

ACOUSTICS AND AIR

CALGA SAND QUARRY
ATTENDED COMPLIANCE NOISE MONITORING
24 AUGUST 2011

REPORT NO. 01127-E
VERSION A

WILKINSON  MURRAY

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PREPARED FOR

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GLOSSARY OF 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 overleaf, 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_{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.

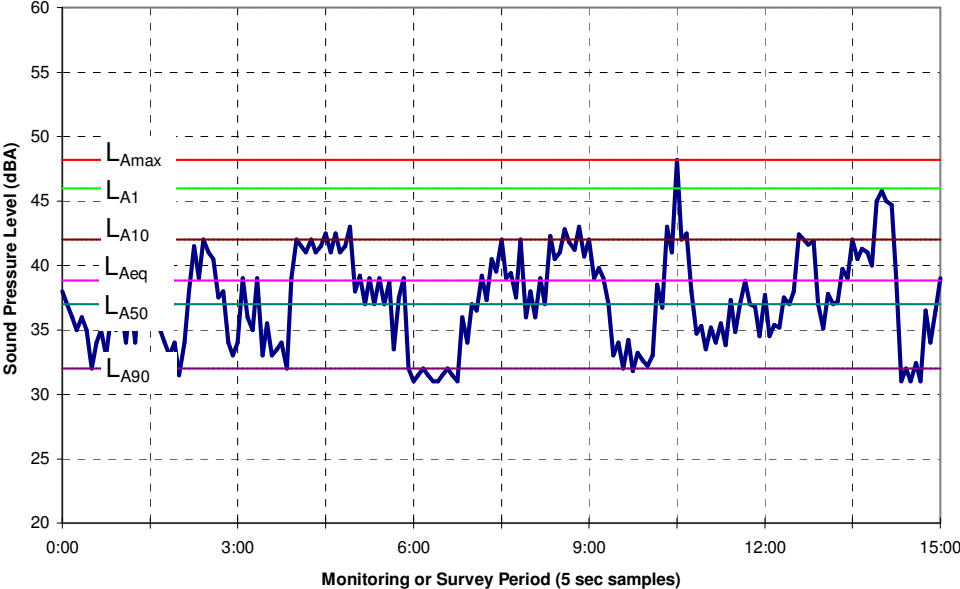
L_{A50} – The L_{A50} level is the noise level which is exceeded for 50% of the sample period. During the sample period, the noise level is below the L_{A50} level for 50% of the time.

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.

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_{A90}) 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 in August 2011 and carried out in accordance with Condition 3(7) of 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 ATTENDED NOISE MONITORING

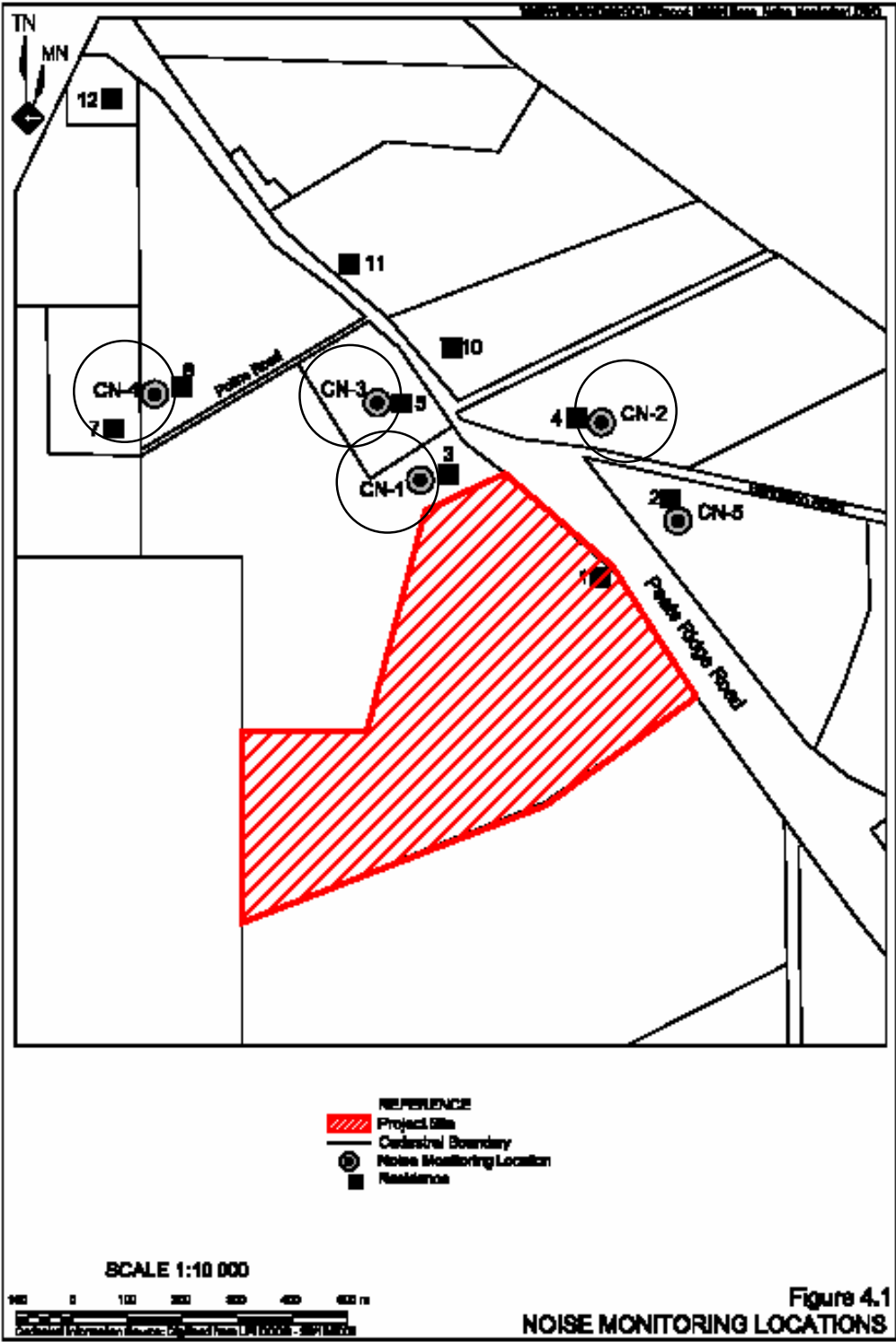
Attended noise monitoring was conducted in the morning of Wednesday, 24 August 2011. Measurements were made at each of the following locations (shown in Figure 2-1):

- CN-1 Gazzana Residence
- CN-2 King Residence
- CN-3 Kashouli Residence
- CN-4 Townsend Residence

Noise levels were measured with a Bruel & Kjaer Type 2236 Sound Level Meter. This Sound Level Meter conforms to Australian Standard 1259 "Acoustics – Sound Level Meters" as Type 1 Precision Sound Level Meter which has an accuracy suitable for laboratory use. The A-Weighting filter of the meter was selected and the time weighting was set to 'fast'. The meter was field calibrated both before and after the measurements with a Bruel & Kjaer Sound Level Calibrator Type 4230. No significant system drift was noted.

The B&K 2236 and the B&K 4230 have been laboratory calibrated within the previous two years in accordance with Wilkinson Murray Quality Assurance procedures.

Figure 2-1 Noise Monitoring Locations



3 OPERATIONAL NOISE CRITERIA

The Noise Monitoring Program presents noise criteria for the operation of plant or equipment on the premises as required by the Office of Environment and Heritage (OEH, formerly known as the Department of Environment, Climate Change and Water) licence. It states that noise levels emanating from the premises must not exceed the relevant criteria when measured within 30m of the residences or noise sensitive areas.

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.

Table 3-1 summarises the daytime noise criteria.

Table 3-1 Operational Daytime Noise Criteria

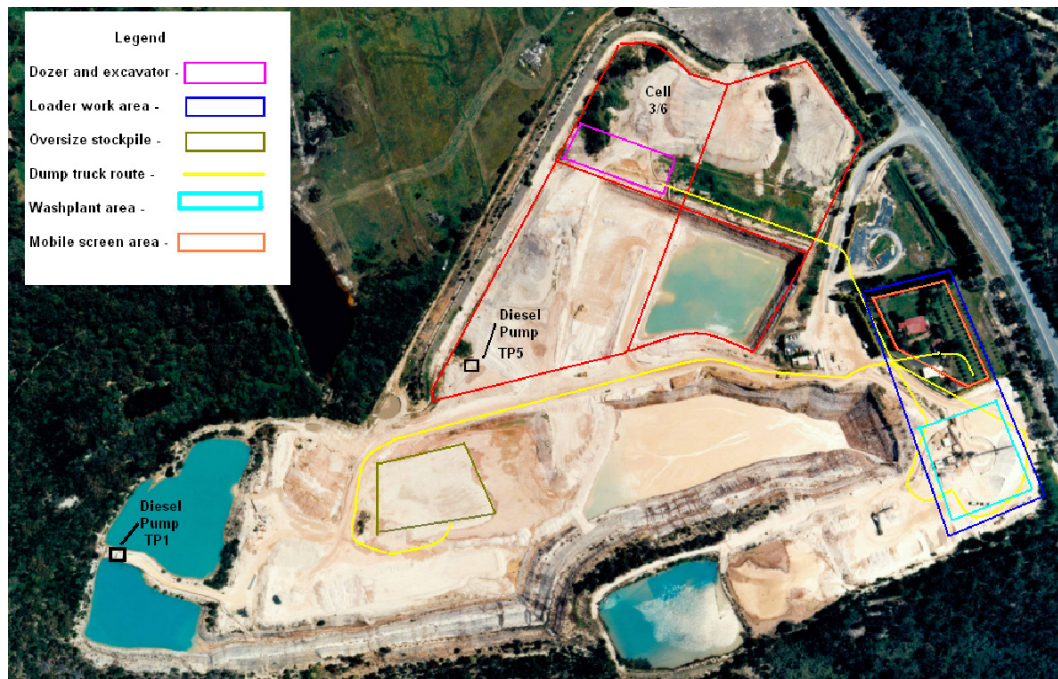
Location	Daytime Criteria $L_{Aeq,15min}$ (dBA)
CN-1	41
CN-2	40
CN-3	39
CN-4	35

4 ASSESSMENT OF NOISE LEVELS

Based on site observations, weather conditions were appropriate for conducting environmental noise measurements during the day of survey. This was confirmed by meteorological data obtained from the site's weather station.

Figure 4-1 presents an aerial of the quarry site.

Figure 4-1 Locality Aerial



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

- Dozer ripping and pushing sandstone in Cell 3/6;
- Excavator loading dump truck with raw feed from 3/6 to go to washplant and brickies raw feed stockpile;
- Dump truck taking raw feed from 3/6 to go to washplant and brickies raw feed stockpile;
- Front-end-loader producing brickies sand, loading sales trucks and loading dump trucks with oversize to be taken to oversize stockpile;
- Front-end-loader feeding washplant from surge pile, loading oversize from washplant onto dump truck and loading sales trucks;
- Water truck was in operation to suppress dust on designated haul roads;
- Transfer pump 5 was in constant operation; and
- Washplant and dry screening plant were in full production.

Table 4-1 summarises the measurement results and compares them against the relevant daytime noise criteria.

Table 4-1 Attended Noise Measurement Results (Wednesday, 24 August 2011)

Location	Time	$L_{Aeq,15min}$ due to Quarry Operations (dBA)	Daytime Criteria $L_{Aeq,15min}$ (dBA)	Comments
CN-1	10.22am	43	41	Engine noise from quarry ranging 41-44dBA was audible most of the time. Occasional impact noise from the quarry was L_{max} 45-47dBA.
	10.37am			Typical and heavy traffic on Peats Ridge Road was L_{max} 50-55dBA and 58-62dBA respectively.
CN-3	10.45am	28	39	Engine noise from the quarry was audible during lulls in traffic and estimated at 28dBA.
	11.00am			Typical and heavy traffic on Peats Ridge Road was L_{max} 49-52dBA and 58-64dBA respectively.
CN-4	11.11am	24	35	Engine noise from the quarry was audible during lulls in traffic and estimated between 22-24dBA.
	11.26am			Typical and heavy traffic on Peats Ridge Road measured with L_{max} 35-37dBA and 40-42dBA respectively.
CN-2	11.32am	37	40	Engine noise from the quarry ranging 33-38dBA was audible most of the time. Reversing alarm from quarry audible for 2mins and measured from 35-47dBA.
	11.47pm			Typical and heavy traffic on Peats Ridge Road was L_{max} 52dBA and 62dBA respectively.

Table 4-1 shows that measured $L_{Aeq,15min}$ noise levels due to quarry operations comply with the relevant daytime noise criteria at three of the four receivers. Quarry noise levels at CN1 was found to exceed the noise criterion by a marginal 2dB.

Section 11.1.3 "Non-Compliances with noise conditions" of the Industrial Noise Policy (INP) states:

"A development will be deemed to be in non-compliance with a noise consent or licence condition if the monitored noise level is more than 2dB above the statutory noise limit specified in the consent or licence condition."

Using the INP's definition of non-compliance, the noise monitoring results suggest that the site is generally compliant with the noise limits.

5 CONCLUSION

Attended compliance noise monitoring was conducted in August 2011. The results of the survey indicated that noise emissions from the Calga Sand Quarry plant were within the limits set in the Noise Monitoring Program at CN2, CN3 and CN4.

Quarry noise levels at CN1 were found to exceed the noise criterion by a marginal 2dB. For compliance purposes this is considered acceptable.

Note

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AAAC

This firm is a member firm of the Association of Australian Acoustical Consultants and the work here reported has been carried out in accordance with the terms of that membership.

Version	Status	Date	Prepared by	Checked by
A	Final	31 August 2011	Roman Haverkamp	John Wassermann