



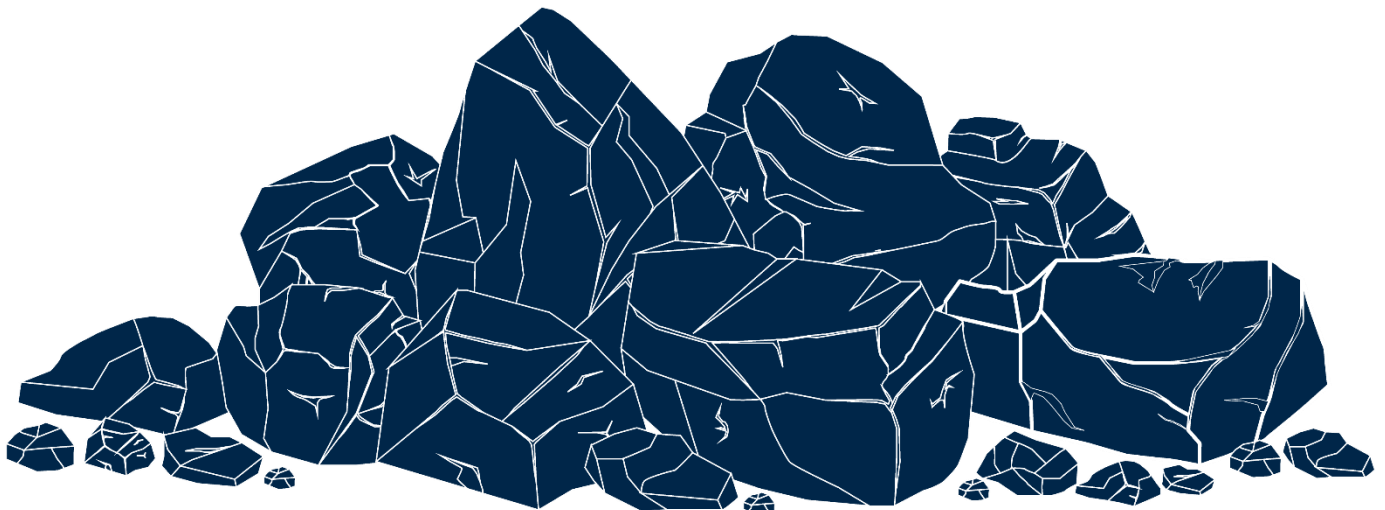
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Karuah East Quarry

Environmental Monitoring Report

January 2024



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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 20611 (the EPL) and Project Approval MP09_0175 (the Consent) for the Karuah East Quarry (the Quarry) as summarised by **Table 1** and **Table 2** respectively.

Table 1 Summary of Environment Protection Licence, EPL 20611

EPL Number:	EPL 20611
Licensee’s Name:	Karuah East Quarry Pty Limited
Licensee’s Address:	Karuah East Quarry PO Box 3284, Thornton NSW 2322 Blue Rock Close, Karuah NSW 2324
Link to Full Licence on the EPA website:	EPL 20611

Table 2 Summary of Project Approval, MP09_0175

Project Approval:	MP09_0175
Applicant:	Karuah East Quarry Pty Limited
Consent Authority:	NSW Planning Assessment Commission
Link to Full Project Approval on the NSW Planning website:	Project Approval MP09_0175

A summary of the environmental monitoring data for the January 2024 reporting period (the Reporting Period) 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 and TSP/PM10 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 20611).

Site Monitoring Point ID	EPL Monitoring Point ID	Location	Address	Coordinates
DDG 1	4	South-West of Karuah East Quarry	54 Mill Hill Close, Karuah NSW 2324	32°38'04"S 151°59'58"E
DDG 2	5	South-West of Karuah East Quarry	64 Mill Hill Close, Karuah NSW 2324	32°38'02"S 152°00'09"E
DDG 3	6	South-West of Karuah East Quarry	Lot 251 DP1092111, Karuah NSW 2324	32°37'57"S 151°59'41"E
DDG 4	7	East of Karuah East Quarry	21 Halloran Road, North Arm Cove NSW 2324	32° 37' 30.87"S 152°01'10.18"E
DDG 5	8	South-West of Karuah East Quarry	Lot 21 DP1024341, Karuah NSW 2324	32° 37' 55.33"S 152°00'2.74"E
HVAS	9	South-West of Karuah East Quarry	64 Mill Hill Close, Karuah NSW 2324	32°38'03"S 152°00'09"E

2.1 Deposited Dust Monitoring

Deposited dust results for the 12-months prior-to and including January 2024 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	DDG 5 EPL ID 8
Feb-23	03/02/2023	06/03/2023	31	0.9	0.7	0.2	0.3	0.8
Mar-23	06/03/2023	05/04/2023	30	1.1	1.5	1.1	1.1	1.1
Apr-23	05/04/2023	04/05/2023	29	0.3	0.5	0.3	0.2	1.2
May-23	04/05/2023	05/06/2023	32	0.2	0.3	0.3	0.4	0.4
Jun-23	06/06/2023	04/07/2023	28	0.6	2.5	1.8	–	–
Jul-23	04/07/2023	03/08/2023	30	0.4	0.9	1.2	1.1	0.3
Aug-23	03/08/2023	04/09/2023	32	0.7	0.3	0.5	0.5	0.2
Sep-23	04/09/2023	04/10/2023	30	1.5	2.6	1.4	1.4	2.0
Oct-23	04/10/2023	02/11/2023	29	1.4	2.4	2.2	1.6	2.5
Nov-23	02/11/2023	30/11/2023	28	1.6	–	1.4	1.0	2.0
Dec-23	30/11/2023	28/12/2023	28	1.1	1.0	1.3	1.3	1.7
Jan-24	28/12/2023	25/01/2024	28	1.4	1.2	1.0	1.2	1.7
Progressive Annual Average				0.9	1.3	1.1	0.9	1.3

Monitoring results for the Reporting Period at all five DDG monitoring sites are within the long-term annual deposited dust limit of 4 g/m²/month.

It should be noted that DDG 4 and DDG 5 samples in the June 2023 reporting period, and DDG 2 sample in the November 2023 reporting period become contaminated with vegetation matter and are therefore discounted from averaging. These two ‘failure to monitor events’; was reported to the NSW Department of Planning, Housing & Infrastructure (NSW Planning), the NSW EPA and surrounding landholders in accordance with the relevant conditions of the Consent and EPL.

2.2 High Volume Air Sampling

TSP and PM10 results for the Reporting Period are summarised by **Table 8** and illustrated respectively by **Figure 1** and **Figure 2**.

Table 8 *HVAS TSP and PM10 monitoring results for the Reporting Period.*

Run Date	Total Suspended Particulates, TSP (µg/m ³)	Particulate Matter < 10 µm, PM10 (µg/m ³)
06/01/2024	17	8
12/01/2024	22	10
18/01/2024	19	8
24/01/2024	33	14
30/01/2024	32	17
Monthly Average	24.6	11.4

Monitoring results for the five HVAS run days within the Reporting Period were compliant with the long-term limits for TSP and PM10 and short-term limits for PM10.

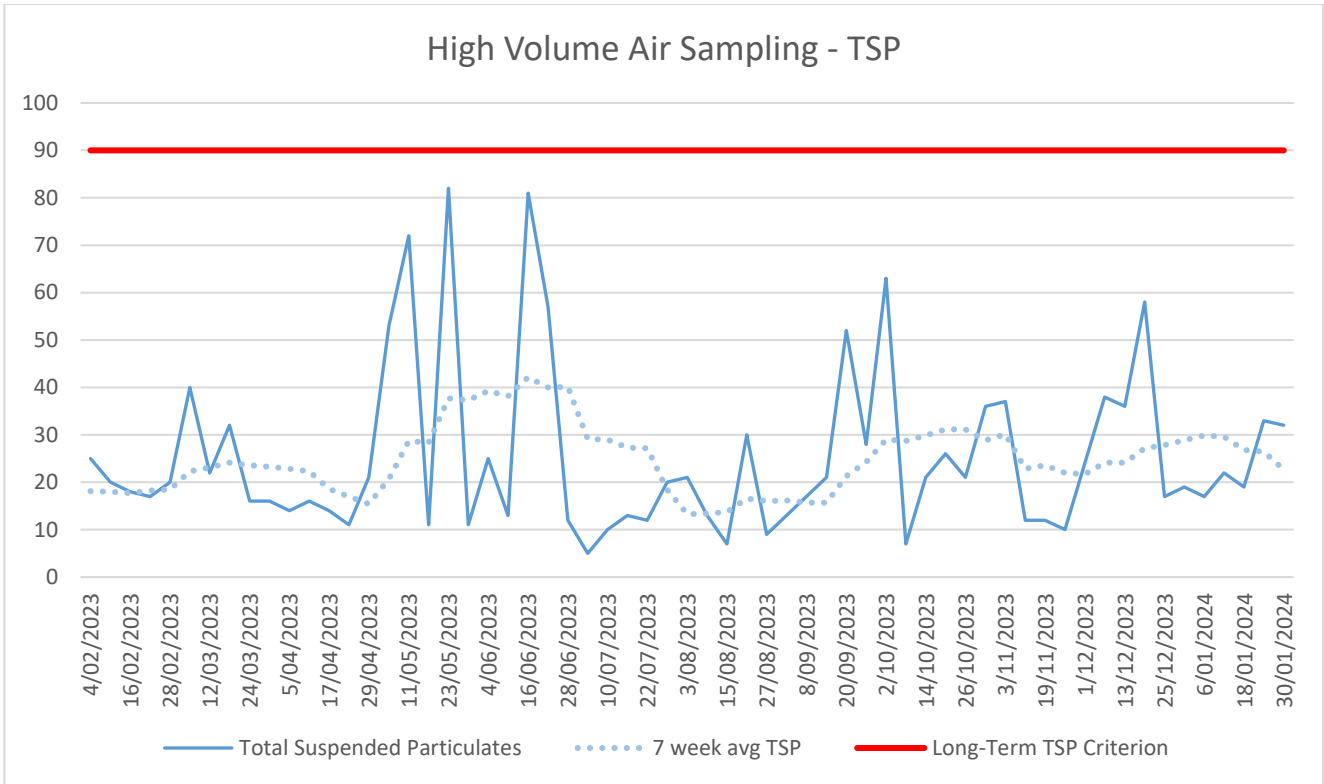


Figure 1 Long-term TSP monitoring trends.

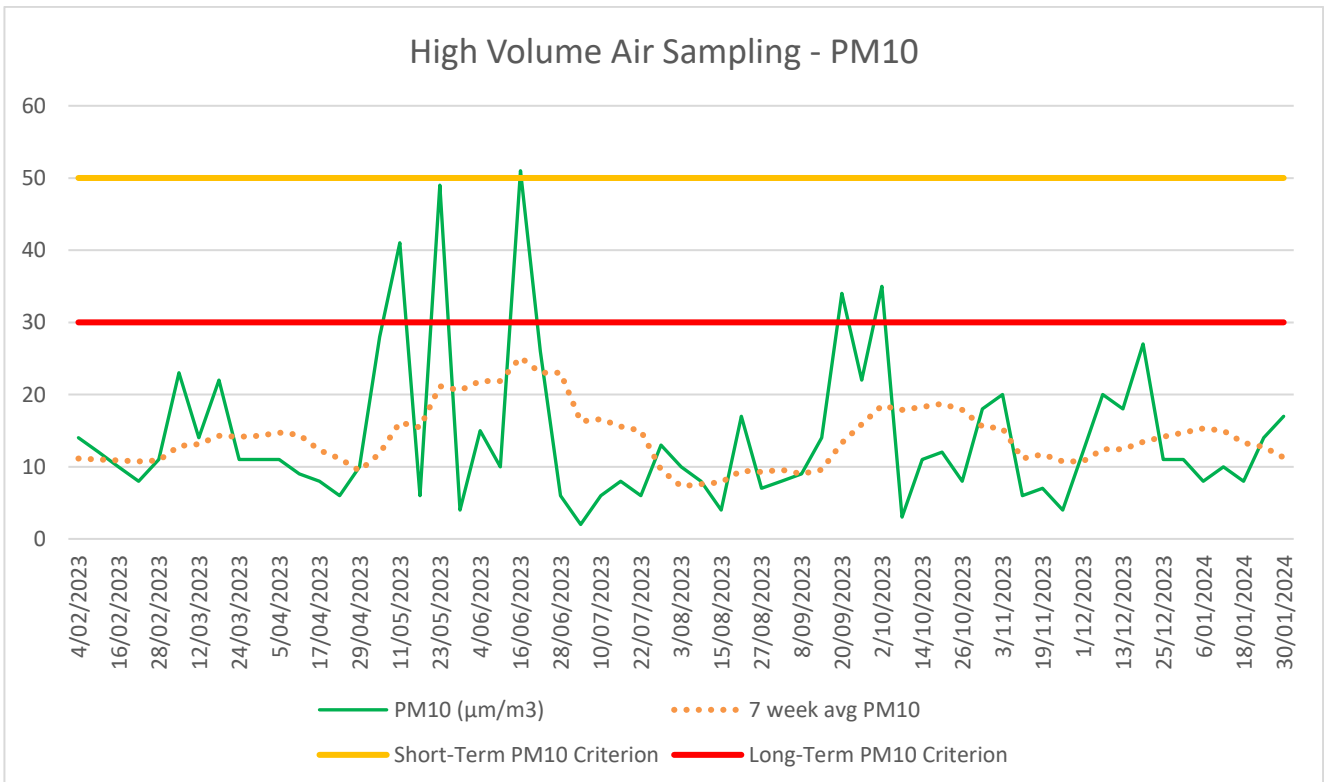


Figure 2 Long-term PM10 monitoring trends.

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**; with the monitoring results summarised by **Table 10**.

There was one blast within the Reporting Period and was observed to be within compliance limits.

Table 9 Blasting Airblast Overpressure and Ground Vibration Criteria (MP09-0175 & EPL 20611).

Location	Airblast Overpressure (dB(L))	Ground Vibration (mm/s)	Allowable Exceedance
Private Residence B	120	10	0%
EPL Monitoring Point ID 11	115	5	5% over 12-month reporting period.

Table 10 Blasting Monitoring Results.

Date	Time	Location	Airblast Overpressure (dB(L))	Ground Vibration (mm/s)
22/01/2024	14:10	RL 128	105.5	0.50

*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 NSW Planning approved Noise Management Plan, which requires attended noise monitoring to be conducted on a quarterly basis.

During the Reporting Period, no noise monitoring was completed.

5.0 Surface Water Monitoring

Water monitoring is undertaken in accordance with the EPL and NSW Planning approved Water Management Plan, with daily monitoring of surface water being discharged from the Quarry via the licenced discharge points in accordance with Condition L2 and M2 of the EPL.

No discharge events that occurred during the Reporting Period, as summarised by **Table 11**.

Table 11 *Discharge Water Monitoring Results.*

Date	pH	Turbidity (NTU)	Total Suspended Solids, TSS (mg/L)	Oil and Grease	Discharge Type
LDP 1 – Dam 1					
-	-	-	-	-	-
LDP 2 – Dam 2					
-	-	-	-	-	-
LDP 3 – Dam 3					
-	-	-	-	-	-

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 1** below outlines the weather records for the Reporting Period.



Monthly Weather Summary

Site: Karuah Quarry Complex
 Month: January 2024

Date	Day	Temperature @ 2m			Temperature @ 10m			Winds			Solar Radiation		Rain ² mm
		Max ¹ °C	Min ² °C	Ave ¹ °C	Max ¹ °C	Min ² °C	Ave ¹ °C	Max Gust ^{1a} km/h	Ave Speed km/h	Dir Ave ¹ deg	Max ¹ W/m ²	Ave ¹ W/m ²	
1	Mon	22.0	19.0	20.4	21.6	19.2	20.5	15.6	3.7	182	370.8	67.1	0.4
2	Tue	29.4	18.8	23.1	27.2	19.4	22.8	21.3	6.1	125	1158.3	205.9	0.0
3	Wed	31.0	18.2	24.2	28.4	18.8	23.7	19.5	6.5	120	1208.2	272.4	0.0
4	Thu	32.7	18.3	25.0	29.9	18.8	24.4	24.0	5.3	140	1032.5	287.3	0.0
5	Fri	33.7	20.5	24.3	30.2	20.5	23.5	21.8	6.2	173	961.6	197.8	1.2
6	Sat	24.7	15.2	20.3	23.7	16.2	20.6	22.3	5.6	171	654.9	118.0	2.2
7	Sun	28.5	14.7	21.2	25.5	15.3	20.8	27.0	5.7	167	1330.8	232.8	0.0
8	Mon	32.6	19.1	25.2	29.8	19.8	24.7	20.8	7.0	130	1122.4	287.3	0.0
9	Tue	32.4	21.0	25.1	31.0	21.1	24.6	12.5	2.6	198	885.0	136.4	3.6
10	Wed	27.7	21.9	23.5	27.0	21.7	23.2	19.6	5.0	148	1089.1	129.7	4.8
11	Thu	31.3	21.2	25.9	29.4	21.9	25.3	20.8	5.6	133	1205.8	211.3	0.0
12	Fri	32.8	20.1	25.8	30.4	20.6	25.2	26.2	7.0	151	1136.6	277.3	0.0
13	Sat	31.0	18.5	24.8	28.2	19.2	24.2	26.2	7.3	142	1071.7	307.2	0.2
14	Sun	35.1	18.1	25.5	30.8	18.5	24.8	25.3	5.5	172	1108.3	288.0	0.8
15	Mon	30.4	20.3	23.5	26.7	20.5	23.3	28.9	7.8	163	1194.2	182.8	4.0
16	Tue	24.5	18.5	21.0	23.7	18.8	21.0	30.8	8.5	173	533.3	100.1	3.0
17	Wed	26.3	21.3	22.6	25.2	21.4	22.7	15.5	4.6	147	502.4	103.0	2.8
18	Thu	33.6	20.3	25.1	31.1	20.7	24.8	19.2	4.1	175	991.6	205.3	12.2
19	Fri	35.4	18.0	26.5	34.1	19.5	26.5	19.8	6.1	263	1158.3	264.3	0.0
20	Sat	31.9	16.9	23.2	28.6	17.2	22.7	20.6	5.1	176	1070.7	303.4	0.0
21	Sun	31.9	18.8	25.1	29.2	19.3	24.5	26.6	6.3	145	1038.3	273.7	0.0
22	Mon	41.6	21.8	29.5	39.1	21.6	28.9	26.2	7.1	182	993.3	285.5	0.0
23	Tue	28.6	20.5	23.7	25.6	20.3	22.7	22.8	7.7	155	1126.7	191.0	0.0
24	Wed	26.4	16.8	21.5	24.5	17.7	21.3	20.2	6.1	145	848.2	153.3	0.0
25	Thu	35.7	22.3	27.7	33.1	23.4	27.2	18.3	4.6	174	985.7	296.3	0.0
26	Fri	45.1	22.6	31.1	40.4	24.6	31.4	16.1	3.6	167	1136.6	208.6	0.0
27	Sat	43.4	22.9	29.4	41.0	22.9	28.8	22.5	9.6	203	1176.7	197.0	0.6
28	Sun	25.8	19.5	22.3	24.3	19.7	21.9	16.4	3.6	164	485.8	54.7	0.0
29	Mon	28.5	19.8	23.5	25.9	20.3	23.3	16.5	4.7	151	1199.9	105.9	0.4
30	Tue	35.5	23.4	27.6	32.7	23.4	26.8	20.3	6.4	126	1109.2	275.1	0.0
31	Wed	33.5	20.1	26.2	30.7	20.6	25.4	26.1	7.2	134	1111.7	245.2	0.0
Ave or Total		31.7	19.6	24.6	29.3	20.1	24.2	21.6	5.9	161.2	1000.0	208.5	36.2
High		45.1	23.4	31.1	41.0	24.6	31.4	30.8	9.6		1330.8	307.2	12.2
Low		22.0	14.7	20.3	21.6	15.3	20.5	12.5	2.6		370.8	54.7	
Notes: 1. Values are for the 24 hour period from 9am to 9am next day.												No. rain days >1mm:	8
2. Values are for the 24 hours to 9am.													

Figure 1 Weather Records Summary during the Reporting Period.

7.0 Production Data

Monthly monitoring of sales and truck movements are summarised by **Table 12**.

Table 12 *Quarry Production Data.*

Month	Truck Movements	Quarry Product Sales (t)
Jan-24	3,559	109,693

8.0 Reporting

8.1 Reportable Environmental Incidents

During the Reporting Period, no reportable environmental incidents occurred at the Quarry.

8.2 Reportable Non-Compliances

During the Reporting Period, no reportable non-compliances were identified at the Quarry.

8.3 Community Complaints

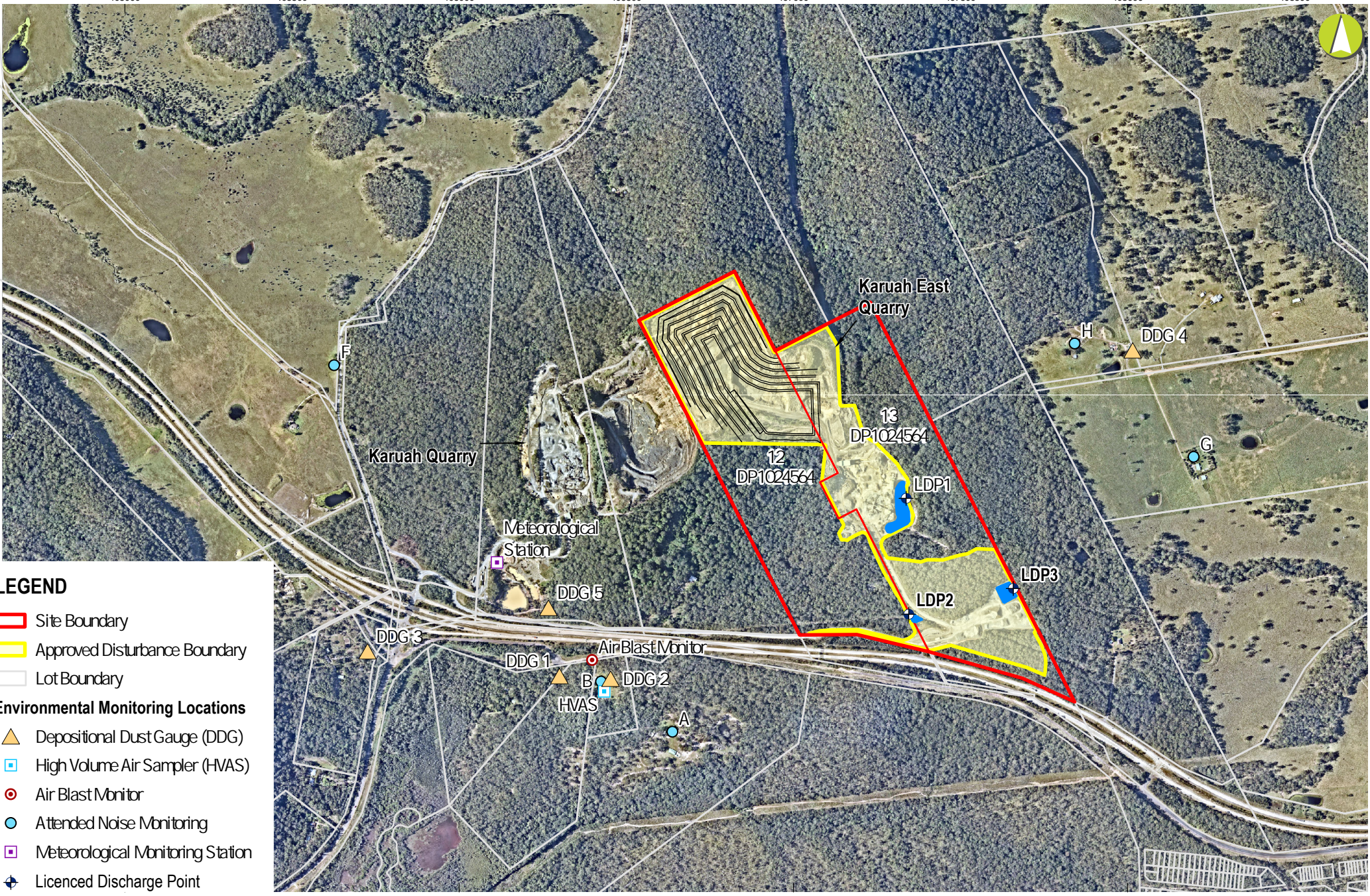
During the Reporting Period, no community complaints were reported to the Quarry.

Appendix 1 – EPL 20611 Monitoring Locations










405000 405500 406000 406500 407000 407500 408000 408500



6389500 6390000 6390500 6391000 6391500 6392000



LEGEND

-  Site Boundary
-  Approved Disturbance Boundary
-  Lot Boundary
- Environmental Monitoring Locations**
-  Depositional Dust Gauge (DDG)
-  High Volume Air Sampler (HVAS)
-  Air Blast Monitor
-  Attended Noise Monitoring
-  Meteorological Monitoring Station
-  Licenced Discharge Point



GDA 1994 MGA Zone 56
8/03/2024

Karuah East Quarry

