# CALGA SAND QUARRY ATTENDED COMPLIANCE NOISE MONITORING 25 SEPTEMBER 2020

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**PREPARED FOR** 

HANSON CONSTRUCTION MATERIALS PTY LTD LOT 151 PEATS RIDGE ROAD CALGA NSW 2250



### DOCUMENT CONTROL

Version	Status	Date	Prepared By	Reviewed By
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#### ACOUSTICS AND AIR

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# 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\_{Amax})** – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

 $L_{A1}$  – The  $L_{A1}$  level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the  $L_{A1}$  level for 99% of the time.

 $L_{A10}$  – The  $L_{A10}$  level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the  $L_{A10}$  level for 90% of the time. The  $L_{A10}$  is a common noise descriptor for environmental noise and road traffic noise.

 $L_{A90}$  – The  $L_{A90}$  level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the  $L_{A90}$  level for 10% of the time. This measure is commonly referred to as the background noise level.

 $L_{Aeq}$  – The equivalent continuous sound level ( $L_{Aeq}$ ) 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  $10^{th}$  percentile (lowest  $10^{th}$  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.



Typical Graph of Sound Pressure Level vs Time

# **1** INTRODUCTION

This report summarises the results of the quarterly attended noise monitoring conducted on Friday, 25 September 2020 and assessed against the consent criteria as summarised in Condition 2, Schedule 3, of consolidated Development Consent DA 94-4-2004.

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

#### 2 MONITORING METHODOLOGY

#### 2.1 Monitoring Locations

Attended noise monitoring was conducted on Friday, 25 September 2020. Measurements were made at each of the following locations (shown in Figure 2-1):

- CN-1 Power Residence;
- CN-2 King Residence;
- CN-3 Kashouli Residence; and
- CN-6 Cauchi Residence.

#### 2.2 Monitoring Equipment

All measurements were conducted using a Bruel and Kjaer Type 2236 Sound Level Meter. This sound level meter conforms to Australian Standard 1259 *Acoustics – Sound Level Meters* 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 Bruel and Kjaer 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).

The Bruel and Kjaer Type 2236 and Type 4230 have been laboratory calibrated within the previous two years in accordance with our in-house Quality Assurance Procedures. Calibration Certificates for both Sound Level Meters used for the monitoring are attached to this letter. Note that Calibration Certificates are valid for 2 years.

#### Figure 2-1 Noise Monitoring Locations



### **3 OPERATIONAL NOISE CRITERIA**

Daytime operational noise is assessed as an  $L_{Aeq,15min}$  noise level. The  $L_{Aeq}$  level is the Equivalent Continuous Sound Level and represents the level of a continuous sound with the same average sound energy over the sampling period as the actual noise environment with its fluctuating sound levels.

Noise levels emanating from the premises must not exceed the relevant criteria when measured within 30 m of the residence.

Table 3-1 summarises the daytime noise criteria.

Table 3-1 Ope	erational Daytime	Noise Criteria
---------------	-------------------	----------------

Location	Daytime Criteria LAeq,15min (dBA)
CN-1	41
CN-2	40
CN-3	39
CN-6	36

## 4 METEOROLOGICAL DATA

Based on site observations, weather conditions were appropriate for conducting environmental noise measurements during the day of survey (wind less than five meters per second at microphone height and no rain). Wind speed was determined by the WM representative using a hand-held digital anemometer AR816.

This was confirmed by meteorological data obtained from the site's weather station.

Table 4-1 summarises meteorological conditions during the noise survey obtained from the site's weather station.

Time Period	Wind Speed (m/s)	Wind Direction	Rain (mm)
10.00am – 10.15am	3.6	NW	0
10.15am – 10.30am	3.1	NW	0
10.30am – 10.45am	4.0	NNW	0
10.45am – 11.00am	4.9	NW	0
11.00am – 11.15am	4.9	NW	0

# Table 4-1Meteorological Conditions during Noise Survey<br/>(Friday, 25 September 2020)

#### **5 DESCRIPTION OF SITE OPERATIONS**





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

- Dozer ripping and pushing sandstone in Stage 3/5 within yellow perimeter.
- Excavator loading haul trucks with raw feed from Stage 3/5 to wash plant surge pile.
- 1 Haul truck transferring raw feed from Stage 3/5 to wash plant surge pile.
- Front end loader, loading sales trucks and loading dump truck with oversize to be taken to oversize stockpile within yellow perimeter.
- Water truck operational on all unsealed roadways.
- Front end loader, loading dry screening plant (Powerscreen).
- Dry screening plant (Powerscreen) was in full production.
- Washplant was in full production.

#### 6 ASSESSMENT OF NOISE LEVELS

Table 6-1 summarises the measurement results and compares them against the relevant daytime noise criteria.

Location	Time	L <sub>Aeq,15min</sub> due to Quarry Operations (dBA)	Daytime Criteria L <sub>Aeq,15min</sub> (dBA)	Comments
CN-1	10.02am – 10.17am	<35	41	Site noise inaudible most of the time due to traffic noise and distant lawn mower. Impact noise from site audible on a few occasions, L <sub>Amax</sub> 40-43dBA. Typical and heavy traffic on Peats Ridge Road ranging L <sub>Amax</sub> 49-56dBA and L <sub>Amax</sub> 59-68dBA, respectively.
CN-3	10.19am – 10.34am	Inaudible	39	Site noise inaudible at all times due to traffic noise and distant lawn mower. Typical and heavy traffic on Peats Ridge Road ranging L <sub>Amax</sub> 52-56dBA and L <sub>Amax</sub> 58-63dBA, respectively.
CN-2	10.36am – 10.51am	34	40	Site noise audible at times during lulls in traffic, est. 32-35dBA. Typical and heavy traffic on Peats Ridge Road ranging L <sub>Amax</sub> 62-66dBA and L <sub>Amax</sub> 68-72dBA, respectively.
CN-6	10.55am – 11.10am	Inaudible	36	Site noise inaudible at all times. Typical traffic on Peats Ridge Road ranging 38-45dBA.

Table 6-1 shows that measured  $L_{Aeq,15min}$  noise levels due to quarry operations comply with the relevant daytime noise criteria at all four receivers.

### 7 CONCLUSION

Attended compliance noise monitoring was conducted on Friday, 25 September 2020. The results of the survey indicated that noise emissions from the Calga Sand Quarry plant complied with the daytime limits at all four identified receivers.

APPENDIX A SOUND LEVEL METER - CALIBRATION CERTIFICATE



Acoustic Level 7 Building 2 423 Pennant Hills Rd Pennant Hills NSW AUSTRALIA 2120 Ph: +61 2 9484 0800 A.B.N. 65 160 399 119 abs Pty Ltd www.acousticresearch.com.au

#### Sound Level Meter AS 1259.1:1990 - AS 1259.2:1990 **Calibration Certificate**

	on Number C	18657		
CI	ient Details Wi	Ikinson Murray Pty Ltd		
	Le	vel 4, 272 Pacific Highway		
	Cr	ows Next NSW 2065		
	ch	5H3 HESt H3 H 2005		
Equipment Tested/ Mode	I Number : B&	2K 2236		
Instrument Serial Number :		2173783		
Microphone Seria	Number : 21	57590		
Pre-amplifier Seria	Number : N/	A		
	Atmospheric	Conditions		
Ambient Ten	nperature : 23	°C		
Relative	Humidity: 57	4%		
Barometric	Pressure : 99	38kPa		
Calibration Technician : Lucky Jai	swal	Secondary Check: Lewis Boorman		
Calibration Date : 19 Dec 20	18	Report Issue Date : 19 Dec 2018		
		1000 Call Date : 17 Dec 2010		
Approved	Signatory : /	Ker	No. of South	
	- / 6	-C-Contraction inter	1 Williams	
Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result	
Clause and Characteristic Tested 10.2.2: Absolute sensitivity	Result	Clause and Characteristic Tested 10.3.4: Inherent system noise level	Result Pass	
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Clause and Characteristic Tested         10.2.2: Absolute sensitivity         10.2.3: Frequency weighting         10.3.2: Overload indications         10.3.3: Accuracy of level range control         8.9: Detector-indicator linearity         8.10: Differential level linearity         Acoustic Tests         31.5 Hz to 8kHz       ±0.15dB         12.5kHz       ±0.21dB         16kHz       ±0.29dB         Electrical Tests       ±0.15dB         21.5 Hz to 20 kHz       ±0.29dB	Result Pass Pass Pass Pass Pass Pass Em	Clause and Characteristic Tested         10.3.4: Inherent system noise level         10.4.2: Time weighting characteristic F and S         10.4.3: Time weighting characteristic I         10.4.5: R.M.S performance         9.3.2: Time averaging         9.3.5: Overload indication         of Measurement -         ironmental Conditions <i>Temperature</i> #Relative Humidaty         ±2.4%         Barometric Pressure         #0.015Pa	Result Pass Pass Pass Pass Pass Pass Pass Pas	

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

The sound level meter under test has been shown to conform to the type 1 requirements for periodic testing as described in AS 1259.1:1990 and AS 1259.2:1990 for the tests stated above.





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