



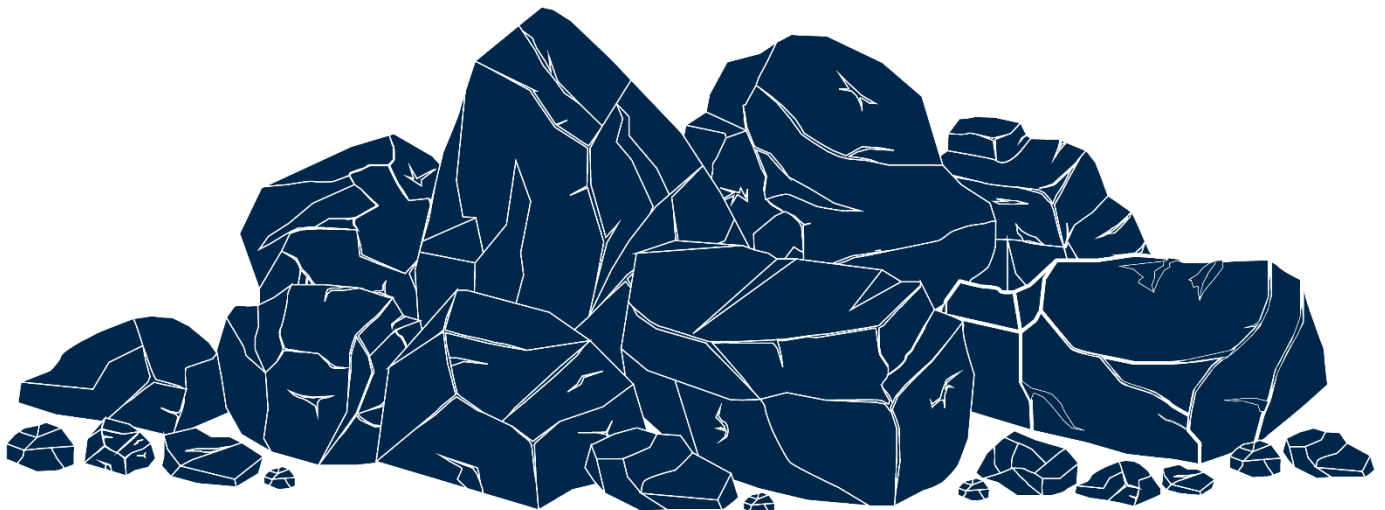
Karuah East Quarry  
ABN: 80 141 505 035  
Karuah East Quarry Pty Limited  
Blue Rock Close, Karuah NSW 2324

W: [www.hunterquarries.com.au](http://www.hunterquarries.com.au)  
E: [admin@hunterquarries.com.au](mailto:admin@hunterquarries.com.au)  
T: 02 4050 0304  
P: PO Box 23, Thornton NSW 2322

Karuah East Quarry

# Annual Review

1 January to 31 December 2023



## Annual Review Title Block


**Table 1 Karuah East Quarry Annual Review 2023 Title Block.**

<b>Name of Operation:</b>	Karuah East Quarry
<b>Name of Operator:</b>	Karuah East Quarry Pty Limited
<b>Project Approval:</b>	MP09_0175
<b>Name of holder of Project Approval:</b>	Karuah East Quarry Pty Limited
<b>Mining Lease:</b>	N/A
<b>Water Licences:</b>	None
<b>MOP / RMP:</b>	N/A
<b>Annual Review Start Date:</b>	01 January 2023
<b>Annual Review End Date:</b>	31 December 2023

I, **Shane Burton**, certify that this audit report is a true and accurate record of the compliance status of **Karuah East Quarry** for the period **01 January 2023** to **31 December 2023** and that I am authorised to make this statement on behalf of **Karuah East Quarry Pty Limited**.

*Note.*

- A. *The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.*
  
- B. *The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications / information / documents — maximum penalty 2 years imprisonment or \$22,000, or both).*

<b>Name of Authorised Reporting Officer:</b>	Shane Burton
<b>Title of Authorised Reporting Officer:</b>	Quarry Manager
<b>Signature of Authorised Reporting Officer:</b>	
<b>Date:</b>	20/03/2024

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## Glossary

Abbreviation / Term	Meaning
AEMR	Annual Environmental Management Report
AQMP	Air Quality Monitoring Program
BCD	Biodiversity Conservation Division of DPE
CCC	Community Consultative Committee
DA	Development Application
DDG	Dust Deposition Gauge
DPE	NSW Department of Planning and Environment
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMP	Environmental Monitoring Program
EMS	Environmental Management Strategy
EPL	NSW Environment Protection Licence
Ha	Hectare
HVAS	High Volume Air Sampler
HQPL	Hunter Quarries Pty Ltd
KEQPL	Karuah East Quarry Pty Limited
Km	Kilometre
L	Litre
LDP	Licensed Discharge Point
MCC	MidCoast Council
NPWS	NSW National Parks and Wildlife Service
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
RAR	Response to Audit Recommendations
RFS	NSW Rural Fire Service
SWMP	Site Water Management Plan
Tpa	tonnes per annum

## 1.0 Statement of Compliance

The compliance status of the Karuah East Quarry (KEQ) site at the end of the 2023 Annual Review reporting period is summarised by **Table 2**, **Table 3**, and **Table 4** below, in reference to the site's Project Approval and Environment Protection Licence (EPL).

**Table 2** *Statement of Compliance.*

Were all conditions of the relevant approval(s) complied with?	
Project Approval (MP09_0175)	No
Environment Protection Licence (EPL 20611)	Yes

**Table 3** *Compliance Status Key (NSW Planning Annual Review Guideline, October 2015).*

Risk Level	Colour Code	Description
High	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence.
Medium	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>potential for serious environmental consequences, but is unlikely to occur; or</li> <li>potential for moderate environmental consequences, but is likely to occur.</li> </ul>
Low	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>potential for moderate environmental consequences, but is unlikely to occur; or</li> <li>potential for low environmental consequences, but is likely to occur.</li> </ul>
Administrative	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions).

**Table 4** *Summary of Non-Compliances.*

Relevant Approval	Condition	Condition Aspect	Compliance Status	Description	Section
Project Approval	Schedule 3, Condition 13	Air Quality	Non-compliant	Minor PM10 exceedance of short-term criteria on 16/06/2023.	Section 6.2 and Section 11.0
			Non-compliant	Contamination of two Depositional Dust Gauges with organic material in the June 2023 reporting period.	Section 6.2 and Section 11.0
			Non-compliant	Contamination of one Depositional Dust Gauge with organic material in the November 2023 reporting period.	Section 6.2 and Section 11.0



## 2.0 Introduction

This Annual Review covers the reporting period from the **1 January 2023** to **31 December 2023** for the Karuah East Quarry site.

Karuah East Quarry is a hard rock quarry which contributes materials to construction industries in the Newcastle, Hunter, Mid-North Coast and Sydney Regions. The site is located approximately 5 km to the north-east of the village of Karuah within the MidCoast Council LGA, and is access via Blue Rock Close and Andersite Road adjacent to the northern Tarean Road interchange with the A1 Pacific Highway. The site is approved (including MOD10) to cover approximately 40 Ha of land within Lot 12 and 13 of DP1024564.

**Figure 1** and **Figure 2** illustrate the site within its broader regional context and site layouts respectively.

The approved development includes the following key elements:

- staged extraction of approximately 29 million tonnes of andesite over a 20 year timeframe;
- extraction of up to 1.5 million tonnes of andesite material per year;
- removal and stockpiling of an estimated 380,000 m<sup>3</sup> of overburden (approximately 750,000 tonnes) from the quarry extraction area. Removal of overburden is not included in the proposed annual extraction rate of 1.5 million tonnes of andesite;
- haulage of up to 1.5 million tonnes of andesite per year from the site to market by 12 to 38 tonne haul trucks via the A1 Pacific Highway;
- implementation of erosion and sediment, and water management control works to ensure no loss of sediment, minimise dust generation and control discharges from the site to ensure that all discharges are within acceptable volumetric and water quality criteria;
- roadworks to secure access to the site including upgrade and extension of Blue Rock Close, realignment of Andersite Road and The Blue Rock Close intersection, and adjust road markings at The Branch Lane and Andersite Road intersection;
- employment of up to 28 onsite staff;
- construction of a new haul road and access through adjoining Roads and Maritime Services (RMS) land;
- staged clearing;
- drilling and blasting activities;
- loading and hauling of extracted material;
- crushing and screening of extracted material;
- stockpiling of material onsite; and
- location of plant on Lot 13 comprised of office buildings, workshops, parking areas, crushing plant, wash plant, weigh bridge and product storage areas.

### 2.1 Quarry Contacts

Key personnel who are responsible for environmental management of the operation are provided by **Table 5**.

**Table 5** *Key Quarry Contacts.*

Position	Name	Contact	Contact Priority
Environment & Development Manager	Scott Ellerton	0447 044 646	Primary Contact
Quarry Manager	Shane Burton	0490 405 375	Secondary Contact
General Manager	Dylan Nagle	0438 380 701	–



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**LEGEND**  
 Site Boundary  
 Lot Boundary

0 70 140 210 280  
 Scale: 1:10,000  
 m

GDA 1994 MGA Zone 56  
 8/03/2024

**Karuah East Quarry**

**Annual Review 2023**

**FIGURE 1 - Regional and Local Context Plan**



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**LEGEND**

- ▭ Site Boundary
- ▭ Approved Disturbance Boundary
- ▭ Biodiversity Offset Area
- ▭ Lot Boundary

0 70 140 210 280  
m  
Scale: 1:10,000

GDA 1994 MGA Zone 56  
8/03/2024

**Karuah East Quarry**

**Annual Review 2023**  
**FIGURE 2 - Locality Plan**

## 3.0 Approvals

A summary of the approvals benefiting the Karuah East Quarry are provided in **Table 6** with further details of each state and commonwealth approval provided in the subsequent sub-sections.

**Table 6** *Project Approvals associated with the Karuah East Quarry.*

Instrument	Grant Date	Expiry Date	Comments
Project Approval (MP09_0175)	17/06/2014	31/12/2034	Primary statutory approval for the site under NSW <i>Environmental Planning and Assessment Act 1979</i> .
Environment Protection Licence (EPL 20611)	26/08/2015	-	Primary statutory licence for the site under NSW <i>Protection of the Environment Operations Act 1997</i> .
Commonwealth Approval (EPBC 2014/7278)	20/03/2015	30/03/2045	Commonwealth statutory approval for the original project under Commonwealth <i>Environmental Protection and Biodiversity Conservation Act 1999</i> .
Commonwealth Approval (EPBC 2022/9164)	Pending Approval		Commonwealth statutory approval for the KEQ MOD10 Project under Commonwealth <i>Environmental Protection and Biodiversity Conservation Act 1999</i> .

### 3.1 Project Approval (MP09\_0175)

The Project Approval has been subject to five Modifications as summarised by **Table 7**.

**Table 7** *Modifications to the Project Approval for the Karuah East Quarry.*

MOD	Approval Date	Description
MOD1	27/04/2018	Modification 1 (MOD1) was approved on 27 April 2018 under the provisions of section 75W of the EP&A Act. The modification approved a nominal expansion to the approved area of disturbance by 2,500 m <sup>2</sup> to allow for improved vehicle manoeuvring in proximity of the crushing plant and processing area.
MOD2	19/12/2018	Modification 2 (MOD2) was approved on 19 December 2018 under the provisions of section 75W of the EP&A Act. The modification approved a 1.133 Ha increase to the site disturbance area to allow for improved environmental management and improved operational safety (for quarry vehicles).
MOD3 to MOD7		Withdrawn
MOD8	22/12/2020	Modification 8 (MOD8) was approved on 22 December 2020 under the provisions of section 4.55(1A) of the EP&A Act. The modification approved revised operational acoustic criteria in line with the NSW Noise Policy for Industry 2017; and formalised a number of industry best practice acoustic mitigation measures that have been installed at the quarry.
MOD9	02/12/2021	Modification 9 (MOD9) was approved 02 December 2021 under the provisions of section 4.55(1A) of the EP&A Act. The modification approved extended operating hours of the KEQ site.
MOD10	18/05/2023	Modification 10 (MOD10) was approved on 18 May 2023 under the provisions of section 4.55(2) of the EP&A Act. The modification approved a 7.17 Ha increase in the disturbance area to a total of 40.18 Ha to allow for additional product stockpiling areas, facilitate improved surface water management, construct a new administration building and expand vehicle manoeuvring and parking at site.

## 3.2 Environment Protection Licence (EPL 20611)

The Environment Protection Licence (EPL) was originally granted on 26 August 2015 and has been subject to seven licence variations as summarised by **Table 8**.

No variations occurred in the 2023 reporting period. In 2024, KEQPL will apply to vary the licence for the MOD10 project and the proposed changes to the DDG locations.

**Table 8** Variations to the Environment Protection Licence for the Karuah East Quarry.

No.	Approval Date	Description
–	26/08/2015	Original EPL granted for the site under NSW Protection of the Environment Operations Act 1997.
1	21/09/2015	Relocation of the blast monitoring location (EPL Monitoring Point 11).
2	06/12/2016	Relocation of Deposited Dust Gauge 5 (EPL Monitoring Point 8) and the High-Volume Air Sampler (EPL Monitoring Point 9).
3	16/01/2019	Inclusion of a Pollution Reduction Study following noise-related non-compliances.
4	25/06/2019	Amended noise monitoring frequency from annual to quarterly monitoring.
5	18/07/2019	Revised Scheduled Activity in accordance with the EPA's updated definitions.
6	02/09/2022	Update for MOD9 extended operating hours and correction of administrative items.
7	07/11/2022	Removal of noise monitoring at Location I.

## 3.3 Commonwealth EPBC Approval (EPBC 2014/7282 & 2022/9164)

### EPBC 2014/7282

KEQPL received EPBC approval (2014/7282) on 20 March 2015.

EPBC 2014/7282 has been subject to one variation to date, which was granted on 4 October 2018. This variation was required as a result of MOD1 to the NSW Project Approval.

At the time of reporting, EPBC 2014/7282 is subject to a second variation application which is currently being processed by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW). The variation application was lodged on 19 December 2023 as a result of MOD10 to the NSW Project Approval.

No other modification approvals to the NSW Project Approval (i.e. MOD2, MOD8 or MOD9) have necessitated an amendment to EPBC 2014/7282. A summary of these matters is provided by **Table 9**.

**Table 9** Variations to the Commonwealth EPBC Approval for the Karuah East Quarry.

No.	Approval Date	Description
–	20/03/2015	Original approval granted for the site under Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
1	04/10/2018	Variation 1 was required as a result of MOD1 to the NSW Project Approval which impacted upon 0.25 Ha of native vegetation.
NOTE: MOD2, MOD8 and MOD9 to the NSW Project Approval did not necessitate a variation due to:		
<ul style="list-style-type: none"> <li>■ MOD2 did not disturb any Matters of National Environmental Significance (MNES);</li> <li>■ MOD8 and MOD9 did not change the KEQ disturbance footprint.</li> </ul>		
2	Pending Approval	Variation 2 was lodged on 19 December 2023 for the KEQ MOD10 Project for impacts to 7.17 Ha of native vegetation.

**EPBC 2022/9164**

MOD10 to the NSW Project Approval is being progressed under the Bilateral Assessment process between the NSW Planning and the Commonwealth DCCEEW following confirmation that the project was a Controlled Action on 13 May 2022.

As noted above, MOD10 includes an expansion to the KEQ disturbance footprint of 7.17 Ha which also extends into part of the approved biodiversity offset area on Lot 13 DP1024564.

MOD10 was approved by NSW Planning on 18 May 2023. Following State approval, the matter was referred to the Commonwealth DCCEEW to process the approval for EPBC 2022/9164. Prior to issuing approval for EPBC 2022/9164, Federal DCCEEW staff have advised that variation to EPBC 2014/7282 is needed in the first instance. As noted above, the variation application was lodged on 19 December 2023 and this matter is being progressed.

### 3.4 Statutory Requirements of this Annual Review

Requirements of the Annual Review are summarised in **Table 10**.

**Table 10 Summary of Statutory Requirements of the Annual Review.**

No.	Requirement	Section
<b>Schedule 2 – Administrative Conditions</b>		
<b>Condition 14</b>	<p><b><u>Production Data</u></b>  <i>The Applicant must:</i></p> <p>a) <i>provide annual quarry production data to MEG using the standard form for that purpose; and</i></p> <p>b) <i>report this data in the Annual Review (see condition 4 of Schedule 5).</i></p>	<b>Section 4.1</b>
	<b>Schedule 3 – Environmental Performance Conditions</b>	
<b>Condition 23</b>	<p><b><u>Monitoring of Product Transport</u></b>  <i>The Applicant must keep accurate records of all laden truck movements to and from the site (including arrival and dispatch) and publish a summary of records on its website every 6 months and in the Annual Review.</i></p>	<b>Section 4.6 and Appendix 2</b>
<b>Schedule 5 – Environmental Management, Reporting and Auditing</b>		
<b>Condition 4</b>	<p><b><u>Annual Review</u></b>  <i>By the end of March each year, the Applicant must review the environmental performance of the development to the satisfaction of the Planning Secretary. This review must:</i></p> <p>a) <i>describe the development (including rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;</i></p>	<b>Section 4.0 and Section 8.0</b>
	<p>b) <i>include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against:</i></p> <ul style="list-style-type: none"> <li>• <i>the relevant statutory requirements, limits or performance measures/criteria;</i></li> <li>• <i>the monitoring results of previous years; and</i></li> <li>• <i>the relevant predictions in the documents referred to in condition 2(d) of Schedule 2 of this consent;</i></li> </ul>	<b>Section 6.0 and Section 7.0</b>
	<p>c) <i>identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;</i></p>	<b>Section 6.2 and Section 11.0</b>
	<p>d) <i>identify any trends in the monitoring data over the life of the development;</i></p>	<b>Section 6.0 and Section 7.0</b>
	<p>e) <i>identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and</i></p>	<b>Section 6.0 and Section 7.0</b>
	<p>f) <i>describe the measures that would be implemented over the current calendar year to improve the environmental performance of the development.</i></p>	<b>Section 12.0</b>

### 3.5 Summary of Environmental Management Plans

A summary of the site’s Environmental Management Plans is provided in **Table 11**.

**Table 11** *Summary of Statutory Environmental Management Plans.*

Environmental Management Plan	Status	2024 Action
Environmental Management Strategy	Originally approved in 2015.	Submission of comprehensive review due 28 May 2024.
	Updated in 2019 for MOD1 and MOD2.	
	Updated in 2020 for MOD8.	
	Updated in 2021 for MOD9.	
Air Quality Management Plan	Originally approved in 2015.	Submission of comprehensive review due 28 May 2024.
	Updated in 2019 for MOD1 and MOD2.	
Biodiversity Offset Area Management Plan	Originally approved in March 2016.	Update pending Commonwealth Approval for MOD10.
	Updated in April 2021.	
Biodiversity Offset Strategy		Update pending Commonwealth Approval for MOD10.
Blast Management Plan	Originally approved in 2015.	Submission of comprehensive review due 28 May 2024.
	Updated in 2019 for MOD1 and MOD2.	
Heritage Management Plan	Originally approved in 2015.	–
	Updated in January 2024 for MOD10.	
Landscape and Rehabilitation Management Plan	Originally approved in 2015.	Update pending Commonwealth Approval for MOD10.
	Updated in 2020 for MOD1 and MOD2.	
Noise Management Plan	Originally approved in 2015.	Submission of comprehensive review due 28 May 2024.
	Updated in 2019 for MOD1 and MOD2.	
	Updated for MOD8 and MOD9.	
Transport Management Plan	Originally approved in 2015.	Submission of comprehensive review due 28 May 2024.
Tetratheca juncea Translocation Plan	Originally approved in 2015.	–
	Updated in 2019 for MOD1 and MOD2.	
	Program ceased in 2020.	
Water Management Plan	Originally approved in 2015.	Submission of comprehensive review due 28 May 2024.
	Updated in 2019 for MOD1 and MOD2.	
Waste Management Plan	Original dated 2017.	–
	Updated in 2019 for MOD1 and MOD2.	
	Updated in 2023 for MOD8, MOD9 and MOD10.	



## 4.0 Operations Summary

The KEQ site operated during the 2023 Annual Review reporting period as outlined below.

### 4.1 Quarry Production Summary

The monthly production summary during the reporting period is included in **Table 12**.

**Table 12** *Monthly Quarry Production Data.*

Month	Production (t)	Truck Loads (#)
Jan-23	78,075	2,090
Feb-23	63,813	3,702
Mar-23	55,950	3,392
Apr-23	61,862	1,942
May-23	95,428	2,867
Jun-23	87,714	2,752
Jul-23	56,165	2,534
Aug-23	97,787	2,677
Sep-23	84,877	2,928
Oct-23	116,043	3,741
Nov-23	123,790	4,026
Dec-23	77,851	2,607
<b>2023 TOTAL:</b>	<b>999,355</b>	<b>35,258</b>
<b>2024 FORECAST:</b>	<b>1,200,000</b>	<b>40,000</b>

### 4.2 Land Preparation

No land clearing was completed during the 2023 reporting period.

### 4.3 Construction Activities

No construction activities were completed during the 2023 reporting period.

### 4.4 Operating Hours

For the 2023 reporting period the KEQ site was operated within the operating hours provided by Schedule 2, Condition 7 of the Project Approval as outlined by **Figure 3**.

No temporary extensions to operating hours were sought from the Planning Secretary and no directions from statutory authorities were received during the 2023 reporting period.

**Hours of Operation**

7. The Applicant must comply with the operating hours in Table 1.

**Table 1: Operating hours**

Activity	Operating Hours
Quarrying Operations	7:00 am to 9:00 pm, Monday to Friday 7:00 am to 10:00 pm Monday to Friday on 50 calendar days per year; and 7:00 am to 6:00 pm, Saturday. No drilling 6:00 pm to 10:00 pm Monday to Friday or 1:00 pm to 6:00 pm Saturday No quarrying operations on Sundays or Public Holidays.
Product loading and dispatch	5:00 am to 9:00 pm Monday to Friday 5:00 am to 10:00 pm Monday to Friday on 50 calendar days per year 6:00 am to 6:00 pm Saturday No product loading and dispatch on Sundays or Public Holidays
Construction activities	7.00 am to 6.00 pm, Monday to Friday; and 8.00 am to 1.00 pm, Saturdays, unless noise from these activities does not exceed 40 dB(A) $L_{Aeq(15 min)}$ at any privately-owned residence.
Maintenance activities	24 hours a day, 7 days per week, providing maintenance activities are inaudible at any privately-owned residence

*Note: This condition does not apply in the event of a direction from police or other relevant authority for safety or emergency reasons regarding works which may need to be undertaken to avoid loss of life, property loss and/or to prevent environmental harm.*

**Figure 3** Operating Hours as specified in the Project Approval.

## 4.5 Operating Equipment

During the 2023 reporting period the following equipment was available for use during operational periods:

- 3x Excavators;
- 1x Bulldozer;
- 1x Mobile crusher (screening and crushing equipment);
- 1x Pugmill (cementious blender);
- 2x Trommels;
- 8x Front end loaders;
- 1x 25,000 L water tankers; and
- 8x Onsite haul trucks.

## 4.6 Transport Rates

Transport rate monitoring is conducted in accordance with Schedule 3, Condition 23 of the Project Approval, outlined by **Figure 4**. Monthly truck movements are summarised by **Table 12** with detailed reports provided by **Appendix 2** and published on the Hunter Quarries website.

**Monitoring of Product Transport**

23. The Applicant must keep accurate records of all laden truck movements to and from the site (including time of arrival and dispatch) and publish a summary of records on its website every 6 months and in the Annual Review.

**Figure 4** Product Transport Monitoring Requirements from the Project Approval.

## 4.7 Next Reporting Period

Forecast operations for the next 2024 reporting period are summarised by **Table 13**.

**Table 13** *Forecast Operations for the Next 2024 Reporting Period.*

Aspect	Forecast Operations for the Next 2024 Reporting Period
Quarrying Operations	Continuation of quarrying activities within the approved extraction pit.
Infrastructure Upgrades	<p>Expanded operational and ancillary infrastructure in accordance with the KEQ MOD10 Project, including increased stockpile areas, additional administration buildings and upgraded sedimentation dams.</p> <p>Routine maintenance to structural assets will continue to be completed subject to economic business cases and in accordance with operational requirements and the expected life of fixed plant.</p>
Equipment Upgrades	No major equipment upgrades are planned; however, routine replacement of equipment will continue to be completed subject to economic business cases and in accordance with operational requirements and the expected life of plant and equipment.

## 5.0 Actions Required from Previous Annual Reviews

KEQPL received correspondence from NSW Planning on 30 March 2023 regarding the 2021 Annual Review and found it to generally satisfy the reporting requirements of the Project Approval and the October 2015 Annual Review Guideline (the Guideline). However, it was requested that future Annual Reviews included:

- A summary of all laden truck movements to and from the site; and
- A summary of surface water monitoring and analysis.

Additionally, it was requested that following documents be made publicly available on KEQ’s website:

- 2020 and 2021 Annual Reviews; and
- Minutes of the Community Consultative Committee since March 2022.

KEQPL received further correspondence from NSW Planning on 29 November 2023 regarding the 2022 Annual Review and similarly found it to generally satisfy the reporting requirements of the Project Approval and the Guideline. However, it was noted that an administrative error had omitted the 2022 Ecological Monitoring Report from Appendix 5 of the 2022 Annual Review. It was therefore requested:

- The 2022 Annual Review be updated and republished, inclusive of the omitted report; and
- The 2023 Annual Review include a status update to the recommendations made in the report.

These actions requested by NSW Planning and the actions required as an outcome of the previous 2022 Annual Review are summarised in **Table 14**.

**Table 14 Summary of Previous Actions.**

Action ID	Action Required	Status	Section
<b>NSW Planning Directions – 2021 Annual Review</b>			
<b>2022-1</b>	<p><i>For future Annual Reviews, under the provisions of Schedule 2, Condition 3 of the approval, please include the following information –</i></p> <ul style="list-style-type: none"> <li>• <i>A summary of all laden truck movements to and from the site.</i></li> </ul>	<p><b>Complete</b>            KEQPL has updated the annual review document template to include laden truck movement details and the required six-monthly reports.</p>	<b>Section 4.6 and Appendix 2</b>
<b>2022-2</b>	<p><i>For future Annual Reviews, under the provisions of Schedule 2, Condition 3 of the approval, please include the following information –</i></p> <ul style="list-style-type: none"> <li>• <i>A summary of surface water monitoring conducted at locations SW1, SW2, SW3 and SW4 in accordance with the approved Water Management Plan, a comparison of monitoring results to predictions made in the EIS, an assessment against water quality performance criteria, the identification of any trends and management implications.</i></li> </ul>	<p><b>Complete</b>            KEQPL has updated the annual review document template to include the required surface water review.</p>	<b>Section 7.0</b>
<b>2022-3</b>	<p><i>As required by Schedule 5, Condition 11 of the approval, please make publicly available on the company website the following information –</i></p> <ul style="list-style-type: none"> <li>• <i>a copy of the Annual Review for the 2020 and 2021 reporting periods; and</i></li> <li>• <i>minutes of the Community Consultative Committee meetings held since March 2022.</i></li> </ul>	<p><b>Complete</b>            KEQPL has uploaded to these documents to the restructured Hunter Quarries website.</p>	–
			<b>Page</b>
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Action ID	Action Required	Status	Section
<b>NSW Planning Directions – 2022 Annual Review</b>			
2022-4	<i>I note that the Ecological Monitoring Report prepared by Wedgetail Project Consulting for the biodiversity offset area and the development site was not included in Appendix 5 of the 2022 Annual Review. Please make this report publicly available on Hunter Quarries website by updating and re-publishing the Annual Review on the company website.</i>	<b>Complete</b> KEQPL has updated and uploaded the amended AR to the restructured Hunter Quarries website.	–
2022-5	<i>Under the provisions of Schedule 2 Condition 3 of the approval, please include in the 2023 Annual Review information that describes the response from Karuah East Quarry to the recommendations made in the Ecological Monitoring Report for the biodiversity offset area.</i>	<b>Complete</b> KEQPL has updated the annual review document template to include a status update of recommendations from the annual ecological monitoring program.	<b>Section 6.6 and Section 12.0</b>
<b>KEQ Findings – 2022 Annual Review</b>			
2022-6	Update of multiple Management Plans to incorporate MOD 9 and MOD 10.	<b>Continuing</b> KEQ commenced updates of multiple management plans and final submission and approval is expected to be completed in 2024.	<b>Section 3.5</b>
2022-7	Continue environmental monitoring in accordance with management plans and approval requirements.	<b>Complete</b> KEQ continued to conduct environmental monitoring during 2023.	<b>Section 1.0 Section 3.5 Section 6.0</b>
2022-8	Continue CCC and community support	<b>Complete</b> KEQ continued to facilitate CCC meetings in 2023.	<b>Section 9.0</b>
2022-9	Continue to update the website with monitoring data and key environment and community information.	<b>Complete</b> Monthly monitoring data uploaded to the restructured Hunter Quarries website during 2023.	–
2022-10	Continue to undertake pest and weed management as required.	<b>Complete</b> Pest and weed monitoring and management continued during 2023.	<b>Section 6.6</b>

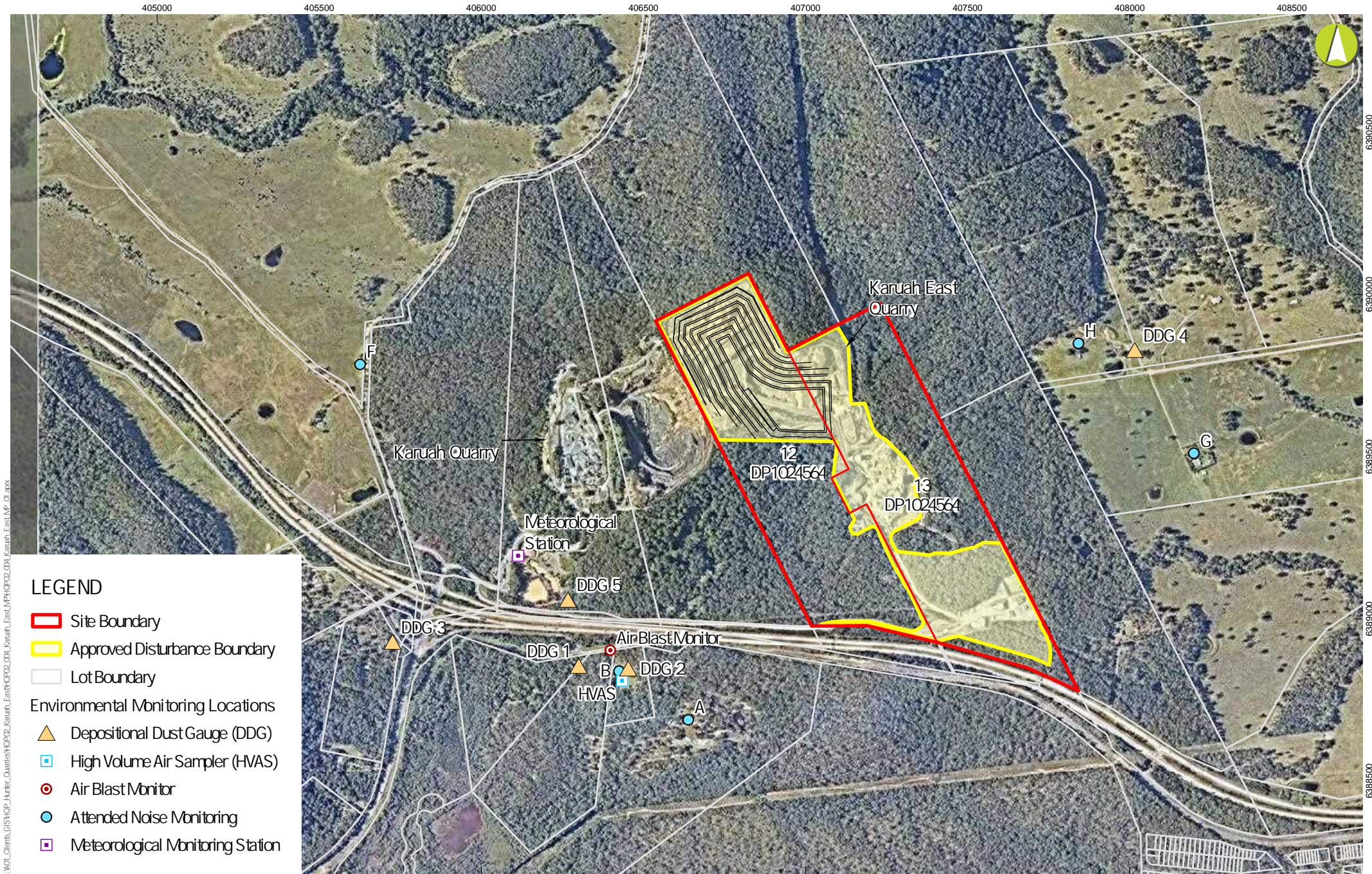
## 6.0 Environmental Performance

KEQPL undertakes environmental monitoring in accordance with the Project Approval and Environment Protection Licence. Key monitoring locations are illustrated by **Figure 5**.

**Table 15** provides a summary of the environmental performance at the site for the 2023 reporting period.

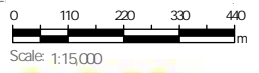
**Table 15** Summary of Environmental Performance During the 2023 Reporting Period.

Aspect	Approval Criteria OR EIS Prediction	Performance During the Operating Period	Trend OR Key Management Implications	Implemented OR Proposed Management Actions
Air Quality	Project Approval – Schedule 3, Condition 13	1x PM10 exceedance	Exceedance for short term criteria considered to be an anomalous result.	Continued monitoring
		2x Depositional Dust exceedances	Exceedances due to contamination of DDG's with organic (not quarry-related) material.	Minor relocation of 3x DDG's to minimise contamination risk as far as reasonably practicable.
Blasting	Project Approval – Schedule 3, Condition 8	Compliant	Within criteria	Improved administrative measures to better manage community complaints were implemented in 2023.
Noise	Project Approval – Schedule 3, Condition 3	Compliant	Within criteria	Continued monitoring
Heritage	Project Approval – Schedule 3, Condition 36	Compliant	No specific criteria	Implementation of revised Heritage Management Plan for the KEQ MOD10 Project once commonwealth approval is achieved in 2024.
Biodiversity	Project Approval – Schedule 3, Condition 33	Compliant	Within criteria for BOAMP	Implement actions from Biodiversity Offset Area Monitoring Report.
Waste	Project Approval – Schedule 3, Condition 42	Compliant	Increased waste associated within improved housekeeping processes.	Continued monitoring
Water	Project Approval – Schedule 3, Condition 19	Compliant	Within discharge criteria	Continued monitoring



**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



GDA 1994 MGA Zone 56  
8/03/2024

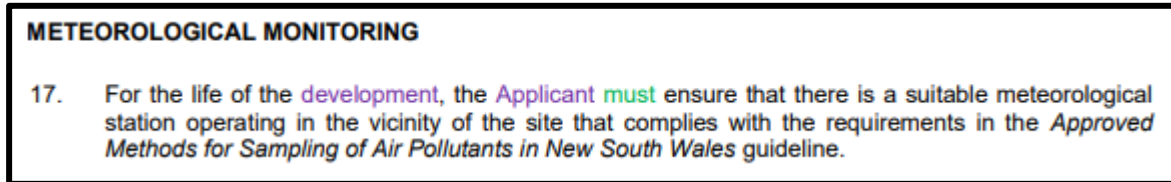
Karuah East Quarry

Annual Review 2023

**FIGURE 5 - Environmental Monitoring Locations**

## 6.1 Meteorological Monitoring

For the 2023 reporting period the KEQ site operated a meteorological monitoring station in accordance with Schedule 3, Condition 17 of the Project Approval as illustrated by **Figure 6**.



**Figure 6** Meteorological Monitoring Requirements from the Project Approval.

The meteorological monitoring station was installed in August 2016 adjacent to the weighbridge of the Karuah Hard Rock Quarry (DA 265-10-2004) as illustrated by **Figure 5** and currently services both quarries at the Karuah Quarry Complex. On 08 March 2023 the station was serviced and subject to the required annual field calibration.

**Table 16** presents a summary of the meteorological data collected by the meteorological station during the 2023 reporting period.

**Table 16** Recorded 2023 Meteorological Data.

Month	Temperature (°C)			Rainfall (mm)		Wet Days (No. >1 mm.)	Wind [Max Gust] (km/h)
	Min	Ave	Max	Total	Max Daily		
Jan-23	12.3	22.3	36.2	174.8	41.0	11	40.2
Feb-23	11.2	23.1	37.2	38.8	25.0	6	45.0
Mar-23	1.9	22.3	40.3	92.6	22.2	9	48.0
Apr-23	6.3	16.9	27.4	153.4	40.0	13	59.2
May-23	1.7	12.5	24.8	100.4	36.8	5	27.6
Jun-23	0.1	11.5	23.1	4.2	2.4	2	28.8
Jul-23	1.8	11.7	25.1	58.2	27.8	6	29.6
Aug-23	3.6	12.8	27.3	58.4	24.8	8	31.1
Sep-23	2.7	15.7	34.3	13.0	4.6	3	28.6
Oct-23	5.5	18.7	36.6	81.4	46.4	5	33.4
Nov-23	10.9	20.3	33.7	99.2	45.0	7	50.9
Dec-23	13.1	23.9	42.6	56.80	22.4	6	45.0

Average monthly temperatures during the reporting period ranged from 11.5 to 23.9 °C, with a maximum temperature 42.6 °C recorded in December 2023. Total monthly rainfall ranged from 4.2 mm (June) to 174.8 mm (Jan), with the maximum daily rainfall recorded at 46.4 mm on 27 October 2023. The maximum wind gust was recorded in April 2023 with a result of 59.2 km/h.

The total rainfall for 2023 was 931.2 mm which can be compared to 1,666.8 mm in 2022.



## 6.2 Air Quality

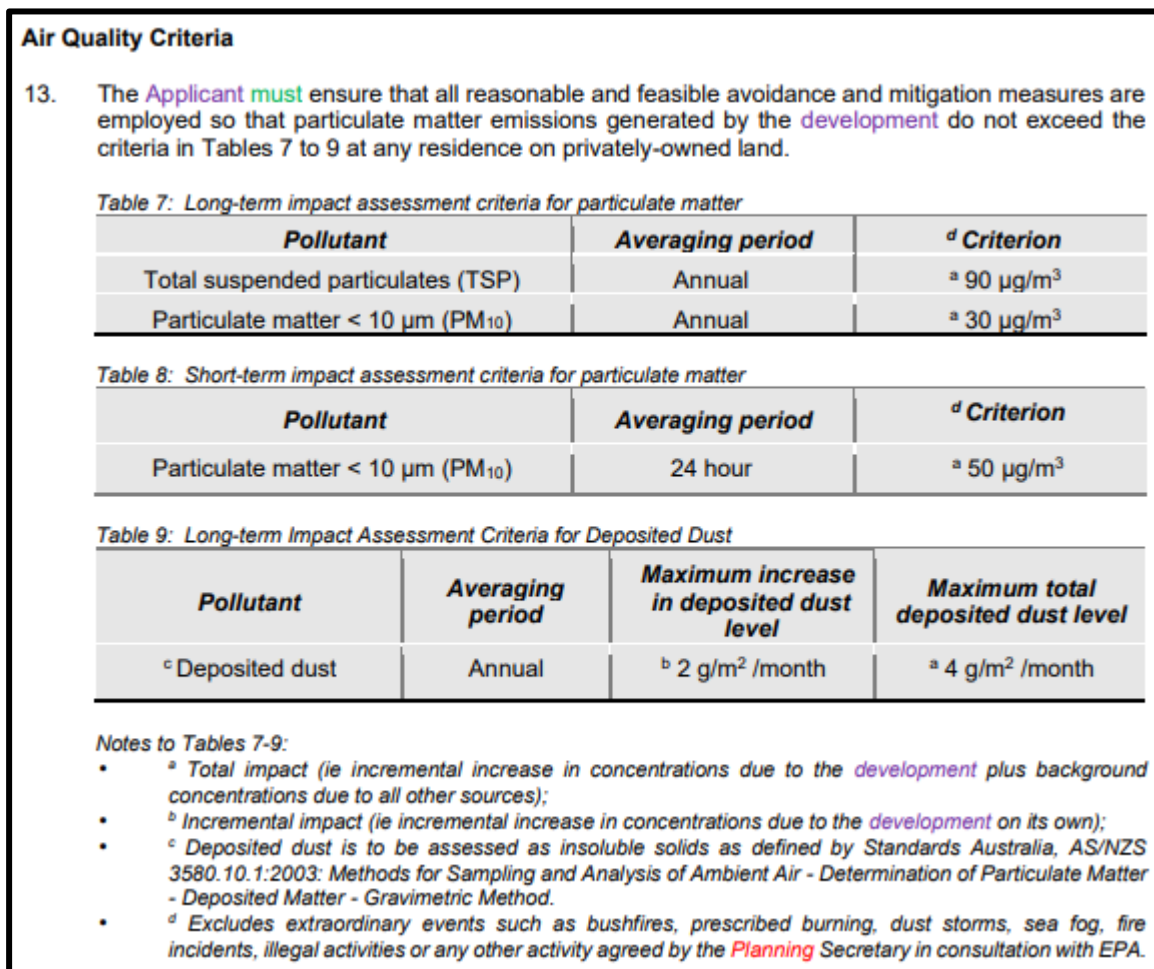
### EIS Predictions

The revised Air Quality Impact Assessment (AQIA) (updated for the Preferred Project Report) indicates that Karuah East Quarry may operate without significant impact on the surrounding environment. In particular, the updated AQIA has confirmed that potential cumulative impacts of Karuah East Quarry and existing Karuah Hard Rock Quarry are well below acceptable criteria levels and will not impose adverse impacts. Overall, it has been demonstrated that the AQIA for Karuah East Quarry is acceptable in terms of air quality considerations for both the construction and operational phases.

### Approval Criteria

Air quality criteria is provided in Schedule 3, Condition 13 of the Project Approval as outlined by **Figure 7**. All reasonable and feasible avoidance and mitigation measures are to be employed so that particulate matter emissions generated do not exceed the criteria at any residence on privately owned land.

No specific limits are specified for air quality emissions by the EPL, however, the EPA does mandate the use of Approved Methods as outlined by their guidance document – *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA, 2022).



**Figure 7 Air Quality Criteria Provided by the Project Approval.**

The main source of air pollution at the quarry is in the form of airborne dust, which arises from activities such as construction, quarrying, vehicle movements and crushing. Air quality monitoring has been performed to meet the EPA’s Approved Methods (EPA, 2022) using five (5x) Depositional Dust Gauges and one (1x) High-Volume Air Sampler. The location of these monitoring locations are illustrated by **Figure 5**.

**Environmental Performance Results (Deposited Dust)**

Depositional dust results are outlined within **Table 17**. The 2023 monitoring results indicated that the maximum deposited dust levels measured at DDG 1 to DDG 5 were generally all less than the long-term impact assessment criteria for depositional dust (maximum deposited dust level of 4 g/m<sup>2</sup>/month) over the reporting period.

**Table 17 Summary of Depositional Dust Gauge Results During the 2023 Reporting Period.**

Monitoring Details				Deposited Dust (g/m <sup>2</sup> /month)				
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
Jan-23	5/01/2023	3/02/2023	29	0.2	0.4	0.8	0.1	0.4
Feb-23	3/02/2023	6/03/2023	31	0.9	0.7	0.2	0.3	0.8
Mar-23	6/03/2023	5/04/2023	30	1.1	1.5	1.1	1.1	1.1
Apr-23	5/04/2023	4/05/2023	29	0.3	0.5	0.3	0.2	1.2
May-23	4/05/2023	5/06/2023	32	0.2	0.3	0.3	0.4	0.4
Jun-23	5/06/2023	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	0.3
Aug-23	3/08/2023	4/09/2023	32	0.7	0.3	0.5	0.5	0.2
Sep-23	4/09/2023	4/10/2023	29	1.5	2.6	1.4	1.4	2.0
Oct-23	4/10/2023	2/11/2023	28	1.4	2.4	2.2	1.6	2.5
Nov-23	2/11/2023	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
<b>2023 Annual Average:</b>				<b>0.8</b>	<b>1.2</b>	<b>1.0</b>	<b>0.8</b>	<b>1.1</b>
<b>2023 Minimum:</b>				<b>0.2</b>	<b>0.3</b>	<b>0.2</b>	<b>0.1</b>	<b>0.2</b>
<b>2023 Maximum:</b>				<b>1.6</b>	<b>2.5</b>	<b>2.2</b>	<b>1.6</b>	<b>2.5</b>

\*Contaminated samples discounted from reporting data set.

However, 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 organic vegetation matter and are therefore discounted from averaging. These ‘failure to monitor’ events were reported to NSW Planning, the NSW EPA and surrounding landholders in accordance with the relevant conditions of the Project Approval and EPL. Both agencies subsequently acknowledged the events and have confirmed no regulatory action will be taken.

**Environmental Performance Results (Particulate Matter)**

Total Suspended Particulates (TSP) and Particulate Matter < 10 µm (PM10) results for the 2023 reporting period are summarised by **Table 18** and illustrated by **Figure 8** and **9** respectively. The results were compliant with the long-term criteria (TSP and PM10) and generally compliant with the short-term criteria for PM10, as outlined below:

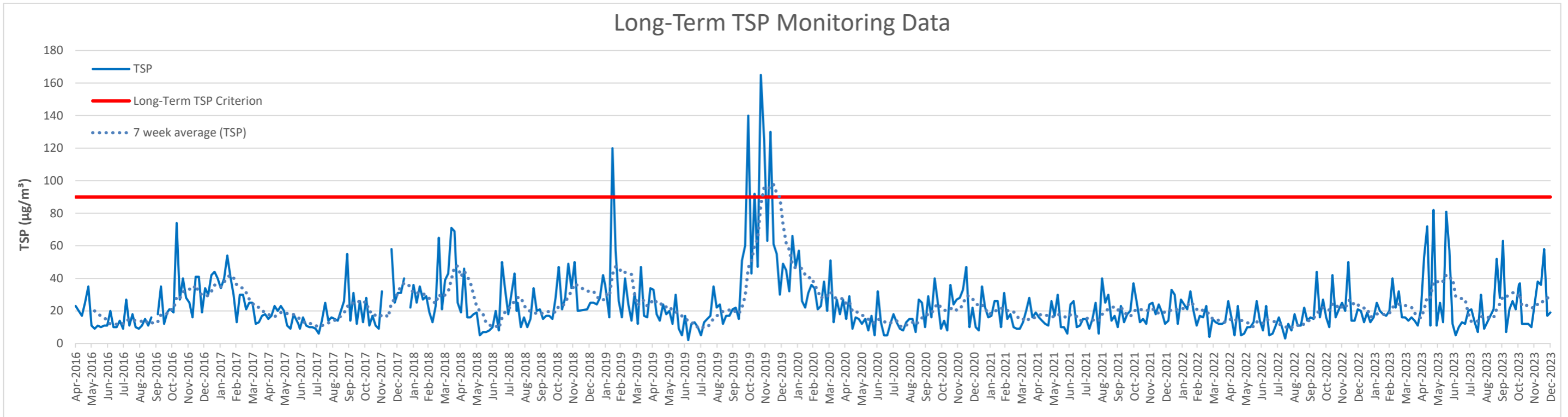
- The annual average for TSP was 25 µg/m<sup>3</sup>, which is below the long-term criteria of 90 µg/m<sup>3</sup>; and
- The annual average for PM10 was 14 µg/m<sup>3</sup>, which is below the long-term criteria of 30 µg/m<sup>3</sup>.

**Table 18 TSP & PM10 High-Volume Air Sampler Results During the 2023 Reporting Period.**

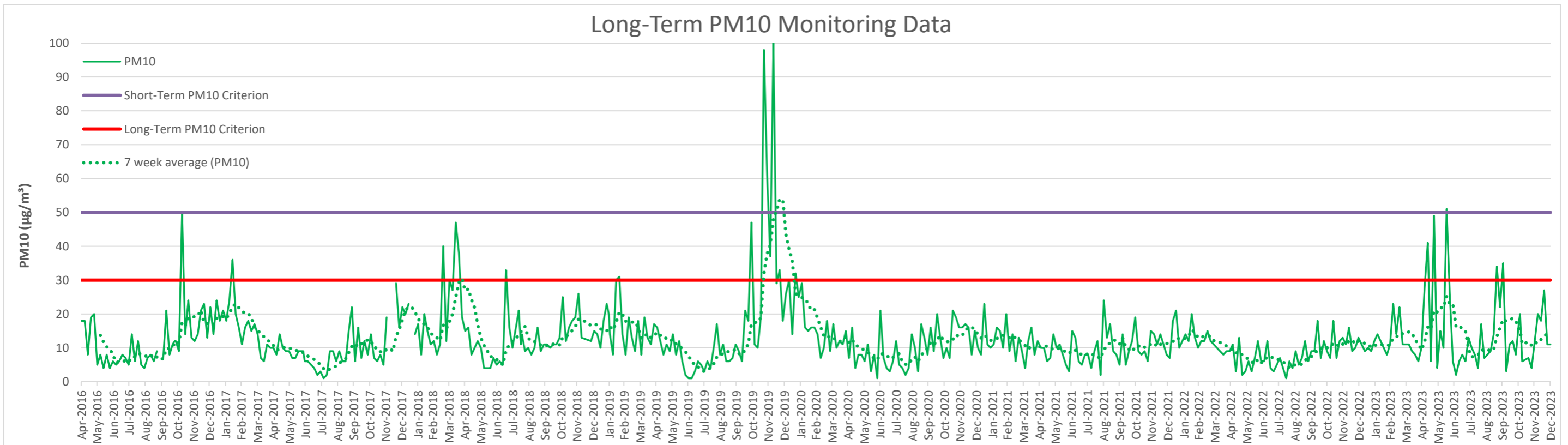
HVAS Run Date	TSP (µg/m <sup>3</sup> )	PM10 (µg/m <sup>3</sup> )	Status	HVAS Run Date	TSP (µg/m <sup>3</sup> )	PM10 (µg/m <sup>3</sup> )	Status
5/01/2023	20	11	Compliant	4/07/2023	5	2	Compliant
11/01/2023	13	9	Compliant	10/07/2023	10	6	Compliant
17/01/2023	19	10	Compliant	16/07/2023	13	8	Compliant
23/01/2023	13	9	Compliant	22/07/2023	12	6	Compliant
29/01/2023	16	12	Compliant	28/07/2023	20	13	Compliant
4/02/2023	25	14	Compliant	3/08/2023	21	10	Compliant
10/02/2023	20	12	Compliant	9/08/2023	13	8	Compliant
16/02/2023	18	10	Compliant	15/08/2023	7	4	Compliant
22/02/2023	17	8	Compliant	21/08/2023	30	17	Compliant
28/02/2023	20	11	Compliant	27/08/2023	9	7	Compliant
6/03/2023	40	23	Compliant	2/09/2023	13	8	Compliant
12/03/2023	22	14	Compliant	8/09/2023	17	9	Compliant
18/03/2023	32	22	Compliant	14/09/2023	21	14	Compliant
24/03/2023	16	11	Compliant	20/09/2023	52	34	Compliant
30/03/2023	16	11	Compliant	26/09/2023	28	22	Compliant
5/04/2023	14	11	Compliant	2/10/2023	63	35	Compliant
11/04/2023	16	9	Compliant	8/10/2023	7	3	Compliant
17/04/2023	14	8	Compliant	14/10/2023	21	11	Compliant
23/04/2023	11	6	Compliant	20/10/2023	26	12	Compliant
29/04/2023	21	10	Compliant	26/10/2023	21	8	Compliant
5/05/2023	53	28	Compliant	1/11/2023	36	18	Compliant
11/05/2023	72	41	Compliant	7/11/2023	12	6	Compliant
17/05/2023	11	6	Compliant	3/11/2023	37	20	Compliant
23/05/2023	82	49	Compliant	19/11/2023	12	7	Compliant
29/05/2023	11	4	Compliant	25/11/2023	10	4	Compliant
4/06/2023	25	15	Compliant	1/12/2023	24	12	Compliant
10/06/2023	13	10	Compliant	7/12/2023	38	20	Compliant
16/06/2023	81	51*	Exceedance*	13/12/2023	36	18	Compliant
22/06/2023	57	26	Compliant	19/12/2023	58	27	Compliant
28/06/2023	12	6	Compliant	25/12/2023	17	11	Compliant
				31/12/2023	19	11	Compliant
<b>2023 Annual Average:</b>					<b>25</b>	<b>14</b>	<b>Compliant</b>
<b>2023 Minimum:</b>					<b>5</b>	<b>2</b>	
<b>2023 Maximum:</b>					<b>82</b>	<b>51</b>	

\*Exceedance of short-term PM10 criteria.

However, it should be noted that on 16/06/2023, one minor exceedance of PM10 was recorded at 51 µg/m<sup>3</sup> compared to the short-term criteria of 50 µg/m<sup>3</sup>. This anomalous result was reported to NSW Planning, the NSW EPA and surrounding landholders in accordance with the relevant conditions of the Project Approval and EPL. NSW Planning reviewed the notification and determined to record a breach under the NSW EP&A Act 1979 on 01 February 2024. However, no response from the EPA was received.



**Figure 8** Long-term TSP monitoring trends.



**Figure 9** Long-term PM10 monitoring trends.

## **Management Measures**

The following best practice air quality control measures continued to be implemented in 2023:

- Disturb only the minimum area necessary for onsite activities.
- Perform regular inspections of weather conditions to identify conditions which would be unfavourable in terms of dust levels at nearest sensitive locations blowing in the direction of sensitive receptors and implement remedial measures where required.
- All trafficable areas and vehicle manoeuvring areas in or on the premises will be maintained in a condition that will minimise the emission of dust to the air, or emission from the premises of wind-blown or traffic generated dust.
- Trucks entering and leaving the premises that are carrying loads of dust generating materials will have their loads covered at all times, except during loading and unloading.
- All plant and equipment to be installed at the site to be maintained and operated in a proper and efficient condition, in accordance with manufacturer's instructions and POEO Act and Regulation.

## **Improvements**

KEQPL will continue to monitor air quality in accordance with the conditions of the Project Approval and EPL and will review operational practices if particulate matter exceedances continue.

In response to the DDG contamination events, KEQPL proposes to undertake a minor relocation of three station to minimise the risk as far as reasonably practicable, subject to approval by NSW Planning and the EPA.

## **6.3 Blasting**

### **EIS Predictions**

The Noise Impact Assessment (NIA) (SLR, 2012) prepared as part of the EIS, developed blasting site laws for Karuah East Quarry based on blast monitoring results from the existing Karuah Quarry. The site laws were utilised to determine limiting factors to blast design for the site in order to achieve the criteria described in **Section 6.3.2**. Based on the predicted blast results the blast emission criteria are predicted to be met without imposing any significant constraints on blast design throughout the life of the quarry. Subsequent modifications have not resulted to changes in blasting practices.

### **Approval Criteria**

Blasting criteria for the site are provided in Schedule 3, Condition 8 of the Project Approval as outlined by **Figure 10**. Additionally, Conditions L5.1 to 5.7 of the EPL 20611 detail consistent blast limits for the project.

**Blasting Criteria**

8. The Applicant must ensure that blasting on the site does not cause exceedances of the criteria in Table 5.

*Table 4: Blasting criteria*

Location	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance
Residence on privately-owned land	120	10	0%
	115	5	5% of the total number of blasts over a period of 12 months

However, the blasting criteria in Table 5 do not apply if the Applicant has a written agreement with the relevant landowner or infrastructure provider/owner, and the Applicant has advised the Department in writing of the terms of this agreement.

**Figure 10 Blasting Criteria provided by the Project Approval.**

**Environmental Performance Results**

In 2023, eighteen (18x) blast events were completed at the site as summarised by Table 19. All blasts were within the limits provided by the Project Approval and EPL.

**Table 19 Blast Monitoring Results for the 2023 Reporting Period.**

Date	Time	Location	Airblast Overpressure* (dB [Lin Peak])	Ground Vibration* PPV (mm/s)
18/01/2023	12:01	RL 120	n/t	n/t
06/02/2023	14:28	RL 120	110.5	1.05
14/02/2023	12:28	RL 120	n/t	n/t
14/03/2023	14:09	RL 120 + 105	108.8	1.01
19/04/2023	12:33	RL 128	n/t	n/t
12/05/2023	14:33	RL 105	112	0.92
22/05/2023	12:30	RL 128	n/t	n/t
29/05/2023	12:33	RL 135	n/t	n/t
09/06/2023	12:46	RL 120 + 128	112.4	0.85
23/06/2023	12:19	RL 120 + 135	n/t	n/t
04/07/2023	14:13	RL 135	n/t	n/t
31/07/2023	14:59	RL 128 + 120	n/t	n/t
14/08/2023	15:36	RL 135 + 105	113.2	2.08
12/09/2023	13:38	RL 128 + 135	n/t	n/t
28/09/2023	13:02	RL 128 + 135	n/t	n/t
17/10/2023	13.03	RL 120	n/t	n/t
17/11/2023	12:17	RL 120	n/t	n/t
08/12/2023	13:37	RL 120	n/t	n/t

\*n/t = Not triggered

Ground Vibration < 0.5 mm/s

Overpressure < 108 dB(L)

## Management Measures

Section 6 of the approved *Blast Management Plan* outlines the blasting controls that are implemented at the site. No exceedances were identified and therefore no further controls are considered necessary.

## Improvements

However, as discussed by **Section 9.3**, in response to three (3x) blast-related community complaints, a minor administrative improvement has been implemented to assist with greater management of blast-related impacts, by updating our Blast Notification Messaging System to provide text message notifications from a single mobile phone number (**0439 580 440**) to allow residents to maintain a single point of contact, allowing greater ability to remain up to date with planned blasting activities.

## 6.4 Noise

### EIS Predictions

The Noise and Blasting Impact Assessment (SLR, 2012) was developed for the initial project approval. Predicted noise levels were below the project specific noise criteria. For MOD8, a Noise Impact Assessment was undertaken by Thearle Acoustics (Thearle, 2019) in accordance with the NSW Noise Policy for industry (2017). This report found operational noise levels of the Karuah East Quarry were predicted to meet project specific noise target at all nearest, non-project related residential locations surrounding the site except for Lot 10 DP 1032636. These predicted noise levels are summarised by **Table 20**.

**Table 20** MOD8 EIS Predicted Noise Levels.

Location	Period	Project Specific Noise Criteria (LAeq,15min)	
		Predicted Noise Impact	Predicted Intrusiveness Criteria
A	Day	42	49
B	Day	36	49
C	Day	37	49
D	Day	34	49
E	Day	39	49
F	Day	26	40
G	Day	43	44
H	Day	45	43
I	Day	40	40
J	Day	< 35	40

For MOD10, a Noise Impact Assessment was conducted by EMM (EMM, 2022) in accordance with the methodology outlined in the NPfl for existing sites and the NSW Noise Policy for industry (2017). Quarry noise emissions are predicted to be below (i.e. comply with) the relevant PNTL during all periods of operations at most assessment locations. The one exception is Location H during the day and evening period, although it is noted however that operational noise emissions are predicted to be below the current consented daytime and evening noise limits at this location (44 dB and 46 dB respectively) and MOD10 did not propose to change these limits. These predicted noise levels are summarised by **Table 21**.

**Table 21 MOD10 EIS Predicted Noise Levels.**

Location	Period	Predicted Noise Level MOD 10 operations (LAeq,15min) (dB)	PNTL (LAeq,15min) (dB)	Existing Noise Limit (LAeq,15min) (dB)
A	Morning shoulder	<35	38	35
	Day	40	51	42
	Evening	40	43	40
B	Morning shoulder	<35	38	35
	Day	40	51	40
	Evening	40	43	40
C	Morning shoulder	<35	38	35
	Day	35	51	40
	Evening	35	43	35
D	Morning shoulder	<35	38	35
	Day	<35	51	40
	Evening	<35	43	35
E	Morning shoulder	<35	38	35
	Day	<35	51	40
	Evening	<35	43	35
F	Morning shoulder	<35	38	35
	Day	<35	48	40
	Evening	<35	43	35
G	Morning shoulder	<35	38	35
	Day	39	46	43
	Evening	39	43	39
H	Morning shoulder	<35	38	35
	Day	44	40	44
	Evening	46	43	46
I	Morning shoulder	<35	38	35
	Day	37	40	40
	Evening	37	40	37
J	Morning shoulder	<35	35	35
	Day	<35	40	40
	Evening	<35	35	35

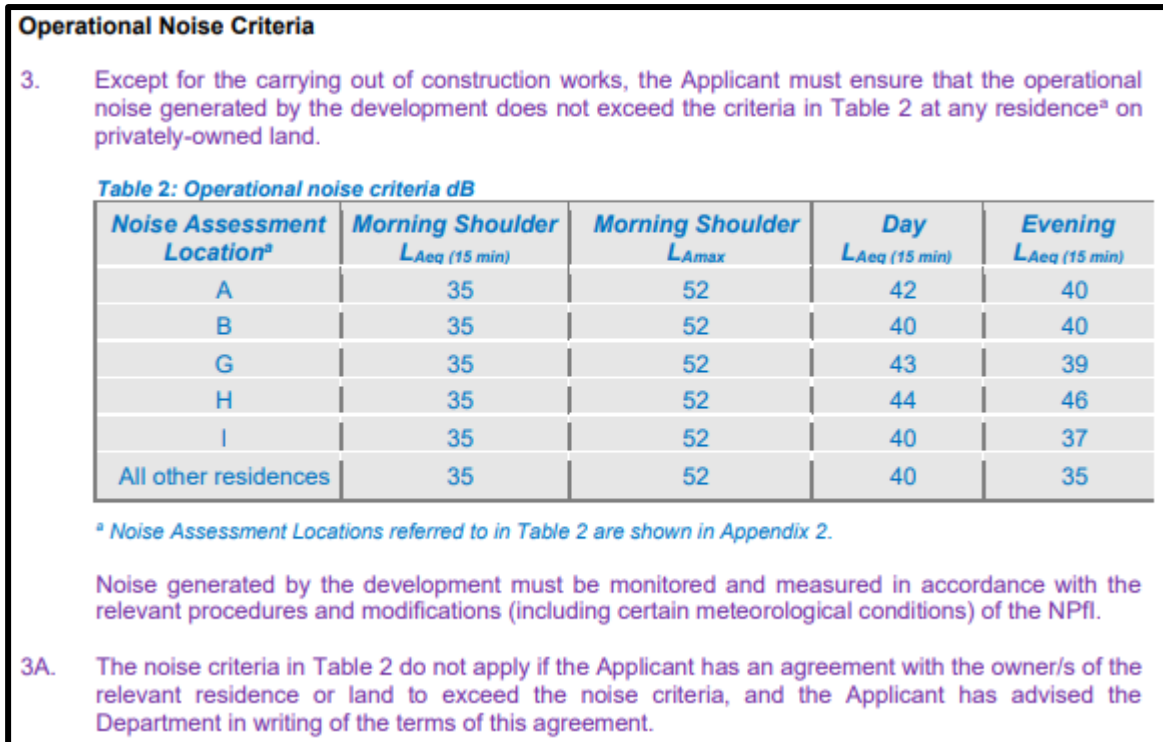
*Note: This predicted noise level included a moderation factor of +2 dB to account for the low frequency noise from the processing plant*

**Approval Criteria**

Noise criteria for the site are provided in Schedule 3, Condition 3 of the Project Approval as outlined by **Figure 11**. Additionally, Conditions L4.1 to 4.5 of the EPL 20611 detail similar noise criteria.

*NOTE – a variation application will be submitted to vary the sites EPL in accordance with MOD10 in 2024.*





**Figure 11 Noise Criteria provided by the Project Approval.**

**Environmental Performance Results**

Attended noise monitoring was conducted at the nearest residential receivers surrounding the site on a quarterly basis by EMM Consulting in accordance with the Project Approval and EPL. The four monitoring reports for the 2023 reporting period are provided by **Appendix 3**.

Noise results for all residential receptors were within compliance limits for all morning shoulder, day and evening monitoring time periods across all four quarterly monitoring rounds.

**Management Measures and Improvements**

Section 6 of the approved *Noise Management Plan* outlines the noise mitigation and management controls that are implemented at the site. No exceedances were identified and therefore no further controls are considered necessary.

In 2024, noise monitoring results will be further analysed as the MOD10 project commences.

## 6.5 Heritage (Aboriginal Cultural Heritage & Historic Heritage)

**EIS Predictions**

An Aboriginal Heritage Impact Assessment was completed as part of the EIS specialist report prepared by RPS (2012). A search of the Aboriginal Heritage Information Management System (AHIMS) database revealed no listed sites inside the project area and the pedestrian survey revealed no Aboriginal cultural heritage items. No evidence of Aboriginal cultural heritage was found during the survey and no impacts were predicted.

A Due Diligence Report was completed by RPS on 17 August 2018 as part of the KEQ MOD2 Project; and by Heritage Now on 18 October 2021 as part of the KEQ MOD10 Project. These assessments confirmed that the site contains low archaeological sensitivity; with the subsequent management recommendations being outlined in Heritage Management Plan.

### **Approval Criteria**

There are no specific performance criteria provided by the Project Approval associated with Aboriginal Cultural Heritage or Historic Heritage.

### **Environmental Performance Results**

No additional disturbance was undertaken within the 2023 reporting period and therefore no heritage impacts occurred, or management issues were identified.

### **Management Measures and Improvements**

A comprehensive review of the *Heritage Management Plan* for the MOD10 project was undertaken during the 2023 reporting period, which included consultation with Registered Aboriginal Parties, the Karuah LALC and Heritage NSW (Aboriginal Cultural Heritage and Historical Archaeology divisions) to ensure management measures are consistent with contemporary legislation and industry best practices.

This revised Heritage Management Plan was approved by NSW Planning on 12 January 2024 and will be implemented during the 2024 reporting period for the MOD10 project once approval is achieved.

## 6.6 Biodiversity

### **EIS Predictions**

The Preferred Project Report (RPS, 2013) ecology assessment for the NSW Project Approval identified impacts to the following non-threatened vegetation communities:

- 20.38 Ha of *Spotted Gum-Grey Gum-Grey Ironbark White Mahogany Moist Sclerophyll Forest*;
- 7.31 Ha of *Smooth barked Apple-Red Bloodwood-Stringybark Dry Sclerophyll Forest*; and
- 0.4 Ha of *Grey Myrtle Dry Rainforest*.

RPS concluded that no fauna species would be materially impacted; however, one threatened flora species would be directly impacted by the removal of 243 individual clumps of *Tetratheca juncea* (Black-eyed Susan). Based on this impact (and possible indirect impacts to *Grevillea parviflora ssp. parviflora* [Small-flower Grevillea]), an EPBC Referral was conducted to the Commonwealth DCCEEW (formerly Department of Sustainability, Environment, Water, Population and Communities – SEWPAC).

The EPBC Assessment Report (ELA, 2014) considered the impact of the Preferred Project to the Matters of National Environmental Significance (MNES) and identified additional direct impacts to Commonwealth Listed threatened species, including:

- 60 individuals of *Asperula asthenes* (Trailing Woodruff); and
- 24.04 Ha of *Phascolarctos cinereus* (Koala) habitat.

The KEQ MOD2 Project impacted a further 0.25 Ha of the smooth-barked apple vegetation community and 13 individual clumps of *Tetratheca juncea*. The minor nature of this footprint extension was managed by altering existing offset arrangements as outlined in **Section 3.1** and **Section 3.3**.

The KEQ MOD10 Project impacted a further 7.17 Ha of native vegetation as assessed under the Bilateral Assessment process between the NSW Planning and the Commonwealth DCCEEW and utilised the NSW Biodiversity Assessment Methodology (BAM) 2020.

The assessment concluded additional impacts to the following biodiversity values which will be offset under the NSW Biodiversity Offsets Scheme (BOS):

- 6.68 Ha of PCT 1619 - *Smooth-barked Apple - Red Bloodwood - Brown Stringybark - Hairpin Banksia heathy open forest of coastal lowlands*;
- 0.30 Ha of PCT 695 - *Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion*;
- 6.98 Ha of *Tetratheca juncea* habitat;
- 6.68 Ha of *Grevillea parviflora* spp. *parviflora* habitat;
- 6.98 Ha of Squirrel Glider habitat; and
- 2.90 Ha of Southern Myotis habitat.

### **Approved Criteria**

There are no specific criteria associated with biodiversity management for the site; however, quarry activities are completed in accordance with the NSW Project Approval, Commonwealth EPBC Approval, and the site's Environment Management Plans, including the Biodiversity Offset Area Management Plan (BOAMP) and Landscape and Rehabilitation Management Plan (LRMP).

### **Environmental Performance Results**

The Biodiversity Offset Area (BOA) for the site is a 138.22 Ha parcel of land parcel comprised of three lots:

- Lot 13 DP 1024564 (part);
- Lot 14 DP 1024564; and
- Lot 5 DP 838128.

Ecological monitoring was completed by Wedgetail Project Consulting in September and October 2023, with the Biodiversity Offset Area Monitoring Report attached in **Appendix 5**. Key findings from the 2023 monitoring programme include:

- *Asperula asthenes*, *Tetratheca juncea* and *Grevillea parviflora* subsp. *parviflora* populations remains consistent with the 2022 monitoring, except for *Asperula asthenes*. The decrease in abundances for this species continues a pattern of fluctuation abundances since 2015. There is no discernible pattern to suggest impacts from quarry operations are related to these fluctuations.
- No areas of major active erosion were identified within the BOA. Minor sedimentation due to overtopping of a small number of sediment fences was observed.
- Weed coverage across the KEQ BOA and Lot 12 has increased – management is required to reduce Lantana cover, especially within the northern portion of the site, adjacent to the powerline easement.

- No feral pigs, or evidence thereof, were observed during the 2023 monitoring event, however this species was identified near the powerline easement in 2020. Despite not having been identified, it is likely this species persists within the BOA and therefore continued control programmes be carried out; and
- A total of 377 nest boxes have been installed to date across the KEQ BOA. Monitoring of nest boxes have been carried out in 2018, 2020 and 2022. No further nest boxes need to be installed until further clearing of hollow bearing trees occurs.

### **Management Measures**

The 2022 Biodiversity Offset Area Monitoring Report (**Appendix 5** of the **2022 Annual Review**) identified a number of actions as summarised by **Table 22**.

Action Identification Numbers have been provided following on from the summary of other 2022 Annual Review actions provided by **Table 14** in **Section 5.0**. Any outstanding actions have been carried over to actions for the 2024 reporting period as provided by **Table 34** in **Section 12.0**.

**Table 22 Summary of Management Actions from the 2022 BOA Monitoring Report.**

Action ID	Action Required	KEQPL Response	Status
<b><i>Fencing and Access Tracks</i></b>			
2022-11	Install fencing around the Lot 14 dwelling.	<p><b>Complete</b>            KEQPL can confirm that the APZ surrounding the Lot 14 dwelling is delineated with appropriate internal fencing.</p> <p>Fencing of the driveway access track was reviewed and determined to be not economically feasible; and will therefore be managed in a consistent manner to other access tracks throughout the BOA.</p>	<b>Closed</b>
2022-12	Install fencing around the Lot 5 dwelling.	<p><b>Underway</b>            KEQPL commenced tendering of the internal fencing works around the APZ of the Lot 5 dwelling. This is currently anticipated to be completed in the 2024 reporting period.</p> <p>Fencing of the driveway access track was reviewed and determined to be not economically feasible; and will therefore be managed in a consistent manner to other access tracks throughout the BOA.</p>	<b>Action 2023-6A</b>
2022-13	Repair the fencing along with the northern boundary with the Branch Lane with Lot 5.	<p><b>Underway</b>            KEQPL commenced tendering of the fencing repairs. This is currently anticipated to be completed in the 2024 reporting period.</p>	<b>Action 2023-6B</b>
2022-14	Install fencing along the eastern boundary of Lot 5 with Lot 2 DP1178728.	<p><b>Reviewed</b>            KEQPL reviewed the feasibility of installing fencing along this unfenced section; however, due to the terrain with gradients of up to 48% and the density of woodland forest which would require significant clearing to gain safe access, it was determined that it was not reasonably practicable to complete this work.</p>	<b>Closed</b>
			<b>Page</b>
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Action ID	Action Required	KEQPL Response	Status
		It should be noted that the sections of the boundary that adjoins areas of the neighbouring property that contain livestock are appropriately fenced. No evidence of livestock intrusion was identified during the reporting period.	
2022-15	Install fencing along the western boundary of Lot 5 with Lot 4 DP838128.	<p><b>Reviewed</b> KEQPL reviewed the feasibility of installing fencing along this unfenced section; however, due to the terrain with gradients of up to 45% and the density of woodland forest which would require significant clearing to gain safe unaccess, it was determined that it was not reasonably practicable to complete this work.</p> <p>It should be noted that during the reporting period, KEQPL acquired Lot 4 and can confirm that fencing along northern boundary with The Branch Lane is in an appropriate condition which effectively supersedes the functionality of the proposed works. Similarly, no evidence of livestock intrusion was identified during the reporting period.</p>	Closed
2022-16	Re-install fauna fencing surrounding Dam 1 following dam reconstruction works.	<p><b>Completed</b> KEQPL completed tendering of the fauna fence replacement works during the reporting period; however, works were delayed due to on-going labour shortages with appropriate fencing supply contactors. Site works were completed on 30 and 31 January 2024.</p>	Closed
2022-17	Install fauna fencing along the western boundary of Lot 13 adjoining the KEQ site.	<p><b>Underway</b> KEQPL has completed survey set-out of the proposed fence location along the approved disturbance boundary. A tendering process will commence in the 2024 reporting period. Sites of surface erosion will also be addressed.</p>	Action 2023-6C
2022-18	Undertake fence maintenance activities along the eastern boundary of Lot 5 with Lot 10 DP1032636.	<p><b>Reviewed</b> KEQPL reviewed the condition of the fence, however, could not find any defects requiring repairs. Similarly, no evidence of livestock intrusion was identified during the reporting period.</p>	Closed
2022-19	Undertake fence maintenance activities along the southern boundary of Lot 14 & 13 with the Pacific Highway.	<p><b>Reviewed</b> KEQPL reviewed the condition of the fence, however, could not find any defects requiring repairs. Similarly, no evidence of livestock intrusion was identified during the reporting period.</p>	Closed
<b>Erosion and Sediment Control</b>			
2022-20	Undertake track repairs in Lot 5 to the northern secondary trail.	<p><b>Reviewed</b> KEQPL reviewed the action and concluded no works were required as the track is redundant and currently under natural regeneration. The erosional has since been colonised by native grasses.</p>	Closed

Action ID	Action Required	KEQPL Response	Status
2022-21	Undertake track repairs in Lot 13 to the southern trail to the Pacific Highway.	<a href="#">Completed</a> KEQPL completed repair works in the 2023 reporting period.	Closed
2022-22	Install silt fencing at Dam 3.	<a href="#">Reviewed</a> KEQPL reviewed the action and concluded no works were required as no exposed dirty water catchment drains into the BOA as the downstream embankment face is well covered by native vegetation and the upstream face drains directly into Dam 3.	Closed
2022-23	Repair silt fencing along the western interface of the approved KEQ disturbance boundary in Lot 12.	<a href="#">Completed</a> KEQPL has since reinstalled this with works completed by 12 March 2024.	Closed
2022-24	Repair sites of surface erosion along the eastern interface of the approved KEQ disturbance boundary in Lot 13.	<a href="#">Underway</a> Refer to Action 2022-17 for further details.	Action 2023-6C and 2023-7
<b>Weed &amp; Pest Control</b>			
2022-25	Undertake lantana control activities.	<a href="#">Action</a> KEQPL to determine an appropriate lantana control programme for the BOA.	Action 2023-8
2022-26	Undertake biennial vertebrate pest monitoring.	<a href="#">Action</a> KEQPL to undertake biennial vertebrate pest monitoring.	Action 2023-9
<b>Fire Management</b>			
2022-27	Prepare a Fire Management Strategy for the BOA.	<a href="#">Action</a> KEQPL to develop and implement a Fire Management Strategy for the BOA.	Action 2023-10

### Improvements

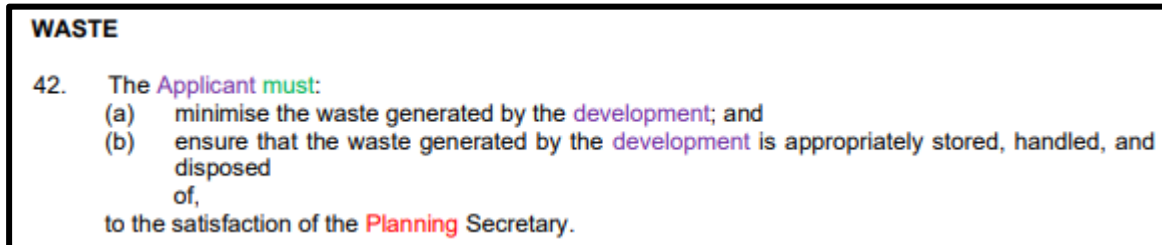
The Biodiversity Offset Area Management Plan (BOAMP) and Landscape and Rehabilitation Management Plan (LRMP) are both currently under review, following the state approval of the KEQ MOD10 Project and the 2023 KEQ Independent Environmental Audit. These revised documents will be resubmitted to NSW Planning for approval following receipt of Commonwealth EPBC Approval for the KEQ MOD10 Project.

Actions from the 2023 Biodiversity Offset Area Monitoring Report are provided by **Table 34** in **Section 12.0**.

## 6.7 Waste Management

### Approval Criteria

Waste management requirements for the site are provided in Schedule 3, Condition 42 of the Project Approval as outlined by **Figure 12**.



**Figure 12** Waste Management Requirements provided by the Project Approval.

### Environmental Performance Results

A licenced waste contractor removes waste from a 3 m<sup>3</sup> waste bin at the site. There were 46 collections during the reporting period, with capacity of the bin ranging from 20% to 100%, or a total of approximately 106 m<sup>3</sup> of waste being removed from site. This represents an increase compared to 57 m<sup>3</sup> in 2022 which can be attributed to greater housekeeping processes being implemented in the reporting period.

### Improvements

KEQPL completed a comprehensive review of the site's Waste Management Plan during the reporting period.

## 7.0 Water Management

### 7.1 Water Management Overview

Surface water at Karuah East Quarry is managed in accordance with the Water Management Plan (WMP). The primary objective of water management is to remain compliant with the Project Approval and EPL; and ensure there is no uncontrolled discharge of water from the site. The goal for any water that leaves the site from a controlled or uncontrolled discharge is that this water meets the required EPL criteria. This objective is intrinsic to erosion and sedimentation designs and controls for the quarry.

As such, the following specific objectives of this WMP have been established as part of the construction and operational phases:

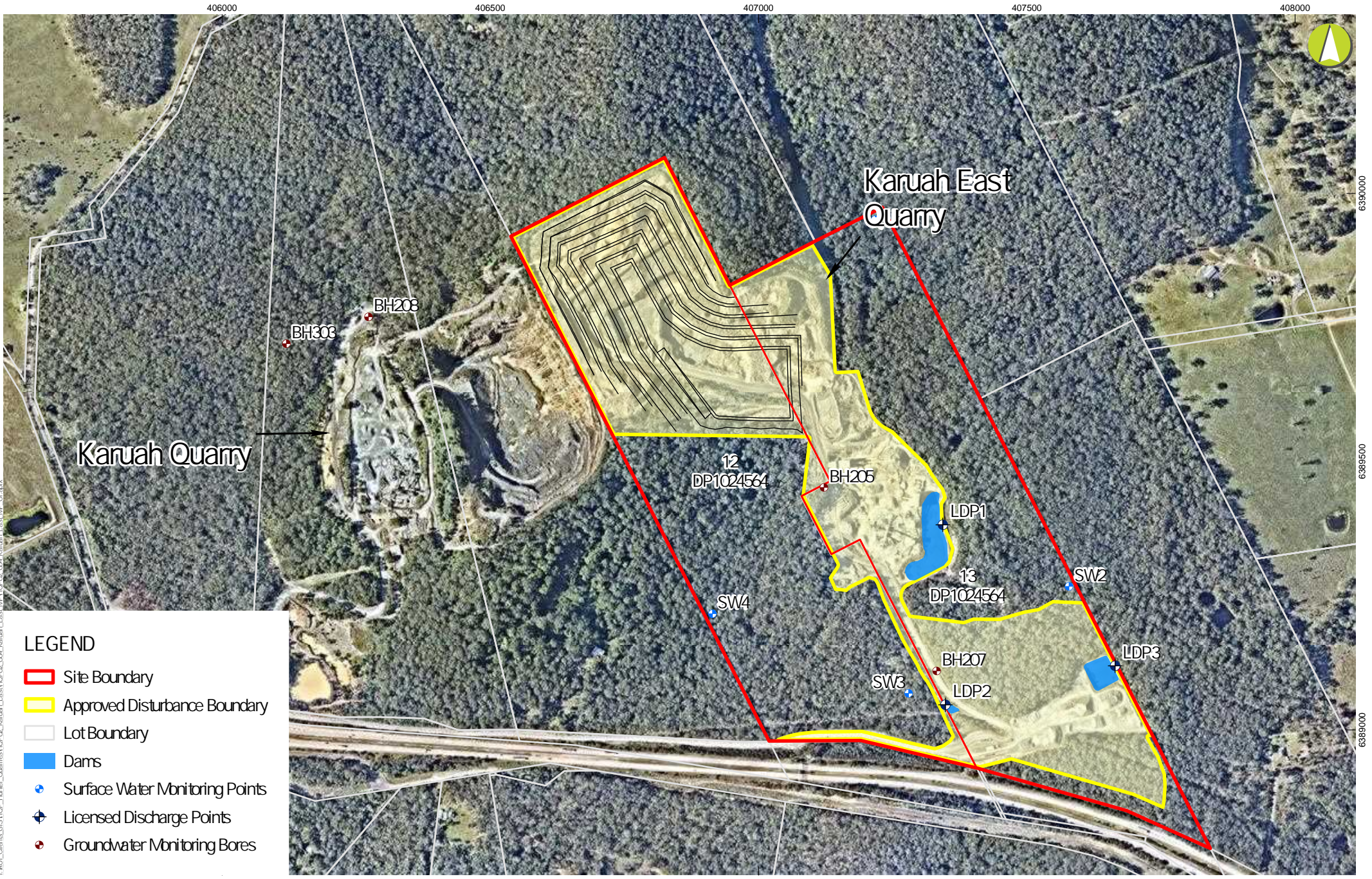
- Conducting best practice land clearing procedures for all proposed disturbance areas;
- Implementation of erosion and sediment controls during construction and operation as per the Blue Book and WMP;
- Separating undisturbed runoff from disturbed runoff where possible to minimise and isolate the amount of disturbed or dirty water runoff;
- Directing sediment-laden runoff into designated sediment control dams;
- Diverting clean runoff from areas upstream of the operation into natural depressions and creeks;
- Allowing sediments to settle in sediment control dams so that the water can be re-used for onsite dust suppression, thereby maintaining dam capacities for subsequent rainfall events;
- Maintaining sediment control structures to ensure that the designed capacities are maintained for optimum settling of sediments; and
- Implementing an effective revegetation and maintenance program for the site.

The Karuah East Quarry has three sediment dams, including:

- Dam 1 - Catchment (crushing plant and product stockpiles);
- Dam 2 - Catchment (product stockpiles and office infrastructure area); and
- Dam 3 - Catchment (product stockpiles area).

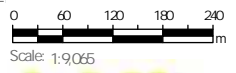
The current water management system and location of dams are shown in **Figure 13**.





**LEGEND**

- ▭ Site Boundary
- ▭ Approved Disturbance Boundary
- ▭ Lot Boundary
- ▭ Dams
- ⊕ Surface Water Monitoring Points
- ⊕ Licensed Discharge Points
- ⊕ Groundwater Monitoring Bores



GDA2020 MGA Zone 56  
8/03/2024

**Karuah East Quarry**

Annual Review 2023

**FIGURE 13 - Water Monitoring Location**

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406000

406500

407000

407500

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6380000

6389500

6389000

## 7.2 Surface Water

### EIS Predictions

Surface water was assessed EIS and then updated for the Preferred Project Report (2013).

The only direct disturbance to occur to the local drainage system will be in the upper reaches of the northern most drainage line in Lot 12. The length of the channel which will be disturbed as a result of excavation in the upper reaches of the catchment with no clearly defined bed or banks. Therefore, the impact on the wider catchment as a result of disturbance to the upper reaches of this drainage line is not anticipated to be significant.

With regards to offsite discharges, a water balance model has been developed to predict the frequency and volume of discharges from the project. The water balance predicts that uncontrolled discharges will be minimal, averaging only one discharge day per year in Stage 2 (which represents approximately half of the total disturbance area) and two days in Stage 5 (at full disturbance).

### Approval Criteria

Discharge criteria is provided in Condition L2.4 of the EPL and summarised in **Table 23**. These pollutants will be tested during discharge events from LDP 1, LDP 2 and LDP 3.

**Table 23** EPL Discharge Monitoring Criteria for LDP 1, LDP 2, and LDP 3.

Parameter	Units of Measure	EPL Discharge Limits (100 Percentile Concentration Limit)
Oil and Grease	mg/L	5 and/or non-visible
pH	pH	6.5 – 8.5
Total Suspended Solids	mg/L	40
Turbidity	NTU	–

As detailed in Section 8.1.3 of the WMP, surface water monitoring is undertaken at the following locations:

- Dam 1 (LDP 1), Dam 2 (LDP 2), and Dam 3 (LDP 3);
- SW 1 – Existing first order drainage line upstream of the site;
- SW 2 – Existing second order drainage line downstream of the site;
- SW 3 – Existing first order drainage line downstream of Dam 2; and
- SW 4 – Existing first drainage line downstream of the quarry extraction area.

As per Section 8.1.3 of the WMP, SW 1 to 4 will be tested on a six-monthly basis (when flowing) during operations to determine ongoing compliance with the water quality performance criteria. SW2 and SW3 will be tested within 24 hours any discharge.

### Environmental Performance Results (Discharge)

Discharge monitoring results for offsite water releases through the sites licenced discharge points are summarised by **Table 24**. In summary:

- No offsite discharges from Dam 1;
- 11 days of compliant and controlled discharge from Dam 2; and
- 22 days of compliant and controlled discharges from Dam 3.

**Table 24 Discharge Monitoring Results for LDP 1, LDP 2, and LDP 3.**

Date	pH	Total Suspended Solids, TSS (mg/L)	Turbidity (NTU)	Oil and Grease	Discharge Type	Status
<b>Dam 1 – LDP 1</b>						
No discharges during the reporting period						
<b>Dam 2 – LDP 2</b>						
30/01/2023	7.1	15	21	NV	Controlled	Compliant
20/04/2023	7.0	9	35	NV	Controlled	Compliant
26/06/2023	7.0	29	70	NV	Controlled	Compliant
22/08/2023	7.3	< 5	4.1	NV	Controlled	Compliant
07/11/2023	7.1	5	6.6	NV	Controlled	Compliant
08/11/2023	7.1	7	6.3	NV	Controlled	Compliant
09/11/2023	7.2	5	5.5	NV	Controlled	Compliant
15/11/2023	7.1	11	30	NV	Controlled	Compliant
16/11/2023	7.0	15	6.1	NV	Controlled	Compliant
17/11/2023	7.2	24	39	NV	Controlled	Compliant
21/11/2023	7.6	35	29	NV	Controlled	Compliant
<b>Dam 3 – LDP 3</b>						
30/01/2023	7.6	5	4.1	NV	Controlled	Compliant
31/01/2023	7.4	10	12	NV	Controlled	Compliant
20/04/2023	8.0	20	34	NV	Controlled	Compliant
08/06/2023	7.3	28	50	NV	Controlled	Compliant
09/06/2023	7.4	22	45	NV	Controlled	Compliant
10/06/2023	7.3	31	60	NV	Controlled	Compliant
11/06/2023	7.4	28	45	NV	Controlled	Compliant
08/08/2023	7.9	32	55	NV	Controlled	Compliant
09/08/2023	7.7	35	60	NV	Controlled	Compliant
22/08/2023	7.4	28	45	NV	Controlled	Compliant
23/08/2023	7.6	27	40	NV	Controlled	Compliant
24/08/2023	7.8	17	35	NV	Controlled	Compliant
02/11/2023	8.4	11	8.4	NV	Controlled	Compliant
06/11/2023	7.5	22	28	NV	Controlled	Compliant
07/11/2023	7.4	12	16	NV	Controlled	Compliant
08/11/2023	8.1	7	7.2	NV	Controlled	Compliant
10/11/2023	7.5	33	45	NV	Controlled	Compliant
11/11/2023	8.0	< 5	1.9	NV	Controlled	Compliant
12/11/2023	7.5	24	29	NV	Controlled	Compliant
13/11/2023	7.6	26	29	NV	Controlled	Compliant
14/11/2023	7.6	28	30	NV	Controlled	Compliant
17/11/2023	8.4	< 5	2.5	NV	Controlled	Compliant

**Environmental Performance Results (Monitoring)**

Surface water monitoring results for the site are provided by **Table 25** for the first half of 2023 and **Table 26** for the second half of 2023. The results the downstream monitoring sites are generally compliant with the ANZECC Guidelines.

**Table 25 Six-Monthly Surface Water Monitoring Results for H1 2023 (03 March 2023).**

Parameter	Units	EPL Discharge Limits	Dam 1	Dam 2	Dam 3	SW1	SW2	SW3	SW4
Oil and Grease	mg/L	5 and/or non-visible	<5	<5	<5	Not flowing – unable to obtain sample.	<5	<5	Not flowing – unable to obtain sample.
pH	pH	6.5 – 8.5	8.9	8.0	8.2		7.4	7.2	
Total Suspended Solids	mg/L	40	5	<5	<5		<5	26	
Parameter	Units	ANZECC Guidelines*	Dam 1	Dam 2	Dam 3		SW2	SW3	
Conductivity	µS/cm	125 – 2200	876	747	880		560	257	
Total Dissolved Solids	mg/L	--	535	555	610		367	162	
Total Phosphorus	mg/L	0.025	<0.01	<0.01	<0.01		0.05	0.02	
Ammonia	mg/L	0.2	<0.01	<0.01	<0.01		<0.01	<0.01	
Nitrogen (Nitrate)	mg/L	0.350	5.47	<0.01	<0.01		<0.01	<0.01	
Total Hardness (as CaCO <sub>3</sub> )	mg/L	--	113	193	226		62	48	
Arsenic	mg/L	0.024	<0.001	<0.001	<0.001		<0.001	<0.001	
Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	
Calcium	mg/L	--	24	59	74		10	11	
Chromium	mg/L	0.001	<0.001	<0.001	<0.001		<0.001	<0.001	
Copper	mg/L	0.0014	<0.001	<0.001	<0.001		<0.001	<0.001	
Lead	mg/L	0.0034	<0.001	<0.001	<0.001		<0.001	<0.001	
Magnesium	mg/L	--	13	11	10		9	5	
Manganese	mg/L	1.9	0.015	0.023	0.019		0.661	0.13	
Nickel	mg/L	0.011	<0.001	<0.001	<0.001		<0.001	<0.001	
Potassium	mg/L	--	2	2	1		2	1	
Sodium	mg/L	--	111	61	82	71	26		
Vanadium	mg/L	--	<0.01	<0.01	<0.01	<0.01	<0.01		
Zinc	mg/L	0.0312	<0.005	<0.005	<0.005	<0.005	<0.005		

\*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<sub>3</sub>/L).

**Table 26 Six-Monthly Surface Water Monitoring Results for H2 2023 (06 October 2023).**

Parameter	Units	EPL Discharge Limits	Dam 1	Dam 2	Dam 3	SW1	SW2	SW3	SW4
Oil and Grease	mg/L	5 and/or non-visible	<5	<5	<5	Not flowing – unable to obtain sample.	<5	<5	Not flowing – unable to obtain sample.
pH	pH	6.5 – 8.5	8.8	7.2	9.6		6.8	7.2	
Total Suspended Solids	mg/L	40	59	6	<5		50	22	
Parameter	Units	ANZECC Guidelines*	Dam 1	Dam 2	Dam 3		SW2	SW3	
Conductivity	µS/cm	125 – 2200	874	959	637		358	567	
Total Dissolved Solids	mg/L	--	500	650	390		400	330	
Total Phosphorus	mg/L	0.025	<0.05	<0.005	<0.05		0.1	<0.05	
Ammonia	mg/L	0.2	<0.02	<0.02	<0.02		<0.02	<0.02	
Nitrogen (Nitrate)	mg/L	0.350	0.5	0.009	<0.005		<0.005	<0.005	
Total Hardness (as CaCO <sub>3</sub> )	mg/L	--	100	200	91		30	79	
Arsenic	mg/L	0.024	0.002	<0.001	<0.001		0.002	<0.001	
Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	
Calcium	mg/L	--	20	52	27		4	15	
Chromium	mg/L	0.001	0.001	<0.001	<0.001		0.005	<0.001	
Copper	mg/L	0.0014	0.002	<0.001	<0.001		0.006	<0.001	
Lead	mg/L	0.0034	<0.001	<0.001	<0.001		0.003	<0.001	
Magnesium	mg/L	--	13	18	5.8		5.2	10	
Manganese	mg/L	1.9	0.074	0.12	0.006		0.41	0.18	
Nickel	mg/L	0.011	<0.001	<0.001	<0.001		<0.001	<0.001	
Potassium	mg/L	--	2	1	<0.5		2	2	
Sodium	mg/L	--	130	78	71	49	69		
Vanadium	mg/L	--	0.008	0.001	<0.001	0.019	0.002		
Zinc	mg/L	0.0312	0.006	<0.001	<0.001	0.03	0.002		

\*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<sub>3</sub>/L).

**Management Measures and Improvements**

KEQPL implements management measures as outlined by the approved WMP; and aims to implement continual improvement processes. As such, in 2023 KEQPL engaged VGT to complete a review of the site surface water management system to reduce the potential for non-compliant off-site discharges.

In 2024, KEQPL will continue to progress detailed design work in accordance with the identified improvement opportunities; and upon completion will review the appropriate approval pathways.

## 7.3 Groundwater

### EIS Predictions and Approval Criteria

The EIS assessment indicated that the extraction area did not intercept any groundwater aquifers and therefore any impacts to groundwater were considered unlikely. As such, there are not approval criteria provided by the Project Approval or EPL.

However, to confirm this and identify any long-term groundwater level and quality trends, the WMP provides quarterly groundwater level and 6-monthly quality monitoring.

Groundwater is monitored at the existing groundwater monitoring bores at BH205, BH207, BH208, and BH303, as locationally illustrated in **Figure 13**. BH207 was relocated in September 2016 and BH205 was relocated on 11 March 2017. Both of these piezometers were relocated within 30m to their original locations to allow construction to progress.

### Environmental Performance Results

**Table 27** shows a comparison of groundwater levels since 2017. All groundwater locations were monitored four times during 2023 with a requirement for quarterly monitoring of groundwater levels as per the WMP.

As evident, water levels have remained relatively consistent at BH208 and BH303 since monitoring commenced; however, BH205 and BH207 showing a consistent decrease and stabilization in water level in recent years.

**Table 28** shows a comparison of groundwater quality since 2017. Sampling of groundwater monitoring locations occurred on 19 April 2023 and 08 December 2023 in accordance with the six-monthly requirement to monitor groundwater quality data as per the WMP.

2023 results are comparable to results from previous years. TDS levels continued to be highly variable across the years. Average EC across the four monitoring locations was comparable to the 2022 average EC levels. KEQPL will continue to monitor groundwater quality during 2024.

### Management Measures and Improvements

Groundwater monitoring results are generally consistent with previous years and therefore no management measures have been implement and no improvements are considered to be necessary.

However, as part of the MOD10 project, BH207 will be grouted ahead of construction and replaced in a new location, subject to approval by NSW Planning.

**Table 27**      **Groundwater Level since 2017**

Month	Groundwater level (metres below ground level)			
	BH205	BH207	BH208	BH303
Apr-2017	25.3	9.4	20.0	30.7
Oct-2017	22.9	8.9	19.9	30.6
Jan-2018	21.9	9.1	20.3	30.7
Apr-2018	21.7	9.2	20.5	30.8
Jul-2018	20.5	8.9	20.5	30.9
Oct-2018	20.4	9.3	19.9	30.8
Jan-2019	20.1	9.2	20.4	21.0
Apr-2019	20.3	9.2	20.5	30.6
Jul-2019	19.7	9.1	20.6	31.1
Oct-2019	18.6	8.2	20.6	30.7
Jan-2020	20.0	9.3	20.7	31.2
Apr-2020	18.4	8.3	20.6	30.4
Jul-2020	18.2	8.3	20.8	31.2
Oct-2020	16.7	7.7	20.7	30.8
Jan-2021	18.1	8.5	20.8	31.4
Apr-2021	17.5	7.4	20.7	30.9
Jun-2021	18.2	8.3	20.7	31.2
Oct-2021	16.7	7.4	20.5	30.7
Jan-2022	17.4	7.9	20.7	31.0
Apr-2022	17.2	7.7	*	31.0
Jul-2022	16.8	7.4	*	30.7
Oct-2022	15.8	6.9	*	30.2
Jan-2023	16.6	7.4	*	30.0
Apr-2023	15.7	7.1	20.2	30.1
Jul-2023	16.9	7.1	20.2	30.2
Dec-2023	16.4	7.6	20.5	30.5

\*No data recorded due to insufficient water levels.

**Table 28 Average Groundwater Quality Results for Key Parameters**

Year	Monitoring Location	pH	TDS (mg/L)	EC (µS/cm)	Number of Samples
2017	BH 205	8.7	1200	2300	2
	BH 207	7.2	1800	3600	2
	BH 208	6.6	1900	3500	2
	BH 303	6.9	1175	2350	2
2018	BH 205	8.8	1150	2500	2
	BH 207	7.2	1020	1940	2
	BH 208	7.1	3000	3000	1
	BH 303	7.5	1250	2550	2
2019	BH 205	8.3	1734	2432	2
	BH 207	6.9	1579	2527	2
	BH 208	6.9	*	2505	1
	BH 303	6.2	1557	2404	2
2020	BH 205	7.1	1460	2735	2
	BH 207	7.0	1548	2865	2
	BH 208	*	*	*	0
	BH 303	5.9	1625	2985	2
2021	BH 205	6.8	1869	3350	2
	BH 207	6.5	1663	3070	2
	BH 208	*	*	*	0
	BH 303	5.8	1674	2910	2
2022	BH 205	6.3	2740	5020	2
	BH 207	6.6	1889	3465	2
	BH 208	*	*	*	0
	BH 303	6.0	1518	2745	2
2023	BH 205	6.2	2796	4845	2
	BH 207	6.4	2164	3430	2
	BH 208	6.5	2191	3745	2
	BH 303	5.7	1843	3010	2

\*No data recorded due to insufficient water levels.

## 7.4 Other Water Management Matters

### Water Licencing

KEQPL's surface water system has been designed to remain within Harvestable Rights provisions and therefore no surface water licences are required. Similarly, KEQPL holds no groundwater extraction licences.

### Salinity Trading

KEQPL does not participate in any salinity trading schemes.

### Compensatory Water Supply

KEQPL has not impacted any neighbouring landholders' water supply schemes requiring the provision of compensatory water supply.



## 8.0 Rehabilitation

In 2023, there have been no opportunities to establish rehabilitation at the quarry site in its current form as main extraction area is yet to reach terminal bench widths and extraction depth is yet to sufficiently progress to enable additional access roadways to be created to facilitate the rehabilitation of surplus roadways. A summary of rehabilitation details is provided by **Table 29** and **Table 30** below.

Future rehabilitation activities will be undertaken in due course once available, as outlined by the approved Landscape and Rehabilitation Management Plan (LRMP), with planned activities for the 2024 reporting period summarised by **Table 31**.

**Table 29 Summary of Rehabilitation Performance During the 2023 Reporting Period.**

Rehabilitation Performance Details	KEQ Site Comments
Extent of the operations and rehabilitation at completion of the reporting period.	No rehabilitation completed.
Agreed post-rehabilitation land-use.	Final land-use is outlined within the LRMP. The vegetation at closure will be native woodland consistent with the surrounding bushland.
Key rehabilitation performance indicators.	No rehabilitation completed.
Renovation or removal of buildings.	No rehabilitation completed.
Any other Rehabilitation undertaken including: <ul style="list-style-type: none"> <li>■ Exploration activities;</li> <li>■ Infrastructure;</li> <li>■ Dams; and</li> <li>■ The installation or maintenance of fences, bunds and any other works.</li> </ul>	No rehabilitation completed.
Rehabilitation sign-off status of completed areas against the land-use objectives and completion criteria.	No rehabilitation completed.
Variations to activities undertaken to those proposed (including why there were variations and whether the Resources Regulator was notified)	No rehabilitation completed.
Outcomes of trials, research projects and other initiatives.	No rehabilitation completed.
Key issues that may affect successful rehabilitation.	No rehabilitation completed.

**Table 30 Disturbance and Rehabilitation Status.**

Item	Quarry Area Type	Previous 2022 Reporting Period [actual] (Ha)	Current 2023 Reporting Period [actual] (Ha)	Next 2024 Reporting Period [forecast] (Ha)
A	Total Quarry Footprint	29.35	29.35	40.18*
B	Total Active Disturbance	29.35	29.35	40.18*
C	Land Being Prepared for Rehabilitation	0	0	0
D	Land Under Active Rehabilitation	0	0	0
E	Completed Rehabilitation	0	0	0

\* Increased disturbance area associated with the expected commencement of the MOD10 project.

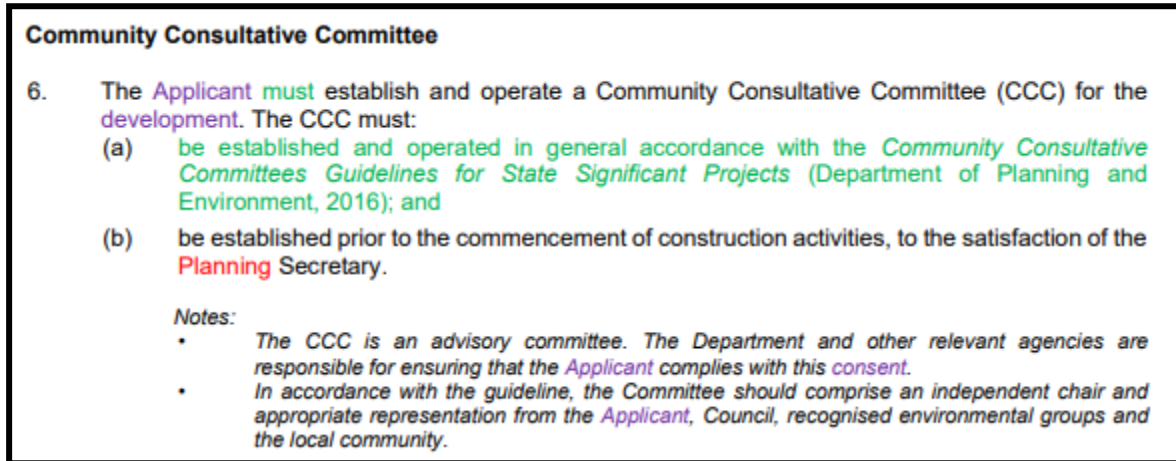
**Table 31**      **Actions for the Next 2024 Reporting Period.**

<b>Action</b>	<b>KEQ Site Comment</b>
Describe the steps to be undertaken to progress agreement during next reporting period, where final rehabilitation outcomes have not yet been agreed between stakeholders.	There is no planned additional rehabilitation at the site in the next Annual Review period.
Outline proposed rehabilitation trials, research projects and other initiatives to be undertaken during next reporting period.	There are no additional rehabilitation trials during the next Annual Review period.
Summary of rehabilitation activities proposed for next report period.	There is no planned additional rehabilitation at the site in the next Annual Review period. Karuah East Quarry continues to assess opportunities for progressive rehabilitation throughout quarry planning.

## 9.0 Community

### 9.1 Community Engagement

A Community Consultative Committee (CCC) was formed for the Karuah East Quarry to undertake community engagement activities in accordance with Schedule 5, Condition 6 of the Project Approval as summarised by **Figure 14**.



**Figure 14** Community Consultative Committee (CCC) requirements from the Project Approval.

In 2023, the CCC was called to meet twice on **13 March 2023** and **18 September 2023**; and consisted of the following members:

- 1x independent chair (Michael Ulph, GHD Technical Director – Communications and Stakeholder Engagement)
- 6x local community members (with an additional 2x guest community members);
- 3x stakeholder groups representatives from the North Arm Cove Residents Association, Port Stephens Shellfish Program and the Karuah LALC;
- 1x council representative from MidCoast Council; and
- 3x company representatives from KEQPL.

Key items discussed during the CCC meetings include project approvals and current operations, environmental management performance, community complaints and associated responses.

### 9.2 Community Contributions

The Karuah East Quarry contributes to supporting the local economy through parent company, Hunter Quarries Pty Ltd (HQPL). In 2023 HQPL supported the following organisations:

- Karuah Pearls Netball Club;
- Karuah Public School P&C;
- Karuah Roos Rugby League Football Club;
- Karuah & District Tennis Club;
- North Arm Cove Community Association;
- Bulahdelah Golf Club;
- Glen William Public School;
- Victoria Hotel Hinton;
- Bulahdelah Men’s Shed;
- Rotary Clubs of Maitland;
- Wildlife in Need of Care;
- Karuah Oyster & Timber Festival;
- Karuah Golf Club; and
- Karuah RSL.

### 9.3 Community Complaints

Members of the community are encouraged to report any issues that are identified associated with our operations via the dedicated **Community Call Line** on **1800 329 161**. The Environment & Development Manager reviews, investigates, and reports all complaints received in accordance with the Project Approval, EPL, and the site’s Environmental Management Strategy.

In 2023, five complaints were received as summarised by **Table 32**.

**Table 32** 2023 Community Complaints.

No.	Date & Time Received	Complaint Category	Nature of Complaint	Outcome of Complaint
1	07/02/2023 4:25pm	Blasting	A complaint was received regarding blasting activities on the 06 February 2023 from DPE on behalf of a resident located at Limeburners Creek.	Karuah East Quarry assisted DPE with their investigation of the complaint as required. DPE confirmed on 01 May 2023 that no further action is required for this matter.
2	04/05/2023	Transport	A complaint was received regarding a traffic incident at a roundabout on Glenwood Drive, Thornton.	All Karuah East Quarry truck drivers were subject to toolbox talks regarding safe, professional and courteous driving expectations.
3	09/06/2023 12.51pm	Blasting	A complaint was received regarding blasting activities on 09 June 2023 from a resident on Halloran Road.	Karuah East Quarry confirmed a blast event had occurred at the time of the complaint and the photographs provided were of the dust plume (i.e. not operational dust).
4	14/08/2023 3.36 pm	Blasting	A complaint was received regarding blasting activities on 14 August 2023 from a resident on Halloran Road.	Karuah East Quarry confirmed by letter on 23 August 2023 that the resultant air blast overpressure & and ground vibration were within development consent compliance limits.
5	10/11/2023 1:59 pm	Transport	A complaint was received regarding a traffic incident northbound on the Pacific Highway between Tarean Road, Karuah and Myall Way, Tea Gardens; resulting in stonechip damages to the complainant's paintwork and windscreen.	Karuah East Quarry reimbursed the complainant repair costs; and all Karuah East Quarry truck drivers were subject to toolbox talks to ensure body tarps are appropriately cleaned and secured and caution is used when driving over rough surfaces.

This represents a significant increase in complaints being received by KEQPL in 2023 compared to previous years with an annual average of 2.1 complaints per year as outlined by **Table 33**.

However, this can be attributed to implementation of a formalised, dedicated and trackable Community Call Line for community members to directly lodge any complaints or concerns and its associated advertisement within the community including:

- Updated signage at the entrance to the quarry premises;
- Inclusion of the Community Call Line in prominent locations on the Hunter Quarries website;
- Inclusion of the Community Call Line in communications with the CCC; and
- Letter drop to nearby residents of the Karuah Quarry Complex.

**Table 33 Community Complaints 2016-2023.**

Year	Total Received	Complaint Category						Comments
		Air Quality	Blasting	Noise	Transport	Water	Other	
2016	1				1			-
2017	3	1*		2*		1		*Combined noise and air quality (dust) complaint.
2018	2		1	1				-
2019	2		1				1^	^property access
2020	1		1					-
2021	1			1				-
2022	2	1				1		-
2023	5		3		2			-

In response to the three blasting complaints the a minor administrative improvement was undertaken to the blast management system, by updating our Blast Notification Messaging System to provide text message notifications from a single textable mobile phone number (**0439 580 440**) to allow residents to maintain a single point of contact with greater ability to remain up to date with planned blasting activities.

In response to the two transport complaints the following improvements are currently being implemented to our transport management system, including:

- Comprehensive review of daily driver pre-trip declaration forms (underway).
- Comprehensive review of Roads or Other Vehicle Operating Areas (ROVOA) PHMP (completed).
- Inclusion of dashcams for all Hunter Quarries operated heavy vehicles (underway).

## 10.0 Independent Environment Audit

In accordance with Schedule 5, Condition 9 of the Project Approval, KEQPL has commissioned an Independent Environment Audit (IEA) every three years as summarised by **Figure 15**.

**INDEPENDENT ENVIRONMENTAL AUDIT**

9. Within 12 months of the commencement of development on the site, and every 3 years thereafter, unless the **Planning** Secretary directs otherwise, the **Applicant** must commission and pay the full cost of an Independent Environmental Audit of the **development**. This audit must:

- (a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the **Planning** Secretary;
- (b) include consultation with the relevant agencies;
- (c) assess the environmental performance of the **development** and whether it is complying with the relevant requirements in this **consent** and any relevant EPL and/or Water Licence (including any assessment, plan or program required under these approvals);
- (d) review the adequacy of any approved strategy, plan or program required under these approvals; and
- (e) recommend measures or actions to improve the environmental performance of the **development**, and/or any assessment, plan or program required under these approvals.

*Note: This audit team must be led by a suitably qualified auditor and include experts in any fields specified by the **Planning** Secretary.*

10. Within three months of commencing an Independent Environmental Audit, or within another timeframe agreed by the **Planning** Secretary, the **Applicant** must submit a copy of the audit report to the **Planning** Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the **Planning** Secretary.

**Figure 15** Independent Environmental Audit (IEA) requirements from the Project Approval.

The first Independent Environmental Audit was completed in July 2017 by EMM Consulting. In October 2020, Hansen Bailey completed the second Independent Environmental Audit.

In October 2023, Environmental Resources management (ERM) conducted the third Independent Environmental Audit of the Karuah East Quarry; which included the following key documents:

- Project Approval, MP09\_0175 (as modified);
- Environment Protection Licence, EPL 20611; and
- Karuah East Quarry’s Environmental Management Plans.

The non-compliances identified in the 2023 Independent Environmental Audit were generally minor in nature and focused on the regular revision of Environmental Management Plans, non-compliant water discharges and various other administrative matters.

KEQPL’s response and action plan is provided by **Appendix 4**.

## 11.0 Incidents & Non-Compliances During the Reporting Period

During the 2023 reporting period, three exceedances of performance criteria occurred, all of which related to air quality.

- **16/06/2023 – PM10 Exceedance of Short-term criteria;**

Minor exceedance of PM10 was recorded at 51 µg/m<sup>3</sup> compared to the short-term criteria of 50 µg/m<sup>3</sup> on 16 June 2023 at the HVAS unit. This anomalous result was reported to NSW Planning, the NSW EPA and surrounding landholders in accordance with the relevant conditions of the Project Approval and EPL.

NSW Planning reviewed the notification and determined to record a breach under the NSW EP&A Act 1979 on 01 February 2024. However, no response from the EPA was received.

In response to this short-term PM10 exceedance, KEQPL proposes to implement a TARP for dust management on site, subject to approval by NSW Planning.

- **June 2023 – Contamination of DDG 4 and DDG 5 with organic material; and**
- **November 2023 – Contamination of DDG 2 with organic material.**

During these reporting periods, dust gauges become contaminated with organic vegetation matter and are therefore discounted from averaging. Ash content of the samples, which quarry-related dust may contribute, remained well within compliance limits.

These ‘failure to monitor’ events were reported to NSW Planning, the EPA and surrounding landholders in accordance with the relevant conditions of the Project Approval and EPL. Both agencies subsequently acknowledged the events and have confirmed no regulatory action will be taken.

In response to the DDG contamination events, KEQPL proposes to undertake a minor relocation of three station to minimise the risk as far as reasonably practicable, subject to approval by NSW Planning and the EPA.

## 12.0 Activities to be Completed in the Next Reporting Period

A consolidated summary of proposed actions to be completed during the 2024 reporting period is provided by **Table 34**.

**Table 34** Summary of Proposed Actions in the Next 2024 Reporting Period.

Action ID	Action	Timeline
<b>Approvals</b>		
2023-1	Submit EPL Variation for updated activities for the KEQ MOD10 Project.	Approval of EPL variation to be completed prior to the commencement of construction.
2023-2	Undertake comprehensive review and update of the following Management Plans for the KEQ MOD10 Project and 2023 KEQ IEA.	Approval Management Plan updates for the KEQ MOD10 Project prior to the commencement of construction.
	A. Environmental Management Strategy.	Submission of comprehensive review due 28 May 2024.
	B. Air Quality Management Plan	Submission of comprehensive review due 28 May 2024.
	C. Biodiversity Offset Area Management Plan.	Update pending Commonwealth Approval for MOD10.
	D. Biodiversity Offset Strategy.	Update pending Commonwealth Approval for MOD10.
	E. Blast Management Plan.	Submission of comprehensive review due 28 May 2024.
	F. Landscape & Rehabilitation Management Plan.	Update pending Commonwealth Approval for MOD10.
	G. Noise Management Plan.	Submission of comprehensive review due 28 May 2024.
	H. Transport Management Plan.	Submission of comprehensive review due 28 May 2024.
	I. Water Management Plan (including effectiveness of WMP and TARP for surface water management to minimise exceedances of discharge limits).	Submission of comprehensive review due 28 May 2024.
<b>Environmental Management Improvements</b>		
2023-3	<u>Air Quality:</u> Submit EPL Variation (in conjunction with HQPL) to undertake minor relocation of three depositional dust gauges to minimise risk of contamination with organic as far as reasonably practicable.	Complete relocation by 31 December 2024.
2023-4	<u>Surface Water Management:</u> Progress with detailed design of surface water improvement opportunities identified by VGT (2023); and review appropriate approval pathways.	Complete feasibility review of detailed design by 31 December 2024.
2023-5	<u>Groundwater Management:</u> Install replacement piezometer and rehabilitate existing piezometer, BH207.	Complete prior to the commencement of construction of the KEQ MOD10 Project.



Action ID	Action	Timeline
<b><i>Biodiversity Management Actions</i></b>		
<b>2023-6</b>	<u>Fencing:</u> <b>A.</b> Install fencing around Lot 5 dwelling APZ. <b>B.</b> Restricting fencing along northern boundary of Lot 5. <b>C.</b> Install fauna fencing along the western boundary of Lot 13 adjoining the KEQ site.	Actions to be progressed during the 2024 reporting period.
<b>2023-7</b>	<u>Erosion and Sediment Control:</u> Repair sites of surface erosion along the eastern interface of the approved KEQ disturbance boundary and Lot 13.	Action to be completed in conjunction with fauna fencing installation ( <b>Action #2023-6C</b> ).
<b>2023-8</b>	<u>Weed Control:</u> Determine appropriate lantana control programme.	Actions to be progressed during the 2024 reporting period.
<b>2023-9</b>	<u>Pest Control:</u> Undertake 2-yearly vertebrate post monitoring.	
<b>2023-10</b>	<u>Fire Management:</u> Develop and implement a Fire Management Strategy for the BOA.	
<b><i>Independent Environmental Audit Actions</i></b>		
Refer to <b>Action #2023-2</b> for Strategy and Management Plan reviews and updates.		
<b>2023-11</b>	Include laden truck movement data in the Annual Review for all future submissions.	Completed.
<b>2023-12</b>	Review repair options to the hazardous materials storage container.	As soon as practicable.
<b>2023-13</b>	Update Hazardous Substances Register to include diesel ASTs.	Completed.
<b>2023-14</b>	Implement document management system to ensure the review, revision and re-approval of statutory management plans are completed.	Completed.

## Appendix 1 – NSW Planning Correspondence

NSW Planning Response to KEQ Annual Review 2021

NSW Planning Response to KEQ Annual Review 2022

Department of Planning and Environment

Joel Fleming  
Environment and Development Manager  
Karuah East Quarry Pty Ltd  
Worimi Country  
PO Box 23  
KARUAH NSW 2324

Sent via the Major Projects website

30/03/2023

### **Karuah East Quarry Project (MP09\_0175) – 2021 Annual Review**

Dear Mr Fleming

I refer to the Annual Review for the period 1 January 2021 – 31 December 2021 required by Schedule 5 Condition 4 of Project Approval 09\_0175 as modified (the approval), submitted to the Department of Planning and Environment (the department) on 31 October 2022.

The department has reviewed the 2021 Annual Review and considers it to generally satisfy the reporting requirements of the approval/consent and the department's *Annual Review Guideline* (October 2015). For future Annual Reviews, under the provisions of Schedule 2 condition 3 of the approval, please include the following information –

- A summary of all laden truck movements to and from the site.
- A summary of surface water monitoring conducted at locations SW1, SW2, SW3 and SW4 in accordance with the approved Water Management Plan, a comparison of monitoring results to predictions made in the EIS, an assessment against water quality performance criteria, the identification of any trends and management implications.

Please note that the department's acceptance of this Annual Review is not an endorsement of the compliance status of the project. I note that the Section 10.2 of the Annual Review has identified the failure to sample deposited dust monthly and total suspended particulates (TSP) every 6 days as being non-compliant with the monitoring requirements of environment Protection Licence 20611. The department also considers this to be a failure to implement the approved Air Quality Management Plan required by Schedule 3 Condition 16 of the approval. At the time it was reported, the department assessed this non-compliance in accordance with the *Compliance Policy* (2020) and determined to not take formal enforcement action and, as such, has recorded this failure as a breach.

Further, the department notes that Karuah East Quarry Pty Ltd failed to submit the Annual Review by 30 April 2022 as directed by the Secretary. The department will send further correspondence in relation to this non-compliance.

As required by Schedule 5 condition 11 of the approval, please make publicly available on the company website the following information –

- a copy of the Annual Review for the 2020 and 2021 reporting periods



Department of Planning and Environment

- minutes of the Community Consultative Committee meetings held since March 2022.

Similarly, as required by Schedule 3 Condition 23, please publish on the company website a summary of laden truck movements from the site.

Should you wish to discuss these matters, please contact Jennifer Sage, Senior Compliance Officer on 0400 245 170 or [compliance@planning.nsw.gov.au](mailto:compliance@planning.nsw.gov.au).

Yours sincerely

A handwritten signature in black ink that reads "H Watters".

Heidi Watters  
Team Leader Northern  
Compliance

As nominee of the Planning Secretary

Department of Planning and Environment

Shane Burton  
Quarry Manager  
Karuah East Quarry  
Worimi Country  
PO Box 23  
KARUAH NSW 2324

29/11/2023

**Karuah East Quarry Project (MP09\_0175) - 2022 Annual Review**

Dear Mr Burton

I refer to the Annual Review for the period 1 January 2022 to 31 December 2022, submitted to the Department of Planning and Environment (NSW Planning) on 31 March 2023 as required under Schedule 5 Condition 4 of Project Approval 09\_0175 as modified (the approval).

The department has reviewed the 2022 Annual Review and considers it to generally satisfy the reporting requirements of the approval and the department's *Annual Review Guideline* (October 2015).

I note that the Ecological Monitoring Report prepared by Wedgetail Project Consulting for the biodiversity offset area and the development site was not included in Appendix 5 of the 2022 Annual Review. Please make this report publicly available on Hunter Quarries website by updating and re-publishing the Annual Review on the company website.

Under the provisions of Schedule 2 Condition 3 of the approval, please include in the 2023 Annual Review information that describes the response from Karuah East Quarry to the recommendations made in the Ecological Monitoring Report for the biodiversity offset area.

Please note that the department's acceptance of this Annual Review is not an endorsement of the compliance status of the project. The following potential non-compliances identified in the 2022 Annual Review will be assessed in accordance with the department's Compliance Policy -

- Schedule 5 Condition 5 - Revision of Strategies, Plans and Programs following submission of the 2022 Annual Review and modification 10 of the project approval.

Further correspondence may be sent in relation to non-compliances.

Should you wish to discuss the matter, please contact Jennifer Sage, Senior Compliance Officer on 0400 245 170 or [compliance@planning.nsw.gov.au](mailto:compliance@planning.nsw.gov.au)

Yours sincerely



Heidi Watters  
Team Leader Northern  
Compliance

As nominee of the Planning Secretary

## Appendix 2 – Transport Monitoring Reports

KEQ Transport Monitoring Report – H1 2023

KEQ Transport Monitoring Report – H2 2023



3/04/2023	40		11	1	6	3	4	6	3	3	3
4/04/2023	32		6	6	3	3	2	4	3	3	2
5/04/2023	25		3		2	4	4	6	3	2	1
6/04/2023	31		11	1	5	7	1	3	3		
7/04/2023	-										
8/04/2023	-										
9/04/2023	-										
10/04/2023	-										
11/04/2023	24		5	1	1	5	1	1	4	5	1
12/04/2023	54		3	8	6	6	7	7	7	9	1
13/04/2023	47		9	6	5	7	2	5	4	5	4
14/04/2023	31		10	5	3	3	2	4	1	3	
15/04/2023	6									6	
16/04/2023	-										
17/04/2023	37		10	2	6	4	3	4	4	3	1
18/04/2023	46		16	2	3	8	3	6	4	4	
19/04/2023	45		9	4	5	8	4	2	8	1	4
20/04/2023	41		8	3	5	6	7	3	6	2	1
21/04/2023	27		6	1	2	4	3	1	6	4	
22/04/2023	25		1	6	6	5	4	3			
23/04/2023	-										
24/04/2023	1							1			
25/04/2023	-										
26/04/2023	17		5	1	1	4		3	2	1	
27/04/2023	33		3	5	5	4	4	2	2	5	2
28/04/2023	26			7	5	1	3	4		5	1
29/04/2023	-										
30/04/2023	-										
1/05/2023	41		7	3	3	6	4	4	5	7	2
2/05/2023	33		7	1	6	2	6	3	4	3	1
3/05/2023	35		8	4	3	5	4	2	8	1	
4/05/2023	30		3	5	3	3	5	1	2	5	3
5/05/2023	27		8	1	3	5	3	1	6		
6/05/2023	-										
7/05/2023	-										
8/05/2023	28		8	2	4	4	2	2	4	2	
9/05/2023	39		2	6	3	5	2	6	6	6	3
10/05/2023	34		2	6	4	4	4	3	5	5	1
11/05/2023	27		1	5	3	1	5	3	2	4	1
12/05/2023	39			11	3	3	5	6	3	7	1
13/05/2023	14		1	6		6	1				
14/05/2023	-										
15/05/2023	40			10	3	2	10	1	3	10	1
16/05/2023	32		1	8	1	3	6	3	1	7	2
17/05/2023	32		1	9	2		9	2		9	
18/05/2023	33			7		5	6	2	4	4	4
19/05/2023	29			9	3	4	5	3		5	
20/05/2023	-										
21/05/2023	-										
22/05/2023	20			4	1	1	5		3	3	3
23/05/2023	23			7	2		5	2	1	4	2
24/05/2023	23			7	2	1	4	2	1	3	3
25/05/2023	20		1	3	1		4	2	2	3	2
26/05/2023	34			8	3	2	6	1	10	3	1
27/05/2023	10			4	1	4		1			
28/05/2023	-										
29/05/2023	34			11	3	3	4	3	4	4	2
30/05/2023	44		2	9	4	6	4	3	8	3	4
31/05/2023	55		1	12	3	5	10	2	6	10	2
1/06/2023	77		3	16	5	8	10	8	6	10	6
2/06/2023	70			19	4	10	10	12	3	10	2
3/06/2023	6		1	2	3						
4/06/2023	-										
5/06/2023	63		1	11	9	1	11	9	5	8	8
6/06/2023	72			14	8	4	13	7	6	11	4
7/06/2023	50		3	8	6	6	5	6	5	5	1
8/06/2023	38			10	4	1	8	2	2	6	3
9/06/2023	38		2	6	5	5	3	8	3	3	3
10/06/2023	-										
11/06/2023	-										
12/06/2023	-										
13/06/2023	32			9	1	2	4	7	1	4	4
14/06/2023	34		2	7	4	6	4	4	1	5	1
15/06/2023	42		1	10	3	3	9	5	1	8	2
16/06/2023	36		1	9	3	5	7	2	4	3	2
17/06/2023	-										
18/06/2023	-										
19/06/2023	30		1	5	2	5	2	3	5	3	2
20/06/2023	30			8	1	4	5	1	7	2	2
21/06/2023	42		1	8	2	7	4	4	5	6	5
22/06/2023	42		2	7	3	7	2	5	6	3	5
23/06/2023	34		1	6	2	8	3	5	3	2	3
24/06/2023	-										
25/06/2023	-										
26/06/2023	58			12	3	9	7	7	5	7	6
27/06/2023	44		4	3	6	4	3	7	4	4	7
28/06/2023	49			11	5	3	8	5	6	6	3
29/06/2023	5			3		2					
30/06/2023	11			2	2		1	1	2	3	





**Monitoring of Product Transport**

The Proponent must keep accurate records of all laden truck movements to and from the site (including time of arrival and dispatch) and publish a summary of records on its website every 6 months and in the Annual Review.

Calendar Date	DAILY TOTAL	Hourly Truck Movements																
		5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17	17 to 18	18 to 19	19 to 20	20 to 21	21 to 22
1/07/2023	32		7	4	9	4	8											
2/07/2023	-																	
3/07/2023	107		17	11	8	11	13	8	16	6	12	5						
4/07/2023	103		12	18	13	13	9	14	7	11	2	2	2					
5/07/2023	92		8	10	12	9	10	9	7	9	9	8	1					
6/07/2023	99		13	10	9	11	9	9	15	9	10	4						
7/07/2023	84		11	11	8	12	7	9	10	9	4	3						
8/07/2023	33		3	7	6	7	6	4										
9/07/2023	-																	
10/07/2023	118		13	10	7	19	11	12	15	9	16	6						
11/07/2023	96		11	12	7	16	8	14	11	6	5	6						
12/07/2023	114		10	15	14	15	12	12	14	9	9	4						
13/07/2023	107		14	10	13	10	11	12	10	10	11	6						
14/07/2023	128		16	12	23	10	18	15	10	13	7	2	2					
15/07/2023	18		2	3	5	5	2	1										
16/07/2023	-																	
17/07/2023	134		17	9	19	11	17	11	17	15	11	5	2					
18/07/2023	128		14	12	12	9	13	16	16	9	19	8						
19/07/2023	151		13	14	15	15	19	14	16	16	17	12						
20/07/2023	132		14	12	11	21	11	13	15	10	16	9						
21/07/2023	114		13	13	13	11	19	12	13	14	6							
22/07/2023	18		3	2	2	5	5	1										
23/07/2023	-																	
24/07/2023	134		14	16	16	18	16	16	13	12	5	7	1					
25/07/2023	96		8	12	11	7	10	12	8	13	12	3						
26/07/2023	121		14	10	10	16	9	15	8	20	9	10						
27/07/2023	122		12	17	7	13	16	10	15	12	12	8						
28/07/2023	114		12	15	8	18	10	14	14	13	6	4						
29/07/2023	14		4	3	2	3	1	1										
30/07/2023	-																	
31/07/2023	125		17	17	8	13	19	13	11	13	10	4						
1/08/2023	114		13	14	8	19	8	12	14	11	12	3						
2/08/2023	140		16	13	10	13	14	16	17	14	21	6						
3/08/2023	129		13	13	10	11	19	12	20	10	12	9						
4/08/2023	106		10	11	7	14	11	15	12	14	6	6						
5/08/2023	18		2	5	1	6	1	3										
6/08/2023	-																	
7/08/2023	82		9	7	10	6	11	6	11	7	9	5	1					
8/08/2023	116	1	13	14	12	14	11	12	12	15	7	5						
9/08/2023	90	1	8	10	11	10	12	5	12	7	10	3	1					
10/08/2023	107		12	13	12	13	10	12	10	13	7	5						
11/08/2023	95		10	8	11	11	11	8	10	9	12	5						
12/08/2023	13		2	3	2	2		4										
13/08/2023	-																	
14/08/2023	79		7	9	11	12	6	11	8	6	7	2						
15/08/2023	75		11	8	8	12	6	7	6	7	6	4						
16/08/2023	109		10	13	12	18	12	12	9	9	11	3						
17/08/2023	148		8	20	13	16	22	15	15	12	17	9	1					
18/08/2023	106		11	16	18	14	18	5	10	5	6	3						
19/08/2023	9		2	1	3		2	1										
20/08/2023	-																	
21/08/2023	110		12	15	10	15	12	12	12	12	5	5						
22/08/2023	113		11	13	7	11	14	15	13	12	9	7	1					
23/08/2023	146		17	14	19	13	18	10	13	16	15	10	1					
24/08/2023	152		16	15	13	21	11	20	14	14	16	9	3					
25/08/2023	119		13	15	13	13	14	11	11	12	14	3						
26/08/2023	18		3	3	6	1	3	2										
27/08/2023	-																	
28/08/2023	108		13	14	12	14	12	16	7	11	7	2						
29/08/2023	122	1	8	14	21	12	13	13	11	15	7	6	1					
30/08/2023	135		14	17	22	13	16	13	8	17	9	6						
31/08/2023	119		9	17	19	13	11	21	6	12	8	3						
1/09/2023	81		12	15	9	8	10	7	9	6	3	2						
2/09/2023	10		2	3	1	1	2	1										
3/09/2023	-																	
4/09/2023	148		20	6	23	13	18	18	14	15	13	6	2					
5/09/2023	146		14	18	11	19	15	15	17	16	13	8						
6/09/2023	168		20	13	23	18	16	17	19	18	20	4						
7/09/2023	94		10	11	13	8	9	12	11	8	6	6						
8/09/2023	70		9	13	7	5	9	5	11	5	4	2						
9/09/2023	4		2		2													
10/09/2023	-																	
11/09/2023	137		16	16	14	13	19	12	18	13	13	2	1					
12/09/2023	110		13	11	10	16	9	13	12	9	7	10						
13/09/2023	83		10	9	6	10	5	10	9	1	15	8						
14/09/2023	187		18	22	21	21	20	21	18	18	19	9						
15/09/2023	135		19	9	14	17	20	14	12	12	13	5						
16/09/2023	32		3	7	8	6	8											
17/09/2023	-																	
18/09/2023	204		17	24	30		9	51	34	30	7	2						
19/09/2023	225		20	27	21	24	29	23	23	22	21	15						
20/09/2023	166		21	23	19	23	12	25	15	11	12	4	1					
21/09/2023	124		10	19	11	14	14	11	14	14	16	1						
22/09/2023	117	1	14	31	12	10	1	13	11	8	12	4						
23/09/2023	11		1	2	5	2	1											
24/09/2023	-																	
25/09/2023	135		9	10	17	9	13	17	13	15	20	11	1					
26/09/2023	135		14	16	9	18	16	16	9	18	16	3						
27/09/2023	148		13	17	6	18	8	22	17	15	20	10	2					
28/09/2023	153		14	20	6	17	17	18	15	16	19	11						



## Appendix 3 – Noise Monitoring Reports

Noise Monitoring Report – Q1 2023

Noise Monitoring Report – Q2 2023

Noise Monitoring Report – Q3 2023

Noise Monitoring Report – Q4 2023

# **Karuah East Quarry**

## **Quarterly Attended Noise Monitoring - Q1 2023**

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Prepared for Karuah East Quarry Pty Limited

March 2023

# Karuah East Quarry

## Quarterly Attended Noise Monitoring - Q1 2023

Karuah East Quarry Pty Limited

E230083 RP1

March 2023

Version	Date	Prepared by	Reviewed by	Comments
1	17 February 2023	Lucas Adamson	Najah Ishac	Draft
2	3 March 2023	Lucas Adamson	Najah Ishac	Final

Approved by



**Najah Ishac**

Director

3 March 2023

Level 3 175 Scott Street

Newcastle NSW 2300

This report has been prepared in accordance with the brief provided by Karuah East Quarry Pty Limited and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. The contents of this report are private and confidential. This report is only for Karuah East Quarry Pty Limited's use in accordance with its agreement with EMM and is not to be relied on by or made available to any other party without EMM's prior written consent. Except as permitted by the *Copyright Act 1968* (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Karuah East Quarry Pty Limited (and subject to the terms of EMM's agreement with Karuah East Quarry Pty Limited).

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# 1 Introduction

## 1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Karuah East Quarry Pty Limited to conduct a quarterly noise survey of operations at Karuah East Quarry (KEQ, the site) located at Blue Rock Close, Karuah NSW. The survey is needed to quantify the acoustic environment and used to compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during morning shoulder, day and evening periods on Tuesday 7 and Wednesday 8 February 2023 at five monitoring locations.

## 1.2 Attended monitoring locations

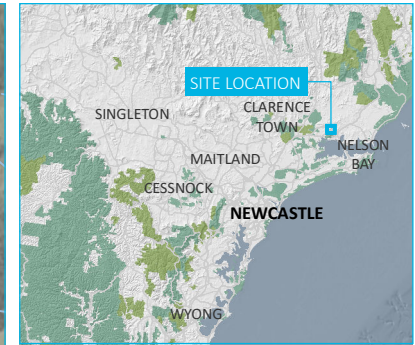
Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

**Table 1.1** Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
A	Private Residence - 74 Mill Hill Close, Karuah	406623	6388704
B	Private Residence - 64 Mill Hill Close, Karuah	406405	6388859
F	Private Residence - 1714 The Branch Lane, Karuah	405639	6389782
G	Private Residence - 2 Halloran Road, North Arm Cove	405629	6389766
H	Private Residence - 21 Halloran Road, North Arm Cove	407795	6389868



\\lemmsvr1\EMM2\2022\E220174 - Karuah East Quarry Noise Monitoring 2022\18 GIS\02 Maps\G001\_SiteLocation\_20220718\_01.mxd 18/07/2022

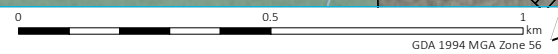


- KEY**
- Site boundary
  - A Attended noise monitoring location
  - Approved disturbance area
  - Major road
  - Minor road
  - Vehicular track
  - Watercourse/drainage line
  - Cadastral boundary
  - Waterbody
  - NPWS reserve
  - State forest

Attended noise monitoring locations

Karuah East Quarry  
Quarterly attended noise monitoring  
Figure 1.1

Source: EMM (2022); ADW Johnson (2020); DFSI (2017); ICSM (2012); GA (2011); ASGC (2006)



### 1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

**Table 1.2 Terminology and abbreviations**

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to approximate how humans hear noise.
L <sub>Amax</sub>	The maximum root mean squared A-weighted noise level over a time period.
L <sub>A1</sub>	The A-weighted noise level which is exceeded for 1 per cent of the time.
LA1,1minute	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
LA10	The A-weighted noise level which is exceeded for 10 percent of the time.
LAeq	The energy average A-weighted noise level.
LA50	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
LA90	The A-weighted noise level exceeded for 90 percent of the time, also referred to as the “background” noise level and commonly used to derive noise limits.
L <sub>Amin</sub>	The minimum A-weighted noise level over a time period.
LCeq	The energy average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

## 2 Noise limits

### 2.1 Project approval

Karuah East Quarry noise limits are detailed in Condition 3 of Project Approval (PA) 09\_0175. Relevant sections of PA 09\_0175 are reproduced in Appendix B.1.

### 2.2 Environment protection licence

Karuah East Quarry noise limits are detailed in Condition L4.1 of Environment Protection Licence (EPL) 20611. Relevant sections of EPL 20611 are reproduced in Appendix B.2.

### 2.3 Noise management plan

The approved Noise Management Plan (NMP) adopts five attended noise monitoring locations that are representative of residences outlined in PA 09\_0175 and EPL 20611. Relevant sections of the NMP are reproduced in Appendix B.3.

### 2.4 Noise limits

Noise impact limits based on PA 09\_0175 and EPL 20611 are as shown in Table 2.1.

**Table 2.1** Noise impact limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Morning Shoulder $L_{Aeq,15minute}$	Morning Shoulder $L_{A1,1minute}$
A	42	40	35	52
B	40	40	35	52
F	40	35	35	52
G	43	39	35	52
H	44	46	35	52

Notes: 1. Morning shoulder period is from 5:00 am to 7:00 am.

### 2.5 Meteorological conditions

PA 09\_0175 specifies that noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Noise Policy for Industry. Similarly, the requirements of Condition L4.3 of EPL 20611 state that noise limits do not apply under the following meteorological conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;
- stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

## 2.6 Additional requirements

Monitoring and reporting have been done in accordance with the NSW EPA 'Noise Policy for Industry' (NPfi) issued in October 2017 and the 'Approved methods for the measurement and analysis of environmental noise in NSW' (Approved Methods) issued in January 2022.

## 3 Methodology

### 3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant EPA requirements.

Meteorological data was obtained from the KEQ on-site meteorological station which allowed correlation of atmospheric parameters with measured noise levels.

### 3.2 Attended noise monitoring

During this survey, attended noise monitoring was conducted during the morning shoulder, day and evening periods at each location. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site's contribution (if any) to measured levels. At each monitoring location, the site-only  $L_{Aeq,15minute}$  and  $L_{Amax}$  were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

If the exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range, but site noise was determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. This is expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means site noise was audible but could not be quantified. All results noted as NM in this report were due to one or more of the following:

- Site noise levels were extremely low and unlikely, in many cases, to be noticed.
- Site noise levels were masked by other more dominant noise sources that are characteristic of the environment, such as breeze in foliage or continuous road traffic noise, that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as to move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

For this assessment, the measured  $L_{Amax}$  has been used as a conservative estimate of  $L_{A1,1minute}$ . The EPA accepts sleep disturbance analysis based on either the  $L_{A1,1minute}$  or  $L_{Amax}$  metrics, with the  $L_{Amax}$  representing a more conservative assessment of site noise emissions.

### 3.3 Meteorological data

Meteorological data for the monitoring period was sourced from the Karuah East Quarry on-site meteorological station to determine applicability of criteria in accordance with the EPL and PA.

### 3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable. If applicable, modifying factor penalties have been reported and added to measured site-only  $L_{Aeq}$  noise levels.

Low-frequency modifying factor penalties have only been applied to site-only  $L_{Aeq}$  levels if the site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

### 3.5 Instrumentation

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

**Table 3.1** Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	2759405	2/2/2024	IEC 61672-1:2002
Svantek SV-36 calibrator	79952	26/9/2023	IEC 60942

## 4 Results

### 4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

**Table 4.1** Total measured noise levels – Q1 2023<sup>1</sup>

Location	Start date and time	L <sub>Amax</sub> dB	L <sub>A1</sub> dB	L <sub>A10</sub> dB	L <sub>Aeq</sub> dB	L <sub>A50</sub> dB	L <sub>A90</sub> dB	L <sub>Amin</sub> dB
A	7/02/2023 5:00	80	76	69	65	58	50	44
B	7/02/2023 5:16	73	70	65	61	59	50	44
F	7/02/2023 5:34	81	61	46	54	43	41	38
G	7/02/2023 5:58	77	60	48	52	46	44	42
H	7/02/2023 6:15	67	52	46	45	43	42	39
A	7/02/2023 7:00	77	75	70	66	63	54	47
B	7/02/2023 7:16	73	71	66	63	62	58	49
F	7/02/2023 7:34	80	61	51	54	47	44	40
G	7/02/2023 8:18	64	48	40	40	36	34	32
H	7/02/2023 8:35	66	48	40	39	34	33	31
A	8/02/2023 18:01	78	74	69	66	63	56	47
B	8/02/2023 18:17	77	71	67	63	61	55	49
F	8/02/2023 18:35	69	56	47	47	44	41	38
G	8/02/2023 18:59	63	50	45	43	42	41	38
H	8/02/2023 19:16	63	48	44	42	42	40	38

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric condition data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 metres above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

**Table 4.2 Measured atmospheric conditions – Q1 2023**

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° Magnetic north <sup>1</sup>	Cloud cover 1/8s
A	7/02/2023 5:00	19.7	0.3	85	0
B	7/02/2023 5:16	20.1	0.6	85	0
F	7/02/2023 5:34	20.6	0.4	90	0
G	7/02/2023 5:58	20.5	0.3	85	1
H	7/02/2023 6:15	20.6	0.3	85	1
A	7/02/2023 7:00	22.0	0.6	90	1
B	7/02/2023 7:16	22.2	0.5	85	1
F	7/02/2023 7:34	22.9	0.7	90	0
G	7/02/2023 8:18	23.5	0.7	85	0
H	7/02/2023 8:35	23.8	0.8	90	0
A	8/02/2023 18:01	26.5	1.9	90	0
B	8/02/2023 18:17	25.9	1.5	85	0
F	8/02/2023 18:35	25.3	1.7	90	0
G	8/02/2023 18:59	24.9	1.6	90	0
H	8/02/2023 19:16	23.9	1.5	85	0

Notes: 1. “-” indicates calm conditions at monitoring location.

## 4.2 Site only noise levels

### 4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.



## 4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data obtained from the site's AWS. Limits are applicable if weather conditions were within specified parameters during each measurement.

**Table 4.3 Site noise levels and limits – Q1 2023**

Location	Start Date and Time (Period)	Wind		Stability Class	Limits apply? <sup>1</sup>	Limit, dB		Site level, dB <sup>2</sup>		Exceedance, dB	
		Speed m/s	Direction <sup>4</sup>			L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>
A	7/02/2023 5:00 (MS)	1.1	101	F	Y	35	52	IA	IA	No	No
B	7/02/2023 5:16 (MS)	1.0	127	F	Y	35	52	IA	IA	No	No
F	7/02/2023 5:34 (MS)	1.2	97	F	Y	35	52	IA	IA	No	No
G	7/02/2023 5:58 (MS)	0.9	123	F	Y	35	52	IA	IA	No	No
H	7/02/2023 6:15 (MS)	0.8	111	F	Y	35	52	IA	IA	No	No
A	7/02/2023 7:00 (D)	0.7	145	A	Y	42	N/A	IA	N/A	No	N/A
B	7/02/2023 7:16 (D)	0.6	133	A	Y	40	N/A	IA	N/A	No	N/A
F	7/02/2023 7:34 (D)	0.4	101	A	Y	40	N/A	IA	N/A	No	N/A
G	7/02/2023 8:18 (D)	1.1	118	A	Y	43	N/A	<30	N/A	No	N/A
H	7/02/2023 8:35 (D)	1.3	114	A	Y	44	N/A	<30	N/A	No	N/A

**Table 4.3 Site noise levels and limits – Q1 2023**

Location	Start Date and Time (Period)	Wind		Stability Class	Limits apply? <sup>1</sup>	Limit, dB		Site level, dB <sup>2</sup>		Exceedance, dB	
		Speed m/s	Direction <sup>4</sup>			L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>
A	8/02/2023 18:01 (E)	3.6	144	D	N	40	N/A	IA	N/A	No	N/A
B	8/02/2023 18:17 (E)	2.9	141	E	Y	40	N/A	IA	N/A	No	N/A
F	8/02/2023 18:35 (E)	2.9	135	E	Y	35	N/A	IA	N/A	No	N/A
G	8/02/2023 18:59 (E)	1.8	135	F	Y	39	N/A	IA	N/A	No	N/A
H	8/02/2023 19:16 (E)	1.8	154	F	Y	46	N/A	IA	N/A	No	N/A

- Notes:
1. Noise emission limits do not apply during periods of rainfall or winds greater than 3 metres per second (at a height of 10 metres).
  2. Site-only L<sub>Aeq,15minute</sub> includes modifying factor penalties if applicable.
  3. NA in exceedance column means criterion was not applicable due to atmospheric conditions outside those specified in project approval.
  4. Degrees magnetic north, “-” indicates calm conditions.
  5. MS = Morning Shoulder period; D = Day period; E = Evening period.

## 5 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Karuah East Quarry Pty Limited to conduct a quarterly noise survey of operations at the site. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified PA and EPL noise limits.

Attended environmental noise monitoring described in this report was done during the morning shoulder, day and evening periods on Tuesday 7 and Wednesday 8 February 2023 at five monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the Q1 2023 survey.

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# Appendix A

## Noise perception and examples

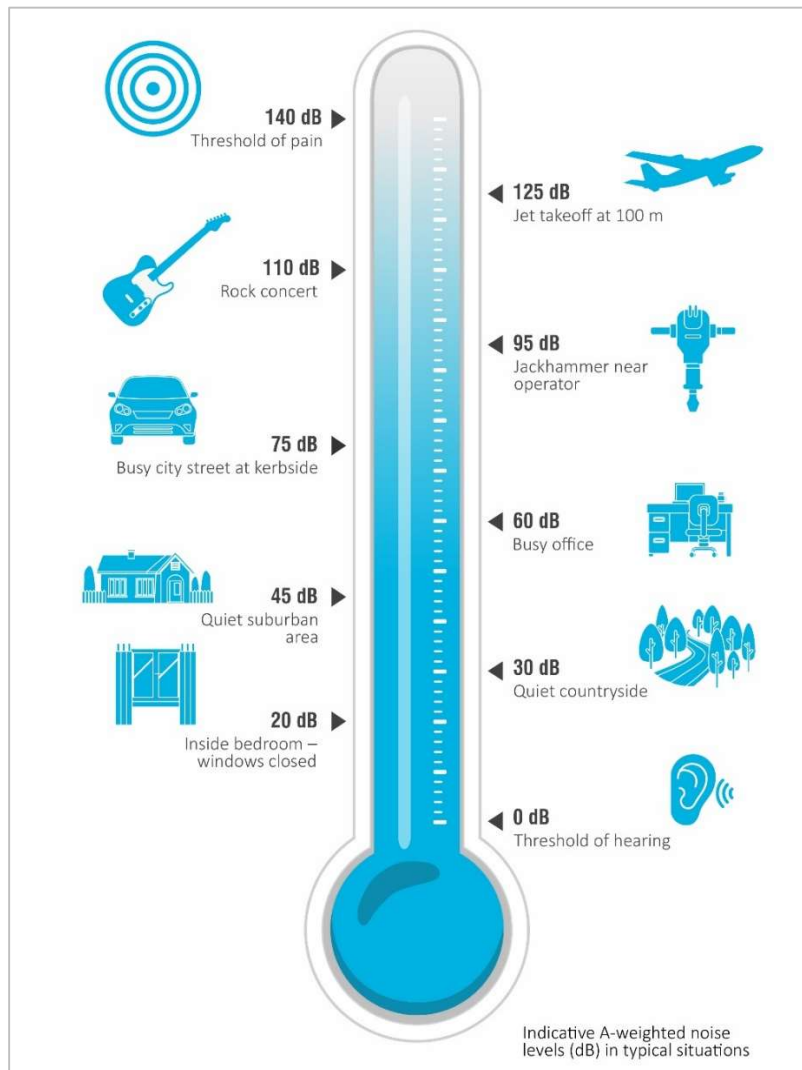
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## A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

**Table A.1** Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud



**Figure A.1** Common noise levels

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# Appendix B

## Regulator documents

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## B.1 Project approval

**SCHEDULE 3  
ENVIRONMENTAL PERFORMANCE CONDITIONS**

**IDENTIFICATION OF APPROVED LIMITS OF EXTRACTION**

1. The Applicant shall, prior to carrying out quarrying operations on the site:
  - (a) engage a registered surveyor to mark out the boundaries of the approved limits of extraction within the Extraction Area; and
  - (b) submit a survey plan of the extraction boundaries, to the satisfaction of the Planning Secretary.
2. The Applicant must ensure that the extraction boundaries are clearly marked at all times while quarrying operations are being carried out, in a manner that allows the limits of extraction to be clearly identified.

**NOISE**

**Operational Noise Criteria**

3. Except for the carrying out of construction works, the Applicant must ensure that the operational noise generated by the development does not exceed the criteria in Table 2 at any residence<sup>a</sup> on privately-owned land.

*Table 2: Operational noise criteria dB*

<b>Noise Assessment Location<sup>a</sup></b>	<b>Morning Shoulder <i>L<sub>Aeq</sub> (15 min)</i></b>	<b>Morning Shoulder <i>L<sub>Amax</sub></i></b>	<b>Day <i>L<sub>Aeq</sub> (15 min)</i></b>	<b>Evening <i>L<sub>Aeq</sub> (15 min)</i></b>
A	35	52	42	40
B	35	52	40	40
G	35	52	43	39
H	35	52	44	46
I	35	52	40	37
All other residences	35	52	40	35

<sup>a</sup> Noise Assessment Locations referred to in Table 2 are shown in Appendix 2.

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and modifications (including certain meteorological conditions) of the NPfI.

- 3A. The noise criteria in Table 2 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

**Road Traffic Noise Criteria**

4. The Applicant must take all reasonable and feasible measures to ensure that the traffic noise generated by the development does not cause additional exceedances of the criteria in Table 3 at any residence on privately-owned land.



Table 3: Road traffic noise criteria

<b>Road</b>	<b>Criteria (Day<sup>a</sup>)</b>
Pacific Highway	60 dB(A) L <sub>Aeq</sub> (15 hour)
Local roads	55 dB(A) L <sub>Aeq</sub> (1 hour)

<sup>a</sup> Day is the period from 7 am to 10 pm every day in accordance with the EPA's NSW Road Noise Policy (2011).

5. Deleted

### Noise Operating Conditions

6. The Applicant must:
- take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;
  - implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;
  - operate a comprehensive noise management system commensurate with the risk of impact;
  - take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfl);
  - carry out quarterly attended noise monitoring (unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent; and
  - regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent.

### Noise Management Plan

7. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
- be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
  - be prepared in consultation with the EPA;
  - describe the measures to be implemented to ensure:
    - compliance with the noise criteria and operating conditions in this consent;
    - best practice management is being employed;
    - noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfl);
  - describe the noise management system in detail; and
  - include a monitoring program that:
    - is capable of evaluating the performance of the development;
    - monitors noise at the nearest and/or most affected residences;
    - adequately supports the noise management system;
    - includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
    - includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

7A. The Applicant must implement the plan as approved by the Planning Secretary.

### BLASTING

#### Blasting Criteria

8. The Applicant must ensure that blasting on the site does not cause exceedances of the criteria in Table 5.

## B.2 Environmental protection licence

# Environment Protection Licence

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## L3 Waste

L3.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

## L4 Noise limits

L4.1 Noise generated at the premises must not exceed the noise limits in the table below. The locations referred to in the table below are indicated in Table 2: Operational Noise Criteria, and Figure 1 of the document titled Project Approval 09\_0175 Modification 9 (MOD 9) Department of Planning, Industry & Environment - which has been filed on EPA file Doc22/715570-1.

Noise Assessment Location	Morning Shoulder LAeq(15 min)	Morning shoulder LAmax	Day LAeq (15 min)	Evening LAeq (15 min)
A (74 Mill Hill Close, Karuah, Lot 100 DP 1028885)	35	52	42	40
B (64 Mill Hill Close, Karuah, Lot 3 DP785172)	35	52	40	40
G (2 Halloran Road, North Arm Cove Lot 1 DP1032636)	35	52	43	39
H (21 Halloran Road, North Arm Cove Lot 10 DP1032636)	35	52	44	46
I (83 Halloran Road, North Arm Cove Lot 12 DP1032636)	35	52	40	37
All other residences	35	52	40	35

L4.2 Noise limit definitions - For the purpose of the table at L4.1, the following definitions apply:  
 Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays;  
 Morning Shoulder is defined as the period from 5:00am to 7:00am Monday to Saturday;  
 Evening is defined as the period from 6:00pm to 10:00pm Monday to Saturday.

L4.3 The noise limits set out in this licence apply under all meteorological conditions except for the following:  
 a) Wind speed greater than 3 metres/second at 10 metres above ground level; or  
 b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or

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- c) Stability category G temperature inversion conditions.

## L4.4 Determining Compliance

To determine compliance with the noise limits set out in the table above, the licensee must locate monitoring equipment:

- a) within 30 metres of a dwelling façade (but not closer than 3 metres) where any dwelling on the property is situated more than 30 metres from the property boundary that is closest to the premises;
- b) approximately on the boundary where any dwelling is situated 30 metres or less from the property boundary that is closest to the premises;
- c) at the most affected point at a location where there is no dwelling at the location; and
- d) within approximately 50 metres of the boundary of a national park or nature reserve.

Note: A non-compliance of the Noise Limits table will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- i) at a location other than an area prescribed in part (a) and part (b); and/or
- ii) at a point other than the most affected point at a location.

- L4.5 For the purposes of determining the noise generated at the premises the modification factors in Fact Sheet C of the EPA's "Noise Policy for Industry" must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

## L5 Blasting

- L5.1 Blasting in or on the premises must only be carried out between the hours of 9:00 am and 4:00 pm Monday to Friday. No blasting is permitted on Saturdays, Sundays or public holidays. Blasting outside of the hours specified in this condition can only take place with the written approval of the EPA.
- L5.2 Blasting is not permitted simultaneously with adjacent quarry(s).
- L5.3 The airblast overpressure level from blasting operations in or on the premises must not exceed:
  - a) 115 dB (Lin Peak) for more than 5% of the total number of blasts during each reporting period; and
  - b) 120 dB (Lin Peak) at any time,
 at monitoring point 11 detailed in Condition P1.4.
- L5.4 The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed:
  - a) 5 mm/second for more than 5% of the total number of blasts during each reporting period; and
  - b) 10 mm/second at any time,
 at monitoring point 11 detailed in Condition P1.4.
- L5.5 Error margins associated with any monitoring equipment used to measure airblast overpressure or peak particle velocity are not to be taken into account in determining whether or not the limit has been exceeded.
- L5.6 The airblast overpressure and ground vibration levels in the conditions above do not apply at noise sensitive locations that are owned by the licensee or subject to a private agreement, relating to airblast overpressure and ground vibration levels, between the licensee and land owner.

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- a) the date and time of the complaint;
- b) the method by which the complaint was made;
- c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- d) the nature of the complaint;
- e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
- f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

## M6 Telephone complaints line

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M6.3 The preceding two conditions do not apply until 1 month after the date of the issue of this licence.

## M7 Blasting

M7.1 To determine compliance with Blast Limit conditions of this licence:

- a) Airblast overpressure and ground vibration levels must be measured and electronically recorded for monitoring point 11 for the parameters specified in Column 1 of the table below; and
- b) The licensee must use the units of measure, sampling method, and sample at the frequency specified opposite in the other columns.

Parameter	Units of Measure	Frequency	Sampling Method
Airblast Overpressure	Decibels (Linear Peak)	All blasts	Australian Standard AS 2187.2-2006
Ground Vibration Peak Particle Velocity	millimetres/second	All blasts	Australian Standard AS 2187.2-2006

## M8 Noise monitoring

M8.1 To assess compliance with the noise limits for this premises attended noise monitoring must be undertaken in accordance with all noise conditions and:

- a) during a period of normal quarry operations;
- b) at each one of the locations listed in the noise limits table of this licence;

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- c) occur quarterly in the reporting period;
- d) occur during each day period as defined in the NSW Noise Policy for Industry.

Note: Quarterly attended noise monitoring must be completed (unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent. The frequency of noise monitoring will be reviewed, upon request.

## 6 Reporting Conditions

### R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:

- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
- b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:

- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
- b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered

## B.3 Noise management plan

# 5 Noise limits

## 5.1 Operational noise

Condition 3 of Schedule 3 of PA 09\_0175 provides the operational noise limits for KEQ. These are reproduced in Table 5.1.

**Table 5.1 Operational noise criteria (dB) from Table 2 of PA 09\_0175**

Noise Assessment Location <sup>1</sup>	Morning Shoulder L <sub>Aeq</sub> (15 minute)	Morning Shoulder L <sub>Amax</sub>	Day L <sub>Aeq</sub> (15 minute)	Evening L <sub>Aeq</sub> (15 minute)
A	35	52	42	40
B	35	52	40	40
G	35	52	43	39
H	35	52	44	46
I	35	52	40	37
All other residences	35	52	40	35

Noise assessment locations are shown in Figure 3.1.

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NPfl (EPA 2017).

The noise limits provided in Table 5.1 apply under standard and noise-enhancing meteorological conditions (as defined in the NPfl) determined by monitoring at the relevant weather station. In accordance with Condition L4.3 of EPL 20611 and consistent with Condition 3 of Schedule 3 of PA 09\_0175 the noise limits provided in Table 5.1 apply under all meteorological conditions except for the following:

- wind speeds greater than 3m/s at 10m above ground level;
- stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or
- stability category G temperature inversion conditions.

In accordance with Fact Sheet D of the NPfl, for 'very noise enhancing meteorological conditions' the applicable noise limit is set at 5dB above those provided in Table 5.1.

Noise limits do not apply if Karuah East has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and Karuah East has advised the Department in writing of the terms of this agreement.

## 5.2 Road traffic noise

Condition 4 of Schedule 3 of PA 09\_0175 states that all reasonable and feasible measures must be taken to ensure that the traffic generated by KEQ does not cause additional exceedances of the criteria provided in Table 5.2 at any residence on privately-owned land.



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# Appendix C

## Calibration certificates

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# CERTIFICATE OF CALIBRATION

CERTIFICATE No: **C33872**

EQUIPMENT TESTED : Sound Level Calibrator

**Manufacturer:** Svantek  
**Type No:** SV-36      **Serial No:** 79952  
**Owner:** EMM Consulting Pty Ltd  
L3, 175 Scott Street  
Newcastle, NSW 2300

**Tests Performed:** Measured Output Pressure level, Frequency & Distortion

**Comments:** See Details overleaf. All Test Passed.

Parameter	Pre-Adj	Adj Y/N	Output: (dB re 20 µPa)	Frequency (Hz)	THD&N (%)
Level1:	NA	N	94.09 dB	1000.00 Hz	1.12 %
Level2:	NA	N	114.06 dB	1000.00 Hz	0.71 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

## CONDITION OF TEST:

<b>Ambient Pressure</b>	1004 hPa ±1 hPa	<b>Date of Receipt :</b>	26/09/2022
<b>Temperature</b>	23 °C ±1° C	<b>Date of Calibration :</b>	29/09/2022
<b>Relative Humidity</b>	55 % ±5%	<b>Date of Issue :</b>	29/09/2022

**Acu-Vib Test Procedure:** AVP02 (Calibrators)  
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....

*Hein Soe*

Accredited for compliance with ISO/IEC 17025 - Calibration  
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

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Unit 14, 22 Hudson Ave. Castle Hill NSW 2154  
(02) 9680 8133  
www.acu-vib.com.au

# CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM31670

EQUIPMENT TESTED: Sound Level Meter

**Manufacturer:** B & K  
**Type No:** 2250  
**Mic. Type:** 4189  
**Pre-Amp. Type:** ZC0032

**Serial No:** 2759405  
**Serial No:** 2983733  
**Serial No:** 22666

**Filter Type:** 1/3 Octave  
**Test No:** F031671

**Owner:** EMM Consulting  
Level 3, 175 Scott Street  
Newcastle, NSW 2300

**Tests Performed:** IEC 61672-3:2013 & IEC 61260-3:2016

**Comments:** All Test passed for Class 1. (See overleaf for details)

**CONDITIONS OF TEST:**

<b>Ambient Pressure</b>	992 hPa ±1 hPa	<b>Date of Receipt :</b>	02/02/2022
<b>Temperature</b>	26 °C ±1° C	<b>Date of Calibration :</b>	02/02/2022
<b>Relative Humidity</b>	48 % ±5%	<b>Date of Issue :</b>	03/02/2022

**Acu-Vib Test Procedure:** AVP10 (SLM) & AVP06 (Filters)

**CHECKED BY:** .....

**AUTHORISED SIGNATURE:** .....

*Jack Kidd*

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(02) 9680 8133  
www.acu-vib.com.au

## **Australia**

### **SYDNEY**

Ground floor 20 Chandos Street  
St Leonards NSW 2065  
T 02 9493 9500

### **NEWCASTLE**

Level 3 175 Scott Street  
Newcastle NSW 2300  
T 02 4907 4800

### **BRISBANE**

Level 1 87 Wickham Terrace  
Spring Hill QLD 4000  
T 07 3648 1200

### **CANBERRA**

Suite 2.04 Level 2  
15 London Circuit  
Canberra City ACT 2601

### **ADELAIDE**

Level 4 74 Pirie Street  
Adelaide SA 5000  
T 08 8232 2253

### **MELBOURNE**

Suite 8.03 Level 8  
454 Collins Street  
Melbourne VIC 3000  
T 03 9993 1900

### **PERTH**

Suite 9.02 Level 9  
109 St Georges Terrace  
Perth WA 6000  
T 08 6430 4800

## **Canada**

### **TORONTO**

2345 Yonge Street Suite 300  
Toronto ON M4P 2E5  
T 647 467 1605

### **VANCOUVER**

60 W 6th Ave  
Vancouver BC V5Y 1K1  
T 604 999 8297



# **Karuah East Quarry**

## **Quarterly Attended Noise Monitoring - Q2 2023**

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Prepared for Karuah East Quarry Pty Limited

May 2023

# Karuah East Quarry

## Quarterly Attended Noise Monitoring - Q2 2023

Karuah East Quarry Pty Limited

E230083 RP2

May 2023

Version	Date	Prepared by	Reviewed by	Comments
1	2 May 2023	Lucas Adamson	Najah Ishac	Draft
2	3 May 2023	Lucas Adamson	Najah Ishac	Final

Approved by



**Najah Ishac**

Director

3 May 2023

Level 3 175 Scott Street

Newcastle NSW 2300

This report has been prepared in accordance with the brief provided by Karuah East Quarry Pty Limited and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. The contents of this report are private and confidential. This report is only for Karuah East Quarry Pty Limited's use in accordance with its agreement with EMM and is not to be relied on by or made available to any other party without EMM's prior written consent. Except as permitted by the *Copyright Act 1968* (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Karuah East Quarry Pty Limited (and subject to the terms of EMM's agreement with Karuah East Quarry Pty Limited).

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# 1 Introduction

## 1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Karuah East Quarry Pty Limited to conduct a quarterly noise survey of operations at Karuah East Quarry (KEQ, the site) located at Blue Rock Close, Karuah NSW. The survey is needed to quantify the acoustic environment and used to compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during morning shoulder, day and evening periods on Wednesday 19 and Monday 24 April 2023 at five monitoring locations.

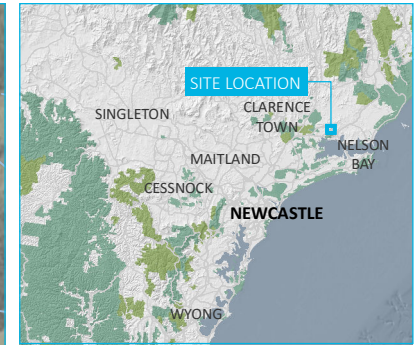
## 1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

**Table 1.1** Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
A	Private Residence - 74 Mill Hill Close, Karuah	406623	6388704
B	Private Residence - 64 Mill Hill Close, Karuah	406405	6388859
F	Private Residence - 1714 The Branch Lane, Karuah	405639	6389782
G	Private Residence - 2 Halloran Road, North Arm Cove	405629	6389766
H	Private Residence - 21 Halloran Road, North Arm Cove	407795	6389868

\\lemmsvr1\EMM2\2022\E220174 - Karuah East Quarry Noise Monitoring 2022\18 GIS\02 Maps\G001\_SiteLocation\_20220718\_01.mxd 18/07/2022

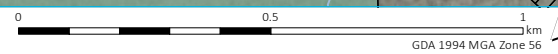


- KEY**
- Site boundary
  - A Attended noise monitoring location
  - Approved disturbance area
  - Major road
  - Minor road
  - Vehicular track
  - Watercourse/drainage line
  - Cadastral boundary
  - Waterbody
  - NPWS reserve
  - State forest

Attended noise monitoring locations

Karuah East Quarry  
Quarterly attended noise monitoring  
Figure 1.1

Source: EMM (2022); ADW Johnson (2020); DFSI (2017); ICSM (2012); GA (2011); ASGC (2006)



### 1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

**Table 1.2 Terminology and abbreviations**

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to approximate how humans hear noise.
L <sub>Amax</sub>	The maximum root mean squared A-weighted noise level over a time period.
L <sub>A1</sub>	The A-weighted noise level which is exceeded for 1 per cent of the time.
LA1,1minute	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
LA10	The A-weighted noise level which is exceeded for 10 percent of the time.
LAeq	The energy average A-weighted noise level.
LA50	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
LA90	The A-weighted noise level exceeded for 90 percent of the time, also referred to as the “background” noise level and commonly used to derive noise limits.
L <sub>Amin</sub>	The minimum A-weighted noise level over a time period.
LCeq	The energy average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

## 2 Noise limits

### 2.1 Project approval

Karuah East Quarry noise limits are detailed in Condition 3 of Project Approval (PA) 09\_0175. Relevant sections of PA 09\_0175 are reproduced in Appendix B.1.

### 2.2 Environment protection licence

Karuah East Quarry noise limits are detailed in Condition L4.1 of Environment Protection Licence (EPL) 20611. Relevant sections of EPL 20611 are reproduced in Appendix B.2.

### 2.3 Noise management plan

The approved Noise Management Plan (NMP) adopts five attended noise monitoring locations that are representative of residences outlined in PA 09\_0175 and EPL 20611. Relevant sections of the NMP are reproduced in Appendix B.3.

### 2.4 Noise limits

Noise impact limits based on PA 09\_0175 and EPL 20611 are as shown in Table 2.1.

**Table 2.1** Noise impact limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Morning Shoulder $L_{Aeq,15minute}$	Morning Shoulder $L_{A1,1minute}$
A	42	40	35	52
B	40	40	35	52
F	40	35	35	52
G	43	39	35	52
H	44	46	35	52

Notes: 1. Morning shoulder period is from 5:00 am to 7:00 am Monday to Saturday as defined in Condition L4.2 of EPL 20611.

### 2.5 Meteorological conditions

PA 09\_0175 specifies that noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Noise Policy for Industry. Similarly, the requirements of Condition L4.3 of EPL 20611 state that noise limits do not apply under the following meteorological conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;
- stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

## 2.6 Additional requirements

Monitoring and reporting have been done in accordance with the NSW EPA 'Noise Policy for Industry' (NPfi) issued in October 2017 and the 'Approved methods for the measurement and analysis of environmental noise in NSW' (Approved Methods) issued in January 2022.

## 3 Methodology

### 3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant EPA requirements.

Meteorological data was obtained from the KEQ on-site meteorological station which allowed correlation of atmospheric parameters with measured noise levels.

### 3.2 Attended noise monitoring

During this survey, attended noise monitoring was conducted during the morning shoulder, day and evening periods at each location. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site's contribution (if any) to measured levels. At each monitoring location, the site-only  $L_{Aeq,15minute}$  and  $L_{Amax}$  were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

If the exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range, but site noise was determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. This is expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means site noise was audible but could not be quantified. All results noted as NM in this report were due to one or more of the following:

- Site noise levels were extremely low and unlikely, in many cases, to be noticed.
- Site noise levels were masked by other more dominant noise sources that are characteristic of the environment, such as breeze in foliage or continuous road traffic noise, that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as to move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

For this assessment, the measured  $L_{Amax}$  has been used as a conservative estimate of  $L_{A1,1minute}$ . The EPA accepts sleep disturbance analysis based on either the  $L_{A1,1minute}$  or  $L_{Amax}$  metrics, with the  $L_{Amax}$  representing a more conservative assessment of site noise emissions.

### 3.3 Meteorological data

Meteorological data for the monitoring period was sourced from the Karuah East Quarry on-site meteorological station to determine applicability of criteria in accordance with the EPL and PA.

### 3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable. If applicable, modifying factor penalties have been reported and added to measured site only  $L_{Aeq}$  noise levels.

Low-frequency modifying factor penalties have only been applied to site-only  $L_{Aeq}$  levels if the site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

### 3.5 Instrumentation

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

**Table 3.1** Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	3029363	3/11/2024	IEC 61672-1:2002
Svantek SV-36 calibrator	86311	17/10/2024	IEC 60942

## 4 Results

### 4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

**Table 4.1** Total measured noise levels – Q2 2023<sup>1</sup>

Location	Start date and time	L <sub>Amax</sub> dB	L <sub>A1</sub> dB	L <sub>A10</sub> dB	L <sub>Aeq</sub> dB	L <sub>A50</sub> dB	L <sub>A90</sub> dB	L <sub>Amin</sub> dB
H	19/04/2023 15:35	65	49	45	43	42	40	38
G	19/04/2023 15:54	73	56	45	48	42	40	38
F	19/04/2023 16:20	83	69	48	57	45	43	40
B	19/04/2023 16:54	79	74	69	66	64	59	53
A	19/04/2023 17:15	67	61	57	54	53	50	47
H	19/04/2023 18:00	51	45	42	41	40	39	36
G	19/04/2023 18:17	59	46	42	40	39	38	36
F	19/04/2023 18:42	77	53	48	50	45	42	38
B	19/04/2023 19:02	83	75	70	66	62	54	46
A	19/04/2023 19:19	78	75	70	66	61	54	48
H	24/04/2023 5:06	51	48	45	42	40	36	30
G	24/04/2023 5:24	54	50	46	43	42	38	34
F	24/04/2023 6:06	77	61	54	54	49	45	41
B	24/04/2023 6:25	80	74	68	65	61	56	50
A	24/04/2023 6:43	65	54	52	50	50	47	44

Notes: 1. Levels in this table are not necessarily the result of activity at site.



Atmospheric condition data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 metres above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

**Table 4.2 Measured atmospheric conditions – Q2 2023**

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° Magnetic north <sup>1</sup>	Cloud cover 1/8s
H	19/04/2023 15:35	22.7	1.9	60	1
G	19/04/2023 15:54	22.5	1.8	60	1
F	19/04/2023 16:20	22.1	<0.5	-	0
B	19/04/2023 16:54	21.4	0.7	70	0
A	19/04/2023 17:15	20.1	<0.5	-	0
H	19/04/2023 18:00	18.2	<0.5	-	0
G	19/04/2023 18:17	17.8	<0.5	-	0
F	19/04/2023 18:42	17.1	<0.5	-	0
B	19/04/2023 19:02	16.3	<0.5	-	0
A	19/04/2023 19:19	16.0	<0.5	-	0
H	24/04/2023 5:06	15.9	<0.5	-	1
G	24/04/2023 5:24	16.2	<0.5	-	1
F	24/04/2023 6:06	17.6	<0.5	-	1
B	24/04/2023 6:25	17.3	<0.5	-	1
A	24/04/2023 6:43	17.8	<0.5	-	1

Notes: 1. "-" indicates calm conditions at monitoring location.

## 4.2 Site only noise levels

### 4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfl, applicable during the survey.

## 4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data obtained from the site's AWS. Limits are applicable if weather conditions were within specified parameters during each measurement.

**Table 4.3 Site noise levels and limits – Q2 2023**

Location	Start Date and Time (Period)	Wind		Stability Class	Limits apply? <sup>1</sup>	Limit, dB		Site level, dB <sup>2</sup>		Exceedance, dB	
		Speed m/s	Direction <sup>4</sup>			L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>
H	19/04/2023 15:35 (D)	2.4	136	A	Y	44	N/A	IA	N/A	No	N/A
G	19/04/2023 15:54 (D)	2.0	128	A	Y	43	N/A	IA	N/A	No	N/A
F	19/04/2023 16:20 (D)	1.7	131	A	Y	40	N/A	IA	N/A	No	N/A
B	19/04/2023 16:54 (D)	0.9	137	A	Y	40	N/A	IA	N/A	No	N/A
A	19/04/2023 17:15 (D)	1.2	128	A	Y	42	N/A	IA	N/A	No	N/A
H	19/04/2023 18:00 (E)	0.7	130	F	Y	46	N/A	IA	N/A	No	N/A
G	19/04/2023 18:17 (E)	0.8	136	F	Y	39	N/A	IA	N/A	No	N/A
F	19/04/2023 18:42 (E)	0.9	135	F	Y	35	N/A	IA	N/A	No	N/A
B	19/04/2023 19:02 (E)	0.9	141	F	Y	40	N/A	IA	N/A	No	N/A
A	19/04/2023 19:19 (E)	1.0	141	E	Y	40	N/A	IA	N/A	No	N/A

**Table 4.3 Site noise levels and limits – Q2 2023**

Location	Start Date and Time (Period)	Wind		Stability Class	Limits apply? <sup>1</sup>	Limit, dB		Site level, dB <sup>2</sup>		Exceedance, dB	
		Speed m/s	Direction <sup>4</sup>			L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>
H	24/04/2023 5:06 (MS)	0.4	333	F	Y	35	52	IA	IA	No	No
G	24/04/2023 5:24 (MS)	0.4	322	F	Y	35	52	IA	IA	No	No
F	24/04/2023 6:06 (MS)	0.1	336	F	Y	35	52	IA	IA	No	No
B	24/04/2023 6:25 (MS)	0.3	321	F	Y	35	52	IA	IA	No	No
A	24/04/2023 6:43 (MS)	0.1	331	F	Y	35	52	IA	IA	No	No

- Notes:
1. Noise emission limits do not apply during periods of rainfall or winds greater than 3 metres per second (at a height of 10 metres).
  2. Site-only L<sub>Aeq,15minute</sub> includes modifying factor penalties if applicable.
  3. NA in exceedance column means criterion was not applicable due to atmospheric conditions outside those specified in project approval.
  4. Degrees magnetic north, “-” indicates calm conditions.
  5. MS = Morning Shoulder period; D = Day period; E = Evening period.

## 5 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Karuah East Quarry Pty Limited to conduct a quarterly noise survey of operations at the site. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified PA and EPL noise limits.

Attended environmental noise monitoring described in this report was done during the morning shoulder, day and evening periods on Wednesday 19 and Monday 24 April 2023 at five monitoring locations.

Karuah East Quarry was confirmed inaudible at all locations during the day, evening and morning shoulder periods. Typically, when this type of noise source is not audible above ambient (not withstanding insect noise and other sources of varied character), the likely level of that source is at least 10 dB below the measured background ( $L_{A90}$ ) level. However, given the locality of locations A and B (directly adjacent to the Pacific Highway), the  $L_{A90}$  is controlled by road traffic noise. Karuah East Quarry was also confirmed to be inaudible during lulls in road traffic noise which, for the measurements at A and B, would correlate with the  $L_{Amin}$  measured during the surveys. Given this, the measured background noise levels and measured  $L_{Amin}$  (for locations A and B), Karuah East Quarry was estimated to be below the relevant noise limits. The Karuah East Quarry  $L_{Amax}$  was also deemed to satisfy the relevant limits given site was inaudible at all locations during the morning shoulder period.

Noise levels from site complied with relevant limits at all monitoring locations during the Q2 2023 survey.

---

# Appendix A

## Noise perception and examples

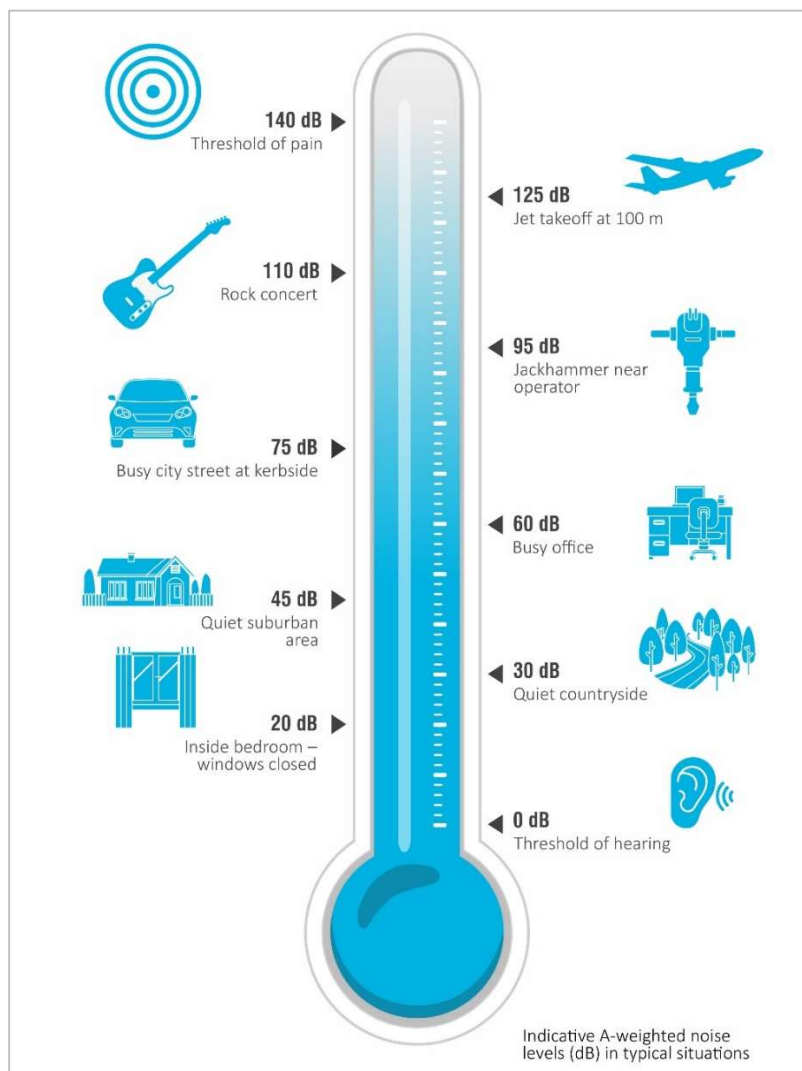
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## A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

**Table A.1** Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud



**Figure A.1** Common noise levels

---

# Appendix B

## Regulator documents

---

## B.1 Project approval



**SCHEDULE 3  
ENVIRONMENTAL PERFORMANCE CONDITIONS**

**IDENTIFICATION OF APPROVED LIMITS OF EXTRACTION**

1. The Applicant shall, prior to carrying out quarrying operations on the site:
  - (a) engage a registered surveyor to mark out the boundaries of the approved limits of extraction within the Extraction Area; and
  - (b) submit a survey plan of the extraction boundaries, to the satisfaction of the Planning Secretary.
2. The Applicant must ensure that the extraction boundaries are clearly marked at all times while quarrying operations are being carried out, in a manner that allows the limits of extraction to be clearly identified.

**NOISE**

**Operational Noise Criteria**

3. Except for the carrying out of construction works, the Applicant must ensure that the operational noise generated by the development does not exceed the criteria in Table 2 at any residence<sup>a</sup> on privately-owned land.

*Table 2: Operational noise criteria dB*

<b>Noise Assessment Location<sup>a</sup></b>	<b>Morning Shoulder <i>L<sub>Aeq</sub> (15 min)</i></b>	<b>Morning Shoulder <i>L<sub>Amax</sub></i></b>	<b>Day <i>L<sub>Aeq</sub> (15 min)</i></b>	<b>Evening <i>L<sub>Aeq</sub> (15 min)</i></b>
A	35	52	42	40
B	35	52	40	40
G	35	52	43	39
H	35	52	44	46
I	35	52	40	37
All other residences	35	52	40	35

<sup>a</sup> Noise Assessment Locations referred to in Table 2 are shown in Appendix 2.

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and modifications (including certain meteorological conditions) of the NPfI.

- 3A. The noise criteria in Table 2 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

**Road Traffic Noise Criteria**

4. The Applicant must take all reasonable and feasible measures to ensure that the traffic noise generated by the development does not cause additional exceedances of the criteria in Table 3 at any residence on privately-owned land.

Table 3: Road traffic noise criteria

<b>Road</b>	<b>Criteria (Day<sup>a</sup>)</b>
Pacific Highway	60 dB(A) L <sub>Aeq</sub> (15 hour)
Local roads	55 dB(A) L <sub>Aeq</sub> (1 hour)

<sup>a</sup> Day is the period from 7 am to 10 pm every day in accordance with the EPA's NSW Road Noise Policy (2011).

5. Deleted

### Noise Operating Conditions

6. The Applicant must:
- take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;
  - implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;
  - operate a comprehensive noise management system commensurate with the risk of impact;
  - take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfl);
  - carry out quarterly attended noise monitoring (unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent; and
  - regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent.

### Noise Management Plan

7. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
- be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
  - be prepared in consultation with the EPA;
  - describe the measures to be implemented to ensure:
    - compliance with the noise criteria and operating conditions in this consent;
    - best practice management is being employed;
    - noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfl);
  - describe the noise management system in detail; and
  - include a monitoring program that:
    - is capable of evaluating the performance of the development;
    - monitors noise at the nearest and/or most affected residences;
    - adequately supports the noise management system;
    - includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
    - includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

7A. The Applicant must implement the plan as approved by the Planning Secretary.

### BLASTING

#### Blasting Criteria

8. The Applicant **must** ensure that blasting on the site does not cause exceedances of the criteria in Table 5.

## B.2 Environmental protection licence

# Environment Protection Licence

Licence - 20611

## L3 Waste

- L3.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

## L4 Noise limits

- L4.1 Noise generated at the premises must not exceed the noise limits in the table below. The locations referred to in the table below are indicated in Table 2: Operational Noise Criteria, and Figure 1 of the document titled Project Approval 09\_0175 Modification 9 (MOD 9) Department of Planning, Industry & Environment - which has been filed on EPA file Doc22/715570-1.

Noise Assessment Location	Morning Shoulder LAeq(15 min)	Morning shoulder LAmax	Day LAeq (15 min)	Evening LAeq (15 min)
A (74 Mill Hill Close, Karuah, Lot 100 DP 1028885)	35	52	42	40
B (64 Mill Hill Close, Karuah, Lot 3 DP785172)	35	52	40	40
G (2 Halloran Road, North Arm Cove Lot 1 DP1032636)	35	52	43	39
H (21 Halloran Road, North Arm Cove Lot 10 DP1032636)	35	52	44	46
I (83 Halloran Road, North Arm Cove Lot 12 DP1032636)	35	52	40	37
All other residences	35	52	40	35

- L4.2 Noise limit definitions - For the purpose of the table at L4.1, the following definitions apply:  
 Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays;  
 Morning Shoulder is defined as the period from 5:00am to 7:00am Monday to Saturday;  
 Evening is defined as the period from 6:00pm to 10:00pm Monday to Saturday.

- L4.3 The noise limits set out in this licence apply under all meteorological conditions except for the following:  
 a) Wind speed greater than 3 metres/second at 10 metres above ground level; or  
 b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or

# Environment Protection Licence

Licence - 20611

- c) Stability category G temperature inversion conditions.

## L4.4 Determining Compliance

To determine compliance with the noise limits set out in the table above, the licensee must locate monitoring equipment:

- a) within 30 metres of a dwelling façade (but not closer than 3 metres) where any dwelling on the property is situated more than 30 metres from the property boundary that is closest to the premises;
- b) approximately on the boundary where any dwelling is situated 30 metres or less from the property boundary that is closest to the premises;
- c) at the most affected point at a location where there is no dwelling at the location; and
- d) within approximately 50 metres of the boundary of a national park or nature reserve.

Note: A non-compliance of the Noise Limits table will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- i) at a location other than an area prescribed in part (a) and part (b); and/or
- ii) at a point other than the most affected point at a location.

- L4.5 For the purposes of determining the noise generated at the premises the modification factors in Fact Sheet C of the EPA's "Noise Policy for Industry" must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

## L5 Blasting

- L5.1 Blasting in or on the premises must only be carried out between the hours of 9:00 am and 4:00 pm Monday to Friday. No blasting is permitted on Saturdays, Sundays or public holidays. Blasting outside of the hours specified in this condition can only take place with the written approval of the EPA.
- L5.2 Blasting is not permitted simultaneously with adjacent quarry(s).
- L5.3 The airblast overpressure level from blasting operations in or on the premises must not exceed:
  - a) 115 dB (Lin Peak) for more than 5% of the total number of blasts during each reporting period; and
  - b) 120 dB (Lin Peak) at any time,
 at monitoring point 11 detailed in Condition P1.4.
- L5.4 The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed:
  - a) 5 mm/second for more than 5% of the total number of blasts during each reporting period; and
  - b) 10 mm/second at any time,
 at monitoring point 11 detailed in Condition P1.4.
- L5.5 Error margins associated with any monitoring equipment used to measure airblast overpressure or peak particle velocity are not to be taken into account in determining whether or not the limit has been exceeded.
- L5.6 The airblast overpressure and ground vibration levels in the conditions above do not apply at noise sensitive locations that are owned by the licensee or subject to a private agreement, relating to airblast overpressure and ground vibration levels, between the licensee and land owner.

# Environment Protection Licence

Licence - 20611

- a) the date and time of the complaint;
- b) the method by which the complaint was made;
- c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- d) the nature of the complaint;
- e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
- f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

## M6 Telephone complaints line

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M6.3 The preceding two conditions do not apply until 1 month after the date of the issue of this licence.

## M7 Blasting

M7.1 To determine compliance with Blast Limit conditions of this licence:

- a) Airblast overpressure and ground vibration levels must be measured and electronically recorded for monitoring point 11 for the parameters specified in Column 1 of the table below; and
- b) The licensee must use the units of measure, sampling method, and sample at the frequency specified opposite in the other columns.

Parameter	Units of Measure	Frequency	Sampling Method
Airblast Overpressure	Decibels (Linear Peak)	All blasts	Australian Standard AS 2187.2-2006
Ground Vibration Peak Particle Velocity	millimetres/second	All blasts	Australian Standard AS 2187.2-2006

## M8 Noise monitoring

M8.1 To assess compliance with the noise limits for this premises attended noise monitoring must be undertaken in accordance with all noise conditions and:

- a) during a period of normal quarry operations;
- b) at each one of the locations listed in the noise limits table of this licence;

# Environment Protection Licence

Licence - 20611

- c) occur quarterly in the reporting period;
- d) occur during each day period as defined in the NSW Noise Policy for Industry.

Note: Quarterly attended noise monitoring must be completed (unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent. The frequency of noise monitoring will be reviewed, upon request.

## 6 Reporting Conditions

### R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:

- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
- b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:

- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
- b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered

## B.3 Noise management plan



# 5 Noise limits

## 5.1 Operational noise

Condition 3 of Schedule 3 of PA 09\_0175 provides the operational noise limits for KEQ. These are reproduced in Table 5.1.

**Table 5.1 Operational noise criteria (dB) from Table 2 of PA 09\_0175**

Noise Assessment Location <sup>1</sup>	Morning Shoulder L <sub>Aeq</sub> (15 minute)	Morning Shoulder L <sub>Amax</sub>	Day L <sub>Aeq</sub> (15 minute)	Evening L <sub>Aeq</sub> (15 minute)
A	35	52	42	40
B	35	52	40	40
G	35	52	43	39
H	35	52	44	46
I	35	52	40	37
All other residences	35	52	40	35

Noise assessment locations are shown in Figure 3.1.

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NPfl (EPA 2017).

The noise limits provided in Table 5.1 apply under standard and noise-enhancing meteorological conditions (as defined in the NPfl) determined by monitoring at the relevant weather station. In accordance with Condition L4.3 of EPL 20611 and consistent with Condition 3 of Schedule 3 of PA 09\_0175 the noise limits provided in Table 5.1 apply under all meteorological conditions except for the following:

- wind speeds greater than 3m/s at 10m above ground level;
- stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or
- stability category G temperature inversion conditions.

In accordance with Fact Sheet D of the NPfl, for 'very noise enhancing meteorological conditions' the applicable noise limit is set at 5dB above those provided in Table 5.1.

Noise limits do not apply if Karuah East has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and Karuah East has advised the Department in writing of the terms of this agreement.

## 5.2 Road traffic noise

Condition 4 of Schedule 3 of PA 09\_0175 states that all reasonable and feasible measures must be taken to ensure that the traffic generated by KEQ does not cause additional exceedances of the criteria provided in Table 5.2 at any residence on privately-owned land.

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# Appendix C

## Calibration certificates

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# CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C34022

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek

Type No: SV-36 Serial No: 86311

Owner: EMM Consulting  
Suite 01, 20 Chandos St  
St Leonards NSW 2065

Tests Performed: Measured Output Pressure level, Frequency & Distortion

Comments: See Details overleaf. All Test Passed.

Parameter	Pre-Adj	Adj Y/N	Output: (dB re 20 µPa)	Frequency (Hz)	THD&N (%)
Level1:	NA	N	94.01 dB	1000.00 Hz	2.00 %
Level2:	NA	N	113.92 dB	1000.00 Hz	0.35 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

## CONDITION OF TEST:

Ambient Pressure 1013 hPa ±1 hPa  
Temperature 22 °C ±1° C  
Relative Humidity 56 % ±5%

Date of Receipt : 17/10/2022  
Date of Calibration : 17/10/2022  
Date of Issue : 17/10/2022

Acu-Vib Test AVP02 (Calibrators)

Procedure: Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED  
SIGNATURE: .....

Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.



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Head Office & Calibration Laboratory  
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154  
(02) 9680 8133  
www.acu-vib.com.au

# CERTIFICATE OF CALIBRATION

CERTIFICATE No: **SLM34169**

**EQUIPMENT TESTED:** Sound Level Meter

**Manufacturer:** B & K

**Type No:** 2250

**Mic. Type:** 4189

**Pre-Amp. Type:** ZC0032

**Serial No:** 3029363

**Serial No:** 3260501

**Serial No:** 30109

**Filter Type:** 1/3 Octave

**Test No:** F034175

**Owner:** EMM Consulting  
Suite 01, 20 Chandos St  
St Leonards NSW 2065

**Tests Performed:** IEC 61672-3:2013 & IEC 61260-3:2016

**Comments:** All Test passed for Class 1. (See overleaf for details)

## CONDITIONS OF TEST:

**Ambient Pressure** 1002 hPa  $\pm 1$  hPa

**Temperature** 24  $^{\circ}\text{C} \pm 1^{\circ}\text{C}$

**Relative Humidity** 35 %  $\pm 5\%$

**Date of Receipt :** 02/11/2022

**Date of Calibration :** 03/11/2022

**Date of Issue :** 04/11/2022

**Acu-Vib Test Procedure:** AVP10 (SLM) & AVP06 (Filters)

**CHECKED BY:** *[Signature]*

**AUTHORISED SIGNATURE:** *[Signature]*

*Jack Kielt*

Accredited for compliance with ISO/IEC 17025 - Calibration  
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

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Head Office & Calibration Laboratory  
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154  
(02) 9680 8133  
www.acu-vib.com.au

## **Australia**

### **SYDNEY**

Ground floor 20 Chandos Street  
St Leonards NSW 2065  
T 02 9493 9500

### **NEWCASTLE**

Level 3 175 Scott Street  
Newcastle NSW 2300  
T 02 4907 4800

### **BRISBANE**

Level 1 87 Wickham Terrace  
Spring Hill QLD 4000  
T 07 3648 1200

### **CANBERRA**

Suite 2.04 Level 2  
15 London Circuit  
Canberra City ACT 2601

### **ADELAIDE**

Level 4 74 Pirie Street  
Adelaide SA 5000  
T 08 8232 2253

### **MELBOURNE**

Suite 8.03 Level 8  
454 Collins Street  
Melbourne VIC 3000  
T 03 9993 1900

### **PERTH**

Suite 9.02 Level 9  
109 St Georges Terrace  
Perth WA 6000  
T 08 6430 4800

## **Canada**

### **TORONTO**

2345 Yonge Street Suite 300  
Toronto ON M4P 2E5  
T 647 467 1605

### **VANCOUVER**

60 W 6th Ave  
Vancouver BC V5Y 1K1  
T 604 999 8297



# **Karuah East Quarry**

## **Quarterly Attended Noise Monitoring - Q3 2023**

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Prepared for Karuah East Quarry Pty Limited

October 2023

# Karuah East Quarry

## Quarterly Attended Noise Monitoring - Q3 2023

Karuah East Quarry Pty Limited

E230083 RP4

October 2023

Version	Date	Prepared by	Reviewed by	Comments
1	23 August 2023	Lucas Adamson	Tony Welbourne	Draft
2	25 August 2023	Lucas Adamson	Tony Welbourne	Final
3	18 October 2023	Rick Scully	Robert Kirwan	Updated to include reference to EPL Conditions R3(a) and (c)

Approved by



**Robert Kirwan**

Associate Consultant

18 October 2023

Level 3 175 Scott Street

Newcastle NSW 2300

This report has been prepared in accordance with the brief provided by Karuah East Quarry Pty Limited and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. The contents of this report are private and confidential. This report is only for Karuah East Quarry Pty Limited's use in accordance with its agreement with EMM and is not to be relied on by or made available to any other party without EMM's prior written consent. Except as permitted by the *Copyright Act 1968* (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Karuah East Quarry Pty Limited (and subject to the terms of EMM's agreement with Karuah East Quarry Pty Limited).

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# 1 Introduction

## 1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Karuah East Quarry Pty Limited to conduct a quarterly noise survey of operations at Karuah East Quarry (KEQ, the site) located at Blue Rock Close, Karuah NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during morning shoulder, day and evening periods on Thursday 10 and Friday 11 August 2023 at five monitoring locations.

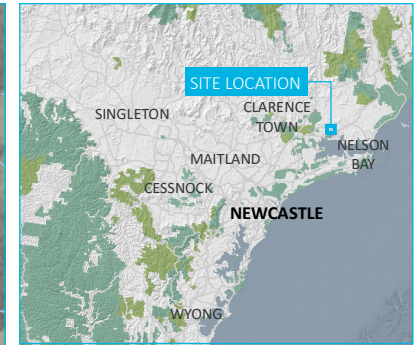
## 1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

**Table 1.1** Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
A	Private residence - 74 Mill Hill Close, Karuah	406623	6388704
B	Private residence - 64 Mill Hill Close, Karuah	406405	6388859
F	Private residence - 1714 The Branch Lane, Karuah	405639	6389782
G	Private residence - 2 Halloran Road, North Arm Cove	405629	6389766
H	Private residence - 21 Halloran Road, North Arm Cove	407795	6389868

\\lemmsvr1\EMM2\2022\E220174 - karuah East Quarry Noise Monitoring 2022\18 GIS\02 Maps\G001\_SiteLocation\_20220718\_01.mxd 18/07/2022

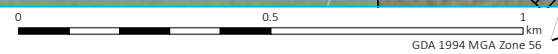


- KEY**
- Site boundary
  - A Attended noise monitoring location
  - Approved disturbance area
  - Major road
  - Minor road
  - Vehicular track
  - Watercourse/drainage line
  - Cadastral boundary
  - Waterbody
  - NPWS reserve
  - State forest

Attended noise monitoring locations

Karuah East Quarry  
Quarterly attended noise monitoring  
Figure 1.1

Source: EMM (2022); ADW Johnson (2020); DFSI (2017); ICSM (2012); GA (2011); ASGC (2006)



### 1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

**Table 1.2 Terminology and abbreviations**

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to approximate how humans hear noise.
$L_{Amax}$	The maximum root mean squared A-weighted noise level over a time period.
$L_{A1}$	The A-weighted noise level which is exceeded for 1 per cent of the time.
$LA_{1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
$LA_{10}$	The A-weighted noise level which is exceeded for 10 per cent of the time.
$LA_{eq}$	The energy average A-weighted noise level.
$LA_{50}$	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
$LA_{90}$	The A-weighted noise level exceeded for 90 per cent of the time, also referred to as the “background” noise level and commonly used to derive noise limits.
$L_{Amin}$	The minimum A-weighted noise level over a time period.
$LC_{eq}$	The energy average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	The vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Morning Shoulder	Monday – Saturday: 5 am to 7 am.

Appendix A provides further information that indicates how an average person perceives changes in noise levels and examples of common noise levels.

## 2 Noise limits

### 2.1 Project approval

Karuah East Quarry noise limits are detailed in Condition 3 of Project Approval (PA) 09\_0175. Relevant sections of PA 09\_0175 are reproduced in Appendix B.1.

### 2.2 Environment protection licence

Karuah East Quarry noise limits are detailed in Condition L4.1 of Environment Protection Licence (EPL) 20611. Relevant sections of EPL 20611 are reproduced in Appendix B.2.

### 2.3 Noise management plan

The approved Noise Management Plan (NMP) adopts five attended noise monitoring locations that are representative of residences outlined in PA 09\_0175 and EPL 20611. Relevant sections of the NMP are reproduced in Appendix B.3.

### 2.4 Noise limits

Noise impact limits based on PA 09\_0175 and EPL 20611 are as shown in Table 2.1.

**Table 2.1** Noise impact limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Morning Shoulder $L_{Aeq,15minute}$	Morning Shoulder $L_{A1,1minute}$
A	42	40	35	52
B	40	40	35	52
F	40	35	35	52
G	43	39	35	52
H	44	46	35	52

Notes: 1. Morning shoulder period is from 5:00 am to 7:00 am Monday to Saturday as defined in Condition L4.2 of EPL 20611.

### 2.5 Meteorological conditions

PA 09\_0175 specifies that noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Similarly, the requirements of Condition L4.3 of EPL 20611 state that noise limits do not apply under the following meteorological conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;
- stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

## 2.6 Additional requirements

Monitoring and reporting have been done in accordance with the NPfl and the NSW EPA 'Approved methods for the measurement and analysis of environmental noise in NSW' (Approved Methods) issued in January 2022.

## 2.7 Very noise-enhancing meteorological conditions

In accordance with the approved methods, noise monitoring for the site is scheduled to occur during forecasted meteorological conditions where noise limits in Table 2.1 will be applicable. However, in cases where actual meteorological conditions do not align with forecasts and noise limits are subsequently not directly applicable, it is the expectation of regulators that noise impact still be managed.

The NPfl states that:

Noise limits derived for consents and licences will apply under the meteorological conditions used in the environmental assessment process, that is, standard or noise-enhancing meteorological conditions. For 'very noise-enhancing meteorological conditions' ... a limit is set based on the limit derived under standard or noise-enhancing conditions (whichever is adopted in the assessment) plus 5 dB. In this way a development is subject to noise limits under all meteorological conditions.

Therefore, if monthly noise monitoring occurs during meteorological conditions outside of those specified in Section 2.5, site limits will be adjusted based on Table 2.1 plus 5 dB.

## 3 Methodology

### 3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant EPA requirements.

Meteorological data was obtained from the KEQ on-site meteorological station which allowed correlation of atmospheric parameters with measured noise levels.

### 3.2 Attended noise monitoring

During this survey, attended noise monitoring was conducted during the morning shoulder, day and evening periods at each location. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of the site's contribution (if any) to measured levels. At each monitoring location, the site-only  $L_{Aeq,15minute}$  and  $L_{Amax}$  were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as IA or NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background ( $L_{A90}$ ), and unlikely to be noticed.
- Site noise levels were masked by more dominant sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods, such as to move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate may be provided. This is expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured  $L_{Amax}$  has been used as a conservative estimate of  $L_{A1,1minute}$ . The EPA accepts sleep disturbance analysis based on either the  $L_{A1,1minute}$  or  $L_{Amax}$  metrics, with the  $L_{Amax}$  representing a more conservative assessment of site noise emissions.

### 3.3 Meteorological data

Meteorological data for the monitoring period was sourced from the Karuah East Quarry on-site meteorological station (the site AWS) to determine the applicability of criteria in accordance with the EPL and PA.

### 3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Assessment of modifying factors is undertaken if the site was audible and directly quantifiable. If applicable, modifying factor penalties have been reported and added to measured site-only  $L_{Aeq}$  noise levels.

Low-frequency modifying factor penalties have only been applied to site-only  $L_{Aeq}$  levels if the site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

### 3.5 Site operations

As required by Condition R4.3(a) of the EPL, the operations occurring at the time of monitoring are summarised per period below:

- Day
  - Routine quarry operations in the quarry pit
  - Routine plant processing operations
  - Routine material transport from the quarry pit to the processing plant and product stockpile areas
  - Routine product loading and dispatch to road trucks
- Evening
  - Routine material transport from the processing plant to product stockpile areas
  - Routine maintenance activities of plant and equipment
- Morning shoulder
  - Routine maintenance activities of plant and equipment
  - Routine product loading and dispatch to road trucks

### 3.6 Instrumentation

The equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

**Table 3.1** Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	2759405	2/2/2024	IEC 61672-1:2002
Svantek SV-36 calibrator	79952	29/9/2024	IEC 60942



## 4 Results

### 4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

**Table 4.1** Total measured noise levels – Q3 2023<sup>1</sup>

Location	Start date and time	L <sub>Amax</sub> dB	L <sub>A1</sub> dB	L <sub>A10</sub> dB	L <sub>Aeq</sub> dB	L <sub>A50</sub> dB	L <sub>A90</sub> dB	L <sub>Amin</sub> dB
A	10/08/2023 16:11	108	85	57	77	54	51	46
B	10/08/2023 16:28	76	74	69	66	65	60	54
F	10/08/2023 16:46	93	65	51	60	48	46	42
G	10/08/2023 17:09	63	50	38	41	35	33	31
H	10/08/2023 17:28	64	47	40	38	33	31	28
H	10/08/2023 18:00	78	49	37	46	34	33	31
G	10/08/2023 18:17	53	47	40	39	37	36	32
F	10/08/2023 18:40	83	59	55	55	52	49	44
B	10/08/2023 18:59	76	74	68	65	63	57	51
A	10/08/2023 19:16	68	61	57	55	53	50	46
A	11/08/2023 5:00	77	75	69	65	59	54	48
B	11/08/2023 5:17	79	75	68	65	60	55	48
F	11/08/2023 5:35	81	64	58	57	54	51	45
G	11/08/2023 5:59	68	58	46	46	43	40	37
H	11/08/2023 6:16	65	60	47	47	43	41	38

Notes: 1. Levels in this table are not necessarily the result of activity at the site.

Atmospheric condition data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 metres above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

**Table 4.2 Measured atmospheric conditions – Q3 2023**

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north <sup>1</sup>	Cloud cover 1/8s
A	10/08/2023 16:11	22.5	<0.5	-	1
B	10/08/2023 16:28	22.8	<0.5	-	1
F	10/08/2023 16:46	21.6	0.9	0	1
G	10/08/2023 17:09	20.1	<0.5	-	2
H	10/08/2023 17:28	19.5	<0.5	-	2
H	10/08/2023 18:00	18.6	<0.5	-	2
G	10/08/2023 18:17	18.1	<0.5	-	2
F	10/08/2023 18:40	17.7	<0.5	-	2
B	10/08/2023 18:59	17.5	<0.5	-	2
A	10/08/2023 19:16	17.1	<0.5	-	2
A	11/08/2023 5:00	12.5	<0.5	-	0
B	11/08/2023 5:17	12.8	<0.5	-	0
F	11/08/2023 5:35	13.2	<0.5	-	0
G	11/08/2023 5:59	13.3	<0.5	-	0
H	11/08/2023 6:16	13.4	<0.5	-	0

Notes: 1. "-" indicates calm conditions at the monitoring location.

## 4.2 Site only noise levels

### 4.2.1 Modifying factors

No modifying factors were applicable during the survey, as defined in the NPfl.

## 4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data obtained from the site AWS. Limits are applicable if weather conditions were within specified parameters during each measurement.

**Table 4.3 Site noise levels and limits – Q3 2023**

Location	Start Date and Time (Period)	Wind		Stability Class	Very enhancing? <sup>1</sup>	Limit, dB		Site level, dB <sup>2</sup>		Exceedance, dB	
		Speed m/s	Direction <sup>4</sup>			L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>
A	10/08/2023 16:11 (D)	1.4	313	A	N	42	N/A	NM	N/A	No	N/A
B	10/08/2023 16:28 (D)	1.2	273	A	N	40	N/A	IA	N/A	No	N/A
F	10/08/2023 16:46 (D)	1.0	223	A	N	40	N/A	IA	N/A	No	N/A
G	10/08/2023 17:09 (D)	0.3	189	A	N	43	N/A	<35	N/A	No	N/A
H	10/08/2023 17:28 (D)	0.4	163	A	N	44	N/A	26	N/A	No	N/A
H	10/08/2023 18:00 (E)	0.5	96	F	N	46	N/A	IA	N/A	No	N/A
G	10/08/2023 18:17 (E)	0.4	124	F	N	39	N/A	IA	N/A	No	N/A
F	10/08/2023 18:40 (E)	0.4	89	F	N	35	N/A	IA	N/A	No	N/A
B	10/08/2023 18:59 (E)	0.3	145	F	N	40	N/A	IA	N/A	No	N/A
A	10/08/2023 19:16 (E)	0.3	111	F	N	40	N/A	IA	N/A	No	N/A

**Table 4.3 Site noise levels and limits – Q3 2023**

Location	Start Date and Time (Period)	Wind		Stability Class	Very enhancing? <sup>1</sup>	Limit, dB		Site level, dB <sup>2</sup>		Exceedance, dB	
		Speed m/s	Direction <sup>4</sup>			L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>
A	11/08/2023 5:00 (MS)	0.3	189	F	N	35	52	IA	IA	No	No
B	11/08/2023 5:17 (MS)	0.2	89	F	N	35	52	IA	IA	No	No
F	11/08/2023 5:35 (MS)	0.1	84	F	N	35	52	IA	IA	No	No
G	11/08/2023 5:59 (MS)	0.1	152	F	N	35	52	IA	IA	No	No
H	11/08/2023 6:16 (MS)	0.2	150	F	N	35	52	IA	IA	No	No

- Notes:
1. Noise limits are adjusted by +5 dB during ‘very noise-enhancing meteorological conditions’ in accordance with the NPfl.
  2. Site-only L<sub>Aeq,15minute</sub> includes modifying factor penalties if applicable.
  3. Degrees magnetic north, “-” indicates calm conditions.
  4. MS = Morning Shoulder period; D = Day period; E = Evening period.

## 5 Mitigation and management

### 5.1 Proposed management actions

EPL Condition R4.3(c) requires details of any management actions taken within the monitoring period to address any exceedances of the limits. As there were no exceedances, no management actions were required.

## 6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Karuah East Quarry Pty Limited to conduct a quarterly noise survey of operations at the site. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified PA and EPL noise limits.

Attended environmental noise monitoring described in this report was done during the morning shoulder, day and evening periods on Thursday 10 and Friday 11 August 2023 at five monitoring locations.

Noise levels from the site complied with relevant limits at all monitoring locations during the Q3 2023 survey.

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# Appendix A

## Noise perception and examples

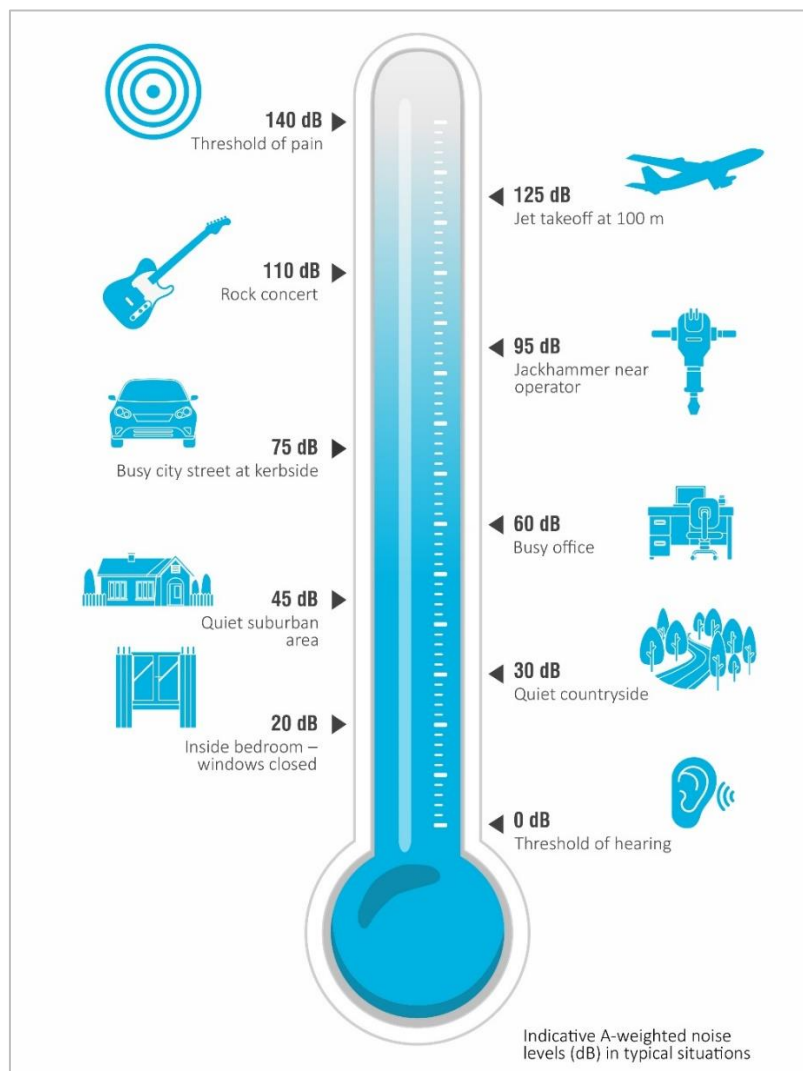
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## A.1 Noise levels

Table A.1 indicates how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

**Table A.1** Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or a quarter) as loud



**Figure A.1** Common noise levels



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# Appendix B

## Regulator documents

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## B.1 Project approval

**SCHEDULE 3  
ENVIRONMENTAL PERFORMANCE CONDITIONS**

**IDENTIFICATION OF APPROVED LIMITS OF EXTRACTION**

1. The Applicant shall, prior to carrying out quarrying operations on the site:
  - (a) engage a registered surveyor to mark out the boundaries of the approved limits of extraction within the Extraction Area; and
  - (b) submit a survey plan of the extraction boundaries, to the satisfaction of the Planning Secretary.
2. The Applicant must ensure that the extraction boundaries are clearly marked at all times while quarrying operations are being carried out, in a manner that allows the limits of extraction to be clearly identified.

**NOISE**

**Operational Noise Criteria**

3. Except for the carrying out of construction works, the Applicant must ensure that the operational noise generated by the development does not exceed the criteria in Table 2 at any residence<sup>a</sup> on privately-owned land.

*Table 2: Operational noise criteria dB*

<b>Noise Assessment Location<sup>a</sup></b>	<b>Morning Shoulder <i>L<sub>Aeq</sub> (15 min)</i></b>	<b>Morning Shoulder <i>L<sub>Amax</sub></i></b>	<b>Day <i>L<sub>Aeq</sub> (15 min)</i></b>	<b>Evening <i>L<sub>Aeq</sub> (15 min)</i></b>
A	35	52	42	40
B	35	52	40	40
G	35	52	43	39
H	35	52	44	46
I	35	52	40	37
All other residences	35	52	40	35

<sup>a</sup> Noise Assessment Locations referred to in Table 2 are shown in Appendix 2.

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and modifications (including certain meteorological conditions) of the NPfI.

- 3A. The noise criteria in Table 2 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

**Road Traffic Noise Criteria**

4. The Applicant must take all reasonable and feasible measures to ensure that the traffic noise generated by the development does not cause additional exceedances of the criteria in Table 3 at any residence on privately-owned land.

Table 3: Road traffic noise criteria

<b>Road</b>	<b>Criteria (Day<sup>a</sup>)</b>
Pacific Highway	60 dB(A) L <sub>Aeq</sub> (15 hour)
Local roads	55 dB(A) L <sub>Aeq</sub> (1 hour)

<sup>a</sup> Day is the period from 7 am to 10 pm every day in accordance with the EPA's NSW Road Noise Policy (2011).

5. Deleted

### Noise Operating Conditions

6. The Applicant must:
- take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;
  - implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;
  - operate a comprehensive noise management system commensurate with the risk of impact;
  - take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfl);
  - carry out quarterly attended noise monitoring (unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent; and
  - regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent.

### Noise Management Plan

7. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
- be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
  - be prepared in consultation with the EPA;
  - describe the measures to be implemented to ensure:
    - compliance with the noise criteria and operating conditions in this consent;
    - best practice management is being employed;
    - noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfl);
  - describe the noise management system in detail; and
  - include a monitoring program that:
    - is capable of evaluating the performance of the development;
    - monitors noise at the nearest and/or most affected residences;
    - adequately supports the noise management system;
    - includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
    - includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

7A. The Applicant must implement the plan as approved by the Planning Secretary.

### BLASTING

#### Blasting Criteria

8. The Applicant **must** ensure that blasting on the site does not cause exceedances of the criteria in Table 5.

## B.2 Environmental protection licence

# Environment Protection Licence

Licence - 20611

## L3 Waste

- L3.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

## L4 Noise limits

- L4.1 Noise generated at the premises must not exceed the noise limits in the table below. The locations referred to in the table below are indicated in Table 2: Operational Noise Criteria, and Figure 1 of the document titled Project Approval 09\_0175 Modification 9 (MOD 9) Department of Planning, Industry & Environment - which has been filed on EPA file Doc22/715570-1.

Noise Assessment Location	Morning Shoulder LAeq(15 min)	Morning shoulder LAmax	Day LAeq (15 min)	Evening LAeq (15 min)
A (74 Mill Hill Close, Karuah, Lot 100 DP 1028885)	35	52	42	40
B (64 Mill Hill Close, Karuah, Lot 3 DP785172)	35	52	40	40
G (2 Halloran Road, North Arm Cove Lot 1 DP1032636)	35	52	43	39
H (21 Halloran Road, North Arm Cove Lot 10 DP1032636)	35	52	44	46
I (83 Halloran Road, North Arm Cove Lot 12 DP1032636)	35	52	40	37
All other residences	35	52	40	35

- L4.2 Noise limit definitions - For the purpose of the table at L4.1, the following definitions apply:  
 Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays;  
 Morning Shoulder is defined as the period from 5:00am to 7:00am Monday to Saturday;  
 Evening is defined as the period from 6:00pm to 10:00pm Monday to Saturday.

- L4.3 The noise limits set out in this licence apply under all meteorological conditions except for the following:  
 a) Wind speed greater than 3 metres/second at 10 metres above ground level; or  
 b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or

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- c) Stability category G temperature inversion conditions.

## L4.4 Determining Compliance

To determine compliance with the noise limits set out in the table above, the licensee must locate monitoring equipment:

- a) within 30 metres of a dwelling façade (but not closer than 3 metres) where any dwelling on the property is situated more than 30 metres from the property boundary that is closest to the premises;
- b) approximately on the boundary where any dwelling is situated 30 metres or less from the property boundary that is closest to the premises;
- c) at the most affected point at a location where there is no dwelling at the location; and
- d) within approximately 50 metres of the boundary of a national park or nature reserve.

Note: A non-compliance of the Noise Limits table will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- i) at a location other than an area prescribed in part (a) and part (b); and/or
- ii) at a point other than the most affected point at a location.

- L4.5 For the purposes of determining the noise generated at the premises the modification factors in Fact Sheet C of the EPA's "Noise Policy for Industry" must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

## L5 Blasting

- L5.1 Blasting in or on the premises must only be carried out between the hours of 9:00 am and 4:00 pm Monday to Friday. No blasting is permitted on Saturdays, Sundays or public holidays. Blasting outside of the hours specified in this condition can only take place with the written approval of the EPA.
- L5.2 Blasting is not permitted simultaneously with adjacent quarry(s).
- L5.3 The airblast overpressure level from blasting operations in or on the premises must not exceed:
  - a) 115 dB (Lin Peak) for more than 5% of the total number of blasts during each reporting period; and
  - b) 120 dB (Lin Peak) at any time,
 at monitoring point 11 detailed in Condition P1.4.
- L5.4 The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed:
  - a) 5 mm/second for more than 5% of the total number of blasts during each reporting period; and
  - b) 10 mm/second at any time,
 at monitoring point 11 detailed in Condition P1.4.
- L5.5 Error margins associated with any monitoring equipment used to measure airblast overpressure or peak particle velocity are not to be taken into account in determining whether or not the limit has been exceeded.
- L5.6 The airblast overpressure and ground vibration levels in the conditions above do not apply at noise sensitive locations that are owned by the licensee or subject to a private agreement, relating to airblast overpressure and ground vibration levels, between the licensee and land owner.

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- a) the date and time of the complaint;
- b) the method by which the complaint was made;
- c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- d) the nature of the complaint;
- e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
- f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

## M6 Telephone complaints line

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M6.3 The preceding two conditions do not apply until 1 month after the date of the issue of this licence.

## M7 Blasting

M7.1 To determine compliance with Blast Limit conditions of this licence:

- a) Airblast overpressure and ground vibration levels must be measured and electronically recorded for monitoring point 11 for the parameters specified in Column 1 of the table below; and
- b) The licensee must use the units of measure, sampling method, and sample at the frequency specified opposite in the other columns.

Parameter	Units of Measure	Frequency	Sampling Method
Airblast Overpressure	Decibels (Linear Peak)	All blasts	Australian Standard AS 2187.2-2006
Ground Vibration Peak Particle Velocity	millimetres/second	All blasts	Australian Standard AS 2187.2-2006

## M8 Noise monitoring

M8.1 To assess compliance with the noise limits for this premises attended noise monitoring must be undertaken in accordance with all noise conditions and:

- a) during a period of normal quarry operations;
- b) at each one of the locations listed in the noise limits table of this licence;



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- c) occur quarterly in the reporting period;
- d) occur during each day period as defined in the NSW Noise Policy for Industry.

Note: Quarterly attended noise monitoring must be completed (unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent. The frequency of noise monitoring will be reviewed, upon request.

## 6 Reporting Conditions

### R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:

- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
- b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:

- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
- b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered

## B.3 Noise management plan

# 5 Noise limits

## 5.1 Operational noise

Condition 3 of Schedule 3 of PA 09\_0175 provides the operational noise limits for KEQ. These are reproduced in Table 5.1.

**Table 5.1 Operational noise criteria (dB) from Table 2 of PA 09\_0175**

Noise Assessment Location <sup>1</sup>	Morning Shoulder L <sub>Aeq</sub> (15 minute)	Morning Shoulder L <sub>Amax</sub>	Day L <sub>Aeq</sub> (15 minute)	Evening L <sub>Aeq</sub> (15 minute)
A	35	52	42	40
B	35	52	40	40
G	35	52	43	39
H	35	52	44	46
I	35	52	40	37
All other residences	35	52	40	35

Noise assessment locations are shown in Figure 3.1.

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NPfl (EPA 2017).

The noise limits provided in Table 5.1 apply under standard and noise-enhancing meteorological conditions (as defined in the NPfl) determined by monitoring at the relevant weather station. In accordance with Condition L4.3 of EPL 20611 and consistent with Condition 3 of Schedule 3 of PA 09\_0175 the noise limits provided in Table 5.1 apply under all meteorological conditions except for the following:

- wind speeds greater than 3m/s at 10m above ground level;
- stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or
- stability category G temperature inversion conditions.

In accordance with Fact Sheet D of the NPfl, for 'very noise enhancing meteorological conditions' the applicable noise limit is set at 5dB above those provided in Table 5.1.

Noise limits do not apply if Karuah East has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and Karuah East has advised the Department in writing of the terms of this agreement.

## 5.2 Road traffic noise

Condition 4 of Schedule 3 of PA 09\_0175 states that all reasonable and feasible measures must be taken to ensure that the traffic generated by KEQ does not cause additional exceedances of the criteria provided in Table 5.2 at any residence on privately-owned land.

---

# Appendix C

## Calibration certificates

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# CERTIFICATE OF CALIBRATION

CERTIFICATE No: **C33872**

EQUIPMENT TESTED : Sound Level Calibrator

**Manufacturer:** Svantek  
**Type No:** SV-36      **Serial No:** 79952  
**Owner:** EMM Consulting Pty Ltd  
L3, 175 Scott Street  
Newcastle, NSW 2300

**Tests Performed:** Measured Output Pressure level, Frequency & Distortion

**Comments:** See Details overleaf. All Test Passed.

Parameter	Pre-Adj	Adj Y/N	Output: (dB re 20 µPa)	Frequency (Hz)	THD&N (%)
Level1:	NA	N	94.09 dB	1000.00 Hz	1.12 %
Level2:	NA	N	114.06 dB	1000.00 Hz	0.71 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

## CONDITION OF TEST:

**Ambient Pressure** 1004 hPa ±1 hPa      **Date of Receipt :** 26/09/2022  
**Temperature** 23 °C ±1° C      **Date of Calibration :** 29/09/2022  
**Relative Humidity** 55 % ±5%      **Date of Issue :** 29/09/2022

**Acu-Vib Test Procedure:** AVP02 (Calibrators)  
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....

*Hein Soe*

Accredited for compliance with ISO/IEC 17025 - Calibration  
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.



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Accredited Lab No. 9262  
Acoustic and Vibration  
Measurements

**Acu-Vib Electronics**  
CALIBRATIONS SALES RENTALS REPAIRS

Head Office & Calibration Laboratory  
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154  
(02) 9680 8133  
www.acu-vib.com.au

# CERTIFICATE OF CALIBRATION

CERTIFICATE No: SLM31670

EQUIPMENT TESTED: Sound Level Meter

**Manufacturer:** B & K  
**Type No:** 2250  
**Mic. Type:** 4189  
**Pre-Amp. Type:** ZC0032

**Serial No:** 2759405  
**Serial No:** 2983733  
**Serial No:** 22666

**Filter Type:** 1/3 Octave  
**Test No:** F031671

**Owner:** EMM Consulting  
Level 3, 175 Scott Street  
Newcastle, NSW 2300

**Tests Performed:** IEC 61672-3:2013 & IEC 61260-3:2016

**Comments:** All Test passed for Class 1. (See overleaf for details)

**CONDITIONS OF TEST:**

<b>Ambient Pressure</b>	992 hPa $\pm 1$ hPa	<b>Date of Receipt :</b>	02/02/2022
<b>Temperature</b>	26 °C $\pm 1^\circ$ C	<b>Date of Calibration :</b>	02/02/2022
<b>Relative Humidity</b>	48 % $\pm 5\%$	<b>Date of Issue :</b>	03/02/2022

**Acu-Vib Test Procedure:** AVP10 (SLM) & AVP06 (Filters)

**CHECKED BY:** .....

**AUTHORISED SIGNATURE:** .....

*Jack Kidd*

Accredited for compliance with ISO/IEC 17025 - Calibration  
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

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CALIBRATIONS SALES RENTALS REPAIRS

Head Office & Calibration Laboratory  
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154  
(02) 9680 8133  
www.acu-vib.com.au

## **Australia**

### **SYDNEY**

Ground floor 20 Chandos Street  
St Leonards NSW 2065  
T 02 9493 9500

### **NEWCASTLE**

Level 3 175 Scott Street  
Newcastle NSW 2300  
T 02 4907 4800

### **BRISBANE**

Level 1 87 Wickham Terrace  
Spring Hill QLD 4000  
T 07 3648 1200

### **CANBERRA**

Suite 2.04 Level 2  
15 London Circuit  
Canberra City ACT 2601

### **ADELAIDE**

Level 4 74 Pirie Street  
Adelaide SA 5000  
T 08 8232 2253

### **MELBOURNE**

Suite 8.03 Level 8  
454 Collins Street  
Melbourne VIC 3000  
T 03 9993 1900

### **PERTH**

Suite 9.02 Level 9  
109 St Georges Terrace  
Perth WA 6000  
T 08 6430 4800

## **Canada**

### **TORONTO**

2345 Yonge Street Suite 300  
Toronto ON M4P 2E5  
T 647 467 1605

### **VANCOUVER**

60 W 6th Ave  
Vancouver BC V5Y 1K1  
T 604 999 8297



[linkedin.com/company/emm-consulting-pty-limited](https://www.linkedin.com/company/emm-consulting-pty-limited)



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# **Karuah East Quarry**

## **Quarterly Attended Noise Monitoring - Q4 2023**

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Prepared for Karuah East Quarry Pty Limited

December 2023



# Karuah East Quarry

## Quarterly Attended Noise Monitoring - Q4 2023

Karuah East Quarry Pty Limited

E230083 RP5

December 2023

Version	Date	Prepared by	Reviewed by	Comments
1	6 December 2023	Lucas Adamson	Najah Ishac	Draft
2	7 December 2023	Lucas Adamson	Najah Ishac	Final

Approved by



**Najah Ishac**

Director

7 December 2023

Level 3 175 Scott Street

Newcastle NSW 2300

This report has been prepared in accordance with the brief provided by Karuah East Quarry Pty Limited and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. The contents of this report are private and confidential. This report is only for Karuah East Quarry Pty Limited's use in accordance with its agreement with EMM and is not to be relied on by or made available to any other party without EMM's prior written consent. Except as permitted by the *Copyright Act 1968* (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Karuah East Quarry Pty Limited (and subject to the terms of EMM's agreement with Karuah East Quarry Pty Limited).

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# 1 Introduction

## 1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Karuah East Quarry Pty Limited to conduct a quarterly noise survey of operations at Karuah East Quarry (KEQ, the site) located at Blue Rock Close, Karuah NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during morning shoulder, day and evening periods on Friday 24 and Thursday 30 November 2023 at five monitoring locations.

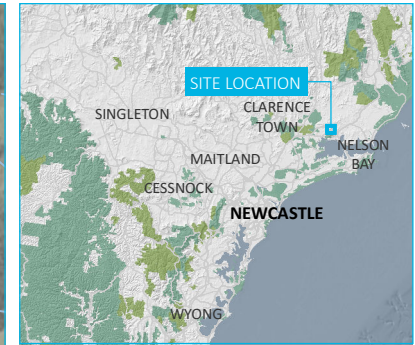
## 1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

**Table 1.1** Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
A	Private residence - 74 Mill Hill Close, Karuah	406623	6388704
B	Private residence - 64 Mill Hill Close, Karuah	406405	6388859
F	Private residence - 1714 The Branch Lane, Karuah	405639	6389782
G	Private residence - 2 Halloran Road, North Arm Cove	405629	6389766
H	Private residence - 21 Halloran Road, North Arm Cove	407795	6389868

\\lemmsvr1\EMM2\2022\E220174 - Karuah East Quarry Noise Monitoring 2022\18 GIS\02 Maps\G001\_SiteLocation\_20220718\_01.mxd 18/07/2022



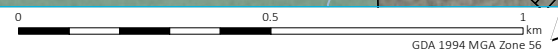
- KEY**
- Site boundary
  - A Attended noise monitoring location
  - Approved disturbance area
  - Major road
  - Minor road
  - Vehicular track
  - Watercourse/drainage line
  - Cadastral boundary
  - Waterbody
  - NPWS reserve
  - State forest

Attended noise monitoring locations

Karuah East Quarry  
Quarterly attended noise monitoring  
Figure 1.1



Source: EMM (2022); ADW Johnson (2020); DFSI (2017); ICSM (2012); GA (2011); ASGC (2006)



### 1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

**Table 1.2 Terminology and abbreviations**

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to approximate how humans hear noise.
$L_{Amax}$	The maximum root mean squared A-weighted noise level over a time period.
$L_{A1}$	The A-weighted noise level which is exceeded for 1 per cent of the time.
$LA_{1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
$LA_{10}$	The A-weighted noise level which is exceeded for 10 per cent of the time.
$LA_{eq}$	The energy average A-weighted noise level.
$LA_{50}$	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
$LA_{90}$	The A-weighted noise level exceeded for 90 per cent of the time, also referred to as the “background” noise level and commonly used to derive noise limits.
$LA_{min}$	The minimum A-weighted noise level over a time period.
$LC_{eq}$	The energy average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	The vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Morning Shoulder	Monday – Saturday: 5 am to 7 am.

Appendix A provides further information that indicates how an average person perceives changes in noise levels and examples of common noise levels.

## 2 Noise limits

### 2.1 Project approval

Karuah East Quarry noise limits are detailed in Condition 3 of Project Approval (PA) 09\_0175. Relevant sections of PA 09\_0175 are reproduced in Appendix B.1.

### 2.2 Environment protection licence

Karuah East Quarry noise limits are detailed in Condition L4.1 of Environment Protection Licence (EPL) 20611. Relevant sections of EPL 20611 are reproduced in Appendix B.2.

### 2.3 Noise management plan

The approved Noise Management Plan (NMP) adopts five attended noise monitoring locations that are representative of residences outlined in PA 09\_0175 and EPL 20611. Relevant sections of the NMP are reproduced in Appendix B.3.

### 2.4 Noise limits

Noise limits based on PA 09\_0175 and EPL 20611 are as shown in Table 2.1.

**Table 2.1** Noise impact limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Morning Shoulder $L_{Aeq,15minute}$	Morning Shoulder $L_{A1,1minute}$
A	42	40	35	52
B	40	40	35	52
F	40	35	35	52
G	43	39	35	52
H	44	46	35	52

Notes: 1. Morning shoulder period is from 5:00 am to 7:00 am Monday to Saturday as defined in Condition L4.2 of EPL 20611.

### 2.5 Meteorological conditions

PA 09\_0175 specifies that noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017.

The EPA requirements in Condition L4.3 of EPL 20611 state that noise limits do not apply under the following meteorological conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;
- stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

## 2.6 Additional requirements

Monitoring and reporting have been done in accordance with the NPfI and the NSW EPA 'Approved methods for the measurement and analysis of environmental noise in NSW' (Approved Methods) issued in January 2022.

## 2.7 Very noise-enhancing meteorological conditions

In accordance with the approved methods, noise monitoring for the site is scheduled to occur during forecasted meteorological conditions where noise limits in Table 2.1 will be applicable. However, in cases where actual meteorological conditions do not align with forecasts and noise limits are subsequently not directly applicable, it is the expectation of regulators that noise impact still be managed.

The NPfI states that:

Noise limits derived for consents and licences will apply under the meteorological conditions used in the environmental assessment process, that is, standard or noise-enhancing meteorological conditions. For 'very noise-enhancing meteorological conditions' ... a limit is set based on the limit derived under standard or noise-enhancing conditions (whichever is adopted in the assessment) plus 5 dB. In this way a development is subject to noise limits under all meteorological conditions.

Therefore, if monthly noise monitoring occurs during meteorological conditions outside of those specified in Section 2.5, site limits will be adjusted based on Table 2.1 plus 5 dB.



## 3 Methodology

### 3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant EPA requirements.

Meteorological data was obtained from the KEQ on-site meteorological station which allowed correlation of atmospheric parameters with measured noise levels.

### 3.2 Attended noise monitoring

During this survey, attended noise monitoring was conducted during the morning shoulder, day and evening periods at each location. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was given to the extent of the site's contribution (if any) to measured levels. At each monitoring location, the site-only  $L_{Aeq,15minute}$  and  $L_{Amax}$  were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as IA or NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background ( $L_{A90}$ ), and unlikely to be noticed.
- Site noise levels were masked by more dominant sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods, such as to move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate may be provided. This is expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured  $L_{Amax}$  has been used as a conservative estimate of  $L_{A1,1minute}$ . The EPA accepts sleep disturbance analysis based on either the  $L_{A1,1minute}$  or  $L_{Amax}$  metrics, with the  $L_{Amax}$  representing a more conservative assessment of site noise emissions.

### 3.3 Meteorological data

Meteorological data for the monitoring period was sourced from the Karuah East Quarry on-site meteorological station (the site AWS) to determine the applicability of criteria in accordance with the EPL and PA.

### 3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Assessment of modifying factors is undertaken if the site was audible and directly quantifiable. If applicable, modifying factor penalties have been reported and added to measured site-only  $L_{Aeq}$  noise levels.

Low-frequency modifying factor penalties have only been applied to site-only  $L_{Aeq}$  levels if the site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

### 3.5 Site operations

As required by Condition R4.3(a) of the EPL, the operations occurring at the time of monitoring are summarised per period below:

- Day
  - Routine quarry operations in the quarry pit
  - Routine plant processing operations
  - Routine material transport from the quarry pit to the processing plant and product stockpile areas
  - Routine product loading and dispatch to road trucks
- Evening
  - Routine material transport from the processing plant to product stockpile areas
  - Routine maintenance activities of plant and equipment
- Morning shoulder
  - Routine maintenance activities of plant and equipment
  - Routine product loading and dispatch to road trucks

### 3.6 Instrumentation

The equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

**Table 3.1** Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	3029363	3/11/2024	IEC 61672-1:2002
Svantek SV-36 calibrator	79952	27/9/2025	IEC 60942

## 4 Results

### 4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

**Table 4.1 Total measured noise levels – Q4 2023<sup>1</sup>**

Location	Start date and time	L <sub>Amax</sub> dB	L <sub>A1</sub> dB	L <sub>A10</sub> dB	L <sub>Aeq</sub> dB	L <sub>A50</sub> dB	L <sub>A90</sub> dB	L <sub>Amin</sub> dB
A	24/11/2023 5:02	56	55	53	49	49	42	37
B	24/11/2023 5:20	74	70	65	61	57	49	42
F	24/11/2023 5:40	96	74	53	70	48	43	39
G	24/11/2023 6:08	59	48	40	39	37	33	30
H	24/11/2023 6:27	57	48	43	39	35	32	29
H	24/11/2023 7:00	64	59	52	48	38	31	28
G	24/11/2023 7:19	66	42	37	36	34	31	28
F	24/11/2023 7:45	96	73	51	65	47	44	40
B	24/11/2023 8:14	74	69	65	62	61	57	50
A	24/11/2023 8:33	60	55	53	51	51	48	44
A	30/11/2023 18:07	61	58	55	52	52	48	43
B	30/11/2023 18:25	78	74	68	65	63	58	51
F	30/11/2023 18:45	89	60	51	57	47	44	41
G	30/11/2023 19:11	59	47	43	41	40	37	33
H	30/11/2023 19:33	66	43	41	39	39	37	34

Notes: 1. Levels in this table are not necessarily the result of activity at the site.

Atmospheric condition data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 metres above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

**Table 4.2 Measured atmospheric conditions – Q4 2023**

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° Magnetic north <sup>1</sup>	Cloud cover 1/8s
A	24/11/2023 5:02	19.2	<0.5	-	8
B	24/11/2023 5:20	19.3	<0.5	-	8
F	24/11/2023 5:40	19.5	<0.5	-	8
G	24/11/2023 6:08	19.5	<0.5	-	7
H	24/11/2023 6:27	19.6	<0.5	-	7
H	24/11/2023 7:00	20.4	<0.5	-	7
G	24/11/2023 7:19	20.8	<0.5	-	7
F	24/11/2023 7:45	21.4	<0.5	-	7
B	24/11/2023 8:14	22.1	<0.5	-	7
A	24/11/2023 8:33	22.2	<0.5	-	7
A	30/11/2023 18:07	27.9	<0.5	-	7
B	30/11/2023 18:25	27.5	<0.5	-	7
F	30/11/2023 18:45	27.3	<0.5	-	7
G	30/11/2023 19:11	27.1	<0.5	-	6
H	30/11/2023 19:33	26.7	<0.5	-	6

Notes: 1. "-" indicates calm conditions at the monitoring location.

## 4.2 Site only noise levels

### 4.2.1 Modifying factors

No modifying factors were applicable during the survey, as defined in the NPfl.

## 4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data obtained from the site AWS. Limits are applicable if weather conditions were within specified parameters during each measurement.

**Table 4.3 Site noise levels and limits – Q4 2023**

Location	Start Date and Time (Period)	Wind		Stability Class	Very enhancing? <sup>1</sup>	Limit, dB		Site level, dB <sup>2</sup>		Exceedance, dB	
		Speed m/s	Direction <sup>4</sup>			L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>
A	24/11/2023 5:02 (MS)	0.1	254	F	N	35	52	IA	IA	No	No
B	24/11/2023 5:20 (MS)	0.1	22	F	N	35	52	IA	IA	No	No
F	24/11/2023 5:40 (MS)	0.3	339	F	N	35	52	IA	IA	No	No
G	24/11/2023 6:08 (MS)	0.2	310	F	N	35	52	IA	IA	No	No
H	24/11/2023 6:27 (MS)	0.1	307	F	N	35	52	IA	IA	No	No
H	24/11/2023 7:00 (D)	0.1	275	A	N	44	N/A	<27	N/A	No	N/A
G	24/11/2023 7:19 (D)	0.3	132	A	N	43	N/A	<26	N/A	No	N/A
F	24/11/2023 7:45 (D)	0.7	140	A	N	40	N/A	IA	N/A	No	N/A
B	24/11/2023 8:14 (D)	0.5	283	A	N	40	N/A	IA	N/A	No	N/A
A	24/11/2023 8:33 (D)	0.9	208	A	N	42	N/A	IA	N/A	No	N/A

**Table 4.3 Site noise levels and limits – Q4 2023**

Location	Start Date and Time (Period)	Wind		Stability Class	Very enhancing? <sup>1</sup>	Limit, dB		Site level, dB <sup>2</sup>		Exceedance, dB	
		Speed m/s	Direction <sup>4</sup>			L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>	L <sub>Aeq,15minute</sub>	L <sub>Amax</sub>
A	30/11/2023 18:07 (E)	2.1	287	F	N	40	N/A	IA	N/A	No	N/A
B	30/11/2023 18:25 (E)	0.8	312	F	N	40	N/A	IA	N/A	No	N/A
F	30/11/2023 18:45 (E)	1.0	312	F	N	35	N/A	IA	N/A	No	N/A
G	30/11/2023 19:11 (E)	0.8	312	F	N	39	N/A	IA	N/A	No	N/A
H	30/11/2023 19:33 (E)	1.0	298	F	N	46	N/A	IA	N/A	No	N/A

- Notes:
1. Noise limits are adjusted by +5 dB during ‘very noise-enhancing meteorological conditions’ in accordance with the NPfl.
  2. Site-only L<sub>Aeq,15minute</sub> includes modifying factor penalties if applicable.
  3. Degrees magnetic north, “-” indicates calm conditions.
  4. MS = Morning Shoulder period; D = Day period; E = Evening period.

# 5 Mitigation and management

## 5.1 Proposed management actions

EPL Condition 4.3(c) requires details of any management actions taken within the monitoring period to address any exceedances of the limits. As there were no exceedances, no management actions were required.

## 6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Karuah East Quarry Pty Limited to conduct a quarterly noise survey of operations at the site. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified PA and EPL noise limits.

Attended environmental noise monitoring described in this report was done during the morning shoulder, day and evening periods on Friday 24 and Thursday 30 November 2023 at five monitoring locations.

Noise levels from the site complied with relevant limits at all monitoring locations during the Q4 2023 survey.



---

# Appendix A

## Noise perception and examples

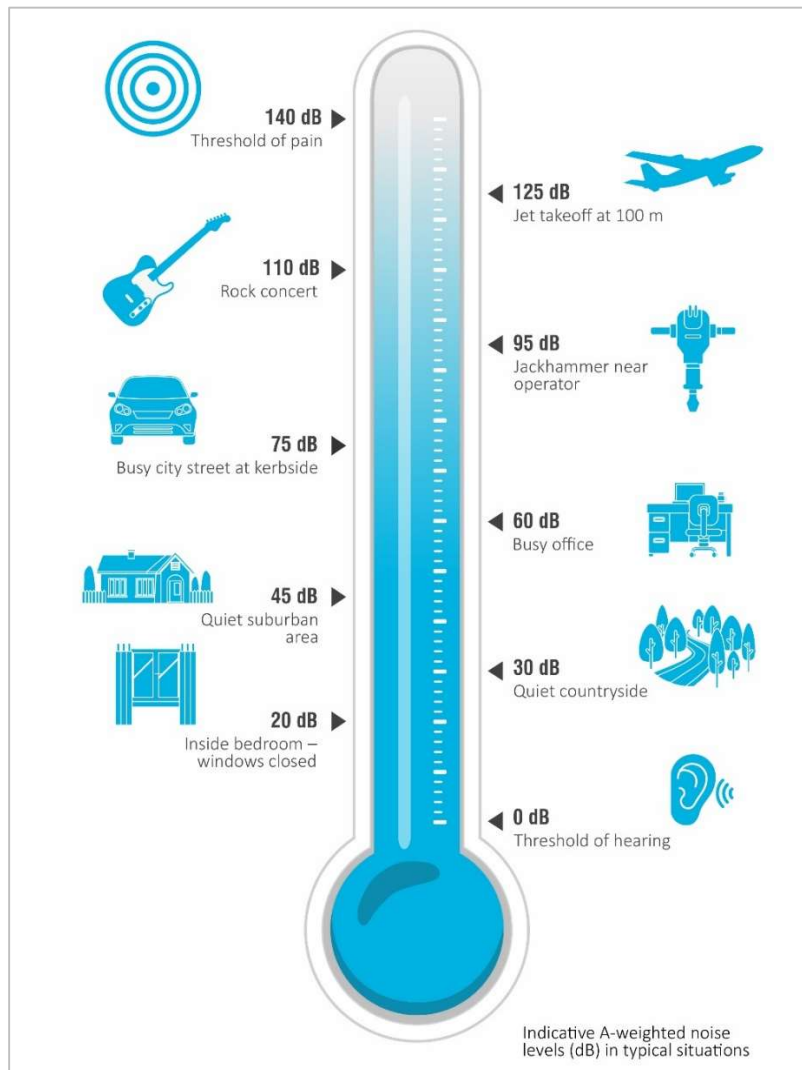
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## A.1 Noise levels

Table A.1 indicates how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

**Table A.1** Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or a quarter) as loud



**Figure A.1** Common noise levels

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# Appendix B

## Regulator documents

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## B.1 Project approval

**SCHEDULE 3  
ENVIRONMENTAL PERFORMANCE CONDITIONS**

**IDENTIFICATION OF APPROVED LIMITS OF EXTRACTION**

1. The Applicant shall, prior to carrying out quarrying operations on the site:
  - (a) engage a registered surveyor to mark out the boundaries of the approved limits of extraction within the Extraction Area; and
  - (b) submit a survey plan of the extraction boundaries, to the satisfaction of the Planning Secretary.
2. The Applicant must ensure that the extraction boundaries are clearly marked at all times while quarrying operations are being carried out, in a manner that allows the limits of extraction to be clearly identified.

**NOISE**

**Operational Noise Criteria**

3. Except for the carrying out of construction works, the Applicant must ensure that the operational noise generated by the development does not exceed the criteria in Table 2 at any residence<sup>a</sup> on privately-owned land.

*Table 2: Operational noise criteria dB*

<b>Noise Assessment Location<sup>a</sup></b>	<b>Morning Shoulder <i>L<sub>Aeq</sub> (15 min)</i></b>	<b>Morning Shoulder <i>L<sub>Amax</sub></i></b>	<b>Day <i>L<sub>Aeq</sub> (15 min)</i></b>	<b>Evening <i>L<sub>Aeq</sub> (15 min)</i></b>
A	35	52	42	40
B	35	52	40	40
G	35	52	43	39
H	35	52	44	46
I	35	52	40	37
All other residences	35	52	40	35

<sup>a</sup> Noise Assessment Locations referred to in Table 2 are shown in Appendix 2.

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and modifications (including certain meteorological conditions) of the NPfI.

- 3A. The noise criteria in Table 2 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

**Road Traffic Noise Criteria**

4. The Applicant must take all reasonable and feasible measures to ensure that the traffic noise generated by the development does not cause additional exceedances of the criteria in Table 3 at any residence on privately-owned land.

Table 3: Road traffic noise criteria

<b>Road</b>	<b>Criteria (Day<sup>a</sup>)</b>
Pacific Highway	60 dB(A) L <sub>Aeq</sub> (15 hour)
Local roads	55 dB(A) L <sub>Aeq</sub> (1 hour)

<sup>a</sup> Day is the period from 7 am to 10 pm every day in accordance with the EPA's NSW Road Noise Policy (2011).

5. Deleted

### Noise Operating Conditions

6. The Applicant must:
- take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;
  - implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;
  - operate a comprehensive noise management system commensurate with the risk of impact;
  - take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
  - carry out quarterly attended noise monitoring (unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent; and
  - regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent.

### Noise Management Plan

7. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
- be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
  - be prepared in consultation with the EPA;
  - describe the measures to be implemented to ensure:
    - compliance with the noise criteria and operating conditions in this consent;
    - best practice management is being employed;
    - noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
  - describe the noise management system in detail; and
  - include a monitoring program that:
    - is capable of evaluating the performance of the development;
    - monitors noise at the nearest and/or most affected residences;
    - adequately supports the noise management system;
    - includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
    - includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

7A. The Applicant must implement the plan as approved by the Planning Secretary.

### BLASTING

#### Blasting Criteria

8. The Applicant must ensure that blasting on the site does not cause exceedances of the criteria in Table 5.

## B.2 Environmental protection licence

# Environment Protection Licence

Licence - 20611

## L3 Waste

- L3.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

## L4 Noise limits

- L4.1 Noise generated at the premises must not exceed the noise limits in the table below. The locations referred to in the table below are indicated in Table 2: Operational Noise Criteria, and Figure 1 of the document titled Project Approval 09\_0175 Modification 9 (MOD 9) Department of Planning, Industry & Environment - which has been filed on EPA file Doc22/715570-1.

Noise Assessment Location	Morning Shoulder LAeq(15 min)	Morning shoulder LAmax	Day LAeq (15 min)	Evening LAeq (15 min)
A (74 Mill Hill Close, Karuah, Lot 100 DP 1028885)	35	52	42	40
B (64 Mill Hill Close, Karuah, Lot 3 DP785172)	35	52	40	40
G (2 Halloran Road, North Arm Cove Lot 1 DP1032636)	35	52	43	39
H (21 Halloran Road, North Arm Cove Lot 10 DP1032636)	35	52	44	46
All other residences	35	52	40	35

- L4.2 Noise limit definitions - For the purpose of the table at L4.1, the following definitions apply:  
 Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays;  
 Morning Shoulder is defined as the period from 5:00am to 7:00am Monday to Saturday;  
 Evening is defined as the period from 6:00pm to 10:00pm Monday to Saturday.
- L4.3 The noise limits set out in this licence apply under all meteorological conditions except for the following:
- Wind speed greater than 3 metres/second at 10 metres above ground level; or
  - Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
  - Stability category G temperature inversion conditions.

## L4.4 Determining Compliance



# Environment Protection Licence

Licence - 20611

To determine compliance with the noise limits set out in the table above, the licensee must locate monitoring equipment:

- a) within 30 metres of a dwelling façade (but not closer than 3 metres) where any dwelling on the property is situated more than 30 metres from the property boundary that is closest to the premises;
- b) approximately on the boundary where any dwelling is situated 30 metres or less from the property boundary that is closest to the premises;
- c) at the most affected point at a location where there is no dwelling at the location; and
- d) within approximately 50 metres of the boundary of a national park or nature reserve.

Note: A non-compliance of the Noise Limits table will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- i) at a location other than an area prescribed in part (a) and part (b); and/or
- ii) at a point other than the most affected point at a location.

L4.5 For the purposes of determining the noise generated at the premises the modification factors in Fact Sheet C of the EPA's "Noise Policy for Industry" must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

## L5 Blasting

L5.1 Blasting in or on the premises must only be carried out between the hours of 9:00 am and 4:00 pm Monday to Friday. No blasting is permitted on Saturdays, Sundays or public holidays. Blasting outside of the hours specified in this condition can only take place with the written approval of the EPA.

L5.2 Blasting is not permitted simultaneously with adjacent quarry(s).

L5.3 The airblast overpressure level from blasting operations in or on the premises must not exceed:

- a) 115 dB (Lin Peak) for more than 5% of the total number of blasts during each reporting period; and
- b) 120 dB (Lin Peak) at any time,

at monitoring point 11 detailed in Condition P1.4.

L5.4 The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed:

- a) 5 mm/second for more than 5% of the total number of blasts during each reporting period; and
- b) 10 mm/second at any time,

at monitoring point 11 detailed in Condition P1.4.

L5.5 Error margins associated with any monitoring equipment used to measure airblast overpressure or peak particle velocity are not to be taken into account in determining whether or not the limit has been exceeded.

L5.6 The airblast overpressure and ground vibration levels in the conditions above do not apply at noise sensitive locations that are owned by the licensee or subject to a private agreement, relating to airblast overpressure and ground vibration levels, between the licensee and land owner.

L5.7 Offensive blast fume must not be emitted from the premises.

*Definition:*

# Environment Protection Licence

Licence - 20611

- d) the nature of the complaint;
- e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
- f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

## M6 Telephone complaints line

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M6.3 The preceding two conditions do not apply until 1 month after the date of the issue of this licence.

## M7 Blasting

M7.1 To determine compliance with Blast Limit conditions of this licence:

- a) Airblast overpressure and ground vibration levels must be measured and electronically recorded for monitoring point 11 for the parameters specified in Column 1 of the table below; and
- b) The licensee must use the units of measure, sampling method, and sample at the frequency specified opposite in the other columns.

Parameter	Units of Measure	Frequency	Sampling Method
Airblast Overpressure	Decibels (Linear Peak	All blasts	Australian Standard AS 2187.2-2006
Ground Vibration Peak Particle Velocity	millimetres/second	All blasts	Australian Standard AS 2187.2-2006

## M8 Noise monitoring

M8.1 To assess compliance with the noise limits for this premises attended noise monitoring must be undertaken in accordance with all noise conditions and:

- a) during a period of normal quarry operations;
- b) at each one of the locations listed in the noise limits table of this licence;
- c) occur quarterly in the reporting period;
- d) occur during each day period as defined in the NSW Noise Policy for Industry.

Note: Quarterly attended noise monitoring must be completed (unless otherwise agreed by the Planning

# Environment Protection Licence

Licence - 20611

Secretary) to determine whether the development is complying with the relevant conditions of this consent. The frequency of noise monitoring will be reviewed, upon request.

## 6 Reporting Conditions

### R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:

- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
- b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:

- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
- b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after

## B.3 Noise management plan

# 5 Noise limits

## 5.1 Operational noise

Condition 3 of Schedule 3 of PA 09\_0175 provides the operational noise limits for KEQ. These are reproduced in Table 5.1.

**Table 5.1 Operational noise criteria (dB) from Table 2 of PA 09\_0175**

Noise Assessment Location <sup>1</sup>	Morning Shoulder L <sub>Aeq</sub> (15 minute)	Morning Shoulder L <sub>Amax</sub>	Day L <sub>Aeq</sub> (15 minute)	Evening L <sub>Aeq</sub> (15 minute)
A	35	52	42	40
B	35	52	40	40
G	35	52	43	39
H	35	52	44	46
I	35	52	40	37
All other residences	35	52	40	35

Noise assessment locations are shown in Figure 3.1.

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NPfl (EPA 2017).

The noise limits provided in Table 5.1 apply under standard and noise-enhancing meteorological conditions (as defined in the NPfl) determined by monitoring at the relevant weather station. In accordance with Condition L4.3 of EPL 20611 and consistent with Condition 3 of Schedule 3 of PA 09\_0175 the noise limits provided in Table 5.1 apply under all meteorological conditions except for the following:

- wind speeds greater than 3m/s at 10m above ground level;
- stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or
- stability category G temperature inversion conditions.

In accordance with Fact Sheet D of the NPfl, for ‘very noise enhancing meteorological conditions’ the applicable noise limit is set at 5dB above those provided in Table 5.1.

Noise limits do not apply if Karuah East has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and Karuah East has advised the Department in writing of the terms of this agreement.

## 5.2 Road traffic noise

Condition 4 of Schedule 3 of PA 09\_0175 states that all reasonable and feasible measures must be taken to ensure that the traffic generated by KEQ does not cause additional exceedances of the criteria provided in Table 5.2 at any residence on privately-owned land.

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# Appendix C

## Calibration certificates

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# CERTIFICATE OF CALIBRATION

CERTIFICATE No: **C33872**

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek

Type No: SV-36 Serial No: 79952

Owner: EMM Consulting Pty Ltd  
L3, 175 Scott Street  
Newcastle, NSW 2300

Tests Performed: Measured Output Pressure level, Frequency & Distortion

Comments: See Details overleaf. All Test Passed.

Parameter	Pre-Adj	Adj Y/N	Output: (dB re 20 µPa)	Frequency (Hz)	THD&N (%)
Level1:	NA	N	94.09 dB	1000.00 Hz	1.12 %
Level2:	NA	N	114.06 dB	1000.00 Hz	0.71 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

## CONDITION OF TEST:

Ambient Pressure 1004 hPa ±1 hPa  
Temperature 23 °C ±1° C  
Relative Humidity 55 % ±5%

Date of Receipt : 26/09/2022  
Date of Calibration : 29/09/2022  
Date of Issue : 29/09/2022

Acu-Vib Test AVP02 (Calibrators)

Procedure: Test Method: AS IEC 60942 - 2017

CHECKED BY: 

AUTHORISED SIGNATURE: 

Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.



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Accredited Lab No. 9262  
Acoustic and Vibration  
Measurements

**Acu-Vib Electronics**  
CALIBRATIONS SALES RENTALS REPAIRS

Head Office & Calibration Laboratory  
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154  
(02) 9680 8133  
www.acu-vib.com.au

# CERTIFICATE OF CALIBRATION

CERTIFICATE No: **SLM34169**

**EQUIPMENT TESTED:** Sound Level Meter

**Manufacturer:** B & K

**Type No:** 2250

**Mic. Type:** 4189

**Pre-Amp. Type:** ZC0032

**Serial No:** 3029363

**Serial No:** 3260501

**Serial No:** 30109

**Filter Type:** 1/3 Octave

**Test No:** F034175

**Owner:** EMM Consulting  
Suite 01, 20 Chandos St  
St Leonards NSW 2065

**Tests Performed:** IEC 61672-3:2013 & IEC 61260-3:2016

**Comments:** All Test passed for Class 1. (See overleaf for details)

## CONDITIONS OF TEST:

**Ambient Pressure** 1002 hPa  $\pm 1$  hPa

**Temperature** 24  $^{\circ}\text{C} \pm 1^{\circ}\text{C}$

**Relative Humidity** 35 %  $\pm 5\%$

**Date of Receipt :** 02/11/2022

**Date of Calibration :** 03/11/2022

**Date of Issue :** 04/11/2022

**Acu-Vib Test Procedure:** AVP10 (SLM) & AVP06 (Filters)

**CHECKED BY:** *[Signature]*

**AUTHORISED SIGNATURE:** *[Signature]*

*Jack Kielt*

Accredited for compliance with ISO/IEC 17025 - Calibration  
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

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Head Office & Calibration Laboratory  
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154  
(02) 9680 8133  
www.acu-vib.com.au



## **Australia**

### **SYDNEY**

Ground floor 20 Chandos Street  
St Leonards NSW 2065  
T 02 9493 9500

### **NEWCASTLE**

Level 3 175 Scott Street  
Newcastle NSW 2300  
T 02 4907 4800

### **BRISBANE**

Level 1 87 Wickham Terrace  
Spring Hill QLD 4000  
T 07 3648 1200

### **CANBERRA**

Suite 2.04 Level 2  
15 London Circuit  
Canberra City ACT 2601

### **ADELAIDE**

Level 4 74 Pirie Street  
Adelaide SA 5000  
T 08 8232 2253

### **MELBOURNE**

Suite 8.03 Level 8  
454 Collins Street  
Melbourne VIC 3000  
T 03 9993 1900

### **PERTH**

Suite 9.02 Level 9  
109 St Georges Terrace  
Perth WA 6000  
T 08 6430 4800

## **Canada**

### **TORONTO**

2345 Yonge Street Suite 300  
Toronto ON M4P 2E5  
T 647 467 1605

### **VANCOUVER**

60 W 6th Ave  
Vancouver BC V5Y 1K1  
T 604 999 8297



## Appendix 4 – KEQ IEA 2023: Response to Audit Recommendations

## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2020 IEA Action Review – Project Approval (MP09_0175)					
No	Requirement	Details of Non-Compliance	2020 KEQ Response / Action	2023 IEA Finding	2023 KEQ Response / Action
S2, C11	<p>The Applicant must pay Council, in accordance with Council’s Great Lakes Wide Development Contributions Plan (November 2007) – Amended:</p> <p>(a) a one-off Headquarters Building contribution of \$1.00 per \$1,000.00 of capital value of the development; and</p> <p>(b) Annual road maintenance contributions of \$.037 per tonne per km, for every tonne of quarry products transported from the site on local roads in accordance with Council’s Great Lakes Wide Development Contributions Plan (November 2007) – Amended. Each payment must be:</p> <ol style="list-style-type: none"> <li>i. paid to Council at the end of each calendar year.</li> <li>ii. Based on weighbridge records of the quantity of quarry products transported from the site; and</li> <li>iii. Increased annually over the life of the development in accordance with the CPI.</li> </ol> <p><i>Note: If the parties are not able to agree on any aspect of the road maintenance contributions, either party may refer the matter to the Planning Secretary for resolution.</i></p>	<p>(a) Records of one-off contribution to Council for Headquarters Building were not available at the time of audit.</p> <p>(b) Records of annual contributions to Council for road maintenance in the 2019/20 Financial Year were not available at the time of audit.</p>	<p>KEQ are investigating payments made to MidCoast Council to ensure that all required developer contribution payments have been made. If payments have not been made, KEQ will consult with Council to establish a payment plan.</p>	<p>Deemed as <b>Non-Compliant</b> during the audit.</p>	<p><b>RESPONSE:</b> KEQ can confirm: (a) Headquarters building contribution was provided to Council on 11 April 2022.</p> <p>(b) Road maintenance contributions for FY18 to FY22 was provided to Council on 30 June 2023. This was subject to compensatory cost escalation in accordance with CPI.</p> <p>FY23 was provided to Council on 03 August 2023 (remittance advice date).</p> <p><b>STATUS:</b> KEQ considers this 2020 finding to be resolved.</p>
S3, C11 (d) (ii)	<p>The Applicant must:</p> <p>(d) Not undertake blasting within 500 metres of:</p> <ol style="list-style-type: none"> <li>ii. Any land outside the site not owned by the Applicant, unless: <ul style="list-style-type: none"> <li>• The Applicant has a written agreement with the relevant landowner to allow blasting to be carried out closer to the land, and the Applicant has advised the Department in writing of the terms of this agreement, or</li> <li>• the Applicant has: <ul style="list-style-type: none"> <li>○ Demonstrated to the satisfaction of the Planning Secretary that the blasting can be carried out closer to the land without compromising the safety of the people or livestock on the land, or damaging the buildings and/or structures on the land; and</li> <li>○ Updated the Blast Management Plan to include the specific measures that would be implemented while blasting is being carried out within 500 metres of the land, to the satisfaction of the Planning Secretary.</li> </ul> </li> </ul> </li> </ol>	<p>Evidence that written agreements with landholders within 500 m of project blasting was not available at the time of audit.</p>	<p>KEQ have operated in accordance with the approved Blast Management Plan (2015) which identifies that there are no residents/receivers within 500 metres from the potentially nearest blasting areas. Refer to Section 3.4 – Sensitive Receivers of the Karuah East Quarry Blast Management Plan for further details.</p> <p>KEQ have never received a community complaint regarding blasting undertaken at the Quarry. KEQ will consult with the Department to determine if any action is required.</p>	<p>Deemed as <b>Non-Compliant</b> during the audit.</p> <p>It is considered that blasting activities during the audit period would have occurred within 500 m of privately owned land without a written agreement.</p> <p>Sale of the subject property has since taken place and thus there are no further actions required in relation to this. Further detail is available in Appendix A1.</p>	<p><b>RESPONSE:</b> KEQ can confirm the property (Lot 4, DP838128) has been acquired.</p> <p><b>STATUS:</b> KEQ considers this 2020 finding to be resolved.</p>
S3, C16	<p>The Applicant must prepare an Air Quality Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:</p> <p>(a) Be prepared by a suitably qualified expert whose appointment has been approved by the Planning Secretary.</p> <p>(b) Be prepared in consultation with Council and EPA and submitted for approval to the Planning Secretary prior to the commencement of construction activities.</p> <p>(c) Describe the measures that would be implemented to ensure:</p> <ul style="list-style-type: none"> <li>• Compliance with the relevant air quality conditions of this consent;</li> </ul>	<p>In June and December of 2017, HVAS monitor filters were not changed at the correct time leading to an overrun of the sample. Filters were changed as soon as errors were identified.</p>	<p>No recommendation made.</p>	<p>Deemed as <b>Non-Compliant</b> during the audit.</p> <p>Whilst ERM consider KEQ are generally compliant with</p>	<p><b>RESPONSE:</b> KEQ have since updated our processes to ensure HVAS monitoring is completed. This failure to monitor has not since been repeated.</p> <p><b>STATUS:</b> KEQ considers this 2020 finding to be resolved.</p>



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2020 IEA Action Review – Project Approval (MP09_0175)					
No	Requirement	Details of Non-Compliance	2020 KEQ Response / Action	2023 IEA Finding	2023 KEQ Response / Action
	<ul style="list-style-type: none"> <li>best management practice is employed; and</li> <li>The air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events.</li> </ul> (d) Describe the proposed air quality management system; and (e) Include a monitoring program that: <ul style="list-style-type: none"> <li>Can evaluate the performance of the development.</li> <li>Includes a protocol for determining any exceedances of the relevant conditions of consent.</li> <li>Effectively supports the air quality management system; and</li> <li>Evaluates and reports on the adequacy of the air quality management system.</li> </ul> The applicant must implement the plan as approved by the Planning Secretary			conditions (a) to (e), implementation of the plan requires a period review in accordance with Schedule 5, Condition 5 meaning that the 2019 version of the AQMP is now outdated.	Refer to the 2023 audit response for details regarding the 2023 findings.
S3, C19	The Applicant must comply with the discharge limits in any EPL, or with Section 120 of the POEO Act.	Uncontrolled and controlled discharges from sediment dams in exceedance of discharge limits occurred during the audit period in 2017, 2018 and 2019.	Responses outlined in S3, C21 below.	Deemed as <b>Non-Compliant</b> during the audit.  Non-compliant discharges were recorded within the audit period. This is discussed in further detail in Condition 19, Schedule 3 of Appendix A1.	<b>RESPONSE:</b> Discharge events were associated with rainfall events greater than the designated design-storm events outlined by the Blue Book (Managing Urban Stormwater: Soils and Construction – Volume 2E, Mines and quarries).  <b>STATUS:</b> KEQ considers this 2020 finding to be resolved.  Refer to the 2023 audit response for details regarding the 2023 findings.
S3, C21	The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: <ol style="list-style-type: none"> <li>Be prepared in consultation with the EPA and DPE Water by suitably qualified and experienced person/s whose appointment has been approved by the Planning Secretary.</li> <li>Be submitted to the Planning Secretary for approval prior to the commencement of construction activities.</li> <li>Include:               <ol style="list-style-type: none"> <li>A Site Water Balance that includes details of:                   <ul style="list-style-type: none"> <li>Sources and security of water supply, including contingency planning;</li> <li>Water use on site; and</li> <li>Measures that would be implemented to minimise use of clean water and maximise recycling of dirty water on the site.</li> </ul> </li> <li>A Surface Water Management Plan, that includes:                   <ul style="list-style-type: none"> <li>Baseline data on surface water flows and quality in the watercourses that could be affected by the development.</li> <li>A detailed description of the surface water management system on the site, including the design objectives and performance criteria for the:                       <ul style="list-style-type: none"> <li>clean water diversions;</li> <li>erosion and sediment controls;</li> <li>water storages (including Maximum Harvestable Rights requirements); and</li> <li>control of water pollution from areas of the site that have been rehabilitated.</li> </ul> </li> </ul> </li> </ol> </li> </ol>	The surface water monitoring does not include a program for the monitoring of stream ecosystem health.  A noncompliance with the WMP was recorded in 2017 due to frequency of Groundwater level monitoring (as reported in Section 7.4.2 of the 2017 Annual Review). Quarterly monitoring commenced in accordance with the required frequency in October 2017; prior to this date monitoring had been undertaken on a six-monthly basis.	KEQ agree with this recommendation and will consult with the Department during the next review of the WMP.  KEQ will consult with the Department during the next review of the WMP and BOAMP to determine whether additional monitoring is required to monitor the health of local watercourses.  However, let it be noted that local watercourses are monitored and reported on in the annual Biodiversity Offset Area Monitoring Report; this is in line with the approved BOAMP.	Deemed as <b>Non-Compliant</b> during the audit.  There was no evidence to confirm a review has taken place due to exceedances in surface water discharge limits (refer Section 3 Condition 19).	KEQ considers the 2020 findings to be superseded.  Refer to the 2023 audit response for details regarding the 2023 findings.



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2020 IEA Action Review – Project Approval (MP09_0175)					
No	Requirement	Details of Non-Compliance	2020 KEQ Response / Action	2023 IEA Finding	2023 KEQ Response / Action
	<ul style="list-style-type: none"> <li>• Surface water impact assessment criteria, to be developed following analysis of baseline data, including trigger levels for investigating any potentially adverse surface water quality impacts.</li> <li>• A program to monitor:               <ul style="list-style-type: none"> <li>○ any surface water discharges;</li> <li>○ the effectiveness of the water management system;</li> <li>○ surface water flows and quality in local watercourses; and</li> <li>○ ecosystem health of local watercourses; and</li> </ul> </li> <li>• An assessment of appropriate options to improve storage and retention times in accordance with Managing Urban Stormwater: Soils and Construction (Landcom);</li> </ul> iii. A Groundwater Monitoring Program that includes: <ul style="list-style-type: none"> <li>• Baseline data of groundwater levels surrounding the site.</li> <li>• Groundwater impact assessment criteria, to be developed following analysis of baseline data, including trigger levels for investigating any potentially adverse groundwater impacts; and</li> <li>• A program to monitor and/or validate the impacts of the development on groundwater resources; and</li> </ul> iv. A Surface and Ground Water Response Plan that describes the measures and/or procedures that would be implemented to: <ul style="list-style-type: none"> <li>• Respond to any exceedances of the surface water impact assessment criteria and groundwater impact assessment criteria; and</li> <li>• Mitigate and/or offset any adverse impacts on surface water and groundwater resources located within and adjacent to the site.</li> </ul> <p>The Applicant must implement the plan as approved by the Planning Secretary</p>				
S3, C23	<p>The Applicant must keep accurate records of all laden truck movements to and from the site (including time of arrival and dispatch) and publish a summary of records on its website every 6 months and in the Annual Review.</p>	(a) Production records are reported in the audit period Annual Reviews, however the transportation of product from site per calendar month and the number of laden truck movements is not reported.  (b) Viewed KEQ website on 17/8/20 and quarterly truck movement records were not available.	<p>KEQ agree with this recommendation. Future environmental monitoring reports will include information on the factors identified in mentioned conditions.</p>	<p>Deemed as <b>Non-Compliant</b> during the audit.</p> <p>Laden truck movements are not recorded within the KEQ Annual Reviews.</p>	<p>KEQ considers the 2020 findings to be superseded.</p> <p>Refer to the 2023 audit response for details regarding the 2023 findings.</p>
S3, C28	<p>The Applicant must, prior to the commencement of vegetation clearing activities for Modification 10, finalise the Biodiversity Offset Strategy, as described in documents listed in condition 2 of Schedule 2, summarised in Table 10 and Table 11 and shown conceptually in Figure 1 of Appendix 4, in consultation with BCD and Council, and to the satisfaction of the Planning Secretary.</p>	<p>The Biodiversity Offset Strategy Finalisation letter (as referenced in Section 2.2 and Appendix 2 in the BOAMP) and evidence of consultation with OEH (now BCD) and Council was not available for review at the time of audit.</p>	<p>Officers of the Biodiversity Conservation Trust are attending site in November to assess the Biodiversity Area and consult on the progress of the Biodiversity Offset Strategy. KEQ will consult with the Department and seek</p>	<p>Deemed as <b>Non-Compliant</b> during the audit.</p> <p>The Biodiversity Offset Strategy should have been updated within 3 months of any</p>	<p>The 2020 audit finding was prior to MOD10 being assessed and approved. Therefore, the resulting actions are no-longer current due to the revised condition.</p> <p>KEQ considers the 2020 findings to be superseded.</p> <p>Refer to the 2023 audit response for details regarding the 2023 findings.</p>



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2020 IEA Action Review – Project Approval (MP09_0175)					
No	Requirement	Details of Non-Compliance	2020 KEQ Response / Action	2023 IEA Finding	2023 KEQ Response / Action
			extension to the timeframe required if required.	modification to the conditions of this consent. It is noted that latest version of the BOS is dated July 2013.	
S3, C32	<p>Within 6 months of the date of approval of Modification 1, the Applicant must prepare a Landscape and Rehabilitation Management Plan for the development to the satisfaction of the Planning Secretary. This Plan would relate to the area of the quarry and all perimeter lands. This plan must:</p> <p>(a) Be prepared by a suitably qualified expert whose appointment has been approved by the Planning Secretary.</p> <p>(b) Be prepared in consultation with BCD and Council, and submitted to the Planning Secretary for approval prior to the commencement of construction activities;</p> <p>(c) Describe how the implementation of the Tetraheca juncea Translocation Program would be integrated with the overall rehabilitation of the site;</p> <p>(d) Describe the short, medium and long-term measures that would be implemented to:</p> <ul style="list-style-type: none"> <li>• Manage remnant vegetation and habitat on the site; and</li> <li>• Ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations of this consent.</li> </ul> <p>(e) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, including triggers for any remedial action;</p> <p>(f) Include a detailed description of the measures that would be implemented over the next 3 years (to be updated for each 3 year period following initial preparation of the plan), including the procedures to be implemented for:</p> <ul style="list-style-type: none"> <li>• Ensuring compliance with the rehabilitation objectives and progressive rehabilitation obligations of this consent;</li> <li>• Enhancing the quality of remnant vegetation and fauna habitat;</li> <li>• Restoring native endemic vegetation and fauna habitat within the rehabilitation area, including details of the target revegetation communities of the rehabilitated landform;</li> <li>• Coordinating the relocation of native fauna to protected habitats associated with preclearing fauna surveys;</li> <li>• Maximising the salvage of environmental resources within the approved disturbance area - including tree hollows, vegetative and soil resources - for beneficial reuse in the enhancement of the rehabilitation area;</li> <li>• Collecting and propagating seed;</li> <li>• Ensuring minimal environmental consequences for threatened species, populations and habitats;</li> <li>• Minimising the impacts on native fauna on site, including the details and implementation of appropriate pre-clearance surveys;</li> <li>• Minimising the impacts on fauna movement between undisturbed areas of the site and nearby vegetation (including potential fauna crossings);</li> <li>• Controlling weeds and feral pests;</li> <li>• Controlling erosion;</li> <li>• Controlling access and providing for management trails; and</li> <li>• Bushfire management and implementation of ecologically appropriate bushfire intervals.</li> </ul> <p>(i) Include a program to monitor the effectiveness of these measures, and progress against the performance and completion criteria.</p>	<p>The revisions detailed in Table 2 of the Landscape and Rehabilitation Management Plan (LRMP) do not describe updating the measures to implemented over the three-year period.</p> <p>The condition requires update every three years following initial preparation of the plan, in this case being November 2018.</p> <p>Chapters 6-9 of the LRMP detail management measures, however the plan does not specify which activities will occur over the next three years of the plan.</p>	<p>KEQ agree with the recommendation made by the auditor and will conduct a revision of the LRMP in the near future. The revisions describe here will be made. During the revision of the LRMP, KEQ will ensure all procedures to record, and report are examined and responsible employees are made aware of their obligations.</p>	<p>Deemed as <b>Non-Compliant</b> during the audit.</p> <p>The LRMP has not been updated within a 3 year period as required by clause (f) of this condition. Further details are discussed in Appendix A1.</p>	<p>KEQ considers the 2020 findings to be superseded.</p> <p>Refer to the 2023 audit response for details regarding the 2023 findings.</p>



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2020 IEA Action Review – Project Approval (MP09_0175)					
No	Requirement	Details of Non-Compliance	2020 KEQ Response / Action	2023 IEA Finding	2023 KEQ Response / Action
	<p>(j) Identify the potential risks to successful implementation of the Tetratheca juncea translocation Program and rehabilitation of the site, and include a description of the contingency measures that would be implemented to mitigate these risks.</p> <p>(k) Include details as to how the rehabilitated land would be permanently conserved and managed as part of the broader Biodiversity Offset Area approved in these conditions.</p> <p>(l) Include details of who would be responsible for monitoring, reviewing, and implementing the plan; and</p> <p>(m) Include details as to the timing of actions set out in the plan</p> <p>The Applicant must implement the plan as approved by the Planning Secretary.</p>				
S3, C33	<p>The Applicant must prepare a Biodiversity Offset Area Management Plan for the development to the satisfaction of the Planning Secretary. This Plan would relate to the area of the Biodiversity Offset Area required in these conditions. This plan must:</p> <p>(a) Be prepared by a suitably qualified expert whose appointment has been approved by the Planning Secretary</p> <p>(b) Be prepared in consultation with BCD and Council</p> <p>(c) Describe how the implementation of the Tetratheca juncea Translocation Program would be integrated with the Biodiversity Offset Area management.</p> <p>(d) Describe the short, medium and long-term measures that would be implemented to manage remnant vegetation and habitat on the Biodiversity Offset Area</p> <p>(e) Include detailed performance and completion criteria for evaluating the performance of the conservation, restoration and management of the Biodiversity Offset Area, including triggers for any remedial action.</p> <p>(f) Providing for the transfer of environmental resources from the approved disturbance area - including tree hollows, vegetative and soil resources - for beneficial reuse in the enhancement of the Biodiversity Offset Area.</p> <p>(g) Providing for the incorporation of the final rehabilitated landform into the Biodiversity Offset Area and its management.</p> <p>(h) Include a detailed description of the measures that would be implemented over the next 3 years (to be updated for each 3-year period following initial preparation of the plan), including the procedures to be implemented for:</p> <ul style="list-style-type: none"> <li>• Enhancing the quality of remnant vegetation and fauna habitat</li> <li>• Restoring native endemic vegetation and fauna habitat within the parts of the Biodiversity Offset Area that are cleared or modified, including details of the target revegetation communities of the restored landform.</li> <li>• Coordinating the relocation of native fauna to protected habitats associated with preclearing fauna surveys.</li> <li>• Collecting and propagating seed</li> <li>• Maximising the protection and restoration of threatened species, populations and habitats in the Biodiversity Offset Area</li> <li>• Maximising fauna movement between the Biodiversity Offset Area and adjacent habitats.</li> <li>• Controlling weeds and feral pests</li> <li>• Controlling erosion</li> <li>• Controlling access and providing for management trails; and</li> <li>• Bushfire management and implementation of ecologically appropriate bushfire intervals.</li> </ul> <p>(i) Include a program to monitor the effectiveness of these measures, and progress against the performance and completion criteria.</p> <p>(j) Identify the potential risks to successful implementation of the Biodiversity Offset program and include a description of the contingency measures that would be implemented to mitigate these risks.</p>	<p>Chapter 3 of the BOAMP details management measures, and some timing details are provided in Chapter 4; however, the plan does not specify which activities will occur over the next three years of the plan. Cumberland Ecology recommends that the BOAMP be updated to include a three year management schedule for the period November 2018 – November 2021.</p>	<p>KEQ agree with this recommendation by the auditor. KEQ have already engaged Kleinfelder to revise the BOAMP to reflect changes to the Project Approval. While this revision is taking place, KEQPL will request Kleinfelder to make these recommended changes.</p>	<p>Deemed as <b>Non-Compliant</b> during the audit.</p> <p>A number of outstanding actions recommended within the latest Ecological Monitoring Report (included within the 2022 Annual Review) have not been closed out and constitutes a non-compliance against clause (h) of this condition. Further details are discussed in Appendix A1.</p>	<p><b>RESPONSE:</b> The BOAMP was updated in May 2021.</p> <p><b>STATUS:</b> KEQ considers the 2020 findings to be resolved.</p> <p>Refer to the 2023 audit response for details regarding the 2023 findings.</p>



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2020 IEA Action Review – Project Approval (MP09_0175)					
No	Requirement	Details of Non-Compliance	2020 KEQ Response / Action	2023 IEA Finding	2023 KEQ Response / Action
	(k) Include details of who would be responsible for monitoring, reviewing, and implementing the plan. (l) Include details of the indicative costs of management actions; and Include details as to the timing of actions set out in the plan.				
S5, C2	The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in this consent. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation. Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity: (a) Take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur. (b) Consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and (c) Implement remediation measures as directed by the Planning Secretary.	Evidence was not available at the time of audit to confirm that reports were provided to DPIE which reviewed control measures and remedial actions required following identified exceedances.	KEQ are in the process of reviewing and where necessary revising the PIRMP. During this process KEQ will review all communication and notification procedures for reporting of pollution exceedances to ARAs.	Deemed as <b>Non-Compliant</b> during the audit.  During the audit period, there have been multiple exceedances of the surface water discharge limits, however it is not clear to the auditors whether feasible measures (including a review of appropriate Management Plans) have been taken to ensure the exceedance ceases.	<b>RESPONSE:</b> All exceedances of criteria are now reported to the Department and NSW EPA as required.  <b>STATUS:</b> KEQ considers the 2020 findings to be resolved.  Refer to the 2023 audit response for details regarding the 2023 findings.
S5, C5	Within 3 months of: (a) The submission of an annual review under Condition 4 above. (b) The submission of an incident report under Condition 7 below. (c) The submission of an audit report under Condition 9 below; or (d) Any modification to the conditions of this consent, (unless the conditions require otherwise), the Applicant must review the strategies, plans, and programs required under this consent, to the satisfaction of the Planning Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Planning Secretary. <i>Note: The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve environmental performance of the development.</i>	(a – d) No evidence was available at the time of audit to confirm that KEQ had reviewed strategies, plans and programs required under the approval following audit period Annual Reviews, incidents, audit reports and modifications.	KEQ agree with this recommendation. A controlled templates will be prepared for use when reviewing documents (such as procedures or management plans).	Deemed as <b>Non-Compliant</b> during the audit.  Multiple plans and programs required under this consent have not been reviewed within the requirements of this condition. This is discussed in further detail in Appendix A1.	KEQ considers the 2020 findings to be superseded.  Refer to the 2023 audit response for details regarding the 2023 findings.
KEQ 2020 IEA Action Review – Project Approval Statement of Commitments					
The Statement of Commitments have been removed from the Project Approval following MOD10. Therefore, no further response or action from KEQ is required.					





## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2020 IEA Action Review – Environment Protection Licence (EPL 20611)					
No	Requirement	Details of Non-Compliance	2020 KEQ Response / Action	2023 IEA Finding	2023 KEQ Response / Action
L1.1, L2.1, L2.2	<p>L1.1 – Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.</p> <p>L2.1 – For each monitoring/discharge point or utilisation area specified in the table/s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.</p> <p>L2.2 – Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.</p>	<p>Some discharges during the audit period exceeded the concentration limits prescribed by Condition L2.4, thereby contravening Section 120 of the POEO Act (see Condition L2.1 below).</p> <p>Uncontrolled and controlled discharges from sediment dams in exceedance of EPL discharge limits occurred during the audit period in 2017, 2018 and 2019. KEQ self-reported the June 2019 discharge exceedances to EPA on 26/06/19 and EPA provided an associated 'Show Cause Notice' on 27/06/19. KEQ provided a response to the Show Cause/notice on 02/08/19. EPA issued a Penalty Infringement Notice for the 24 June 2019 discharge and Formal Warning regarding the other discharge events of 24 – 27 June 2019 via letter dated 15/08/19.</p>	No recommendation made.	<p>Deemed as <b>Non-Compliant</b> during the audit.</p> <p>There have been reoccurrences of exceedances of surface water discharge concentration limits within this audit period. Further details available in Appendix A2 –EPL Table.</p>	No actions required.
O7.1	All acoustic bunds necessary to achieve compliance with the noise limits specified in this licence must be constructed prior to the commencement of quarrying activities and be maintained throughout the operational life of the premises to the height and location described in the Noise Management Plan.	Acoustic bunding for site infrastructure identified in the EA (ADW Johnson, 2013) was not constructed prior to the commencement of quarrying operations. See Schedule 3, Condition 7 of PA 09_0175.	No recommendation made.	<p>Deemed as <b>Non-Compliant</b> during the audit.</p> <p>Acoustic bunding not installed during audit period. The condition though was varied during the audit period which removed the condition as another control was implement. Further detail is available in Appendix A2 – EPL Table.</p>	No actions required.



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	Requirement	2023 IEA Assessment & Recommendation	2023 KEQ Response / Action
S2, C11	<p>The Applicant must pay Council, in accordance with Council’s Great Lakes Wide Development Contributions Plan (November 2007) – Amended:</p> <p>(a) a one-off Headquarters Building contribution of \$1.00 per \$1,000.00 of capital value of the development; and</p> <p>(b) Annual road maintenance contributions of \$.037 per tonne per km, for every tonne of quarry products transported from the site on local roads in accordance with Council’s Great Lakes Wide Development Contributions Plan (November 2007) – Amended.</p> <p>Each payment must be:</p> <ol style="list-style-type: none"> <li>i. paid to Council at the end of each calendar year.</li> <li>ii. Based on weighbridge records of the quantity of quarry products transported from the site; and</li> <li>iii. Increased annually over the life of the development in accordance with the CPI.</li> </ol> <p><i>Note: If the parties are not able to agree on any aspect of the road maintenance contributions, either party may refer the matter to the Planning Secretary for resolution.</i></p>	<p><b>Assessment:</b></p> <p>(a) An invoice for payment was issued by MidCoast Council to “Branch Land Pty Ltd” in relation to Application No. DA-09-0175 on 11 April 2022 for a value of \$5,000. Remittance Advice for the same amount with the matching supplier invoice reference number (20221212) was provided from MidCoast Council on 10 June 2022. ERM has not been provided with evidence to determine how this contribution amount was calculated and thus cannot verify that compliance with this condition has been met.</p> <p>(b) Road Maintenance Contributions were provided in one invoice to MidCoast Council, with remittance advice prepared on 30 June 2023 for the following amounts:</p> <ul style="list-style-type: none"> <li>▪ FY2018: \$3,438.77;</li> <li>▪ FY2019: \$14,876.66;</li> <li>▪ FY2020: \$112,797.25;</li> <li>▪ FY2021: \$65,794.58; and</li> <li>▪ FY2022: \$130,498.26.</li> </ul> <p><b>Recommendation:</b></p> <p>It is recommended that KEQ provide further evidence (e.g. a cost calculation and/or evidence of Council acceptance) that the payments made:</p> <ul style="list-style-type: none"> <li>▪ Correctly represent the value of the Headquarters Building contribution; and</li> <li>▪ Are based on weighbridge records and increased annually over the life of the development in accordance with the CPI.</li> </ul> <p>Should any contribution shortfalls be identified, it is recommended that KEQ make an additional payment to cover this amount as soon as practicable.</p>	<p><b>RESPONSE:</b></p> <p>KEQ can confirm:</p> <p>(a) Headquarters building contribution was provided to Council based on the capital investment value of the project. No concerns have been raised by Council.</p> <p>(b) Road maintenance contributions for FY18 to FY22 was provided to Council on 30 June 2023. This was subject to compensatory cost escalation in accordance with CPI as per the intent of the Condition.</p> <p>The CPI increases were completed in accordance with the methodology provided by the former Great Lakes Council on 13 April 2010 in relation to affiliated quarry, Karuah Hard Rock Quarry (DA 265-10-2004). Given the close relationship between the two quarry sites, KEQ considers it appropriate to apply the same methodology.</p> <p>On 30 June 2023, Council advised the matter had been provided to the Manager Finance for review. No further correspondence has been received from Council regarding this matter.</p> <p>FY23 was provided to Council on 03 August 2023 (remittance advice date). Council acknowledged receipt of the payment on 28 August 2023. No concerns have been raised by Council regarding the provision of Developer Contributions from the Karuah East Quarry.</p> <p><b>STATUS:</b></p> <p>KEQ considers this 2023 finding to be resolved.</p>
S3, C11 (d) (ii)	<p>The Applicant must:</p> <p>(d) Not undertake blasting within 500 metres of:</p> <ol style="list-style-type: none"> <li>ii. Any land outside the site not owned by the Applicant, unless: <ul style="list-style-type: none"> <li>• The Applicant has a written agreement with the relevant landowner to allow blasting to be carried out closer to the land, and the Applicant has advised the Department in writing of the terms of this agreement, or</li> <li>• the Applicant has: <ul style="list-style-type: none"> <li>○ Demonstrated to the satisfaction of the Planning Secretary that the blasting can be carried out closer to the land without compromising the safety of the people or livestock on the land, or damaging the buildings and/or structures on the land; and</li> <li>○ Updated the Blast Management Plan to include the specific measures that would be implemented while blasting is being carried out within 500 metres of the land, to the satisfaction of the Planning Secretary.</li> </ul> </li> </ul> </li> </ol>	<p><b>Assessment:</b></p> <p>ERM review the Blast Management Plan (BMP) prepared by SLR Consulting Ltd in May 2019. The following potential non-compliance in the BMP was observed:</p> <p>(d) (ii) A property is situated approximately 340 m north-north-west to the closest perimeter of the quarry. It is understood that the property is unoccupied, however the land is privately owned. As a result, it is considered that blasting activities during the audit period would have occurred within 500m of privately owned land without a written agreement or as to the satisfaction of the Planning Secretary.</p> <p><b>Recommendation:</b></p> <p>It was confirmed that the sale of the property within 500 m of the KEQ quarry pit took place. Therefore, no further actions are required in relation to this non-compliance.</p>	<p><b>RESPONSE:</b></p> <p>KEQ can confirm the property (Lot 4, DP838128) has been acquired.</p> <p><b>STATUS:</b></p> <p>KEQ considers this 2023 finding to be resolved.</p>



# KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)																										
No	Requirement	2023 IEA Assessment & Recommendation	2023 KEQ Response / Action																							
S3, C12	<p>The Applicant must prepare a Blast Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:</p> <ul style="list-style-type: none"> <li>(a) Be prepared by a suitably qualified expert whose appointment has been approved by the Planning Secretary;</li> <li>(b) Be prepared in consultation with Council and EPA, and submitted to the Planning Secretary for approval prior to the commencement of construction activities.</li> <li>(c) Describe the measures that would be implemented to ensure:               <ul style="list-style-type: none"> <li>• best management practice is being employed; and</li> <li>• compliance with the relevant conditions of this consent;</li> </ul> </li> <li>(d) Include a road closure protocol if blasting occurs within 500 metres of a public road</li> <li>(e) Include a specific blast fume management protocol, to demonstrate how emissions will be minimised including risk management strategies if blast fumes are generated; and</li> <li>(f) Include a monitoring program for evaluating the performance of the development including:               <ul style="list-style-type: none"> <li>• Compliance with the applicable criteria; and</li> <li>• Minimising fume emissions from the site.</li> </ul> </li> </ul> <p>The Applicant must implement the plan as approved by the Planning Secretary.</p>	<p><b>Assessment:</b> ERM reviewed the Blast Management Plan (BMP) prepared by SLR Consulting Ltd in May 2019. The following potential non-compliance in the BMP was observed:</p> <ul style="list-style-type: none"> <li>(b) The BMP includes evidence of consultation with the EPA and Council and DPE approval occurring in 2015. There is no evidence of consultation provided for the May 2019 update.</li> <li>(c) Best management and control measures are discussed in section 6 of the BMP including operating conditions, blast design, public safety, road closure management, monitoring of meteorological conditions, avoidance of concurrent blasts with nearby quarrying operations, and consultation with neighbouring residences.</li> </ul> <p>For most conditions of this consent, the BMP describes measures to be implemented to ensure compliance is met, however in relation to condition 11 (d), the BMP does not describe the details of measures implemented to ensure a blast is not carried out within 500m of land outside the site not owned by the Applicant.</p> <p><b>Recommendation:</b> The BMP is recommended to be updated to account for control measures carried out in order to meet compliance with Condition 11 d) ii and approved by the Planning Secretary. The BMP is recommended to be updated in consultation with the Council and EPA and be submitted to the Planning Secretary.</p>	<p><b>ACTION:</b> KEQ to complete a comprehensive review of the Blast Management Plan and submit the revised document to the Planning Secretary for approval.</p> <p><b>DUE:</b> 28 May 2024 in accordance with Schedule 5, Condition 5(c).</p> <p><b>STATUS:</b> Underway – draft revision of the management plan has been completed by IEMA. Further revisions are to be assessed in accordance with these recommendations.</p>																							
S3, C13	<p>The Applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not exceed the criteria in Tables 7 to 9 at any residence on privately-owned land.</p> <p><i>Table 7: Long-term impact assessment criteria for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th><sup>d</sup> Criterion</th> </tr> </thead> <tbody> <tr> <td>Total suspended particulates (TSP)</td> <td>Annual</td> <td><sup>a</sup> 90 µg/m<sup>3</sup></td> </tr> <tr> <td>Particulate matter &lt; 10 µm (PM<sub>10</sub>)</td> <td>Annual</td> <td><sup>a</sup> 30 µg/m<sup>3</sup></td> </tr> </tbody> </table> <p><i>Table 8: Short-term impact assessment criteria for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th><sup>d</sup> Criterion</th> </tr> </thead> <tbody> <tr> <td>Particulate matter &lt; 10 µm (PM<sub>10</sub>)</td> <td>24 hour</td> <td><sup>a</sup> 50 µg/m<sup>3</sup></td> </tr> </tbody> </table> <p><i>Table 9: Long-term Impact Assessment Criteria for Deposited Dust</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Maximum increase in deposited dust level</th> <th>Maximum total deposited dust level</th> </tr> </thead> <tbody> <tr> <td><sup>c</sup> Deposited dust</td> <td>Annual</td> <td><sup>b</sup> 2 g/m<sup>2</sup> /month</td> <td><sup>a</sup> 4 g/m<sup>2</sup> /month</td> </tr> </tbody> </table>	Pollutant	Averaging period	<sup>d</sup> Criterion	Total suspended particulates (TSP)	Annual	<sup>a</sup> 90 µg/m <sup>3</sup>	Particulate matter < 10 µm (PM <sub>10</sub> )	Annual	<sup>a</sup> 30 µg/m <sup>3</sup>	Pollutant	Averaging period	<sup>d</sup> Criterion	Particulate matter < 10 µm (PM <sub>10</sub> )	24 hour	<sup>a</sup> 50 µg/m <sup>3</sup>	Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level	<sup>c</sup> Deposited dust	Annual	<sup>b</sup> 2 g/m <sup>2</sup> /month	<sup>a</sup> 4 g/m <sup>2</sup> /month	<p><b>Assessment:</b> Annual reviews report the measured particulate matter (PM) and depositional dust (DD) results against the approved criteria of this condition. The Short-term impact assessment criteria for particulate matter was exceeded on one occasion during the audit period and there were two “failure to monitor” events which ERM consider having been appropriately responded to. Additional detail relating to compliance with this CoC is provided in Appendix A1.</p> <p><b>Recommendation:</b> It is recommended to continue the monitoring per the AQMP as only one low-range exceedance was recorded during the audit period. Should additional exceedances reoccur, examine additional mitigation measures in conjunction with a review of the AQMP.</p>	<p><b>ACTION:</b> KEQ to include this recommendation into the comprehensive review of the Air Quality Management Plan.</p> <p>Refer to the response under Schedule 3, Condition 16 for further details.</p>
Pollutant	Averaging period	<sup>d</sup> Criterion																								
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## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	Requirement	2023 IEA Assessment & Recommendation	2023 KEQ Response / Action
S3, C16	<p>The Applicant must prepare an Air Quality Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:</p> <p>(a) Be prepared by a suitably qualified expert whose appointment has been approved by the Planning Secretary.</p> <p>(b) Be prepared in consultation with Council and EPA and submitted for approval to the Planning Secretary prior to the commencement of construction activities.</p> <p>(c) Describe the measures that would be implemented to ensure:</p> <ul style="list-style-type: none"> <li>• Compliance with the relevant air quality conditions of this consent;</li> <li>• best management practice is employed; and</li> <li>• The air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events.</li> </ul> <p>(d) Describe the proposed air quality management system; and</p> <p>(e) Include a monitoring program that:</p> <ul style="list-style-type: none"> <li>• Can evaluate the performance of the development.</li> <li>• Includes a protocol for determining any exceedances of the relevant conditions of consent.</li> <li>• Effectively supports the air quality management system; and</li> <li>• Evaluates and reports on the adequacy of the air quality management system.</li> </ul> <p>The applicant must implement the plan as approved by the Planning Secretary</p>	<p><b>Assessment:</b></p> <p>The AQMP was most recently updated in May 2019 by SLR Consulting. Whilst ERM consider KEQ are generally compliant with conditions (a) to (e), implementation of the plan requires a period review in accordance with Schedule 5 Condition 5 meaning that the 2019 version of the AQMP is now outdated. Additional detail relating to compliance with this CoC is provided in Appendix A1.</p> <p><b>Recommendation:</b></p> <p>Refer to recommendation under Schedule 5 Condition 4 in relation to updates of strategies, plans and programs required under this consent.</p>	<p><b>ACTION:</b></p> <p>KEQ to complete a comprehensive review of the Air Quality Management Plan and submit the revised document to the Planning Secretary for approval.</p> <p><b>DUE:</b></p> <p>28 May 2024 in accordance with Schedule 5, Condition 5(c).</p> <p><b>STATUS:</b></p> <p>Underway – draft revision of the management plan has been completed by IEMA. A further revision is to be assessed in accordance with these recommendations.</p>
S3, C19	<p>The Applicant must comply with the discharge limits in any EPL, or with Section 120 of the POEO Act.</p>	<p><b>Assessment:</b></p> <p>There are three Licenced Discharge Points (LDP) associated with the site. This includes LDP001 (Dam 1), LDP002 (Dam 2) and LDP003 (Dam 3). Discharge results are recorded within the KEQ Discharge Register. Heavy rainfall, particularly in 2021 and 2022 resulted in multiple uncontrolled and non-compliant discharges during the audit period. A review of the WMP has not been carried out as required following the multiple exceedances of the discharge limits. Additional detail relating to compliance with this CoC is provided in Appendix A1.</p> <p><b>Recommendation:</b></p> <p>Conduct a review the effectiveness of the WMP and TARP to ensure that the response plans can be effectively implemented to prevent exceedances of relevant water quality assessment criteria and ensure sufficient capacity is available in dams.</p> <p>The review should consider the multiple surface water discharge exceedances which took place in 2020, 2021 and 2022 and the effectiveness of associated response procedures. The review should be conducted by a suitable qualified specialist and recommendations should be reflected within an update to the WMP.</p>	<p><b>ACTION:</b></p> <p>KEQ to include these two recommendations into the comprehensive review of the Water Management Plan.</p> <p>Refer to the response under Schedule 3, Condition 21 for further details.</p>
S3, C21	<p>The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:</p> <p>(a) Be prepared in consultation with the EPA and DPE Water by suitably qualified and experienced person/s whose appointment has been approved by the Planning Secretary.</p> <p>(b) Be submitted to the Planning Secretary for approval prior to the commencement of construction activities.</p> <p>(c) Include:</p> <ol style="list-style-type: none"> <li>i. A Site Water Balance that includes details of: <ul style="list-style-type: none"> <li>• Sources and security of water supply, including contingencyplanning;</li> </ul> </li> </ol>	<p><b>Assessment:</b></p> <p>The KEQ Water Management Plan (WMP) was prepared by SLR Consulting Ltd and most recently updated in May 2019. There is no evidence to confirm a review has taken place due to exceedances in surface water discharge limits (refer Section 3 Condition 19). Additional detail relating to compliance with this CoC is provided in Appendix A1.</p>	<p><b>ACTION:</b></p> <p>KEQ to complete a comprehensive review of the Water Management Plan and submit the revised document to the Planning Secretary for approval.</p> <p><b>DUE:</b></p> <p>28 May 2024 in accordance with Schedule 5, Condition 5(c).</p>



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	Requirement	2023 IEA Assessment & Recommendation	2023 KEQ Response / Action
	<ul style="list-style-type: none"> <li>• Water use on site; and</li> <li>• Measures that would be implemented to minimise use of clean water and maximise recycling of dirty water on the site.</li> </ul> <p>ii. A Surface Water Management Plan, that includes:</p> <ul style="list-style-type: none"> <li>• Baseline data on surface water flows and quality in the watercourses that could be affected by the development.</li> <li>• A detailed description of the surface water management system on the site, including the design objectives and performance criteria for the:               <ul style="list-style-type: none"> <li>○ clean water diversions;</li> <li>○ erosion and sediment controls;</li> <li>○ water storages (including Maximum Harvestable Rights requirements); and</li> <li>○ control of water pollution from areas of the site that have been rehabilitated.</li> </ul> </li> <li>• Surface water impact assessment criteria, to be developed following analysis of baseline data, including trigger levels for investigating any potentially adverse surface water quality impacts.</li> <li>• A program to monitor:               <ul style="list-style-type: none"> <li>○ any surface water discharges;</li> <li>○ the effectiveness of the water management system;</li> <li>○ surface water flows and quality in local watercourses; and</li> <li>○ ecosystem health of local watercourses; and</li> </ul> </li> <li>• An assessment of appropriate options to improve storage and retention times in accordance with Managing Urban Stormwater: Soils and Construction (Landcom);</li> </ul> <p>iii. A Groundwater Monitoring Program that includes:</p> <ul style="list-style-type: none"> <li>• Baseline data of groundwater levels surrounding the site.</li> <li>• Groundwater impact assessment criteria, to be developed following analysis of baseline data, including trigger levels for investigating any potentially adverse groundwater impacts; and</li> <li>• A program to monitor and/or validate the impacts of the development on groundwater resources; and</li> </ul> <p>iv. A Surface and Ground Water Response Plan that describes the measures and/or procedures that would be implemented to:</p> <ul style="list-style-type: none"> <li>• Respond to any exceedances of the surface water impact assessment criteria and groundwater impact assessment criteria; and</li> <li>• Mitigate and/or offset any adverse impacts on surface water and groundwater resources located within and adjacent to the site.</li> </ul> <p>The Applicant must implement the plan as approved by the Planning Secretary</p>	<p><b>Recommendation:</b></p> <p>The following recommendations are made in relation the WMP:</p> <ul style="list-style-type: none"> <li>▪ Updates to the WMP should include details of a contingency plan;</li> <li>▪ It is recommended that KEQ implement a framework to log all steps and actions to be taken in accordance with the TARP, in particular when a ‘Condition Amber’ or ‘Condition Red’ Trigger Response is enacted.</li> <li>▪ WMP updates are to be undertaken in consultation with the EPA and DPE Water and be submitted to the Planning Secretary.</li> </ul> <p>Additional recommendations which are applicable to this condition are made in relation to Adaptive Management (refer Schedule 5 Condition 2).</p>	<p><b>STATUS:</b></p> <p>Underway – IEMA has been engaged to draft a revision of the management plan. These water-themed recommendations will be incorporated.</p>
S3, C23	<p>The Applicant must keep accurate records of all laden truck movements to and from the site (including time of arrival and dispatch) and publish a summary of records on its website every 6 months and in the Annual Review.</p>	<p><b>Assessment:</b></p> <p>Monitoring of product transport is recorded and uploaded to Hunter Quarry’s website under Karuah East Quarry. The monitoring data includes hourly truck movements for every day of each calendar year. Laden truck movements are not recorded within the KEQ Annual Reviews.</p> <p><b>Recommendation:</b></p> <p>It is recommended to publish a summary of laden truck movements to and from site in future Annual Reviews.</p>	<p><b>ACTION:</b></p> <p>KEQ to include laden truck movements in the Annual Reviews for all future submissions.</p> <p><b>DUE:</b></p> <p>31 March 2024 in accordance with Schedule 5, Condition 4.</p> <p><b>STATUS:</b></p> <p>Completed – Product transport report has been included in the 2023 Annual Review document template.</p>

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)																															
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S3, C28	<p>The Applicant must, prior to the commencement of vegetation clearing activities for Modification 10, finalise the Biodiversity Offset Strategy, as described in documents listed in condition 2 of Schedule 2, summarised in Table 10 and Table 11 and shown conceptually in Figure 1 of Appendix 4, in consultation with BCD and Council, and to the satisfaction of the Planning Secretary.</p> <p><i>Table 10: Biodiversity Offset Strategy – land-based offsets</i></p> <table border="1"> <thead> <tr> <th>Area</th> <th>Offset Type</th> <th>Minimum Size (ha)</th> </tr> </thead> <tbody> <tr> <td>Offset Area</td> <td>Existing vegetation to be managed and enhanced</td> <td>130.36 ha</td> </tr> </tbody> </table> <p><i>Table 11: Biodiversity Offset Strategy – ecosystem and species credit requirements</i></p> <table border="1"> <thead> <tr> <th>Credit Type</th> <th>Credits Required</th> </tr> </thead> <tbody> <tr> <td colspan="2"><b>Ecosystem Credits</b></td> </tr> <tr> <td>PCT 1619: Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands</td> <td>188</td> </tr> <tr> <td>PCT 695: Blackbutt – Turpentine – Tallowood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion</td> <td>7</td> </tr> <tr> <td><b>Total</b></td> <td><b>195</b></td> </tr> <tr> <td colspan="2"><b>Species Credits</b></td> </tr> <tr> <td><i>Tetradlea juncea</i> (Black-eyed Susan)</td> <td>260</td> </tr> <tr> <td><i>Grevillea parviflora</i> subsp. <i>parviflora</i> (Small-flower Grevillea)</td> <td>250</td> </tr> <tr> <td>Squirrel Glider (<i>Petaurus norfolcensis</i>)</td> <td>260</td> </tr> <tr> <td>Southern Myotis (<i>Myotis macropus</i>)</td> <td>107</td> </tr> <tr> <td><b>Total</b></td> <td><b>877</b></td> </tr> </tbody> </table> <p><i>Notes:</i></p> <ol style="list-style-type: none"> <li>The Biodiversity Offset Strategy must direct that the land proposed as the Offset Area must be free of any dwelling-houses and associated sheds, bushfire asset protection zones and other related utilities or structures so as to preserve the integrity and function of that offset area. The Biodiversity Offset Strategy must also provide details of the revegetation of any parts of the offset area that are cleared of native vegetation or are in an otherwise substantially modified state, other than required management trails and boundary fencing buffer distances.</li> <li>Credits required for impacts to EPBC Act listed species and associated habitats must be like-for-like.</li> </ol>	Area	Offset Type	Minimum Size (ha)	Offset Area	Existing vegetation to be managed and enhanced	130.36 ha	Credit Type	Credits Required	<b>Ecosystem Credits</b>		PCT 1619: Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands	188	PCT 695: Blackbutt – Turpentine – Tallowood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion	7	<b>Total</b>	<b>195</b>	<b>Species Credits</b>		<i>Tetradlea juncea</i> (Black-eyed Susan)	260	<i>Grevillea parviflora</i> subsp. <i>parviflora</i> (Small-flower Grevillea)	250	Squirrel Glider ( <i>Petaurus norfolcensis</i> )	260	Southern Myotis ( <i>Myotis macropus</i> )	107	<b>Total</b>	<b>877</b>	<p><b>Assessment:</b></p> <p>As Table 10 pre-existed Modification 10, in accordance with Condition 5 of Schedule 5, the Biodiversity Offset Strategy should have been updated within 3 months of any modification to the conditions of this consent. It is noted that latest version of the BOS is dated July 2013.</p> <p>At the time of writing, as confirmed by Site Management, the updated Biodiversity Offset Strategy is pending Commonwealth EPBC Approval.</p> <p>It was confirmed by Site Management and observed by the auditors during the site visit that no vegetation clearing activities have taken place for Modification 10 and thus an assessment of compliance against Table 11 of this condition is Not Triggered.</p> <p><b>Recommendation:</b></p> <p>Consultation with the BCD and Council in relation to this condition is recommended to be published in the latest Biodiversity Offset Strategy and uploaded to the Hunter Quarries website.</p> <p>Review and update the BOS when the consent is modified.</p>	<p><b>ACTION:</b></p> <p>KEQ to complete a comprehensive review of the Biodiversity Offset Strategy and submit the revised document to the Planning Secretary for approval.</p> <p><b>DUE:</b></p> <p>TBD – pending the receipt of Commonwealth Approval for MOD10 (EPBC 2022 – 9164) under the Commonwealth EPBC Act 1999.</p> <p><b>STATUS:</b></p> <p><b>Table 10 – Underway:</b></p> <ul style="list-style-type: none"> <li>KEQ is continuing to engage with NSW Planning regarding the mechanism used for the land-based offset.</li> </ul> <p><b>Table 11 (Ecosystem Credits) – Underway:</b></p> <ul style="list-style-type: none"> <li>PCT1619 have been secured.</li> <li>PCT695 have been secured.</li> </ul> <p><b>Table 11 (Species Credits) – Underway:</b></p> <ul style="list-style-type: none"> <li>Black-eyed Susan – in-principle sale agreement for 25x credits has been reached. KEQ are continuing to review credit purchase options for the outstanding credits.</li> <li>Small-flower Grevillea – KEQ are continuing to review credit purchase options.</li> <li>Squirrel Glider – purchase agreement has been executed with the Credit Supply Taskforce.</li> <li>Southern Myotis – KEQ are continuing to review credit purchase options.</li> </ul>
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Southern Myotis ( <i>Myotis macropus</i> )	107																														
<b>Total</b>	<b>877</b>																														
S3, C32	<p>Within 6 months of the date of approval of Modification 1, the Applicant must prepare a Landscape and Rehabilitation Management Plan for the development to the satisfaction of the Planning Secretary. This Plan would relate to the area of the quarry and all perimeter lands. This plan must:</p> <p>(a) Be prepared by a suitably qualified expert whose appointment has been approved by the Planning Secretary.</p> <p>(b) Be prepared in consultation with BCD and Council, and submitted to the Planning Secretary for approval prior to the commencement of construction activities;</p> <p>(c) Describe how the implementation of the <i>Tetradlea juncea</i> Translocation Program would be integrated with the overall rehabilitation of the site;</p> <p>(d) Describe the short, medium and long-term measures that would be implemented to:</p> <ul style="list-style-type: none"> <li>Manage remnant vegetation and habitat on the site; and</li> <li>Ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations of this consent.</li> </ul> <p>(e) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, including triggers for any remedial action;</p> <p>(f) Include a detailed description of the measures that would be implemented over the next 3 years (to be updated for each 3 year period following initial preparation of the plan), including the procedures to be implemented for:</p>	<p><b>Assessment:</b></p> <p>The Landscape and Rehabilitation Management Plan (LRMP) was most recently updated in March 2020. The LRMP has not been updated within a 3 year period as required by clause (f) of this condition. Additional detail relating to compliance with this CoC is provided in Appendix A1.</p> <p><b>Recommendation:</b></p> <p>Ensure the LRMP is updated every 3 years and that implementation of measures detailed in the plan have been reviewed and updated where required.</p> <p>Scheduled reminders should be implemented to ensure that future updates of the LRMP are undertaken within the required 3 year period. Where required, update associated monitoring programs to ensure the effectiveness of the procedures can be effectively measured.</p>	<p><b>ACTION:</b></p> <p>KEQ to complete a comprehensive review of the Landscape and Rehabilitation Management Plan and submit the revised document to the Planning Secretary for approval.</p> <p><b>DUE:</b></p> <p>28 May 2024 in accordance with Schedule 5, Condition 5(c). NOTE – this may be delayed, subject to the receipt of Commonwealth Approval for MOD10 (EPBC 2022 – 9164) under the Commonwealth EPBC Act 1999.</p> <p><b>STATUS:</b></p> <p>Underway – The rehabilitation component of the management plan is complete; and the landscape component is currently being reviewed by KEQ’s ecologist. However, this may be delayed, subject to Commonwealth approval.</p>																												



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	Requirement	2023 IEA Assessment & Recommendation	2023 KEQ Response / Action
	<ul style="list-style-type: none"> <li>• Ensuring compliance with the rehabilitation objectives and progressive rehabilitation obligations of this consent;</li> <li>• Enhancing the quality of remnant vegetation and fauna habitat;</li> <li>• Restoring native endemic vegetation and fauna habitat within the rehabilitation area, including details of the target revegetation communities of the rehabilitated landform;</li> <li>• Coordinating the relocation of native fauna to protected habitats associated with preclearing fauna surveys;</li> <li>• Maximising the salvage of environmental resources within the approved disturbance area - including tree hollows, vegetative and soil resources - for beneficial reuse in the enhancement of the rehabilitation area;</li> <li>• Collecting and propagating seed;</li> <li>• Ensuring minimal environmental consequences for threatened species, populations and habitats;</li> <li>• Minimising the impacts on native fauna on site, including the details and implementation of appropriate pre-clearance surveys;</li> <li>• Minimising the impacts on fauna movement between undisturbed areas of the site and nearby vegetation (including potential fauna crossings);</li> <li>• Controlling weeds and feral pests;</li> <li>• Controlling erosion;</li> <li>• Controlling access and providing for management trails; and</li> <li>• Bushfire management and implementation of ecologically appropriate bushfire intervals.</li> </ul> <p>(i) Include a program to monitor the effectiveness of these measures, and progress against the performance and completion criteria.</p> <p>(j) Identify the potential risks to successful implementation of the Tetratheca juncea translocation Program and rehabilitation of the site, and include a description of the contingency measures that would be implemented to mitigate these risks.</p> <p>(k) Include details as to how the rehabilitated land would be permanently conserved and managed as part of the broader Biodiversity Offset Area approved in these conditions.</p> <p>(l) Include details of who would be responsible for monitoring, reviewing, and implementing the plan; and</p> <p>(m) Include details as to the timing of actions set out in the plan</p> <p>The Applicant must implement the plan as approved by the Planning Secretary.</p>		
S3, C33	<p>The Applicant must prepare a Biodiversity Offset Area Management Plan for the development to the satisfaction of the Planning Secretary. This Plan would relate to the area of the Biodiversity Offset Area required in these conditions. This plan must:</p> <p>(a) Be prepared by a suitably qualified expert whose appointment has been approved by the Planning Secretary</p> <p>(b) Be prepared in consultation with BCD and Council</p> <p>(c) Describe how the implementation of the Tetratheca juncea Translocation Program would be integrated with the Biodiversity Offset Area management.</p> <p>(d) Describe the short, medium and long-term measures that would be implemented to manage remnant vegetation and habitat on the Biodiversity Offset Area</p> <p>(e) Include detailed performance and completion criteria for evaluating the performance of the conservation, restoration and management of the Biodiversity Offset Area, including triggers for any remedial action.</p> <p>(f) Providing for the transfer of environmental resources from the approved disturbance area - including tree hollows, vegetative and soil resources - for beneficial reuse in the enhancement of the Biodiversity Offset Area.</p>	<p><b>Assessment:</b></p> <p>The Biodiversity Offset Area Management Plan (BOAMP) was most recently updated in April 2021. A number of outstanding actions recommended within the latest Ecological Monitoring Report (included within the 2022 Annual Review) have not been closed out and constitutes a non-compliance against clause (h) of this condition. Additional detail relating to compliance with this CoC is provided in Appendix A1.</p> <p><b>Recommendation:</b></p> <p>ERM notes that KEQ have implemented a “BOA Completion Status and Action Plan” and recommends that the status of actions be reviewed and updated as soon as practicable.</p>	<p><b>ACTION:</b></p> <p>KEQ to continue implementing the 2022 BOA Monitoring Actions in accordance with the developed action plan. This action plan will need to be consolidated to include actions from the 2023 monitoring period.</p> <p><b>DUE:</b></p> <p>As soon as practicable.</p> <p><b>STATUS:</b></p> <p>Underway – The key action of repairs to fauna fencing surrounding Dam 1 commenced 30 January 2024.</p>



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	Requirement	2023 IEA Assessment & Recommendation	2023 KEQ Response / Action
	<p>(g) Providing for the incorporation of the final rehabilitated landform into the Biodiversity Offset Area and its management.</p> <p>(h) Include a detailed description of the measures that would be implemented over the next 3 years (to be updated for each 3-year period following initial preparation of the plan), including the procedures to be implemented for:</p> <ul style="list-style-type: none"> <li>• Enhancing the quality of remnant vegetation and fauna habitat</li> <li>• Restoring native endemic vegetation and fauna habitat within the parts of the Biodiversity Offset Area that are cleared or modified, including details of the target revegetation communities of the restored landform.</li> <li>• Coordinating the relocation of native fauna to protected habitats associated with preclearing fauna surveys.</li> <li>• Collecting and propagating seed</li> <li>• Maximising the protection and restoration of threatened species, populations and habitats in the Biodiversity Offset Area</li> <li>• Maximising fauna movement between the Biodiversity Offset Area and adjacent habitats.</li> <li>• Controlling weeds and feral pests</li> <li>• Controlling erosion</li> <li>• Controlling access and providing for management trails; and</li> <li>• Bushfire management and implementation of ecologically appropriate bushfire intervals.</li> </ul> <p>(i) Include a program to monitor the effectiveness of these measures, and progress against the performance and completion criteria.</p> <p>(j) Identify the potential risks to successful implementation of the Biodiversity Offset program and include a description of the contingency measures that would be implemented to mitigate these risks.</p> <p>(k) Include details of who would be responsible for monitoring, reviewing, and implementing the plan.</p> <p>(l) Include details of the indicative costs of management actions; and</p> <p>(m) Include details as to the timing of actions set out in the plan.</p>		
S3, C39	<p>The Applicant must ensure that the storage, handling, and transport of dangerous goods and hazardous materials is conducted in accordance with the relevant Australian Standards, particularly AS1940 and AS1596, and the Dangerous Goods Code.</p>	<p><b>Assessment:</b> KEQ have developed a Hazardous Substances (SDS) Register, most recently updated in December 2022, which describes the list of products, quantities, location on site, type of application, SDS issue and expiry dates, and “stability and reactivities” classification.</p> <p>Based on a review of tank compliance plates, tank brochures and site observations, the auditors are satisfied that dangerous good and hazardous materials are stored in accordance with AS1940, AS1596 and the Dangerous Goods Code. However, it is noted that neither of the Diesel ASTs are included on the Hazardous Substances Register.</p> <p><b>Recommendation:</b> The hazardous materials storage container should be repaired (to ensure it does not allow rainfall to fill the bund – making it inoperable) to ensure it complies with AS1940.</p> <p>It is recommended to update the Hazardous Substances Register to ensure it includes both diesel ASTs.</p>	<p><b>ACTIONS:</b></p> <ol style="list-style-type: none"> <li>1. KEQ to review repair options to the storage container and implement as needed.</li> <li>2. KEQ to review Hazardous Substances Register and include in KEQ reporting processes to ensure routine updates and revisions are carried out.</li> </ol> <p><b>DUE:</b> As soon as practicable.</p>





## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	Requirement	2023 IEA Assessment & Recommendation	2023 KEQ Response / Action
S5, C1	<p>The Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Planning Secretary. This strategy must:</p> <p>(a) Be submitted to the Planning Secretary for approval prior to the commencement of construction activities</p> <p>(b) Provide the strategic framework for environmental management of the development.</p> <p>(c) Identify the statutory approvals that apply to the development.</p> <p>(d) Describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development.</p> <p>(e) Describe the procedures that would be implemented to:</p> <ul style="list-style-type: none"> <li>• Keep the local community and relevant agencies informed about the operation and environmental performance of the development.</li> <li>• Receive, handle, respond to, and record complaints; • resolve any disputes that may arise during the course of the development;</li> <li>• respond to any non-compliance; and</li> <li>• Respond to emergencies; and</li> </ul> <p>(f) Include:</p> <ul style="list-style-type: none"> <li>• Copies of any strategies, plans and programs approved under the conditions of this consent; and</li> <li>• Clear plan depicting all the monitoring required to be carried out under the conditions of this consent.</li> </ul> <p>The Applicant must implement the strategy as approved by the Planning Secretary.</p>	<p><b>Assessment:</b></p> <p>The latest version of the Environmental Management Strategy (EMS) was prepared in December 2015. It is noted that there are references to management plans within the EMS which are now superseded, therefore the version is not considered up to date as required by clause (f) of this condition. Additional detail relating to compliance with this CoC is provided in Appendix A1.</p> <p><b>Recommendation:</b></p> <p>It is recommended that a review of the EMS be undertaken and updated where required to ensure it is current. This includes but not limited to updates in statutory requirements and references to updated management plans and monitoring programs.</p>	<p><b>ACTION:</b></p> <p>KEQ to complete a comprehensive review of the Environmental Management Strategy and submit the revised document to the Planning Secretary for approval.</p> <p><b>DUE:</b></p> <p>28 May 2024 in accordance with Schedule 5, Condition 5(c).</p> <p><b>STATUS:</b></p> <p>Underway – draft revision of the management plan has been completed by IEMA. A further revision is to be assessed in accordance with this recommendation.</p>
S5, C2	<p>The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in this consent. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&amp;A Act or EP&amp;A Regulation. Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:</p> <p>(a) Take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur.</p> <p>(b) Consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and</p> <p>(c) Implement remediation measures as directed by the Planning Secretary.</p>	<p><b>Assessment:</b></p> <p>(a) During the audit period, there have been multiple exceedances of the surface water discharge limits, however it is not clear to the auditors whether feasible measures (including a review of appropriate Management Plans) have been taken to ensure the exceedance ceases.</p> <p>(b) Example incident reports have been issued to the DPE and reviewed by ERM. Some incident reports have not been issued to the Department immediately after an incident occurred.</p> <p>(c) There have been no specific remediation measures directed by the Planning Secretary within this audit period.</p> <p><b>Recommendation:</b></p> <p>Conduct a review of short term adaptive management processes to consider whether temporary solutions such as pumping and storage of water to enable short term provisioning of additional capacity is recommended.</p> <p>The above recommendations should be incorporated within an update to the Water Management Plan.</p>	<p><b>RESPONSE:</b></p> <p>(a) VGT completed a water management review of the KEQ site on 14 September 2023, which concluded no reasonable short-term measures could be completed without securing further approvals.</p> <p>Therefore, KEQ disagrees with the non-compliance findings.</p> <p><b>ACTION:</b></p> <p>KEQ to include these two recommendations into the comprehensive review of the Water Management Plan.</p> <p>Refer to the response under Schedule 3, Condition 21 for further details.</p>
S5, C4	<p>By the end of March each year, the Applicant must review the environmental performance of the development to the satisfaction of the Planning Secretary. This review must:</p> <p>(a) describe the development (including rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year.</p>	<p><b>Assessment:</b></p> <p>The Annual Reviews which are applicable within this audit period are for the years 2020, 2021 and 2022. The auditors reviewed the Annual Reviews and confirm each contain the required details as listed within (a) to (f) of this condition.</p>	<p><b>RESPONSE:</b></p> <p>KEQ acknowledges the 2022 Annual Review was subject a late submission. KEQ has since implemented improved reporting processes to ensure submission of documents to external stakeholders is completed.</p>



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	Requirement	2023 IEA Assessment & Recommendation	2023 KEQ Response / Action
	<p>(b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against:</p> <ul style="list-style-type: none"> <li>• The relevant statutory requirements, limits or performance measures/criteria;</li> <li>• The monitoring results of previous years; and</li> <li>• The relevant predictions in the documents referred to in condition 2(d) of Schedule 2 of this consent.</li> </ul> <p>(c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance.</p> <p>(d) identify any trends in the monitoring data over the life of the development;</p> <p>(e) identify any discrepancies between the predicted and actual impacts of the development and analyse the potential cause of any significant discrepancies; and</p> <p>(f) describe the measures that would be implemented over the current calendar year to improve the environmental performance of the development.</p>	<p>Following consultation with the Planning Secretary and as captured within the 2022 Annual Review and “Post Approval Document Received” email notification, the 2021 Annual Review was identified to have been lodged in October 2022 therefore considered a late submission in accordance with this condition.</p> <p><b>Recommendation:</b> It is recommended that all Annual Reviews are submitted to the Planning Secretary by the end of March each year.</p>	<p><b>STATUS:</b> Completed – no further actions required.</p>
S5, C5	<p>Within 3 months of:</p> <p>(a) The submission of an annual review under Condition 4 above.</p> <p>(b) The submission of an incident report under Condition 7 below.</p> <p>(c) The submission of an audit report under Condition 9 below; or</p> <p>(d) Any modification to the conditions of this consent, (unless the conditions require otherwise),</p> <p>the Applicant must review the strategies, plans, and programs required under this consent, to the satisfaction of the Planning Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Planning Secretary.</p> <p><i>Note: The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve environmental performance of the development.</i></p>	<p><b>Assessment:</b> The management plans and strategies which are applicable to this condition are as follows:</p> <ul style="list-style-type: none"> <li>▪ Environmental Management Strategy – dated Dec 2015</li> <li>▪ Air Quality Management Plan –dated May 2019</li> <li>▪ Blast Management Plan – dated May 2019</li> <li>▪ Noise Management Plan – dated April 2022</li> <li>▪ Heritage Management Plan – dated December 2015</li> <li>▪ Water Management Plan – dated May 2019</li> <li>▪ Traffic Management Plan – dated December 2015</li> <li>▪ Tetratheca Juncea Translocation Plan – dated January 2019</li> <li>▪ Biodiversity Offset Strategy – dated July 2013</li> <li>▪ Landscape and Rehabilitation Management Plan – dated March 2020</li> <li>▪ Biodiversity Offset Area Management Plan – dated April 2021</li> </ul> <p>There is no evidence within the respective strategies, plans and programs required under this consent to demonstrate that a review has taken place within the requirements of this condition.</p> <p><b>Recommendation:</b> Ensure that all strategies, plans and programs required under this consent are updated to include a document control or similar so that revision dates are clear to the reader.</p> <p>Opportunities to improve notification systems are recommended to be reviewed to ensure programs are revised within the timeframes as required under this consent.</p>	<p><b>RESPONSE:</b> KEQ acknowledges the review, revision, completion of agency consultation and re-submission of statutory management plans requires significant improvement.</p> <p>In 2023, KEQ has implemented a new document template, document control system (inclusive of Document ID and version numbers, and a consolidated document history table) as well as a new Management Plan register to enable improved timeliness of document updates when revision triggers are reached.</p> <p><b>ACTIONS:</b> Refer to constituent management plan conditions for individual actions.</p> <p><b>STATUS:</b> Completed – document management system.</p>



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2023 IEA Findings and KEQ Response - Environment Protection Licence (EPL 20611)				
No	Requirement	2023 IEA Assessment	2023 IEA Recommendation	2023 KEQ Response / Action
L1.1, L2.1, L2.2	<p>L1.1 – Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.</p> <p>L2.1 – For each monitoring/discharge point or utilisation area specified in the table/s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.</p> <p>L2.2 – Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.</p>	<p>From the review of the Annual Returns and Surface Water Monitoring Discharge Register it is noted that numerous reoccurring uncontrolled discharges of surface waters that exceed the concentration limits have occurred during the audit period.</p> <p>According to the Discharge Register, the following discharges were recorded which exceeded the concentration limits defined in EPL 20611 [summary]:</p> <p>2020 – a total of 11 discharges non-compliant with the EPL concentration limits.</p> <p>2021 – a total of 18 discharges non-compliant with the EPL concentration limits.</p> <p>2022 – a total of 29 discharges non-compliant with the EPL concentration limits.</p> <p>All discharges exceeding the concentration criteria have been reported within the Annual Returns. Heavy rainfall, particularly in 2021 and 2022 resulted in multiple uncontrolled and non-compliant discharges during the audit period. A review of the WMP has not been carried out as required following the multiple exceedances of the discharge limits. It is not clear whether the response procedures described in the WMP are effective in preventing non-compliant discharges during heavy rainfall.</p>	<p>Conduct a detailed review of the effectiveness of the WMP, inclusive of the TARP to ensure that management measure are appropriate to ensure sufficient storage capacity of the KEQ dams is effectively maintained, such that uncontrolled discharges do not occur.</p> <p>The review should consider the multiple surface water discharge exceedances which took place in 2020, 2021 and 2022 and the effectiveness of associated preventative measures and procedures, such as scheduling of dam desedimentation works prior to forecast rainfall events.</p> <p>The review should be conducted by a suitably qualified specialist and recommendations should be reflected within an update to the WMP.</p> <p>It is recommended that KEQ implement a framework to log all steps and actions to be taken in accordance with the TARP, in particular when a 'Condition Amber' or 'Condition Red' Trigger Response is enacted.</p>	<p>Duplicate recommendations.</p> <p>Refer to water-related conditions of the Project Approval for further details.</p>
O1.1, O5.1, O5.2	<p>O1.1 – Licensed activities must be carried out in a competent manner. This includes:</p> <p>(a) The processing, handling, movement and storage of materials and substances used to carry out the activity; and</p> <p>(b) The treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.</p> <p>O5.1 – All tanks and storage areas for drums containing material that has potential to cause environmental harm must be bunded or have an alternative spill containment system in-place. The bunding and/or spill containment systems must be properly designed, engineered, and constructed to be suitable for the material types and quantities stored therein in accordance with all appropriate standards, including Australian Standards (AS)1940 and AS1596.</p> <p>O5.2 – Bunds must:</p> <p>(a) have walls and floors constructed of impervious materials;</p> <p>(b) Be of sufficient capacity to contain 110% of the volume of the tank (or 110% volume of the largest tank where a group of tanks are installed);</p> <p>(c) Have floors graded to a collection sump;</p> <p>(d) Not have a drain valve incorporated in the bund structure;</p> <p>or be constructed and operated in a manner that achieves the same environmental outcome.</p>	<p>Lubricants and associated materials were stored within a hazardous material storage container that was no longer structurally sound and open to the weather which results in the bund being filled with water, this considered non-compliant with this condition.</p> <p>There are two aboveground storage tanks (ASTs) containing diesel onsite, both of which comprise a double walled construction. The primary storage area has been constructed with a drainage system to sump, but the sump was noted to be under-sized and it would offer limited containment in the event of a spill.</p>	<p>The hazardous materials storage container should be repaired (to ensure it does not allow rainfall to fill the bund – making it inoperable) to ensure it complies with AS1940.</p>	<p>Duplicate recommendation.</p> <p>Refer to the Schedule 3, Condition 39 for further details.</p>



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2023 IEA Findings and KEQ Response - Environment Protection Licence (EPL 20611)				
No	Requirement	2023 IEA Assessment	2023 IEA Recommendation	2023 KEQ Response / Action
O3.1, O3.2, O3.3	<p>O3.1 – The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.</p> <p>O3.2 - Any activity carried out in or on the premises must be carried out by such practical means as to prevent dust or minimise the emission of dust to the air.</p> <p>O3.3 – Any plant operated in or on the premises must be operated by such practical means to prevent or minimise dust or other air pollutants.</p>	<p>Central control room to manage dust suppression sprays at each transfer point and stockpile within crushing and screening plant. Water spray truck actively wets internal roads and product stockpiles. Biggest observable issue during the site visit was noted to be from main drop point to boot – jaw crusher.</p> <p>Across the audit period it was noted that dust was generally managed in accordance with this condition, although an exceedance of the air quality limits stated in the Project Approval, as below:</p> <ul style="list-style-type: none"> <li>Short term PM: One exceedance of the short-term criteria for PM10, occurring on 16 June 2023 with a PM10 monitoring value of 51 µg/m3. This result is considered a low-range exceedance with the PM10 limit of 50 µg/m3 and as this is the only exceedance recorded within this audit period, no further actions are recommended at this stage.</li> </ul>	<p>As only a single incident of a lowrange exceedance occurred during the audit period, no specific recommendations are made beyond continuing to monitor for exceedances as per the requirement of the EPL.</p> <p>If exceedances reoccur examine additional measure to manage.</p>	<p>Duplicate recommendations.</p> <p>Refer to air quality-related conditions of the Project Approval for further details.</p>
O7.1	<p>All acoustic bunds necessary to achieve compliance with the noise limits specified in this licence must be constructed prior to the commencement of quarrying activities and be maintained throughout the operational life of the premises to the height and location described in the Noise Management Plan.</p>	<p>It was noted in the Annual return for the reporting period 26-08-2020 to 25-08-2021 that acoustic bunding was not constructed as required by condition O7.1 as it was deemed to be ineffective.</p> <p>Enclosures were built around the crushers which meets noise limit protection requirements. The EPL was varied on 02/09/2022, removing the requirement for bunding and amending condition O7.1. The noncompliance noted for this condition was limited to the previous version of the EPL. The site is compliant as at the close of the audit period.</p>	<p>As the original requirement has been removed from the EPL condition, no further action is recommended.</p>	<p><b>RESPONSE:</b> KEQ disagrees with this finding as the implementation of noise enclosures as part of MOD8 addressed the intent of this condition which was not removed at the time due to administrative oversight.</p>
M2.1, M3.1	<p>M2.1 – For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns.</p> <p>M3.1 – Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:</p> <p>(a) Any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or</p> <p>(b) If no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or</p> <p>(c) If no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.</p> <p><i>Note: The Protection of the Environment Operations (Clean Air) Regulation 2021 requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".</i></p>	<p>Monitoring of discharges is outlined in Section 8.1.3 of the WMP. The monitoring frequency is generally conducted in accordance with Condition M2.1.</p> <p>Examples of air quality monitoring for deposited dust, TSP and PM10 during the audit period were viewed. Sampling from reports reviewed is undertaken in accordance with the stated methods.</p> <p>A review of the Annual Returns noted 2 separate non-compliances against condition M2.1 &amp; M3.1. The first was reported as being due to a HVAS sample jar being shattered twice (03/06/2021 and 05/07/2021) at the laboratory prior to analysis.</p> <p>KEQ stated the action taken was to instruct laboratory /field technicians to take greater care when handling sample jars. The second was reported as a failure of HVAS equipment failing during periods of extreme rainstorms</p>	<p>Ensure monitoring is undertaken in accordance with requirements of M2 conditions.</p>	<p><b>RESPONSE:</b> KEQ acknowledges the finding, but considers no further actions are required.</p>



## KEQ IEA 2023 – Response to Audit Recommendations

KEQ 2023 IEA Findings and KEQ Response - Environment Protection Licence (EPL 20611)				
No	Requirement	2023 IEA Assessment	2023 IEA Recommendation	2023 KEQ Response / Action
		<p>(22/03/2021, 28/03/2021 and 03/04/2021) resulting in scheduled runs not being able to be undertaken. Make up runs were subsequently undertaken to make up for the missed runs.</p> <p>Beyond the above noted issues, air quality monitoring is undertaken as per the methodology prescribed by the NSW Environment Protection Authority (EPA) in their document, Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (2022) (Approved Methods).</p>		
M8.1	<p>To assess compliance with the noise limits for this premises attended noise monitoring must be undertaken in accordance with all noise condition and:</p> <p>a) During a period of normal quarry operations.            b) at each one of the locations listed in the noise limits table of this licence            c) Occur quarterly in the reporting period.            d) Occur during each day period as defined in the NSW Noise Policy for Industry.</p> <p><i>Note: Quarterly attended noise monitoring must be completed (unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent. The frequency of noise monitoring will be reviewed, upon request.</i></p>	<p>A review of the Quarterly Monitoring Reports, prepared by EMM Consulting, across the audit period identified the methodology includes the requirements of this condition.</p> <p>Recorded Weather and Operating Conditions as reported stated monitoring was conducted in accordance with the stated criteria a), b) and d).</p> <p>A review of the Annual Returns noted 1 noncompliance for c) Noise monitoring not undertaken during the 26-08-2020 to 25-08-2021 reporting period. KEQ stated due to statistically wet year, monitoring under the required meteorological conditions proved difficult and therefore the last quarter monitoring was not conducted in time.</p> <p>KEQ stated in response to the failure to monitor they were amending the process of planning for quarterly monitoring to account for weather impacts. It is noted that the incident has not reoccurred during the audit period.</p>	<p>Following the incident KEQ amended quarterly monitoring planning and the failure to conduct quarterly monitoring has not reoccurred.</p> <p>Therefore, no further action is recommended.</p>	<p><b>RESPONSE:</b>            KEQ acknowledges the finding, but considers no further actions are required.</p>
R1.5	<p>The Annual Return for the reporting period must be supplied to the EPA via eConnect EPA or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').</p>	<p>A review of the submission dates of the Annual Returns noted that the Annual Return for the reporting period 26-08-21 to 25-08-2022 was submitted on 26-10-2022, 2 days after the due date of 24-10-2022.</p> <p>All other Annual returns for the audit period were noted to have been submitted within the required time period.</p>	<p>Ensure Annual Returns are submitted within the 60 days and the due date as notified by the EPA.</p>	<p><b>RESPONSE:</b>            KEQ acknowledges the 2021/22 Annual Return was subject a late submission. KEQ has since implemented improved reporting processes to ensure submission of documents to external stakeholders is completed.</p> <p><b>STATUS:</b>            Completed – no further actions required.</p>