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QUARTERLY NOISE MONITORING ASSESSMENT – QUARTER 4 2022 COOMA ROAD QUARRY, GOOGONG, NSW

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QUARTERLY NOISE MONITORING ASSESSMENT – QUARTER 4 2022
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, Nathalie Tomson**
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Ramboll Australia Pty Ltd.
ACN 095 437 442
ABN 49 095 437 442

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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).
LAmax	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).
- 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 October to December 2022, 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**.

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 Wednesday 7 December and Thursday 8 December 2022. 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.

Where the quarry was not distinctly audible during the attended monitoring, the quarry contribution is estimated to be at least 10 dBA below the ambient noise level, as determined by the LA90, or estimated to be less than criteria value

4. RESULTS AND DISCUSSION

4.1 Location N3

Noise monitoring at location N3 conducted on Wednesday 7 December 2022 and Thursday 8 December 2022 resulted in inaudible quarry noise during morning shoulder and daytime measurements. The quarry was not operational during the evening measurement period. These results meet the established noise criteria and indicate that noise emissions from Cooma 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.

Extraneous noise sources measured included birds, highway traffic, wind, trees rustling, motorcycles and a passing Ute. Highway traffic from Old Cooma Road was the dominant noise source.

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 LAeq(15min) Contribution	LAeq(15min) Criteria
		LAmax	LAeq	LA90				
08-12-22	5:24[1] (Morning Shoulder)	66	40	33	WD: n/a WS: 0 Rain: Nil	Highway traffic 40 Birds 38 Quarry inaudible	<35	35
07-12-22	17:38 (Day)	78	55	43	WD: 180° WS: 0.7 m/s Rain: Nil	Birds Wind Ute passing 78 Motorcycles 75 Trees rustling Quarry inaudible	<35	35
07-12-22	19:52 (Evening)	72	45	39	WD: n/a WS: 0 Rain: Nil	Highway traffic 40-42 Quarry inaudible	<35	35

[1] Monitoring completed outside of morning shoulder period. Unable to complete all five locations during 6am and 7am. Alternative arrangements (e.g. multiple days of monitoring) will be made for subsequent quarterly monitoring events so all locations are completed between 6am and 7am.

4.2 Location N8

Noise monitoring at location N8 conducted on Wednesday 7 December 2022 and Thursday 8 December 2022 resulted in inaudible quarry noise during morning shoulder and daytime measurements. The quarry was not operational during the evening measurement period. These results meet the established noise criteria and indicate that noise emissions from Cooma 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.

Extraneous noise sources measured included birds and highway traffic, with highway traffic from Old Cooma Road being the dominant noise source.

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 LAeq(15min) Contribution	LAeq(15min) Criteria
		LAmax	LAeq	LA90				
08-12-22	5:48[1] (Morning Shoulder)	77	51	43	WD: n/a WS: 0 Rain: Nil	Highway traffic 48-53 Birds Quarry inaudible	<40	40
08-12-22	7:40 (Day)	65	52	48	WD: 280° WS: 0.6 m/s Rain: Nil	Highway traffic 48-53 Birds Quarry inaudible	<44	44
07-12-22	18:08 (Evening)	75	52	48	WD: 180° WS: 0.4 m/s Rain: Nil	Highway traffic 52-55 Music 52 Quarry inaudible	<39	39

[1] Monitoring completed outside of morning shoulder period. Unable to complete all five locations during 6am and 7am. Alternative arrangements will be made for subsequent quarterly monitoring events so all locations are completed between 6am and 7am.

4.3 Location N38

Noise monitoring at location N38 conducted on Wednesday 7 December 2022 and Thursday 8 December 2022 resulted in inaudible quarry noise during morning shoulder and daytime measurements. The quarry was not operational during the evening measurement period. These results meet the established noise criteria and indicate that noise emissions from Cooma 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.

Extraneous noise sources measured included a passing truck, highway traffic, birds, a loud passing car, wind, and rustling leaves. Highway traffic from Old Cooma Road being the dominant noise source.

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 LAeq(15min) Contribution	LAeq(15min) Criteria
		LAmax	LAeq	LA90				
08-12-22	6:07 (Morning Shoulder)	82	57	48	WD: 180ª WS: 0.7 m/s Rain: Nil	Highway traffic 46-55 Truck passing 77 Birds Quarry inaudible	<36	36
08-12-22	7:58 (Day)	76	52	45	WD: 145ª WS: 0.6 m/s Rain: Nil	Highway traffic Passing car 65 Quarry inaudible	<38	38
07-12-22	18:30 (Evening)	74	58	53	WD: 280° WS: 2.6 m/s Rain: Nil	Highway traffic 55-60 Wind 60 Rustling trees Quarry inaudible	<43 [1]	35

[1] Quarry not audible, heavy traffic dominating noise environment

4.4 Location N60

Noise monitoring at location N60 conducted on Wednesday 7 December 2022 and Thursday 8 December 2022 resulted in inaudible quarry noise during morning shoulder and daytime measurements. The quarry was not operational during the evening measurement period. These results meet the established noise criteria and indicate that noise emissions from Cooma 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.

Extraneous noise sources measured included heavy highway traffic including trucks and motorcycles. This was the dominant noise source due to the proximity of Old Cooma Road to the quarry.

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 LAeq(15min) Contribution	LAeq(15min) Criteria
		LAmax	LAeq	LA90				
08-12-22	6:44 (Morning Shoulder)	90	74	60	WD: n/a WS: 0 Rain: Nil	Highway traffic 50-80 Heavy highway traffic 70-85 Trucks on highway Quarry inaudible	<36	36
08-12-22	8:36 (Day)	102	72	58	WD: n/a WS: 0 Rain: Nil	Heavy highway traffic 70-97 Motorcycle 80 Quarry inaudible	<48 [2]	38
07-12-22	19:13 (Evening)	80	63	- [1]	WD: 0° WS: 2.7 m/s Rain: Nil	Highway traffic 40-73 Quarry inaudible	<35	35

[1] L90 not collected during monitoring period

[2] Day period dominated by heavy traffic noise

4.5 Location N67

Noise monitoring at location N67 conducted on Wednesday 7 December 2022 and Thursday 8 December 2022 resulted in inaudible quarry noise during morning shoulder and daytime measurements. The quarry was not operational during the evening measurement period. These results meet the established noise criteria and indicate that noise emissions from Cooma 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.

Extraneous noise sources measured included birds, highway traffic and police sirens. Highway traffic from Old Cooma Road was the dominant noise source.

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 LAeq(15min) Contribution (dBA)	LAeq(15min) Criteria (dBA)
		LAmax	LAeq	LA90				
08-12-22	6:27 (Morning Shoulder)	78	53	- [1]	WD: n/a WS: 0 Rain: Nil	Birds Highway traffic 40-45 Quarry inaudible	<36	36
08-12-22	8:18 (Day)	62	51	- [1]	WD: n/a WS: 0 Rain: Nil	Birds 52 Highway traffic 48-57 Quarry inaudible	<41	41
07-12-22	18:54 (Evening)	59	48	45	WD: n/a WS: 0 Rain: Nil	Highway traffic 5 Police sirens 70 Quarry inaudible	<35	35

[1] L90 not recorded

5. CONCLUSION

Monitoring was carried out on Tuesday 6 December 2022 and Wednesday 7 December 2022 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.

This NMA completed by Ramboll at the Holcim Lynwood Quarry, Marulan, NSW as a quarterly requirement of the NMP showed compliance to the relevant noise criteria.

6. REFERENCES

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