

NOISE MANAGEMENT PLAN

WALLERAWANG QUARRY

FINAL

April 2019



NOISE MANAGEMENT PLAN

WALLERAWANG QUARRY

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Walker Quarries Pty Ltd

Project Director: Alex Irwin
Project Manager: Alex Irwin
Report No. 4433/R03
Date: April 2019

	
Lithgow	Orange
PO Box 307 Lithgow NSW 2790 ABN 82 003 061 890	Office 1 3 Hampden Avenue Orange NSW 2800
T 02 6352 3377 E accounts@walkerquarries.com.au	T 1300 793 267 E info@umwelt.com.au
www.walkerquarries.com.au	www.umwelt.com.au



Quality
ISO 9001

This report was prepared using
Umwelt's ISO 9001 certified
Quality Management System.

Disclaimer

This document has been prepared for the sole use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Umwelt (Australia) Pty Ltd (Umwelt). No other party should rely on this document without the prior written consent of Umwelt.

Umwelt undertakes no duty, nor accepts any responsibility, to any third party who may rely upon or use this document. Umwelt assumes no liability to a third party for any inaccuracies in or omissions to that information. Where this document indicates that information has been provided by third parties, Umwelt has made no independent verification of this information except as expressly stated.

©Umwelt (Australia) Pty Ltd

Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
V0*	Alex Irwin	22 February 2019	Alex Irwin	26 February 2019
V1	Alex Irwin	1 April 2019	Alex Irwin	1 April 2019

Note * V0 represents the first version of this plan prepared by Umwelt Pty Ltd. This follows from Rev 4 produced by RW Corkery & Co. Pty Limited

Table of Contents

1.0	Scope	1
2.0	Regulatory Requirements	3
2.1	Development Consent DA 344-11-2001	3
2.2	Environment Protection Licence EPL – 13172	5
3.0	Objectives and Outcomes	7
4.0	Baseline Noise Levels	8
5.0	Noise Criteria	9
6.0	Noise Management System	10
6.1	Proactive Management Measures	10
6.1.1	Hours of Operation	10
6.1.2	Operational Designs and Controls	10
6.1.3	Noise Monitoring	11
6.2	Reactive Management Measures	11
6.2.1	Triggers	11
6.2.2	Response and Corrective Actions	12
7.0	Monitoring	14
7.1	Introduction	14
7.2	Meteorological Monitoring	14
7.3	Attended Noise Monitoring	14
7.3.1	Purpose	14
7.3.2	Methodology	14
7.3.3	Procedure	16
7.3.4	Locations	16
7.3.5	Frequency	17
7.3.6	Supplementary Monitoring	17
7.4	Sound Power Level Audit	17
7.5	Evaluation of Results	18
8.0	Incident Management, Notification and Reporting	19
8.1	Incident Identification	19
8.2	Incident Management and Notification	19
8.2.1	Non-compliance Incidents	19
8.2.2	Pollution Incidents	19
8.3	Incident Reporting	19

9.0	Data Management and Reporting	21
9.1	Review and Recording of Monitoring Data	21
9.2	Reporting and publication of monitoring data	21
10.0	Roles and Responsibilities	22
11.0	Competence Training and Awareness	23
12.0	Plan Review	24
13.0	References	25

Figures

Figure 1.1	Locality Plan	2
Figure 7.1	Noise Monitoring Locations	15

Tables

Table 1.1	Document Status History	1
Table 2.1	Noise-Related Conditional Requirements of DA 344-11-2001	3
Table 2.2	Noise-Related Conditional Requirements of EPL 13172	5
Table 3.1	Noise Management Objectives and Key Performance Outcomes	7
Table 5.1	Quarry Noise Criteria ¹	9
Table 6.1	Approved Hours of Operation	10
Table 7.1	Meteorological Monitoring	14
Table 10.1	Roles and Responsibilities of Personnel with Respect to Management of Noise	22

Appendices

Appendix 1	Consultation with Environment Protection Authority
------------	--

1.0 Scope

This Noise Management Plan (NMP) for the Wallerawang Quarry (the Quarry) has been reviewed and updated by Umwelt (Australia) Pty Ltd (Umwelt) on behalf of Walker Quarries Pty Ltd (Walker Quarries) in satisfaction of Condition 5 of Schedule 3 of Development Consent DA 344-11-2001 (DA 344-11-2001).

The Quarry is located approximately 8 kilometres (km) northwest of Lithgow (see **Figure 1.1**) and comprises a total disturbed area of approximately 11 hectares (ha). The Quarry is approved to produce 500 000 tonnes per annum (tpa) of quartzite and rock aggregate material.

Noise generating activities principally relate to the following operational activities.

- Vegetation clearing and topsoil and subsoil stripping.
- Drill and blast extraction of raw materials.
- Load and haul of materials for processing through crushing and screening or emplacement of overburden.
- Stockpiling and transport of final products.
- Miscellaneous equipment use within the Quarry.

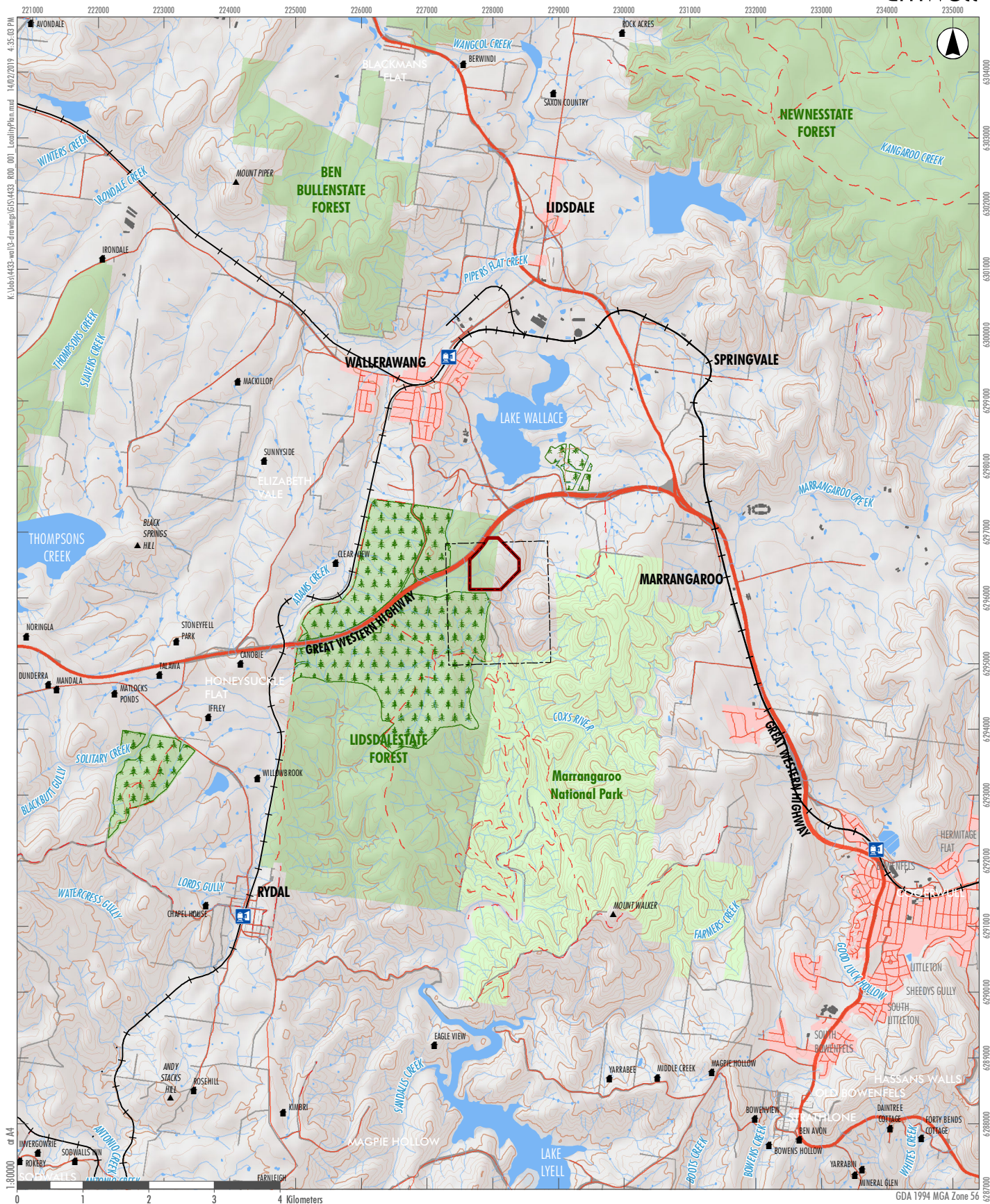
This Environment Protection Authority (EPA) was consulted in the preparation of the original NMP. As identified in **Appendix 1**, the EPA chose not to provide guidance on the content requirements of the NMP.

The previous version of this NMP (Rev 3) incorporated the recommendations of an Independent Environmental Audit (IEA) completed in July 2018. This version of the NMP (V0) was prepared following the approval of a modification to DA 344 11 2001 on 7 December 2018 and is the first version of the NMP prepared by Umwelt Pty Ltd. The NMP relies on the results of previous noise impact assessments (Atkins, 2001 and RWC, 2017), as well as monitoring and audits of the acoustic setting at the Quarry (Atkins, 2014 and 2016, MAC, 2017a, 2017b, 2018a and 2018b).

Table 1.1 provides the complete history of NMP review and approval.

Table 1.1 Document Status History

Rev No.	Prepared by		Purpose
	Name	Date	
0	P. Hensley	October 2014	Draft submitted to department prior to commencement
1	RW Corkery & Co	September 2016	Updated and approved following first IEA
2	RW Corkery & Co	November 2017	Updated following Modification 1 (issued August 2017)
3	RW Corkery & Co	September 2018	Updated Following 2 nd IEA
4	RW Corkery & Co	November 2018	Updated following 2018 Annual Review
V0	Alex Irwin	February 2019	Updated following Modification 2 (issued December 2018)
V1	Alex Irwin	April 2019	Updated following DPE Review (March 2019)



- Legend**
- Quarry Site - ML1633
 - EL 4473
 - State Forest
 - NPWS Estate

Note:
Image Source: Copyright: © 2014 Esri Data source:

FIGURE 1.1
Locality Plan

2.0 Regulatory Requirements

2.1 Development Consent DA 344-11-2001

Conditions 3(1) to 3(4) of DA 344-11-2001 (as modified on 7 December 2018) provide instruction as to the requirements of Walker Quarries in relation to noise management. Condition 3(5) requires the preparation of a Noise Management Plan. Conditions 5(3) to 5(5) provide instruction on the preparation, review and amendment to consent required management plans.

Table 2.1 identifies each of these conditional requirements relating to noise management and identifies the section of this NMP where each requirement is addressed.

Table 2.1 Noise-Related Conditional Requirements of DA 344-11-2001

No.	Condition	Section										
Hours of Operation												
3(1)	<p>The Applicant must comply with the operating hours set out in Table 1.</p> <p><i>Table 1: Operating Hours</i></p> <table><tr><th>Activity</th><th>Permissible Hours</th></tr><tr><td>Quarrying operations</td><td><ul style="list-style-type: none">7 am to 6 pm Monday to Friday8 am to 1 pm SaturdayAt no time on Sundays or public holidays</td></tr><tr><td>Loading and dispatch of trucks</td><td><ul style="list-style-type: none">May be conducted at any time, provided these activities comply with the noise criteria in Table 2</td></tr><tr><td>Blasting</td><td><ul style="list-style-type: none">9 am to 5 pm Monday to Friday9 am to 1 pm on SaturdaysAt no time on Sundays or public holidays</td></tr><tr><td>Maintenance</td><td><ul style="list-style-type: none">May be conducted at any time, provided that these activities are not audible at any privately-owned residence</td></tr></table>	Activity	Permissible Hours	Quarrying operations	<ul style="list-style-type: none">7 am to 6 pm Monday to Friday8 am to 1 pm SaturdayAt no time on Sundays or public holidays	Loading and dispatch of trucks	<ul style="list-style-type: none">May be conducted at any time, provided these activities comply with the noise criteria in Table 2	Blasting	<ul style="list-style-type: none">9 am to 5 pm Monday to Friday9 am to 1 pm on SaturdaysAt no time on Sundays or public holidays	Maintenance	<ul style="list-style-type: none">May be conducted at any time, provided that these activities are not audible at any privately-owned residence	6.1.1
Activity	Permissible Hours											
Quarrying operations	<ul style="list-style-type: none">7 am to 6 pm Monday to Friday8 am to 1 pm SaturdayAt no time on Sundays or public holidays											
Loading and dispatch of trucks	<ul style="list-style-type: none">May be conducted at any time, provided these activities comply with the noise criteria in Table 2											
Blasting	<ul style="list-style-type: none">9 am to 5 pm Monday to Friday9 am to 1 pm on SaturdaysAt no time on Sundays or public holidays											
Maintenance	<ul style="list-style-type: none">May be conducted at any time, provided that these activities are not audible at any privately-owned residence											
3(2)	<p>The following activities will be carried out outside the hours specified in condition 1 above:</p> <p>(a) delivery or dispatch of materials as requested by Police or other public authorities; and</p> <p>(b) emergency work to avoid the loss of lives, property or to prevent environmental harm.</p> <p>In such circumstances, the Applicant must notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.</p>	6.1.1										
Noise Impact Assessment Criteria												
3(3)	<p>The Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 2 at any residence on privately-owned land.</p> <p><i>Table 2: Noise criteria dB(A)</i></p> <table><tr><th>Receiver</th><th>Day <i>L_{Aeq} (15 minute)</i></th><th>Evening <i>L_{Aeq} (15 minute)</i></th><th>Night <i>L_{Aeq} (15 minute)</i></th></tr><tr><td>Any residence on privately owned land</td><td>43</td><td>43</td><td>39</td></tr></table> <p>Noise generated by the development is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.</p> <p>However, the noise criteria in Table 2 do not apply if the Applicant has an agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.</p>	Receiver	Day <i>L_{Aeq} (15 minute)</i>	Evening <i>L_{Aeq} (15 minute)</i>	Night <i>L_{Aeq} (15 minute)</i>	Any residence on privately owned land	43	43	39	5.0		
Receiver	Day <i>L_{Aeq} (15 minute)</i>	Evening <i>L_{Aeq} (15 minute)</i>	Night <i>L_{Aeq} (15 minute)</i>									
Any residence on privately owned land	43	43	39									

No.	Condition	Section
Operating Conditions		
3(4)	<p>The Applicant must:</p> <ul style="list-style-type: none"> (a) implement best practice management to minimise the construction, operational and road transportation noise of the development; (b) minimise the noise impacts of the development during meteorological conditions when the noise criteria in this consent do not apply (see Appendix 3); (c) carry out noise monitoring (at least every 3 months or as otherwise agreed with the Secretary) to determine whether the development is complying with the relevant conditions of this consent; and (d) regularly assess noise monitoring data and modify and/or stop operations on site to ensure compliance with the relevant conditions of this consent, <p>to the satisfaction of the Secretary.</p>	<p>6.1</p> <p>6.1.2, 6.2.2.3</p> <p>6.1.3, 6</p> <p>6.2</p>
Noise Management Plan		
5(5)	<p>The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:</p> <ul style="list-style-type: none"> (a) be prepared in consultation with the EPA; (b) be submitted to the Secretary within three months of the determination of Modification 1, unless otherwise agreed by the Secretary; (c) describe the measures to be implemented to ensure: <ul style="list-style-type: none"> • compliance with the noise criteria and operating conditions of this consent; • best practice management is being employed; and • the noise impacts of the development are minimised during meteorological conditions under which the noise criteria in this consent do not apply; (d) describe the proposed noise management system; and (e) include a monitoring program to be implemented to measure noise from the development against the noise criteria in Table 2, and which evaluates and reports on the effectiveness of the noise management system on site. <p>The Applicant must implement the Noise Management Plan as approved from time to time by the Secretary.</p>	<p>App. 1</p> <p>1.0</p> <p>6.0</p> <p>6.0</p> <p>7.0</p> <p>Noted</p>
Management Plan Requirements		
5(3)	<p>The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:</p> <ul style="list-style-type: none"> (a) detailed baseline data; (b) a description of: <ul style="list-style-type: none"> • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures/criteria; and • the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures; (c) a description of the measures that to be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria; 	<p>4.0</p> <p>2.0</p> <p>5.0</p> <p>6.2, 8.0</p> <p>6.0</p>

No.	Condition	Section
	(d) a program to monitor and report on the: <ul style="list-style-type: none"> impacts and environmental performance of the development; and effectiveness of any management measures (see (c) above); 	7.0.
	(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	8.0
	(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	9.0
	(g) a protocol for managing and reporting any: <ul style="list-style-type: none"> incidents; complaints; non-compliances with statutory requirements; and exceedances of the impact assessment criteria and/or performance criteria; and a protocol for periodic review of the plan.	12.0
5(4)	The Applicant must continue to apply existing approved management plans, strategies or monitoring programs that have most recently been approved under this consent, until the approval of a similar plan, strategy or program under this consent.	12.0
5(5)	Within 3 months of the submission of an: <ul style="list-style-type: none"> (a) incident report under condition 9 below; (b) Annual Review under condition 11 below; (c) audit report under condition 12 below; and (d) any modifications to this consent, the Applicant must review the strategies, plans and programs required under this consent, to the satisfaction of the Secretary. The applicant must notify the Department in writing of any such review being undertaken. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document must be submitted for the approval of the Secretary.	12.0, App 1

2.2 Environment Protection Licence EPL – 13172

Environment Protection Licence 13172 (EPL 13172) contains a number of conditional requirements related to the prevention of noise pollution. **Table 2.2** identifies each of these conditional requirements and identifies the section of this NMP where each requirement is addressed.

Table 2.2 Noise-Related Conditional Requirements of EPL 13172

No	Condition	Section
L4.1	Noise from the premises must not exceed: <ul style="list-style-type: none"> (a) 43 dB(A) $L_{Aeq}(15 \text{ minute})$ during the day (7am to 6pm) Monday to Friday and 7am to 1pm Saturday; and (b) 43 dB(A) $L_{Aeq}(15 \text{ minute})$ during the evening (6pm to 10pm) Monday to Friday; and (c) at all other times 39 dB(A) $L_{Aeq}(15 \text{ minute})$, except as expressly provided by this licence. Where L_{Aeq} means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.	5.0
L4.2	Noise from the premises is to be measured at the nearest or most affected residence to determine compliance with this condition.	7.3

No	Condition	Section																																			
L4.3	<p>The noise emission limits identified in this licence apply under all meteorological conditions except:</p> <p>(a) during rain and wind speeds (at 10m height) greater than 3m/s; and</p> <p>(b) under "non-significant weather conditions".</p> <p>Note: Field meteorological indicators for non-significant weather conditions are described in the NSW Industrial Noise Policy, Chapter 5 and Appendix E in relation to wind and temperature inversions.</p>	5.0																																			
M1.1	<p>Monitoring Records</p> <p>The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.</p>	9.1																																			
M1.2	<p>All records required to be kept by this licence must be:</p> <p>(a) in a legible form, or in a form that can readily be reduced to a legible form;</p> <p>(b) kept for at least 4 years after the monitoring or event to which they relate took place; and</p> <p>(c) produced in a legible form to any authorised officer of the EPA who asks to see them.</p>	9.1																																			
M4.1	<p>For each monitoring point specified in the table below the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1. The licensee must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns.</p> <table><tr><th>Parameter</th><th>Units of Measure</th><th>Frequency</th><th>Averaging Period</th><th>Sampling Method</th></tr><tr><td>Air temperature</td><td>°C</td><td>Continuous</td><td>1 hour</td><td>AM-4</td></tr><tr><td>Wind direction</td><td>°</td><td>Continuous</td><td>15 minute</td><td>AM-2 & AM-4</td></tr><tr><td>Wind speed</td><td>m/s</td><td>Continuous</td><td>15 minute</td><td>AM-2 & AM-4</td></tr><tr><td>Sigma theta</td><td>°</td><td>Continuous</td><td>15 minute</td><td>AM-2 & AM-4</td></tr><tr><td>Rainfall</td><td>mm</td><td>Continuous</td><td>15 minute</td><td>AM-4</td></tr><tr><td>Relative humidity</td><td>%</td><td>Continuous</td><td>1 hour</td><td>AM-4</td></tr></table>	Parameter	Units of Measure	Frequency	Averaging Period	Sampling Method	Air temperature	°C	Continuous	1 hour	AM-4	Wind direction	°	Continuous	15 minute	AM-2 & AM-4	Wind speed	m/s	Continuous	15 minute	AM-2 & AM-4	Sigma theta	°	Continuous	15 minute	AM-2 & AM-4	Rainfall	mm	Continuous	15 minute	AM-4	Relative humidity	%	Continuous	1 hour	AM-4	7.2
Parameter	Units of Measure	Frequency	Averaging Period	Sampling Method																																	
Air temperature	°C	Continuous	1 hour	AM-4																																	
Wind direction	°	Continuous	15 minute	AM-2 & AM-4																																	
Wind speed	m/s	Continuous	15 minute	AM-2 & AM-4																																	
Sigma theta	°	Continuous	15 minute	AM-2 & AM-4																																	
Rainfall	mm	Continuous	15 minute	AM-4																																	
Relative humidity	%	Continuous	1 hour	AM-4																																	
R2.1	<p>Notification of Environmental Harm</p> <p>Notifications must be made by telephoning the Environment Line service on 131 555.</p>	8.3																																			
R2.2	<p>The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.</p>	8.3																																			

3.0 Objectives and Outcomes

Table 3.1 presents the objectives and key performance outcomes relating to noise management for the NMP and the Quarry.

Table 3.1 Noise Management Objectives and Key Performance Outcomes

Objectives	Key Performance Outcomes
To ensure compliance with the conditions of DA 344-11-2001 and EPL 13172 and reasonable community expectations.	Compliance with all relevant criteria and reasonable community expectations, as determined in consultation with the relevant government agencies.
To implement appropriate noise management and mitigation measures during all stages of Quarry operation so as to ensure that harm to the environment is minimised as far as possible.	All identified noise management and mitigation measures implemented.
To implement an appropriate noise monitoring program to establish compliance or otherwise with relevant criteria during all stages of Quarry operation.	All identified monitoring undertaken in accordance with the relevant procedures and at the relevant intervals.
To implement an appropriate complaint handling and response protocol.	Complaints (if any) handled and responded to in an appropriate manner. All complaints recorded and reported in accordance with annual reporting requirements.
To implement appropriate corrective and preventative actions, if required.	Corrective and preventative actions implemented, if required.
To implement an appropriate incident reporting program, if required.	Incidents (if any) reported in an appropriate manner.

4.0 Baseline Noise Levels

Monitoring of background (L_{90} ¹) noise levels was undertaken as part of the original *Environmental Impact Statement* (Pacrim, 2001). This was measured as follows for the day, evening and night time periods.

- Day: 38dB(A).
- Evening: 38dB(A).
- Night: 34dB(A).

The noise criteria applied to DA 344-11-2001 (refer to **Section 5.0** and **Table 5.1**) reflect the RBL based on the determination of intrusiveness, i.e. RBL + 5dB(A).

It is noted that the RBL of the local setting is to be reviewed and reassessed as part of a Noise Impact Assessment (NIA) to support a modification to operations at the Quarry. The NMP will be reviewed and revised within 3 months of assessment and determination of the proposed modification

¹ The L_{90} noise level is that which is exceeded 90% of the time during the day, evening and night time periods. This is considered by NSW noise policy to represent the Rating Background Level (RBL).

5.0 Noise Criteria

In accordance with *Condition 3(3)* of DA 344-11-2001 and *Condition L4.1* of EPL 13172, the noise criteria for all operations undertaken on the Quarry Site are provided by **Table 5.1**.

Table 5.1 Quarry Noise Criteria¹

Location	Day ² (dB(A) L _{Aeq} (15 min))	Evening ² (dB(A) L _{Aeq} (15 min))	Night ² (dB(A) L _{Aeq} (15 min))
Any residence on privately-owned land	43	43	39
<p>Note 1: The criteria do not apply where an agreement is negotiated with a landowner to exceed the noise criteria, and the DPE has been advised in writing of the terms of this agreement</p> <p>Note 2: For the purposes of assessing compliance:</p> <ul style="list-style-type: none"> Day is defined as the period from 7:00am to 6:00pm Monday to Friday, and 7:00am to 1:00pm on Saturdays; Evening is defined as the period from 6:00pm to 10:00pm Monday to Friday; and Night is defined as 'all other times'. 			

It is noted that *Appendix 3* of DA 344-11-2001 and *Condition L4.3* of EPL 13172 identify conditions under which the noise criteria do not apply, namely:

- wind speeds greater than 3 m/s at 10m above ground level;
- temperature inversion conditions between 1.5°C and 3°C/100m and wind speed greater than 2 m/s at 10 m above ground level; or
- temperature inversion conditions greater than 3°C/100m.

The approved hours of operation (see **Section 6.1.1**) are limited to times that will in most instances, not occur during temperature inversion conditions. It is therefore not expected that temperature inversions will constrain operations at the Quarry.

6.0 Noise Management System

6.1 Proactive Management Measures

6.1.1 Hours of Operation

All operations will be undertaken in accordance with the approved hours of operation presented in **Table 6.1**.

Table 6.1 Approved Hours of Operation

Activity	Permissible Hours
Quarrying Operations	7:00am to 6:00pm Monday to Friday; 8:00am to 1:00pm Saturday; and At no time on Sundays or public holidays.
Loading and Despatch of Trucks	Any time provided it meets the criteria set out in Table 5.1 .
Blasting	9:00am to 5:00pm Monday to Friday; 9:00am to 1:00pm Saturday; and At no time on Sundays or public holidays.
Maintenance.	Any time provided it is inaudible at all residential premises surrounding the Quarry Site.
Source: DA 344-11-2001 – Condition 3(1)	

It is noted that under *Condition 3(2)* of DA 344-11-2001 the following activities can be carried out outside the hours specified in Condition 1 above:

- delivery or despatch of materials as requested by Police or other public authorities; and
- emergency work to avoid the loss of lives, property or to prevent environmental harm.

In such circumstances prior notification shall be provided to the DPE and affected residents prior to undertaking the activities. Where prior notification is not possible, this will be undertaken at the first safe opportunity following the works.

6.1.2 Operational Designs and Controls

The Quarry Site has been designed with an objective to minimise the noise generated by extraction, processing and transport activities. The design features and operational noise controls to meet this objective are as follows.

Design Features

- The extraction area is oriented to provide noise mitigation throughout the life of the Quarry. A highwall will be maintained in order to limit sound promulgation to the northeast.
- Stockpiles and ancillary equipment will be positioned to limit potential noise impacts.

Operational Safeguards

- All approved hours of operation will be strictly adhered to.
- Walker Quarries will comply with the maximum production and/or transport limit of 500 000t per year.
- Operations at exposed locations and under unfavourable weather conditions will be modified, where necessary, to reduce potential noise-related impacts.
- All relevant equipment will be regularly serviced to ensure sound power levels of each item remains equivalent to or less than the SPLs nominated by Pacrim (2001). The SPLs of all on-site plant and equipment are to be measured on an annual basis (refer to **Section 7.4**). The results of the annual audit will be included in the Annual Review supplied to the DPE and Annual Return to the EPA.
- All site personnel, subcontractors and suppliers shall undergo an induction that includes requirements in relation to potential noise impacts.
- The internal road network will be maintained to the current standard and if any new roads are proposed these will be constructed to similar standards to limit body noise from empty trucks.
- Maintenance work on all plant and equipment will only be undertaken outside the standard hours of operation if these are inaudible at all residential premises surrounding the Quarry Site (refer also to **Table 6.1**).

6.1.3 Noise Monitoring

A program of noise monitoring will be undertaken at nominated residences and the results and performance of the site operations discussed with local residents and landholders. Monitoring is further discussed in **Section 7.0**.

6.2 Reactive Management Measures

6.2.1 Triggers

Three triggers for reactive management will be applied.

- **Noise Complaint.** Any complaint received, either directly or via Council, EPA or other regulatory agency, will trigger the implementation of the response and corrective action measures described in **Section 6.2.2.1**.
- **Exceedance of noise criteria established through noise monitoring.** Any record of noise exceeding the criteria nominated in **Section 5.0** will trigger the response and corrective action measures described in **Section 6.2.2.2**.
- **Emergency and Extraordinary Weather Events.** Any request from police or in the event of an emergency will result in the activation of reactive management measures described in **Section 6.2.2.3**. If any of the meteorological conditions detailed in *Condition 2.1* of DA 344-11-2001 or *Condition L4.3* of EPL 13172 are observed reactive management measures will also be triggered (refer to **Section 6.2.2.3**).

6.2.2 Response and Corrective Actions

6.2.2.1 Noise Complaint

A Complaints Management Procedure is provided in *Section 6.2* of the Environmental Management Strategy. Following receipt of a complaint appropriate action will be taken within two working days to determine the cause of the complaint and identify appropriate actions to remediate the complaint source. The following details will be recorded following receipt of any noise-related complaint.

1. The date and time of the complaint.
2. The method by which the complaint was made.
3. Any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect.
4. The nature of the complaint.

Within 48 hours of receipt of a complaint, action to identify the cause of the complaint and identify appropriate actions to remediate this will be commenced. On completion of actions to address the complaint, the following information will be added to the complaint register.

5. The action taken in relation to the complaint, including any follow-up contact with the complainant.
6. If no action was taken, the reasons why no action was taken.

Complaints of a general nature, e.g. “noise from the Quarry is too loud” will be investigated and an appropriate response provided to the complainant. This could include supplementary noise monitoring as described in **Section 7.3.6**, if required.

6.2.2.2 Noise Criteria Exceedance

If noise monitoring (completed as described in **Section 7.0**) indicates that noise exceeds the approved criteria, the following response and action plan will be implemented.

1. After obtaining exceedance information, the Quarry Manager (or delegated representative) will review meteorological conditions to assess whether these represent conditions for which the noise criteria do not apply.
2. The Quarry Manager will immediately investigate the source of the noise, review the performance of equipment and if necessary make arrangements to alter the configuration of equipment, or stand down specific equipment, so that the noise levels are reduced.
3. If meteorological conditions were such that noise conditions did not apply (refer to Section 5), the Quarry Manager will document the exceedance including the relevant meteorological conditions.
4. Following a confirmed exceedance of noise criteria, the Quarry Manager will immediately² notify DPE and EPA of the exceedance and actions being taken to remediate the source of excessive noise.
5. Within 7 days of confirming the exceedance, and notification of the DPE and EPA (Step 4), the Quarry Manager will provide a detailed report on:
 - a. the time and date of the incident;

² Immediately being the first opportunity following identification of the exceedance and establishment of initial actions to reduce noise.

- b. relevant details of the incident; and
 - c. measures taken to (or to be taken) prevent re-occurrence.
- 6. If required, noise monitoring will be repeated to confirm compliance with the approved noise criteria.
- 7. Within 2 weeks of obtaining any data showing an exceedance of noise criteria, the Quarry Manager will notify in writing any affected landowners or tenants.
- 8. Any exceedance of the approved noise criteria will be reported to EPA in the Annual Return and to DPE in the Annual Environmental Management Report.

6.2.2.3 Emergency and Extraordinary Weather Events

In the event that deliveries or despatch are requested at unusual times by Police or other authorities or in the event of an emergency, the Quarry Manager will act appropriately to ensure the general safety of employees and the local community. It is noted that these events are permitted outside the hours of operation required by Condition 3(2) of DA 344-11-2001.

Regardless of this, during times when these conditions are forecast or observed, the Quarry Manager will modify operations to minimise potential noise impacts. This will include but is not limited to:

- turning off or limiting operations of mobile equipment or fixed plant;
- redirecting operations to more sheltered areas within the extraction area; and
- moving equipment to lower elevations to reduce the potential for noise to be carried over long distances.

7.0 Monitoring

7.1 Introduction

This subsection describes the noise monitoring program that will be implemented to meet the conditions of consent and assist Walker Quarries to protect the acoustic environment and amenity of the surrounding rural setting and to minimise the likelihood of noise-related complaints.

7.2 Meteorological Monitoring

Figure 7.1 identifies the location of a meteorological station installed in accordance with *Condition 3(15)* of DA 344-11-2001 and *Condition M4.1* of EPL 13172. The meteorological station is located away from natural or artificial obstructions and areas with the potential to influence local thermodynamics, e.g. concrete or bitumen surfaces, generally in accordance with the *Approved Methods for Sampling of Air Pollutants in New South Wales*.

The parameters, units of measure, averaging period and frequency recorded by the meteorological station are specified in **Table 7.1** (and are in compliance with *Condition M4.1* of EPL 13172).

Table 7.1 Meteorological Monitoring

Parameter	Units of Measure	Frequency	Averaging Period
Rainfall	mm	Continuous	15 minute
Sigma theta	°	Continuous	15 minute
Air Temperature	°C	Continuous	1 hour
Wind Direction at 10m	°	Continuous	15 minute
Wind Speed at 10m	m/s	Continuous	15 minute

7.3 Attended Noise Monitoring

7.3.1 Purpose

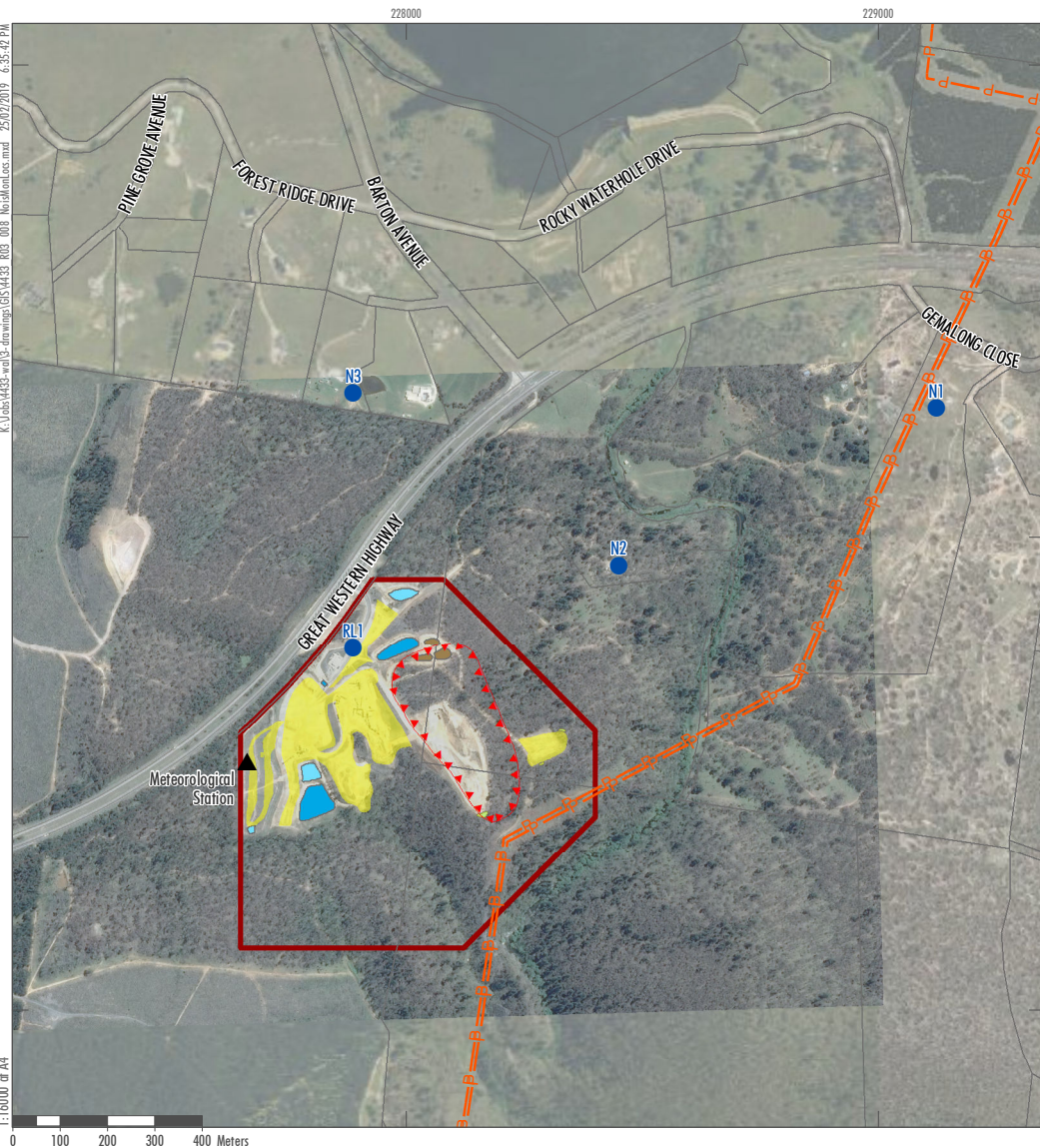
The purpose of the noise monitoring will be to confirm compliance with the criteria identified in **Section 5.0**.

Monitoring results will be continually reviewed in order that Walker Quarries will improve, where possible, the environmental performance of the development over time.

7.3.2 Methodology

Noise monitoring will be undertaken in accordance with the following documents.

- NSW Industrial Noise Policy (INP) (EPA, 1999).
- AS 1055.1-1997 "Acoustics – Description and Measurement of Environmental Noise – General Procedures".



Legend

- | | |
|---|---|
| Quarry Site - ML1633 | Cadastral boundary |
| Stockpile Area | ● Noise Monitoring Locations |
| Sediment Basin | ▲ Meteorological Station |
| Silt Cell | —P— Power Line |
| Storage Dam | |

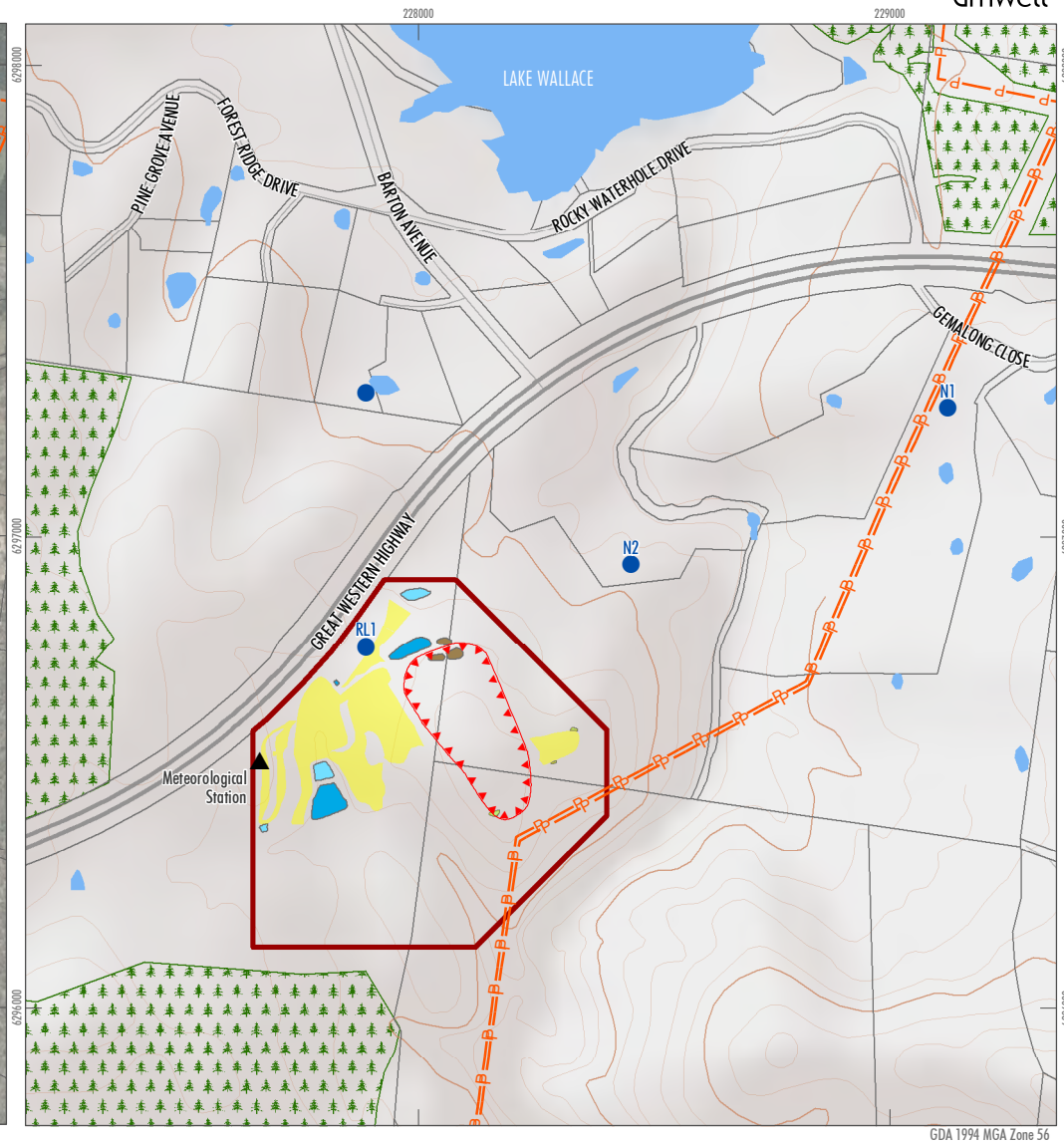


FIGURE 7.1
Noise Monitoring Locations

The monitoring will expressly seek to identify and quantify any relevant modification factors referred to in Chapter 3 of the INP.

All acoustic instrumentation employed throughout the monitoring program will comply with the requirements of AS IEC 61672 2004 “Electroacoustics – Sound Level Meters”, as amended, and will carry current NATA or manufacturer calibration certificates. Instrument calibration will be checked before and after each survey, with the variation in calibrated levels not exceeding $\pm 0.5\text{dB(A)}$.

Information that will be recorded during monitoring and about each location will include:

- the name of the person undertaking the monitoring;
- location(s) of the monitoring;
- recording intervals (date and times);
- meteorological conditions i.e. temperature, humidity, cloud cover, and wind speed and direction drawn from the on-site meteorological station;
- statistical noise level descriptors together with notes identifying the principal noise sources;
- instrument make, model, serial number and calibration details; and
- a brief description of activities occurring during the monitoring period.

Noise monitoring will be undertaken at the locations presented in **Figure 7.1**, and unless prevented by meteorological conditions, will be undertaken in a single day. It is noted there may be circumstances where noise monitoring is split over two days to account for operational activities, weather conditions or time constraints of the monitoring personnel.

7.3.3 Procedure

Attended noise monitoring will be undertaken using a hand-held noise meter. The maximum ($L_{A\text{max}}$), and the energy equivalent ($L_{A\text{eq}}$) intrusive noise level over a 15 minute measurement period will be recorded.

If necessary, other descriptors such as L_{A10} , L_{A50} , L_{A90} , L_{A99} and $L_{A\text{min}}$ could also be recorded. Wherever possible, the L_{A90} noise level (i.e. without contributions from Quarry activities) will be recorded to identify the prevailing background noise level.

7.3.4 Locations

Figure 7.1 identifies the three off-site monitoring locations:

- N1: “Gemalong” property residence.
- N2: “Cockatoo Pines” property boundary adjacent to residence.
- N3: Cypress Place, Wallerawang.

These locations have been chosen as the closest residential receivers to the Quarry Site to enable assessment against the noise criteria (of Table 5). If access to any of these locations is unavailable, the closest possible location will be chosen for the purpose of monitoring.

A fourth monitoring location is included on the Quarry Site:

- RL1: Reference Location 1 adjacent to the Quarry office.

This location allows for the combined noise level of the operating Quarry to be measured, and through extrapolation and assessment of other relevant factors, the relative contribution of the Quarry at locations N1, N2 and N3 calculated.

The results of noise monitoring conducted between 2014 and 2018 (Atkins, 2014 and 2016, MAC, 2017a, 2017b, 2018a and 2018b) has consistently returned the following results.

- The Quarry has generally been inaudible.
- Extrapolated results from RL1 confirming noise contribution of the Quarry as below the noise criteria of **Table 5.1**.

7.3.5 Frequency

Attended monitoring shall be scheduled at least every 6 months (nominally September and March) in order to evaluate compliance with the noise criteria described in **Section 5.0** (refer to **Table 5.1**). If, in consultation with the acoustic consultancy commissioned to complete the monitoring, Walker Quarries identifies that operational or meteorological conditions will affect the validity of the monitoring results, it will reschedule the planned monitoring and notify the DPE³. Monitoring will record representative noise levels during operating periods, i.e. in accordance with approved operating hours.

Once production reaches 250 000 tpa, the frequency of monitoring will be reviewed against performance to determine if the monitoring frequency needs to be modified. If a variation to the monitoring frequency is warranted, the NMP will be updated and the approval of DPE sought to modify the monitoring program.

7.3.6 Supplementary Monitoring

In the event of a noise-related complaint, Walker Quarries will review the results of the noise monitoring program and make the results of that monitoring and/or subsequent investigation available to the complainant.

In the event that this does not resolve the complaint, or where the complaint specifically references the noise emissions of the Hydraulic Hammer Drill, Walker Quarries will undertake a supplementary attended noise survey (in accordance with the methods and procedure described in **Section 7.3.2** and **7.3.3**).

7.4 Sound Power Level Audit

On an annual basis, Walker Quarries will monitor the sound power level (SPL) of active mobile and fixed plant operating at the Quarry. The SPL will be measured, using a calibrated hand-held noise meter at a distance of 10 m from the operating plant. The SPL audit will be used to inform necessary maintenance or equipment upgrade requirements to ensure noise generated by the Quarry remains equivalent to that predicted and compliance with noise criteria is achieved.

³ The approval of the Secretary is required if the period between monitoring dates exceeds 6 months.

7.5 Evaluation of Results

A noise monitoring report will be prepared by Walker Quarries responsible for the monitoring within 14 days of each attended noise monitoring event. That report will include an assessment of the monitoring results against the criteria identified in **Section 5.0**. The monitoring reports will be reviewed by the Quarry Manager and copies included within the Annual Review.

In the event that the noise monitoring report identifies an exceedance of the relevant criteria, the procedures identified in **Section 6.2.2** will be implemented.

8.0 Incident Management, Notification and Reporting

8.1 Incident Identification

Condition R2 of EPL 13172 requires that Walker Quarries must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident.

In accordance with the definition provided by Section 147 of the POEO Act, harm to the environment is deemed to be material if:

1. it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial; or
2. it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations).

An incident which is only as a result of an exceedance of noise criterion, is referred to as a **Non-compliance Incident**.

An incident which causes or threatens to cause material harm to the environment is referred to as a **Pollution Incident**.

8.2 Incident Management and Notification

8.2.1 Non-compliance Incidents

On identification of non-compliance against noise criteria, which will follow receipt of a complaint, the Quarry Manager will be notified and an investigation into the source of the non-compliance or complaint causing emissions commenced in accordance with the response and corrective actions described in **Section 6.2.2**.

8.2.2 Pollution Incidents

The EPA excludes noise pollution from the requirements of a Pollution Incident Response Management Plan.

8.3 Incident Reporting

Following implementation and review of the corrective measures, a short description of the incident, actions taken, and results of the corrective actions will be documented by the Quarry Manager.

Within three months of the submission of an incident report to the DPE, the Quarry Manager will review this NMP and any other relevant strategies, plans and programs required under DA 344-11-2001 and revise them as required. Walker Quarries will notify the DPE in writing that this review is being undertaken. If the review does lead to revision, Walker Quarries will submit the revised NMP to the DPE within 3 months of the incident for approval.

Walker Quarries notes that all incidents must be reported as per condition 9 and condition 10 of Schedule 5 of DA 344-11-2001, which requires:

- Immediate notification to the Secretary and any other relevant agencies of the incident; and
- Provision of detailed reporting on the incident to the Secretary and any other relevant agencies within 7 days of the incident.

A summary of all incidents, including dates of occurrence, corrective measures taken, and success of these measures will be compiled and reported in the Annual Return to the EPA and the Annual Review to DPE.

9.0 Data Management and Reporting

9.1 Review and Recording of Monitoring Data

Walker Quarries will retain records of meteorological monitoring and noise monitoring for a minimum period of four years. Monitoring records will be made available to relevant government authorities following a written request.

9.2 Reporting and publication of monitoring data

Walker Quarries will include all attended noise monitoring reports as appendices to the Annual Review. That document, once approved by the relevant government agencies, will be published on their website.

In accordance with the requirements of Section 66(6) of the *Protection of the Environment Operations Act 1997*, each month Walker Quarries will publish all monitoring data on their website. The information will be published within 14 days of receipt of a final noise monitoring report. In addition, Walker Quarries will provide a copy of noise reports, free of charge, to a member of the public when requested in writing. The data will be provided in a format that includes raw data values if requested, is comprehensible by the general public and also includes all accompanying necessary information. These requirements are presented in detail in Requirements for Publishing Pollution Monitoring Data (EPA, 2013).

10.0 Roles and Responsibilities

Table 10.1 outlines the roles and responsibilities of personnel with reference to management of noise.

Table 10.1 Roles and Responsibilities of Personnel with Respect to Management of Noise

Role	Responsibilities
Managing Director	<p>Ensure compliance with the Noise Management Plan.</p> <p>Ensure adequate resources are available to implement the Noise Management Plan.</p> <p>Ensure suitably trained personnel are available to implement the responsibilities of the Quarry Manager during any time of the Quarry Manager's absence from site.</p>
Quarry Manager, or his/her nominee	<p>Ensure the implementation of the Noise Management Plan.</p> <p>Ensure noise monitoring results are regularly reviewed/evaluated and entered into the environmental database.</p> <p>Ensure reviews of meteorological forecasts are undertaken on a daily basis prior to the commencement of operations.</p> <p>Implementation of the Noise Management System (see Section 6.0).</p> <p>Relocate or postpone relevant activities in the event of adverse weather conditions, where practical.</p> <p>Provide primary contact for complaints and supply follow-up information to any complainant.</p> <p>Initiate investigations of complaints as received from the public or government agency.</p> <p>Prepare a report to government agencies or neighbours following a notifiable pollution incident (see Section 8.0).</p> <p>Inform the Managing Director of identified causes of elevated noise and any alterations to site operations that has influenced the noise environment.</p> <p>Ensure employees are competent through training and awareness programs.</p> <p>Coordinate the review of the Noise Management Plan (see Section 12.0).</p>
All On-site Personnel	<p>Operate in manner that minimises risks of incidents to themselves, fellow workers or the surrounding environment.</p> <p>Fully implement the relevant control measures within the Noise Management Plan.</p> <p>Report any anomalous noise or extraordinary events to the Quarry Manager.</p> <p>Follow any instructions provided by the Quarry Manager.</p>
All Truck Drivers	<p>Follow any instructions provided by any on-site personnel.</p>

11.0 Competence Training and Awareness

All personnel and contractors working at the Quarry undergo an induction. This induction includes information on the management of noise while working on site.

Regular toolbox meetings are held to discuss whole-of-site production, management, safety and environmental issues. Matters relating to noise are raised during these meetings, when necessary.

12.0 Plan Review

In accordance with the Environmental Management Strategy, and *Condition 5(5)* of DA 344-11-2001, the NMP will be reviewed within three months of the submission of an:

- a) incident as defined by **Section 8.1**;
- b) Annual Review⁴;
- c) an Independent Environmental Audit completed in accordance with *Condition 5(13)* of DA 344-11-2001; and
- d) any modifications to this consent.

Walker Quarries will notify the DPE in writing of any review being undertaken and if this review results in any revisions to the NMP, submit a copy to the Secretary of the DPE for approval (within 6 weeks of the review). The reviews will ensure the adequacy of the NMP and allow for opportunities of adaptive management and continual improvement. This will include a review of monitored noise levels and monitoring frequency and methods, as necessary. Each review will also evaluate the effectiveness of the overall noise monitoring program and whether it needs to be modified or scaled back.

⁴ The Annual Review is due by 30 September each year.

13.0 References

Atkins Acoustics and Associates Pty Ltd (2001). Noise and Blast Impact Assessment, Wallerawang Hard Rock Quarry. Prepared for Walker Quarries Pty Limited.

Atkins Acoustics and Associates Pty Ltd (2014). Site Attended Noise Audit, Wallerawang Quarry. Prepared for Walker Quarries Pty Limited.

Atkins Acoustics and Associates Pty Ltd (2016). Site Attended Noise Audit, Wallerawang Quarry. Prepared for Walker Quarries Pty Limited.

Australian Standard (AS) 1055.1-1997. Acoustics – Description and Measurement of Environmental Noise – General Procedures.

Australian Standard (AS) IEC 61672 2004. Electroacoustics – Sound Level Meters.

Department of Environment and Conservation (DEC) (2007). Approved Methods for Sampling of Air Pollutants in New South Wales.

Environmental Protection Authority (EPA) (1999). NSW Industrial Noise Policy.

Environmental Protection Authority (EPA) (2013). Requirements for Publishing Pollution Monitoring Data.

Muller Acoustic Consulting (MAC) (2017a). Noise Monitoring Assessment, Wallerawang Quarry.

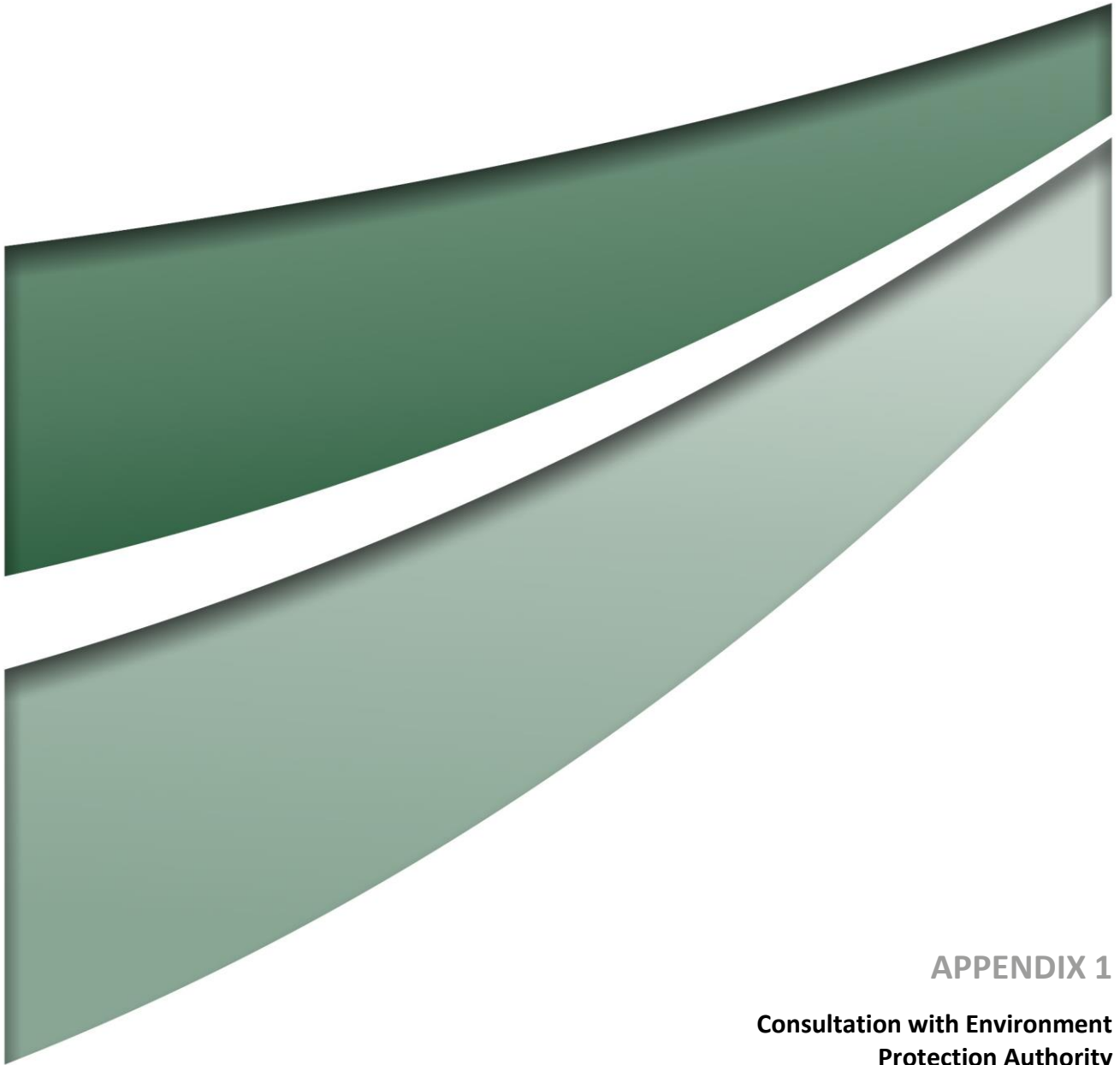
Muller Acoustic Consulting (MAC) (2017b). Noise Monitoring Assessment, Wallerawang Quarry, September 2017.

Muller Acoustic Consulting (MAC) (2018a). Noise Monitoring Assessment, Wallerawang Quarry, April 2018.

Muller Acoustic Consulting (MAC) (2018b). Noise Monitoring Assessment, Wallerawang Quarry, August 2018.

Pacrim Environmental (Pacrim) (2001). Environmental Impact Statement Proposed Wallerawang Quarry. Prepared for Sitegoal Pty. Limited, November 2001 (report 01/206.1).

RW Corkery & Co. Pty Limited (RWC) (2017). Environmental Assessment for Modification to Operations at the Wallerawang Quarry (DA 344-11-2001). Prepared on behalf of Walker Quarries Pty Ltd (Report No. 949/05).



APPENDIX 1

**Consultation with Environment
Protection Authority**



Your reference :
Our reference : EF13/4384; DOC16/386834
Contact : Mr Allan Adams; (02) 6332 7610

Mr Ray Sharwood
Quarry Manager
Walker Quarries Pty Ltd
PO Box 307
Lithgow NSW 2790

Attn. Mr Alex Irwin

3 August 2016

Dear Mr Sharwood

I refer to the email correspondence from Mr Irwin (RW Corkery & Co Pty Limited) to the Environment Protection Authority (EPA) on 20 July 2016 providing the opportunity to review and comment on the draft copies of the 'Wallerawang Quarry – Noise Monitoring Program' and the 'Wallerawang Quarry – Blast Management Plan'.

The EPA acknowledges that the development of these plans in consultation with the EPA is a general requirement of the development consent for each mine.

The EPA encourages the development of Environmental Management Plans and Programs to ensure that licensees have determined how they will meet their statutory obligations and environmental objectives as specified by any Project/Development Approval and/or the conditions of an environment protection licence (EPL). However, the EPA does not review these plans/programs (unless in circumstances deemed necessary) as the role of the EPA is to establish and regulate against environment protection and management criteria. As such, the EPA does not become directly involved in the development of strategies to comply with such conditions/criteria, and will not be providing any further comment.

As a management tool, such plans and programs should assist Walker Quarries in meeting their commitment to statutory compliance and wider environmental management and where appropriate should be integrated with other operational or management plans. The EPA recommends that such plans be audited to an industry standard or certified to the ISO 14001 standard (if applicable) as part of any overall environmental management systems.

Should you have any further enquiries in relation to this matter please contact Mr Allan Adams at the Central West (Bathurst) Office of the EPA by telephoning (02) 6332 7610.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Darryl Clift'.

DARRYL CLIFT
Head Central West Unit
Environment Protection Authority

Alex Irwin

From: Alex Irwin
Sent: 20 October 2017 12:41 PM
To: 'central.west@epa.nsw.gov.au'
Cc: Allan Adams
Subject: 949 - Wallerawang Quarry - Consultation required for Management Plans
Attachments: Notice of Modification_25 August 2017.pdf; 94902b_Noise MP - September 2016.pdf; 94902f_WMP 2016 - September 2016.pdf

Good afternoon Allan,

Walker Quarries Pty Ltd received approval for a modification to the project approval for the Wallerawang Quarry (DA 344-11-2001) on 25 August 2017 (attached). Walker Quarries Pty Ltd holds EPL 13172 for the Wallerawang Quarry.

Conditions 3(5) and 3(18) of DA 344-11-2001 require Walker Quarries to consult with the EPA in the preparation of a Noise Management Plan and Soil and Water Management Plan respectively.

With respect to the nominated conditions, and noting that Walker Quarries is currently operating under a Noise Management Plan and Water Management Plan (also attached), can you provide any specific requirements of the EPA for the preparation or update of these.

I note DA 344-11-2001 requires these plans to be submitted to the Secretary for approval by 25 November 2017 and so we would appreciate any advice as soon as possible.

Regards,

Alex Irwin
Senior Environmental Consultant
(Mobile 0429 635 975)

RW Corkery & Co Pty Limited

Geological and Environmental Consultants



Brooklyn
Level 1, 12 Dangar Road
PO Box 239
BROOKLYN NSW 2083

Phone: (02) 9985 8511
Fax: (02) 6361 3622
Email: brooklyn@rwcorkery.com
Website: www.rwcorkery.com

Orange
62 Hill Street
ORANGE NSW 2800

Phone: (02) 6362 5411
Fax: (02) 6361 3622
Email: orange@rwcorkery.com

Brisbane
Suite 5, Building 3,
Pine Rivers Office Park
205 Leitchs Road
BRENDALE QLD 4500

Phone: (07) 3205 5400
Fax: (02) 6361 3622
Email: brisbane@rwcorkery.com

This message is intended for the addressee named and may contain confidential/privileged information. If you are not the intended recipient, please delete it and notify the sender. Any confidentiality or privilege between R. W. Corkery & Co. Pty Limited and Client is not waived or lost because this email has been sent to you by mistake. You should scan any included files for viruses.

**Newcastle**

75 York Street
Teralba NSW 2284

Perth

First Floor
12 Prowse Street
West Perth WA 6005
PO Box 783
West Perth WA 6872

Canberra

2/99 Northbourne Avenue
Turner ACT 2612
PO Box 6135
O'Connor ACT 2602

Sydney

50 York Street
Sydney NSW 2000

Brisbane

Level 13
500 Queen Street
Brisbane QLD 4000

Orange

Office 1
3 Hampden Street
Orange NSW 2800