



Karuah East Quarry
ABN: 80 141 505 035
Karuah East Quarry Pty Limited
Blue Rock Close, Karuah NSW 2324

W: www.hunterquarries.com.au
E: admin@hunterquarries.com.au
T: 02 4050 0304
P: PO Box 23, Thornton NSW 2322

Karuah East Quarry

Environmental Monitoring Report

November 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 November 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	15	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

NOTE: * DDG 5 discontinued monitoring from August 2025 due to deletion from the EPL following acquisition of Lot 11 DP1024564 from Wedgerock Pty Ltd.

2.1 Deposited Dust Monitoring

Deposited dust results for the 12-months prior-to and including November 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
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) [^]
	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
May-25	05/05/2025	03/06/2025	29	2.0	3.9	0.2	(0.3)	0.6
Jun-25	03/06/2025	01/07/2025	28	2.9	1.0	0.6	0.4	2.1
Jul-25	01/07/2025	01/08/2025	31	10.1*	0.5	0.4	0.2	0.9
Aug-25	01/08/2025	01/09/2025	31	0.9	2.3	0.5	0.8	–
Sep-25	01/09/2025	01/10/2025	30	1.7	1.3	1.0	0.7	–
Oct-25	01/10/2025	31/10/2025	30	1.1	1.7	1.7	1.2	–
Nov-25	31/10/2025	02/12/2025	32	1.0	2.5	2.1	1.1	–
Progressive Annual Average				2.3	1.8	1.1	1.0	–

Notes: * Recorded anomalous exceedance which 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.

[^] 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 NSW Planning, the NSW EPA and surrounding landholders in accordance with the relevant conditions of the Consent and EPL.

** DDG 5 discontinued monitoring from August 2025 due to deletion from the EPL following acquisition of Lot 11 DP1024564 from Wedgerock Pty Ltd.

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**.

Monitoring results for the six HVAS run days within the Reporting Period were generally compliant with the long-term criteria for TSP and PM10, and short-term criteria for PM10.

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

Run Date	Total Suspended Particulates, TSP ($\mu\text{g}/\text{m}^3$)	Particulate Matter < 10 μm , PM10 ($\mu\text{g}/\text{m}^3$)
02/11/2025	14	10
08/11/2025*	34	15
12/11/2025*	47	34
14/11/2025^	117	106
20/11/2025	48	35
26/11/2025	24	11

Notes: **On 08 November 2025, Essential Energy conducted maintenance work in the area resulting in a partial power outage, interrupting the scheduled operation of the HVAS monitoring unit, whereby monitoring was conducted for approximately 14 hours rather than the full 24-hour Monitoring Period. Accordingly, partial particulate monitoring was conducted during this scheduled Monitoring Period.*

Upon identification of the reduced monitoring period, a replacement manual operation run was completed between approximately 1.00 pm on 12 November 2025 and 1.00 pm on 13 November 2025. Additionally, the system timer was reset to recommence normal operations for the next scheduled run on 14 November 2025.

^On 14 November 2025, an exceedance of short-term (daily) particulate monitoring criteria occurred on 14 November 2025 as a result of three bushfires in the vicinity of the Karuah Quarry Complex, including the Tenterfield Road, North Arm Cove; the Pacific Highway, Karuah; and the Warraba Road, The Branch bushfires.

The PM10 result was recorded at $106 \mu\text{g}/\text{m}^3$ against a short-term criteria of $50 \mu\text{g}/\text{m}^3$, whilst long-term averages for both TSP and PM10 remained within the long-term criteria over the previous 12-months.

Both of these matters were reported to the NSW Department of Planning, Housing and Infrastructure (NSW Planning), the NSW EPA and surrounding landholders in accordance with the relevant conditions of the Consent and EPL.

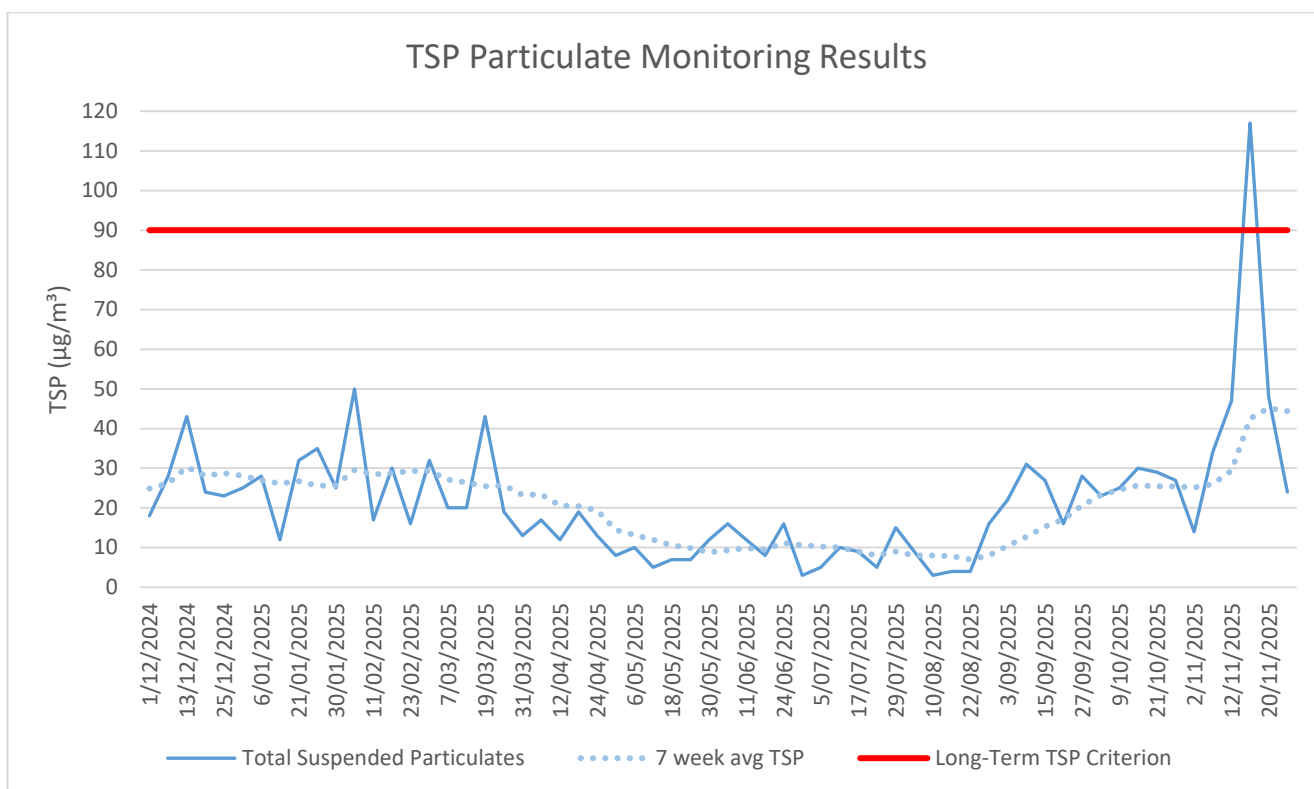


Figure 1 Long-term TSP monitoring trends.

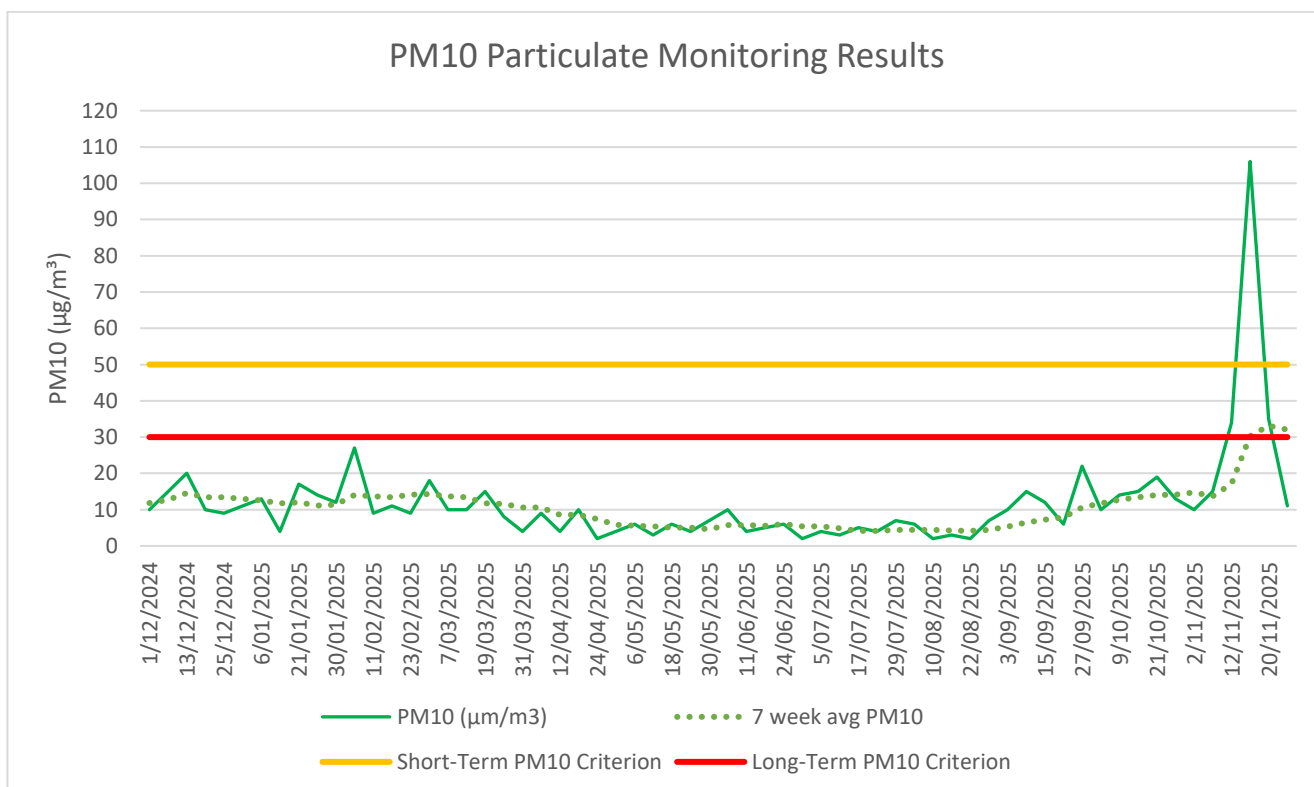


Figure 2 Long-term PM10 monitoring trends.

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 were two blasts undertaken during the Reporting Period, which were 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)
12/11/2025	11:34	RL105	105.0	0.43
28/11/2025	13:59	RL105 + 128	107.9	0.44

*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.

There were no discharge events during the Reporting Period are 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 3** below outlines the weather records for the Reporting Period.

Monthly Weather Summary



Site: Karuah Quarry Complex
Month: November 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	
1	Sat	26.5	18.0	21.7	24.1	18.1	21.1	30.8	22.1	124	1156.6	236.5	0.8
2	Sun	27.6	16.1	20.6	25.6	16.8	20.4	20.1	14.0	160	1136.7	147.9	1.0
3	Mon	25.6	15.3	20.2	23.9	15.9	19.9	21.3	14.7	173	1178.2	146.0	0.2
4	Tue	34.9	15.2	25.3	32.8	15.3	24.9	41.4	24.4	173	948.2	229.4	1.4
5	Wed	27.0	7.2	17.6	25.5	8.1	17.7	49.7	30.3	199	1032.6	286.5	0.0
6	Thu	28.1	9.8	18.7	26.9	10.5	18.4	40.2	26.3	191	939.2	298.1	0.0
7	Fri	26.3	17.1	21.3	24.2	17.7	20.5	34.3	24.5	155	1101.7	271.2	0.0
8	Sat	31.9	17.1	23.0	30.0	17.8	22.6	28.4	16.0	158	1045.8	199.3	0.0
9	Sun	33.4	16.9	24.2	32.4	17.6	24.3	48.5	22.8	186	930.7	164.5	0.0
10	Mon	25.9	11.9	18.6	23.1	12.3	17.8	41.4	27.0	161	1000.7	292.8	0.0
11	Tue	25.0	11.3	18.5	22.1	12.3	18.0	30.8	21.1	173	1119.2	234.4	0.0
12	Wed	30.4	11.8	21.2	29.1	12.6	20.7	50.9	28.4	174	972.5	284.5	0.0
13	Thu	24.2	7.6	16.0	20.6	8.6	15.4	29.6	20.9	141	965.8	295.8	0.0
14	Fri	30.4	15.3	21.5	27.9	16.5	21.4	30.8	18.3	209	974.9	271.7	0.0
15	Sat	26.2	14.6	19.7	23.4	15.1	19.1	30.8	20.1	167	1003.2	215.1	0.0
16	Sun	31.8	19.0	23.1	29.0	19.2	22.6	31.9	20.2	209	909.2	202.5	5.0
17	Mon	33.8	12.1	23.0	32.4	13.5	23.8	46.1	25.1	225	1091.7	283.6	0.0
18	Tue	28.6	9.7	18.1	26.5	10.9	18.0	39.0	24.4	209	1275.8	247.7	0.0
19	Wed	29.1	11.9	20.1	25.7	12.8	19.6	30.8	21.9	185	952.5	308.8	0.0
20	Thu	33.0	16.3	24.2	30.4	17.6	23.6	30.8	19.0	192	939.2	299.7	0.0
21	Fri	31.7	18.9	22.8	28.5	18.9	22.0	36.7	18.2	127	1039.2	228.6	1.0
22	Sat	23.3	17.6	19.9	21.6	17.9	19.6	23.7	14.6	128	907.4	96.3	0.6
23	Sun	28.6	19.5	22.2	25.6	19.6	21.5	26.0	16.8	148	1141.6	184.1	5.4
24	Mon	33.4	18.7	23.6	31.5	18.9	23.2	35.5	21.8	161	1052.5	236.2	0.2
25	Tue	27.1	17.1	21.5	24.0	17.3	20.6	33.1	21.5	147	1210.8	257.4	0.0
26	Wed	34.5	18.6	25.8	32.3	20.0	25.8	47.3	25.4	194	1148.3	183.7	0.0
27	Thu	38.5	17.2	25.2	37.0	18.0	25.5	40.2	27.2	226	1070.8	211.2	0.0
28	Fri	36.0	15.1	24.7	34.8	15.8	24.3	49.7	26.9	179	976.7	306.9	0.0
29	Sat	30.8	20.2	25.1	28.6	20.7	24.4	28.4	21.9	160	969.1	280.0	0.0
30	Sun	34.0	16.0	24.6	32.9	16.4	24.3	36.7	24.1	192	1140.0	203.1	0.0
Ave or Total		29.9	15.1	21.7	27.7	15.8	21.4	35.5	22.0	174.3	1044.4	236.8	15.6
High		38.5	20.2	25.8	37.0	20.7	25.8	50.9	30.3		1275.8	308.8	5.4
Low		23.3	7.2	16.0	20.6	8.1	15.4	20.1	14.0		907.4	96.3	
Notes: 1. Values are for the 24 hour period from 9am to 9am next day.												No. rain days >1mm:	3
2. Values are for the 24 hours to 9am.													

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
May-25	2,174	65,786
Jun-25	3,087	93,552
Jul-25	2,964	88,839
Aug-25	1,773	53,267
Sep-25	3,045	89,707
Oct-25	3,419	107,258
Nov-25	2,759	81,136
Progressive Annual Total	29,136	888,693

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, one air-quality related non-compliance occurred at the Quarry, as outlined below:

- An exceedance of short-term (daily) particulate monitoring criteria occurred on 14 November 2025 as a result of three bushfires in the vicinity of the Karuah Quarry Complex, including the Tenterfield Road, North Arm Cove; the Pacific Highway, Karuah; and the Warraba Road, The Branch bushfires.

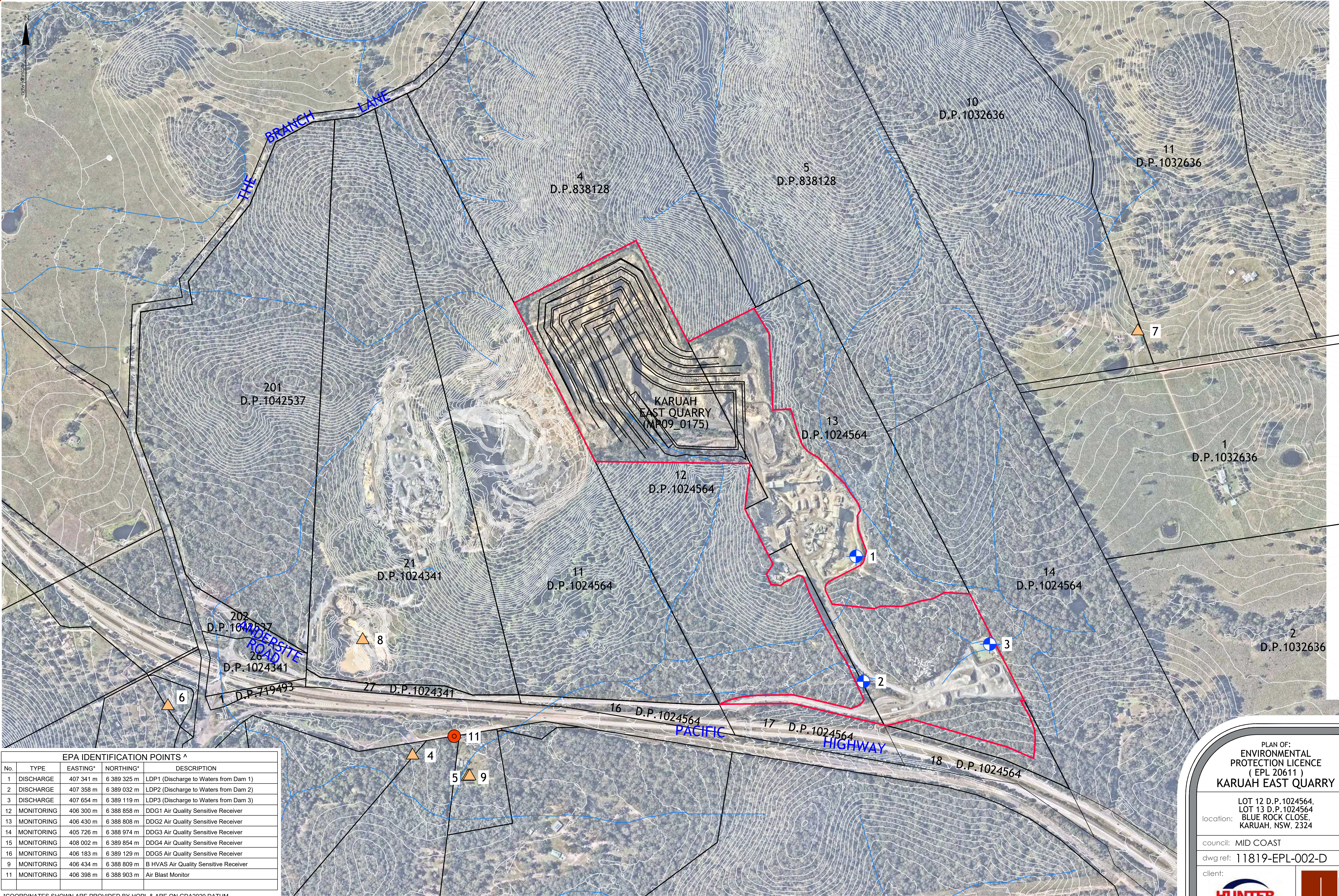
8.3 Community Complaints

During the Reporting Period, one transport-related complaint was received by the Quarry, as outlined below:

- A complaint was received by phone on 18 November 2025 regarding recent interactions with trucks exiting Andersite Road and turning left into The Branch Lane to access the A1 Pacific Highway interchange. The complainant requested anonymity and to not be contacted with any investigation outcomes.

At the time of writing, KEPQL are currently reviewing signage options to reduce vehicle speed through the intersection.

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: 2.0m 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

www.adwjohanson.com.au