃/L).

Daily discharge monitoring was conducted when discharging surface water from the Quarry via the licenced discharge points in accordance with Condition L2 and M2 of the EPL, as summarised by **Table 12**. No discharging events occurred in August 2023.

Table 12 *Discharge Water Monitoring Results.*

Date	pH	Total Suspended Solids, TSS (mg/L)	Oil and Grease	Nitrogen (total) (mg/L)	Phosphorus (total) (mg/L)	Discharge Type
LDP 1 – Sediment Dam 2						
-	-	-	-	-	-	-

6.0 Weather Station Monitoring

The Quarry operates and maintains a permanent meteorological monitoring station to record weather parameters including temperature, wind speed and direction, solar radiation and rainfall. **Figure 3** below outlines the weather records for the August 2023 reporting period.

Monthly Weather Summary



Site: Karuah Quarry
Month: August 2023

Date	Day	Temperature @ 2m			Temperature @ 10m			Winds			Solar Radiation		Rain ²
		Max ¹	Min ²	Ave ¹	Max ¹	Min ²	Ave ¹	Max Gust ¹	Ave Speed ²	Dir Ave ¹	Max ¹	Ave ¹	
		°C	°C	°C	°C	°C	°C	km/h	km/h	deg	W/m ²	W/m ²	mm
1	Tue	23.0	3.7	12.2	22.1	4.6	13.2	17.3	3.3	214	505.0	126.3	0.0
2	Wed	21.9	6.0	11.3	19.6	6.2	11.7	12.1	3.0	230	509.1	126.6	0.0
3	Thu	20.2	8.1	12.7	18.7	9.0	13.6	12.8	3.2	182	560.0	94.0	0.0
4	Fri	21.9	5.8	13.2	21.3	7.3	14.0	11.7	3.1	137	539.2	128.3	0.0
5	Sat	23.6	7.9	14.2	22.8	8.7	14.9	11.7	2.8	171	531.7	125.6	0.0
6	Sun	22.5	9.8	14.6	21.4	11.0	15.2	19.1	3.1	205	639.9	88.3	24.8
7	Mon	18.6	11.5	13.4	17.4	11.6	13.5	12.3	2.9	198	641.7	54.6	5.0
8	Tue	16.3	6.1	10.3	15.8	6.5	10.6	10.1	2.4	239	475.8	58.4	2.0
9	Wed	18.6	5.9	10.9	17.6	6.6	11.4	13.1	2.7	225	697.5	103.7	0.2
10	Thu	20.4	6.1	12.2	19.2	7.2	13.1	13.0	3.1	183	570.8	134.0	0.0
11	Fri	23.9	3.6	12.8	23.2	4.8	14.5	21.4	3.7	215	607.4	130.0	0.0
12	Sat	20.2	3.8	10.3	17.9	5.1	11.0	13.8	2.7	165	539.1	138.4	0.0
13	Sun	22.8	7.7	13.3	22.1	8.7	14.0	19.5	3.9	217	550.8	138.0	0.0
14	Mon	20.9	9.9	13.1	18.8	10.2	13.1	8.4	2.3	211	700.0	83.7	2.2
15	Tue	20.1	9.9	13.0	18.6	10.6	13.3	12.0	3.9	272	739.9	75.9	7.6
16	Wed	17.6	5.9	11.3	16.2	6.1	11.4	19.2	3.8	218	754.1	84.6	2.2
17	Thu	19.6	4.1	10.8	17.5	4.8	11.4	14.9	2.7	180	744.9	128.1	0.0
18	Fri	22.6	10.4	14.7	21.0	10.8	14.8	10.1	3.2	184	669.9	131.5	8.4
19	Sat	18.9	8.0	13.2	17.9	8.9	13.4	31.1	12.7	285	673.3	140.9	0.0
20	Sun	18.4	5.9	12.4	17.8	8.0	13.3	24.7	6.8	288	560.0	148.0	0.0
21	Mon	22.1	6.8	13.2	20.3	7.9	13.7	16.3	3.2	179	573.3	151.3	0.0
22	Tue	22.5	6.4	12.8	20.3	7.6	13.3	15.6	2.8	185	657.5	151.4	0.0
23	Wed	25.1	9.7	15.9	24.0	10.8	17.1	12.7	3.5	178	645.8	134.5	0.0
24	Thu	21.2	9.4	14.3	18.9	9.8	14.0	18.9	4.0	227	654.1	145.0	2.6
25	Fri	20.2	5.2	11.1	18.3	6.2	11.5	16.6	3.0	191	601.6	151.7	0.0
26	Sat	22.6	4.9	12.1	20.6	5.6	12.6	14.6	3.0	203	605.8	159.3	0.0
27	Sun	20.9	5.6	11.7	18.9	6.2	12.2	17.2	3.0	163	719.2	137.4	0.0
28	Mon	21.1	5.7	12.4	19.3	6.2	13.0	17.8	3.7	173	709.9	143.3	0.0
29	Tue	22.5	6.1	12.9	20.5	6.7	13.3	19.5	3.2	178	742.5	156.6	0.0
30	Wed	23.0	8.7	14.5	21.2	9.8	15.0	15.0	3.5	161	625.0	165.9	0.0
31	Thu	27.3	8.6	16.6	25.7	9.4	16.6	16.2	4.1	200	626.7	157.2	3.4
Ave or Total		21.3	7.0	12.8	19.8	7.8	13.3	15.8	3.6	201.7	624.9	125.6	58.4
High		27.3	11.5	16.6	25.7	11.6	17.1	31.1	12.7		754.1	165.9	24.8
Low		16.3	3.6	10.3	15.8	4.6	10.6	8.4	2.3		475.8	54.6	
Notes: 1. Values are for the 24 hour period from 9am to 9am next day.												No. rain days >1mm:	
2. Values are for the 24 hours to 9am.												9	

Figure 3 Weather Records Summary – August 2023.

7.0 Production Data

Monthly monitoring of sales and truck movements are summarised by **Table 13**.

Table 13 *Quarry Production Data.*

Month	Truck Movements	Quarry Product Sales (t)
Jan-23	422	12,109
Feb-23	842	24,606
Mar-23	668	18,737
Apr-23	616	18,013
May-23	776	21,807
Jun-23	903	27,048
Jul-23	769	24,880
Aug-23	563	18,090

8.0 Reporting

8.1 Reportable Environmental Incidents

During the August 2023 reporting period, no reportable environmental incidents occurred at the Quarry.

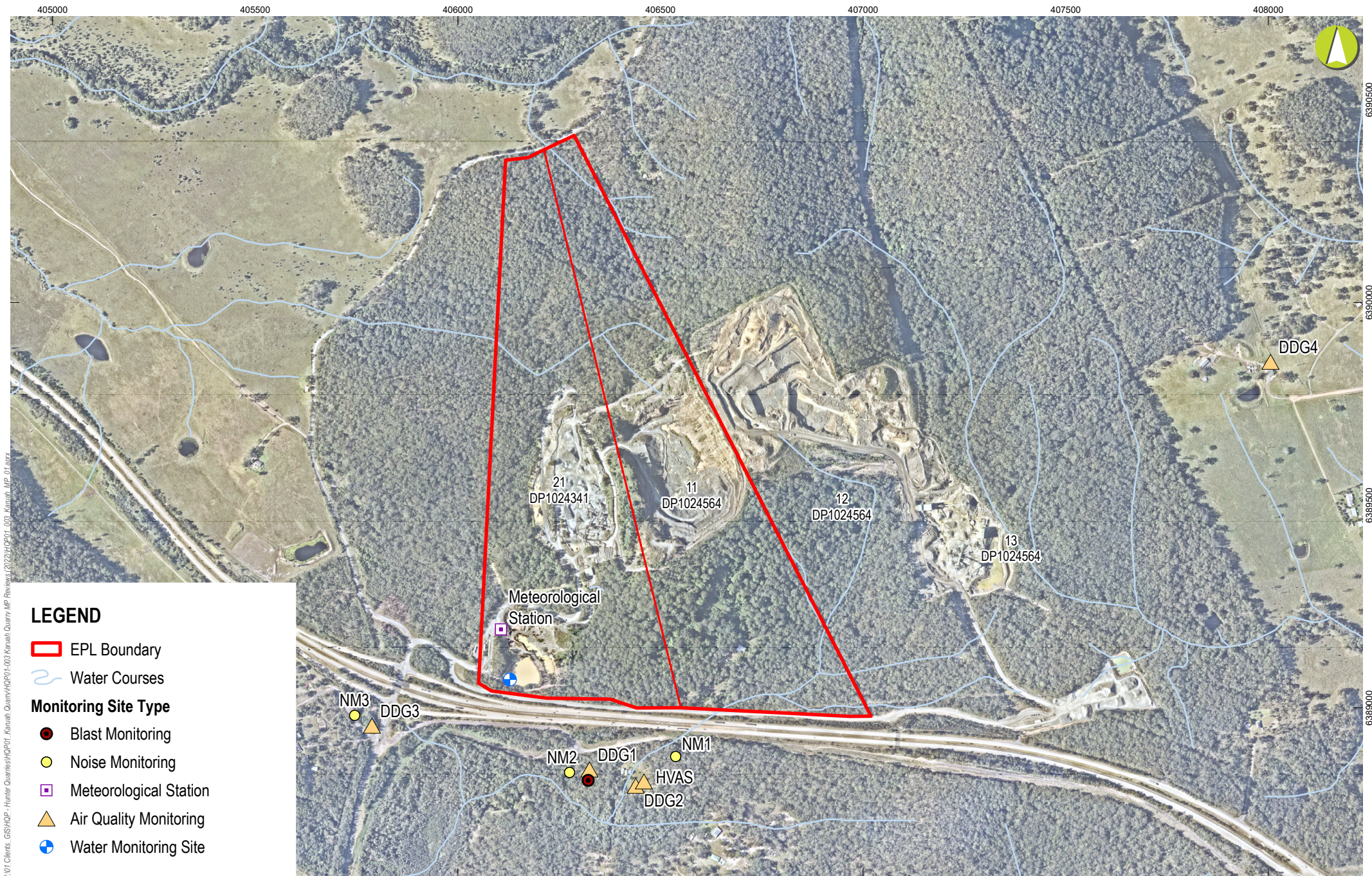
8.2 Reportable Non-Compliances

During the August 2023 reporting period, no reportable non-compliances were identified at the Quarry.

8.3 Community Complaints

During the August 2023 reporting period, no community complaints were received by the Quarry.

Appendix 1 – EPL 11569 Monitoring Locations



LEGEND

- ▭ EPL Boundary
- ~ Water Courses
- Monitoring Site Type**
- Blast Monitoring
- Noise Monitoring
- ▣ Meteorological Station
- ▲ Air Quality Monitoring
- ⊕ Water Monitoring Site

