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Karuah East Quarry

Environmental Monitoring Report

April 2025



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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 April 2025 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
DDG 1	12	South-West of Karuah East Quarry	54 Mill Hill Close, Karuah NSW 2324
DDG 2	13	South-West of Karuah East Quarry	64 Mill Hill Close, Karuah NSW 2324
DDG 3	14	South-West of Karuah East Quarry	Lot 251 DP1092111, Karuah NSW 2324
DDG 4	7	East of Karuah East Quarry	21 Halloran Road, North Arm Cove NSW 2324
DDG 5	16	South-West of Karuah East Quarry	Lot 21 DP1024341, Karuah NSW 2324
HVAS	9	South-West of Karuah East Quarry	64 Mill Hill Close, Karuah NSW 2324

2.1 Deposited Dust Monitoring

Deposited dust results for the 12-months prior-to and including April 2025 are summarised by **Table 7**. 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

Table 7 *Deposited dust monitoring results.*

Reporting Period	Start Date	End Date	Days	DDG 1 (EPL ID 4) EPL ID 12	DDG 2 (EPL ID 5) EPL ID 13	DDG 3 (EPL ID 6) EPL ID 14	DDG 4 (EPL ID 7) EPL ID 15	DDG 5 (EPL ID 8) EPL ID 16
May-24	29/04/2024	29/05/2024	30	(0.5)	(0.3)	(0.2)	(0.4)	(0.4)
Jun-24	29/05/2024	28/06/2024	30	(0.7)	(0.5)	(0.5)	(0.7)	(0.4)
Jul-24	28/06/2024	30/07/2024	32	(1.1)	(0.8)	(0.6)	(0.9)	(0.7)
Aug-24	30/07/2024	30/08/2024	31	(0.7)	(0.5)	(0.7)	(0.9)	(0.6)
Sep-24	30/08/2024	30/09/2024	31	(2.2)	(1.2)	(1.3)	(1.2)	(0.9)
Oct-24	30/09/2024	31/10/2024	31	(1.0)	(0.7)	(0.7)	(5.1) ²	(0.4)
Nov-24	31/10/2024	29/11/2024	29	(1.4)	(1.1)	(1.1)	(1.7)	(0.9)
Dec-24	29/11/2024	30/12/2024	29	(0.6)	(1.4)	(1.3)	(3.1)	(1.1)
Jan-25	30/12/2024	31/01/2025	32	(3.8)	(1.7)	(1.9)	(1.3)	(1.3)
Feb-25	31/01/2025	03/03/2025	31	(1.2)	(0.9)	(1.1)	(1.2)	(2.1)
Mar-25	03/03/2025	03/04/2025	31	(0.7)	(1.0)	(1.4)		(28.2) ¹
	04/03/2025	03/04/2025	30				(1.1)	
Apr-25	03/04/2025	05/05/2025	32	1.2	3.2	0.4	(1.0)	1.1
Progressive Annual Average				1.2	1.0	1.0	1.4	2.9

Notes:

1. An exceedance was recorded at DDG5 during the March 2025 Monitoring Period, due to an elevated quantity of combustible matter being recorded (27.5 g). This is attributed to the development of a significant algal bloom on the collected rainwater surface within the dust gauge glassware. This event 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. An anomalous exceedance was recorded at DDG4 during the October 2024 Monitoring Period which was subsequently reported to 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)
06/04/2025	17	9
12/04/2025	12	4
18/04/2025	19	10
24/04/2025	13	2
30/04/2025	8	4
Monthly Average	13.8	5.8

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.

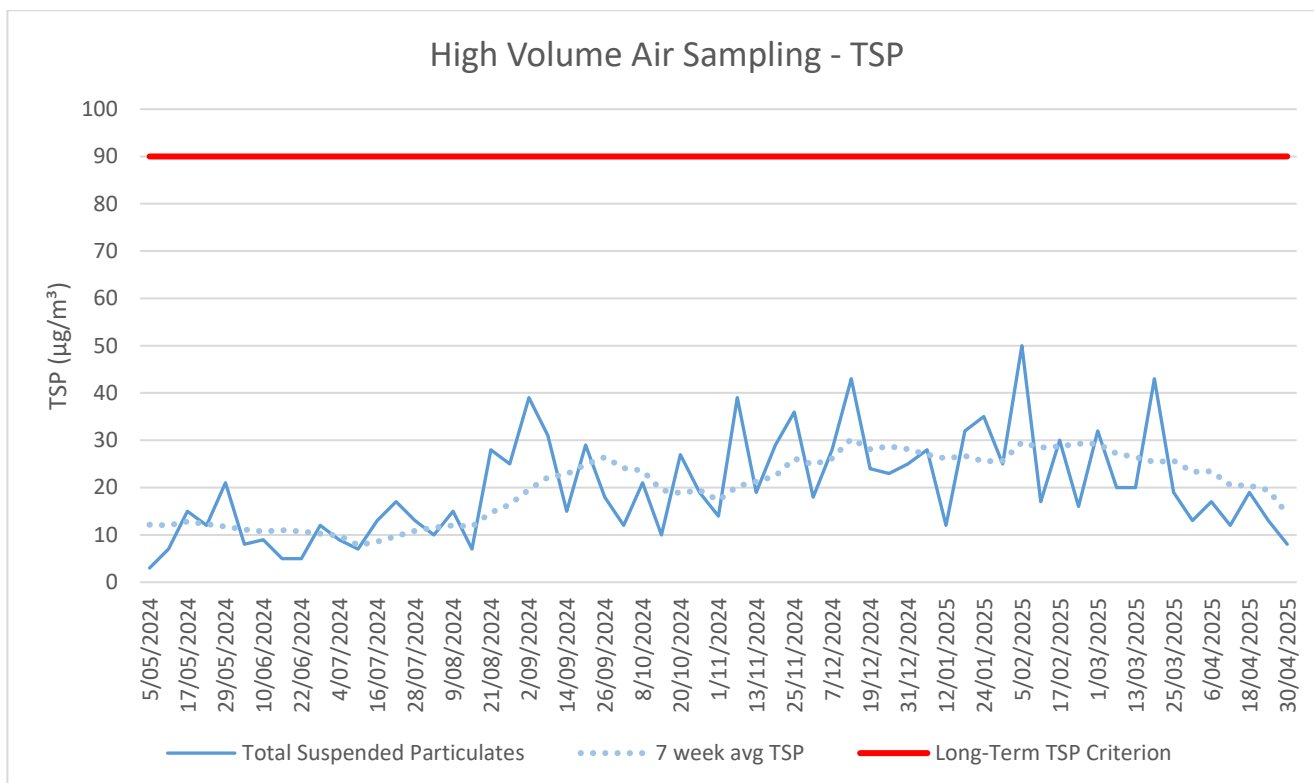


Figure 1 Long-term TSP monitoring trends.

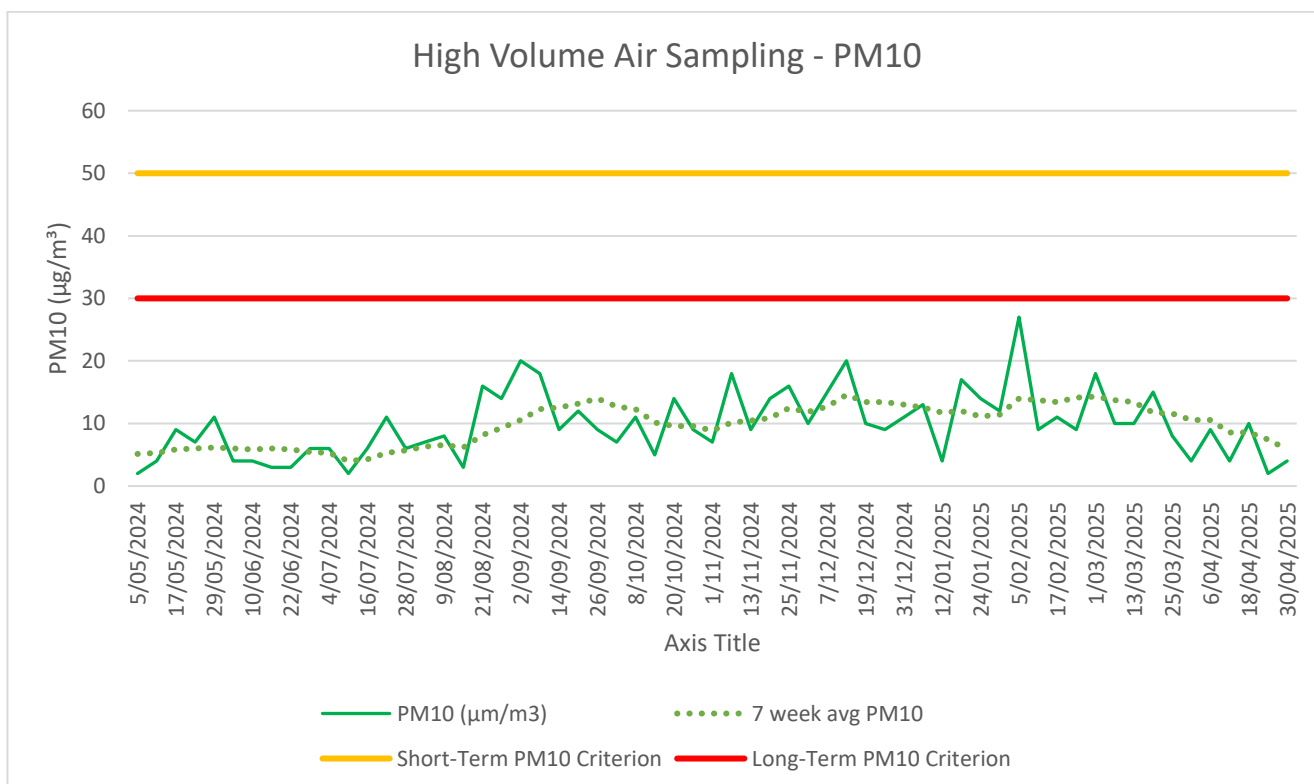


Figure 2 Long-term PM10 monitoring trends.

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 undertaken during the Reporting Period, which was observed to be within compliance limits, as summarised by **Table 10**.

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)
11/04/2025	14:40	RL 120 + 90	113.4	0.62

*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.

No noise monitoring was undertaken during the Reporting Period.

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.

Discharge events that occurred during the Reporting Period are summarised by **Table 11**.

Discharge events were generally compliant with the limits provided by the Consent and EPL, including Total Suspended Solids (TSS) below 40 mg/L and pH within the range of 6.5 to 8.5.

However, from 27 April to 04 May a major rainfall event, greater than the design storm event, was received at the site. The exceedance of rainfall caused all dams to overflow (uncontrolled discharge). TSS limits were exceeded and PIRMP protocols were enacted.

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					
27/04/2025	7.3	>1,000	2400	Not Visible	Uncontrolled
28/04/2025	7.6	>1,000	1000	Not Visible	Uncontrolled
29/04/2025	7.4	>1,000	640	Not Visible	Uncontrolled
30/04/2025	7.3	>1,000	1300	Not Visible	Uncontrolled
LDP 2 – Dam 2					
01/04/2025	6.9	45	29	Not Visible	Controlled
15/04/2025	7.5	11	8	Not Visible	Controlled
17/04/2025	7.0	55	29	Not Visible	Controlled
22/04/2025	7.1	45	31	Not Visible	Controlled
24/04/2025	7.0	60	34	Not Visible	Controlled
27/04/2025	6.8	840	380	Not Visible	Uncontrolled
28/04/2025	7.1	380	160	Not Visible	Uncontrolled
29/04/2025	7.1	250	74	Not Visible	Uncontrolled
LDP 3 – Dam 3					
01/04/2025	7.1	50	30	Not Visible	Controlled
02/04/2025	6.7	55	38	Not Visible	Controlled
03/04/2025	7.1	39	24	Not Visible	Controlled
17/04/2025	7.2	65	26	Not Visible	Controlled
18/04/2025	7.1	33	18	Not Visible	Controlled
19/04/2025	7.1	45	22	Not Visible	Controlled
22/04/2025	7.2	50	32	Not Visible	Controlled
23/04/2025	7.1	50	33	Not Visible	Controlled
24/04/2025	7.1	50	27	Not Visible	Controlled
27/04/2025	7.0	95	43	Not Visible	Uncontrolled
28/04/2025	7.0	240	140	Not Visible	Uncontrolled
29/04/2025	6.9	290	160	Not Visible	Uncontrolled

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 Reporting Period.

Monthly Weather Summary



Site: Karuah Quarry Complex
Month: April 2025

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 ¹	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	16.0	18.6	22.2	16.0	18.7	35.5	17.6	199	486.6	64.6	10.4
2	Wed	22.1	14.8	17.3	20.9	14.7	17.4	29.6	18.9	209	776.6	91.5	3.6
3	Thu	20.3	15.3	17.1	19.3	15.1	16.9	14.2	9.2	248	451.7	61.6	1.8
4	Fri	28.3	12.5	16.5	25.4	13.2	17.1	13.0	6.6	229	642.5	61.1	2.2
5	Sat	28.2	12.2	19.2	26.7	13.4	19.7	16.6	10.8	204	699.2	180.5	0.0
6	Sun	27.4	11.5	18.5	25.8	12.1	18.6	26.0	18.5	196	694.1	195.9	0.0
7	Mon	27.0	9.3	17.2	25.8	11.0	18.1	23.7	15.4	211	686.6	186.3	0.0
8	Tue	27.4	13.2	18.6	25.9	13.6	18.5	29.6	19.5	213	675.8	180.1	0.0
9	Wed	22.9	14.0	17.3	21.2	14.7	17.3	30.8	20.4	156	718.2	90.2	0.8
10	Thu	25.1	12.7	18.0	23.0	13.8	18.2	23.7	18.1	182	860.8	126.3	0.0
11	Fri	27.2	13.1	18.8	24.8	14.1	19.1	14.2	10.7	194	808.2	142.8	0.0
12	Sat	28.9	14.0	19.8	26.8	14.3	19.7	14.2	10.6	172	625.8	167.7	0.0
13	Sun	26.7	15.6	19.9	24.6	16.0	19.6	26.0	20.2	177	784.2	137.5	14.2
14	Mon	26.5	12.8	18.3	25.1	13.2	18.5	18.9	13.6	218	838.3	111.4	0.2
15	Tue	27.2	16.0	20.3	26.3	16.8	20.4	31.9	18.3	160	645.8	159.3	7.2
16	Wed	22.9	13.8	17.4	22.1	14.3	17.4	36.7	23.5	202	907.4	110.8	2.6
17	Thu	22.7	15.3	17.7	21.0	15.5	17.4	34.3	15.9	201	845.0	91.6	30.8
18	Fri	22.1	13.7	16.7	21.5	14.7	17.0	28.4	19.4	234	735.0	78.8	12.2
19	Sat	25.6	11.3	16.6	23.4	11.8	16.7	18.9	12.1	224	702.5	144.5	0.0
20	Sun	27.3	12.5	17.8	26.0	13.4	18.3	13.0	7.5	250	776.6	135.2	0.0
21	Mon	29.7	15.0	20.8	28.8	16.9	22.1	16.6	9.7	237	596.6	152.8	0.0
22	Tue	26.8	13.1	17.7	25.3	13.7	17.9	30.8	17.7	215	768.3	103.6	14.6
23	Wed	22.8	13.7	16.8	20.8	14.0	16.7	26.0	16.3	226	776.6	104.9	35.6
24	Thu	24.1	14.4	19.2	23.1	15.0	19.8	37.9	24.9	147	735.1	107.1	1.2
25	Fri	25.2	14.0	18.2	23.7	14.0	18.1	24.9	17.6	170	672.5	111.2	4.4
26	Sat	24.1	13.8	17.7	22.7	14.0	17.9	21.3	14.3	173	690.0	116.0	0.4
27	Sun	25.0	16.3	19.6	23.6	16.2	19.5	22.5	13.0	191	663.3	90.2	58.4
28	Mon	18.7	16.3	17.3	18.9	16.5	17.4	54.4	35.4	146	231.6	20.7	142.2
29	Tue	23.4	13.8	17.3	22.4	14.5	17.5	33.1	19.4	197	727.5	94.7	7.6
30	Wed	24.0	14.5	17.8	22.5	15.0	17.7	16.6	11.6	207	672.4	94.1	18.6
Ave or Total		25.1	13.8	18.1	23.7	14.4	18.3	25.4	16.2	199.5	696.5	117.1	369.0
High		29.7	16.3	20.8	28.8	16.9	22.1	54.4	35.4		907.4	195.9	142.2
Low		18.7	9.3	16.5	18.9	11.0	16.7	13.0	6.6		231.6	20.7	

Notes: 1. Values are for the 24 hour period from 9am to 9am next day.

2. Values are for the 24 hours to 9am.

No. rain days >1mm: 17

Figure 3 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-25	1,822	54,080
Feb-25	3,048	95,968
Mar-25	3,001	95,438
Apr-25	2,044	63,662
Progressive Annual Total	9,915	309,149

8.0 Reporting

8.1 Reportable Environmental Incidents

During the Reporting Period, one reportable environmental incident occurred at the Quarry, including:

- Uncontrolled discharge of sediment-laden water to Yalimbah and Bulga Creeks from Sunday 27 April to Sunday 04 May 2025 following the receipt of 318.4 mm of rainfall over six days. This rainfall event exceeded the 95th percentile 5x day rainfall depth of 90.6 mm, which the site's sediment dams are designed to withstand in accordance with Landcom's Blue Book (*Managing Urban Stormwater: Soils and Construction – Volume 2E, Mines and quarries*).

During the event the site's Pollution Incident Response Management Plan (PIRMP) was enacted through reporting to relevant authorities, the KEQPL executive and the local community. Formal incident reports were subsequently submitted to NSW Planning and the NSW EPA.

8.2 Reportable Non-Compliances

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

8.3 Community Complaints

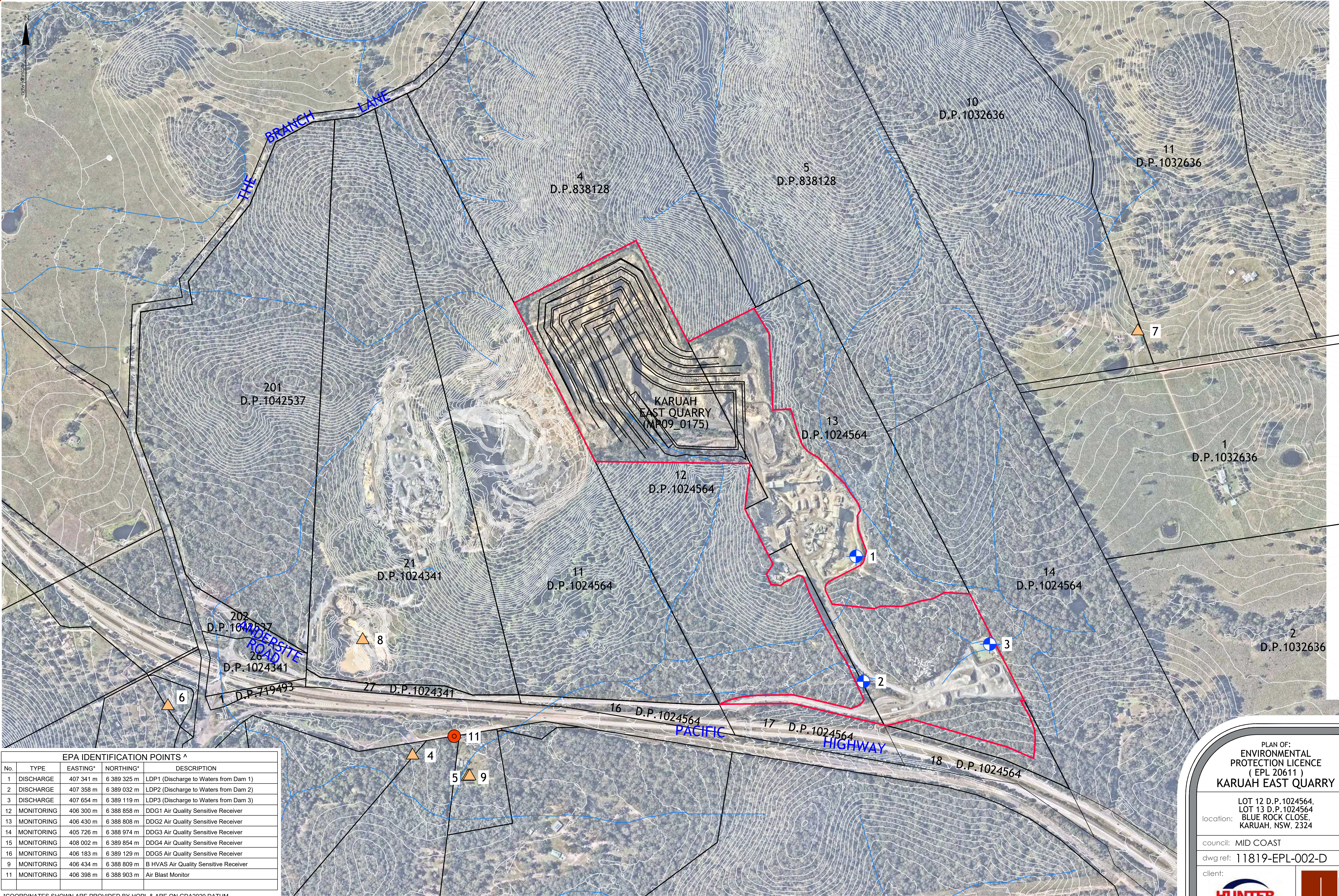
During the Reporting Period, one community complaint was received by the Quarry.

- Complaint received that audible noise from quarry operations were experienced at a nearby residence on Halloran Road, North Arm Cove between 10:00 and 10:30 pm on 03 April 2025.

An investigation of the complaint confirmed that noise generating activities were conducted beyond authorised hours of operation provided by the Consent and EPL. A letter box drop to neighbouring landholders was subsequently completed confirming operating hours until 10:00 pm Mondays and until 9:00 pm from Tuesday to Friday.

Operations staff and contractors were then subject to toolbox talks of these hours and the associated allowable activities.

Appendix 1 – EPL 20611 Monitoring Locations



EPA IDENTIFICATION POINTS ^				
No.	TYPE	EASTING*	NORTHING*	DESCRIPTION
1	DISCHARGE	407 341 m	6 389 325 m	LDP1 (Discharge to Waters from Dam 1)
2	DISCHARGE	407 358 m	6 389 032 m	LDP2 (Discharge to Waters from Dam 2)
3	DISCHARGE	407 654 m	6 389 119 m	LDP3 (Discharge to Waters from Dam 3)
12	MONITORING	406 300 m	6 388 858 m	DDG1 Air Quality Sensitive Receiver
13	MONITORING	406 430 m	6 388 808 m	DDG2 Air Quality Sensitive Receiver
14	MONITORING	405 726 m	6 388 974 m	DDG3 Air Quality Sensitive Receiver
15	MONITORING	408 002 m	6 389 854 m	DDG4 Air Quality Sensitive Receiver
16	MONITORING	406 183 m	6 389 129 m	DDG5 Air Quality Sensitive Receiver
9	MONITORING	406 434 m	6 388 809 m	B HVAS Air Quality Sensitive Receiver
11	MONITORING	406 398 m	6 388 903 m	Air Blast Monitor

*COORDINATES SHOWN ARE PROVIDED BY HQPL & ARE ON GDA2020 DATUM

ver.	date	comment	surveyed	drawn	checked	pm	co-ordinate information	level information	scale (A1 original size)	page
A	11.06.2020	INITIAL EPL PLAN	--	Z.J.	M.R.	M.R.	CO-ORDINATE SYSTEM: M.G.A. ZONE 56 FOR PLAN CONTENT GDA94 ORIGIN OF CO-ORDINATES: P.M.	DATUM: A.H.D. CONTOUR INTERVAL: 2.0 m ORIGIN OF LEVELS: LIDAR DATA	<div><div></div><div>0100200m</div></div> <div>SCALE: 1:4000 (FULL)</div>	1 OF 1
B	24.07.2023	UPDATED EPL BOUNDARY	--	Z.J.	M.R.	M.R.				
C	17.05.2024	UPDATED MONITORING LOCATIONS	HQPL	Z.J.	M.R.	M.R.				
D	20.05.2024	UPDATED LDP NAMING & POINTS	HQPL	Z.J.	M.R.	M.R.				

- project management

• civil engineering

• infrastructure

• superintendency

• economic analysis

• social impact

• town planning

• surveying

• development feasibility

• visualisation

• urban design

^ MONITORING POINTS HAVE BEEN PROVIDED BY HUNTER QUARRIES PTY LTD.
REFER TO PLAN 'KARUAH HARD ROCK QUARRY ENVIRONMENTAL MONITORING LOCATIONS - FIGURE 1'
BY SLR CONSULTING AUSTRALIA - REFERENCE: 633.HQP00.0030 DATED 23/06/2014.

PLAN OF:
ENVIRONMENTAL
PROTECTION LICENCE
(EPL 20611)
KARUAH EAST QUARRY

location:
LOT 12 D.P.1024564,
LOT 13 D.P.1024564
BLUE ROCK CLOSE,
KARUAH, NSW, 2324

council: MID COAST

dwg ref: 11819-EPL-002-D

client:



central coast office ph: (02) 4305 4300
hunter office ph: (02) 4978 5100
sydney office ph: (02) 8046 7411

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