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QUARTERLY NOISE MONITORING ASSESSMENT – QUARTER 1 2023 COOMA ROAD QUARRY, GOOGONG, NSW

**QUARTERLY NOISE MONITORING ASSESSMENT –
QUARTER 1 2023
COOMA ROAD QUARRY, GOOGONG, NSW**

Ramboll
Level 2, Suite 18 Eastpoint
50 Glebe Road
PO Box 435
The Junction
NSW 2291
Australia

T +61 2 4962 5444
<https://ramboll.com>

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Prepared by **Jake Bourke, Matilda Englert**
Checked by **Greer Laing**
Approved by **Greer Laing**
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ABBREVIATIONS AND DEFINITIONS

Ambient Noise	The all-encompassing noise within a given environment. It is the composite of sounds from many sources, both near and far.
Background noise	The underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed. This is described using the LA90 descriptor (see below).
dB	Abbreviation for decibel, a measure of sound equivalent to 20 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure, and 10 times the logarithm of a given sound power to a reference power.
dB(A)	A measure of A-weighted sound levels. A Weighting is an adjustment made to the sound level measurement to approximate the response of the human ear.
Extraneous noise	Noise resulting from activities that are not typical of the area. Atypical activities may include construction, and traffic generated by holiday periods. Normal daily traffic is not extraneous noise.
LA1	The noise level, measured in dB(A), which is exceeded for 1 per cent of the measurement period.
LA1(1min)	The noise level, measured in dB(A), which is exceeded for 1 per cent of the time over a 1-minute measurement period, i.e., is exceeded for 0.6 seconds. This measure can approximate to the maximum noise level but may be less if there is more than 1 noise event during this 0.6 second period.
LA10	The noise level, measured in dB(A), which is exceeded for 10 per cent of the time.
LA90	The noise level, measured in dB(A), which is exceeded for 90 per cent of the time, referred to as the background noise level. This is considered to represent the background noise (see above).
LAeq	The level of noise equivalent to the energy average of noise levels occurring over a defined measurement period.
LAeq (period)	The average equivalent noise level, measured in dB(A), during a measurement period (e.g., 15-minute, day, evening, or night).
LAm_{ax}	The A-weighted sound pressure level that represents the maximum noise level measured over the time that a given sound is measured.
NMA	Noise Monitoring Assessment
NMP	Noise Management Plan

Source: Noise Guide for Local Government (NSW EPA, 2013)

1. OVERVIEW

1.1 Project Driver

Ramboll Australia Pty Ltd (Ramboll) has been commissioned by Holcim (Australia) Pty Ltd (Holcim) to complete a Noise Monitoring Assessment (NMA) for Cooma Road Quarry (“the quarry”) at Googong, NSW.

This NMA was done in accordance with the following documents:

- Noise Policy for Industry (NPI) (NSW EPA, 2017).
- Cooma Road Quarry Noise Management Plan (NMP) (Holcim Australia, 2019).
- Development Consent Application Number SSD_5109 (Minister for Planning and Infrastructure, 2013).
- Environment Protection Licence (EPL) number 1453 (NSW EPA, 2020).
- Australian Standard AS 1055:2018 Acoustics—Description and measurement of environmental noise (Standards Australia, 2018).
- IEC 60942 Ed. 3.0 b:2003 Electroacoustics - Sound calibrators (Standards Australia, 2003).

This NMA has been undertaken for the quarterly period January to March 2023, and forms part of the monitoring program to determine compliance with conditions of the Development Consent.

1.2 Site Location and Sensitive Receptors

The quarry is in Googong, approximately 6 kilometres south of Queanbeyan, NSW.

Sensitive receptors surrounding the quarry are primarily rural and residential properties in all directions. Old Cooma Road is located to the east of the quarry and passing road traffic is a dominate noise source for those receivers to the east of the quarry.

Five monitoring locations have been selected as part of the NMA and in accordance with the Development Consent and are shown in **Table 1-1**.

Table 1-1: Monitoring locations locality and sensitive receptors

Monitoring Locations	Locality and Sensitive Receptors
N3	West of the quarry situated on a rural property off Copperfield Place. This location represents residential and rural receivers to the west of the quarry.
N8	Northeast of the quarry along Tempe Crescent and is representative of residential receivers in that area.
N38	On Heights Road and is representative of the elevated residential receivers to the east of the quarry.
N60	At 501 Old Cooma Road and represents the residence adjacent to the quarry access road.
N67	Situated on a rural property at 732 Old Cooma Road to the south of the quarry. This is representative of rural and residential receivers to the south, with direct line of site into the quarry pit

The monitoring locations with respect to the quarry and assessed receivers are presented in the locality plan shown in **Figure 1**.



Legend

- Noise monitoring location

Figure 1 : Noise monitoring locations at Cooma Road Quarry

2. NOISE CRITERIA

Table 2-1 brings the applicable noise criteria outlined in the Development Consent for the residential receivers surrounding the quarry (N1 –N71), and the five monitoring locations adopted from the NMP that are deemed representative and applicable for this NMA (N3, N8, N38, N60, and N67).

Table 2-1: Monitoring locations and noise criteria

Receiver ¹	Monitoring Locations	Morning Shoulder ²	Day ³	Evening ⁴
		Laeq (15min)	Laeq (15min)	Laeq (15min)
		dB(A)		
N1, N7, N8, N56, N57, N59, N63, N64, N65	N8	40	44	39
N67	N67	36	41	35
All other receivers between N9 and N71 inclusive	N60, N38	36	38	35
All other receivers	N3	35	35	35
¹ Refer to the Development Consent and/or the NMP for receiver locations on the map ² 6 am–7 am Monday to Saturday ³ 7 am–6 pm Monday to Saturday ⁴ 6 pm–10 pm Monday to Saturday Note: no operations on Sundays and public holidays				

3. METHODOLOGY

The monitoring program was created in accordance with the procedures described in Australian Standard AS 1055:2018 and the Approval Documents referenced in Section 1. The measurements were carried out using a RION Sound Level Meter NL-52 on Tuesday 7 and Wednesday 8 March 2023. The acoustic instrumentation implemented carries current NATA calibration and complies with AS/NZS IEC 61672-1:2013/2002 class 1. Calibration of all instrumentation was checked prior to and following measurements using a Pulsar Acoustic Calibrator 105 which also carried a current NATA calibration and complies with IEC 60942:2003. Drift in calibration did not exceed ± 0.3 dBA.

Attended noise monitoring was conducted for 15-minutes in duration during the day, evening, and night periods over two days. Where possible, throughout each measurement the operator(s) quantified the contribution of each significant noise source.

4. RESULTS AND DISCUSSION

4.1 Location N3

Noise monitoring at location N3 conducted on Tuesday 7 March 2023 and Wednesday 8 March 2023 resulted in inaudible quarry noise during morning shoulder and day. The quarry was not operational during the evening. These results meet the established noise criteria and indicate that noise emissions from Cooma Road Quarry did not contribute to noise nuisance. The results and observations taken during the monitoring events at Location N3 are presented in **Table 4-1**.

Noise sources measured included wind/rustling leaves, birds, and pedestrians.

Table 4-1: Noise survey results and observations for Location N3

Date	Time (hrs)	Descriptor (dBA)			Meteorology	Apparent Noise Source, Description and LAeq (dBA)	Cooma Road Quarry Contribution (LA1sec) (dBA)	LAeq(15min) Criteria
		L _{Amax}	L _{Aeq}	L _{A90}				
07-03-23	6:01 (Morning Shoulder)	60.9	41.8	38.4	WD: 150° WS: 0.6 m/s Rain: Nil	Wind/rustling leaves 40-46 Quarry inaudible	Inaudible	35
08-03-23	17:40 (Day)	66.0	52.8	49.1	WD: 110° WS: 2.9 m/s Rain: Nil	Wind/rustling leaves 48-56 Birds 52-58 Quarry inaudible	Inaudible	35
07-03-23	18:01 (Evening)	69.8	52.1	47.3	WD: 110° WS: 2.7 m/s Rain: Nil	Wind/rustling leaves 48-56 Birds 52-58 Pedestrian with dog 56 Quarry inaudible	Inaudible	35

4.2 Location N8

Noise monitoring at location N8 conducted on Tuesday 7 March 2023 and 8 March 2023 resulted in inaudible quarry noise during morning shoulder and day. The quarry was not operational during the evening. These results meet the established noise criteria and indicate that noise emissions from Cooma Road Quarry did not contribute to noise nuisance. The results and observations taken during the monitoring events at Location N8 are presented in **Table 4-2**.

Noise sources measured included motorway traffic, passing cars, wind and barking dogs.

Table 4-2: Noise survey results and observations for Location N8

Date	Time (hrs)	Descriptor (dBA)			Meteorology	Apparent Noise Source, Description and LAeq (dBA)	Cooma Road Quarry Contribution (LA1sec) (dBA)	LAeq(15min) Criteria
		LAmx	LAeq	LA90				
07-03-23	6:00 (Morning Shoulder)	69.5	54.1	45.4	WD: n/a WS: 0 Rain: Nil	Motorway traffic 54-61 Passing car 69 Barking dogs 55-60 Quarry inaudible	Inaudible	40
08-03-23	7:58 (Day)	72.4	59.1	55.5	WD: 100° WS: 2.4 m/s Rain: Nil	Motorway traffic 54-69 Passing car 69-73 Quarry inaudible	Inaudible	44
07-12-22	18:26 (Evening)	72.7	55.7	51.2	WD: 100° WS: 2.8 m/s Rain: Nil	Motorway traffic 52-59 Wind 49-53 Passing cars 67-72 Quarry inaudible	Inaudible	39

4.3 Location N38

Noise monitoring at location N38 conducted on Tuesday 7 March 2023 and Wednesday 8 March 2023 resulted in inaudible quarry noise during morning shoulder and day. The quarry was not operational during the evening. These results meet the established noise criteria and indicate that noise emissions from Cooma Road Quarry did not contribute to noise nuisance. The results and observations taken during the monitoring events at Location N38 are presented in **Table 4-3**.

Noise sources measured included motorway traffic, a truck, and a passing car.

Table 4-3: Noise survey results and observations for Location N38

Date	Time	Descriptor (dBA)			Meteorology	Apparent Noise Source, Description and LAeq (dBA)	Cooma Road Quarry Contribution (LA1sec) (dBA)	LAeq(15min) Criteria
		L _{Amax}	L _{Aeq}	L _{A90}				
07-03-23	6:23 (Morning Shoulder)	68.8	52.9	48.8	WD: n/a WS: 0 Rain: Nil	Motorway traffic 52-57 Truck 68 Passing car 66 Quarry inaudible	Inaudible	36
08-03-23	7:40 (Day)	74.4	55.7	52.9	WD: 35° WS: 0.9 m/s Rain: Nil	Motorway traffic 47-75 Quarry inaudible	Inaudible	38
07-03-23	18:45 (Evening)	71.8	52.6	47.9	-	Motorway traffic Quarry inaudible	Inaudible	35

4.4 Location N60

Noise monitoring at location N60 conducted on Tuesday 7 March 2023 and Wednesday 8 March 2023 resulted in inaudible quarry noise during morning shoulder and day. The quarry was not operational during the evening. These results meet the established noise criteria and indicate that noise emissions from Cooma Road Quarry did not contribute to noise nuisance. The results and observations taken during the monitoring events at Location N60 are presented in **Table 4-4**.

Noise sources measured included motorway traffic and birds.

Table 4-4: Noise survey results and observations for Location N60

Date	Time	Descriptor (dBA)			Meteorology	Apparent Noise Source, Description and LAeq (dBA)	Cooma Road Quarry Contribution (LA1sec) (dBA)	LAeq(15min) Criteria
		LAmx	LAeq	LA90				
08-03-23	6:33 (Morning Shoulder)	84.5	67.3	54.0	WD: 150° WS: 2.8 m/s Rain: Nil	Motorway traffic 44-82 Birds 52 Quarry inaudible	Inaudible	36
08-03-23	7:00 (Day)	76.5	66.1	50.6	WD: 130° WS: 2.3 m/s Rain: Nil	Motorway traffic 48-76 Quarry inaudible	Inaudible	38
07-03-23	19:31 (Evening)	70.4	58.1	45.8	WD: 120° WS: 2.9 m/s Rain: Nil	Motorway traffic 47-66 Quarry inaudible	Inaudible	35

4.5 Location N67

Noise monitoring at location N67 conducted on Tuesday 7 March 2023 and Wednesday 8 March 2023 resulted in inaudible quarry noise during morning shoulder and day. The quarry was not operational during the evening. These results meet the established noise criteria and indicate that noise emissions from Cooma Road Quarry did not contribute to noise nuisance. The results and observations taken during the monitoring events at Location N67 are presented in **Table 4-5**.

Noise sources measured included motorway traffic.

Table 4-5: Noise survey results and observations for Location N67

Date	Time	Descriptor (dBA)			Meteorology	Apparent Noise Source, Description and LAeq (dBA)	Cooma Road Quarry Contribution (LA1sec) (dBA)	LAeq(15min) Criteria
		LAmx	LAeq	LA90				
07-03-23	6:44 (Morning Shoulder)	68.3	57.6	52.5	WD: 140° WS: 1.8 m/s Rain: Nil	Motorway traffic 55-64 Quarry inaudible	Inaudible	36
08-03-23	7:20 (Day)	67.4	53.1	48.5	WD: 150° WS: 2.9 m/s Rain: Nil	Motorway traffic 49-64 Quarry inaudible	Inaudible	41
07-03-23	19:13 (Evening)	96.8	59.5	44.8	WD: 120° WS: 1.6 m/s Rain: Nil	Motorway traffic 48-61 Quarry inaudible	Inaudible	35

5. CONCLUSION

This NMA was completed by Ramboll at the Holcim Cooma Road Quarry, Googong, NSW as a quarterly requirement of the NMP. Monitoring was carried out on Tuesday 7 March 2023 and Wednesday 8 March 2023 at five locations selected as representative to the sensitive receptors at the surroundings to Cooma Road Quarry. No audible quarry noise was recorded at any of the selected monitoring locations during the monitoring campaign.

6. REFERENCES

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