Noise Monitoring Assessment

Dunloe Quarry, Pottsville, NSW
Quarter 2 Ending June 2020.

Prepared for: Holcim (Australia) Pty Ltd
May 2020
MAC180611-07RP8

MAC
Muller Acoustic Consulting

Document Information

Noise Monitoring Assessment

Dunloe Quarry, Pottsville, NSW

Quarter 2 Ending June 2020

Prepared for: Holcim (Australia) Pty Ltd

Prepared by: Muller Acoustic Consulting Pty Ltd
PO Box 262, Newcastle NSW 2300
ABN: 36 602 225 132
P: +61 2 4920 1833
www.mulleracoustic.com

Document ID	Status	Date	Prepared By	Signed	Reviewed By	Signed
MAC180611-07RP8	Final	20 May 2020	Nicholas Shipman		Oliver Muller	

DISCLAIMER

All documents produced by Muller Acoustic Consulting Pty Ltd (MAC) are prepared for a particular client's requirements and are based on a specific scope, circumstances and limitations derived between MAC and the client. Information and/or report(s) prepared by MAC may not be suitable for uses other than the original intended objective. No parties other than the client should use or reproduce any information and/or report(s) without obtaining permission from MAC. Any information and/or documents prepared by MAC is not to be reproduced, presented or reviewed except in full.

CONTENTS

This page has been intentionally left blank

1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by Holcim (Australia) Pty Ltd (Holcim) to complete a Noise Monitoring Assessment (NMA) for the quarterly period ending June 2020 for Dunloe Quarry (the 'quarry'), Pottsville, NSW.

The monitoring has been conducted in accordance with the Dunloe Project Approval (2008) and Noise Management Plan at four representative monitoring locations. This assessment represents the operations undertaken during Quarter 2, ending June 2020 and forms part of the annual noise monitoring program to address conditions of the project approval.

The assessment has been conducted in accordance with the following documents:

- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI), 2017;
- Dunloe Noise Management Plan (NMP), 2016; and
- Australian Standard AS 1055:2018- Acoustics - Description and measurement of environmental noise - General Procedures.

A glossary of terms, definitions and abbreviations used in this report is provided in **Appendix A**.

This page has been intentionally left blank

2 Noise Criteria

Schedule 3 Section 2 of the Project Approval outlines the applicable noise criteria for residential receivers surrounding the quarry site.

The noise criteria are applicable when the site undertakes quarrying operations within the permitted operating hours Monday to Friday 7am – 5pm, Saturday 7am – 12pm with no operations on Sunday.

Table 1 presents the noise criteria for each of the receivers as outlined in the Project Approval.

Table 1 Noise Criteria

Location	Day Criteria dB $LA_{eq(15min)}$ [2]
All privately-owned receivers [1]	48

Note 1: Receiver locations are shown in Figure 1.

Note 2: Criteria applicable between Monday to Friday 7am – 5pm, Saturday 7am – 12pm with no operations on Sunday as the Table 2 of the Project Approval.

This page has been intentionally left blank

3 Methodology

3.1 Locality

The quarry is approximately 2.5km south west of Pottsville, NSW. Receivers surrounding the quarry are primarily rural/residential situated in coastal bushland with elevated and undulating topography. The monitoring locations with respect to the quarry and assessed receivers are presented in the locality plan shown in **Figure 1.**

3.2 Noise Monitoring Locations

Four monitoring locations have been selected as part of the NMA and are listed below:

- R1 is located at the property on Kellehers Road situated north of the quarry;
- R2 is located west of the quarry on the boundary of 574 Pottsville Road;
- R3 is located to the south-west of the quarry at the address of 122 Warwick Park Road; and
- R4 is located at 265 Warwick Park Road, south of the quarry.

3.3 Assessment Methodology

Attended noise surveys were conducted in general accordance with the procedures described in Australian Standard AS 1055:2018, "Acoustics - Description and Measurement of Environmental Noise and Dunloe Quarry's Project Approval. Measurements were carried out using a Svantek Type 1, 971 noise analyser on Wednesday 13 May 2020. Acoustic instrumentation used carries current NATA calibration and complies with AS/NZS IEC 61672.1-2019-Electroacoustics - Sound level meters - Specifications. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed ±0.5dBA.

One measurement was conducted at each monitoring location during the daytime period. Measurements were of 15 minutes in duration and where possible, throughout each survey the operator quantified the contribution of each significant noise source.

Extraneous noise sources were excluded from the analysis to determine the $LA_{eq(15min)}$ quarry noise contribution for comparison against the relevant criteria. Where the quarry was inaudible, the contribution is estimated to be at least 10dB below the ambient noise level.

FIGURE 1

LOCALITY PLAN

REF: MAC180611-07

0 500m

KEY

R1 RECEIVER LOCATION

SITE LOCATION

MAC
Muller Acoustic Consulting

*Imagery Source : nearmaps

4 Results

4.1 Assessment Results - Location R1

The monitored noise level contributions and observed meteorological conditions for R1 are presented in **Table 2**.

Table 2 Operator-Attended Noise Survey Results – Location R1

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			Meteorology	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}		
15/05/2020	13:38	53	37	32	WD: W WS: 0.1m/s Rain: Nil	Traffic 31-36 Insects <31 Birds 31-53 Aircraft 34-44 Quarry inaudible
Dunloe Quarry $L_{Aeq(15min)}$ Contribution						<30

4.2 Assessment Results - Location R2

The monitored noise level contributions and observed meteorological conditions for R2 are presented in **Table 3.**

Table 3 Operator-Attended Noise Survey Results – Location R2

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			Meteorology	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}		
15/05/2020	14:00	88	65	43	WD: W WS: 1m/s Rain: Nil	Traffic 39-88 Birds 39-46 Wind 38-46 Quarry inaudible
Dunloe Quarry $L_{Aeq(15min)}$ Contribution						<30

4.3 Assessment Results - Location R3

The monitored noise level contributions and observed meteorological conditions for R3 are presented in **Table 4.**

Table 4 Operator-Attended Noise Survey Results – Location R3

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			Meteorology	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}		
15/05/2020	14:21	66	44	33	WD: W WS: 1m/s Rain: Nil	Aircraft 36-51 Birds 36-56 Insects <32 Wind 32-38 Dog 32-42 Traffic 36-66 Quarry inaudible
Dunloe Quarry $L_{Aeq(15min)}$ Contribution						<30

4.4 Assessment Results - Location R4

The monitored noise level contributions and observed meteorological conditions for R4 are presented in **Table 5**.

Table 5 Operator-Attended Noise Survey Results – Location R4

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			Meteorology	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}		
15/05/2020	14:41	62	41	37	WD: W WS: 0.5m/s Rain: Nil	Birds 34-46 Traffic 32-38 Insects <34 Livestock 36-41 Wind <34 Quarry inaudible
Dunloe Quarry $L_{Aeq(15min)}$ Contribution						<30

5 Discussion

5.1 Discussion of Results - Location R1

Quarry noise emissions were inaudible during monitoring conducted on Wednesday 13 May 2020 at location R1. Quarry noise contributions were estimated to satisfy the relevant daytime noise limit of 48dB $LA_{eq(15min)}$. Extraneous noise sources include traffic, insects, birds, and aircraft during the monitoring period.

5.2 Discussion of Results - Location R2

Quarry noise emissions were inaudible during monitoring conducted on Wednesday 13 May 2020 at location R2. Quarry noise contributions were estimated to satisfy the relevant daytime noise limit of 48dB $LA_{eq(15min)}$. Extraneous noise sources include traffic, birds, and wind in trees during the monitoring period.

5.3 Discussion of Results - Location R3

Quarry noise emissions were inaudible during monitoring conducted on Wednesday 13 May 2020 at location R3. Quarry noise contributions were estimated to satisfy the relevant daytime noise limit of 48dB $LA_{eq(15min)}$. Extraneous noise sources include aircraft, birds, insects, wind in trees and dogs barking during the monitoring period.

5.4 Discussion of Results - Location R4

Quarry noise emissions were inaudible during monitoring conducted on Wednesday 13 May 2020 at location R4. Quarry noise contributions were estimated to satisfy the relevant daytime noise limit of 48dB $LA_{eq(15min)}$. Extraneous noise sources include birds, traffic, insects, livestock, and wind in trees during the monitoring period.

This page has been intentionally left blank

6 Conclusion

Muller Acoustic Consulting Pty Ltd (MAC) has completed a Noise Monitoring Assessment (NMA) on behalf of Holcim (Australia) Pty Ltd at Dunloe Quarry, Pottsville, NSW. The assessment was completed to determine the quarry's compliance with the relevant criteria outlined in their Project Approval for relevant surrounding residential receivers for Quarter 2, ending June 2020.

Attended noise monitoring was undertaken on Wednesday 13 May 2020 at representative monitoring locations, with quarry noise contributions compared against the relevant criteria. The assessment has identified that noise emissions generated by Dunloe Quarry complies with the relevant noise criteria specified in the Project Approval at all assessed residential receivers.

This page has been intentionally left blank

Appendix A - Glossary of Terms

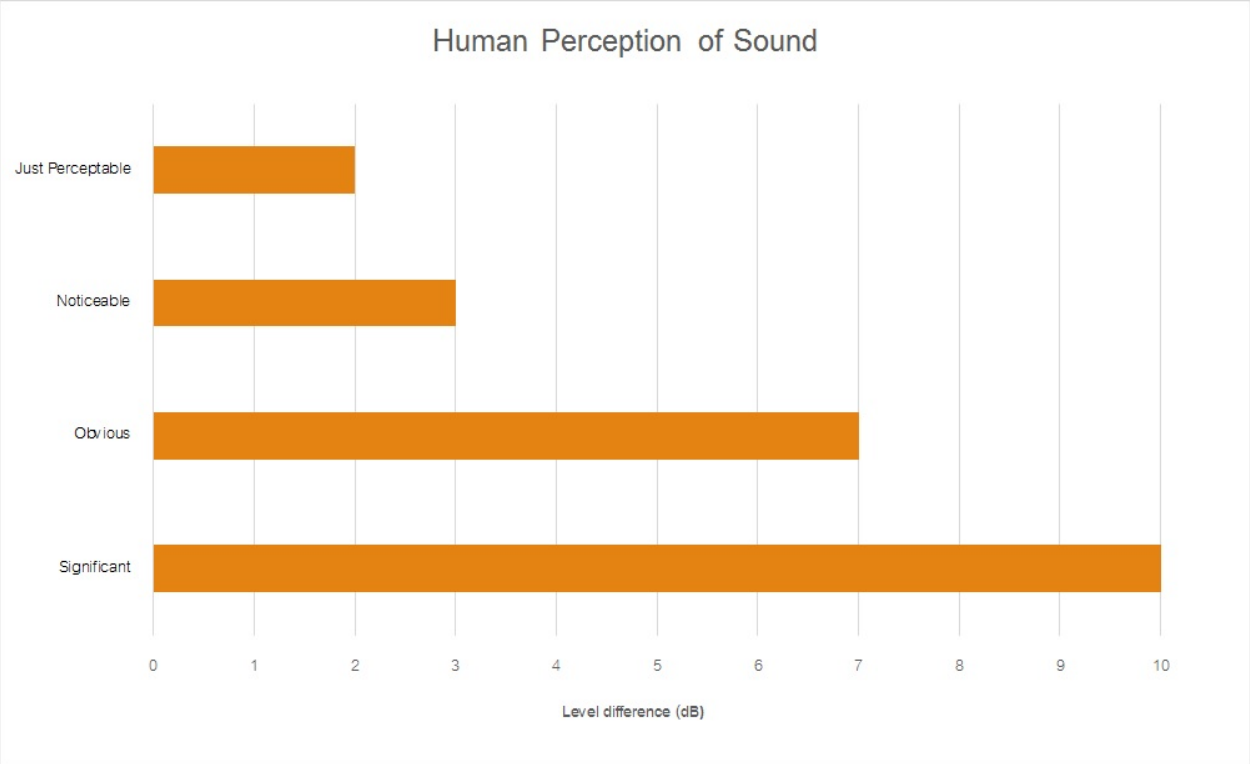
Table A1 provides a number of technical terms have been used in this report.

Table A1 Glossary of Terms	
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the NPI as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured LA90 statistical noise levels.
Adverse Weather	Weather effects that enhance noise (that is, wind and temperature inversions) that occur at a site for a significant period of time (that is, wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of the nights in winter).
Ambient Noise	The noise associated with a given environment. Typically a composite of sounds from many sources located both near and far where no particular sound is dominant.
A Weighting	A standard weighting of the audible frequencies designed to reflect the response of the human ear to noise.
dBA	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
dB(Z), dB(L)	Decibels Linear or decibels Z-weighted.
Hertz (Hz)	The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.
LA10	A noise level which is exceeded 10 % of the time. It is approximately equivalent to the average of maximum noise levels.
LA90	Commonly referred to as the background noise, this is the level exceeded 90 % of the time.
LAeq	The summation of noise over a selected period of time. It is the energy average noise from a source, and is the equivalent continuous sound pressure level over a given period.
LAmax	The maximum root mean squared (rms) sound pressure level received at the microphone during a measuring interval.
RBL	The Rating Background Level (RBL) is an overall single figure background level representing each assessment period over the whole monitoring period. The RBL is used to determine the intrusiveness criteria for noise assessment purposes and is the median of the ABL's.
Sound power level (LW)	This is a measure of the total power radiated by a source. The sound power of a source is a fundamental location of the source and is independent of the surrounding environment. Or a measure of the energy emitted from a source as sound and is given by : = 10.log10 (W/Wo) Where : W is the sound power in watts and Wo is the sound reference power at 10-12 watts.

Table A2 provides a list of common noise sources and their typical sound level.

Table A2 Common Noise Sources and Their Typical Sound Pressure Levels (SPL), dBA	
Source	Typical Sound Level
Threshold of pain	140
Jet engine	130
Hydraulic hammer	120
Chainsaw	110
Industrial workshop	100
Lawn-mower (operator position)	90
Heavy traffic (footpath)	80
Elevated speech	70
Typical conversation	60
Ambient suburban environment	40
Ambient rural environment	30
Bedroom (night with windows closed)	20
Threshold of hearing	0

Figure A1 – Human Perception of Sound



Muller Acoustic Consulting Pty Ltd
PO Box 262, Newcastle NSW 2300
ABN: 36 602 225 132
P: +61 2 4920 1833
www.mulleracoustic.com

MAC
Muller Acoustic Consulting