

## CALGA SAND QUARRY

LOT 151 PEATS RIDGE ROAD, CALGA, NSW, 2250

QUARTERLY COMPLIANCE NOISE MONITORING – JUNE 2022

RWDI # 2200854.04

1 July 2022

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## DOCUMENT CONTROL

Version	Status	Date	Prepared By	Reviewed By
A	Final	1 July 2022	Roman Haverkamp	John Wassermann

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### RWDI

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### AAAC

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### QUALITY ASSURANCE

RWDI Australia Pty Ltd operates a Quality Management System which complies with the requirements of AS/NZS ISO 9001:2015. This management system has been externally certified by SAI Global and Licence No. QEC 13457 has been issued for the following scope: The provision of consultancy services in acoustic engineering and air quality; and the sale, service, support and installation of acoustic monitoring and related systems and technologies.



## GLOSSARY OF ACOUSTIC TERMS

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are demonstrated in the graph below, are here defined.

**Maximum Noise Level (L<sub>Amax</sub>)** – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

**L<sub>A1</sub>** – The L<sub>A1</sub> level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L<sub>A1</sub> level for 99% of the time.

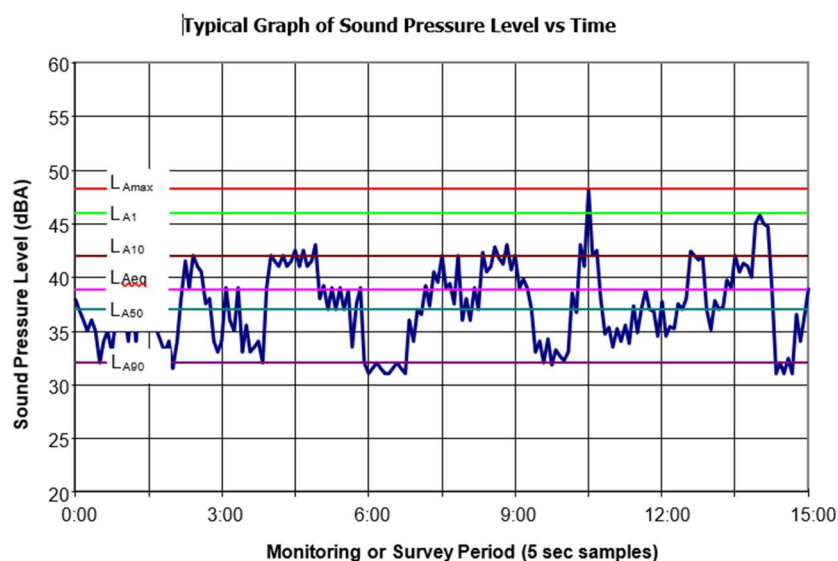
**L<sub>A10</sub>** – The L<sub>A10</sub> level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L<sub>A10</sub> level for 90% of the time. The L<sub>A10</sub> is a common noise descriptor for environmental noise and road traffic noise.

**L<sub>A90</sub>** – The L<sub>A90</sub> level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L<sub>A90</sub> level for 10% of the time. This measure is commonly referred to as the background noise level.

**L<sub>Aeq</sub>** – The equivalent continuous sound level (L<sub>Aeq</sub>) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

**ABL** – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L<sub>A90</sub>) for each period.

**RBL** – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.





# TABLE OF CONTENTS

## GLOSSARY OF ACOUSTIC TERMS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>5</b>
<b>2</b>	<b>OPERATIONAL NOISE CRITERIA .....</b>	<b>6</b>
<b>3</b>	<b>MONITORING METHODOLOGY .....</b>	<b>7</b>
3.1	Monitoring Locations.....	7
3.2	Meteorological Conditions .....	7
3.3	Monitoring Equipment.....	7
<b>4</b>	<b>DESCRIPTION OF SITE OPERATIONS.....</b>	<b>9</b>
<b>5</b>	<b>ASSESSMENT OF NOISE LEVELS .....</b>	<b>10</b>
<b>6</b>	<b>CONCLUSIONS .....</b>	<b>11</b>

# LIST OF APPENDICES

Appendix A: Calibration Certificate



## 1 INTRODUCTION

RWDI Australia (RWDI) was commissioned by Hanson Construction Pty Ltd to conduct the quarterly compliance noise monitoring of the Calga Sand Quarry located at Lot 151, Peats Ridge Road in Calga (the Site).

This report summarises the results of the quarterly attended noise monitoring conducted on 20 June 2022 and assess them against the operational noise criteria set in Development Consent DA 94-4-2004.

The Noise Monitoring Program prepared by R.W. Corkery & Co. Pty Ltd summarises all relevant criteria, monitoring locations, and frequency / timing of monitoring.

## 2 OPERATIONAL NOISE CRITERIA

**Table 2-1** summarises the daytime operational noise criteria as summarised in Condition 2, Schedule 3, of Development Consent DA 94-4-2004 (as consolidated). Noise levels emanating from the Site must not exceed the relevant criteria when measured within 30 metres (m) of the dwelling:

**Table 2-1 Operational Daytime Noise Criteria**

Assessment Location	Daytime $L_{Aeq,15min}$ Operational Noise Criteria (dBA)
CN-1	41
CN-2	40
CN-3	39
CN-6	36

The relevant assessment locations are shown in **Figure 2-1**.



**Figure 2-1 Site Locality and Assessment Locations**



## 3 MONITORING METHODOLOGY

Attended noise monitoring was conducted during the daytime assessment period (7:00 am – 6:00 pm) on Monday, 20 June 2022. One 15-minute measurement was conducted at each of the receiver locations listed in **Table 2-1**.

Measurement of noise was carried out in accordance with Australian Standard AS 1055:2018 *Description and Measurement of Environmental Noise* and *Approved Methods for the Measurements and Analysis of Environmental Noise in NSW* (NSW EPA, 2022).

### 3.1 Monitoring Locations

Monitoring was conducted at the four assessment locations listed in **Table 2-1** and shown in **Figure 2-1**. All noise measurements were conducted at a location representative of the most affected point within the 30 m perimeter surrounding the dwelling.

### 3.2 Meteorological Conditions

Based on site observations, meteorological conditions were deemed suitable for conducting environmental noise measurements during the day of survey (wind less than five metres per second [m/s] at microphone height and no rain). Wind speed was determined by the RWDI operator using a hand-held digital anemometer AR816. This was confirmed by meteorological data obtained from the Site's Automatic Weather Station (AWS) (**Table 3-1**).

**Table 3-1 Meteorological Conditions during Noise Survey (20 June 2022)**

Time Period	Wind Speed (m/s)	Wind Direction	Rain (mm)
1:15 pm – 1:30 pm	0.9	SW	0
1:30 pm – 1:45 pm	0.9	SW	0
1:45 pm – 2:00 pm	0	SW	0
2:00 pm – 2:15 pm	0.4	SW	0
2:15 pm – 2:30 pm	1.3	ENE	0

### 3.3 Monitoring Equipment

All measurements were conducted using a NTi XL2 Sound Level Meter (SLM). This sound level meter conforms to AS IEC 61672.2-2019 *Electroacoustics – Sound level meters Pattern evaluation tests* as a Type 1 Precision Sound Level Meter which has an accuracy suitable for field and laboratory use. The A-Weighting filter of the meter was selected and the time weighting was set to “Fast”. The calibration of the meter was checked before and after the measurements with a Brüel and Kjær Type 4230 sound level calibrator and no significant drift was noted (the sound level meter calibrated 94.0 dBA before and after each of the 15-minute measurements).

**QUARTERLY COMPLIANCE NOISE MONITORING – JUNE 2022**  
**CALGA SAND QUARRY**

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July 1, 2022

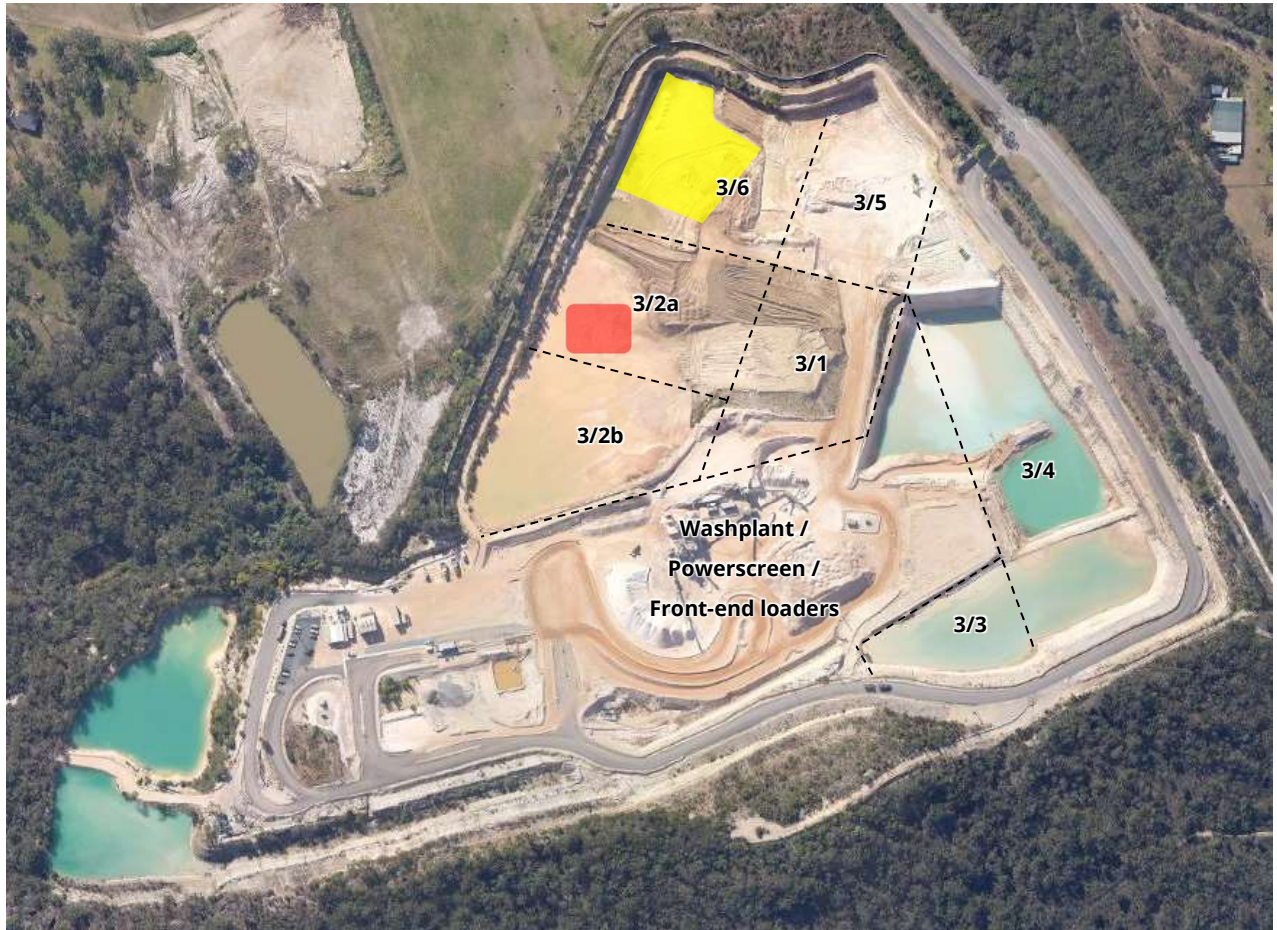


The NTi XL2 sound level meter and the Brüel and Kjær Type 4230 have been laboratory calibrated within the previous two years in accordance with our in-house Quality Assurance Procedures. The Calibration Certificate for the SLM used for the monitoring is attached to this letter. Note that Calibration Certificates are valid for 2 years.



## 4 DESCRIPTION OF SITE OPERATIONS

**Figure 4-1** shows the site layout with the active work locations on the day of the survey.



**Figure 4-1 Site Layout and Active Work Locations (20 June 2022)**

The following mobile plant and equipment were in operation during the time of the monitoring:

- Excavator working in Stage 3/6 preparing area for set up of mobile screening equipment. **Figure 4-1**).
- Front-end loader loading sales trucks and loading dump truck with oversize material to be taken to the oversize material stockpile (in red area shown in **Figure 4-1**).
- Water truck operational on all unsealed roadways.
- Front-end loader loading dry screening plant (Powerscreen)
- Dozer extracting raw material in stage 3/6 by ripping and pushing material into a stockpile.
- Washplant running in normal production mode with fines recovery circuit active. Being fed by dry screening plant (Powerscreen)

## 5 ASSESSMENT OF NOISE LEVELS

**Table 5-1** summarises the measurement results and compares them against the relevant daytime noise criteria (**Table 2-1**).

**Table 5-1 Attended Noise Measurement Results (20 June 2022)**

Assessment Location	Start Time	L <sub>Aeq,15min</sub> due to Site Noise (dBA)	Operational Noise Criteria (dBA)	Comments
CN-1	1:20 pm	38	41	<b>Site-related sources:</b> Site audible during lulls of traffic – mobile fleet ~ 35-39 dBA. Impact noise 43 dBA. <b>Other dominant noise sources:</b> Frequent Peats Ridge Road traffic ~ 48-64 dBA . Frequent birds ~ 40-60 dBA.
CN-3	1:38 pm	32	39	<b>Site-related sources:</b> Site audible during lulls of traffic – mobile fleet ~ 30-33 dBA. <b>Other dominant noise sources:</b> Frequent Peats Ridge Road traffic ~ 55-75 dBA. Frequent birds ~ 40-60 dBA.
CN-2	1:55 pm	33	40	<b>Site-related sources:</b> Site audible during lulls of traffic – mobile fleet ~ 31-34 dBA. <b>Other dominant noise sources:</b> Frequent Peats Ridge Road traffic ~ 55-75 dBA. Frequent birds ~ 40-55 dBA.
CN-6	2:16 pm	Inaudible	36	<b>Site-related sources:</b> Site inaudible at all times. <b>Other dominant noise sources:</b> Frequent road traffic on Peats Ridge Road dominating the noise environment ~ 50-65 dBA Frequent birds ~ 45-55 dBA

**Table 5-1** indicates that measured L<sub>Aeq,15min</sub> noise levels due to quarry operations comply with the relevant daytime noise criteria at all four receivers



## 6 CONCLUSIONS

Attended compliance noise monitoring was conducted on Monday, 20 June 2022. The results of the survey indicate that noise emissions from the Calga Sand Quarry complied with the daytime operational noise criteria set in Development Consent DA 94-4-2004 at all four identified assessment.

This report entitled Calga Sand Quarry – Quarterly Compliance Noise Monitoring – June 2022 by RWDI Australia (“RWDI”) for Hanson Construction Material Pty Ltd (“Client”). The findings and conclusions presented in this report have been prepared for the Client and are specific to the project described herein (“Project”). The conclusions and recommendations contained in this report are based on the information available to RWDI when this report was prepared. Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

The conclusions and recommendations contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilize the report and/or implement the conclusions and recommendations contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions and recommendations in this report carefully review the stated assumptions contained herein and to understand the different factors which may impact the conclusions and recommendations provided.

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# APPENDIX A


**CALIBRATION CERTIFICATE**



**Acoustic  
Research  
Labs Pty Ltd**

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Ph: +61 2 9484 0800 A.B.N. 65 150 399 119  
[www.acousticresearch.com.au](http://www.acousticresearch.com.au)

**Sound Level Meter**  
**IEC 61672-3:2013**  
**Calibration Certificate**  
Calibration Number C21674

<b>Client Details</b>		RWDI Level 4, 272 Pacific Highway Crows Nest NSW 2065	
<b>Equipment Tested/ Model Number :</b>		Nti XL2	
<b>Instrument Serial Number :</b>		A2A-08006-E0	
<b>Microphone Serial Number :</b>		7796	
<b>Pre-amplifier Serial Number :</b>		09815	
<b>Pre-Test Atmospheric Conditions</b>		<b>Post-Test Atmospheric Conditions</b>	
<b>Ambient Temperature :</b> 20.9°C		<b>Ambient Temperature :</b> 21.8°C	
<b>Relative Humidity :</b> 54.9%		<b>Relative Humidity :</b> 53.6%	
<b>Barometric Pressure :</b> 100.5kPa		<b>Barometric Pressure :</b> 100.5kPa	
<b>Calibration Technician :</b> Lucky Jaiswal		<b>Secondary Check:</b> Harrison Kim	
<b>Calibration Date :</b> 13 Oct 2021		<b>Report Issue Date :</b> 15 Oct 2021	
<b>Approved Signatory :</b> 		Ken Williams	
<b>Clause and Characteristic Tested</b>	<b>Result</b>	<b>Clause and Characteristic Tested</b>	<b>Result</b>
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.

<b>Least Uncertainties of Measurement -</b>			
<b>Acoustic Tests</b>		<b>Environmental Conditions</b>	
125Hz:	±0.13dB	Temperature	±0.2°C
1kHz:	±0.13dB	Relative Humidity	±2.4%
8kHz:	±0.14dB	Barometric Pressure	±0.015kPa
Electrical Tests	±0.10dB		

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.

PAGE 1 OF 1