Karuah East Quarry
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Karuah East Quarry

Annual Review

1 January to 31 December 2024

Annual Review Title Block

Table 1 Karuah East Quarry Annual Review 2024 Title Block.

Name of Operation:	Karuah East Quarry
Name of Operator:	Karuah East Quarry Pty Limited
Project Approval:	MP09_0175
Name of holder of Project Approval:	Karuah East Quarry Pty Limited
Mining Lease:	N/A
Water Licences:	None
MOP / RMP:	N/A
Annual Review Start Date:	01 January 2024
Annual Review End Date:	31 December 2024

I, **Scott Ellerton**, certify that this audit report is a true and accurate record of the compliance status of **Karuah East Quarry** for the period **01 January 2024** to **31 December 2043** 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).*

Name of Authorised Reporting Officer:	Scott Ellerton
Title of Authorised Reporting Officer:	Environment & Development Manager
Signature of Authorised Reporting Officer:	
Date:	23/03/2025

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Glossary

Abbreviation / Term	Meaning
AEMR	Annual Environmental Management Report
AHIMS	Aboriginal Heritage Information Management System
AQIA	Air Quality Impact Assessment
BAM	NSW Biodiversity Assessment Methodology
BOA	Biodiversity Offset Area
BOAMP	Biodiversity Offset Area Management Plan
BOS	NSW Biodiversity Offsets Scheme
CCC	Community Consultative Committee
DDG	Dust Deposition Gauge
DCCEEW	Department of Climate Change, Energy, the Environment & Water
EIS	Environmental Impact Statement
EPBC Act	Commonwealth *Environment Protection & Biodiversity Conservation Act 1999*
EP&A Act	NSW *Environmental Planning & Assessment Act 1979*
EPL	NSW Environment Protection Licence
Ha	Hectare
HVAS	High Volume Air Sampler
HQPL	Hunter Quarries Pty Ltd
IEA	Independent Environmental Audit
KEQ	Karuah East Quarry
KEQPL	Karuah East Quarry Pty Limited
km	Kilometre
L	Litre
LALC	Local Aboriginal Land Council
L&RMP	Landscape & Rehabilitation Management Plan
LDP	Licenced Discharge Point
MNES	Commonwealth Matters of National Environmental Significance
MCC	MidCoast Council
MOD	Modification to the NSW Project Approval
NIA	Noise Impact Assessment
NSW Planning	NSW Department of Planning, Housing & Infrastructure
PM10	Particulates less than 10 µm in diameter
POEO Act	NSW *Protection of the Environment Operations Act 1997*
RAR	Response to Audit Recommendations
Tpa	tonnes per annum
TSP	Total Suspended Particulates
TSS	Total Suspended Solids
WPC	Wedgetail Project Consulting

1.0 Statement of Compliance

The compliance status of the Karuah East Quarry (KEQ) site at the end of the 2024 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)	No

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: ▪ potential for serious environmental consequences, but is unlikely to occur; or ▪ potential for moderate environmental consequences, but is likely to occur.
Low	Non-compliant	Non-compliance with: ▪ potential for moderate environmental consequences, but is unlikely to occur; or ▪ potential for low environmental consequences, but is likely to occur.
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 EPL	Schedule 3, Condition 3 Condition L4.1	Noise	Non-compliant	Minor exceedance of the instantaneous noise limit during the morning shoulder monitoring period on 23 May 2024.	**Section 6.4 and Section 11.0**
Project Approval	Schedule 3, Condition 13	Air Quality	Non-compliant	Anomalous exceedance of depositional dust criteria at DDG4 during the October 2024 monitoring period.	**Section 6.2 and Section 11.0**
Project Approval	Schedule 3, Condition 19	Water	Non-compliant	Major rainfall events resulting in discharges of sediment-laden water from: ▪ 05 to 08 April 2024; ▪ 21 to 23 April 2024; and ▪ 02 to 04 June 2024.	**Section 7.2 and Section 11.0**
EPL	Condition L2.4		Non-compliant	Minor exceedances of pH criteria: ▪ 25 March 2024 (LDP2); and ▪ 29 March 2024 (LDP3).	

2.0 Introduction

This Annual Review covers the reporting period from the **1 January 2024** to **31 December 2024** for the Karuah East Quarry site.

Karuah East Quarry is a hard rock andesite quarry which contributes materials to the construction, civil infrastructure and land development industries in the Greater Newcastle, Hunter Valley, and Mid-North Coast regions. The site is located approximately 5 km to the north-east of the village of Karuah within the MidCoast Council LGA and is accessed via Blue Rock Close and Andersite Road adjacent to the northern Tarean Road interchange with the A1 Pacific Highway. The site is approved 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^3 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 road 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 Transport for NSW (TfNSW) 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, weighbridge 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	Darryn Bosch	0490 405 375	Secondary Contact
General Manager	Dylan Nagle	0438 380 701	–

Karuah East Quarry

Annual Review 2024

FIGURE 1 - Regional and Local Context Plan

Karuah East Quarry

Annual Review 2024

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 NSW 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 *Environmental Planning and Assessment Act 1979* (EP&A Act).
Environment Protection Licence (EPL 20611)	26/08/2015	–	Primary statutory licence for the site under NSW *Protection of the Environment Operations Act 1997* (POEO Act).
Commonwealth Approval (EPBC 2014/7278)	20/03/2015	30/03/2045	Commonwealth statutory approval for the original project under Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).
Commonwealth Approval (EPBC 2022/9164)	Pending Approval		Commonwealth statutory approval for the KEQ MOD10 Project under Commonwealth EPBC Act.

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 m² 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 eight licence variations as summarised by **Table 8**.

In 2024, one variation application was submitted to undertake minor adjustments to the locations of the site's Depositional Dust Gauges (DDG).

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.
8	17/02/2025	Minor adjustment of DDG locations.

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 writing, 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, with draft conditions received on 25 February 2025.

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 *Environment Protection and Biodiversity Conservation Act 1999*.
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: ▪ MOD2 did not disturb any Matters of National Environmental Significance (MNES); ▪ MOD8 and MOD9 did not change the KEQ disturbance footprint.		
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 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 extension to the KEQ disturbance footprint of 7.17 Ha which also extends into part of the approved Biodiversity Offset Area (BOA) on Lot 13 DP1024564.

MOD10 was approved by NSW Planning on 18 May 2023. Following NSW 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, Commonwealth 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 continuing to be 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
Schedule 2 – Administrative Conditions		
Condition 14	***Production Data*** *The Applicant must:* *a) provide annual quarry production data to MEG using the standard form for that purpose; and* *b) report this data in the Annual Review (see condition 4 of Schedule 5).*	**Section 4.1**
Schedule 3 – Environmental Performance Conditions		
Condition 23	***Monitoring of Product Transport*** *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.*	**Section 4.6 and Appendix 2**
Schedule 5 – Environmental Management, Reporting and Auditing		
Condition 4	***Annual Review*** *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:* *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;*	**Section 4.0 and Section 8.0**
	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: • *the relevant statutory requirements, limits or performance measures/criteria;* • *the monitoring results of previous years; and* • *the relevant predictions in the documents referred to in condition 2(d) of Schedule 2 of this consent;*	**Section 6.0 and Section 7.0**
	c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;	**Section 6.2 and Section 11.0**
	d) identify any trends in the monitoring data over the life of the development;	**Section 6.0 and Section 7.0**
	e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and	**Section 6.0 and Section 7.0**
	f) describe the measures that would be implemented over the current calendar year to improve the environmental performance of the development.	**Section 12.0**

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	2025 Action
Environmental Management Strategy	Comprehensive review completed by KEQPL in May 2024 and approved by NSW Planning on 19 August 2024.	Continue to review and update as required.
Air Quality Management Plan	Comprehensive review completed by IEMA in February 2024 and approved by NSW Planning on 18 June 2024.	Continue to review and update as required.
Biodiversity Offset Area Management Plan	Comprehensive review completed by Wedgetail Project Consulting (WPC) in May 2024. Development of the final revised document is subject to Commonwealth Approval for MOD10.	Final update pending Commonwealth Approval for MOD10.
Biodiversity Offset Strategy	Originally approved in 2015.	Update pending Commonwealth Approval for MOD10.
Blast Management Plan	Comprehensive review completed by IEMA in March 2024 and approved by NSW Planning on 29 April 2024.	Continue to review and update as required.
Heritage Management Plan	Comprehensive review completed by Heritage Now in August 2023 and approved by NSW Planning on 12 January 2024.	Continue to review and update as required.
Landscape and Rehabilitation Management Plan	Comprehensive review completed by IEMA and WPC in October 2024 and approved by NSW Planning on 11 February 2025.	Continue to review and update as required.
Noise Management Plan	Comprehensive review completed by EMM in February 2024 and approved by NSW Planning on 11 July 2024.	Continue to review and update as required.
Transport Management Plan	Comprehensive review completed by ADW Johnson in May 2024 and approved by NSW Planning on 26 November 2024.	Continue to review and update as required.
Tetratheca juncea Translocation Plan	Program ceased in 2020.	–
Water Management Plan	Comprehensive review completed by ADW Johnson in May 2024 and is currently pending approval by NSW Planning.	Continue to review and update as required.

4.0 Operations Summary

The KEQ site operated during the 2024 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-24	109,693	3,559
Feb-24	82,999	2,649
Mar-24	92,042	3,003
Apr-24	91,145	2,988
May-24	97,554	3,113
Jun-24	91,148	3,058
Jul-24	93,576	3,148
Aug-24	100,141	3,410
Sep-24	97,268	3,310
Oct-24	93,705	3,123
Nov-24	84,997	2,861
Dec-24	81,260	2,687
2024 TOTAL:	**1,115,528**	**36,909**
2025 FORECAST:	**1,200,000**	**40,000**

4.2 Land Preparation

No land clearing was completed during the 2024 reporting period.

4.3 Construction & Demolition Activities

No construction activities were completed during the 2024 reporting period.

However, the original residential dwelling located on Lot 12 was demolished in November 2024 by a licenced demolition contractor.

4.4 Operating Hours

During the 2024 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 2024.

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 Reporting Period the following equipment was available for use during operational periods:

- 3x Excavators,
- 5x Front End Loaders,
- 2x Rigid Haul Trucks,
- 4x Articulated Haul Trucks,
- 1x Mini Digger,
- 1x Posi-track,
- 1 x Mobile Screen,
- 1 x Mobile Jaw,
- 1 x Mobile Grizzly,
- 1 x 40,000 litre Water Cart,
- 1 x 30,000 litre Water Cart,
- 1 x Trommel,
- 1 x Pugmill, and
- 1 x Elevated Work Platform.

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 2025 reporting period are summarised by **Table 13**.

Table 13 Forecast Operations for the Next 2025 Reporting Period.

Aspect	Forecast Operations for the Next 2025 Reporting Period
Quarrying Operations	Continuation of quarrying activities within the approved extraction pit.
Infrastructure Upgrades	Expanded operational and ancillary infrastructure in accordance with the KEQ MOD10 Project, including increased stockpile areas, additional administration buildings and upgraded sedimentation dams. 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.
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 04 October 2024 regarding the 2023 Annual Review and found it to generally satisfy the reporting requirements of the Project Approval and the NSW Planning Annual Review Guideline (October, 2015).

The actions required as an outcome of the previous Annual Reviews are summarised in **Table 14**.

Table 14 Summary of Previous Actions.

Action ID	Action Required	Status	Section
KEQ Findings – 2023 Annual Review			
2023-1	KEQ MOD10 Project: Submit EPL Variation for updated activities for the KEQ MOD10 Project.	**Continuing** Variation application pending NSW Planning approval of the Water Management Plan.	**Section 3.5** **Section 7.0**
2023-2	Undertake comprehensive review and update of the following Management Plans for the KEQ MOD10 Project and 2023 KEQ IEA.	Management Plan approvals required prior to the commencement of construction for the KEQ MOD10 Project.	
	A. Environmental Management Strategy.	**Complete** Approved 19 August 2024.	**Section 3.5**
	B. Air Quality Management Plan.	**Complete** Approved 1 June 2024.	**Section 3.5**
	C. Biodiversity Offset Area Management Plan.	**Continuing** Pending Commonwealth EPBC Approval of MOD10.	**Section 3.5**
	D. Biodiversity Offset Strategy.	**Continuing** Pending Commonwealth EPBC Approval of MOD10.	**Section 3.5**
	E. Blast Management Plan.	**Complete** Approved 29 April 2024.	**Section 3.5**
	F. Landscape & Rehabilitation Management Plan.	**Complete** Approved 11 February 2025.	**Section 3.5**
	G. Noise Management Plan.	**Complete** Approved 11 July 2024.	**Section 3.5**
	H. Transport Management Plan.	**Complete** Approved 26 November 2024.	**Section 3.5**
	I. Water Management Plan (including effectiveness of WMP and TARP for surface water management to minimise exceedances of discharge limits).	**Continuing** Pending NSW Planning Approval.	**Section 3.5**
2023-3	Air Quality: 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.	**Continuing** The EPL Variation was approved on 17 February 2025 and at the time of writing, the relocation works are currently being scheduled.	**Section 6.2**

Action ID	Action Required	Status	Section
2023-4	Surface Water Management: Progress with detailed design of surface water improvement opportunities identified by VGT (2023); and review appropriate approval pathways.	**Continuing** KEQPL will progress securing necessary approvals in 2025.	**Section 7.2**
2023-5	Groundwater Management: Install replacement piezometer and rehabilitate existing piezometer, BH207.	**Complete** Replacement borehole drilled in August 2024.	**Section 7.3**
2023-6	Fencing: **A.** Install fencing around Lot 5 dwelling APZ. **B.** Restring fencing along northern boundary of Lot 5. **C.** Install fauna fencing along the western boundary of Lot 13 adjoining the KEQ site.	**A. Completed** **B. Completed** **C. Quoted**	**Section 6.6**
2023-7	Erosion and Sediment Control: Repair sites of surface erosion along the eastern interface of the approved KEQ disturbance boundary and Lot 13.	**Continuing** KEQPL will progress securing necessary approvals in 2025 to facilitate works / site access.	**Section 6.6**
2023-8	Weed Control: Determine appropriate lantana control programme.	**Continuing** KEQPL are continuing to review appropriate resourcing to undertake.	**Section 6.6**
2023-9	Pest Control: Undertake 2-yearly vertebrate post monitoring.	**Continuing** KEQPL will progress securing necessary approvals in 2025.	**Section 6.6**
2023-10	Fire Management: Develop and implement a Fire Management Strategy for the BOA.	**Complete** Fire Management Strategy developed by Coolburn in October 2024.	**Section 6.6**
2023-11	Include laden truck movement data in the Annual Review for all future submissions.	Completed in 2023.	**Appendix 4**
2023-12	Review repair options to the hazardous materials storage container.	**Complete** Container removed from site in early 2024.	**Appendix 4**
2023-13	Update Hazardous Substances Register to include diesel ASTs.	Completed in 2023.	**Appendix 4**
2023-14	Implement document management system to ensure the review, revision and re-approval of statutory management plans are completed.	Completed in 2023.	**Appendix 4**

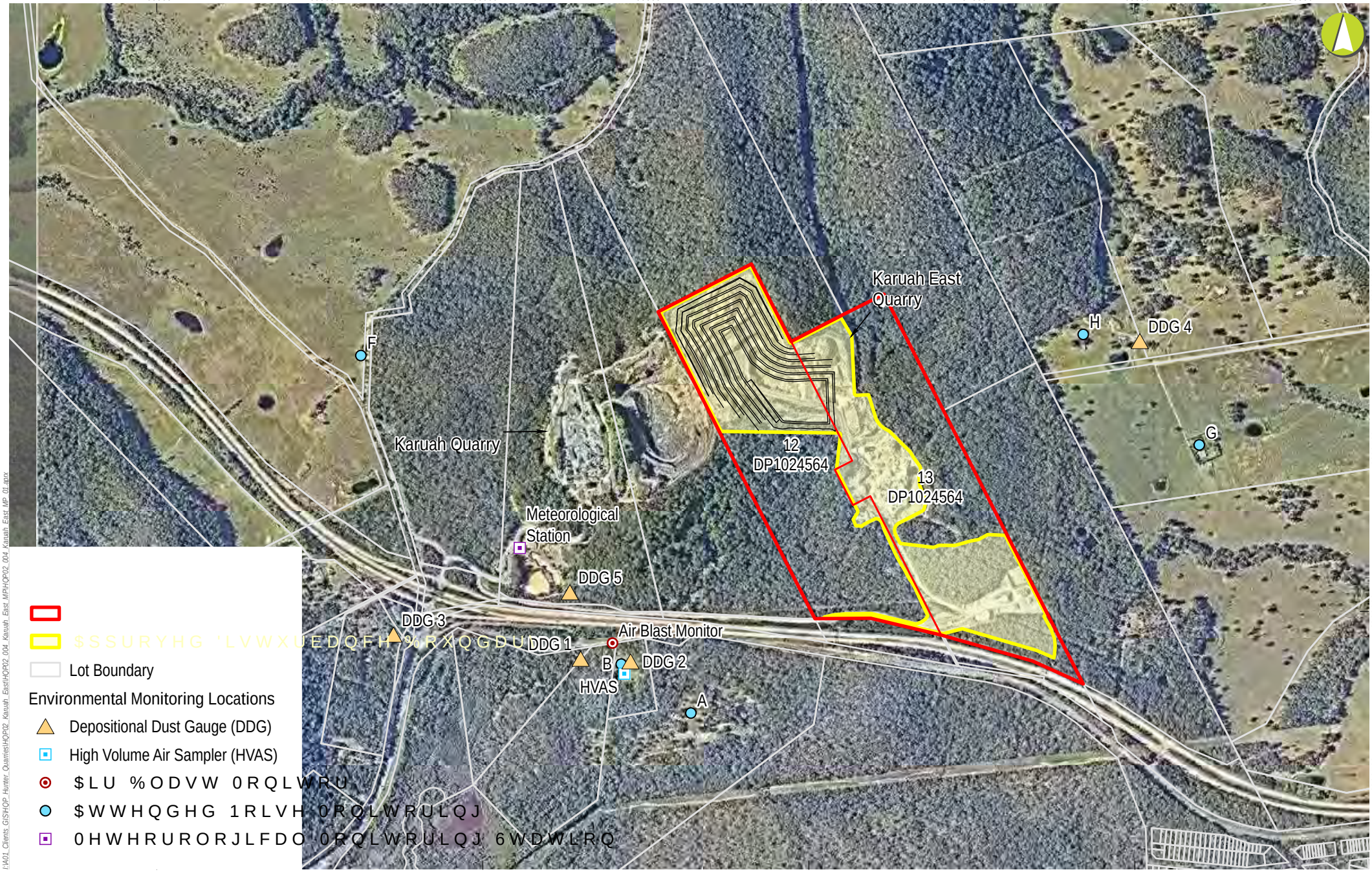
6.0 Environmental Performance

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

Table 15 provides a summary of the environmental performance at the site for the 2024 reporting period.

Table 15 Summary of Environmental Performance During the 2024 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 Depositional Dust exceedance	Exceedance at DDG 4 during the October 2024 monitoring period considered to be an anomalous result.	Minor relocation of 3x DDG's to minimise risks of inaccurate results as far as reasonably possible.
Blasting	Project Approval – Schedule 3, Condition 8	Compliant	Within criteria	Continued monitoring
Noise	Project Approval – Schedule 3, Condition 3	1x $LA_{1,1}$ exceedance during the morning shoulder.	Exceedance associated with the impact of truck tailgate over potholed roadway.	Implementation of improved continuous road repairs following wet-weather events.
Heritage	Project Approval – Schedule 3, Condition 36	Compliant	No specific criteria	Continued monitoring
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	Non-Compliant	Discharges of sediment-laden water following major rainfall events.	Continued monitoring
			Minor pH exceedances during controlled discharges.	Implementation of improved processes, including fieldsheets and checklists.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Karuah East Quarry
Annual Review 2024
FIGURE 5 - Environmental Monitoring Locations

6.1 Meteorological Monitoring

For the 2024 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**.

METEOROLOGICAL MONITORING

17. For the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline.

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 26 March 2024 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 Reporting Period.

Table 16 Recorded 2024 Meteorological Data.

Month	Temperature (°C)			Rainfall (mm)		Wet Days (No. >1 mm)	Wind [Max Gust] (km/h)
	Min	Ave	Max	Total	Max Daily		
Jan-24	14.7	24.6	45.1	36.2	12.2	8	45.0
Feb-24	15.6	23.9	39.2	107.4	42.8	9	52.1
Mar-24	12.3	21.7	40.0	71.6	15.8	9	56.8
Apr-24	9.4	18.1	30.4	308.4	117.6	9	46.1
May-24	4.2	14.2	23.2	285.2	40.2	14	47.3
Jun-24	2.7	11.7	22.6	192.4	54.6	8	42.6
Jul-24	2.1	11.5	23.3	65.4	10.4	11	65.1
Aug-24	3.6	14.1	30.9	85.2	16.2	10	65.1
Sep-24	3.7	15.4	29.3	147.0	52.6	10	61.5
Oct-24	7.2	17.5	32.6	79.4	18.8	9	45.0
Nov-24	12.0	21.8	39.3	56.4	16.8	10	50.9
Dec-24	11.7	23.6	39.3	64.4	29.8	7	49.7

Average monthly temperatures during 2024 ranged from 11.5 to 24.6 °C, with a maximum temperature of 45.1 °C recorded in January 2024. Total monthly rainfall ranged from 36.2 mm (January) to 308.4 mm (April), with the maximum daily rainfall recorded at 117.6 mm on 06 April 2024. The maximum wind gust was recorded at 65.1 km/h on both 21 July 2024 and 29 August 2024.

The total rainfall for 2024 was 1,504 mm which can be compared to 931 mm in 2023.

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).

Air Quality Criteria

13. 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.

Table 7: Long-term impact assessment criteria for particulate matter

Pollutant	Averaging period	[d] Criterion
Total suspended particulates (TSP)	Annual	[a] 90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	[a] 30 µg/m^3

Table 8: Short-term impact assessment criteria for particulate matter

Pollutant	Averaging period	[d] Criterion
Particulate matter < 10 µm (PM_{10})	24 hour	[a] 50 µg/m^3

Table 9: Long-term Impact Assessment Criteria for Deposited Dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
[c] Deposited dust	Annual	[b] 2 g/m^2 /month	[a] 4 g/m^2 /month

Notes to Tables 7-9:

- *[a] Total impact (ie incremental increase in concentrations due to the development plus background concentrations due to all other sources);*
- *[b] Incremental impact (ie incremental increase in concentrations due to the development on its own);*
- *[c] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.*
- *[d] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Planning Secretary in consultation with EPA.*

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 quarry operations, product processing and vehicle movements. 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 is illustrated by **Figure 5**.

Environmental Performance Results (Deposited Dust)

Depositional dust results are outlined within **Table 17**. The 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^2/month) over the 2024 reporting period.

Table 17 Summary of Depositional Dust Gauge Results During the 2024 Reporting Period.

Monitoring Details				*Deposited Dust (g/m^2/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-24	28/12/2023	25/01/2024	28	1.4	1.2	1.0	1.2	1.7
Feb-24	25/01/2024	26/02/2024	32	1.1	0.8	1.3	1.3	1.3
Mar-24	26/02/2024	28/03/2024	31	0.8	0.9	1.8	0.6	1.8
Apr-24	28/03/2024	29/04/2024	32	0.9	0.4	0.5	0.8	0.5
May-24	29/04/2024	29/05/2024	30	0.5	0.3	0.2	0.4	0.4
Jun-24	29/05/2024	28/06/2024	30	0.7	0.5	0.5	0.7	0.4
Jul-24	28/06/2024	30/07/2024	32	1.1	0.8	0.6	0.9	0.7
Aug-24	30/07/2024	30/08/2024	31	0.7	0.5	0.7	0.9	0.6
Sep-24	30/08/2024	30/09/2024	31	2.2	1.2	1.3	1.2	0.9
Oct-24	30/09/2024	31/10/2024	31	1.0	0.7	0.7	5.1*	0.4
Nov-24	31/10/2024	29/11/2024	29	1.4	1.1	1.1	1.7	0.9
Dec-24	29/11/2024	30/12/2024	29	0.6	1.4	1.3	3.1	1.1
2023 Annual Average:				**0.8**	**1.2**	**1.0**	**0.8**	**0.9**
2023 Minimum:				**0.2**	**0.3**	**0.2**	**0.1**	**0.4**
2023 Maximum:				**1.6**	**2.5**	**2.2**	**1.6**	**1.8**

However, it should be noted that an anomalous exceedance was recorded at DDG4 during the October 2024 monitoring period which was subsequently reported to NSW Planning, the NSW EPA and surrounding landholders in accordance with the relevant conditions of the Project Approval and EPL. NSW Planning subsequently determined to record a breach of the Project Approval on 11 December 2024.

Environmental Performance Results (Particulate Matter)

Total Suspended Particulates (TSP) and Particulate Matter < 10 µm (PM10) results for the 2024 reporting period are summarised by **Table 18** and illustrated by **Figure 8** and **Figure 9** respectively. The results were compliant with the long-term criteria (TSP and PM10) and short-term criteria (PM10 only), as outlined below:

- The annual average TSP was 20.3 µg/m^3, which is below the long-term criteria of 90 µg/m^3;
- The annual average PM10 was 9.7 µg/m^3, which is below the long-term criteria of 30 µg/m^3; and
- The maximum PM10 was 21 µg/m^3, which is below the short-term criteria of 50 µg/m^3.

Table 18 TSP & PM10 High-Volume Air Sampler Results During the 2024 Reporting Period.

HVAS Run Date	TSP (µg/m³)	PM10 (µg/m³)	Status		HVAS Run Date	TSP (µg/m³)	PM10 (µg/m³)	Status
06/01/2024	17	8	Compliant		04/07/2024	9	6	Compliant
12/01/2024	22	10	Compliant		10/07/2024	7	2	Compliant
18/01/2024	19	8	Compliant		16/07/2024	13	6	Compliant
24/01/2024	33	14	Compliant		22/07/2024	17	11	Compliant
30/01/2024	32	17	Compliant		28/07/2024	13	6	Compliant
05/02/2024	34	19	Compliant		03/08/2024	10	7	Compliant
11/02/2024	29	10	Compliant		09/08/2024	15	8	Compliant
17/02/2024	23	11	Compliant		15/08/2024	7	3	Compliant
23/02/2024	32	13	Compliant		21/08/2024	28	16	Compliant
29/02/2024	53	21	Compliant		27/08/2024	25	14	Compliant
06/03/2024	40	14	Compliant		02/09/2024	39	20	Compliant
12/03/2024	41	17	Compliant		08/09/2024	31	18	Compliant
18/03/2024	12	4	Compliant		14/09/2024	15	9	Compliant
24/03/2024	10	4	Compliant		20/09/2024	29	12	Compliant
30/03/2024	8	3	Compliant		26/09/2024	18	9	Compliant
05/04/2024	9	5	Compliant		02/10/2024	12	7	Compliant
11/04/2024	16	6	Compliant		08/10/2024	21	11	Compliant
17/04/2024	25	10	Compliant		14/10/2024	10	5	Compliant
23/04/2024	12	5	Compliant		20/10/2024	27	14	Compliant
29/04/2024	12	5	Compliant		26/10/2024	19	9	Compliant
05/05/2024	3	2	Compliant		01/11/2024	14	7	Compliant
11/05/2024	7	4	Compliant		07/11/2024	39	18	Compliant
17/05/2024	15	9	Compliant		13/11/2024	19	9	Compliant
23/05/2024	12	7	Compliant		19/11/2024	29	14	Compliant
29/05/2024	21	11	Compliant		25/11/2024	36	16	Compliant
04/06/2024	8	4	Compliant		01/12/2024	18	10	Compliant
10/06/2024	9	4	Compliant		07/12/2024	28	15	Compliant
16/06/2024	5	3	Compliant		13/12/2024	43	20	Compliant
22/06/2024	5	3	Compliant		19/12/2024	24	10	Compliant
28/06/2024	12	6	Compliant		25/12/2024	23	9	Compliant
					31/12/2024	25	11	Compliant
2024 Annual Average:						**20.3**	**9.7**	**Compliant**
2024 Minimum:						**3**	**2**	
2024 Maximum:						**53**	**21**	

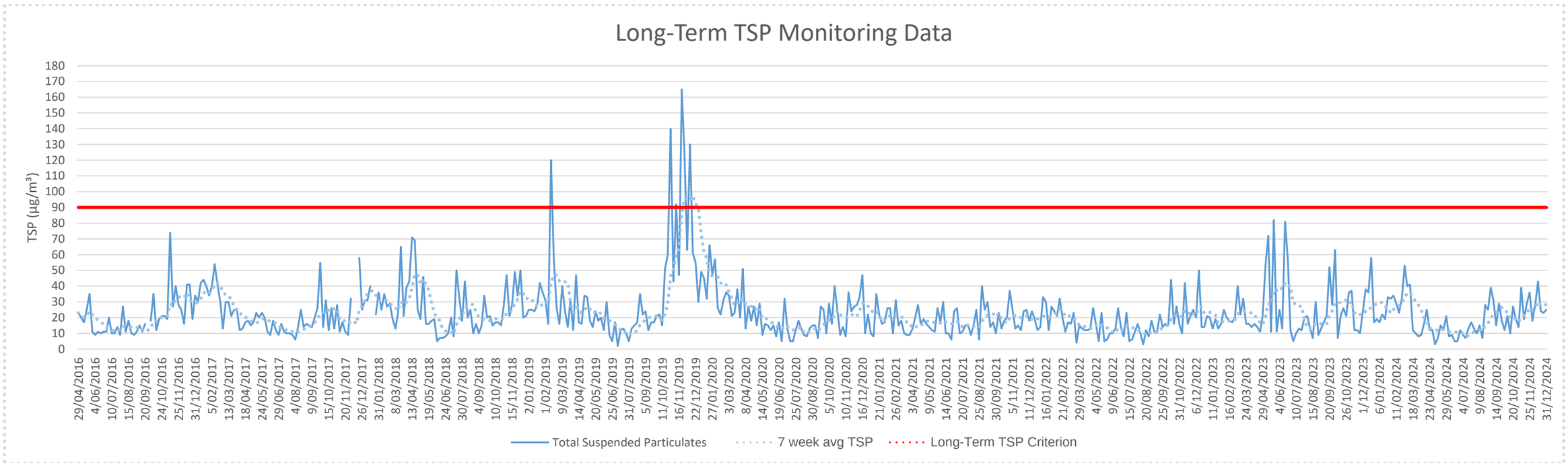

Figure 8 Long-term TSP monitoring trends.

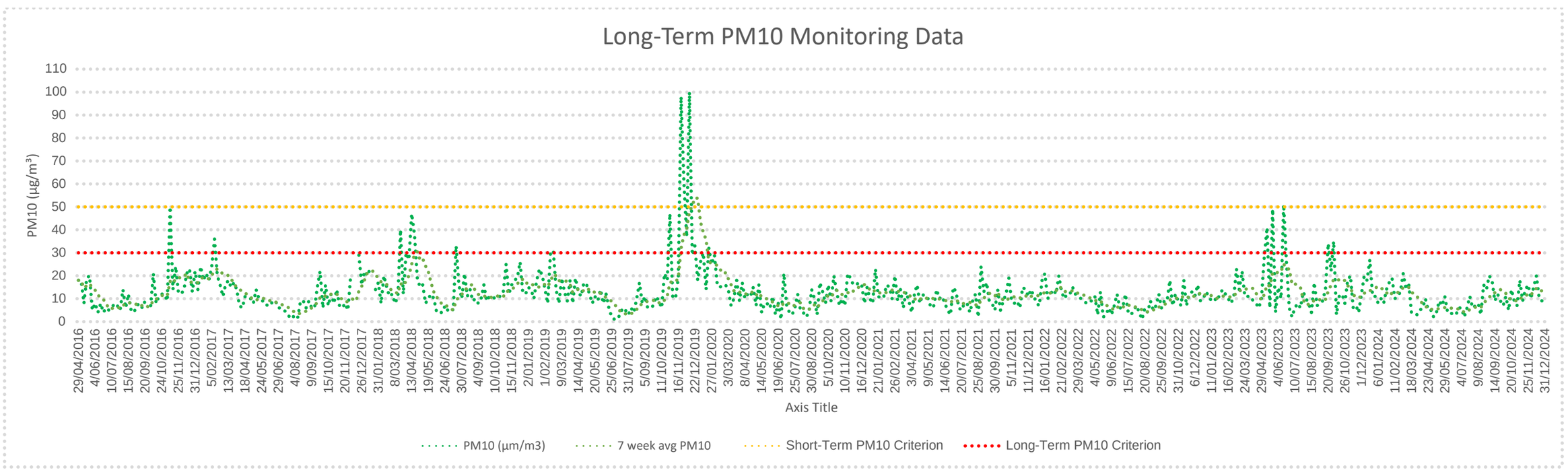

Figure 9 Long-term PM10 monitoring trends.

Management Measures

The following best practice air quality control measures continued to be implemented in 2024 including:

- 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 the POEO Act.

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 occur.

In response to DDG contamination events in 2023, KEQPL currently propose to undertake minor adjustments to the locations of three DDG's. EPL Variation 8 was approved on 17 February 2025 and at the time of writing, the minor relocation works are currently being scheduled with KEQPL's contractor.

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 2024, eighteen (18x) blast events were completed at the site as summarised by **Table 19**. All blast output results were within the limits provided by the Project Approval and EPL.

Table 19 Blast Monitoring Results for the 2024 Reporting Period.

Date	Time	Location	Airblast Overpressure* (dB [Lin Peak])	Ground Vibration* PPV (mm/s)
22/01/2024	14:10	RL 128	105.5	0.50
14/02/2024	12:03	RL 128	n/t	n/t
11/03/2024	13:57	RL 105	112.4	0.60
16/04/2024	13:34	RL 120	112.2	0.69
03/05/2024	13:07	RL 105	104.6	1.26
22/05/2024	14:07	RL 120	112.4	0.88
27/05/2024	12:01	RL 105	106.6	0.97
06/06/2024	11:31	RL 99	108.3	0.84
19/06/2024	11:35	RL 135	111	0.50
04/07/2024	12:06	RL 128	n/t	n/t
12/07/2024	14:38	RL 120	112.7	0.66
26/07/2024	12:33	RL 105	106.8	1.30
19/08/2024	14:05	RL 105 + 128	108.6	1.23
02/09/2024	13:06	RL 105	110.5	0.77
02/10/2024	12:01	RL 105	105.9	1.17
16/10/2024	13:58	RL 105	113.5	0.63
06/11/2024	14:21	RL 120	n/t	n/t
14/11/2024	14:20	RL 120 + 128	110.7	0.37

***n/t = Not triggered**
Ground Vibration < 0.5 mm/s
Overpressure < 108 dB(L)

Management Measures

Section 3 of the approved *Blast Management Plan* outlines the blasting controls that are implemented at the site. During the 2024 reporting period, the sites Blast Notification register was subject to comprehensive review.

Improvements

KEQPL will continue to monitor blasting activities in accordance with the conditions of the Project Approval and EPL and will review operational practices if any exceedances or incidents occur, or community complaints are received.

6.4 Noise

EIS Predictions

For the KEQ MOD10 Project, a Noise Impact Assessment was conducted by EMM (EMM, 2022) in accordance with the methodology outlined in the NPfI 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 20**.

Table 20 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

Location	Period	Predicted Noise Level MOD 10 operations (LAeq,15min) (dB)	PNTL (LAeq,15min) (dB)	Existing Noise Limit (LAeq,15min) (dB)
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 minor administrative change to the EPL will be sought during the 2025 statutory licence review to reflect the KEQ MOD10 Project, however, this will not result in a change to the quantitative criteria.

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[a] on privately-owned land.

Table 2: Operational noise criteria dB

Noise Assessment Location[a]	Morning Shoulder $L_{Aeq\ (15\ min)}$	Morning Shoulder L_{Amax}	Day $L_{Aeq\ (15\ min)}$	Evening $L_{Aeq\ (15\ min)}$
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

[a] *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.

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 2024 reporting period are provided by **Appendix 3**.

Noise results for all residential receptors were generally within compliance limits for all morning shoulder, day and evening monitoring time periods across all four quarterly monitoring rounds. However, in the Q2 2024 monitoring round on 23 May 2024, a minor exceedance was identified.

Monitoring at Receptor G at 6:14 am during the morning shoulder, the site $LA_{1,1minute}$ (i.e. instantaneous maximum noise) was measured at 55 dB, with the direction of the noise coming from the Karuah East Quarry weighbridge. This noise exceeded the morning shoulder limit of 52 dB by 3 dB; whilst the LAeq,15minute (i.e. 15-minute average noise) remained within the compliance limits.

Therefore, the noise exceedance was assessed as being associated with truck tailgate impact noise, possibly caused by potholes on the access road following the continuous steady rainfall of approximately 20 to 30 mm of daily rainfall over the preceding week.

Upon identification of this noise source, repairs were completed to the access road later that day, and all drivers and operations staff were subject to toolbox talks at their next shift pre-start meeting, regarding appropriate travel speeds for crossing wheel washes, cattle grids, potholes, and other road defects to minimise noise emissions.

The incident was reported to NSW Planning, the EPA and surrounding landholders in accordance with the Project Approval and EPL. However, at the time of writing, no formal correspondence has been received from NSW Planning or the EPA in relation to this matter.

Management Measures and Improvements

Section 3.0 of the approved *Noise Management Plan* outlines the noise mitigation and management controls that are implemented at the site.

Following the exceedance of noise criteria, KEPQL have undertaken greater monitoring of road surface conditions following rainfall events to minimise the generation of impact noise associated with truck tailgates.

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 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 2025 reporting period for the MOD10 project once construction commences.

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 (L&RMP).

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 WPC in September and October 2024, with the Biodiversity Offset Area Monitoring Report attached in **Appendix 5**. Key findings from the 2024 monitoring programme include:

- Asperula asthenes, Tetratheca juncea and Grevillea parviflora subsp. parviflora populations are in good condition, though several populations have seen decreases in size since the previous monitoring event. This is possibly due to many factors including natural environmental variation, edge effect from quarry operations (MP 15, MP6) or Lantana camara infestations (MP3). Others have experienced a small increase but have overall remained relatively stable since the previous monitoring event.

- Key disturbances recorded within the KEQ BOA and Lot 12 include minor sedimentation due to overtopping of a small number of sediment fences, the occurrence of dust on foliage within close proximity to quarry operations, and the runoff of excavated rock into the BOA from the eastern boundary and western boundary along the haul road of the quarry operations.

- Weed coverage across the KEQ BOA and Lot 12 has significantly increased – management is required to reduce Lantana cover, especially within the northern portion of the site (Lot 5 and spreading down into Lot 13), adjacent to the powerline easement (particularly MP 2, MP3 and MP 4). Lantana infestations were also seen in the northern section of Lot 12.

- Maintenance required to repair and install fencing and sediment fencing.

- Minor erosion and sedimentation of a dam in Lot 12 due to runoff from the eastern boundary of the quarry.

- No feral pigs and foxes, or evidence thereof, were observed during the 2024 monitoring event, however this species was identified near the powerline easement in 2020. Despite not having been identified since, it is likely this species persists within the BOA and therefore continued control programmes be carried out.

- A total of 375 nest boxes have been installed to date across the KEQ BOA. Monitoring of nest boxes have been carried out in 2018, 2020 2022 and 2024. No further nest boxes need to be installed until further clearing of hollow bearing trees occurs. Monitoring will be required in 2026.

Management Measures

The 2024 Biodiversity Offset Area Monitoring Report (**Appendix 5**) identified a number of actions as summarised by **Table 21** and **Table 32**.

Table 21 Summary of Management Actions from the 2024 BOA Monitoring Report.

Action ID	Action Required	KEQPL Response	Status
Fencing and Access Tracks			
2024-1	Review all fencing and signage required for the BOA.	KEQPL will be completed a comprehensive review of the status of all fencing across the Biodiversity Offset Area.	**Open**
2024-2	Review all erosion and sediment controls for the BOA.	KEQPL will be completed a comprehensive review of the status of all fencing across the Biodiversity Offset Area.	**Open**

Improvements

The revised Landscape & Rehabilitation Management Plan (L&RMP) was approved on 11 February 2025; and the Biodiversity Offset Area Management Plan (BOAMP) will be finalised following receipt of Commonwealth EPBC Approval for the KEQ MOD10 Project.

Throughout 2024, KEQPL commenced the installation of permanent survey marks delineated with continuous flagging rope to mark-out internal boundaries of the BOA.

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**.

WASTE

42. The Applicant must:
(a) minimise the waste generated by the development; and
(b) ensure that the waste generated by the development is appropriately stored, handled, and disposed of,
to the satisfaction of the Planning Secretary.

Figure 12 Waste Management Requirements provided by the Project Approval.

Environmental Performance Results

A licenced waste contractor removes waste from a 3 m^3 waste bin at the site. There were 50 collections during the reporting period, with capacity of the bin ranging from 50% to 95%, or a total of approximately 93 m^3 of waste being removed from site. This represents a stabilisation in the increase in waste generation compared to 106 m^3 in 2023 and 57 m^3 in 2022 which was be attributed to greater housekeeping processes being implemented in the previous reporting period.

Improvements

KEQPL will continue to monitor and review waste management processes as required.

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 any discharges of water from the site is of a suitable quality, as far as reasonably practicable. 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.**

Karuah East Quarry

Annual Review 2024

FIGURE 13 - Water Monitoring Location

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 22**. These pollutants will be tested during discharge events from LDP 1, LDP 2 and LDP 3.

Table 22 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 23**. In summary:

- 10x days of offsite discharges from Dam 1 (all of which were non-compliant);
- 47x days of offsite discharges from Dam 2 (8x of which were non-compliant); and
- 77x days of offsite discharges from Dam 3 (5x of which were non-compliant).

Table 23 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
Dam 1 – LDP 1						
05/04/2024	7.6	500	800	NV	Uncontrolled	Non-Compliant
06/04/2024	7.2	1,200	>1,000	NV	Uncontrolled	Non-Compliant
07/04/2024	7.2	450	>1,000	NV	Uncontrolled	Non-Compliant
08/04/2024	7.2	780	>1,000	NV	Uncontrolled	Non-Compliant
21/04/2024	7.4	630	>1,000	NV	Uncontrolled	Non-Compliant
22/04/2024	7.2	1,640	>1,000	NV	Uncontrolled	Non-Compliant
22/04/2024	7.3	1,000	>1,000	NV	Uncontrolled	Non-Compliant
02/06/2024	7.5	420	>1,000	NV	Uncontrolled	Non-Compliant
03/06/2024	7.3	770	>1,000	NV	Uncontrolled	Non-Compliant
04/06/2024	7.6	350	>1,000	NV	Uncontrolled	Non-Compliant
Dam 2 – LDP 2						
16/01/2024	7.7	5	4.2	NV	Controlled	Compliant
08/02/2024	7.2	6	9.7	NV	Controlled	Compliant
09/02/2024	7.3	6	5.3	NV	Controlled	Compliant
15/02/2024	6.8	8	10	NV	Controlled	Compliant
16/02/2024	7.9	7	7.8	NV	Controlled	Compliant
05/03/2024	7.8	5	6	NV	Controlled	Compliant
18/03/2024	7.6	26	27	NV	Controlled	Compliant
25/03/2024	8.8	9	5	NV	Controlled	Non-Compliant^
05/04/2024	7.3	240	520	NV	Uncontrolled	Non-Compliant*
06/04/2024	6.8	150	320	NV	Uncontrolled	Non-Compliant*
07/04/2024	6.7	96	210	NV	Uncontrolled	Non-Compliant*
21/04/2024	6.8	280	520	NV	Uncontrolled	Non-Compliant*
22/04/2024	6.8	140	320	NV	Uncontrolled	Non-Compliant*
03/05/2024	6.9	14	55	NV	Controlled	Compliant
04/05/2024	6.8	16	50	NV	Controlled	Compliant
09/05/2024	6.8	38	45	NV	Controlled	Compliant
10/05/2024	7.3	7	17	NV	Controlled	Compliant
13/05/2024	7.1	7	13	NV	Controlled	Compliant
14/05/2024	7.1	<5	12	NV	Controlled	Compliant
20/05/2024	7.0	19	50	NV	Controlled	Compliant
21/05/2024	7.0	37	65	NV	Controlled	Compliant
22/05/2024	6.8	18	45	NV	Controlled	Compliant
23/05/2024	6.9	18	55	NV	Controlled	Compliant
02/06/2024	6.9	44	140	NV	Uncontrolled	Non-Compliant*
03/06/2024	6.8	42	110	NV	Uncontrolled	Non-Compliant*
04/06/2024	7.0	28	65	NV	Controlled	Compliant
06/06/2024	6.8	29	70	NV	Controlled	Compliant
17/06/2024	7.1	6	18	NV	Controlled	Compliant
18/06/2024	7.3	<5	13	NV	Controlled	Compliant
26/06/2024	7.1	16	38	NV	Controlled	Compliant
27/06/2024	7.0	14	38	NV	Controlled	Compliant
01/07/2024	7.1	9	26	NV	Controlled	Compliant
02/07/2024	6.9	22	29	NV	Controlled	Compliant
01/08/2024	7.1	18	28	NV	Controlled	Compliant

Date	pH	Total Suspended Solids, TSS (mg/L)	Turbidity (NTU)	Oil and Grease	Discharge Type	Status
06/08/2024	7.2	21	36	NV	Controlled	Compliant
15/08/2024	6.6	22	25	NV	Controlled	Compliant
16/08/2024	6.9	<5	6	NV	Controlled	Compliant
19/08/2024	6.9	<5	11	NV	Controlled	Compliant
26/08/2024	6.8	11	26	NV	Controlled	Compliant
26/09/2024	7.6	<5	3	NV	Controlled	Compliant
27/09/2024	7.3	36	50	NV	Controlled	Compliant
02/10/2024	7.5	29	50	NV	Controlled	Compliant
09/10/2024	6.8	27	45	NV	Controlled	Compliant
14/10/2024	7.1	6	13	NV	Controlled	Compliant
25/10/2024	7.9	12	22	NV	Controlled	Compliant
12/11/2024	7.7	14	22	NV	Controlled	Compliant
02/12/2024	7.3	25	40	NV	Controlled	Compliant
Dam 3 – LDP 3						
08/02/2024	7.2	7	8.4	NV	Controlled	Compliant
09/02/2024	7.4	5	4.8	NV	Controlled	Compliant
15/02/2024	7.5	<5	2.6	NV	Controlled	Compliant
16/02/2024	7.4	7	4.6	NV	Controlled	Compliant
04/03/2024	7.2	<5	5.6	NV	Controlled	Compliant
05/03/2024	7.3	<5	4.1	NV	Controlled	Compliant
18/03/2024	7.3	7	7	NV	Controlled	Compliant
19/03/2024	7.7	5	5.1	NV	Controlled	Compliant
28/03/2024	7.7	8	12	NV	Controlled	Compliant
29/03/2024	8.6	6	4.9	NV	Controlled	Non-compliant^
02/04/2024	8.5	<5	2.6	NV	Controlled	Compliant
03/04/2024	7.4	<5	3.7	NV	Controlled	Compliant
05/04/2024	7.3	25	36	NV	Controlled	Compliant
06/04/2024	7.1	96	**130**	NV	Uncontrolled	Non-compliant*
07/04/2024	7.0	54	**75**	NV	Uncontrolled	Non-compliant*
08/04/2024	7.2	30	**55**	NV	Controlled	Compliant
10/04/2024	7.1	22	31	NV	Controlled	Compliant
11/04/2024	7.2	17	24	NV	Controlled	Compliant
12/04/2024	7.3	16	20	NV	Controlled	Compliant
13/04/2024	7.3	8	13	NV	Controlled	Compliant
21/04/2024	7.0	18	24	NV	Controlled	Compliant
22/04/2024	7.0	10	18	NV	Controlled	Compliant
23/04/2024	7.0	10	17	NV	Controlled	Compliant
24/04/2024	7.2	6	10	NV	Controlled	Compliant
01/05/2024	7.3	12	21	NV	Controlled	Compliant
02/05/2024	7.1	18	28	NV	Controlled	Compliant
03/05/2024	7.2	10	21	NV	Controlled	Compliant
04/05/2024	7.2	8	17	NV	Controlled	Compliant
09/05/2024	6.9	38	**50**	NV	Controlled	Compliant
10/05/2024	7.2	5	12	NV	Controlled	Compliant
11/05/2024	7.0	24	40	NV	Controlled	Compliant
12/05/2024	7.2	<5	13	NV	Controlled	Compliant
13/05/2024	7.3	<5	**12**	NV	Controlled	Compliant

Date	pH	Total Suspended Solids, TSS (mg/L)	Turbidity (NTU)	Oil and Grease	Discharge Type	Status
20/05/2024	7.1	20	**50**	NV	Controlled	Compliant
21/05/2024	7.1	23	40	NV	Controlled	Compliant
22/05/2024	6.9	37	**75**	NV	Controlled	Compliant
23/05/2024	7.0	19	**55**	NV	Controlled	Compliant
24/05/2024	6.8	20	40	NV	Controlled	Compliant
02/06/2024	7.1	44	**130**	NV	Uncontrolled	Non-compliant*
03/06/2024	6.9	50	**120**	NV	Uncontrolled	Non-compliant*
04/06/2024	7.0	32	**85**	NV	Controlled	Compliant
05/06/2024	7.0	21	**60**	NV	Controlled	Compliant
06/06/2024	6.9	16	**60**	NV	Controlled	Compliant
07/06/2024	7.0	18	**80**	NV	Controlled	Compliant
17/06/2024	7.1	28	**45**	NV	Controlled	Compliant
18/06/2024	7.0	23	40	NV	Controlled	Compliant
19/06/2024	7.1	7	39	NV	Controlled	Compliant
24/06/2024	7.1	16	**60**	NV	Controlled	Compliant
25/06/2024	7.1	18	**50**	NV	Controlled	Compliant
26/06/2024	7.0	18	40	NV	Controlled	Compliant
01/07/2024	7.2	10	25	NV	Controlled	Compliant
02/07/2024	7.2	9	26	NV	Controlled	Compliant
04/07/2024	7.1	12	28	NV	Controlled	Compliant
05/07/2024	7.2	6	24	NV	Controlled	Compliant
09/07/2024	7.5	6	18	NV	Controlled	Compliant
10/07/2024	7.3	6	19	NV	Controlled	Compliant
01/08/2024	7.3	<5	8.5	NV	Controlled	Compliant
02/08/2024	7.3	<5	11	NV	Controlled	Compliant
06/08/2024	8.4	<5	5.1	NV	Controlled	Compliant
15/08/2024	8.3	<5	3.5	NV	Controlled	Compliant
16/08/2024	8.0	<5	5.5	NV	Controlled	Compliant
19/08/2024	7.5	<5	11	NV	Controlled	Compliant
26/08/2024	7.3	<5	5.4	NV	Controlled	Compliant
26/09/2024	7.2	7	9.5	NV	Controlled	Compliant
27/09/2024	7.1	32	**50**	NV	Controlled	Compliant
28/09/2024	7.1	27	40	NV	Controlled	Compliant
29/09/2024	7.5	21	29	NV	Controlled	Compliant
30/09/2024	7.6	12	21	NV	Controlled	Compliant
01/10/2024	7.6	22	36	NV	Controlled	Compliant
09/10/2024	7.2	<5	8	NV	Controlled	Compliant
10/10/2024	7.1	10	18	NV	Controlled	Compliant
14/10/2024	7.4	10	21	NV	Controlled	Compliant
15/10/2024	7.6	6	14	NV	Controlled	Compliant
12/11/2024	7.4	<5	2.7	NV	Controlled	Compliant
02/12/2024	7.2	11	14	NV	Controlled	Compliant
03/12/2024	7.7	5	6.8	NV	Controlled	Compliant
04/12/2024	7.4	6	5.1	NV	Controlled	Compliant

^Minor pH exceedances during controlled discharges.

**Discharges of sediment-laden water associated with major rainfall events.*

Environmental Performance Results (Monitoring)

Surface water monitoring results for the site are provided by **Table 24** for the first half of 2024 and **Table 25** for the second half of 2024. The results the downstream monitoring sites are generally compliant with the ANZECC Guidelines.

Table 24 Six-Monthly Surface Water Monitoring Results for H1 2024 (21 March 2024).

Parameter	Units	EPL Discharge Limits	LDP1	LDP2	LDP3	SW1	SW2	SW3	SW4
Oil and Grease	mg/L	5 and/or non-visible	Not Visible	Not Visible	Not Visible	Not flowing – unable to obtain sample.	Not Visible	Not Visible	Not flowing – unable to obtain sample.
pH	pH	6.5 – 8.5	8.1	8.6	8.7		6.9	6.6	
Total Suspended Solids	mg/L	40	370	17	<5		10	220	
Parameter	**Units**	**ANZECC Guidelines***	**LDP1**	**LDP2**	**LDP3**		**SW2**	**SW3**	
Conductivity	µS/cm	125 – 2200	638	1,210	1,090		493	396	
Total Dissolved Solids	mg/L	--	620	860	740		310	660	
Total Phosphorus	mg/L	0.025	0.3	<0.05	<0.05		<0.05	0.3	
Ammonia	mg/L	0.2	<0.02	<0.02	<0.02		0.11	<0.02	
Nitrogen (Nitrate)	mg/L	0.350	3.4	0.4	0.3		0.7	0.8	
Total Hardness (as $CaCO_3$)	mg/L	--	37	320	240		37	22	
Arsenic	mg/L	0.024	0.003	<0.001	<0.001		0.001	0.003	
Cadmium	mg/L	0.0002	0.0001	<0.0001	<0.0001		<0.0001	0.0001	
Calcium	mg/L	--	5	100	74		4	3	
Chromium	mg/L	0.001	0.017	<0.0001	<0.0001		<0.0001	0.0001	
Copper	mg/L	0.0014	0.019	0.001	<0.001		<0.001	0.021	
Lead	mg/L	0.0034	0.01	<0.001	<0.001		<0.001	<0.021	
Magnesium	mg/L	--	6.2	15	13		6.4	3.0	
Manganese	mg/L	1.9	0.65	0.03	0.013		0.18	0.65	
Nickel	mg/L	0.011	0.015	<0.001	<0.001		<0.001	0.016	
Potassium	mg/L	--	2	3	2		4	2	
Sodium	mg/L	--	99	82	110		70	58	
Vanadium	mg/L	--	0.064	0.003	<0.001		0.004	0.058	
Zinc	mg/L	0.0312	0.13	0.004	0.001		0.003	0.14	

*Key default trigger values presented in ANZECC 2000 for slightly disturbed upland rivers in NSW. Heavy metals based on hard water (120-179 mg CaCO3/L).

Table 25 Six-Monthly Surface Water Monitoring Results for H2 2024 (08 August 2024).

Parameter	Units	EPL Discharge Limits	LDP1	LDP2	LDP3	SW1	SW2	SW3	SW4
Oil and Grease	mg/L	5 and/or non-visible	Not Visible	Not Visible	Not Visible	Not flowing – unable to obtain sample.	Not Visible	Not Visible	Not Visible
pH	pH	6.5 – 8.5	7.6	7.7	8.8		6.0	6.6	6.2
Total Suspended Solids	mg/L	40	810	48	<5		10	130	36
Parameter	**Units**	**ANZECC Guidelines***	**LDP1**	**LDP2**	**LDP3**		**SW2**	**SW3**	**SW4**
Conductivity	µS/cm	125 – 2200	380	4,230	657		904	404	1,010
Total Dissolved Solids	mg/L	--	1,340	2,000	440		680	460	710
Total Phosphorus	mg/L	0.025	0.4	<0.05	<0.05		<0.05	0.07	<0.05
Ammonia	mg/L	0.2	<0.02	0.32	<0.02		<0.02	<0.02	<0.02
Nitrogen (Nitrate)	mg/L	0.350	4.7	1.7	0.02		0.01	0.074	0.11
Total Hardness (as $CaCO_3$)	mg/L	--	17	1,400	140		120	81	110
Arsenic	mg/L	0.024	0.004	<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	<0.0001
Calcium	mg/L	--	2	510	46		12	23	10
Chromium	mg/L	0.001	0.035	0.001	<0.001		<0.001	0.007	0.002
Copper	mg/L	0.0014	0.047	0.002	0.001		0.001	0.008	0.002
Lead	mg/L	0.0034	0.027	<0.001	<0.001		<0.001	0.005	0.002
Magnesium	mg/L	--	3	18	5.8		23	5.9	20
Manganese	mg/L	1.9	1.4	0.51	0.006		0.26	0.22	0.10
Nickel	mg/L	0.011	0.031	0.002	<0.001		0.001	0.006	0.002
Potassium	mg/L	--	1	3	1		2	1	3
Sodium	mg/L	--	79	92	68		110	31	140
Vanadium	mg/L	--	0.011	0.006	0.001		0.003	0.022	0.009
Zinc	mg/L	0.0312	0.026	0.008	0.002		0.013	0.042	0.012

*Key default trigger values presented in ANZECC 2000 for slightly disturbed upland rivers in NSW. Heavy metals based on hard water (120-179 mg CaCO3/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 continued to progress detailed design work in accordance with the identified improvement opportunities; and will progress securing the relevant approvals in 2025.

Additionally, KEQPL implemented improved processes, including fieldsheets and checklists for controlled discharges to mitigate against minor exceedances of performance criteria, such as pH, TSS and Oil & Grease, that occurred on 25 March 2024 from LDP2 and 29 March 2024 from LDP3.

7.3 Groundwater

EIS Predictions and Approval Criteria

The EIS assessment indicted 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 30 m to their original locations to allow construction to progress.

Environmental Performance Results

Table 26 shows a comparison of groundwater levels since 2017. All groundwater locations were monitored four times during 2024 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 show a consistent increase followed by a stabilisation in water level in recent years.

Table 27 shows a comparison of groundwater quality since 2017. Sampling of groundwater monitoring locations occurred on 08 March, 28 June, 12 September and 19 December 2024.

2024 results are comparable to results from previous years. TDS levels continued to be highly variable across the years. Average Electrical Conductivity (EC) across the four monitoring locations was comparable to the 2023 average EC levels.

Management Measures and Improvements

Groundwater monitoring results are generally consistent with previous years and therefore no management measures are considered to be necessary. However, on 12 September 2024 data loggers were installed to provide additional data regarding seasonal trends.

As part of the KEQ MOD10 project, a drilling of replacement borehole (BH502) was completed in August 2024 to facilitate the future decommissioning of BH207 ahead of construction, subject to approval of the revised WMP by NSW Planning.

Table 26 Groundwater Level since 2017

Month	Groundwater level (metres below ground level)				
	BH205	BH207	BH208	BH303	BH502
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	–
Jan-2024	15.8	7.3	19.8	30.4	–
Apr-2024	15.6	6.4	19.8	30.5	–
Jul-2024	15.8	6.6	19.5	30.4	–
Dec-2024	16.8	7.0	19.2	30.3	23.3

*No data recorded due to insufficient water levels.

Table 27 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
2024	BH 205	6.0	2833	3730	4
	BH 207	6.3	2065	3525	4
	BH 208	6.4	2515	3725	4
	BH 303	5.9	1840	3768	4

*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 2024, 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 become redundant. A summary of rehabilitation details is provided by **Table 28** and **Table 29** below.

Future rehabilitation activities will be undertaken in due course once available, as outlined by the approved Landscape and Rehabilitation Management Plan (L&RMP), with planned activities for the 2025 reporting period summarised by **Table 30**.

Table 28 Summary of Rehabilitation Performance During the 2024 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 L&RMP. 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: ▪ Exploration activities; ▪ Infrastructure; ▪ Dams; and ▪ The installation or maintenance of fences, bunds and any other works.	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 29 Disturbance and Rehabilitation Status.

Item	Quarry Area Type	Previous 2023 Reporting Period [actual] (Ha)	Current 2024 Reporting Period [actual] (Ha)	Next 2025 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 30 Actions for the Next 2025 Reporting Period.

Action	KEQ Site Comment
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**.

Community Consultative Committee

6. The Applicant must establish and operate a Community Consultative Committee (CCC) for the development. The CCC must:
   (a) be established and operated in general accordance with the *Community Consultative Committees Guidelines for State Significant Projects* (Department of Planning and Environment, 2016); and
   (b) be established prior to the commencement of construction activities, to the satisfaction of the Planning Secretary.

Notes:
- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent.*
- *In accordance with the guideline, the Committee should comprise an independent chair and appropriate representation from the Applicant, Council, recognised environmental groups and the local community.*

Figure 14 Community Consultative Committee requirements from the Project Approval.

In 2024, the CCC was called to meet twice on **25 March 2024** and **09 September 2024**; 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 2024 HQPL supported the following organisations:

- Karuah Pearls Netball Club;
- Karuah Roos Rugby League Football Club;
- Karuah & District Tennis Club;
- North Arm Cove Community Association;
- Victoria Hotel Bullarama;
- Ringwood Motorsport Park;
- Bulahdelah Men's Shed;
- Rotary Clubs of Maitland;
- Stroud Show;
- Karuah Oyster & Timber Festival; 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.

The Community Call Line was advertised by:

- Signage at the entrance to the quarry premises;
- Inclusion of the Community Call Line in prominent locations on the Hunter Quarries' website; and
- Inclusion of the Community Call Line in communications with the CCC.

In 2024, no complaints were received or reported to KEQPL.

This represents a significant decrease in complaints compared to previous years with an annual average of 2.1 complaints per year as outlined by **Table 31.**

Table 31 Community Complaints 2016-2024.

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	–	–	–
2024	0	–	–	–	–	–	–	–

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 requirements from the Project Approval.

The first IEA was completed in July 2017 by EMM Consulting and in October 2020, Hansen Bailey completed the second IEA.

In October 2023, ERM conducted the third IEA 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 IEA were generally minor in nature and focused on the regular revision of Environmental Management Plans, non-compliant water discharges and various other administrative matters.

All actions have been resolved throughout 2024, as outlined in **Appendix 4**.

11.0 Incidents & Non-Compliances During the Reporting Period

During the 2024 reporting period, six (6) exceedances of performance criteria occurred, relating to surface water discharges, noise and air quality as summarised below.

- **05 to 08 April 2024 – Discharges of sediment-laden water following major rainfall event**

Uncontrolled discharges of sediment-laden water to Yalimbah and Bulga Creeks from Friday 5 April to Monday 8 April following the receipt of 200.8 mm of rainfall over five days. This rainfall event exceeded the 95th percentile 5x day rainfall depth of 90.6 mm; which the site's sediment dams are designed to withstand in accordance with Landcom's Blue Book.

During the event the PIRMP was enacted through reporting to regulatory authorities, the KEQPL executive and the local community. Formal incident reports were subsequently submitted to NSW Planning and the NSW EPA.

- **21 to 23 April 2024 – Discharges of sediment-laden water following major rainfall event**

Uncontrolled discharges of sediment-laden water to Yalimbah and Bulga Creeks from Sunday 21 April to Tuesday 23 April following the receipt of 97.4 mm of rainfall over approximately 36 hours. This rainfall event exceeded the 95th percentile 5x day rainfall depth of 90.6 mm; which the site's sediment dams are designed to withstand in accordance with Landcom's Blue Book.

During the event the PIRMP was enacted through reporting to regulatory authorities, the KEQPL executive and the local community. Formal incident reports were subsequently submitted to NSW Planning and the NSW EPA.

- **25 March & 29 March 2024 – Minor exceedances of pH during controlled discharge events**

Minor exceedances of pH were identified following controlled discharge events, including a pH of 8.8 at LDP2 on 25 March and 8.6 at LDP3 on 29 March 2024. KEQPL has since implemented improved processes, including checklists and fieldsheets, to ensure water criteria parameters for pH, TSS, and Oil & Grease, are compliant with the EPL criteria prior to commencing controlled discharges. This has since prevented recurrence.

- **23 May 2024 – Exceedance of the instantaneous noise limit during the morning shoulder**

A minor exceedance of the noise criteria during the morning shoulder at Location G (Halloran Road, North Arm Cove) was measured, with the site $LA_{1,1\ minute}$ being observed at 55 dB, compared to the compliance limit of 52 dB (i.e. an instantaneous maximum noise exceedance of 3 dB). This was assessed as being attributable to truck impact and/or tailgate noise, possibly caused by potholes on the quarry access road. It was noted at 240 degrees (magnetic) from the measurement location, which is in the general direction of the KEQ weighbridge / access road to Blue Rock Close.

The potholes occurred due to the consistent 20 to 30 mm of daily rainfall over the preceding week. These damages were repaired later in the day (23 May 2024), and truck drivers and operational staff were subject to toolbox talks regarding driving at appropriate speeds through noise-sensitive features, such as the wheel wash, cattle grids, potholes and/or other road defects, at pre-start meetings the following morning.

The exceedance was reported to NSW Planning, the NSW EPA, and surrounding landholders in accordance with the relevant conditions of the Consent and EPL. No further formal correspondence from either agency has been received.

- **02 to 04 June 2024 – Discharges of sediment-laden water following major rainfall event**

Uncontrolled discharges of sediment-laden water to Yalimbah and Bulga Creeks from Sunday 02 June to Tuesday 04 June following the receipt of 91.6 mm of rainfall over approximately 36 hours. This rainfall event exceeded the 95th percentile 5x day rainfall depth of 90.6 mm; which the site's sediment dams are designed to withstand in accordance with Landcom's Blue Book.

During the event the PIRMP was enacted through reporting to regulatory authorities, the KEQPL executive and the local community. Formal incident reports were subsequently submitted to NSW Planning and the NSW EPA.

- **October 2024 – Exceedance of depositional dust criteria at DDG 4**

An anomalous exceedance was recorded at DDG4 during the October 2024 monitoring period which was subsequently reported to NSW Planning, the NSW EPA and surrounding landholders in accordance with the relevant conditions of the Project Approval and EPL. NSW Planning subsequently determined to record a breach of the Project Approval on 11 December 2024.

12.0 Activities to be Completed in the Next Reporting Period

A consolidated summary of proposed actions to be completed during the 2025 reporting period is provided by **Table 32**.

Table 32 Summary of Proposed Actions in the Next 2025 Reporting Period.

Action ID	Action	Timeline
	2023 Annual Review	
2023-1	Submit EPL Variation for updated activities for the KEQ MOD10 Project, pending approval of the Water Management Plan by NSW Planning.	EPL Variation to be approved 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.
	C. Biodiversity Offset Area Management Plan.	Update pending Commonwealth Approval for MOD10.
	D. Biodiversity Offset Strategy.	Update pending Commonwealth Approval for MOD10.
	I. Water Management Plan (including effectiveness of WMP and TARP for surface water management to minimise exceedances of discharge limits).	Pending approval by NSW Planning.
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.	The EPL Variation was approved on 17 February 2025 and at the time of writing, the relocation works are currently being scheduled.
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.	KEQPL will progress securing necessary approvals in 2025.
2023-6	<u>Fencing:</u> **C.** Install fauna fencing along the western boundary of Lot 13 adjoining the KEQ site.	Actions to be progressed during the 2024 reporting period.
2023-7	<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 (**Action #2023-6C)**.
2023-8	<u>Weed Control:</u> Determine appropriate lantana control programme.	KEQPL are continuing to review appropriate resourcing to undertake the programme.
2023-9	<u>Pest Control:</u> Undertake 2-yearly vertebrate pest monitoring.	KEQPL are continuing to review appropriate monitoring systems.
	2024 Annual Review	
2024-1	KEQPL will be complete a comprehensive review of the status of all fencing across the Biodiversity Offset Area.	KEQPL will complete the review by 31 December 2025.
2024-2	KEQPL will be complete a comprehensive review of the status of all fencing across the Biodiversity Offset Area.	KEQPL will complete the review by 31 December 2025.
2024-3	KEQPL to complete the 5-yearly statutory review of the site's EPL and include updating the administrative references to the KEQ MOD10 Project.	KEQPL will provide a submission by 02 April 2025.

Appendix 1 – NSW Planning Correspondence

NSW Planning Response to KEQ Annual Review 2023

NSW Planning ref: MP09_0175-PA-39

Scott Ellerton
Environment and Development Manager
KARUAH EAST QUARRY PTY LIMITED
Worimi Country

04/10/2024

Sent via the Major Projects Portal only

Subject: Karuah East Quarry Project - 2023 Annual Review

Dear Mr Ellerton

I refer to the Annual Review for the period 1 January 2023 to 31 December 2023, submitted as required by Schedule 5, Condition 4 of project approval MP09_0175 as modified (the approval) to the NSW Department of Planning, Housing and Infrastructure (NSW Planning) on 2 April 2024.

NSW Planning has reviewed the Annual Review and considers it to generally satisfy the reporting requirements of the approval and the NSW Planning Annual Review Guideline (October 2015). I note that a copy of the 2023 Annual Review is publicly available on the company's website.

For future Annual Reviews, under the provisions of Schedule 2, Condition 3 of the approval, please include the following information:

1. Status update for all actions listed in Table 34 *Summary of Proposed Actions in the Next Reporting Period*

Please note that the NSW Planning's acceptance of this Annual Review is not an endorsement of the compliance status of the project.

Should you wish to discuss the matter further, please contact Jennifer Sage, Senior Compliance Officer on 0400 245 170 or email compliance@planning.nsw.gov.au

Yours sincerely

Heidi Watters
Team Leader
Compliance

As nominee of the Planning Secretary

Appendix 2 – Transport Monitoring Reports

KEQ Transport Monitoring Report – H1 2024

KEQ Transport Monitoring Report – H2 2024

Karuah East Quarry

Transport Monitoring Data - H1 2024

Project Approval (MP09-0175)

Schedule 3, Condition 23

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																	Manual Sale
		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	
1/01/2024	-																		
2/01/2024	-																		
3/01/2024	-																		
4/01/2024	-																		
5/01/2024	-																		
6/01/2024	-																		
7/01/2024	-																		
8/01/2024	93		8	12	12	10	10	13	9	5	11	3							
9/01/2024	135		6	17	14	19	16	17	15	10	12	9							
10/01/2024	185		12	20	23	16	26	23	13	17	22	12	1						
11/01/2024	185		15	23	22	19	21	20	12	19	21	9	4						
12/01/2024	196		19	25	25	25	16	22	17	15	18	8	3						3
13/01/2024	81		16	11	20	15	12	7											
14/01/2024	-																		
15/01/2024	211		16	20	21	20	26	25	16	22	24	17	2						2
16/01/2024	233		16	26	26	28	21	28	16	23	26	19	4						
17/01/2024	289		20	28	30	32	29	32	34	19	33	22	5	5					
18/01/2024	198		10	25	20	24	28	22	25	20	14	9	1						
19/01/2024	162		20	12	12	18	16	22	17	13	19	13							
20/01/2024	61		14	7	12	11	12	5											
21/01/2024	-																		
22/01/2024	208		17	25	16	29	16	29	13	18	25	13	1						6
23/01/2024	238		19	27	25	27	28	28	25	24	24	10	1						
24/01/2024	211		24	21	19	29	23	22	20	17	19	15	2						
25/01/2024	166		24	19	20	17	19	23	7	17	14	6							
26/01/2024	-																		
27/01/2024	-																		
28/01/2024	-																		
29/01/2024	204		26	14	19	26	22	21	17	19	28	11	1						
30/01/2024	232		25	17	29	25	24	29	18	18	33	14							
31/01/2024	245		25	17	30	22	21	33	22	27	30	18							
1/02/2024	199		18	20	14	29	21	20	25	16	24	11	1						
2/02/2024	190		22	15	15	22	21	23	15	20	21	14	2						
3/02/2024	27		7	5	5	5	3	2											
4/02/2024	-																		
5/02/2024	202		21	16	24	22	26	20	25	24	15	8	1						
6/02/2024	145		11	16	17	20	10	21	14	12	17	7							
7/02/2024	51		5	9	2	7	7	3	4	8	4	2							
8/02/2024	71		8	1	9	10	6	8	8	6	7	6	2						
9/02/2024	105		14	10	7	18	10	12	11	10	4	8	1						
10/02/2024	12		4	1	2	3	2												
11/02/2024	-																		
12/02/2024	174		18	18	18	21	17	18	16	14	15	18	1						
13/02/2024	155		19	9	21	22	17	16	15	11	18	7							
14/02/2024	160		22	5	20	15	17	15	14	11	26	14	1						
15/02/2024	112		10	12	13	13	16	10	13	10	8	6	1						
16/02/2024	81		8	7	12	10	13	11	6	8	4	2							
17/02/2024	19		4	4	5	1	2	3											
18/02/2024	-																		
19/02/2024	113		14	8	14	13	8	19	14	10	10	3							
20/02/2024	69		11	7	10	6	11	5	5	7	4	3							
21/02/2024	112		17	5	18	11	13	12	10	9	9	8							
22/02/2024	108		15	14	14	14	10	6	7	10	6	12							
23/02/2024	72		11	6	8	10	6	9	5	8	6	3							
24/02/2024	12		4	1	2	1	2	2											
25/02/2024	-																		
26/02/2024	102		13	8	10	10	12	8	15	6	14	5	1						
27/02/2024	92		5	13	4	15	7	10	8	9	15	4	2						
28/02/2024	88		9	10	14	12	12	5	8	5	5	7	1						
29/02/2024	111		10	10	10	16	13	12	10	13	12	3	2						
1/03/2024	125		11	8	19	11	18	13	18	12	11	4							
2/03/2024	28		6	4	5	6	2	5											
3/03/2024	-																		
4/03/2024	176		14	20	16	21	18	22	20	14	16	12	3						
5/03/2024	191		10	15	21	26	23	21	25	12	26	12							
6/03/2024	175		17	13	22	20	20	22	14	23	16	7	1						
7/03/2024	192		17	22	17	17	20	20	24	15	18	18	4						
8/03/2024	160		14	12	14	15	14	22	20	12	17	17	3						
9/03/2024	9		1	3	1	2	1	1											
10/03/2024	-																		
11/03/2024	141		19	9	16	19	10	19	9	15	14	9	2						
12/03/2024	162		22	13	15	16	22	18	11	20	17	8							
13/03/2024	168		15	16	15	19	14	20	16	20	17	11	5						
14/03/2024	220		15	19	27	21	24	22	24	27	22	17	2						
15/03/2024	112		16	11	15	13	9	11	11	12	8	5	1						
16/03/2024	55		10	9	14	8	9	5											
17/03/2024	-																		
18/03/2024	109		9	10	11	11	12	18	12	14	6	6							
19/03/2024	115		18	8	12	16	15	14	12	10	8	1	1						
20/03/2024	117		14	10	17	12	16	13	13	7	12	3							
21/03/2024	66		7	8	6	6	6	8	7	3	8	5	2						
22/03/2024	90		11	15	8	13	5	16	11	3	6	2							
23/03/2024	14		3	5	2	2	1	1											

24/03/2024	-											
25/03/2024	116	10	12	12	10	12	17	7	14	11	11	
26/03/2024	140	13	15	11	17	15	17	15	14	14	8	1
27/03/2024	151	20	14	12	25	13	18	11	20	5	12	1
28/03/2024	109	10	17	11	17	13	15	12	3	8	3	
29/03/2024	-											
30/03/2024	-											
31/03/2024	-											
1/04/2024	-											
2/04/2024	133	10	18	11	17	19	9	14	11	17	6	1
3/04/2024	153	8	23	15	19	12	22	14	13	18	8	1
4/04/2024	114	17	13	22	8	16	9	11	7	7	4	
5/04/2024	78	10	10	13	8	11	10	5	6	3	2	
6/04/2024	1					1						
7/04/2024	-											
8/04/2024	153	11	17	18	16	17	18	14	16	15	10	1
9/04/2024	192	18	21	18	23	20	22	22	19	20	9	
10/04/2024	147	12	17	16	18	19	17	13	13	15	7	
11/04/2024	169	13	19	22	20	17	17	16	17	13	14	1
12/04/2024	169	14	21	21	19	19	19	15	14	20	6	1
13/04/2024	26	3	10	2	8	3						
14/04/2024	-											
15/04/2024	136	14	13	18	16	15	18	16	10	10	6	
16/04/2024	142	14	11	17	12	18	15	19	7	20	9	
17/04/2024	198	22	13	27	17	24	20	21	17	18	14	5
18/04/2024	191	13	19	24	17	26	18	21	18	15	19	1
19/04/2024	119	11	15	16	13	16	12	8	7	15	5	1
20/04/2024	25	2	4	3	6	6	4					
21/04/2024	-											
22/04/2024	130	11	19	19	13	9	15	11	10	12	7	4
23/04/2024	143	9	17	14	11	15	20	12	12	15	16	2
24/04/2024	148	16	13	15	13	18	13	15	13	22	10	
25/04/2024	-											
26/04/2024	43	5	4	15	3	7	4	2	3			
27/04/2024	-											
28/04/2024	-											
29/04/2024	182	21	20	18	32	19	17	15	15	17	8	
30/04/2024	123	16	19	11	11	18	8	11	14	9	6	
1/05/2024	98	7	17	12	15	10	9	12	6	6	4	
2/05/2024	82	7	9	9	10	8	11	9	2	15	1	1
3/05/2024	90	3	12	16	11	10	13	8	12	3	2	
4/05/2024	1				1							
5/05/2024	-											
6/05/2024	55	6	12	5	8	9	7	4	2	1	1	
7/05/2024	90	3	13	10	13	6	11	7	10	9	7	1
8/05/2024	111	3	20	8	17	7	17	12	7	15	5	
9/05/2024	79	14	7	5	7	3	19	5	5	7	7	
10/05/2024	86	9	11	12	10	13	12	8	8	2	1	
11/05/2024	11	2	4			3	2					
12/05/2024	-											
13/05/2024	144	8	21	9	23	11	18	13	15	12	14	
14/05/2024	193	21	16	21	20	19	22	20	22	17	11	4
15/05/2024	208	20	26	15	28	12	27	14	31	20	14	1
16/05/2024	166	19	16	11	19	11	26	23	12	19	7	3
17/05/2024	189	26	28	19	19	23	22	18	14	10	9	1
18/05/2024	20	5	2	4	4	3	2					
19/05/2024	-											
20/05/2024	167	16	12	23	23	21	21	22	15	11	3	
21/05/2024	124	12	17	10	18	12	14	17	10	10	3	1
22/05/2024	128	14	11	13	17	18	12	16	8	14	5	
23/05/2024	139	15	10	15	11	17	14	13	16	17	11	
24/05/2024	137	17	11	13	20	11	20	14	13	12	6	
25/05/2024	21	8	1	6	3	3						
26/05/2024	-											
27/05/2024	137	10	22	11	15	17	13	14	12	13	9	1
28/05/2024	127	21	10	9	14	16	12	11	13	10	9	2
29/05/2024	125	12	13	10	9	13	15	11	14	14	12	2
30/05/2024	171	15	19	15	19	15	21	15	18	15	16	3
31/05/2024	142	12	21	13	19	19	17	10	17	9	5	
1/06/2024	15	3	3	1	6	2						
2/06/2024	-											
3/06/2024	102	12	13	10	11	7	11	16	8	6	7	1
4/06/2024	132	12	20	15	14	16	9	18	10	11	7	
5/06/2024	167	12	18	18	19	21	16	16	21	12	14	
6/06/2024	143	9	16	20	9	17	19	14	20	10	8	1
7/06/2024	149	10	21	18	22	21	15	12	20	7	2	1
8/06/2024	-											
9/06/2024	-											
10/06/2024	-											
11/06/2024	106	15	9	10	11	8	16	10	10	8	6	3
12/06/2024	149	12	11	13	16	13	18	15	18	17	14	2
13/06/2024	171	16	14	22	15	17	18	20	22	16	9	2
14/06/2024	182	19	24	27	16	19	22	17	19	14	4	1
15/06/2024	16		3	4	3	4	2					
16/06/2024	-											
17/06/2024	115	13	12	15	9	14	16	12	8	8	7	1
18/06/2024	111	10	9	14	11	12	14	12	9	12	4	4
19/06/2024	148	19	11	9	20	12	16	24	12	11	13	1
20/06/2024	137	13	19	9	13	11	25	8	19	10	7	3
21/06/2024	131	16	16	14	16	13	16	15	12	5	7	1
22/06/2024	30	4	5	7	6	4	4					
23/06/2024	-											
24/06/2024	167	20	20	15	19	15	25	17	11	12	11	2
25/06/2024	213	22	22	29	19	28	32	16	16	16	11	2
26/06/2024	163	13	18	22	15	21	17	21	14	14	8	

27/06/2024	198		20	23	17	24	18	24	25	18	17	12			
28/06/2024	189		18	16	22	21	20	24	24	15	22	6	1		
29/06/2024	45		12	3	15	5	7	3							
30/06/2024	-														

Karuah East Quarry

Transport Monitoring Data - H2 2024

Project Approval (MP09-0175)

Schedule 3, Condition 23

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																	Manual Sale
		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	
1/07/2024	164		9	19	17	22	20	18	15	17	18	8	1						
2/07/2024	102	1	15	15	13	16	10	17	3	6	4	2							
3/07/2024	104		3	16	7	8	15	12	16	12	12	3							
4/07/2024	150		21	13	19	18	12	17	14	15	11	10							
5/07/2024	120		13	18	15	15	16	19	3	8	11	2							
6/07/2024	22		4	1	6	6		5											
7/07/2024	-																		
8/07/2024	178		17	21	24	22	23	19	15	13	12	11	1						
9/07/2024	116		9	17	10	16	10	16	12	12	7	7							
10/07/2024	95		13	8	15	9	6	10	10	11	10	3							
11/07/2024	96		17	9	15	6	13	10	7	8	3	6	2						
12/07/2024	130		15	15	15	12	18	11	11	13	11	8	1						
13/07/2024	65		8	18	14	12	10	3											
14/07/2024	-																		
15/07/2024	121		12	11	14	8	13	15	15	17	7	9							
16/07/2024	121		12	11	14	7	10	14	15	9	16	9	4						
17/07/2024	157		16	15	20	16	13	18	15	16	15	12	1						
18/07/2024	125		10	16	15	21	5	19	7	16	8	7	1						
19/07/2024	137		11	20	18	14	18	13	12	11	11	9							
20/07/2024	35		4	8	8	7	5	3											
21/07/2024	-																		
22/07/2024	147		12	19	11	17	12	19	8	16	17	14	2						
23/07/2024	122		20	11	16	9	14	14	12	9	11	5	1						
24/07/2024	118		12	7	15	14	9	18	9	10	15	8	1						
25/07/2024	154		14	17	16	14	18	15	15	18	13	11	3						
26/07/2024	104		13	10	12	16	14	8	12	7	4	7	1						
27/07/2024	31		5	8	9	4	4	1											
28/07/2024	-																		
29/07/2024	107		13	10	14	7	15	9	15	5	10	8	1						
30/07/2024	144		15	16	15	18	10	14	10	15	18	10	3						
31/07/2024	109		12	10	9	12	12	13	10	8	17	6							
1/08/2024	105		14	10	15	8	11	7	10	15	8	7							
2/08/2024	175		19	14	24	21	16	23	14	17	10	15	2						
3/08/2024	15		3	1	4	2	4	1											
4/08/2024	-																		
5/08/2024	156		15	15	20	16	20	12	18	19	12	7	2						
6/08/2024	172		16	21	16	19	21	22	14	20	12	8	3						
7/08/2024	193		18	25	16	25	21	25	27	19	10	6	1						
8/08/2024	200		18	20	23	26	19	24	16	24	18	12							
9/08/2024	86		9	13	10	10	9	8	11	7	4	5							
10/08/2024	22		3	5	6	4	1	3											
11/08/2024	-																		
12/08/2024	121		11	14	12	13	12	11	12	17	11	7	1						
13/08/2024	131		12	12	14	18	11	16	21	11	9	5	1						1
14/08/2024	83		10	17	10	7	10	12	9	4	2	2							
15/08/2024	90		6	19	9	13	6	8	9	10	5	5							
16/08/2024	99		10	6	13	18	7	16	9	8	6	5	1						
17/08/2024	8		2		1	2	2	1											
18/08/2024	-																		
19/08/2024	135		15	13	13	15	15	17	12	12	12	9	2						
20/08/2024	138		12	14	14	17	18	13	15	13	13	7	2						
21/08/2024	161		14	19	17	17	19	22	15	12	12	14							
22/08/2024	151		17	18	15	19	17	16	12	15	10	10	2						
23/08/2024	207		14	24	20	22	24	21	24	21	24	13							
24/08/2024	34		6	3	9	6	7	3											
25/08/2024	-																		
26/08/2024	121		15	9	17	15	11	13	15	5	15	6							
27/08/2024	201		19	21	21	24	21	18	21	22	22	12							
28/08/2024	192		21	19	17	18	16	24	26	17	22	8	4						
29/08/2024	182		16	15	19	24	16	25	18	14	21	14							
30/08/2024	196		16	22	21	21	19	25	15	24	19	14							
31/08/2024	32		3	8	6	8	5	2											
1/09/2024	-																		
2/09/2024	210		19	20	19	21	22	27	25	22	19	13	3						
3/09/2024	163		19	16	17	20	13	20	14	14	13	15	2						
4/09/2024	165		20	18	15	17	13	22	12	18	16	12	2						
5/09/2024	200		17	26	19	22	27	18	20	18	16	13	4						
6/09/2024	155		17	16	19	18	16	20	21	9	12	7							
7/09/2024	26		6	3	5	6	5	1											
8/09/2024	-																		
9/09/2024	170		19	16	17	20	15	27	18	15	12	9	2						
10/09/2024	211		18	22	26	17	23	18	27	23	19	14	4						
11/09/2024	193		14	24	15	28	16	26	19	26	17	8							
12/09/2024	202		10	18	30	22	24	24	31	19	16	8							
13/09/2024	101		8	16	16		4	32	4	10	6	3	1						1
14/09/2024	39		4	9	6	7	7	6											
15/09/2024	-																		
16/09/2024	116		14	7	13	7	14	9	11	16	12	9	4						
17/09/2024	249		22	23	26	24	32	28	23	30	24	10	7						
18/09/2024	186		16	20	20	23	21	18	21	16	17	14							
19/09/2024	186		20	17	21	23	19	27	6	19	20	12	2						
20/09/2024	125		20	13	18	14	13	11	18	7	5	4	2						
21/09/2024	21		5	5	4	3	1	3											

22/09/2024	-													
23/09/2024	122		13	9	13	16	16	16	14	8	9	5	3	
24/09/2024	110		16	12	9	14	9	14	11	9	8	3	1	4
25/09/2024	135		14	10	15	15	16	12	19	12	9	12	1	
26/09/2024	86		10	5	11	15	11	11	10	7	3	3		
27/09/2024	57		8	8	4	8	7	9	5	5	1	2		
28/09/2024	10			3	2	2	3							
29/09/2024	-													
30/09/2024	72		4	8	9	8	4	13	5	10	6	5		
1/10/2024	111		4	11	16	10	16	9	13	10	15	7		
2/10/2024	153		11	16	18	20	12	21	11	13	17	14		
3/10/2024	180		22	13	25	19	16	22	16	18	16	12	1	
4/10/2024	155		19	25	19	18	16	27	12	9	6	4		
5/10/2024	-													
6/10/2024	-													
7/10/2024	-													
8/10/2024	189		21	17	21	19	16	25	20	15	25	8	2	
9/10/2024	105		8	14	12	7	13	14	15	7	10	5		
10/10/2024	153		14	10	22	14	22	17	11	18	15	8	2	
11/10/2024	181		16	18	22	22	22	24	20	15	11	10	1	
12/10/2024	19		6	3	3		6	1						
13/10/2024	-													
14/10/2024	86		19	8	7	10	4	11	9	8	3	4	3	
15/10/2024	113		16	15	15	16	11	12	8	9	10	1		
16/10/2024	152	1	7	25	9	19	18	17	17	13	14	10	2	
17/10/2024	177		15	19	19	17	21	17	17	20	11	18	3	
18/10/2024	148		16	15	21	12	21	13	17	15	12	6		
19/10/2024	24		2	5	3	8	5	1						
20/10/2024	-													
21/10/2024	137		11	19	10	21	12	15	15	16	13	5		
22/10/2024	131		15	8	14	14	16	17	13	14	13	7		
23/10/2024	155		16	16	18	19	14	14	18	14	10	12	4	
24/10/2024	161		18	18	21	18	12	19	10	16	12	14	3	
25/10/2024	72		7	9	10	8	9	6	8	4	3	8		
26/10/2024	17		3	2	3	5	4							
27/10/2024	-													
28/10/2024	133		13	11	15	19	14	15	14	15	8	9		
29/10/2024	93		8	7	8	9	11	8	13	9	10	9	1	
30/10/2024	109		9	8	8	11	13	10	13	16	13	8		
31/10/2024	166		14	20	12	21	17	18	18	10	22	8	6	
1/11/2024	142		15	17	16	16	17	19	13	14	6	8	1	
2/11/2024	22		3	6	3	6	2	2						
3/11/2024	-													
4/11/2024	143		14	13	19	16	17	15	15	7	15	10	2	
5/11/2024	167		20	16	18	14	18	24	13	17	19	6	2	
6/11/2024	133		16	16	13	14	15	14	12	10	13	10		
7/11/2024	133		15	18	11	17	14	13	16	11	12	6		
8/11/2024	140		13	19	15	22	14	18	14	11	9	5		
9/11/2024	32		9	4	8	4	2	5						
10/11/2024	-													
11/11/2024	106		14	11	7	13	11	11	11	13	8	6	1	
12/11/2024	88		11	15	15	10	11	8	7	5	3	3		
13/11/2024	71		4	11	10	3	9	12	9	11		2		
14/11/2024	131		13	15	15	12	12	22	12	9	16	3	2	
15/11/2024	138		15	16	14	17	17	14	13	14	10	8		
16/11/2024	21		6	3	2	1	9							
17/11/2024	-													
18/11/2024	120		14	9	24	9	15	10	14	8	9	7	1	
19/11/2024	86		14	3	7	8	7	12	7	11	11	6		
20/11/2024	97		10	10	7	15	10	10	8	12	7	6	2	
21/11/2024	117		15		9	20	10	14	8	25	5	8	3	
22/11/2024	107		12	14	13	11	9	12	10	11	5	10		
23/11/2024	21		2	6	4	5	3	1						
24/11/2024	-													
25/11/2024	142	2	17	18	13	14	12	16	15	12	10	13		
26/11/2024	225		17	25	26	23	25	29	18	22	22	16	2	
27/11/2024	176		18	21	17	21	16	19	17	17	16	11	3	
28/11/2024	175		14	21	18	24	17	22	21	16	13	8	1	
29/11/2024	115		8	15	14	14	15	13	16	8	10	2		
30/11/2024	10			3	4	1	1							1
1/12/2024	-													
2/12/2024	87		6	9	14	8	14	6	10	4	8	8		
3/12/2024	123		10	11	20	9	17	11	16	13	9	7		
4/12/2024	164		17	13	21	15	15	21	17	14	15	15	1	
5/12/2024	159		14	16	18	19	19	17	18	13	18	7		
6/12/2024	184		21	19	25	16	24	18	18	16	17	7	3	
7/12/2024	27		7	4	6	3	5	2						
8/12/2024	-													
9/12/2024	231	1	20	19	26	26	22	29	20	26	21	19	2	
10/12/2024	148		17	11	15	12	20	16	12	19	13	10	3	
11/12/2024	223		19	25	24	24	25	29	22	24	16	14	1	
12/12/2024	198		21	18	15	25	18	25	17	24	19	14	2	
13/12/2024	174		16	24	19	19	19	17	15	22	10	12		1
14/12/2024	65		13	13	14	11	10	4						
15/12/2024	-													
16/12/2024	236		22	26	27	22	31	17	26	22	26	14	2	1
17/12/2024	188		16	22	20	16	23	20	18	17	23	12	1	
18/12/2024	269		18	31	24	26	25	29	33	31	31	19	2	
19/12/2024	176		24	20	23	24	22	15	17	17	12	2		
20/12/2024	37		8	12	10	6		1						
21/12/2024	-													
22/12/2024	-													
23/12/2024	-													
24/12/2024	-													
25/12/2024	-													

26/12/2024	-		
27/12/2024	-		
28/12/2024	-		
29/12/2024	-		
30/12/2024	-		
31/12/2024	-		

Appendix 3 – Noise Monitoring Reports

Noise Monitoring Report – Q1 2024

Noise Monitoring Report – Q2 2024

Noise Monitoring Report – Q3 2024

Noise Monitoring Report – Q4 2024

Karuah East Quarry

Quarterly Attended Noise Monitoring - Q1 2024

Prepared for Karuah East Quarry Pty Limited

February 2023

Karuah East Quarry

Quarterly Attended Noise Monitoring - Q1 2024

Karuah East Quarry Pty Limited

E240073 RP1

February 2023

Version	Date	Prepared by	Reviewed by	Comments
1	19 February 2024	Lucas Adamson	Najah Ishac	Draft
2	29 February 2024	Lucas Adamson	Najah Ishac	Final

Approved by

Najah Ishac
Director
29 February 2024

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Appendices

Tables

Figures

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 Monday 5 February 2024 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

KEY

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

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

0 0.5 1 km

GDA 1994 MGA Zone 56

N

\\emmsvr1\EMM2\2022\E220174 - Karuah East Quarry Noise Monitoring 2022\8 GIS\02_Maps\G001_Site Location_20220718_01.mxd 18/07/2022

Attended noise monitoring locations

Karuah East Quarry
Quarterly attended noise monitoring
Figure 1.1

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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.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10 per cent of the time.
L_{Aeq}	The energy average A-weighted noise level.
L_{A50}	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
L_{A90}	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.
L_{Ceq}	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 limit summary

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

Table 2.1 Noise 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 considerations

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 using a hand held device.

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

Attended noise monitoring was conducted by Lucas Adamson. Qualifications, experience, and/or demonstration of competence is in accordance with the Approved methods and supportive documentation is available upon request.

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 – Q1 2024[1]

Location	Start date and time	L_{Amax} dB	L_{A1} dB	L_{A10} dB	L_{Aeq} dB	L_{A50} dB	L_{A90} dB	L_{Amin} dB
A	5/02/2024 5:01	61	55	51	48	46	42	35
B	5/02/2024 5:19	76	73	66	63	60	51	42
F	5/02/2024 5:39	88	78	61	64	50	41	38
G	5/02/2024 6:05	54	47	42	41	40	39	37
H	5/02/2024 6:35	56	46	41	37	35	33	31
H	5/02/2024 7:00	59	47	38	38	34	33	31
G	5/02/2024 7:17	54	46	39	37	36	34	32
F	5/02/2024 7:43	90	77	54	62	43	40	38
B	5/02/2024 8:03	75	72	68	66	65	63	60
A	5/02/2024 8:24	66	58	56	55	55	53	52
A	5/02/2024 18:00	73	58	53	51	49	45	41
B	5/02/2024 18:18	74	72	66	63	60	54	45
F	5/02/2024 18:37	84	73	51	59	39	36	34
G	5/02/2024 19:02	60	51	44	40	34	31	27
H	5/02/2024 19:20	81	63	45	55	41	41	39

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 – Q1 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
A	5/02/2024 5:01	24.4	<0.5	-	6
B	5/02/2024 5:19	24.3	<0.5	-	6
F	5/02/2024 5:39	24.2	<0.5	-	6
G	5/02/2024 6:05	24.2	<0.5	-	5
H	5/02/2024 6:35	24.3	<0.5	-	5
H	5/02/2024 7:00	24.2	<0.5	-	4
G	5/02/2024 7:17	24.3	<0.5	-	3
F	5/02/2024 7:43	24.7	<0.5	-	2
B	5/02/2024 8:03	25	<0.5	-	3
A	5/02/2024 8:24	25.3	<0.5	-	3
A	5/02/2024 18:00	31.1	<0.5	-	7
B	5/02/2024 18:18	30.5	<0.5	-	7
F	5/02/2024 18:37	29.9	<0.5	-	7
G	5/02/2024 19:02	27.9	<0.5	-	7
H	5/02/2024 19:20	26.9	0.9	90	7

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 NPfI.

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 – Q1 2024

Location	Start Date and Time (Period)	Wind		Stability Class	Very enhancing? [1]	Limit, dB		Site level, dB [2]		Exceedance	
		Speed m/s	Direction [4]			$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
A	5/02/2024 5:01 (MS)	0.6	115	F	N	35	52	IA	IA	No	No
B	5/02/2024 5:19 (MS)	0.9	56	F	N	35	52	IA	IA	No	No
F	5/02/2024 5:39 (MS)	1.3	101	E	N	35	52	IA	IA	No	No
G	5/02/2024 6:05 (MS)	1.7	110	D	N	35	52	IA	IA	No	No
H	5/02/2024 6:35 (MS)	0.4	118	F	N	35	52	IA	IA	No	No
H	5/02/2024 7:00 (D)	0.3	156	A	N	44	N/A	IA	N/A	No	N/A
G	5/02/2024 7:17 (D)	0.6	149	A	N	43	N/A	IA	N/A	No	N/A
F	5/02/2024 7:43 (D)	0.8	139	B	N	40	N/A	IA	N/A	No	N/A
B	5/02/2024 8:03 (D)	0.7	135	A	N	40	N/A	IA	N/A	No	N/A
A	5/02/2024 8:24 (D)	0.7	184	A	N	42	N/A	IA	N/A	No	N/A
A	5/02/2024 18:00 (E)	2.0	100	F	Y	45[1]	N/A	IA	N/A	No	N/A
B	5/02/2024 18:18 (E)	1.7	111	F	N	40	N/A	IA	N/A	No	N/A
F	5/02/2024 18:37 (E)	1.0	109	F	N	35	N/A	IA	N/A	No	N/A
G	5/02/2024 19:02 (E)	1.7	119	F	N	39	N/A	IA	N/A	No	N/A

Table 4.3 Site noise levels and limits – Q1 2024

Location	Start Date and Time (Period)	Wind		Stability Class	Very enhancing? [1]	Limit, dB		Site level, dB [2]		Exceedance	
		Speed m/s	Direction [4]			$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
H	5/02/2024 19:20 (E)	1.5	61	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 NPfI.

2. Site-only $L_{Aeq,15minute}$, 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 Monday 5 February 2024 at five monitoring locations.

Noise levels from the site complied with relevant limits at all monitoring locations during the Q1 2024 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

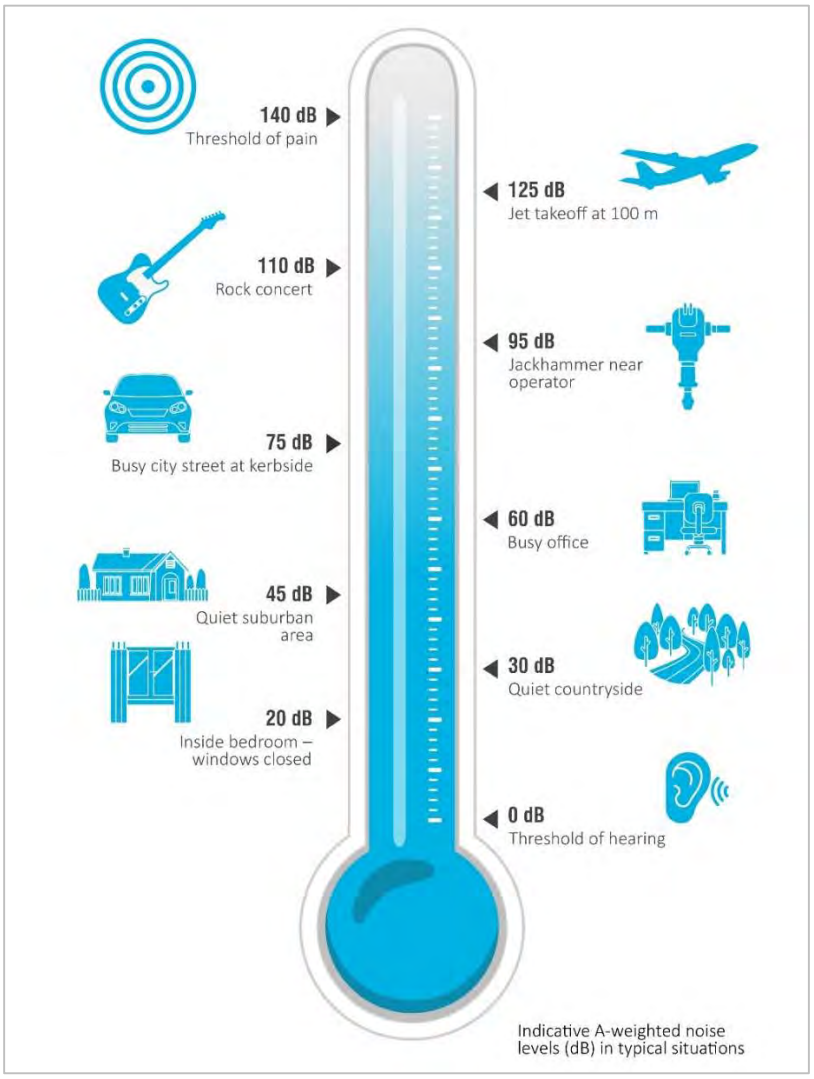

Figure A.1 Common noise levels

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[a] on privately-owned land.

Table 2: Operational noise criteria dB

Noise Assessment Location[a]	Morning Shoulder $L_{Aeq\ (15\ min)}$	Morning Shoulder L_{Amax}	Day $L_{Aeq\ (15\ min)}$	Evening $L_{Aeq\ (15\ min)}$
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

[a] *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

Road	***Criteria (Day[a])***
Pacific Highway	60 dB(A) $L_{Aeq\ (15\ hour)}$
Local roads	55 dB(A) $L_{Aeq\ (1\ hour)}$

[a] *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:
   (a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;
   (b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;
   (c) operate a comprehensive noise management system commensurate with the risk of impact;
   (d) 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);
   (e) 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
   (f) 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:
   (a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
   (b) be prepared in consultation with the EPA;
   (c) describe the measures to be implemented to ensure:
      (i) compliance with the noise criteria and operating conditions in this consent;
      (ii) best practice management is being employed;
      (iii) noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
   (d) describe the noise management system in detail; and
   (e) include a monitoring program that:
      (i) is capable of evaluating the performance of the development;
      (ii) monitors noise at the nearest and/or most affected residences;
      (iii) adequately supports the noise management system;
      (iv) includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
      (v) 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

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 Assesment 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:
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
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 determing 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:

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 complaince 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

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[1]	Morning Shoulder $L_{Aeq(15\ minute)}$	Morning Shoulder L_{Amax}	Day $L_{Aeq(15\ minute)}$	Evening $L_{Aeq(15\ minute)}$
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 NPfI (EPA 2017).

The noise limits provided in Table 5.1 apply under standard and noise-enhancing meteorological conditions (as defined in the NPfI) 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 then 2m/s at 10m above ground level; or
- stability category G temperature inversion conditions.

In accordance with Fact Sheet D of the NPfI, 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

EMM
creating opportunities

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C37642

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 86311
Class: 1
Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1003	hPa ±1 hPa	**Date of Receipt :**	11/10/2023
Temperature	23	°C ±1° C	**Date of Calibration :**	13/10/2023
Relative Humidity	38	% ±5%	**Date of Issue :**	13/10/2023

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%.

NATA
WORLD RECOGNISED ACCREDITATION
Accredited Lab No. 9262
Acoustic and Vibration Measurements

Acu-Vib Electronics
CALIBRATIONS SALES RENTALS REPAIRS

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

Sydney Calibration Laboratory
Suite 4.03, Level 4, 3 Thomas Holt Drive, Macquarie Park NSW 2113, Australia
Accredited for compliance with ISO/IEC 17025 - Calibration. Laboratory No. 1301

CERTIFICATE OF CALIBRATION

Certificate No: CAU2300941

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	No: 2759405
Microphone:	Brüel & Kjær	4189	No: 2983733
Preamplifier:	Brüel & Kjær	ZC-0032	No: 22666
Supplied Calibrator:	None		
Software version:	BZ7224 Version 4.7.4	Pattern Approval:	-
Instruction manual:	BE1712-22	Identification:	N/A

CUSTOMER:

EMM Consulting Pty Limited
20 Chandos Street
St Leonards NSW 2065

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 °C
Environment conditions:	*see actual values in **Environmental conditions** sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-1:2013 class 1.
Procedures from IEC 61672-3:2013 were used to perform the periodic tests.
The measurements included in this document are traceable to Australian/National standards.

PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System B&K 3630 with application software type 7763 (version 8.6 - DB: 8.60) and test procedure 2250-4189.

RESULTS:

	Initial calibration		Calibration prior to repair/adjustment
X	Calibration without repair/adjustment		Calibration after repair/adjustment

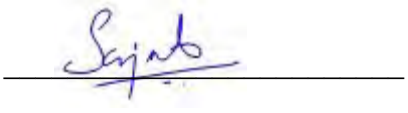
The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of Calibration:20/12/2023

Certificate issued:21/12/2023

Calibration Technician: Sajeeb Tharayil

Approved signatory: Sajeeb Tharayil



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Karuah East Quarry

Quarterly Attended Noise Monitoring - Q2 2024

Prepared for Karuah East Quarry Pty Limited

June 2024

Karuah East Quarry

Quarterly Attended Noise Monitoring - Q2 2024

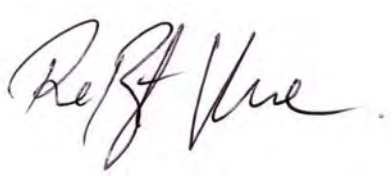
Karuah East Quarry Pty Limited

E240073 RP2

June 2024

Version	Date	Prepared by	Reviewed by	Comments
V1	3 June 2024	Isaac Hepworth	Robert Kirwan	Draft
V2	6 June 2024	Isaac Hepworth	Robert Kirwan	Final

Approved by



Robert Kirwan
Associate Acoustics Consultant
6 June 2024

Level 3 175 Scott Street
Newcastle NSW 2300

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Appendices

Tables

Figures

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 and day periods on Thursday 23 May 2024 at five monitoring locations. Evening periods were also monitored on 30 May 2024 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

KEY

- Site boundary
- 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

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

0 0.5 1 km

GDA 1994 MGA Zone 56

N

Karuah East Quarry
Quarterly attended noise monitoring
Figure 1.1

EMM creating opportunities

\\emmsvr1\EMM2\2022\E220174 - Karuah East Quarry Noise Monitoring 2022\8 GIS\02_Maps\G001_SiteLocation_20220718_01.mxd 18/07/2022

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% of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1% of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10% of the time.
L_{Aeq}	The energy average A-weighted noise level.
L_{A50}	The A-weighted noise level which is exceeded for 50% of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90% 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.
L_{Ceq}	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 limit summary

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

Table 2.1 Noise 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 considerations

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 using a hand held device.

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

Attended noise monitoring was conducted by Isaac Hepworth. Qualifications, experience, and/or demonstration of competence is in accordance with the Approved methods and supportive documentation is available upon request.

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
Rion NA-28 sound level meter	00701424	01/06/2025	IEC 61672-1:2002
Pulsar Model 106 calibrator	81334	21/06/2024	IEC 60942:2003

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 2024[1]

Location	Start date and time	L_{Amax} dB	L_{A1} dB	L_{A10} dB	L_{Aeq} dB	L_{A50} dB	L_{A90} dB	L_{Amin} dB
A	23/05/2024 05:00	56	54	52	49	48	45	36
B	23/05/2024 05:21	72	69	65	61	57	50	45
F	23/05/2024 05:44	61	58	54	52	51	48	45
G	23/05/2024 06:14	60	50	47	45	44	40	37
H	23/05/2024 06:37	60	52	46	44	43	41	38
H	23/05/2024 07:00	61	50	48	46	45	43	40
G	23/05/2024 07:21	55	51	48	47	46	44	42
F	23/05/2024 07:51	62	52	50	48	47	45	42
B	23/05/2024 08:13	70	68	65	62	60	56	48
A	23/05/2024 08:35	70	57	54	52	52	49	45
H	30/05/2024 18:00	44	41	38	36	36	34	31
G	30/05/2024 18:21	46	40	36	34	33	31	27
F	30/05/2024 18:49	52	50	48	45	44	41	37
B	30/05/2024 19:13	73	71	68	64	62	57	49
A	30/05/2024 19:34	68	65	58	55	54	45	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 – Q2 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
A	23/05/2024 05:00	14	<0.5	-	8
B	23/05/2024 05:21	15	<0.5	-	8
F	23/05/2024 05:44	11	<0.5	-	8
G	23/05/2024 06:14	11	<0.5	-	6
H	23/05/2024 06:37	14	<0.5	-	6
H	23/05/2024 07:00	15	<0.5	-	6
G	23/05/2024 07:21	16	<0.5	-	6
F	23/05/2024 07:51	13	0.6	180	6
B	23/05/2024 08:13	14	<0.5	-	7
A	23/05/2024 08:35	16	<0.5	-	7
H	30/05/2024 18:00	19	<0.5	-	3
G	30/05/2024 18:21	17	<0.5	-	3
F	30/05/2024 18:49	18	<0.5	-	6
B	30/05/2024 19:13	19	<0.5	-	6
A	30/05/2024 19:34	15	<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 NPfI.

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 – Q2 2024

Location	Start date and time (period)	Wind		Stability class	Very enhancing? [1]	Limit, dB		Site level, dB [2]		Exceedance	
		Speed m/s	Direction [4]			$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
A	23/05/2024 05:00 (MS)	0.6	265	F	N	35	52	IA	IA	No	No
B	23/05/2024 05:21 (MS)	0.3	243	F	N	35	52	IA	IA	No	No
F	23/05/2024 05:44 (MS)	0.8	263	F	N	35	52	IA	IA	No	No
G	23/05/2024 06:14 (MS)	0.6	278	B	N	35	52	<20	55	No	Yes
H	23/05/2024 06:37 (MS)	0.4	204	A	N	35	52	<20	50	No	No
H	23/05/2024 07:00 (D)	0.3	203	A	N	44	N/A	40	N/A	No	N/A
G	23/05/2024 07:21 (D)	0.9	282	A	N	43	N/A	36	N/A	No	N/A
F	23/05/2024 07:51 (D)	0.4	283	A	N	40	N/A	<20	N/A	No	N/A
B	23/05/2024 08:13 (D)	0.7	232	A	N	40	N/A	IA	N/A	No	N/A
A	23/05/2024 08:35 (D)	0.4	209	A	N	42	N/A	IA	N/A	No	N/A
H	30/05/2024 18:00 (E)	0.1	163	F	N	46	N/A	IA	N/A	No	N/A
G	30/05/2024 18:21 (E)	0.2	197	F	N	39	N/A	IA	N/A	No	N/A
F	30/05/2024 18:49 (E)	0.2	110	F	N	35	N/A	IA	N/A	No	N/A

Table 4.3 Site noise levels and limits – Q2 2024

Location	Start date and time (period)	Wind		Stability class	Very enhancing? [1]	Limit, dB		Site level, dB [2]		Exceedance	
		Speed m/s	Direction [4]			$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
B	30/05/2024 19:13 (E)	0.3	89	F	N	40	N/A	IA	N/A	No	N/A
A	30/05/2024 19:34 (E)	1.1	62	F	N	40	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 NPfI.
2. Site-only $L_{Aeq,15minute}$, 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.

During the measurement at location G, starting at 6:14 am, the site L_{Amax} was measured at 55 dB which exceeded the morning shoulder limit of 52 dB by 3 dB. This was assessed as likely being attributable to truck impact and/or tailgate noise, possibly caused by potholes on the access road. It was noted at 240 degrees (magnetic) from the measurement location, which is in the general direction of the KEQ weighbridge/access road to Blue Rock Close.

The potholes occurred due to the consistent 20 to 30 mm of daily rainfall over the preceding week. These damages were repaired later in the day (23 May 2024), and truck drivers and operational staff were subject to toolbox talks regarding driving at appropriate speeds through noise sensitive features, such as the wheel wash, cattle grids, potholes and/or other road defects, at pre-start meetings the following morning.

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 EPA and EPL noise limits.

Attended environmental noise monitoring described in this report was done during the morning shoulder and day periods on Thursday 23 May 2024 at five monitoring locations. Evening periods were also monitored on 30 May 2024 at five monitoring locations.

During the measurement at location G, starting at 6:14 am, the site L_{Amax} was measured at 55 dB which exceeded the morning shoulder limit of 52 dB by 3 dB. This was assessed as likely being attributable to truck impact and/or tailgate noise, possibly caused by potholes on the access road.

These potholes/road defects were repaired later in the day (23 May 2024), and truck drivers and operational staff were subject to toolbox talks regarding driving at appropriate speeds through noise sensitive features the at pre-start meetings following morning.

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

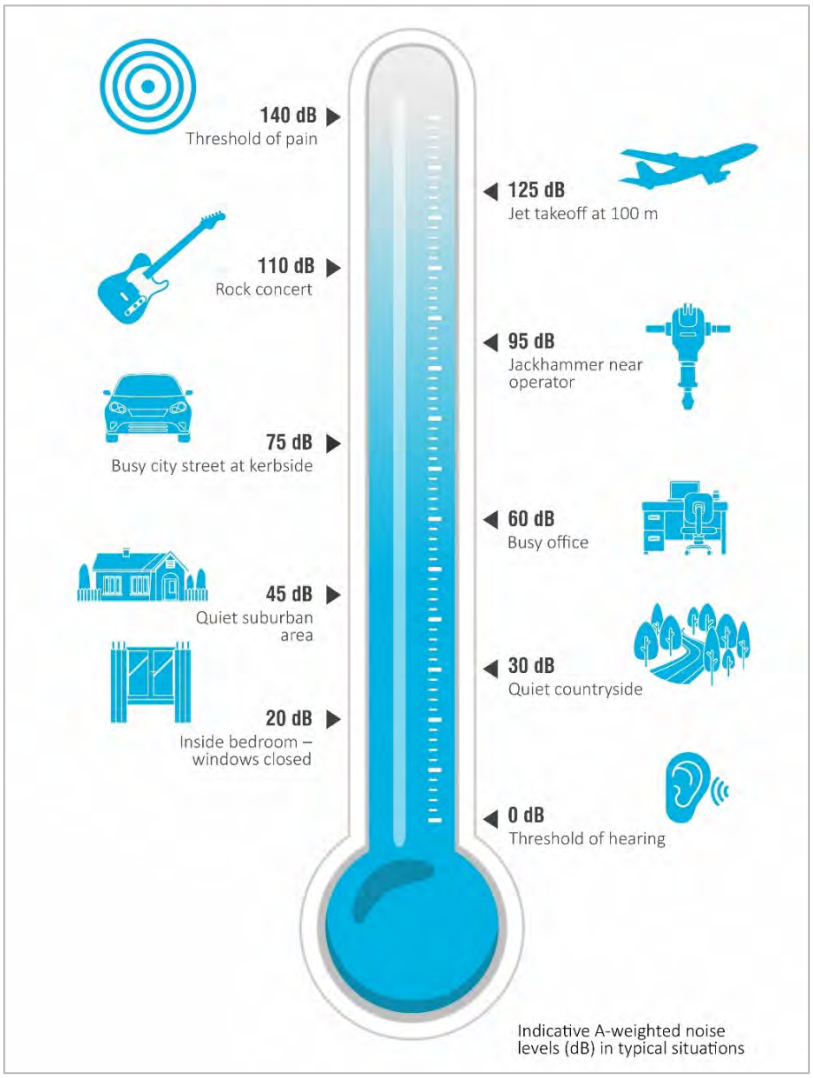

Figure A.1 Common noise levels

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[a] on privately-owned land.

Table 2: Operational noise criteria dB

Noise Assessment Location[a]	Morning Shoulder $L_{Aeq\ (15\ min)}$	Morning Shoulder L_{Amax}	Day $L_{Aeq\ (15\ min)}$	Evening $L_{Aeq\ (15\ min)}$
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

[a] *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

Road	***Criteria (Day[a])***
Pacific Highway	60 dB(A) $L_{Aeq\ (15\ hour)}$
Local roads	55 dB(A) $L_{Aeq\ (1\ hour)}$

[a] *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:
   (a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;
   (b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;
   (c) operate a comprehensive noise management system commensurate with the risk of impact;
   (d) 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);
   (e) 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
   (f) 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:
   (a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
   (b) be prepared in consultation with the EPA;
   (c) describe the measures to be implemented to ensure:
      (i) compliance with the noise criteria and operating conditions in this consent;
      (ii) best practice management is being employed;
      (iii) noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
   (d) describe the noise management system in detail; and
   (e) include a monitoring program that:
      (i) is capable of evaluating the performance of the development;
      (ii) monitors noise at the nearest and/or most affected residences;
      (iii) adequately supports the noise management system;
      (iv) includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
      (v) 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

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 Assesment 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:
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
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 determing 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:

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 complaince 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

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[1]	Morning Shoulder $L_{Aeq(15\ minute)}$	Morning Shoulder L_{Amax}	Day $L_{Aeq(15\ minute)}$	Evening $L_{Aeq(15\ minute)}$
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 NPfI (EPA 2017).

The noise limits provided in Table 5.1 apply under standard and noise-enhancing meteorological conditions (as defined in the NPfI) 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 then 2m/s at 10m above ground level; or
- stability category G temperature inversion conditions.

In accordance with Fact Sheet D of the NPfI, 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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C.1 Calibration certificates

Acoustic Research Labs Pty Ltd
Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3:2013
Calibration Certificate
Calibration Number C23317

Client Details	EMM Consulting Level 3, 175 Scott Street Newcastle NSW 2300
Equipment Tested/ Model Number :	NA-28
Instrument Serial Number :	00701424
Microphone Serial Number :	01916
Pre-amplifier Serial Number :	01463
Firmware Version :	2.0

Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature :	24°C	**Ambient Temperature :**	22.6°C
Relative Humidity :	46%	**Relative Humidity :**	46.6%
Barometric Pressure :	100.6kPa	**Barometric Pressure :**	100.6kPa

Calibration Technician :	Max Moore	**Secondary Check:**	Dylan Selge
Calibration Date :	1 Jun 2023	**Report Issue Date :**	2 Jun 2023

Approved Signatory : Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	*Pass*	17: Level linearity incl. the level range control	*Pass*
13: Electrical Sig. tests of frequency weightings	*Pass*	18: Toneburst response	*Pass*
14: Frequency and time weightings at 1 kHz	*Pass*	19: C Weighted Peak Sound Level	*Pass*
15: Long Term Stability	*Pass*	20: Overload Indication	*Pass*
16: Level linearity on the reference level range	*Pass*	21: High Level Stability	*Pass*

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2013 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013 and because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Uncertainties of Measurement -

Acoustic Tests		Environmental Conditions	
125Hz	*±0.13dB*	*Temperature*	*±0.1°C*
1kHz	*±0.13dB*	*Relative Humidity*	*±1.9%*
8kHz	*±0.14dB*	*Barometric Pressure*	*±0.014kPa*
Electrical Tests	*±0.13dB*		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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Sound Calibrator

IEC 60942:2017

Calibration Certificate

Calibration Number C23389

Client Details EMM Consulting
Level 3, 175 Scott Street
Newcastle NSW 2300

Equipment Tested/ Model Number : Pulsar Model 106
Instrument Serial Number : 81334

Atmospheric Conditions
Ambient Temperature : 22.6°C
Relative Humidity : 35.5%
Barometric Pressure : 101.43kPa

Calibration Technician : Shaheen Boaz
Secondary Check: Dhanush Bonu
Calibration Date : 21 Jun 2023
Report Issue Date : 21 Jun 2023

Approved Signatory : Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	*Pass*
Frequency Generated	*Pass*
Total Distortion	*Pass*

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.18	1000.30

The sound calibrator has been shown to conform to the class 2 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed..

Uncertainties of Measurement -

Specific Tests		Environmental Conditions	
Generated SPL	*±0.10dB*	*Temperature*	*±0.1°C*
Frequency	*±0.07%*	*Relative Humidity*	*±1.9%*
Distortion	*±0.20%*	*Barometric Pressure*	*±0.014kPa*

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

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Karuah East Quarry

Quarterly attended noise monitoring - Q3 2024

Prepared for Karuah East Quarry Pty Limited

August 2024

Karuah East Quarry

Quarterly attended noise monitoring - Q3 2024

Karuah East Quarry Pty Limited

E240073 RP#4

August 2024

Version	Date	Prepared by	Reviewed by	Comments
1	30 August 2024	Lucas Adamson	Najah Ishac	Final

Approved by

Najah Ishac
Director
30 August 2024

Level 3 175 Scott Street
Newcastle NSW 2300
ABN: 28 141 736 558

TABLE OF CONTENTS

Appendices

Tables

Figures

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 and day periods on Friday 9 August 2024 and during the evening period on Tuesday 27 August 2024 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

KEY

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

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

0 0.5 1 km

GDA 1994 MGA Zone 56

N

\\emmsvr1\EMM2\2022\E220174 - Karuah East Quarry Noise Monitoring 2022\8 GIS\02_Maps\G001_Site Location_20220718_01.mxd 18/07/2022

Attended noise monitoring locations

Karuah East Quarry
Quarterly attended noise monitoring
Figure 1.1

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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.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10 per cent of the time.
L_{Aeq}	The energy average A-weighted noise level.
L_{A50}	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
L_{A90}	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.
L_{Ceq}	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 limit summary

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

Table 2.1 Noise 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 considerations

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 using a hand held device.

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

Attended noise monitoring was conducted by Lucas Adamson. Qualifications, experience, and/or demonstration of competence is in accordance with the Approved methods and supportive documentation is available upon request.

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 – Q3 2024[1]

Location	Start date and time	L_{Amax} dB	L_{A1} dB	L_{A10} dB	L_{Aeq} dB	L_{A50} dB	L_{A90} dB	L_{Amin} dB
A	9/8/2024 5:00	58	55	53	50	49	46	41
B	9/8/2024 5:17	78	75	68	65	59	52	44
F	9/8/2024 5:35	80	65	53	56	49	45	39
G	9/8/2024 5:59	62	56	45	44	39	37	34
H	9/8/2024 6:17	67	51	43	43	40	38	35
H	9/8/2024 7:00	62	56	48	45	42	40	37
G	9/8/2024 7:18	63	54	47	46	44	42	40
F	9/8/2024 7:41	83	67	53	56	48	45	42
B	9/8/2024 8:00	77	74	69	66	64	58	52
A	9/8/2024 8:18	67	63	55	53	52	49	46
A	28/8/2024 18:09	89	78	59	65	54	50	45
B	28/8/2024 18:26	77	74	69	65	61	55	48
F	28/8/2024 18:45	75	59	56	53	51	47	43
G	28/8/2024 19:08	56	44	42	40	39	37	35
H	28/8/2024 19:27	54	47	42	40	39	36	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 – Q3 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
A	9/8/2024 5:00	7.5	<0.5	-	0
B	9/8/2024 5:17	7.7	<0.5	-	0
F	9/8/2024 5:35	7.8	<0.5	-	0
G	9/8/2024 5:59	7.4	<0.5	-	0
H	9/8/2024 6:17	7.8	<0.5	-	0
H	9/8/2024 7:00	8.1	<0.5	-	0
G	9/8/2024 7:18	7.9	<0.5	-	1
F	9/8/2024 7:41	8.8	<0.5	-	2
B	9/8/2024 8:00	10.1	<0.5	-	2
A	9/8/2024 8:18	10.8	<0.5	-	2
A	28/8/2024 18:09	18.6	<0.5	-	0
B	28/8/2024 18:26	18.8	<0.5	-	0
F	28/8/2024 18:45	18.5	<0.5	-	0
G	28/8/2024 19:08	18.2	<0.5	-	0
H	28/8/2024 19:27	18.0	<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 NPfI.

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 2024

Location	Start Date and Time (Period)	Wind		Stability Class	Very enhancing? [1]	Limit, dB		Site level, dB [2]		Exceedance	
		Speed m/s	Direction [4]			$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
A	9/8/2024 5:00 (MS)	0.2	56	F	No	35	52	IA	IA	No	No
B	9/8/2024 5:17 (MS)	0.2	17	F	No	35	52	IA	IA	No	No
F	9/8/2024 5:35 (MS)	0.4	37	F	No	35	52	IA	IA	No	No
G	9/8/2024 5:59 (MS)	0.3	347	F	No	35	52	NM	48	No	No
H	9/8/2024 6:17 (MS)	0.1	40	F	No	35	52	NM	46	No	No
H	9/8/2024 7:00 (D)	0.1	0	A	No	44	N/A	<40	N/A	No	N/A
G	9/8/2024 7:18 (D)	0.1	339	A	No	43	N/A	39	N/A	No	N/A
F	9/8/2024 7:41 (D)	0.1	315	A	No	40	N/A	IA	N/A	No	N/A
B	9/8/2024 8:00 (D)	0.3	211	A	No	40	N/A	IA	N/A	No	N/A
A	9/8/2024 8:18 (D)	0.5	257	A	No	42	N/A	IA	N/A	No	N/A
A	28/8/2024 18:09 (E)	0.3	283	F	No	40	N/A	IA	N/A	No	N/A
B	28/8/2024 18:26 (E)	0.1	203	F	No	40	N/A	IA	N/A	No	N/A
F	28/8/2024 18:45 (E)	0.2	83	F	No	35	N/A	IA	N/A	No	N/A
G	28/8/2024 19:08 (E)	0.3	302	F	No	39	N/A	IA	N/A	No	N/A

Table 4.3 Site noise levels and limits – Q3 2024

Location	Start Date and Time (Period)	Wind		Stability Class	Very enhancing? [1]	Limit, dB		Site level, dB [2]		Exceedance	
		Speed m/s	Direction [4]			$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
H	28/8/2024 19:27 (E)	0.3	241	F	No	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 NPfI.

2. Site-only $L_{Aeq,15minute}$, 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 and day periods on Friday 9 August 2024 and during the evening period on Tuesday 27 August 2024 at five monitoring locations.

Noise levels from the site complied with relevant limits at all monitoring locations during the Q3 2024 survey.

Appendix A
Noise perception and examples

EMM
creating opportunities

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

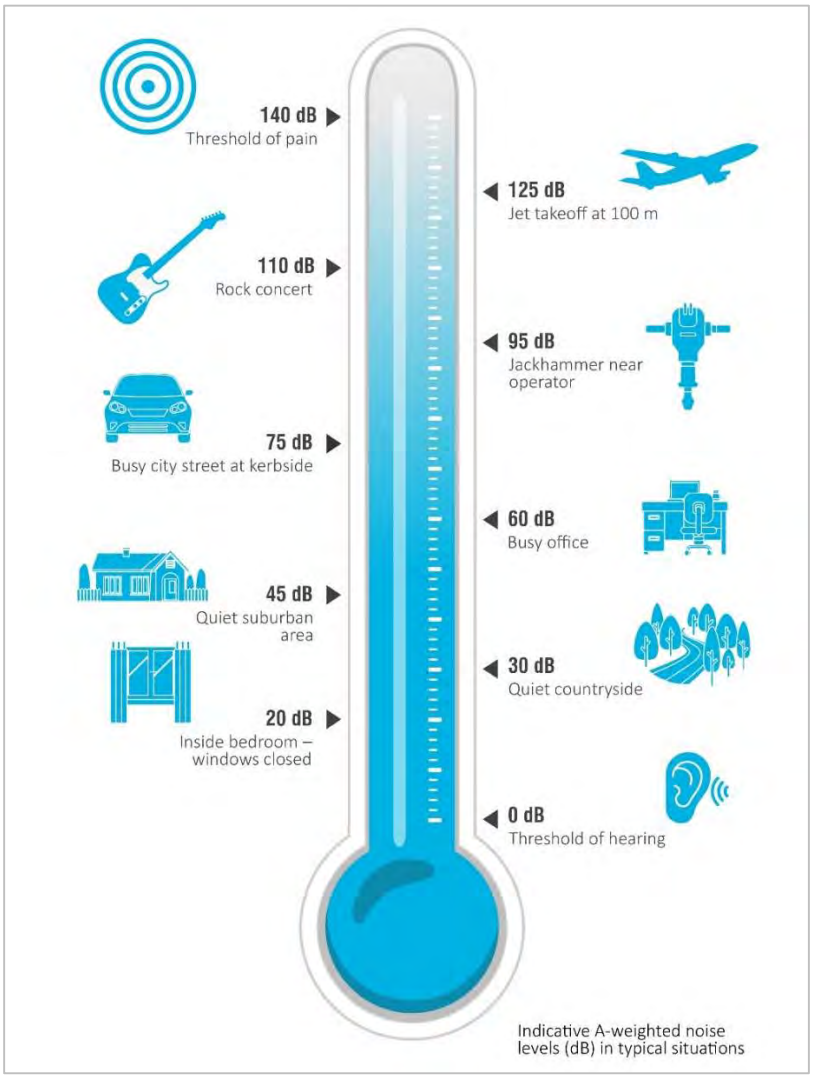

Figure A.1 Common noise levels

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[a] on privately-owned land.

Table 2: Operational noise criteria dB

Noise Assessment Location[a]	Morning Shoulder $L_{Aeq\ (15\ min)}$	Morning Shoulder L_{Amax}	Day $L_{Aeq\ (15\ min)}$	Evening $L_{Aeq\ (15\ min)}$
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

[a] *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

Road	***Criteria (Day[a])***
Pacific Highway	60 dB(A) $L_{Aeq\ (15\ hour)}$
Local roads	55 dB(A) $L_{Aeq\ (1\ hour)}$

[a] *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:
   (a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;
   (b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;
   (c) operate a comprehensive noise management system commensurate with the risk of impact;
   (d) 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);
   (e) 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
   (f) 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:
   (a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
   (b) be prepared in consultation with the EPA;
   (c) describe the measures to be implemented to ensure:
      (i) compliance with the noise criteria and operating conditions in this consent;
      (ii) best practice management is being employed;
      (iii) noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
   (d) describe the noise management system in detail; and
   (e) include a monitoring program that:
      (i) is capable of evaluating the performance of the development;
      (ii) monitors noise at the nearest and/or most affected residences;
      (iii) adequately supports the noise management system;
      (iv) includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
      (v) 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

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 Assesment 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:
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
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 determing 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:

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 complaince 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

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[1]	Morning Shoulder $L_{Aeq(15\ minute)}$	Morning Shoulder L_{Amax}	Day $L_{Aeq(15\ minute)}$	Evening $L_{Aeq(15\ minute)}$
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 NPfI (EPA 2017).

The noise limits provided in Table 5.1 apply under standard and noise-enhancing meteorological conditions (as defined in the NPfI) 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 then 2m/s at 10m above ground level; or
- stability category G temperature inversion conditions.

In accordance with Fact Sheet D of the NPfI, 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: C37508

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer:	Svantek		
Type No:	SV 36	**Serial No:**	79952
Class:	1		
Owner:	EMM Consulting Pty Ltd L3, 175 Scott Street Newcastle, NSW 2300		
Tests Performed:	Measured Output Pressure level, Frequency & Distortion		
Comments:	See Details and Class Tolerance overleaf.		

CONDITION OF TEST:

Ambient Pressure	1005	hPa ±1 hPa	**Date of Receipt :**	26/09/2023
Temperature	23	°C ±1° C	**Date of Calibration :**	27/09/2023
Relative Humidity	47	% ±5%	**Date of Issue :**	28/09/2023

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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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	**Serial No:**	3029363
Mic. Type:	4189	**Serial No:**	3260501
Pre-Amp. Type:	ZC0032	**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 ±1 hPa	**Date of Receipt :**	02/11/2022
Temperature	24	°C ±1° C	**Date of Calibration :**	03/11/2022
Relative Humidity	35	% ±5%	**Date of Issue :**	04/11/2022

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

CHECKED BY: ..... **AUTHORISED 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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Karuah East Quarry

Quarterly attended noise monitoring - Q4 2024

Prepared for Karuah East Quarry Pty Limited

November 2024

Karuah East Quarry

Quarterly attended noise monitoring - Q4 2024

Karuah East Quarry Pty Limited

E240073 RP#5

November 2024

Version	Date	Prepared by	Reviewed by	Comments
1	29 November 2024	Lucas Adamson	Robert Kirwan	Final

Approved by

Robert Kirwan
Associate Acoustics Consultant
29 November 2024

Level 3 175 Scott Street
Newcastle NSW 2300
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Appendices

Tables

Figures

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 and day periods on Monday 25 November 2024 and during the evening period on Tuesday 19 November 2024 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

KEY

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

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

0 0.5 1 km

GDA 1994 MGA Zone 56

N

\\emmsvr1\EMM2\2022\E220174 - Karuah East Quarry Noise Monitoring 2022\8 GIS\02_Maps\G001_Site Location_20220718_01.mxd 18/07/2022

Attended noise monitoring locations

Karuah East Quarry
Quarterly attended noise monitoring
Figure 1.1

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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.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10 per cent of the time.
L_{Aeq}	The energy average A-weighted noise level.
L_{A50}	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
L_{A90}	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.
L_{Ceq}	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 limit summary

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

Table 2.1 Noise 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 considerations

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 using a hand held device.

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

Attended noise monitoring was conducted by Isacc Hepworth and Lucas Adamson. Qualifications, experience, and/or demonstration of competence is in accordance with the Approved methods and supportive documentation is available upon request.

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
Rion NA-28 sound level meter	1070590	27/5/2026	IEC 61672-1:2002
Pulsar Model 105 calibrator	96080	26/2/2025	IEC 60942:2003
Brüel & Kjær 2250 sound level meter	2759405	20/12/2024	IEC 61672-1:2013

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Svantek SV-36 calibrator	79952	9/10/2025	IEC 60942:2017

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 2024[1]

Location	Start date and time	L_{Amax} dB	L_{A1} dB	L_{A10} dB	L_{Aeq} dB	L_{A50} dB	L_{A90} dB	L_{Amin} dB
H	19/11/2024 18:07	58	45	41	39	38	36	33
G	19/11/2024 18:28	53	44	41	39	38	36	33
F	19/11/2024 18:58	50	47	44	41	41	36	34
A	19/11/2024 19:24	58	56	54	52	51	48	44
B	19/11/2024 20:13	72	71	67	63	60	53	47
A	25/11/2024 5:06	63	60	55	52	51	47	42
B	25/11/2024 5:23	76	72	67	63	60	55	47
F	25/11/2024 5:42	78	60	46	52	43	40	36
G	25/11/2024 6:08	62	45	36	37	32	30	28
H	25/11/2024 6:28	64	43	36	35	32	30	29
H	25/11/2024 7:02	68	43	35	36	31	30	28
G	25/11/2024 7:20	66	42	37	35	33	31	29
F	25/11/2024 7:43	85	68	45	57	41	38	35
B	25/11/2024 8:02	75	73	70	69	68	67	64
A	25/11/2024 8:23	64	56	53	51	51	48	46

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 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
H	19/11/2024 18:07	24.1	1.9	10	3
G	19/11/2024 18:28	21.8	1.5	10	4
F	19/11/2024 18:58	25.3	<0.5	-	5
A	19/11/2024 19:24	25.7	<0.5	-	6
B	19/11/2024 20:13	23.5	<0.5	-	7
A	25/11/2024 5:06	19.3	<0.5	-	1
B	25/11/2024 5:23	19.3	<0.5	-	2
F	25/11/2024 5:42	19.2	<0.5	-	1
G	25/11/2024 6:08	19.1	<0.5	-	1
H	25/11/2024 6:28	19.2	<0.5	-	1
H	25/11/2024 7:02	19.7	<0.5	-	1
G	25/11/2024 7:20	20.2	<0.5	-	1
F	25/11/2024 7:43	20.5	<0.5	-	1
B	25/11/2024 8:02	21.1	<0.5	-	1
A	25/11/2024 8:23	22.3	<0.5	-	1

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 NPfI.

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 2024

Location	Start Date and Time (Period)	Wind		Stability Class	Very enhancing? [1]	Limit, dB		Site level, dB [2]		Exceedance	
		Speed m/s	Direction [4]			$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
H	19/11/2024 18:07 (E)	1.5	165	F	No	46	N/A	IA	N/A	No	N/A
G	19/11/2024 18:28 (E)	1.6	73	F	No	39	N/A	IA	N/A	No	N/A
F	19/11/2024 18:58 (E)	1.1	109	F	No	35	N/A	IA	N/A	No	N/A
A	19/11/2024 19:24 (E)	0.9	62	F	No	40	N/A	IA	N/A	No	N/A
B	19/11/2024 20:13 (E)	0.9	52	F	No	40	N/A	IA	N/A	No	N/A
A	25/11/2024 5:06 (MS)	1.0	16	F	No	35	52	IA	IA	No	No
B	25/11/2024 5:23 (MS)	0.5	219	F	No	35	52	IA	IA	No	No
F	25/11/2024 5:42 (MS)	0.2	290	F	No	35	52	IA	IA	No	No
G	25/11/2024 6:08 (MS)	0.1	299	F	No	35	52	IA	IA	No	No
H	25/11/2024 6:28 (MS)	0.2	331	F	No	35	52	IA	IA	No	No
H	25/11/2024 7:02 (D)	0.6	266	A	No	44	N/A	IA	N/A	No	N/A
G	25/11/2024 7:20 (D)	1.1	290	A	No	43	N/A	IA	N/A	No	N/A
F	25/11/2024 7:43 (D)	1.2	306	A	No	40	N/A	IA	N/A	No	N/A
B	25/11/2024 8:02 (D)	1.8	311	A	No	40	N/A	IA	N/A	No	N/A

Table 4.3 Site noise levels and limits – Q4 2024

Location	Start Date and Time (Period)	Wind		Stability Class	Very enhancing? [1]	Limit, dB		Site level, dB [2]		Exceedance	
		Speed m/s	Direction [4]			$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
A	25/11/2024 8:23 (D)	1.2	321	A	No	42	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 NPfI.

2. Site-only $L_{Aeq,15minute}$, 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 and day periods on Monday 25 November 2024 and during the evening period on Tuesday 19 November 2024 at five monitoring locations.

Noise levels from the site complied with relevant limits at all monitoring locations during the Q4 2024 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

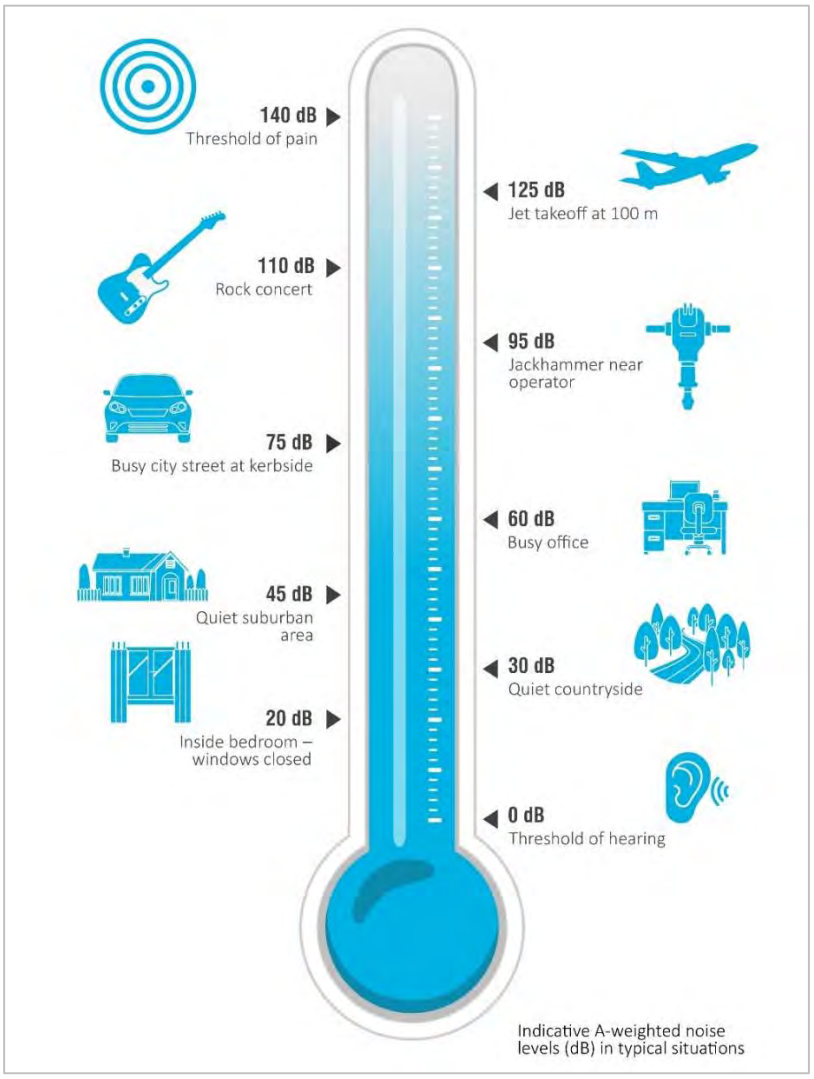

Figure A.1 Common noise levels

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[a] on privately-owned land.

Table 2: Operational noise criteria dB

Noise Assessment Location[a]	Morning Shoulder $L_{Aeq\ (15\ min)}$	Morning Shoulder L_{Amax}	Day $L_{Aeq\ (15\ min)}$	Evening $L_{Aeq\ (15\ min)}$
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

[a] *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

Road	***Criteria (Day[a])***
Pacific Highway	60 dB(A) $L_{Aeq\ (15\ hour)}$
Local roads	55 dB(A) $L_{Aeq\ (1\ hour)}$

[a] *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:
   (a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;
   (b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;
   (c) operate a comprehensive noise management system commensurate with the risk of impact;
   (d) 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);
   (e) 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
   (f) 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:
   (a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
   (b) be prepared in consultation with the EPA;
   (c) describe the measures to be implemented to ensure:
      (i) compliance with the noise criteria and operating conditions in this consent;
      (ii) best practice management is being employed;
      (iii) noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
   (d) describe the noise management system in detail; and
   (e) include a monitoring program that:
      (i) is capable of evaluating the performance of the development;
      (ii) monitors noise at the nearest and/or most affected residences;
      (iii) adequately supports the noise management system;
      (iv) includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
      (v) 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

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 Assesment 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:
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
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 determing 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:

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 complaince 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

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[1]	Morning Shoulder $L_{Aeq(15\ minute)}$	Morning Shoulder L_{Amax}	Day $L_{Aeq(15\ minute)}$	Evening $L_{Aeq(15\ minute)}$
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 NPfI (EPA 2017).

The noise limits provided in Table 5.1 apply under standard and noise-enhancing meteorological conditions (as defined in the NPfI) 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 then 2m/s at 10m above ground level; or
- stability category G temperature inversion conditions.

In accordance with Fact Sheet D of the NPfI, 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: C51438

EQUIPMENT TESTED : Acoustic Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 79952
Class: 1
Owner: EMM Consulting Pty Ltd
L3, 175 Scott Street
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1013	hPa ±1 hPa	**Date of Receipt :**	02/10/2024
Temperature	22	°C ±1° C	**Date of Calibration :**	09/10/2024
Relative Humidity	42	% ±5%	**Date of Issue :**	09/10/2024

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%.

Acu-Vib Electronics
ACOUSTICS AND VIBRATIONS
Head Office & Calibration Laboratory
Unit 14, 22 Hudson Avenue, Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

NATA
WORLD RECOGNISED
ACCREDITATION
Accredited Laboratory
No. 9262
Acoustic and Vibration
Measurements

Acoustic Research Labs Pty Ltd
Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3:2013
Calibration Certificate

Calibration Number C24405

Client Details	EMM Consulting Level 3, 175 Scott Street Newcastle NSW 2300
Equipment Tested/ Model Number :	NA-28
Instrument Serial Number :	01070590
Microphone Serial Number :	08184
Pre-amplifier Serial Number :	52329
Firmware Version :	v2.0

Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature :	24.4 °C	**Ambient Temperature :**	23.8 °C
Relative Humidity :	45.2 %	**Relative Humidity :**	46.7 %
Barometric Pressure :	101.3 kPa	**Barometric Pressure :**	101.26 kPa

Calibration Technician :	Peter Elters	**Secondary Check:**	Rhys Gravelle
Calibration Date :	27 May 2024	**Report Issue Date :**	3 Jun 2024

Approved Signatory : Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	*Pass*	17: Level linearity incl. the level range control	*Pass*
13: Electrical Sig. tests of frequency weightings	*Pass*	18: Toneburst response	*Pass*
14: Frequency and time weightings at 1 kHz	*Pass*	19: C Weighted Peak Sound Level	*Pass*
15: Long Term Stability	*Pass*	20: Overload Indication	*Pass*
16: Level linearity on the reference level range	*Pass*	21: High Level Stability	*Pass*

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Uncertainties of Measurement -

Acoustic Tests		Environmental Conditions	
125Hz	*±0.13 dB*	*Temperature*	*±0.1 °C*
1kHz	*±0.13 dB*	*Relative Humidity*	*±1.9 %*
8kHz	*±0.14 dB*	*Barometric Pressure*	*±0.11 kPa*
Electrical Tests	*±0.13 dB*		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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Sound Calibrator

IEC 60942:2017

Calibration Certificate

Calibration Number C24154

Client Details EMM Consulting
Level 3, 175 Scott Street
Newcastle NSW 2300

Equipment Tested/ Model Number : Model 105
Instrument Serial Number : 96080

Atmospheric Conditions

Ambient Temperature : 25.5 °C
Relative Humidity : 52.1 %
Barometric Pressure : 100.4 kPa

Calibration Technician : Peter Elters
Secondary Check: Rhys Gravelle
Calibration Date : 26 Feb 2024
Report Issue Date : 26 Feb 2024

Approved Signatory :  Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	*Pass*
Frequency Generated	*Pass*
Total Distortion	*Pass*

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	93.80	1000.30

The sound calibrator has been shown to conform to the class 1 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed..

Uncertainties of Measurement -

Specific Tests		Environmental Conditions	
Generated SPL	*±0.10 dB*	*Temperature*	*±0.1 °C*
Frequency	*±0.07 %*	*Relative Humidity*	*±1.9 %*
Distortion	*±0.20 %*	*Barometric Pressure*	*±0.11 kPa*

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

NATA WORLD RECOGNISED ACCREDITATION

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

Sydney Calibration Laboratory
Suite 4.03, Level 4, 3 Thomas Holt Drive, Macquarie Park NSW 2113, Australia
Accredited for compliance with ISO/IEC 17025 - Calibration. Laboratory No. 1301

CERTIFICATE OF CALIBRATION

Certificate No: CAU2300941

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	No: 2759405
Microphone:	Brüel & Kjær	4189	No: 2983733
Preamplifier:	Brüel & Kjær	ZC-0032	No: 22666
Supplied Calibrator:	None		
Software version:	BZ7224 Version 4.7.4	Pattern Approval:	-
Instruction manual:	BE1712-22	Identification:	N/A

CUSTOMER:

EMM Consulting Pty Limited
20 Chandos Street
St Leonards NSW 2065

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 °C
Environment conditions:	*see actual values in **Environmental conditions** sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-1:2013 class 1.
Procedures from IEC 61672-3:2013 were used to perform the periodic tests.
The measurements included in this document are traceable to Australian/National standards.

PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System B&K 3630 with application software type 7763 (version 8.6 - DB: 8.60) and test procedure 2250-4189.

RESULTS:

	Initial calibration		Calibration prior to repair/adjustment
X	Calibration without repair/adjustment		Calibration after repair/adjustment

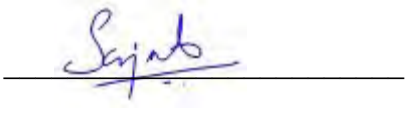
The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of Calibration:20/12/2023

Certificate issued:21/12/2023

Calibration Technician: Sajeeb Tharayil

Approved signatory: Sajeeb Tharayil



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Appendix 4 – KEQ IEA 2023: Status Update

KEQ IEA 2023 – Response to Audit Recommendations (revised)

2024 Annual Review Status Update

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	*Requirement*	*2023 IEA Assessment & Recommendation*	*2023 KEQ Response / Action*
S2, C11	The Applicant must pay Council, in accordance with Council's Great Lakes Wide Development Contributions Plan (November 2007) – Amended: (a) a one-off Headquarters Building contribution of $1.00 per $1,000.00 of capital value of the development; and (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: i. paid to Council at the end of each calendar year. ii. Based on weighbridge records of the quantity of quarry products transported from the site; and iii. Increased annually over the life of the development in accordance with the CPI. *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.*	**Assessment:** (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. (b) Road Maintenance Contributions were provided in one invoice to MidCoast Council, with remittance advice prepared on 30 June 2023 for the following amounts: ▪ FY2018: $3,438.77; ▪ FY2019: $14,876.66; ▪ FY2020: $112,797.25; ▪ FY2021: $65,794.58; and ▪ FY2022: $130,498.26. **Recommendation:** It is recommended that KEQ provide further evidence (e.g. a cost calculation and/or evidence of Council acceptance) that the payments made: ▪ Correctly represent the value of the Headquarters Building contribution; and ▪ Are based on weighbridge records and increased annually over the life of the development in accordance with the CPI. Should any contribution shortfalls be identified, it is recommended that KEQ make an additional payment to cover this amount as soon as practicable.	**RESPONSE:** KEQ can confirm: (a) Headquarters building contribution was provided to Council based on the capital investment value of the project. No concerns have been raised by Council. (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. 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. 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. 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. **STATUS:** KEQ considers this 2023 finding to be resolved.
S3, C11 (d) (ii)	The Applicant must: (d) Not undertake blasting within 500 metres of: ii. Any land outside the site not owned by the Applicant, unless: • 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 • the Applicant has: ○ 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 ○ 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.	**Assessment:** 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: (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. **Recommendation:** 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.	**RESPONSE:** KEQ can confirm the property (Lot 4, DP838128) has been acquired. **STATUS:** KEQ considers this 2023 finding to be resolved.

KEQ IEA 2023 – Response to Audit Recommendations (revised)

2024 Annual Review Status Update

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	*Requirement*	*2023 IEA Assessment & Recommendation*	*2023 KEQ Response / Action*
S3, C12	The Applicant must prepare a Blast Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: (a) Be prepared by a suitably qualified expert whose appointment has been approved by the Planning Secretary; (b) Be prepared in consultation with Council and EPA, and submitted to the Planning Secretary for approval prior to the commencement of construction activities. (c) Describe the measures that would be implemented to ensure: • best management practice is being employed; and • compliance with the relevant conditions of this consent; (d) Include a road closure protocol if blasting occurs within 500 metres of a public road (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 (f) Include a monitoring program for evaluating the performance of the development including: • Compliance with the applicable criteria; and • Minimising fume emissions from the site. The Applicant must implement the plan as approved by the Planning Secretary.	**Assessment:** 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: (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. (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. 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. **Recommendation:** 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.	**ACTION:** KEQ to complete a comprehensive review of the Blast Management Plan and submit the revised document to the Planning Secretary for approval. **DUE:** 28 May 2024 in accordance with Schedule 5, Condition 5(c). **STATUS:** Underway – draft revision of the management plan has been completed by IEMA. Further revisions are to be assessed in accordance with these recommendations. **2024 Annual Review Update:** Completed. Revised Blast Management Plan approved by NSW Planning on 29 April 2024.
S3, C13	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. *Table 7: Long-term impact assessment criteria for particulate matter* **Pollutant** | **Averaging period** | **[d] Criterion** Total suspended particulates (TSP) | Annual | [a] 90 µg/m³ Particulate matter < 10 µm (PM_{10}) | Annual | [a] 30 µg/m³ *Table 8: Short-term impact assessment criteria for particulate matter* **Pollutant** | **Averaging period** | **[d] Criterion** Particulate matter < 10 µm (PM_{10}) | 24 hour | [a] 50 µg/m³ *Table 9: Long-term Impact Assessment Criteria for Deposited Dust* **Pollutant** | **Averaging period** | **Maximum increase in deposited dust level** | **Maximum total deposited dust level** [c] Deposited dust | Annual | [b] 2 g/m² /month | [a] 4 g/m² /month	**Assessment:** 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. **Recommendation:** 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.	**ACTION:** KEQ to include this recommendation into the comprehensive review of the Air Quality Management Plan. Refer to the response under Schedule 3, Condition 16 for further details. **2024 Annual Review Update:** Completed. Revised Air Quality Management Plan approved by NSW Planning on 18 June 2024.

KEQ IEA 2023 – Response to Audit Recommendations (revised)

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KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	*Requirement*	*2023 IEA Assessment & Recommendation*	*2023 KEQ Response / Action*
S3, C16	The Applicant must prepare an Air Quality Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: (a) Be prepared by a suitably qualified expert whose appointment has been approved by the Planning Secretary. (b) Be prepared in consultation with Council and EPA and submitted for approval to the Planning Secretary prior to the commencement of construction activities. (c) Describe the measures that would be implemented to ensure: • Compliance with the relevant air quality conditions of this consent; • best management practice is employed; and • The air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events. (d) Describe the proposed air quality management system; and (e) Include a monitoring program that: • Can evaluate the performance of the development. • Includes a protocol for determining any exceedances of the relevant conditions of consent. • Effectively supports the air quality management system; and • Evaluates and reports on the adequacy of the air quality management system. The applicant must implement the plan as approved by the Planning Secretary	**Assessment:** 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. **Recommendation:** Refer to recommendation under Schedule 5 Condition 4 in relation to updates of strategies, plans and programs required under this consent.	**ACTION:** KEQ to complete a comprehensive review of the Air Quality Management Plan and submit the revised document to the Planning Secretary for approval. **DUE:** 28 May 2024 in accordance with Schedule 5, Condition 5(c). **STATUS:** Underway – draft revision of the management plan has been completed by IEMA. A further revision is to be assessed in accordance with these recommendations. **2024 Annual Review Update:** Completed. Revised Air Quality Management Plan approved by NSW Planning on 29 April 2024.
S3, C19	The Applicant must comply with the discharge limits in any EPL, or with Section 120 of the POEO Act.	**Assessment:** 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. **Recommendation:** 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. 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.	**ACTION:** KEQ to include these two recommendations into the comprehensive review of the Water Management Plan. Refer to the response under Schedule 3, Condition 21 for further details. **2024 Annual Review Update:** Completed. Revised Water Management Plan submitted to NSW Planning on 10 September 2024.
S3, C21	The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: (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. (b) Be submitted to the Planning Secretary for approval prior to the commencement of construction activities. (c) Include: i. A Site Water Balance that includes details of: • Sources and security of water supply, including contingency planning;	**Assessment:** 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.	**ACTION:** KEQ to complete a comprehensive review of the Water Management Plan and submit the revised document to the Planning Secretary for approval. **DUE:** 28 May 2024 in accordance with Schedule 5, Condition 5(c).

KEQ IEA 2023 – Response to Audit Recommendations (revised)

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	*Requirement*	*2023 IEA Assessment & Recommendation*	*2023 KEQ Response / Action*
	• Water use on site; and • Measures that would be implemented to minimise use of clean water and maximise recycling of dirty water on the site. ii. A Surface Water Management Plan, that includes: • Baseline data on surface water flows and quality in the watercourses that could be affected by the development. • A detailed description of the surface water management system on the site, including the design objectives and performance criteria for the: ○ clean water diversions; ○ erosion and sediment controls; ○ water storages (including Maximum Harvestable Rights requirements); and ○ control of water pollution from areas of the site that have been rehabilitated. • 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. • A program to monitor: ○ any surface water discharges; ○ the effectiveness of the water management system; ○ surface water flows and quality in local watercourses; and ○ ecosystem health of local watercourses; and • An assessment of appropriate options to improve storage and retention times in accordance with Managing Urban Stormwater: Soils and Construction (Landcom); iii. A Groundwater Monitoring Program that includes: • Baseline data of groundwater levels surrounding the site. • Groundwater impact assessment criteria, to be developed following analysis of baseline data, including trigger levels for investigating any potentially adverse groundwater impacts; and • A program to monitor and/or validate the impacts of the development on groundwater resources; and iv. A Surface and Ground Water Response Plan that describes the measures and/or procedures that would be implemented to: • Respond to any exceedances of the surface water impact assessment criteria and groundwater impact assessment criteria; and • Mitigate and/or offset any adverse impacts on surface water and groundwater resources located within and adjacent to the site. The Applicant must implement the plan as approved by the Planning Secretary	**Recommendation:** The following recommendations are made in relation the WMP: ▪ Updates to the WMP should include details of a contingency plan; ▪ 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. ▪ WMP updates are to be undertaken in consultation with the EPA and DPE Water and be submitted to the Planning Secretary. Additional recommendations which are applicable to this condition are made in relation to Adaptive Management (refer Schedule 5 Condition 2).	**STATUS:** Underway – IEMA has been engaged to draft a revision of the management plan. These water-themed recommendations will be incorporated. **2024 Annual Review Update:** Completed. Revised Water Management Plan submitted to NSW Planning on 10 September 2024.
S3, C23	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.	**Assessment:** 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. **Recommendation:** It is recommended to publish a summary of laden truck movements to and from site in future Annual Reviews.	**ACTION:** KEQ to include laden truck movements in the Annual Reviews for all future submissions. **DUE:** 31 March 2024 in accordance with Schedule 5, Condition 4. **STATUS:** Completed – Product transport report has been included in the 2023 Annual Review document template.

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KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	*Requirement*	*2023 IEA Assessment & Recommendation*	*2023 KEQ Response / Action*
S3, C28	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. *Table 10: Biodiversity Offset Strategy – land-based offsets* **Area** | **Offset Type** | **Minimum Size (ha)** Offset Area | Existing vegetation to be managed and enhanced | 130.36 ha *Table 11: Biodiversity Offset Strategy – ecosystem and species credit requirements* **Credit Type** | **Credits Required** **Ecosystem Credits** PCT 1619: Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands | 188 PCT 695: Blackbutt – Turpentine – Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion | 7 Total | 195 **Species Credits** *Tetratheca juncea* (Black-eyed Susan) | 260 *Grevillea parviflora subsp. parviflora* (Small-flower Grevillea) | 250 Squirrel Glider (*Petaurus norfolcensis*) | 260 Southern Myotis (*Myotis macropus*) | 107 Total | 877 *Notes:* *1. 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.* *2. Credits required for impacts to EPBC Act listed species and associated habitats must be like-for-like.*	**Assessment:** 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. At the time of writing, as confirmed by Site Management, the updated Biodiversity Offset Strategy is pending Commonwealth EPBC Approval. 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. **Recommendation:** 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. Review and update the BOS when the consent is modified.	**ACTION:** KEQ to complete a comprehensive review of the Biodiversity Offset Strategy and submit the revised document to the Planning Secretary for approval. **DUE:** TBD – pending the receipt of Commonwealth Approval for MOD10 (EPBC 2022 – 9164) under the Commonwealth EPBC Act 1999. **STATUS:** Table 10 – Underway: ▪ KEQ is continuing to engage with NSW Planning regarding the mechanism used for the land-based offset. Table 11 (Ecosystem Credits) – Underway: ▪ PCT1619 have been secured. ▪ PCT695 have been secured. Table 11 (Species Credits) – Underway: ▪ 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. ▪ Small-flower Grevillea – KEQ are continuing to review credit purchase options. ▪ Squirrel Glider – purchase agreement has been executed with the Credit Supply Taskforce. ▪ Southern Myotis – KEQ are continuing to review credit purchase options. **2024 Annual Review Update:** Subject to on-going consultation with NSW & Commonwealth Agencies. Further approvals are likely and therefore will be subject to separate reporting.
S3, C32	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: (a) Be prepared by a suitably qualified expert whose appointment has been approved by the Planning Secretary. (b) Be prepared in consultation with BCD and Council, and submitted to the Planning Secretary for approval prior to the commencement of construction activities; (c) Describe how the implementation of the Tetratheca juncea Translocation Program would be integrated with the overall rehabilitation of the site; (d) Describe the short, medium and long-term measures that would be implemented to: • Manage remnant vegetation and habitat on the site; and • Ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations of this consent. (e) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, including triggers for any remedial action;	**Assessment:** 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. **Recommendation:** Ensure the LRMP is updated every 3 years and that implementation of measures detailed in the plan have been reviewed and updated where required. 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.	**ACTION:** KEQ to complete a comprehensive review of the Landscape and Rehabilitation Management Plan and submit the revised document to the Planning Secretary for approval. **DUE:** 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. **STATUS:** 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.

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No	*Requirement*	*2023 IEA Assessment & Recommendation*	*2023 KEQ Response / Action*
	(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: • Ensuring compliance with the rehabilitation objectives and progressive rehabilitation obligations of this consent; • Enhancing the quality of remnant vegetation and fauna habitat; • Restoring native endemic vegetation and fauna habitat within the rehabilitation area, including details of the target revegetation communities of the rehabilitated landform; • Coordinating the relocation of native fauna to protected habitats associated with preclearing fauna surveys; • 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; • Collecting and propagating seed; • Ensuring minimal environmental consequences for threatened species, populations and habitats; • Minimising the impacts on native fauna on site, including the details and implementation of appropriate pre-clearance surveys; • Minimising the impacts on fauna movement between undisturbed areas of the site and nearby vegetation (including potential fauna crossings); • Controlling weeds and feral pests; • Controlling erosion; • Controlling access and providing for management trails; and • Bushfire management and implementation of ecologically appropriate bushfire intervals. (i) Include a program to monitor the effectiveness of these measures, and progress against the performance and completion criteria. (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. (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. (l) Include details of who would be responsible for monitoring, reviewing, and implementing the plan; and (m) Include details as to the timing of actions set out in the plan The Applicant must implement the plan as approved by the Planning Secretary.		**2024 Annual Review Update:** Completed. Revised Landscape & Rehabilitation Management Plan approved by NSW Planning on 11 February 2025.
S3, C33	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: (a) Be prepared by a suitably qualified expert whose appointment has been approved by the Planning Secretary (b) Be prepared in consultation with BCD and Council (c) Describe how the implementation of the Tetratheca juncea Translocation Program would be integrated with the Biodiversity Offset Area management. (d) Describe the short, medium and long-term measures that would be implemented to manage remnant vegetation and habitat on the Biodiversity Offset Area (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.	**Assessment:** 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. **Recommendation:** 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.	**ACTION:** 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. **DUE:** As soon as practicable. **STATUS:** Underway – The key action of repairs to fauna fencing surrounding Dam 1 commenced 30 January 2024.

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KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	*Requirement*	*2023 IEA Assessment & Recommendation*	*2023 KEQ Response / Action*
	(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. (g) Providing for the incorporation of the final rehabilitated landform into the Biodiversity Offset Area and its management. (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: • Enhancing the quality of remnant vegetation and fauna habitat • 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. • Coordinating the relocation of native fauna to protected habitats associated with preclearing fauna surveys. • Collecting and propagating seed • Maximising the protection and restoration of threatened species, populations and habitats in the Biodiversity Offset Area • Maximising fauna movement between the Biodiversity Offset Area and adjacent habitats. • Controlling weeds and feral pests • Controlling erosion • Controlling access and providing for management trails; and • Bushfire management and implementation of ecologically appropriate bushfire intervals. (i) Include a program to monitor the effectiveness of these measures, and progress against the performance and completion criteria. (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. (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 (m) Include details as to the timing of actions set out in the plan.		**2024 Annual Review Update:** Completed. Fencing surrounding Dam was completed in February 2024.
S3, C39	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.	**Assessment:** 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. 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 ad the Dangerous Goods Code. However, it is noted that neither of the Diesel ASTs are included on the Hazardous Substances Register. **Recommendation:** 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. It is recommended to update the Hazardous Subsidence Register to ensure it includes both diesel ASTs.	**ACTIONS:** 1. KEQ to review repair options to the storage container and implement as needed. 2. KEQ to review Hazardous Substances Register and include in KEQ reporting processes to ensure routine updates and revisions are carried out. **DUE:** As soon as practicable. **2024 Annual Review Update:** 1. Completed in early 2024. 2. Completed in 2023.

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KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	*Requirement*	*2023 IEA Assessment & Recommendation*	*2023 KEQ Response / Action*
S5, C1	The Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Planning Secretary. This strategy must: (a) Be submitted to the Planning Secretary for approval prior to the commencement of construction activities (b) Provide the strategic framework for environmental management of the development. (c) Identify the statutory approvals that apply to the development. (d) Describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development. (e) Describe the procedures that would be implemented to: • Keep the local community and relevant agencies informed about the operation and environmental performance of the development. • Receive, handle, respond to, and record complaints; • resolve any disputes that may arise during the course of the development; • respond to any non-compliance; and • Respond to emergencies; and (f) Include: • Copies of any strategies, plans and programs approved under the conditions of this consent; and • Clear plan depicting all the monitoring required to be carried out under the conditions of this consent. The Applicant must implement the strategy as approved by the Planning Secretary.	**Assessment:** 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. **Recommendation:** 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.	**ACTION:** KEQ to complete a comprehensive review of the Environmental Management Strategy and submit the revised document to the Planning Secretary for approval. **DUE:** 28 May 2024 in accordance with Schedule 5, Condition 5(c). **STATUS:** Underway – draft revision of the management plan has been completed by IEMA. A further revision is to be assessed in accordance with this recommendation. **2024 Annual Review Update:** Completed. Revised Environmental Management Strategy approved by NSW Planning on 19 August 2024.
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.	**Assessment:** (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. (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. (c) There have been no specific remediation measures directed by the Planning Secretary within this audit period. **Recommendation:** 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. The above recommendations should be incorporated within an update to the Water Management Plan.	**RESPONSE:** (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. Therefore, KEQ disagrees with the non-compliance findings. **ACTION:** KEQ to include these two recommendations into the comprehensive review of the Water Management Plan. Refer to the response under Schedule 3, Condition 21 for further details. **2024 Annual Review Update:** Completed. Revised Water Management Plan submitted to NSW Planning on 10 September 2024.
S5, C4	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: (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.	**Assessment:** 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.	**RESPONSE:** 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.

KEQ IEA 2023 – Response to Audit Recommendations (revised)

2024 Annual Review Status Update

KEQ 2023 IEA Findings and KEQ Response – Project Approval (MP09_0175)			
No	*Requirement*	*2023 IEA Assessment & Recommendation*	*2023 KEQ Response / Action*
	(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: • The relevant statutory requirements, limits or performance measures/criteria; • The monitoring results of previous years; and • The relevant predictions in the documents referred to in condition 2(d) of Schedule 2 of this consent. (c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance. (d) identify any trends in the monitoring data over the life of the development; (e) identify any discrepancies between the predicted and actual impacts of the development and analyse the potential cause of any significant discrepancies; and (f) describe the measures that would be implemented over the current calendar year to improve the environmental performance of the development.	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. **Recommendation:** It is recommended that all Annual Reviews are submitted to the Planning Secretary by the end of March each year.	**STATUS:** Completed – no further actions required.
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. *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.*	**Assessment:** The management plans and strategies which are applicable to this condition are as follows: ▪ Environmental Management Strategy – dated Dec 2015 ▪ Air Quality Management Plan –dated May 2019 ▪ Blast Management Plan – dated May 2019 ▪ Noise Management Plan – dated April 2022 ▪ Heritage Management Plan – dated December 2015 ▪ Water Management Plan – dated May 2019 ▪ Traffic Management Plan – dated December 2015 ▪ Tetratheca Juncea Translocation Plan – dated January 2019 ▪ Biodiversity Offset Strategy – dated July 2013 ▪ Landscape and Rehabilitation Management Plan – dated March 2020 ▪ Biodiversity Offset Area Management Plan – dated April 2021 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. **Recommendation:** 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. Opportunities to improve notification systems are recommended to be reviewed to ensure programs are revised within the timeframes as required under this consent.	**RESPONSE:** KEQ acknowledges the review, revision, completion of agency consultation and re-submission of statutory management plans requires significant improvement. 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. **ACTIONS:** Refer to constituent management plan conditions for individual actions. **STATUS:** Completed – document management system.

KEQ IEA 2023 – Response to Audit Recommendations (revised)

2024 Annual Review Status Update

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	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. 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. L2.2 – Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.	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. According to the Discharge Register, the following discharges were recorded which exceeded the concentration limits defined in EPL 20611 [summary]: 2020 – a total of 11 discharges non-compliant with the EPL concentration limits. 2021 – a total of 18 discharges non-compliant with the EPL concentration limits. 2022 – a total of 29 discharges non-compliant with the EPL concentration limits. 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.	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. 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. The review should be conducted by a suitably qualified specialist and recommendations should be reflected within an update to the WMP. It is recommended that KEQimplement 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.	Duplicate recommendations. Refer to water-related conditions of the Project Approval for further details.
O1.1, O5.1, O5.2	O1.1 – Licensed activities must be carried out in a competent manner. This includes: (a) The processing, handling, movement and storage of materials and substances used to carry out the activity; and (b) The treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity. 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. O5.2 – Bunds must: (a) have walls and floors constructed of impervious materials; (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); (c) Have floors graded to a collection sump; (d) Not have a drain valve incorporated in the bund structure; or be constructed and operated in a manner that achieves the same environmental outcome.	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. 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.	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.	Duplicate recommendation. Refer to the Schedule 3, Condition 39 for further details.

KEQ IEA 2023 – Response to Audit Recommendations (revised)

2024 Annual Review Status Update

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	O3.1 – The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises. 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. 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.	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. 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: • 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.	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. If exceedances reoccur examine additional measure to manage.	Duplicate recommendations. Refer to air quality-related conditions of the Project Approval for further details.
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.	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. 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.	As the original requirement has been removed from the EPL condition, no further action is recommended.	**RESPONSE:** 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.
M2.1, M3.1	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. 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: (a) Any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or (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 (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. *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".*	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. 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. A review of the Annual Returns noted 2 separate non-compliances against condition M2.1 & 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. 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	Ensure monitoring is undertaken in accordance with requirements of M2 conditions.	**RESPONSE:** KEQ acknowledges the finding, but considers no further actions are required.

KEQ IEA 2023 – Response to Audit Recommendations (revised)

KEQ 2023 IEA Findings and KEQ Response - Environment Protection Licence (EPL 20611)				
No	*Requirement*	*2023 IEA Assessment*	*2023 IEA Recommendation*	*2023 KEQ Response / Action*
		(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. 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).		
M8.1	To assess compliance with the noise limits for this premises attended noise monitoring must be undertaken in accordance with all noise condition 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 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.*	A review of the Quarterly Monitoring Reports, prepared by EMM Consulting, across the audit period identified the methodology includes the requirements of this condition. Recorded Weather and Operating Conditions as reported stated monitoring was conducted in accordance with the stated criteria a), b) and d). 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. 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.	Following the incident KEQ amended quarterly monitoring planning and the failure to conduct quarterly monitoring has not reoccurred. Therefore, no further action is recommended.	**RESPONSE:** KEQ acknowledges the finding, but considers no further actions are required.
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').	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. All other Annual returns for the audit period were noted to have been submitted within the required time period.	Ensure Annual Returns are submitted within the 60 days and the due date as notified by the EPA.	**RESPONSE:** 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. **STATUS:** Completed – no further actions required.

KEQ IEA 2023 – Response to Audit Recommendations (revised)

KEQ 2023 IEA Findings and KEQ Response – Opportunities for Improvement				
No	*Requirement*	*2023 IEA Assessment*	*2023 IEA Recommendation*	*2023 KEQ Response / Action*
S3, C27	The Applicant must develop a translocation program for Tetratheca juncea to the satisfaction of the Planning Secretary. This program must: (a) be prepared in consultation with BCD, by a suitably qualified and experienced ecologist whose appointment has been approved by the Planning Secretary; (b) be submitted to the Planning Secretary for approval prior to the commencement of construction activities that involve clearing of or potential harm to Tetratheca juncea; (c) include measures for the translocation of all Tetratheca juncea stems in the area of disturbance to nearby areas with similar physical and biological habitat features; (d) include a monitoring program to study the Tetratheca juncea stems before and after translocation; (e) include short and long-term goals and performance criteria to measure the effectiveness of the program; and (f) provide for the transfer of information obtained as a result of implementing the program to BCD and the Department.	The Tetratheca juncea Tanslocation Management Plan (TjTMP) (sic) was most recently updated in January 2019. Whilst no non-compliances have been identified specific to this condition, recommendations are made in relation to the success of the program. (a) The TjTMP was prepared in consultation with the Office of Environment and Heritage (OEH) with evidence of the consultation attached to Appendix B of the TjTMP. Evidence is provided within Appendix A of the TjTMP confirming a suitably qualified expert was approved by the Planning Secretary to prepare the TjTMP. (b) A letter from the DPE provided confirms the TjTMP was approved in accordance with the Project Approval. (c) Section 6 and Section 7 of the TjTMP describe measures for the translocation of Tetratheca juncea (T. juncea) stems in the area of disturbance to nearby areas. More specifically, the TjTMP describes that all clumps of T. juncea identified during the original Project Approval had already been translocated to the translocated area. The translocation of additional T. juncea identified within "Site 2" as part of the modification to the original "Part 3A approval" was scheduled to take place in 2018 and 2020. Further details in Section 7 of the TjTMP describes the translocation process, ecologicsl inspection requirements and after planting care. (d) The TjTMP describes a monitoring program in Section 9, including for the original Development Approval and for "Site 2". Monitoring Actions are listed in the monitoring program and include a timing for completion of each action. Examples of actions to be undertaken include: ▪ Count flowers, ▪ Count fruits, ▪ Observe general plant health, and ▪ Photo points. The most recent T. juncea Monitoring Report was prepared in February 2021 by Firebird ecoSultants following a site visit undertaken in October 2020. The Report confirms that "*the year 2020 was to be the final year of monitoring of the translocation project*" and states "*the translocation site does not present suitable habitat*", due to the low level of success of the translocation project at the Site. Additional contributing factors have been raised in relation to the low survival rate of T. juncea following translocation, such as lower long term average rainfall, however, the primary factor being the translocation site is not representative of the habitat that T. juncea typically occur in. (e) Short Term and Long Term goals are described in Section 8 of the TjTMP, include references to performance criteria described in Section 9. Section 9 lists the monitoring actions for translocation and states that this information "*will be used to report and measure the general health and success of the translocated T. juncea sections*" and that *"reports should be provided annually to OEH and DPE on the success of translocation methods and recommendations made to assist in future translocation efforts".*	Whilst the auditors have collected sufficient evidence to demonstrate KEQPL are compliant with the scope and intent of the condition, due to the low survival rate of T. juncea following translocation (less than the 25% target), a review of the T. juncea Translocation Program should be undertaken by a suitably qualified ecologist in consultation with BCS. This review will identify if the approved methodologies and performance criteria were applicable to the site conditions. A Trigger Action Response Plan should be considered in any future translocation plans to support the targeted short and long term success rate goals. In the event any future tanslocations of T. juncea are triggered, the results of this current translocation event must be considered and amendents made to the site selection criteria (including soil type, slope and aspect). The requirement for long term weed control, reduced grazing pressures and any prescribed burns, or other measures to stimulate seed germination, should be clearly identified as part of the adaptive management measures. Any future translocation plan will need to be prepared in consultation with BCS and approved by the Planning Secretary.	**Response:** KEQ has sought legal advice regarding the TjTP and has confirmed that the program ceased in 2020. Therefore, KEQ considers that the program is now completed, with no further action required.

KEQ IEA 2023 – Response to Audit Recommendations (revised)

2024 Annual Review Status Update

KEQ 2023 IEA Findings and KEQ Response – Opportunities for Improvement				
No	*Requirement*	*2023 IEA Assessment*	*2023 IEA Recommendation*	*2023 KEQ Response / Action*
S3, C41	The Applicant must: (a) ensure the development is suitable equipped to respond to any fires on site; (b) assist the Rural Fire Service and emergency services as much as possible if there is a fire in the surrounding area; and (c) ensure new construction complies with Australian Standard AS3959-2018 'Construction of buildings in bush fire-prone areas' or the relevant requirements of the NASH Standard – Steel Framed Construction in Bushfire Areas (incorporating amendment A - 2015); and the construction requirements in Section 7.5 of 'Planning for Bush Fire Protection 2019'.	(a) KEQPL have a Bushfire Evacuation Plan (undated) which describes the procedures in relation to notifications to site personnel and constructures, communication methods, and evacuation and assembly. The plan also describes the allocation of responsibilities and response instructions for quarry supervisors and personnel. An Emergency Contacts sheet document lists the contact information of local Emergency Services such as Police, Fire Brigade, Ambulance, Hospitals, EPA, SES and Mines Rescue, as well as the names and numbers of internal emergency contacts. First Aid Kits, Fire Extinguishers and Water Carts were all observed to be available during the site audit. The Emergency Management Flip Chart describes the site evacuation procedures for a range of emergencies including fire, explosion, persons trapped and major trauma. The Flip Chart provides further details of the responsibilities of the site Emergency Controllers (which are allocated at each daily toolbox meeting) as well as maps and procedures which identify the Emergency Assembly procedures and locations. (b) Based on review of the NPWS Fire History – Wildfires and Prescribed Burns, no bushfires have occurred in the near vicinity of the Site during the audit period, this not triggering compliance with Condition 41(b). (c) It was confirmed by Site Management that no new construction has occurred during the audit period.	Whilst this condition is deemed compliant, it is recommended that the Bushfire Evacuation Plan is updated with a version control including date of review to ensure it is current and can be periodically reviewed.	**ACTION:** KEQ to review the Bushfire Evacuation Plan document template and update as considered necessary. **DUE:** 31 March 2025. **2024 Annual Review Update:** Completed. Bushfire Evacuation Plan will be managed as part of the sites WHS Management System.