



**Grounded in Quality**

A proud member of the Hunter Construction Group

---

## **Karuah East Quarry**

### **Environmental Monitoring Report:**

**August 2022**



# Table of Contents

1	Introduction .....	3
2	Air Quality Monitoring .....	4
2.1	Deposited Dust Monitoring .....	5
2.2	High Volume Air Sampling .....	5
3	Blast Monitoring .....	7
4	Noise Monitoring .....	8
4.1	Attended Monitoring .....	8
4.2	Unattended Noise Monitoring .....	8
5	Surface Water Monitoring .....	12
5.1	Monthly Surface Water Monitoring Program .....	12
5.2	Discharge Monitoring .....	15
5.2.1	Dam 1 (LDP1) .....	15
5.2.2	Dam 2 (LDP2) .....	15
5.2.3	Dam 3 (LDP3) .....	15
6	Weather Monitoring .....	16
7	Reporting .....	19
7.1	Community Consultative Committee .....	19
7.2	Production .....	19
7.3	Non-Compliance .....	19
7.4	Complaints .....	19
	Table 1 Environmental Protection Licence 20611 information .....	3
	Table 2 Project Approval 09_0175 information .....	3
	Table 3 PA 09_0175 Long Term Assessment Criteria for Deposited Dust .....	4
	Table 4 PA 09_0175 Long Term Impact Assessment Criteria for Particulate Matter .....	4
	Table 5 PA 09_0175 Short Term impact Assessment Criterion for Particulate Matter .....	4
	Table 6 Air quality monitoring locations .....	4
	Table 7 Deposited dust monitoring results .....	5
	Table 8 High Volume Air Sampling ( $\mu\text{g}/\text{m}^3$ ) results .....	5
	Table 9 Blasting criteria .....	7
	Table 10 Blast monitoring results .....	7
	Table 11 Operational Noise Criteria ( $\text{dB(A)}$ $\text{LA}_{\text{eq}(15\text{min})}/\text{LA}_{\text{(max)}}$ ) .....	8
	Table 12 Noise monitoring locations .....	8
	<b>Table 13 Attended Noise Monitoring (EMM, August 2022) .....</b>	<b>9</b>
	Table 14 Water monitoring results .....	13
	Table 15 EPL20611 - Pollutant concentration limits .....	15
	Table 16 Discharge monitoring – LDP1 .....	15
	Table 17 Discharge monitoring – LDP2 .....	15
	Table 18 Discharge monitoring – LDP3 .....	15

<b>Table 19 Non-compliance Register .....</b>	<b>19</b>
<b>Table 20 Complaints Register.....</b>	<b>19</b>

<b>Figure 1 HVAS Sampling Long-term Trends .....</b>	<b>6</b>
<b>Figure 2 Weather Summary - August 2022.....</b>	<b>17</b>
<b>Figure 3 Wind Rose - August 2022.....</b>	<b>18</b>

Appendix 1

Monitoring Locations

# 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 20611* (the EPL) (see Table 1) and *Project Approval 09\_0175* (the Consent) (see Table 2) for Karuah East Quarry (the Quarry).

**Table 1 Environmental Protection Licence 20611 information**

<b>Environmental Protection Licence Number</b>	20611
<b>Licensee's Name</b>	Karuah East Quarry Pty Limited
<b>Licensee's Address</b>	Licensee Postal Address: PO Box 3284 Thornton NSW 2322.  Premises Address: Karuah East Quarry, Blue Rock Close, Karuah NSW 2324.
<b>Link to Full Licence on the EPA Website</b>	<a href="https://apps.epa.nsw.gov.au/prpoeoapp/">https://apps.epa.nsw.gov.au/prpoeoapp/</a>

**Table 2 Project Approval 09\_0175 information**

<b>Development Application</b>	PA 09_0175
<b>Applicant</b>	Karuah East Quarry Pty Limited
<b>Approval Authority</b>	Minister for Planning
<b>Link to Full Development Approval on Major Projects Planning Portal</b>	<a href="https://www.planningportal.nsw.gov.au/major-projects/project/15026">https://www.planningportal.nsw.gov.au/major-projects/project/15026</a>

A summary of the environmental monitoring data for August 2022 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 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 13* of the Consent (see Table 3, Table 4 and Table 5). Deposited dust and TSP/PM<sub>10</sub> monitoring is undertaken at the locations listed in Table 6.

**Table 3 PA 09\_0175 Long Term Assessment Criteria for Deposited Dust**

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

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

**Table 4 PA 09\_0175 Long Term Impact Assessment Criteria for Particulate Matter**

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

**Table 5 PA 09\_0175 Short Term impact Assessment Criterion for Particulate Matter**

Pollutant	Averaging period	Criterion
Particulate matter <10 µm (PM <sub>10</sub> )	24 hour	50 µg/m <sup>3</sup>

**Table 6 Air quality monitoring locations**

Site ID	EPL ID	Location	Address	GPS Coordinates
DDG 1	MP 4	South-West of Karuah East Quarry	5760 Pacific Hwy, Karuah NSW 2324	32°38'04"S 151°59'58"E
DDG 2	MP 5	South-West of Karuah East Quarry	5770 Pacific Hwy, Karuah NSW 2324	32°38'02"S 152°00'09"E
DDG 3	MP 6	South-West of Karuah East Quarry	DP 1024341, Karuah	32°37'57"S 151°59'41"E
DDG 4	MP 7	East of Karuah East Quarry	21 Halloran Rd North Arm Cove NSW 2324	32° 37' 30.87"S 152°01'10.18"E
DDG 5	MP 8	South-West of Karuah East Quarry	Lot 21 DP 1024341 Karuah NSW 2324	32° 37' 55.33"S 152°00'2.74"E
HVAS (TSP/PM <sub>10</sub> )	MP 9	South-West of Karuah East Quarry	5770 Pacific Hwy, Karuah NSW 2324	32°38'03"S 152°00'09"E

All dust monitoring is undertaken in accordance with the *Approved Methods of Sampling and Analysis of Air Pollutants in NSW* (EPA, 2022).

## 2.1 DEPOSITED DUST MONITORING

Deposited dust results for the twelve months prior to and including August 2022 are shown in Table 7.

**Table 7 Deposited dust monitoring results**

Date On	Date Off	DDG 1	DDG 2	DDG 3	DDG 4	DDG 5
6/09/2021	6/10/2021	0.7	0.4	0.5	0.4	0.4
6/10/2021	3/11/2021	3.6	0.1	0.5	0.1	0.5
3/11/2021	3/12/2021	0.5	0.2	0.4	0.2	0.5
3/12/2021	4/01/2022	1.3	0.3	0.2	1.0	0.5
4/01/2022	3/02/2022	0.9	0.7	0.3	0.4	0.8
3/02/2022	7/02/2022	1.4	0.8	1.2	0.1	0.9
7/03/2022	5/04/2022	0.8	3.6	0.8	0.4	0.9
5/04/2022	5/05/2022	0.1	0.3	0.1	0.2	0.2
5/05/2022	3/06/2022	0.4	0.6	0.4	0.3	0.3
3/06/2022	5/07/2022	0.3	0.2	0.2	0.2	0.3
5/07/2022	3/08/2022	0.3	0.3	0.4	0.7	0.4
3/08/2022	2/09/2022	0.9	0.9	0.6	1.0	0.9
<b>YTD average</b>		0.9	0.7	0.5	0.4	0.6

Monitoring results indicate that for the period from 3 August 2022 to 2 September 2022 the insoluble solid levels recorded at DDG 1 to DDG 5 monitoring locations were below the project criterion of 4 g/m<sup>2</sup>/month over an annual averaging period.

## 2.2 HIGH VOLUME AIR SAMPLING

The TSP and PM<sub>10</sub> results for August 2022, and a progressive annual average are shown in Table 8. Figure 1 illustrates the year-to-date results for HVAS monitoring.

**Table 8 High Volume Air Sampling (µg/m<sup>3</sup>) results**

Run Date	HVAS TSP (µg/m <sup>3</sup> )	HVAS PM <sub>10</sub> (µg/m <sup>3</sup> )
2/08/2022	16	7
8/08/2022	10	4
14/08/2022	3	1
20/08/2022	12	6
26/08/2022	8	4
<b>24hr Average Criteria<sup>1</sup></b>	<b>N/A</b>	<b>50</b>
<b>Annual Average Criteria<sup>1</sup></b>	<b>90</b>	<b>30</b>
<b>Progressive Annual Average<sup>2</sup></b>	15.1	9.1

Note: <sup>1</sup> Criteria as specified in PA 09\_0175.

<sup>2</sup> The progressive annual average is from 01/01/2022 to 26/08/2022, this is not a measure of compliance.

All HVAS monitoring results for August 2022 were compliant with the long term and short term impact assessment criteria outlined in *Schedule 3 Condition 13* of the Consent (see Table 3, Table 4 and Table 5).

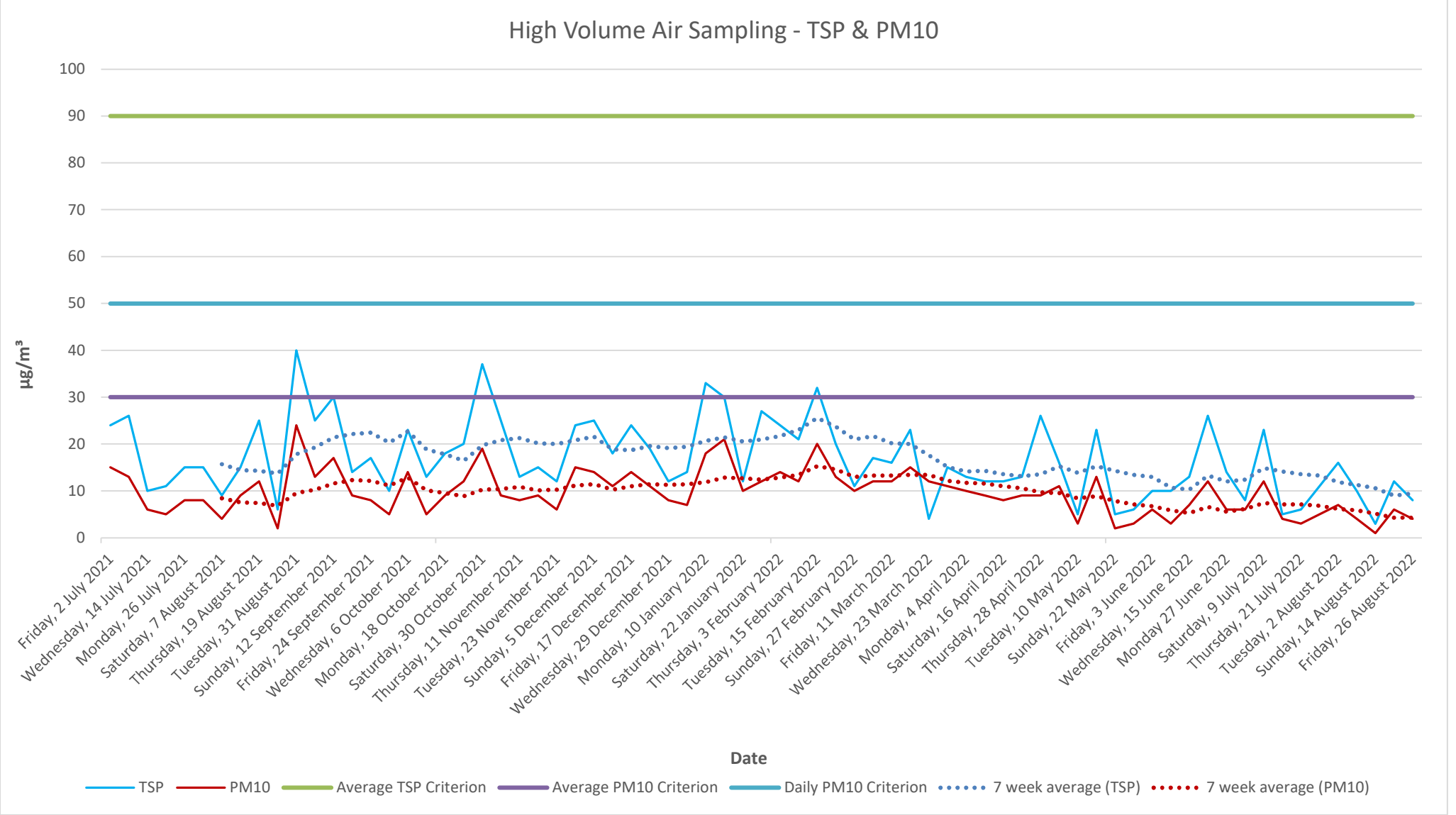


Figure 1 HVAS Sampling Long-term Trends

### 3 BLAST MONITORING

---

Blasting must only be carried out between the hours of 9:00 AM and 4:00 PM Monday to Friday. No blasting is permitted on Saturday, Sundays, or Public Holidays. Blasting outside of the hours specified by the EPL/Consent, can only take place with the written approval of relevant regulatory authorities.

KEQ conduct monitoring at the nearest residential location (EPL 20611 EPA identification no. 11) to ensure that airblast overpressure level and ground vibration peak particle velocity do not exceed the EPL and Consent criteria (see Table 9).

**Table 9 Blasting criteria**

Location	Airblast Overpressure (Decibels (Linear Peak))	Ground Vibration Peak Particle Velocity (Millimetres/second)	Allowable exceedance
Private residence (Location B)	120	10	0%
	115	5	5% of total blasts over 12 months

There were two blasts conducted in August 2022, see Table 10 for monitoring results.

**Table 10 Blast monitoring results**

Date	Time	Location	Overpressure (dB(L))	Vibration (mm/s)
Monday, 15 August 2022	1:23pm	Top of Quarry	Nil Trigger	Nil Trigger
Friday, 26 August 2022	11:02pm	Bench (RL) 105	103.9	0.57

The monitoring results demonstrate compliance with blasting criteria of the Consent and the EPL.



## 4 NOISE MONITORING

Noise monitoring is undertaken in accordance with the approved *Noise Management Plan* (April, 2022).

As the Quarry is operational with no construction activities being completed, construction noise is not being considered. Table 11 summarises the operational noise criteria.

Noise generated by the Quarry operation must not exceed the criteria specified in *Schedule 3, Condition 3* of the Consent at each location outlined in Table 11.

**Table 11 Operational Noise Criteria (dB(A)  $L_{Aeq(15min)}/L_{A(max)}$ )**

Monitoring Location ID	Description	Easting (MGA)	Northing (MGA)	Applicable noise limit, dB		
				Morning Shoulder $L_{Aeq(15\text{ minute})}/L_{Amax}$	Day $L_{Aeq(15\text{ minute})}$	Evening $L_{Aeq(15\text{ minute})}$
A	Mill Hill Close West	406623	6388704	35/52	42	40
B	Mill Hill Close West	406405	6388859	35/52	40	40
F	The Branch Lane West	405639	6389782	35/52	40	35
G	Halloran Road South	408154	6389523	35/52	43	39
H	Halloran Road West	407795	6389868	35/52	44	46

In accordance with the Consent, a noise monitoring program has been implemented. A summary of this monitoring program is outlined in Table 12.

**Table 12 Noise monitoring locations**

Monitoring Method	Location	Frequency	Criteria
Attended noise monitoring	A, B, F, G, H	Quarterly	Refer to Table 11

### 4.1 ATTENDED MONITORING

The most recent results for attended monitoring, undertaken 18 August 2022 and 22 August 2022 (see Table 13), show ambient noise levels include noise sources such as traffic from the nearby Pacific Highway and wildlife such as insects and birds. The Quarry operations were audible at location G and H during day and evening period. Monitoring for all locations across all periods was compliant with the criteria.

### 4.2 UNATTENDED NOISE MONITORING

A review of the historical unattended noise monitoring data by expert noise consultants (EMM) found no evident trends associated with Karuah East Quarry operations. As a result of this review, Karuah East Quarry has decided to cease the unattended noise monitoring component of the quarterly compliance noise monitoring program.

**Table 13 Attended Noise Monitoring (EMM, August 2022)**

Location	Date	Start time (Period)	Total noise levels, dB							Site contribution, dB			EPL / PA Limits, dB		Meteorological conditions <sup>2</sup> EPL limits apply (Y/N)	Exceedance, dB	Comments
			L <sub>Amin</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>	L <sub>A10</sub>	L <sub>A1</sub>	L <sub>Amax</sub>	L <sub>Ceq</sub>	Mod. Factor <sup>1</sup>	L <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>Aeq</sub>	L <sub>Amax</sub>			
A	22/8	05:02 MS	41	53	64	67	75	77	72	Nil	IA	IA	NS / 35	52	0.6 m/s @ 336° F stability class Y	Nil	<b>Karuah East Quarry inaudible.</b> Insects, frogs and traffic on the Pacific Highway consistently audible.
B	22/8	05:18 MS	47	54	62	65	71	76	69	Nil	IA	IA	NS / 35	52	0.4 m/s @ 345° F stability class Y	Nil	<b>Karuah East Quarry inaudible.</b> Insects, frogs and traffic on the Pacific Highway consistently audible.
F	22/8	05:36 MS	44	47	53	53	57	81	61	Nil	IA	IA	NS / 35	52	0.4 m/s @ 2° F stability class Y	Nil	<b>Karuah East Quarry inaudible.</b> Insects, frogs, bird noise and traffic on the Pacific Highway consistently audible. A traffic passby briefly audible.
G	22/8	06:00 MS	34	38	42	45	51	62	56	Nil	<30	47	NS / 35	52	0.7 m/s @ 330° F stability class Y	Nil	<b>Karuah East Quarry engine revs and truck loading occasionally audible.</b> Insects, frogs, bird noise and traffic on the Pacific Highway consistently audible. Distant dogs barking occasionally audible.
H	22/8	06:16 MS	35	37	43	44	53	68	56	Nil	<30	48	NS / 35	52	0.8 m/s @ 306° F stability class Y	Nil	<b>Karuah East Quarry engine revs and truck loading occasionally audible.</b> Insects, frogs, bird noise and traffic on the Pacific Highway consistently audible. Distant dogs barking and aircraft noise occasionally audible.

Location	Date	Start time (Period)	Total noise levels, dB							Site contribution, dB			EPL / PA Limits, dB		Meteorological conditions <sup>2</sup> EPL limits apply (Y/N)	Exceedance, dB	Comments
			L <sub>Amin</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>	L <sub>A10</sub>	L <sub>A1</sub>	L <sub>Amax</sub>	L <sub>Ceq</sub>	Mod. Factor <sup>1</sup>	L <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>Aeq</sub>	L <sub>Amax</sub>			
A	18/8	16:01 Day	47	51	55	57	61	73	71	Nil	IA	N/A	40 / 42	N/A	0.8 m/s @ 2° A stability class Y	Nil	<b>Karuah East Quarry inaudible.</b> Insects, frogs and traffic on the Pacific Highway consistently audible. Bird noise frequently audible. Dogs barking occasionally audible. Traffic passby on one occasion.
B	18/8	16:20 Day	53	59	65	68	71	73	74	Nil	IA	N/A	37 / 40	N/A	1.1 m/s @ 359° A stability class Y	Nil	<b>Karuah East Quarry inaudible.</b> Insects, frogs and traffic on the Pacific Highway consistently audible. Bird noise and resident noise frequently audible.
F	18/8	16:39 Day	42	45	56	53	66	81	65	Nil	IA	N/A	35 / 40	N/A	0.3 m/s @ 56° A stability class Y	Nil	<b>Karuah East Quarry inaudible.</b> Insects, frogs, and traffic on the Pacific Highway consistently audible. Bird noise frequently audible. Distant dogs barking and traffic passbys occasionally audible.
G	18/8	17:02 Day	34	37	50	51	62	67	59	Nil	30	N/A	38 / 43	N/A	0.2 m/s @ 29° B stability class Y	Nil	<b>Karuah East Quarry engine revs consistently audible.</b> Insects, frogs and traffic on the Pacific Highway consistently audible. Bird noise and dogs barking frequently audible.
H	18/8	17:22 Day	30	33	38	39	46	64	53	Nil	30	N/A	NS / 44	N/A	0.2 m/s @ 17° A stability class Y	Nil	<b>Karuah East Quarry engine revs consistently audible.</b> Traffic on the Pacific Highway consistently audible. Bird noise frequently audible. Aircraft noise, dogs barking, livestock and nearby animals occasionally audible.

Location	Date	Start time (Period)	Total noise levels, dB							Site contribution, dB			EPL / PA Limits, dB		Meteorological conditions <sup>2</sup>  EPL limits apply (Y/N)	Exceedance, dB	Comments
			L <sub>Amin</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>	L <sub>A10</sub>	L <sub>A1</sub>	L <sub>Amax</sub>	L <sub>Ceq</sub>	Mod. Factor <sup>1</sup>	L <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>Aeq</sub>	L <sub>Amax</sub>			
A	18/8	19:19 Eve.	44	49	55	57	65	73	67	Nil	IA	N/A	NS / 40	N/A	0.1 m/s @ 132° F stability class Y	Nil	<b>Karuah East Quarry inaudible.</b> Distant traffic on the Pacific Highway, insects and frogs consistently audible. Dogs barking occasionally audible.
B	18/8	19:01 Eve.	49	55	63	67	71	73	71	Nil	IA	N/A	NS / 40	N/A	0.3 m/s @ 161° F stability class Y	Nil	<b>Karuah East Quarry inaudible.</b> Distant traffic on the Pacific Highway, insects and frogs consistently audible. Bird noise occasionally audible.
F	18/8	18:42 Eve.	44	48	55	57	59	80	65	Nil	IA	N/A	NS / 35	N/A	0.3 m/s @ 148° F stability class Y	Nil	<b>Karuah East Quarry inaudible.</b> Insects, frogs and traffic on the Pacific Highway consistently audible. Bird noise occasionally audible. Traffic passby on one occasion.
G	18/8	18:18 Eve.	35	38	48	44	62	72	57	Nil	IA	N/A	NS / 39	N/A	0.1 m/s @ 108° F stability class Y	Nil	<b>Karuah East Quarry inaudible.</b> Insects, frogs and traffic on the Pacific Highway consistently audible. Dogs barking and aircraft noise occasionally audible. Traffic passby on one occasion.
H	18/8	18:00 Eve.	32	35	64	41	78	89	65	Nil	IA	N/A	NS / 46	N/A	0.2 m/s @ 30° F stability class Y	Nil	<b>Karuah East Quarry inaudible.</b> Insects, frogs, bird noise and traffic on the Pacific Highway consistently audible. Dogs barking frequently audible. Resident noise occasionally audible.

- Notes:
1. Modifying factor correction for LFN in accordance with Fact sheet C of the NPfI.
  2. Meteorological data were taken as an average over 15 minutes from the Karuah East Quarry on-site weather station (Refer to Section 5.1).
  3. IA = inaudible.
  4. N/A = not applicable.
  5. NS = not specified.

## 5 SURFACE WATER MONITORING

---

### 5.1 MONTHLY SURFACE WATER MONITORING PROGRAM

Monthly water monitoring was undertaken on 3 August 2022 in accordance with the *Surface Water Monitoring Program* outlined in the *KEQ Water Management Plan (2015)*. Results are displayed in Table 14 along with the EPL discharge criterion and ANZECC (2000) Guidelines. These results do not determine compliance, they are used to analyse trends and assist with water management.

**Table 14 Water monitoring results**

Parameter	Units of measure	EPL 20611 concentration limit during discharge	Dam 1	Dam 2	Dam 3	SW 2	SW 3 (Not flowing)
Oil and grease	Milligrams per litre	5 and/or non-visible	<5	<5	<5	<5	-
pH	pH	6.5 – 8.5	7.24	7.18	7.19	6.71	-
Total suspended solids	Milligrams per litre	40	161	<5	7	42	-
		<b>ANZECC Guidelines<sup>1</sup></b>					
Conductivity	µS/cm	125 – 2200	590	1318	582	520	-
Total dissolved solids	mg/L	--	382	868	386	333	-
Total phosphorus	mg/L	0.025	0.09	0.01	0.02	0.04	-
Ammonia	mg/L	0.2	0.06	0.02	<0.01	0.03	-
Nitrogen (Nitrate)	mg/L	0.350	12	0.64	2.23	0.39	-
Total hardness (as CaCO <sub>3</sub> )	mg/L	--	49	436	140	81	-
Arsenic	mg/L	0.024	<0.001	<0.001	<0.001	<0.001	-
Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	-
Calcium	mg/L	--	8	158	46	11	-
Chromium	mg/L	0.001	0.006	<0.001	0.002	0.006	-
Copper	mg/L	0.0014	0.006	<0.001	0.003	0.003	-
Lead	mg/L	0.0034	0.003	<0.001	<0.001	0.002	-
Magnesium	mg/L	--	7	10	6	13	-
Manganese	mg/L	1.9	0.258	0.329	0.067	0.087	-
Nickel	mg/L	0.011	0.005	<0.001	<0.001	0.002	-

Potassium	mg/L	--	2	1	1	2	-
Sodium	mg/L	--	92	52	48	62	-
Vanadium	mg/L	--	0.02	<0.01	<0.01	0.01	-
Zinc	mg/L	0.0312	0.032	<0.005	<0.005	0.012	-

Note 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 CaCO<sup>3</sup>/L).

## 5.2 DISCHARGE MONITORING

Condition L2 of the EPL outlines the requirement to monitor water discharges from the Quarry via the licensed discharge points (LDP1, LDP2 and LDP3), see Table 15.

**Table 15 EPL20611 - Pollutant concentration limits**

Pollutant	Units of Measure	Concentration Limit
Oil and Grease	Visible	5 &/or none visible
pH	pH units	6.5 – 8.5
Total suspended solids	Milligrams per litre	40

### 5.2.1 Dam 1 (LDP1)

Dam 1 had zero days of discharge during the month of August (see Table 16).

**Table 16 Discharge monitoring – LDP1**

Date	pH	Total suspended solids	Oil and grease	Controlled
-	-	-	-	-

### 5.2.2 Dam 2 (LDP2)

Dam 2 had three days of controlled discharging during the month of August. Daily monitoring during discharge was conducted and all results were compliant with pollution concentration limits (see Table 17).

**Table 17 Discharge monitoring – LDP2**

Date	pH	Total suspended solids	Oil and grease	Controlled
Thursday, 11 August	6.6	6	None visible	Yes
Friday, 12 August	7	34	None visible	Yes
Monday, 29 August	7.1	9	None visible	Yes

### 5.2.3 Dam 3 (LDP3)

Dam 3 had four days of controlled discharging during the month of August. Daily monitoring during discharge was conducted and all results were compliant with pollution concentration limits (see Table 18).

**Table 18 Discharge monitoring – LDP3**

Date	pH	Total suspended solids	Oil and grease	Controlled
Thursday, 11 August	7.3	29	None visible	Yes
Friday, 12 August	7.4	14	None visible	Yes
Monday, 29 August	7.9	6	None visible	Yes
Tuesday, 30 August	7.9	5	None visible	Yes



## 6 WEATHER MONITORING

---

Karuah East Quarry has a permanent meteorological station to monitor various weather parameters including temperature, wind speed/direction, solar radiation, and rainfall. Figure 2 shows the recorded results for the local weather during August 2022.

A wind rose is a graphic tool used to depict the average direction and speed of the wind over a recorded period. Figure 3 shows the wind rose generated from data gathered during August 2022.

## Monthly Weather Summary



Site: **Karuah Quarry**

Month: **August 2022**

Date	Day	Temperature @ 2m			Temperature @ 10m			Winds			Solar Radiation		Rain <sup>2</sup> mm
		Max <sup>1</sup> °C	Min <sup>2</sup> °C	Ave <sup>1</sup> °C	Max <sup>1</sup> °C	Min <sup>2</sup> °C	Ave <sup>1</sup> °C	Max Gust <sup>1</sup> km/h	Ave Speed <sup>1</sup> km/h	Dir Ave <sup>1</sup> deg	Max <sup>1</sup> W/m <sup>2</sup>	Ave <sup>1</sup> W/m <sup>2</sup>	
1	Mon	19.3	8.2	10.0	18.7	9.8	10.9	20.1	2.1	186	0.0	0.0	
2	Tue	19.8	2.8	10.7	19.2	3.7	11.5	16.6	2.6	194	0.0	0.0	
3	Wed	22.5	6.4	14.5	22.2	7.4	16.2	17.8	2.7	154	0.0	0.0	
4	Thu	21.4	9.6	16.1	21.5	10.2	16.8	31.9	3.8	164	0.0	0.0	
5	Fri	20.1	12.9	11.8	20.2	13.7	13.3	17.8	2.4	163	0.0	0.0	12.4
6	Sat	19.8	7.0	12.9	18.9	7.9	14.1	40.2	6.0	266	0.0	0.0	
7	Sun	19.1	7.0	11.8	17.4	8.3	12.1	28.4	4.9	247	0.0	0.0	0.2
8	Mon	16.9	8.7	10.5	15.8	9.4	11.0	30.8	4.3	209	0.0	0.0	0.4
9	Tue	16.3	5.5	11.1	15.4	6.6	11.0	29.6	4.8	227	0.0	0.0	4.0
10	Wed	16.0	8.8	10.6	14.6	9.1	10.8	21.3	2.5	190	0.0	0.0	33.6
11	Thu	17.0	7.1	12.2	16.2	8.1	12.6	11.8	1.8	160	0.0	0.0	0.2
12	Fri	14.7	9.8	12.5	14.9	10.8	12.8	17.8	2.3	183	0.0	0.0	0.2
13	Sat	18.8	10.5	11.6	18.0	11.1	12.2	36.7	5.4	222	0.0	0.0	3.6
14	Sun	18.0	4.9	12.3	16.6	6.5	12.8	42.6	8.2	255	0.0	0.0	0.2
15	Mon	18.3	8.4	10.5	17.3	9.7	11.3	42.6	4.9	213	0.0	0.0	
16	Tue	18.6	5.1	10.6	17.0	6.4	11.5	29.6	3.9	220	0.0	0.0	
17	Wed	20.5	3.8	10.9	18.0	5.0	11.2	23.7	3.4	192	0.0	0.0	
18	Thu	22.6	4.7	13.2	21.5	5.6	13.8	18.9	2.6	204	0.0	0.0	
19	Fri	22.4	8.3	12.7	21.0	9.0	13.4	35.5	5.6	223	0.0	0.0	
20	Sat	19.7	3.7	12.6	18.6	5.7	13.2	30.8	4.5	215	0.0	0.0	
21	Sun	18.5	7.5	10.6	16.5	9.6	11.3	18.9	3.2	184	0.0	0.0	10.6
22	Mon	22.3	6.1	14.3	21.6	7.4	14.8	27.2	3.4	189	0.0	0.0	0.2
23	Tue	22.2	9.5	11.3	20.4	10.4	11.5	33.1	7.1	210	0.0	0.0	
24	Wed	17.3	6.3	9.6	15.9	6.3	10.4	30.8	4.6	222	0.0	0.0	21.8
25	Thu	17.2	4.3	11.7	17.0	5.6	12.2	18.9	2.6	168	470.0	24.7	0.2
26	Fri	19.0	9.5	11.9	16.9	10.1	12.1	24.9	3.0	197	819.2	103.3	5.4
27	Sat	20.2	8.1	12.3	18.3	9.1	12.3	17.8	2.8	173	849.2	127.2	1.4
28	Sun	22.9	7.5	15.3	21.6	8.2	15.9	22.5	3.9	149	666.7	167.3	0.2
29	Mon	21.3	10.7	16.4	20.2	11.8	16.6	24.9	3.8	127	619.9	112.3	
30	Tue	23.8	12.2	15.4	22.8	13.0	16.3	14.2	2.3	172	714.9	118.7	
31	Wed	22.0	7.4	15.6	19.1	8.5	15.1	21.3	4.0	195	740.8	179.9	
Ave or Total		19.6	7.5	12.4	18.5	8.5	12.9	25.8	3.9	195.8	157.4	26.9	94.6
High		23.8	12.9	16.4	22.8	13.7	16.8	42.6	8.2		849.2	179.9	33.6
Low		14.7	2.8	9.6	14.6	3.7	10.4	11.8	1.8		0.0	0.0	
No. rain days >1mm:												8	

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

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

Figure 2 Weather Summary - August 2022

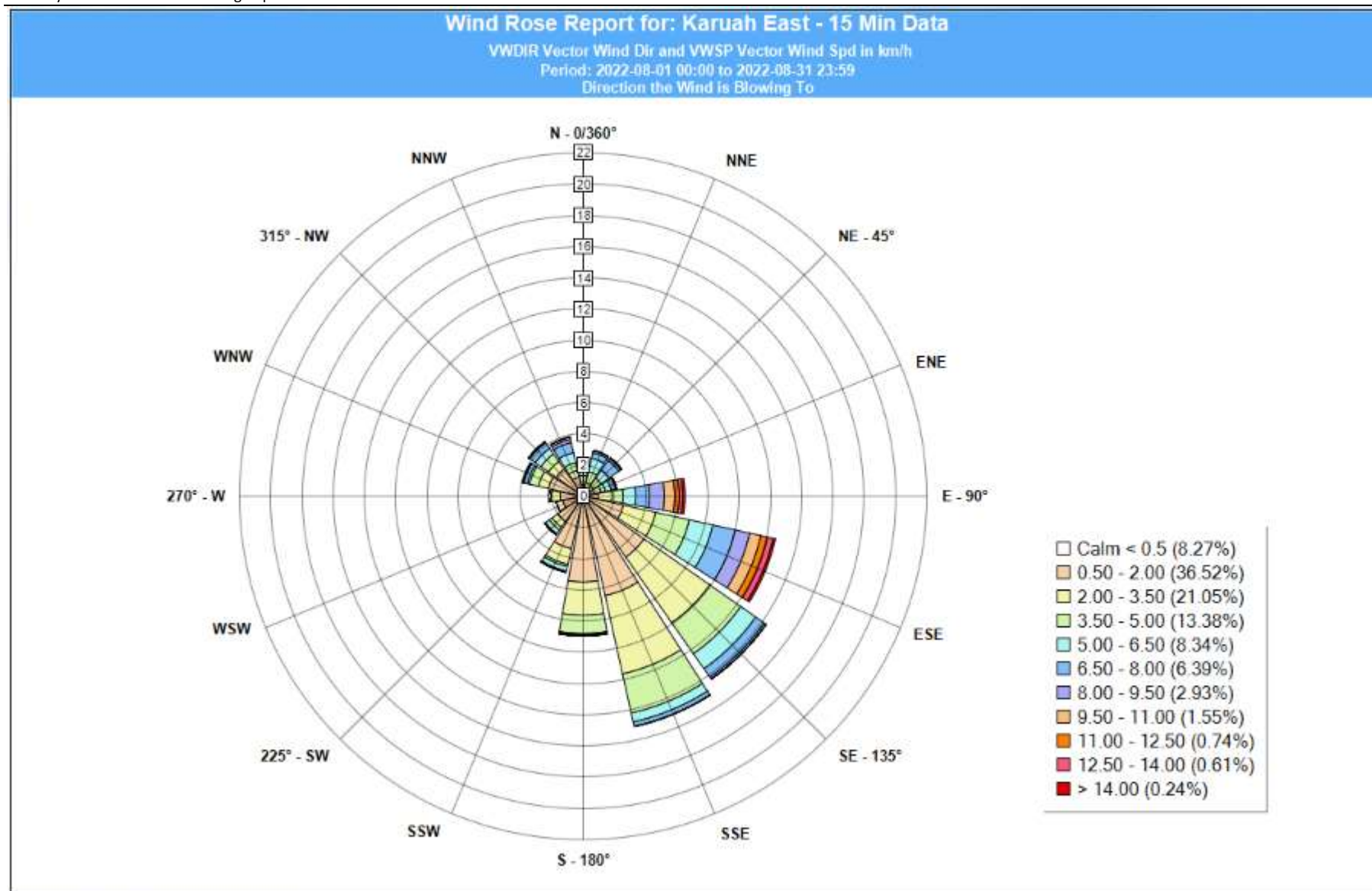


Figure 3 Wind Rose - August 2022

## 7 REPORTING

### 7.1 COMMUNITY CONSULTATIVE COMMITTEE

The purpose of a Community Consultative Committee (CCC) is to provide a forum for discussion between a proponent (KEQPL) and representatives of the community, stakeholder groups and the local council on issues directly relating to a specific State Significant Project (KEQ).

The KEQ CCC generally meets biannually (twice a year). Meeting minutes can be found at Hunter Quarries website <<https://hunterquarries.com.au/>>.

On 14 March, the first KEQ CCC meeting for 2022 was held, below are the key details:

- A site inspection was undertaken with two KEQPL representatives and one community representative.
- The meeting was facilitated at the Karuah RSL with one chairperson, four community representatives and two KEQPL representatives.
- The next CCC meeting is scheduled for September 2022.

### 7.2 PRODUCTION

For the month of August, 95758 tonnes of various quarry products were produced.

### 7.3 NON-COMPLIANCE

There were nil non-compliance event during August 2022 to report (see Table 19).

**Table 19 Non-compliance Register**

Date	Nature of Incident	Action
August 2022	Nil complaints received	Nil action required

### 7.4 COMPLAINTS

There were nil complaints received during August 2022 (see Table 20).

**Table 20 Complaints Register**

Date	Nature of Complaint	Action
July 2022	Nil complaints received	Nil action required

# Appendix 1 – Monitoring Locations



# Karuah East Quarry

Monitoring Locations

## Legend

- Attended Noise
- Dust Deposition
- Groundwater
- High Volume Air Samplers
- Surface Water
- Unattended Noise



Google Earth

Image © 2019 CNES / Airbus

© 2018 Google

900 m