ANNUAL ENVIRONMENTAL MANAGEMENT REPORT (AEMR) FOR THE KARUAH HARD ROCK QUARRY, KARUAH, NSW.

AEMR Period –

16 January, 2019 – 15 January, 2020

Prepared by Hunter Quarries Pty Ltd

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ABBREVIATIONS

AEMR	Annual Environmental Management Report
AQMP	Air Quality Monitoring Program
CCC	Community Consultative Committee
DA	Development Application
DDG	Dust Deposition Gauge
DIPNR	Former Department of Infrastructure Planning and Natural Resources (now DPIE)
DPIE	Former NSW Department of Planning and Environment (now DPIE)
DPIE	Department of Planning Industry and Environment
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMP	Environmental Monitoring Program
EMS	Environmental Management Strategy
EPL	Environment Protection Licence
Ha	Hectare
HQPL	Hunter Quarries Pty Ltd
km	Kilometre
L	Litre
LDP	Licenced Discharge Point
MCC	MidCoast Council
NPWS	NSW National Parks and Wildlife Service, now part of OEH
OEH	Office of Environment and Heritage
POEO Act	Protection of the Environment Operations Act 1997
RAR	Response to Audit Recommendations
RFS	NSW Rural Fire Service
SLR	SLR Consulting Australia Pty Ltd
SWMP	Site Water Management Plan
tpa	tonnes per annum

i PURPOSE OF THE REPORT

Hunter Quarries Pty Ltd (HQPL) has prepared this report which fulfils the Annual Environmental Management Report (AEMR) requirement of the Development Consent (DA 265-10-2004), Schedule 4 Condition 5. However, this AEMR has been prepared generally in accordance with the Department of Planning and Environment (DPIE) 2015 Annual Review Guidelines. As such, HQPL acknowledges that while this document is an AEMR as required by the Development Consent, it has been prepared to be consistent with the format of an Annual Review.

*This AEMR serves to cover the reporting period from the **16 January 2019 to 15 January 2020**.*

This report provides specific detail on the project including a summary of environmental monitoring data and environmental performance during the reporting period. All environmental data in full can be supplied at request.

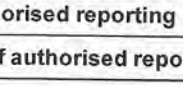
Name of Operation	Karuah Hardrock Quarry
Name of Operator	Hunter Quarries Pty Ltd
Development Consent / Project Approval #	DA 265-10-2004
Name of holder of Development Consent / Project Approval	Hunter Quarries Pty Ltd
Mining Lease #	None
Water Licences	None
AEMR start date	16 January 2019
AEMR end date	15 January 2020

I, Greg Dressler, certify that this AEMR is a true and accurate record of the compliance status of Karuah Hardrock Quarry for the period 16 January 2019 to 15 January 2020 and that I am authorised to make this statement on behalf of Hunter Quarries Pty Ltd.

Note.

a) *The AEMR is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.*

b) *The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or*

Name of authorised reporting officer	Greg Dressler
Title of authorised reporting officer	Quarry Manager
Signature of authorised reporting officer	
Date	Version 2 – 13 July 2020

1.0 STATEMENT OF COMPLIANCE

Tables 1 - 3 outline the compliance status of the quarry operations at the end of the reporting period within the relevant approval conditions.

Table 1 Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	
Environment Protection Licence (No. 11569).	YES
Development Consent (DA265-10-2004)	No

Table 2 DPIE Compliance Status Key

Risk level	Colour code	Description
High	Non-Compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-Compliant	Non-compliance with: • potential for serious environmental consequences, but is unlikely to occur; or • potential for moderate environmental consequences, but is likely to occur
Low	Non-Compliant	Non-compliance with: • potential for moderate environmental consequences, but is unlikely to occur; or • potential for low environmental consequences, but is likely to occur
Admin NC	Non-Compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

Table 3 Non- Compliance

Relevant Approval	Condition #	Condition Description (Summary)	Compliance Status	Site Comment/Where Addressed in AEMR
EPL 11569	Nil	-	Compliant	Nil
DA265-10-2004	Condition 13 of Schedule 3 and Condition 14 of Schedule 3	No TSP or PM10 monitoring	Non - Compliant	See Audit Action Plan
DA265-10-2004	Condition 18 of Schedule 3	No binding Covenant	Admin Non - Compliance	See Audit Action Plan
DA265-10-2004	Condition 19 of Schedule 3	No flora and fauna monitoring	Admin Non - Compliance	See Audit Action Plan
DA265-10-2004	Condition 21 of Schedule 3	No flora and fauna monitoring	Admin Non - Compliance	See Audit Action Plan
DA265-10-2004	Condition 26 of Schedule 3	Implementation of Water Management Plan	Admin Non - Compliance	See Audit Action Plan

Relevant Approval	Condition #	Condition Description (Summary)	Compliance Status	Site Comment/Where Addressed in AEMR
DA265-10-2004	Condition 28 of Schedule 3	Implementation of Water Management Plan	Admin Non - Compliance	See Audit Action Plan
DA265-10-2004	Condition 36 of Schedule 3	Bushfire Management Plan approval	Admin Non - Compliance	See Audit Action Plan
DA265-10-2004	Condition 4 of Schedule 4	EMP update	Admin Non - Compliance	See Audit Action Plan
DA265-10-2004	Condition 10 of Schedule 4	Communications Strategy	Admin Non - Compliance	See Audit Action Plan

2.0 INTRODUCTION

This Annual Environmental Management Report (AEMR) provides detail on the reporting period from the ***16 January 2019 to 15 January 2020.*** The AEMR period covers the same period as the Environment Protection Licence (EPL) Annual Return period.

2.1 Project Overview

The MidCoast Council (MCC) granted conditional Development Consent for a hard rock quarry and crushing plant at Karuah on 3 December 1997. Hunter Quarries Pty Limited (HQPL) purchased the site from Mountain Industries in 2002 and has since operated a hard rock quarry at the site, known as Karuah Quarry. The material extracted at the quarry is andesite which is a hard, blue rock used for various purposes such as road base material, construction aggregate, aggregate used for concrete batching, drainage works, fill, landscaping and other uses.

The site is contained wholly within the MCC Area and is located adjacent to Karuah Red Quarry and the Pacific Highway. It is approximately 4 kilometres (km) north of the Karuah town centre.

Development Consent (DA 265 – 10 – 2004) for the quarry's proposed expansion was granted on the 3 June 2005 by the former Minister for Infrastructure, Planning and Natural Resources. **Figure 1** outlines the regional context of the site. **Figure 2** shows the location of the site including the EPL boundary, lot and DP's, monitoring locations and disturbance footprint.

A 16 hectare (ha) conservation offset area was established on a southern portion of Lot 12.

Production at the Karuah Quarry continued during the Annual Review period.

Figure 1 Regional Locality

EPA IDENTIFICATION POINTS ^				
No.	TYPE	EASTING*	NORTHING*	DESCRIPTION
1	DISCHARGE	406 112 m	6 389 070 m	Water Discharge From Dam 2
2	MONITORING	406 254 m	6 388 851 m	Dust Deposition Gauge DDG1
3	MONITORING	406 439 m	6 388 841 m	Dust Deposition Gauge DDG2
4	MONITORING	405 723 m	6 388 979 m	Dust Deposition Gauge DDG3
5	MONITORING	408 016 m	6 389 831 m	Dust Deposition Gauge DDG4

*COORDINATES SHOWN ARE ON DATUM GDA94 MGA ZONE 56

11819-EPL-001-A

Plotted By: Zachary Jarvie Plot Date: 11/06/20 4:19:05PM Cad File: N:\11819\DWG\11819-EPL-001-A.DWG

This plan includes coloured information. If you have a black and white copy you do not have all of the information. This note is coloured RED.

ver.	date	comment	surveyed	drawn	checked	pm
A	11.06.2020	INITIAL EPL PLAN	- -	Z.J.	M.R.	M.R.

co-ordinate information
CO-ORDINATE SYSTEM: M.G.A. ZONE 56 GDA94
ORIGIN OF CO-ORDINATES: P.M.

level information
DATUM: A.H.D.
ORIGIN OF LEVELS: LiDAR DATA
CONTOUR INTERVAL: 2.0 m

scale (A1 original size)
0 100 200m
SCALE: 1:4000 (FULL)

page
1 OF 1

^ MONITORING POINTS HAVE BEEN PROVIDED BY HUNTER QUARRIES PTY LTD.
REFER TO PLAN 'KARUAH HARD ROCK QUARRY ENVIRONMENTAL MONITORING LOCATIONS - FIGURE 1' BY SLR CONSULTING AUSTRALIA - REFERENCE: 633.HQP00.0030 DATED 23/06/2014.

PLAN OF:
ENVIRONMENTAL PROTECTION LICENCE (EPL 11569)
KARUAH QUARRY

location: LOT 21 D.P.1024341, LOT 11 D.P.1024564 ANDERSITE ROAD, KARUAH, NSW, 2324

council: MID COAST

dwg ref: 11819-EPL-001-A

client: HUNTER QUARRIES

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3.0 APPROVALS

HQPL is required to hold relevant approvals for the quarrying operation and these are detailed in **Table 4**.

Table 4 Current Consents and Licences

Instrument	Date of Issue	Date of Expiration	Comments
Environment Protection Licence (No. 11569).	30 June 2005	N/A	The EPL is a requirement of *the Protection of the Environment Operations Act* (PoEO Act) *1997*.
Development Consent (DA265-10-2004)	3 June 2005	3 June 2027	DA 265-10-2004 will lapse 22 years after the approval date 03 June 2005.

HQPL has an Environment Protection Licence 11569 (EPL 11569) which covers its activities at Karuah Quarry. **Table 5** outlines the licensing limits for production and material handling.

Table 5 EPL Fee-Based Activity

EPL Fee-based Activity	Current Scale (tpa)
Crushing, Grinding or Separating	> 100,000 – 500,000 t processed
Land-based extractive activity	> 100,000 – 500,000 t obtained

3.1 Consent Conditions for Reporting in the AEMR

Table 6 details the relevant conditions in Development Consent (DA 265-10-2004) that must be reported annually in the AEMR, and the respective section(s) in this document where these consent conditions are addressed.

Table 6 Checklist for AEMR Reporting

Condition Number	Condition Requirement for AEMR	Document Section
Schedule 3 Condition 23	*The Applicant shall include a progress report on the implementation and performance of the Flora and Fauna Management Plan and the Conservation Offset Strategy in the AEMR.*	*Section 6.5*
Schedule 3 Condition 29 (c)	*The Applicant shall include a progress report on the re-vegetation and maintenance of the visual bund in the AEMR, to the satisfaction of the Director General.*	*Section 8.1*
Schedule 3 Condition 34 (d)	*The Applicant shall report on waste management and minimisation in the AEMR to the satisfaction of the Director-General.*	*Section 6.7*
Schedule 3 Condition 37 (b)	*The Applicant shall include a copy of this (production) data in the AEMR.*	*Section 4.1*
Schedule 3 Condition 41	*The Applicant shall include a progress report on the Rehabilitation Management Plan in the AEMR.*	*Section 8*
Schedule 4 Condition 5	*The Applicant shall prepare and submit an AEMR to the Director-General and the relevant agencies. This report must address:* *a) identify the standards and performance measures that apply to the development;*	*Section 3 and 6*
	b) describe the works carried out in the last 12 months;	*Section 4*
	c) describe the works that will be carried out in the next 12 months;	*Section 4.2*
	d) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;	*Section 9.3*
	e) include a summary of the monitoring results for the development during the past year;	*Section 8*
	f) include an analysis of these monitoring results against the relevant: • *impact assessment criteria;* • *monitoring results from previous years;* • *predictions in the EIS;*	*Section 6*
	g) identify any trends in the monitoring results over the life of the development;	*Section 6*
	h) identify any non-compliance during the previous year; and	*Section 11.2*
	i) describe what actions were, or are being taken to ensure compliance.	*Section 11*

3.2 DPIE Feedback (2018 AEMR)

The Department of Planning and Environment (DPIE) provided feedback to HQPL in the letter dated 9 May 2019 requesting some additional information for the 2018 AEMR. **Table 7** outlines where this information has been covered.

Table 7 DPIE Feedback on 2018 AEMR

Aspect	Document Section/HQPL Response
Section 9.3 Complaints - In accordance with Section 9 of the Guidelines, please provide approved communication strategy as described in section 4.14.2 of the Karuah Hard Rock Quarry Environmental Management Strategy (EMS) dated March 2016. Copies of the six – monthly report provided to the Mid-Coast Council and residents may be included as an appendix.	Section 9.1
Section 6 Environmental Performance – please include a location plan of the approved monitoring sites within this section.	Included as Figure 2 and Appendix 3.
Section 6.7 Waste – please include a graph showing waste streams trends over time.	As there has only been two years of data no graph has been produced. Graph to be produced in 2020. A comparison has been provided between the past two years.

The DPIE approved the 2018 AEMR in a letter dated 9 May 2019.

3.3 DPIE Feedback (2019 AEMR)

The DPIE provided feedback to HQPL in the letter dated 3 July 2020 requesting additional information for the 2019 AEMR. **Table 8** outlines the DPIE comments and HQPL responses.

Table 8 DPIE Feedback on 2019 AEMR

Aspect	Document Section/HQPL Response
Section 2 – please amend the Introduction to include a map (or maps) which illustrate the regional context, development consent boundary and mining lease boundaries (where relevant).	Two new figures have been added. Figure 1 and 2.
Section 11.2 – Please revise the Summary of Non-Compliances and Table 30 to include blasting carried out at Karuah Quarry outside the hours authorised by Schedule 3 condition 6(a) of the approval, as reported in Section 6.3 (Table 20).	The AEMR states that there was a blast conducted on 29 June 2019 – a Saturday. This is outside of the consented hours and therefore would be a non-compliance. There was no such blast carried out on the Saturday. HQPL completed some investigating and it seems that Premier Drill & Blast incorrectly reported the blast on the 28 June as having been conducted on the 29 June. This error has been corrected in Section 6.3 of the AEMR.

4.0 OPERATIONS SUMMARY

The following section briefly describes the general operation and environmental performance of the Karuah Quarry operations during this AEMR period. Quarry operations continued within the already approved quarry footprint.

4.1 Exploration

No exploration activities took place during this reporting period.

4.2 Land Preparation

During the reporting period no land preparation occurred.

4.3 Construction Activities

There were no construction activities undertaken at HQPL during the AEMR period.

4.4 Quarry Operations

The current operations involve progressive drilling and blasting, which is followed by crushing and screening to produce the required materials. Some weathered material is extracted by ripping, which eliminates the need for blasting. The quarry currently produces a range of crushed natural rock product for use in landscaping, local road making and construction projects. Quarrying activities are allowed from 7am to 6pm Monday to Friday and from 7am to 1pm on Saturday. Maintenance activities are permitted 7 days a week between 7am to 6pm.

4.4.1 Equipment

During the reporting period the following equipment was utilised for the extraction of the hard rock material:

- Excavator x 1;
- Mobile crusher (screening and crushing equipment);
- Pegson 1000 Crusher;
- Front end loader x 2;
- 13,000 litre (L) water tanker; and
- Onsite Haul trucks x 2.

4.4.2 Production of Material

This AEMR is required to report on the production operations of the quarry and these are summarised in **Table 9.**

Table 9 Monthly Production Summary (tonnes)

Month	Main (tonnes)	Gravel (tonnes)	Monthly total (tonnes)
January 16- January 31, 2019	17,187	7,841	25,028
Feb-19	33,766	14,293	48,059
Mar-19	38,829	15,906	54,735
Apr-19	30,547	10,556	41,103
May-19	40,390	14,566	54,956
Jun-19	28,904	10,218	39,122
Jul-19	32,180	11,677	43,857
Aug-19	21,976	12,767	34,743
Sep-19	17,955	11,848	29,803
Oct-19	22,500	10,554	33,054
Nov-19	21,423	5,906	27,329
Dec-19	13,728	3,805	17,533
January 1- January 15, 2020	5,570	2,098	7,668
Total production for the AEMR period	**324,955**	**132,035**	**456,990**

The site was below the production criteria in the Development Consent (limit 500,000 tonnes annually).

Table 10 Production and Operations Summary

Material	Approved Limit (Specify Source)	Previous Reporting Period (actual)	This Reporting Period (actual)	Next Reporting Period (forecast)
Waste Rock/Overburden*	0	0	0	0
Rock Product	500,000 tonnes (Schedule 1, DA 265-10-2004)	459,059	456,990	400,000
Saleable Product (Transported Offsite)	500,000 tonnes (Schedule 1, DA 265-10-2004)	459,059	456,990	400,000
Hours of Operation	Monday – Friday 7am to 6pm Saturday 7am to 1pm Sunday and public holidays no work at any time Minor maintenance works on plant and machinery may be carried out 7 days a week and public holidays 7am to 6pm (Schedule 3, condition 2, DA 265-10-2004)	No change	No change	No change

"In the early stages of operation at Karuah Quarry, overburden was generated to enable the formation of the pit. No overburden was generated in the AEMR period with quarrying of 'hardrock' only.

Table 11 outlines production since 2005 at the Karuah Quarry.

Table 11 Production and Operations Summary Since 2005

AEMR Period	Production (tonnes)
1 January, 2005 – 31 July, 2006 (19 month period)	595,898
1 August, 2006 – 31 July 2007	338,528
1 August, 2007 – 31 July 2008	494,117
1 August, 2008 – 31 July 2009	779,006
1 August, 2008 – 31 July 2009	460,294
1 August, 2010 to 15 January, 2012 (16 month period)	637,234
16 January, 2012 to 15 January, 2013	460,148
16 January, 2013 to 15 January, 2014	458,040
16 January, 2014 to 15 January, 2015	442,831
16 January, 2015 to 15 January, 2016	412,779
16 January, 2016 to 15 January, 2017	497,077
16 January, 2017 to 15 January, 2018	498,752
16 January, 2018 to 15 January, 2019	459,059

AEMR Period	Production (tonnes)
16 January, 2019 to 15 January, 2020	456,990

Note, in the past there were two occasions where the AEMR period changed at the Karuah Quarry based on consultation with the DPIE. Since 2012 the period has been January 16 – January 15. The date of the Development Consent (265-10-2004) is from 3 June 2005 and the period of the consent is until 3 June 2027. The Development Consent (Schedule 2 Condition 7) states there is a total production limit 11.2 million tonnes of andesite from the site within the period of this consent.

Since the start of 2005 until 15 January 2020 the quarry has produced 6,990,753 tonnes which is well within the overall extraction limit.

4.5 Water Management

Surface water at Karuah Quarry is managed in accordance with HQPL Surface Water Management Plan (SWMP).

The principal objective of surface water management for the quarry is to ensure that there is no uncontrolled discharge of water from the site and that the water quality leaving the site meets the appropriate quality standards. This objective is intrinsic to erosion and sedimentation designs and controls for the quarry. As such, the following specific objectives of this SWMP have been established:

- Conducting best practice land clearing procedures for all proposed disturbance areas;
- Separating *undisturbed* runoff from *disturbed* runoff where possible to minimise and isolate the amount of disturbed or “dirty water” runoff;
- Directing sediment-laden runoff into designated sediment control dams;
- Diverting clean runoff from areas upstream of the operation into natural depressions and creeks;
- Constructing the haul road and working pit face with effective surface drainage thereby reducing roadside erosion and sedimentation;
- Allowing sediments to settle in sediment control dams so that the water can be re-used for on-site dust suppression, thereby maintaining dam capacities for subsequent rainfall events;
- Maintaining sediment control structures to ensure that the designed capacities are maintained for optimum settling of sediments;
- Directing runoff to the rubble drain near Area 2; and
- Implementing an effective revegetation and maintenance program for the site.

Water Management is discussed further in **Section 7.0.**

4.6 Rehabilitation during the Reporting Period

There was no new rehabilitation during the reporting period.

Rehabilitation performance is discussed in **Section 8.0**.

4.7 Next Reporting Period

Table 12 outlines forecast operations for the next reporting period.

Table 12 Forecast Operations for Next Reporting Period

Operational Area	Forecast for Next Reporting Period
Pit expansion areas	No proposed changes. Operations continuing during the next reporting period within the existing disturbance footprint.
Infrastructure Development/Upgrades	No proposed changes to infrastructure or development.

5.0 ACTIONS REQUIRED FROM PREVIOUS AEMR (HQPL ACTIONS)

The previous AEMR was submitted in March 2019, and the site received an approval letter on 9 May 2019.

The actions required as an outcome of the previous AEMR, including any actions that have been undertaken and when the actions were completed are provided in **Table 13.**

Table 13 Actions Required from Previous AEMR

Action Required from Previous AEMR	Action Taken by the Operator	Where Discussed in the AEMR
DPIE		
Updates required for 2018 and revised 2019 AEMR.	See **Table 8 and 9**.	
Proposed Actions by HQPL		
Continue to update the website with monitoring data and key environment and community information.	Continued.	Section 9
Continue weed reduction program (target rehabilitation and conservation areas).	Weed management continued during the reporting period, including targeting spraying.	Section 6.5
Remain within licensing and production limits.	Within limits.	Section 3
Continuation of community support program.	Continued.	Section 9
Preparation of a *Rehabilitation and Closure Plan* for DPIE approval.	There have been several draft versions of this plan prepared in 2019. The most recent version was sent to the DPIE on 13 February 2020. The document is currently with DPIE.	Section 8

6.0 ENVIRONMENTAL PERFORMANCE

6.1 Meteorological Monitoring

Schedule 3 Condition 16 of the Development Consent (DA265-10-2004) requires HQPL to *"ensure that there is a suitable meteorological station operating in the vicinity of the development"*.

A new meteorological station was installed in August 2016 which is used by both the Karuah Quarry and Karuah East Quarry with the station located near the weighbridge. **Table 14** presents a summary of the meteorological data collected by HQPL during the AEMR reporting period.

Table 14 AEMR Meteorological Data

Month	Temp (C°)			Rainfall			Wind
	Average (C°)	Min Temp (C°)	Max Temp (C°)	Total (mm)	Max Daily (mm)	No rain days > 1 mm	Max Wind Gust (km/h)
Jan-19 (16th - 31st)	27.3	18.6	43.5	17.2	7.4	3	48.5
Feb-19	23.8	12.5	38.9	48.6	16.0	7	46.1
Mar-19	22.2	12.3	39.2	154.0	39.8	11	50.9
Apr-19	18.4	7.6	33.7	46.2	17.8	7	39.0
May-19	14.6	3.6	27.2	39.2	35.4	4	59.2
Jun-19	11.9	4.0	24.5	174.8	64.6	8	47.3
Jul-19	11.6	1.7	24.2	8.8	46.2	5	53.3
Aug-19	12.3	0.7	26.0	40.6	35.6	2	66.3
Sep-19	15.4	4.5	32.4	158.8	122.2	7	71.0
Oct-19	18.3	7.3	35.5	36.2	9.8	7	66.3
Nov-19	21.3	7.4	38.7	24.6	20.0	2	53.3
Dec-19	23.5	10.9	44.5	5.6	2.2	2	63.9
Jan-20 (1st – 15th)	24.3	14.5	45.6	8.6	3.4	2	49.7

In summary:

- Total rainfall: 763.2mm (represents a significant decrease since previous period (1116.8mm);
- Monthly rainfall average: 63.6mm;
- Number of rainy days >1mm: 67 days;
- Highest temperature: 45.6 C;
- Lowest temperature: 0.7 C; and
- Average temperature: 18.8 C.

6.2 Noise

6.2.1 EIS Predictions

The 2004 EIS noted that operational noise levels are predicted to meet project specific noise goals at all nearest, potentially affected non-project related residential locations surrounding the site. The 2004 EIS predicted that there would be no increase in road traffic noise levels due to quarry contributed traffic discernible at any residential location adjacent to the Highway.

6.2.2 Approved Criteria

Approved noise criteria from the Development Consent are outlined in **Table 15.**

Table 15 Noise Criteria for Karuah Quarry

Time Period	Noise Limit (dBA) – Laeq (15minute)
Day 7:00am to 6:00pm Monday to Friday 7:00am to 1:00pm Saturday	48
Evening 6:00pm to 10:00pm Monday to Friday	47
At All Other Times	46

6.2.3 Key Environmental Performance or Management Issues

In accordance with the Development Consent both operator attended and unattended noise monitoring has been conducted at the nearest residential receivers to the quarry during the reporting period.

The Environmental Monitoring Program states: *In order to measure the possible impact of noise resulting from quarry operations, the following monitoring will be undertaken at the two (2) nearest residences downwind and/or in line-of sight from the quarry and not owned or under agreement with HQPL.*

Noise monitoring locations are shown in **Appendix 3**.

A summary of the results is provided in **Table 16** to **19**, with full copies of the noise monitoring reports appended to this AEMR in **Appendix 4**.

Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds and quarry operations. The noise reports and monitoring tables below provide further details on the following information:

- Monitoring location and serial number of the noise logger;
- Date, start time, Wind velocity (m/s) and Temperature (ºC) at the measurement location; and
- Typical maximum (LAmax) and contributed noise levels.

Quarry contributions listed in the tables are from Karuah Quarry and are stated only when a contribution could be quantified.

May 2019 Noise Monitoring

Table 16 May 2019 Noise Monitoring Results – Attended

Location	Date/Start Time/ Weather	Primary Noise Descriptor (dBA re 20 μPa)					Description of Noise Emissions and Typical Maximum Noise Levels (dBA)
		LAmax	LA1	LA10	LA90	LAeq	
NM1 Lot 3 DP785172 Northern Boundary	22/05/2019 10:36 Day Wind 1 m/s SW Temp 21°C	79	73	67	56	64	Pacific Highway traffic 55 – 79 Birds 45 – 52 **Karuah Quarry Inaudible**
		Contribution not measurable above background noise.					
NM2 Lot 2 DP 785172 Northern Boundary	22/05/2019 10:53 Day Wind 1 m/s SW Temp 21°C	70	67	62	54	58	Pacific Highway traffic 53 – 72 Insects 50 – 52 Birds 58 – 62 **Karuah Quarry Audible in Lulls** Crusher 41-44 **Estimated LAeq(15minute) 43 dBA**
		Contribution not measurable above background noise.					
		Contribution of Karuah Quarry Operations ~ LAeq <30 dBA					

Table 17 May 2019 Noise Monitoring Results - Unattended

INP Period	LA1	LA10	LA90	LAeq
NM1				
Daytime during Operational Hours[1]	65	65	53	60
Daytime outside Operational Hours[2]	65	64	54	59
Evening[3]	67	64	62	61
Night[4]	66	63	39	59
NM2				
Daytime during Operational Hours[1]	68	64	36	60
Daytime outside Operational Hours[2]	67	63	36	60
Evening[3]	69	64	48	60
Night[4]	69	62	36	58

Note:
1. *Daytime - 7.00 am to 5.00 pm Monday to Friday, 8.00 am to 12.00 pm Saturday, not operations on Sunday*
2. *Daytime - 5.00 pm to 6.00 pm Monday to Friday, 12.00 pm to 6.00 pm Saturday, 8.00 am to 6.00 pm Sunday*
3. *Evening - 6.00 pm 10.00 pm*
4. *Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.*

Operator-attended and unattended noise monitoring was conducted at the two (2) nearest residences to determine noise levels produced by Karuah Quarry operations. An additional operator-attended noise survey was conducted at location F as requested by NSW DP&E and at the Project site in order to determine likely compliance.

Noise generated by traffic on the Pacific Highway and insect noise dominated ambient noise levels at noise monitoring locations NM1 and NM2. Noise generated by traffic on the Pacific Highway and Branch Lane dominated ambient noise levels at noise monitoring Location F.

The quarry was inaudible and unmeasurable at NM1 and NM2 monitoring locations due to high ambient noise levels from Pacific Highway traffic.

Results from the unattended ambient noise measurements conducted at both noise monitoring locations were also consistent with site observations which indicate that the Karuah Quarry is not a major contributor to ambient noise levels at these locations during the survey period.

October 2019 Noise Monitoring

Table 18 October 2019 Noise Monitoring Results – Operator Attended

Location	Date/Start Time/ Weather	Primary Noise Descriptor (dBA re 20 μPa)					Description of Noise Emissions and Typical Maximum Noise Levels (dBA)
		LAmax	LA1	LA10	LA90	LAeq	
NM1 Lot 3 DP785172 Northern Boundary	15/10/2019 8:50 Wind Calm Temp 18°C	74	68	64	56	61	Pacific Highway ~ 50 Birds ~50 Quarry inaudible
NM2 Lot 2 DP 785172 Northern Boundary	24/10/2019 9:02 Day Wind Calm	79	73	68	58	65	Pacific Highway ~ 65 Birds ~50 Quarry inaudible

Table 19 Unattended Continuous Monitoring Ambient Noise Level (October 2019)

INP Period	LA1	LA10	LA90	LAeq
NM1				
Day	67	64	55	61
Evening	71	66	56	63
Night	74	72	58	68
NM2				
Day	73	69	59	66
Evening	74	69	56	65
Night	75	68	47	64

Operator-attended and unattended noise monitoring was conducted at the two (2) nearest residences to determine noise levels produced by Karuah Quarry operations.

Noise generated by traffic on the Pacific Highway and bird noise dominated ambient noise levels at noise monitoring locations NM1 and NM2.

The quarry was inaudible and unmeasurable at NM1 and NM2 monitoring locations due to high ambient noise levels from Pacific Highway traffic.

Results from the unattended ambient noise measurements conducted at two (2) noise monitoring locations were also consistent with site observations which indicate that the Karuah Quarry is not a major contributor to ambient noise levels at these locations during the survey period.

6.2.4 Management Measures

The following objectives and management measures apply to noise management at Karuah Quarry:

- To reduce and/or control noise associated with the quarry operations; and
- To train all relevant personnel in methods to reduce/control noise.

6.2.5 Proposed Improvements to Management Measures

Noise monitoring indicates that the noise levels emitted by the site are below the requirements within the consent criteria. Noise monitoring will continue to be completed in the next AEMR period.

The effectiveness of existing noise mitigation controls will continue to be monitored by the Quarry Manager as part of the routine noise monitoring program and environmental inspections.

6.3 Blasting

6.3.1 EIS Predictions

The 2004 EIS predicted that air blast and ground vibration levels will meet the EPA Guidelines at all residential locations surrounding the development with appropriate maximum instantaneous charge (MIC) limits in place.

6.3.2 Approved Criteria

According to both the EPL 11569 and DA 265-10-2004, the overpressure level from blasting operations must not exceed 115 dB(L) for more than 5% of the total number of blasts, at any residences or nearby receiver, and must not exceed 120dB(L) at any time.

Ground vibration must not exceed 5mm/s for 5% of the total number of blasts over a period of 12 months and must not exceed 10mm/s at the nearby receiver.

6.3.3 Key Environmental Performance or Management Issues

During the reporting period all blasts were monitored at the blast monitoring location shown in **Appendix 3.**

Table 20 outlines the blast monitoring results at the Quarry during the AEMR period. For the July 2020 revision of the AEMR the day of the week was added as well as a correction for the highlighted blasting date from 29 June 2019 to 28 June 2019. This was a recording error during the first version of the AEMR.

Table 20 Blast Monitoring Results During the AEMR Period

DATE	Time of Blast	Nearest Private Residence	
		Overpressure	Peak Particle
		Level (dBL)	Velocity (mm/s)
Friday 08-02-2019	12:30 PM	109.9	0.94
Friday 01-03-2019	1:37 PM	n/t	n/t
Friday 08-03-2019	2:23 PM	105.0	0.23
Friday 05-04-2019	1:00 PM	113.5	1.18
Friday 10-05-2019	1:12PM	109.9	1.30
Friday 24-05-2019	1:18 PM	108.4	1.12
Monday 03-06-2019	12:34 PM	98.8	0.75
Wednesday 19-06-2019	1:05 PM	113.1	0.90
Friday 28-06-2019	11:20 AM	110.2	0.06
Thursday 11-07-2019	1:48 PM	108.0	1.06
Friday 02-08-2019	12:30 PM	109.5	0.84

DATE	Time of Blast	Nearest Private Residence	
		Overpressure	Peak Particle
		Level (dBL)	Velocity (mm/s)
Tuesday 27-08-2019	1:16 PM	106.5	0.67
Friday 27-09-2019	1:03 PM	108.0	1.50
Thursday 24-10-2019	1:23 PM	108.0	1.07
Wednesday 15-01-2020	12:00 PM	105.5	1.20

***No Trigger (N/T)**

Note there were two blasts within a close proximity of each other on 11 July 2019. The timing of these blasts was slightly offset, with the same blast results recorded from the blast monitor.

Table 21 provides a summary of the blasting results during the AEMR period.

Table 21 Blast Monitoring Summary for AEMR Period

Blast Monitoring Summary for AEMR Period *(16 January 2019 – 15 January 2020)*	Nearest Private Residence
Total No. of Blasts during reporting period	15
No. of Blast records collected – ie. Values registered	15
No. of Blasts with no results or no value registered.	0
No. of blasts exceeding 5 mm/s	0
No. of Blasts exceeding 115 dBL	0
Average PPV value (mm/s)	0.94
Highest PPV value (mm/s)	1.50
Lowest PPV value (mm/s)	0.06
Average overpressure value (dBL)	108.2
Highest overpressure value (dBL)	113.5
Lowest overpressure value (dBL) registered	98.8

Blast monitoring trigger levels used at the Quarry are set at 88 dB(L) for overpressure and 0.5 mm/s for ground vibration. Therefore, any blasts not triggering the monitoring equipment are significantly below the required overpressure and ground vibration criteria.

During the AEMR period:

- No blasts exceeded 120 dBL; and
- No blast exceeded 115 dBL at the nearest residential dwelling or privately owned land; and
- No ground vibration peak particle velocity readings exceeding 5 mm/s.

Blasting results have been below approved criteria and EIS predictions.

6.3.4 Management Measures

The following control measures have been employed at the site:

- Considerations of explosive loading, initiation sequence and firing;

- Use of experienced blast contractors;
- Monitoring of meteorological conditions prior to blasting; and
- Notifying landowners (at their request) and occupiers of blast events.

Additionally, all blasting activities at Karuah Quarry are monitored by a licensed blasting contractor. Monitoring equipment is located at the front gate (Monitor 1 – internal monitor) to the quarry and at the nearest residence (Monitor 2).

6.3.5 Proposed Improvements to Management Measures

Blasts will continue to be monitored and reported in the next AEMR period. No further improvements required.

6.4 Air Quality

6.4.1 EIS Predictions

The 2004 EIS for an Extension to the Karuah Quarry predicted that dust levels from the operation would be within the criteria of 4 g/m^2/month. HQPL can demonstrate that air quality monitoring through dust depositional monitoring after several years clearly shows the quarry is meeting air quality criteria.

6.4.2 Approved Criteria

All air quality monitoring conducted at the quarry during the reporting period was compared to criteria stipulated in Schedule 3 Consent Condition 13, of DA 265-10-2004 which apply at any privately owned residences, or on more than 25% of any privately owned land, and are as follows:

- Deposited dust annual average assessment criteria less than 4 g/m^2/month; and
- Deposited dust increase in deposited dust level of greater than 2 g/m^2/month.

There are no EPL criteria relating to dust levels at Karuah Quarry.

6.4.3 Key Environmental Performance or Management Issues

The principle source of air pollution at the quarry is in the form of airborne dust, which arises from activities such as quarrying, vehicle movements and crushing.

The results in **Tables 22** illustrate that all dust gauges were below the annual average assessment criteria of 4 g/m^2/month during the 2019 reporting period.

Table 22 Depositional Dust Monitoring Summary (g/m^2/month)

Date on	Date off	DDG1	DDG2	DDG3	DDG4
18-01-2019	18-02-2019	1.7	2.7	1.2	1.0
18-02-2019	20-03-2019	2.4	2.5	1.7	1.7
20-03-2019	16-04-2019	2.1	4.0	0.9	1.0
16-04-2019	15-05-2019	0.8	1.2	0.5	4.8
15-05-2019	12-06-2019	0.4	0.6	0.3	<0.1
12-06-2019	15-07-2019	0.4	0.5	0.2	0.1
15-07-2019	14-08-2019	0.7	0.7	0.3	0.5
14-08-2019	12-09-2019	0.6	2.4	0.7	2.5
12-09-2019	16-10-2019	0.3	0.7	<0.1	1.1
16-10-2019	14-11-2019	3.8	2.0	3.5	2.4

14-11-2019	12-12-2019	2.6	2.0	3.1	2.5
12-12-2019	13-01-2020	2.0	2.7	1.9	2.0
Annual Average		1.5	1.8	1.3	1.6

Table 23 Long- term Depositional Dust Monitoring Summary

Dust Depositional Gauge	Monitoring Summary for AEMR period	Monitoring Results 2019 Period (g/m^2/month)	Monitoring Results 2018 Period (g/m^2/month)	Monitoring Results 2017 Period (g/m^2/month)	Monitoring Results 2016 Period (g/m^2/month)	Monitoring Results 2015 Period (g/m^2/month)	Monitoring Results 2014 Period (g/m^2/month)
DDG 1	Insoluble Solids Reporting Period Average	1.5	1.1	0.9	1.9	1.5	1.2
	Max. Insoluble Solids	3.8	1.6	1.7	4.0	6.4	2.2
	Min. Insoluble Solids	0.3	0.6	0.4	0.4	0.3	0.5
DDG 2	Insoluble Solids Reporting Period Average	1.8	0.9	0.7	1.0	0.9	0.9
	Max. Insoluble Solids	4.0	3.4	1.8	3.0	3.7	2.2
	Min. Insoluble Solids	0.5	0.4	0.1	0.3	0.3	0.4
DDG 3	Insoluble Solids Reporting Period Average	1.3	0.9	0.9	0.7	0.6	0.8
	Max. Insoluble Solids	3.5	3.4	1.4	1.3	2.8	1.4
	Min. Insoluble Solids	0.2	0.4	0.5	0.3	0.1	0.3
DDG 4	Insoluble Solids Reporting Period Average	1.6	1.3	1.5	1.3	1.2	1.6
	Max. Insoluble Solids	4.8	3.0	3.8	3.2	4.1	7.1
	Min. Insoluble Solids	0.1	0.2	0.5	0.3	0.3	0.3

In summary:

- DDG1 – increase from an average of 1.1 g/m^2/month in 2018 to 1.5 g/m^2/month in 2019. Within Development Consent criteria;
- DDG2 - increase from an average of 0.9 g/m^2/month in 2018 to 1.8 g/m^2/month in 2019. Within Development Consent criteria;
- DDG3 – increase from an average of 0.9 g/m^2/month in 2018 to 1.3 g/m2/month in 2019. Within Development Consent criteria; and
- DDG4 – increase from an average of 1.3 g/m^2/month in 2018 to 1.6 g/m^2/month in 2019. Within Development Consent criteria.

The longterm results indicates there has been little change between annual averages across the depositional dust gauges between 2014 and 2019. While there were no exceedances of the monthly depositional dust criteria of 4 g/m^2/month, 2019 displayed a slightly higher level of depositional dust than in previous years. This is likely a result of the regional bushfire events which occurred between November and December 2019. There appears to have been no cumulative impacts associated with the adjacent Karuah East operation.

6.4.4 Management Measures

The following management measures have been adopted at the site to control dust:

- Air quality monitoring;
- Minimising disturbance of land to only what is required by quarry activities;
- Minimising distance travelled by hauling rock the shortest distance possible;
- Utilising quarry runoff water for dust suppression on roads, stockpiles, production plant and work areas. A 13,000 litre (L) water cart is used at the site to assist with firefighting capabilities and dust management. Water is regularly collected from Sediment Dam 2 and sprayed on roads throughout the quarry to minimise dust generated from vehicle movements;
- Engaging the services of a contract road sweeper to regularly clean roadways around the entrance to the quarry; and
- Ensuring loads are covered when leaving the site.

6.4.5 Proposed Improvements to Management Measures

HQPL will continue to monitor air quality in accordance with the conditions of the Development Consent and will also review measures for improving dust management on site. Air quality monitoring during this reporting period demonstrates that air quality and dust levels are complying with the development consent criteria and the current OEH air quality goals, which are outlined in section 5.4 of the EIS (ADW, 2004).

6.5 Biodiversity

6.5.1 EIS Predictions

The 2004 Stage 2 EIS stated:

The proposed extension will impact on four endangered species, one directly and the others indirectly. The impacts can be adequately mitigated to allow these species to continue to function unimpeded by the proposed extension. A conservation off-set of 16 hectares will be provided on adjacent land. The off-set will comprise similar habitat to that which will be disturbed by quarrying. The off-set will ensure an appropriate level of formal protection for threatened flora and fauna species in the long-term.

6.5.2 Approved Criteria

There are no specific criteria associated with biodiversity management for the site. Activities need to be completed in accordance with the EIS.

6.5.3 Key Environmental Performance or Management Issues

HQPL implement a *Flora and Fauna Management Plan.* The key components and management measures of the *Flora and Fauna Management Plan* include:

- A vegetation clearing protocol;
- Flora and fauna monitoring;
- Topsoil management;
- *Conservation Offset Management Plan*; and
- *Remnant Vegetation Conservation Plan*.

Flora and Fauna Monitoring

There was no flora and fauna monitoring undertaken during 2019 at the Karuah Quarry. Ecological monitoring is undertaken annually in the Lot 12 offset area as part of the annual monitoring at the adjacent Karuah East Quarry. The results from the 2019 monitoring indicate that while some species are stressed from dry conditions, the vegetation and fauna habitats within the Karuah East Biodiversity Offset Area (BOA) and Lot 12 are in high condition and remain relatively unchanged since the baseline survey in 2015.

Stock and Feral Animals

A number of diggings have been observed in the southern half of the BOA area during previous site inspections. However, there was no evidence of disturbance from feral animals within the Lot 12 conservation area.

Weeds

The biodiversity monitoring and site inspections in previous reporting periods have identified *Lantana camara* (Lantana) as being the most widespread and abundant weed species across the site, including the conservation area.

Two other Priority Weed species were identified in the BOA: *Asparagus aethiopicus* (Ground Asparagus) and *Senecio madagascariensis* (Fireweed) which are both listed as Priority Weeds within the MidCoast LGA. These two species only occur as small discrete patches in a few locations in the BOA.

An intensive weed spraying regime across the Karuah Quarry and the adjacent Karuah East Quarry targeting the areas of Lantana was undertaken in 2019. Spraying at Karuah Quarry was undertaken on two occasions (autumn and spring) during the reporting period. Spraying was successful at reducing Lantana and will be continued in 2020.

6.5.4 Management Measures

Biodiversity impacts continue to be managed in accordance with the *Flora and Fauna Management Plan*.

Long Term Security of the Conservation Offset Area

Conditions 17 and 18 of the consent outline the requirements for the establishment and long term security of the conservation offset area on the southern portion of Lot 12 DP 1024564 (as shown in Appendix 2 of the consent). The proponent is in the process of preparing a caveat on the title of Lot 12 DP 1024564 in

consultation with the NSW DPIE. Following endorsement of the caveat by the Secretary (NSW DPIE), the proponent will formalise the caveat with NSW Land and Property Information (NSW LPI). Whilst the caveat on title is not yet finalised, Hunter Quarries recognise the importance of maintaining and enhancing the conservation offset area and accordingly implements the Flora and Fauna Management Plan that includes a Management Plan for the Conservation Offset Area.

It is anticipated that the caveat will be progressed further with the NSW DPIE over the next 12 months.

6.5.5 Proposed Improvements to Management Measures

HQPL has improved its weed spraying regime and will continue to undertake weed control measures particularly around haul roads and within rehabilitation areas in 2020.

Site inspections for the identification of noxious weeds will continue to be undertaken.

6.6 Heritage (Aboriginal and Non- Aboriginal)

6.6.1 EIS Predictions

The archaeological survey conducted for the EIS (ADW, 2004) process did not find any heritage items onsite. There were no predicted impacts to heritage from the Karuah Quarry.

6.6.2 Approved Criteria

There are no specific criteria associated with heritage relating to the project.

The process for managing any unexpected heritage items is outlined in **Section 6.6.4**.

6.6.3 Key Environmental Performance or Management Issues

There were no issues relating to Aboriginal and Cultural heritage during the reporting period.

6.6.4 Management Measures

Should unexpected Aboriginal objects/features be encountered, work must stop immediately, and the area cordoned off with a high visibility barrier. The Quarry Manager is to then contact a heritage consultant and Registered Aboriginal Parties (RAPs). The heritage consultant, in consultation with the RAPs, is to conduct a field survey to assess the Aboriginal objects/features identified. The heritage consultant, in consultation with the RAPs, will then recommend appropriate mitigation measures.

The Quarry Manager is to implement the mitigation measures that are recommended by the heritage consultant and agreed to by the RAPs and in accordance with OEH regulations. If additional visual inspection and salvage is recommended, the Quarry Manager is to arrange for the heritage consultant and RAPs to undertake those works.

Provided that these heritage contingency protocols have been followed, works within the Project Area may proceed.

6.6.5 Proposed Improvements to Management Measures

As there have been no heritage items located to date, no improvements to management measures are proposed.

6.7 General Waste Management

6.7.1 Environmental Management

HQPL use a licensed contractor for waste removal at the site. Typical waste at the quarry generally consists of non- hazardous and general wastes, as well as oily wastes. The general and non- hazardous wastes are placed in a skip bin and removed from site.

Oily water accumulates in the workshop sump within a bunded area and is removed by a licenced contractor when the sump is full. Additionally, scrap steel and tyres are separated and stockpiled until there is enough quantity for removal by a licensed contractor for recycling.

6.7.2 Environmental Performance

JR Richards, a waste contractor, removes waste from a 3 metre cubed waste bin at the site. There were 26 collections during the reporting period, with capacity of the bin ranging from 50% to 100%. Over the year, approximately 82 cubic metres of waste was removed from the site, with this being a small increase compared to the previous period of 71 cubic metres.

6.7.3 Proposed Improvements to Management Measures

HQPL will continue to effectively manage their waste on site, including continuing to reuse and recycle where possible.

6.8 Summary of Environmental Performance

Table 24 provides a summary of the environmental performance at the site for the reporting period.

Table 24 Environmental Performance

Aspect	Approval Criteria/EIS Prediction	Performance During the Operating Period	Trend/Key Management Implications	Implemented/Proposed Management Actions
Noise	See Section 6.2.1	Compliant	Within criteria	Continued monitoring
Blasting	See Section 6.3.1	Compliant	Within criteria	Continued monitoring
Air Quality	See Section 6.4.1	Compliant	Within criteria	Continued monitoring
Biodiversity	See Section 6.5.1	Compliant	No specific criteria	Continued management
Heritage	See Section 6.6.1	Compliant	No specific criteria	No additional management proposed.
Waste	No predictions	Compliant	Minimal change over successive years.	Continued monitoring

7.0 WATER MANAGEMENT

7.1 Summary of Water Management at Site

7.1.1 Environmental Management

Surface water at Karuah Quarry is managed in accordance with HQPL Surface Water Management Plan (SWMP). The primary objective of water management at the site is to remain compliant with EPL 11569. As such, water contained within the footprint of the development is directed to Sediment Dam 2. Where this is not possible, water is directed through sediment control structures such as silt fences and retention sumps.

Water Storage and Use

During this reporting period, water from Sediment Dam 2 has been used for the following:

- Dust suppression on internal access and haul roads; and
- Process water/dust suppression for the crusher, conveyors and stockpiles.

HQPL continued to record water usage during the reporting period.

The capacity of the dam is approximately 18 ML. During the reporting period the volume of water stored in Sediment Dam 2 ranged from 3.6 ML to just less than 18 ML.

7.1.2 Proposed Improvements to Management Measures

Sediment Dam 2 and other erosion and sediment control structures are regularly inspected. Additionally, surface water is pumped from Sediment Dam 2 to the smaller sediment dam to reduce the risk of overflow and discharge, and to reduce sediment load. In order to reduce the risk of water discharges, the level of Sediment Dam 2 is maintained at a low level.

7.1.3 Discharges

Water Discharge Events

In the event of a discharge, surface water parameters and volume are to be monitored in accordance with the conditions in the EPL. This includes monitoring water quality daily during discharge and sampling for pH and TSS at the licenced discharge point (LDP). During discharge events, water discharging from the site needs to be within the parameters outlined in Condition L2.4 of EPL 11569. The site has the ability to pump water back up into the pit area (unused section) to increase capacity.

One uncontrolled discharge event occurred at Karuah Quarry on 31 July 2019 (Sediment Dam 2) refer to **Table 25.**

Table 25 Discharge Monitoring Results 2019

Discharge Point	Date	pH	EC (µS/cm)	Turbidity (NTU)	TSS (mg/L)	Oil and Grease (mg/L)	Comment
	EPL Criteria	**6.5 - 8.5**	**-**	**-**	**50**	**5**	
LDP001	16.9	7.4	705	50	27	<5	Uncontrolled discharge

7.1.4 Routines Monitoring

Karuah sampled the Sediment Dam 2 twice during the 2019 reporting period. The results are presented in **Table 26**.

Table 26 Surface Water Monitoring Results 2019

Date	EPL Criteria (For Discharge)	28 May 2019	2 December 2019
pH	6.5 - 8.5	7.7	8.0
EC (µS/cm)	-	432	590
TSS (mg/L)	50	385	41
Turbidity (NTU)	-	-	380
Oil and Grease (mg/L)	5 or non - visible	<5	<5
Total Nitrogen	-	1.2	1.7
Total Phosphorus	-	0.2	0.06

As evident, the parameters are within the pH criteria on both occasions. TSS was above criteria in May 2019; however, no discharge occurred on this occasion meaning Karuah remains compliant with Condition L2.4 of EPL 11569. Oil and grease were compliant during the reporting period.

7.2 Water Take

Table 27 outlines the water take at Karuah Quarry for the reporting period.

Table 27 Water Take

Water Licence Number	Water Sharing Plan, Source and Management Zone (as applicable)	Entitlement	Passive Take/Inflows	Active Pumping	TOTAL
Nil water licenses for Karuah Quarry	-	Nil	-	Nil	-

7.3 Salinity Trading Scheme Credit Use

Not applicable to HQPL.

7.4 Compensatory Water to Other Users

Not applicable to HQPL.

8.0 REHABILITATION

There have been limited opportunities to establish rehabilitation at the quarry site, due to the configuration of the quarry and the progressive nature of the working areas. Once works have ceased at the quarry, rehabilitation will be undertaken and completed in accordance with the *Rehabilitation Management Plan*.

A report titled the *Karuah Quarry Rehabilitation and Closure Plan* has been prepared for Karuah Quarry and submitted to the DPIE on 13 February 2020, with this management plan not yet approved. This management plan combines the requirements of Schedule 3 Condition 39 (Rehabilitation Management Plan) and Schedule 3 Condition 44 (Quarry Closure Plan) of DA 265-10-2004 into one document.

8.1 Rehabilitation Performance During Reporting Period

A summary of rehabilitation at Karuah Quarry is outlined in **Table 28.**

Table 28 Summary of Rehabilitation Performance During Reporting Period

Guideline Requirement	Site Comment
Extent of the operations and rehabilitation at completion of the reporting period	Rehabilitation undertaken as per the annual rehabilitation inspection, which included an inspection of the visual bund. No rehabilitation was undertaken in the AEMR period.
Agreed post- rehabilitation land use	The *Rehabilitation and Closure Plan* is currently being updated with HQPL consulting with DPIE and the landowner throughout 2019 and into 2020. This Rehabilitation and Closure Plan proposes to leave the pit as a water storage, with woodland rehabilitation for the rest of the site.
Key rehabilitation performance indicators	The *Rehabilitation and Closure Plan* includes completion criteria.
Renovation or removal of buildings	None during reporting period.
Any other Rehabilitation taken including: • Exploration activities; • Infrastructure; • Dams; and • The installation or maintenance of fences, bunds and any other works.	No rehabilitation undertaken during the AEMR period.
Any rehabilitation areas which have received formal sign off from the Resources Regulator	None.
Variations to activities undertaken to those proposed (including why there were variations and whether the Resources Regulator was notified)	No rehabilitation undertaken during the AEMR period.
Outcomes of trials, research projects and other initiatives	Key notes from the rehabilitation inspection are outlined in **Section 8.2**.

Guideline Requirement	Site Comment
Key issues that may affect successful rehabilitation	Weed management is a continuous management issue for the site.

8.2 Summary of Rehabilitation Inspection

Rehabilitation inspections are completed in Rehabilitation Area 1 annually. The inspection includes reviewing key features such as:

- Ground cover;
- Erosion;
- Overstorey, mid storey and lower storey;
- Nutrient cycling;
- Presence of mortality or die back; and
- Presence of weeds.

There is now only one rehabilitation area at site. It was necessary in 2018 to remove one of the rehabilitation areas to allow safe access to a section of the pit.

The rehabilitation in the Rehabilitation Area is mostly on rocky substrate with some soil. There is minimal erosion, with a good cover of acacias and some eucalypts have established. It should be noted that traditionally acacias are the first species to propagate and eucalypts will emerge years later. Therefore, identification of perished acacias should not cause concern. There is minimal ground cover in some areas; with evidence of weeds (mainly Lantana) mostly along the edge of the rehabilitation area. There is minimal change in groundcover and general conditioning from previous monitoring periods.

The rehabilitation area was subject to a weed spraying regime for Lantana in 2019. Spraying was successful at reducing Lantana and will be continued in 2020.

Table 29 details the rehabilitation status by year in accordance with the key rehabilitation performance indicators.

Table 29 Rehabilitation Status

Quarry Area Type	Previous Reporting Period (Actual)	This Reporting Period (Actual)	Next Reporting Period (Forecast)
	Previous AEMR Period (ha)	Current AEMR Period (ha)	Next AEMR Period (ha)
A. Total Quarry Footprint (including access road in)	28.8 ha	28.8 ha	28.8 ha
B. Total Active Disturbance	25.9 ha	25.9 ha	25.9 ha
C. Land Being Prepared for Rehabilitation	0	0	0
D. Land Under Active Rehabilitation	1.8 ha*	1.8 ha	3.0 ha
E. Completed Rehabilitation (signed off rehabilitation)	0	0	0
F. Remnant Bushland within Disturbance Footprint	1.1 ha	1.1 ha	1.1 ha

*A review of disturbance and rehabilitation areas was completed in 2018. An area previously classified as bushland on the edge of a rehabilitation area has been reclassified as rehabilitation. The disturbance and rehabilitation will continue to be reviewed annually based on up to date aerial imagery.

There was no new rehabilitation during the current reporting period. There is approximately 1.2 ha of rehabilitation proposed in 2020 with a rehabilitation trial planned in the north east corner and on the eastern wall of the pit. See **Section 8.3** for further details.

8.3 Actions for the next Reporting Period

The DPIE 2015 Annual Review Guidelines require the AEMR to outline the rehabilitation actions proposed during the next reporting period. These actions are detailed in **Table 30**.

Table 30 Actions for the Next Reporting Period

Requirement	Site Comment
Describe the steps to be undertaken to progress agreement during next reporting period, where final rehabilitation outcomes have not yet been agreed between stakeholders	Trial is proposed. See row below.
Outline proposed rehabilitation trials, research projects and other initiatives to be undertaken during next reporting period	A rehabilitation trial is proposed to occur in the north east corner and on the eastern wall of the pit. The trial will involve side casting material from the top of the Karuah Quarry onto the benches below. The benches are proposed to be hydro mulched with a seed mix using the hydro mulching cannon. Results would be recorded and if successful utilised for future rehabilitation on benches within the pit. The trial would be conducted in accordance with the *Karuah Quarry Rehabilitation and Closure Plan* (SLR 2020) outlined in **Section 8.4**.
Summary of rehabilitation activities proposed for next report period	Rehabilitation trial is proposed in the north east corner and on the eastern wall of the pit.

8.4 Activities Proposed for 2021 and Beyond

The *Karuah Quarry Rehabilitation and Closure Plan* (SLR 2020) outlines the following approach to rehabilitation and closure. The site has Development Consent approval to operate until 3 June 2027, however the current lease agreement between HQPL and the owner of Lot 11 expires on 6 May 2024. It is proposed that the Karuah Quarry will enter a closure phase for Lot 11 in early 2021. Rehabilitation at Lot 11 will commence in early 2021 and will be completed by 6 May 2021. This will allow three years of rehabilitation monitoring prior to the Lot 11 lease agreement ceasing on 6 May 2024. Lot 21 will continue to be operational until the end of the Development Consent (3 June 2027). A rehabilitation program for Lot 21 will be implemented after this date.

9.0 COMMUNITY

9.1 Community Engagement Activities

In both 2007 and 2011, HQPL sent flyers to nearby neighbours and advertised for expressions of interest for a Community Consultative Committee (CCC). There was no interest received and therefore a CCC was not formed. In the neighbouring Karuah East Quarry, during biannual CCC meetings, community members are able to discuss Karuah Quarry if required.

Following the 2019 IEA, HQPL have committed in the RAR to sending out a leaflet to nearby residents and MCC outlining the environmental performance of the quarry.

9.2 Community Contributions

HQPL feels strongly about supporting the local community and has a long history of community contributions. They are the proud supporters of various local and regional community groups and charities.

Additional information regarding community contributions can be found on the HQPL website at http://hunterquarries.com.au/community/.

9.3 Complaints

No complaints have been received at Karuah Quarry from 2012 to 2016, with one complaint related to noise and one related to dust received in 2017 and 2018 respectively.

A complaint was received by the EPA on 11 March 2019 regarding dust issuing from Karuah Quarry. HQPL investigated the incident and reviewed dust mitigation measures.

When a complaint is received, it is logged and investigated by the Quarry Manager. Feedback is then provided to the complainant and government agencies, as required. This process forms a part of the Karuah Quarry Environmental Management Strategy (EMS).

A telephone number has been established for the purpose of receiving complaints and enquiries from the community and this number is available on the HQPL website (www.hunterquarries.com.au) and is provided on a sign at the entrance to the quarry. The community can contact the quarry on **(02) 4997 5966** as well as through the HQPL website.

10.0 INDEPENDENT AUDIT

There is a requirement for Independent Environmental Audits at Karuah Quarry as per Schedule 4 Condition 6 of the Development Consent.

Within 2 years of the date of this consent, and every 5 years thereafter, unless the Director-General directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development.

The previous audit was undertaken in July 2019. The next audit is due in July 2024.

11.0 INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

11.1 Summary of Incidents

There were no reportable incidents during the 2019 reporting period.

11.2 Summary of Non-Compliances

There were 9 no non-compliances during the reporting period detailed in **Table 31**.

The following non – compliances were identified as part of the IEA undertaken during 2019. Note, the IEA period (25 July 2014 to 31 July 2019) is different to the Annual Review period (2019 calendar year).

Table 31 Non - Compliances in 2019

Condition	Audit Finding	Recommendation
Condition 13 of Schedule 3 AND Condition 14 of Schedule 3	These conditions require the monitoring of PM_{10} and TSP in order to show compliance. No TSP or PM_{10} monitoring has been undertaken during the audit period at Karuah Quarry.	EMM recommends the following: Hunter Quarries enter formal discussions regarding the requirement for PM_{10} / TSP monitoring with DPIE, and following agreement with DPIE, amend the EMP as required. Furthermore, following DPIE agreement, Hunter Quarries to revise EMP to include HVAS, PM_{10} and TSP monitoring for Karuah Quarry based on the HVAS utilised for the Karuah East Quarry and report data in future AEMRs, in accordance with development consent.
Condition 18 of Schedule 3	No formalised evidence or correspondence was provided to show that a Binding Covenant (e.g. Conservation Deed or Agreement) had been prepared and approved for the Offset Area as required by this condition	It is recommended Hunter Quarries follow up with DPIE and OEH in regard to an arrangement (e.g. deed or agreement) which details long term security for the conservation offset area.
Condition 19 of Schedule 3	The Flora and Fauna Management Plan (2014) was sighted as part of the audit. No evidence of correspondence with DPIE for the approval of the 2014 version of the management plan was able to be provided.	It is recommended that Hunter Quarries reviews and updates the Flora and Fauna Management Plan (including sub-plans) and submit the plan to DPIE for approval.
Condition 21 of Schedule 3	Hunter Quarries has prepared and implemented a Remnant Vegetation Conservation Plan which adequately addressed measures for conservation, maintenance and enhancement of the vegetation on site and includes performance measures over time as required by this consent condition. However, it is noted that monitoring efforts for remnant vegetation areas ceased in 2011. The last audit (MCW 2014) recommended that Environmental Monitoring be conducted biannually to ensure all ecological values are monitored to determine any changes within communities. No monitoring has been conducted during the audit period.	It is recommended that Environmental Monitoring be conducted biannually to ensure all ecological values are monitored to determine any changes within communities.
Condition 26	Site Management Plan 2016 approved by DPIE in	EMM recommends that Hunter

Condition	Audit Finding	Recommendation
of Schedule 3	letter dated 1 April 2016, sighted and meets conditions of consent. Audit actions from the previous audit, while addressed in Table 1 of the current Site Water Management Plan (2016), do not appear to be fully implemented at the site, as evidenced by the discharge scenario identified during the site inspection (refer to Condition 24 compliance in Appendix 1 of the Audit Report). It was unclear during the site inspection if a water level sensor was installed on Dam 2 or if an alarm was set for high water levels in the dam. The WMP states that these items have been installed and implemented.	Quarries update the Site Water Management Plan to include a procedure for adequate management of the water discharge valve based on dam water levels and to formalise roles and responsibilities in relation to water discharge events. Hunter Quarries should also confirm that the high-level sensor and alarm system has been implemented at site.
Condition 28 of Schedule 3	The previous audit (MCW 2014) considered part a) of this condition 'non-compliant' and part b) 'compliant'. The following recommendations were made in light of this, including: - Hunter Quarries install a gauge to monitor and record the water levels in the dam; - a level alarm is to be provided for the gauge to warn if high levels occur; - a method to measure the volume of discharge flows from the site to be installed; and - - a systemised approach is applied to managing the risk of dam levels - rising and overtopping, that a number of people on site are made aware of. The WMP (2016) states that the water level in Sediment Dam 2 is monitored via an electronic height sensor, however the sensor did not appear to be operating during the site inspection. The SWMP describes that the flow of water can be estimated based on the flow through the discharge pipeline. The 2018 AEMR outlines that the site has the ability to pump water back up into the pit area (unused section) to increase capacity. Based on the site inspection it is not evident that any of the audit actions from the previous audit had been addressed, as discharge was occurring during the inspection after a 10 mm rainfall event, when no discharges had previously occurred at the site according to documentation reviewed for the audit.	EMM recommends the following: Hunter Quarries to revise the Site Water Management Plan (SWMP) to formalise adequate management procedures of discharge point.
Condition 36 of Schedule 3	The Bushfire Management Plan (BMP-GSSE dated August 2006) was updated and finalised in December 2014. No evidence of approval of the plan from council or RFS was available for observation. A copy of the plan was sighted during the audit. Plant and equipment available onsite for firefighting purposes includes: - water storage dam (Sediment Dam 2) with a permanent fill point for tankers, and a 50,000L clean water tank; - water tanker and earth tanking equipment; fire extinguishers; warning alarm siren; and - portable radios. Hunter Quarries also employee site induction training specific to emergency response. Site Induction Training was observed and noted.	It is recommended that Hunter Quarries follow-up with Council and RFS regarding the approval of this plan so that it is approved in accordance with the condition requirement.
Condition 4 of Schedule 4	The EMP does not appear to have been updated and approved by DPIE following the previous IEA.	Hunter Quarries is to review and update EMP within specified

Condition	Audit Finding	Recommendation
		timeframe of the completion of the IEA (2019) in accordance with this consent condition.
Condition 10 of Schedule 4	No evidence supplied of submission of reports in accordance with the communications strategy detailed in the EMS.	EMM recommend that these reports are prepared as discussed in the EMS and as required by this condition of consent. Alternatively, -a CCC for Karuah Quarry should be implemented; or -the EMS should be revised to detail an alternative communications strategy that can be met by Hunter Quarries.

HQPL prepared a Response to Audit Recommendations (RAR) which was submitted to DPIE 19 February 2020. This was accepted by DPIE 28 February 2020.

12.0 ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

Table 32 outlines the proposed actions in the next AEMR.

Table 32 Proposed Actions in the Next AEMR

Proposed Action	Timeline	Management Plan Requires Revision (Y/N)
Continue to update the website with monitoring data and key environment and community information.	Continuous	No
Continue weed reduction program (target rehabilitation and conservation areas).	Continuous as required.	No
Undertake a rehabilitation trial in the north east corner and on the eastern wall of the pit.	2020	No
Remain within licensing and production limits.	Continuous	No
Continuation of community support program.	Continuous	No
Completion of Community Engagement Strategy	2020	No
Ensure the *Karuah Quarry Rehabilitation and Closure Plan* is approved. Commencing planning for rehabilitation in Lot 11 commencing 2021.	Q2 2020	No
Update to relevant environmental management plans including figures	Q2 2020	Yes

13.0 REFERENCES

The following documents and reports have been used to assist in writing the quarry's AEMR:

DoP (2005) *Development Consent DA265-10-2004*.

DEC-EPA, (2002) *Environment Protection Licence 111569*.

Asquith & deWitt (ADW) (2004) *Environmental Impact Statement: Proposed Hard Rock Quarry Extension*.

SLR Consulting (2019) *Karuah Quarry Biannual Noise Monitoring Assessment May 2019*

SLR Consulting (2015 Review) *Environmental Management Strategy*

SLR Consulting (2015 Review) *Environmental Monitoring Plan*

SLR Consulting (2015 Review) *Rehabilitation Management Plan*

SLR Consulting (2015 Review) *Bushfire Management Plan*

SLR Consulting (2015 Review) Site *Water Management Plan*

Thearle (2019) *Karuah Quarry Noise Monitoring October 2019*

APPENDIX 1 – Development Consent

Development Consent

Section 80 of the *Environmental Planning and Assessment Act 1979*

I, the Minister for Infrastructure, Planning and Natural Resources, approve the Development Application referred to in Schedule 1, subject to the conditions in Schedules 2 to 4.

These conditions are required to:
- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the on-going environmental management of the development.

SIGNED

Craig Knowles, MP
Minister for Infrastructure, Planning and Natural Resources

Sydney 3 June 2005 File No. S04/00635

SCHEDULE 1

Development Application:	DA 265-10-2004.
Applicant:	Hunter Quarries Pty Limited.
Consent Authority:	Minister for Infrastructure, Planning and Natural Resources.
Land:	Lot 21 DP 1024341, Lot 11 DP 1024564 & Lot 12 DP 1024564.
Proposed Development:	The development includes: • implementing the remainder of the approved Stage 1 quarry operation; • extending the quarry operations into the Stage 2 area • upgrading and using existing infrastructure on site; • rehabilitating the site by re-contouring and revegetating exposed surfaces; and • producing up to 500,000 tonnes of product a year over the next 22 years.
State Significant	The proposal is classified as State significant development under section 76A(7) of the *Environmental Planning and Assessment Act 1979* as it is an extractive industry that would extract more than 200,000 tonnes of material a year.
Integrated Development:	The proposal is classified as integrated development, under section 91 of the *Environmental Planning and Assessment Act 1979* as it requires an additional approval under the *Protection of the Environment Operations Act 1997.*

Designated Development:	The proposal is classified as designated development under section 77A of the *Environmental Planning and Assessment Act 1979* as it is an extractive industry that would "obtain or process for sale, or reuse, more than 30,000 cubic metres of extractive material per year…". Consequently, it meets the criteria for designated development in schedule 3 of the *Environmental Planning and Assessment Regulation 2000*.

Notes:

- *To find out when this development consent becomes effective, see section 83 of the Environmental Planning and Assessment Act 1979* (EP&A Act);
- *To find out when this development consent is liable to lapse, see section 95 of the EP&A Act; and*
- *To find out about appeal rights, see section 97 of the EP&A Act*

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DEFINITIONS

AEMR	Annual Environmental Management Report
Applicant	Hunter Quarries Pty Limited, or its successors
BCA	Building Code of Australia
CCC	Community Consultative Committee
Council	Great Lakes Shire Council
DA	Development Application
Day	Day is defined as the period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
DEC	Department of Environment and Conservation
Department	Department of Infrastructure, Planning and Natural Resources
Director-General	Director-General of the Department of Infrastructure, Planning and Natural Resources, or delegate
DPI	Department of Primary Industry
EIS	Environmental Impact Statement titled 'Environmental Impact Statement to accompany a State Significant Development Application for an existing Hard Rock Quarry, Property: Lot 21 DP 1024341 and Lot 11 DP 1024564, Pacific Highway, Karuah', Volumes 1, 2 & 3, dated October 2004 and prepared by Asquith and deWitt Pty Ltd
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPL	Environment Protection License
Evening	Evening is defined as the period from 6pm to 10pm
GTA	General Terms of Approval
Minister	Minister for Infrastructure and Planning, or delegate
Night	Night is defined as the period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
POEO Act	*Protection of the Environment Operations Act 1997*
Privately owned land	Land not owned by the Applicant or its related companies or where a private agreement does not exist between the Applicant and the land owner
Receiver	As defined in the *NSW Industrial Noise Policy* (EPA 2000)
Site	Land to which the DA applies (Lot 21 DP 1024341, Lot 11 DP 1024564 & Lot 12 DP 1024564)
Stage 1	Existing quarry operation approved by Great Lakes Shire Council on 11 November 1997 (DA 302/97) including the 'Karuah Red quarry' site, as marked on the map in Appendix 1.
Stage 2	Proposed quarry extension as marked on the map in Appendix 1.

SCHEDULE 2
ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. The Applicant shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development.

TERMS OF APPROVAL

2. The Applicant shall carry out the development generally in accordance with the:
   (a) DA 265-10-2004;
   (b) EIS titled *Environmental Impact Statement to accompany a State Significant Development Application for an existing Hard Rock Quarry, Property: Lot 21 DP 1024341 and Lot 11 DP 1024564, Pacific Highway, Karuah*, Volumes 1, 2 & 3, dated October 2004 and prepared by Asquith and deWitt Pty Ltd; and
   (c) conditions of this development consent.

3. If there is any inconsistency between the above, the conditions of this consent shall prevail to the extent of the inconsistency.

4. The Applicant shall comply with any reasonable requirement/s of the Director-General arising from the Department's assessment of:
   (a) any reports, plans or correspondence that are submitted in accordance with this development consent; and
   (b) the implementation of any actions or measures contained in these reports, plans or correspondence.

LIMITS ON APPROVAL

5. This consent lapses 22 years after the date it commences.

6. The Applicant shall not produce or transport more than 500,000 tonnes of material a year from the development.

7. The Applicant shall not extract more that 11.2 million tonnes of andecite from the site within the period of this consent.

SURRENDER OF CONSENTS

8. Within 6 months of the date of this consent, the Applicant shall surrender all existing development consents and continuing use rights associated with the site, in accordance with clause 97 of the EP&A Regulation.

STRUCTURAL ADEQUACY

9. The Applicant shall ensure that any new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

   Notes:
   - *Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for any building works.*
   - *Part 8 of the EP&A Regulation sets out the detailed requirements for the certification of development.*

DEMOLITION

10. The Applicant shall ensure that all demolition work is carried out in accordance with *AS 2601-2001: The Demolition of Structures,* or its latest version.

OPERATION OF PLANT AND EQUIPMENT

11. The Applicant shall ensure that all plant and equipment at the site, or used in connection with the development, are:
    a) maintained in a proper and efficient condition; and
    b) operated in a proper and efficient manner.

IDENTIFICATION OF BOUNDARIES

12. Within 6 months of the date of this consent, the Applicant shall:
    (a) engage a registered surveyor to mark out the boundaries of the approved limits of extraction under Stage 1 and Stage 2;
    (b) submit a survey plan of these boundaries and the proposed timing of extraction within Stage 1 and Stage 2 to the Director-General; and
    (c) ensure that these boundaries are clearly marked at all times in a permanent manner that allows operating staff and inspecting officers to clearly identify these limits.

SECTION 94 CONTRIBUTIONS

13. The Applicant shall pay a contribution of 4.7 cents per cubic meter of material per kilometere hauled to Council for the maintenance/repair of public roads in accordance with Council's Section 94 Plan for road haulage, to the satisfaction of Council.

    Note: The applicable contribution rate is reviewed annually by Council and new rates, if applicable become operational from 1 July each year. The contribution is to be paid at the rate that is current at the time.

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

[1]NOISE

Noise Impact Assessment Criteria

1. The Applicant shall ensure that the noise generated by the development does not exceed the criteria specified in Table 2 at any residence or noise sensitive receptor on privately owned land.

Time Period	Noise Limits dB(A)
	$L_{Aeq\ (15minute)}$
Day (7am to 6pm) Monday to Friday and 7am to 1pm Saturday	48
Evening (6pm to 10pm) Monday to Friday	47
At all other times	46

Table 2: Noise Impact Assessment Criteria for the Development

Notes:

- *Noise from the site is to be measured within thirty meters of any residence or other noise sensitive areas to determine compliance with the noise criteria set out in Table 2.*
- *$LA_{eq(15\ minute)}$ is the equivalent continuous noise level - the level of noise equivalent to the energy average of noise levels occurring over a measurement period.*
- *For the purpose of noise measures required for this condition, the LA_{eq} noise level must be measured or computed at the point defined in this condition over a period of 15 minutes using "FAST" response on the sound level meter.*
- *For the purpose of the noise criteria for this condition, 5dBA must be added to the measured level if the noise is substantially tonal or impulsive in character. The location or point of impact can be different for each development, for example, at the closest residential receiver or at the closest boundary of the development. Measurement locations can be:*
  - *a) 1 meter from the facade of the residence for night time assessment;*
  - *b) at the residential boundary;*
  - *c) 30 meters from the residence (rural situations) where boundary is more than 30 meters from residence.*
- *The noise emission limits identified in this condition apply for prevailing meteorological conditions (winds up to 3m/s), except under conditions of temperature inversions. Noise impacts that may be enhanced by temperature inversions must be addressed by:*
  - *a) documenting noise complaints received to identify any higher level of impacts or patterns of temperature inversions;*
  - *b) where levels of noise complaints indicate a higher level of impact then actions to quantify and ameliorate any enhanced impacts under temperature inversions conditions should be developed and implemented.*

Operating Hours

2. The Applicant shall comply with the operating hours in Table 1:

Activity	Days of the Week	Time
• Construction • Extraction and processing • Internal and off-site transportation of product	Monday – Friday	7am to 6pm
	Saturday	7am to 1pm
	Sunday and public holidays	No work at any time
Minor maintenance works on plant and machinery	7 days a week and public holidays	7am to 6pm

Table 1: Operating Hours for the Development

Note: Delivery of material outside of the hours of operation permitted by condition 2 is only allowed, where that delivery is required by the police or other authorities for safety reasons; and/or where the operation or personnel or equipment are endangered. In such circumstances, prior notification should be provided to the DEC and affected residents as soon as possible, or within a reasonable period in the case of emergency.

Noise Monitoring

3. Within 6 months of the date of this consent, the Applicant shall prepare and implement a Noise Monitoring Program for the development to evaluate compliance with the noise impact assessment criteria in this consent, in consultation with the DEC, and to the satisfaction of the Director-General.

[1] Incorporates DEC GTAs

[2]BLASTING AND VIBRATION

Airblast Overpressure Criteria

4. The Applicant shall ensure that the airblast overpressure level from blasting at the development does not exceed the criteria in Table 3 at any residence or sensitive receiver on privately owned land.

Airblast overpressure level [dB(Lin Peak)]	Allowable exceedance
115	5% of the total number of blasts over a period of 12 months
120	0%

Table 3: Airblast Overpressure Limits

Ground Vibration Criteria

5. The Applicant shall ensure that the peak particle velocity from blasting at the development does not exceed the criteria in Table 4 at any residence or sensitive receiver on privately owned land.

Peak particle velocity (mm/s)	Allowable exceedance
5	5% of the total number of blasts over a period of 12 months
10	0%

Table 4: Ground Vibration Limits

Blasting Restrictions

6. Blasting at the site may only take place:
   a) between 9am and 3pm Monday to Friday inclusive;
   b) once per week; and
   c) at such other times as may be approved by the DEC.

Public Notice

7. Within 6 months of this consent, the Applicant shall establish a blasting notification register of landowners and other interested persons, within 2 km of the quarry.

8. Throughout the life of the development, the Applicant shall notify all registered individuals of up coming blasting operations at the development site.

Property Inspections

9. Within 3 months of this consent, the Applicant shall advise all landowners within 1 kilometer of the development that they are entitled to a structural property inspection.

10. If the Applicant receives a written request for a structural property inspection from any landowner within 1 kilometer of the development, the Applicant shall within 3 months of receiving this request:
    a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to inspect the condition of any building or structure on the land, and if necessary recommend measures to mitigate any potential blasting impacts; and
    b) give the landowner a copy of the property inspection report.

Property Investigations

11. If any landowner within 1 kilometre of the site claims that buildings and/or structures on his/her land have been damaged as a result of blasting at the development, the Applicant shall within 3 months of receiving this request:
    (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to investigate the claim; and
    (b) give the landowner a copy of the property investigation report.

[2] Incorporates DEC GTAs

If this independent property investigation confirms the landowner's claim, and both parties agree with these findings, then the Applicant shall repair the damages to the satisfaction of the Director-General.

If the Applicant or landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Director-General for resolution.

If the matter cannot be resolved within 21 days, the Director-General shall refer the matter to an Independent Dispute Resolution Process (see Appendix 3).

Operating Conditions

12. The Applicant shall implement all practical measures to ensure the safety of people, and avoid and/or minimise any blasting impacts of the development on any privately owned land

[3]AIR QUALITY

Air Quality Impact Assessment Criteria

13. The Applicant shall ensure that the dust emissions generated by the development do not cause additional exceedances of the ambient air quality impact assessment criteria listed in Tables 6, 7, and 8 at any residence on, or on more than 25 percent of, any privately owned land.

Pollutant	Averaging period	Criterion
Total suspended particulate (TSP) matter	Annual	90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	30 µg/m^3

Table 6: Long Term Impact Assessment Criteria for Particulate Matter

Pollutant	Averaging period	Criterion
Particulate matter < 10 µm (PM_{10})	24 hour	50 µg/m^3

Table 7: Short Term Impact Assessment Criterion for Particulate Matter

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m^2/month	4 g/m^2/month

Table 8: Long Term Impact Assessment Criteria for Deposited Dust

Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 2003, AS 3580.10.1-1991: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.

Operating Conditions

14. The Applicant shall implement all practical measures to minimise and/or prevent the emission of dust from the site.

Monitoring

15. Within 6 months of the date of this consent, the Applicant shall prepare and implement an Air Quality Monitoring Program for the development to evaluate compliance with the air quality impact assessment criteria in this consent, in consultation with the DEC, and to the satisfaction of the Director-General.

[4]METEOROLOGICAL MONITORING

16. Within 6 months of this consent, the Applicant shall ensure that there is a suitable meteorological station operating in the vicinity of the development in accordance with the requirements in Approved Methods for Sampling of Air Pollutants in New South Wales, and to the satisfaction of the DEC and the Director-General.

[3] Incorporates DEC GTAs

[4] Incorporates DEC GTAs

FLORA AND FAUNA

Conservation Offset Area

17. The Applicant shall establish, conserve, and maintain the area of vegetation in Lot 12 DP 1024564 marked on the map in Appendix 2, to the satisfaction of the Director- General.

18. Within 3 years of this consent, the Applicant shall implement suitable arrangements to provide long term security for the conservation offset area, to the satisfaction of the Director-General.

    Note: The long term security of the offset can be achieved through a combination of the following: Deed of Agreement with the Minister, rezoning the land under the Great Lakes Local Environment Plan 1996, caveats on the title under the Conveyancing Act 191, etc….

Flora and Fauna Management Plan

19. Before carrying out any clearing associated with Stage 2 of the development, the Applicant shall prepare, and subsequently implement, a Flora and Fauna Management Plan for the development to the satisfaction of the Director-General. This plan must include:
    a) a Vegetation Clearing Protocol;
    b) a Remnant Vegetation Conservation Plan; and
    c) a Conservation Offset Management Plan.

20. The Vegetation Clearing Protocol shall describe the procedures that would be implemented for:
    a) minimising the areas of remnant vegetation to be cleared;
    b) delineating areas of remnant vegetation to be cleared;
    c) protecting areas outside of the disturbance areas;
    d) undertaking pre-clearance surveys (including observations/surveys for threatened species);
    e) identification of fauna management strategies;
    f) conserving and reusing topsoil;
    g) collecting seed from the site for rehabilitation works;
    h) salvaging and reusing material from the site for habitat enhancement; and
    i) controlling weeds.

21. The Remnant Vegetation Conservation Plan shall:
    a) describe what measures would be implemented to conserve, maintain and enhance the vegetation on the site which will not be cleared as part of the development (in particular sub-populations of Tetratheca juncea (Black-eyed Susan)); and
    b) describe how the performance of these measures would be monitored over time.

22. The Conservation Offset Management Plan shall:
    a) describe the habitat in the conservation offset area for following threatened species:
        - Phascogale tapoatafa (Brush-tailed Phascogale);
        - Ninox strenua (Powerful Owl);
        - Phascolarctos cinereus (Koala); and
        - Tetratheca juncea (Black-eyed Susan).
    b) justify why this area is suitable as a conservation offset for the species described in (a) above;
    c) establish baseline data for the existing habitat in the proposed conservation offset area;
    d) describe how the proposed conservation offset area would be managed, including long-term measures for:
        - feral animal control;
        - weed management;
        - stock management; and
        - bush fire management.
    e) describe how the ecological performance of the conservation offset area would be monitored over time.

Reporting

23. The Applicant shall include a progress report on the implementation and performance of the Flora and Fauna Management Plan and the Conservation Offset Strategy in the AEMR.

[5]SURFACE WATER

Pollution of Waters

24. Except as may be expressly provided by an Environment Protection License, the Applicant shall comply with section 120 of the *Protection of the Environment Operations Act 1997* during the carrying out of the development.

Water Discharge Limit

25. The Applicant shall only discharge water from the development in accordance with the provisions of a DEC Environment Protection License

Site Water Management Plan

26. Within 12 months of the date of this consent, the Applicant shall prepare, and subsequently implement, a Site Water Management Plan for the development, in consultation with the DEC, and to the satisfaction of the Director-General. The plan shall detail how site water management on site will be integrated with existing surface water management and erosion and sediment control systems and address surface water management and erosion and sediment control at both the construction and operation phases of the development. This plan must include:
    a) an Erosion and Sediment Control Plan;
    b) a Surface Water Monitoring Program; and
    c) a site water balance.

Erosion and Sediment Control

27. The Erosion and Sediment Control Plan must:
    a) be consistent with the requirements of the Department of Housing's Managing Urban Stormwater: Soils and Construction manual;
    b) identify activities that could cause soil erosion and generate sediment;
    c) describe what measures would be implemented to minimise soil erosion and off-site sediment transport from the following locations:
        - the active quarry face and pit;
        - product and top soil stockpile sites;
        - haul roads;
        - workshop areas;
        - rehabilitation areas; and
        - all other exposed and disturbed surfaces within the site.
    d) describe the location and function of erosion and sediment control structures and their capacity to contain runoff in relation to above average rainfall events;
    e) describe what measures would be implemented to maintain the structures over time;
    f) describe how the effectiveness of the Erosion and Sediment Control Plan will be measured and monitored.

Surface Water Monitoring

28. The Applicant shall:
    a) measure:
        - the volume of water discharged from the site via licensed discharge points;
        - water use on the site;
        - water transfers across the site; and
        - dam and water structure storage levels.
    b) regularly monitor the quality of the surface water discharged from the licensed discharge points on the site;

    to the satisfaction of the DEC and the Director-General.

VISUAL IMPACT

29. The Applicant shall
    a) implement all practicable measures to minimise the visual impacts of the development;
    b) retain, re-vegetate and subsequently maintain a visual bund within the Stage 1 works area (in accordance with Figures 13 and 14 of the EIS) to minimise the visual impacts of development;
    c) include a progress report on the re-vegetation and maintenance of the visual bund in the AEMR,

    to the satisfaction of the Director General.

[5] Incorporates DEC GTAs

[6]TRAFFIC AND TRANSPORT

Pacific Highway

30. The Applicant shall ensure that vehicular access to and from the quarry and the Pacific Highway is via the newly constructed grade separated interchange at Branch Lane.

Parking

31. The Applicant shall provide sufficient parking on-site for all quarry-related traffic to the satisfaction of the Director-General.

Road Haulage

32. The Applicant shall ensure that all loaded vehicles entering or leaving the site are covered.

33. The Applicant shall ensure that sediment and/or other pollutants are not tracked onto any public roads servicing the development.

[7]WASTE MANAGEMENT

34. The Applicant shall:
    a) monitor the amount of waste generated by the development;
    b) investigate ways to minimise waste generated by the development;
    c) implement reasonable and feasible measures to minimise waste generated by the development; and
    d) report on waste management and minimisation in the AEMR.

    to the satisfaction of the Director-General.

35. The Applicant must not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing or disposal or any waste generated at the site to be disposed of at the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997.

    Note: the above condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the site if it requires an environment protection licence under the Protection of the Environment Operations Act 1997.

BUSHFIRE MANAGEMENT

36. The Applicant shall:
    a) ensure that the development is suitably equipped to respond to any fires on-site; and
    b) assist the Rural Fire Service and Emergency Services as much as possible if there is a fire on-site.; and within 6 months of the date of this consent, the Applicant shall prepare a conservation sensitive Bushfire Management Plan for the development, to the satisfaction of Council and the Rural Fire Service.

PRODUCTION DATA

37. The Applicant shall:
    a) provide annual production data to the DPI (Minerals) using the standard form for that purpose; and
    b) include a copy of this data in the AEMR.

REHABILITATION

38. The Applicant shall progressively rehabilitate the site to the satisfaction of the Director-General.

Rehabilitation Management Plan

39. Within 6 months of the date of this consent, the Applicant shall prepare, and subsequently implement, a Rehabilitation Management Plan for the site, which integrates rehabilitation works for both Stage 1 and Stage 2 areas, to the satisfaction of the Director-General: This plan must:
    a) identify the disturbed area at the site (both Stage 1 and Stage 2);
    b) describe in general the short, medium, and long term measures that would be implemented to rehabilitate the site;
    c) describe in detail the measures that would be implemented over the next 5 years to rehabilitate the site; and
    d) describe in detail how rehabilitation measures will be integrated with:

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[6] Incorporates DEC GTAs

[7] Incorporates DEC GTAs

- erosion and sediment control works on site;
- remnant vegetation and habitat enhancement and conservation works; and
- visual screening works;

e) describe how the performance of these measures would be monitored over time.

40. Within 5 years of providing the Rehabilitation Management Plan to the Director-General, and every 5 years thereafter, the Applicant shall review and update the plan to the satisfaction of the Director-General.

Reporting

41. The Applicant shall include a progress report on the Rehabilitation Management Plan in the AEMR.

Rehabilitation Bond

42. Within 6 months of the date of this consent, the Applicant shall lodge a suitable conservation and rehabilitation bond for the development with the Director-General. The sum of the bond shall be calculated at $\$2.50/m^2$, or as otherwise agreed to with the Director-General, for the area of disturbance at the development.

    Notes:
    - *If the rehabilitation is completed to the satisfaction of the Director-General, the Director-General will release the rehabilitation bond.*
    - *If the rehabilitation is not completed to the satisfaction of the Director-General, the Director-General will call in all, or part of, the rehabilitation bond, and arrange for the satisfactory completion of these works.*

43. Within 3 years of lodging the rehabilitation bond with the Director-General, and every 5 years thereafter, unless the Director-General directs otherwise, the Applicant shall review, and if necessary revise, the sum of the rehabilitation bond to the satisfaction of the Director-General. This review must consider:
    a) the effects of inflation;
    b) any changes to the area of disturbance; and
    c) the performance of any progressive rehabilitation which has been undertaken at the site.

QUARRY CLOSURE PLAN

44. At least 3 years prior to the cessation of quarrying, the Applicant shall prepare a Quarry Closure Plan for the development, in consultation with the Council, and to the satisfaction of the Director-General. The plan must:
    a) define the objectives and criteria for quarry closure;
    b) investigate options for the future use of the site, including any final void(s);
    c) describe the measures that would be implemented to minimise or manage the ongoing environmental effects of the development; and
    d) describe how the performance of these measures would be monitored over time.

SCHEDULE 4
ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING

ENVIRONMENTAL MANAGEMENT STRATEGY

1. Within 6 months of the date of this consent, the Applicant shall prepare, and subsequently implement an Environmental Management Strategy for the development to the satisfaction of the Director-General. This strategy must:
   a) provide the strategic context for environmental management of the development;
   b) identify the statutory requirements that apply to the development;
   c) describe in general how the environmental performance of the development would be monitored and managed during the development;
   d) describe the procedures that would be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the development;
      - receive, handle, respond to, and record complaints;
      - resolve any disputes that may arise during the course of the development;
      - respond to any non-compliance;
      - manage cumulative impacts; and
      - respond to emergencies; and
   e) describe the role, responsibility, authority, and accountability of all the key personnel involved in environmental management of the development.

2. Within 3 months of the completion of the Independent Environmental Audit (see condition 6 below), the Applicant shall review, and if necessary revise, the Environmental Management Strategy to the satisfaction of the Director-General.

ENVIRONMENTAL MONITORING PROGRAM

3. Within 6 months of the date of this consent, the Applicant shall prepare an Environmental Monitoring Program for the development, in consultation with the relevant agencies, and to the satisfaction of the Director-General. This program must consolidate the various monitoring requirements in Schedule 4 of this consent into a single document.

4. Within 3 months of the completion of the Independent Environmental Audit (see condition 6 below), the Applicant shall review, and if necessary revise, the Environmental Monitoring Program to the satisfaction of the Director-General.

ANNUAL REPORTING

5. The Applicant shall prepare and submit an AEMR to the Director-General and the relevant agencies. This report must address:
   a) identify the standards and performance measures that apply to the development;
   b) describe the works carried out in the last 12 months;
   c) describe the works that will be carried out in the next 12 months;
   d) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;
   e) include a summary of the monitoring results for the development during the past year;
   f) include an analysis of these monitoring results against the relevant:
      - impact assessment criteria;
      - monitoring results from previous years; and
      - predictions in the EIS;
   g) identify any trends in the monitoring results over the life of the development;
   h) identify any non-compliance during the previous year; and
   i) describe what actions were, or are being taken to ensure compliance.

INDEPENDENT ENVIRONMENTAL AUDIT

6. Within 2 years of the date of this consent, and every 5 years thereafter, unless the Director-General directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
   a) be conducted by a suitably qualified, experienced, and independent person whose appointment has been endorsed by the Director-General;
   b) be consistent with *ISO 19011:2002 - Guidelines for Quality and/ or Environmental Systems Auditing*, or updated versions of this guideline;
   c) assess the environmental performance of the development, and its effects on the surrounding environment;
   d) assess whether the development is complying with the relevant standards, performance measures, and statutory requirements;

e) review the adequacy of the Applicant's Environmental Management Strategy and Environmental Monitoring Program; and
f) if necessary, recommend measures or actions to improve the environmental performance of the development, and/or the environmental management and monitoring systems.

7. Within 3 months of commissioning this audit, or as otherwise agreed by the Director-General, the Applicant shall submit a copy of the audit report to the Director-General, with a response to the recommendations contained in the audit report.

COMMUNITY CONSULTATIVE COMMITTEE

8. Within 3 months of the date of this consent the Applicant shall seek expressions of interest from members of the local community to serve as a member of a Community Consultative Committee for the development.

9. If at least two members of the local community express an interest to serve on the CCC the Applicant shall establish the CCC. The CCC shall:
(a) be comprised of:
- 2 representatives from the Applicant, including the person responsible for environmental management at the quarry;
- 1 representative from Council (if available); and
- at least 2 representatives from the local community,

whose appointment has been approved by the Director-General in consultation with the Council;
(b) be chaired by an independent chairperson, whose appointment has been endorsed by the Director-General;
(c) meet at least twice a year; and
(d) review and provide advice on the environmental performance of the development, including any construction or environmental management plans, monitoring results, audit reports, or complaints.

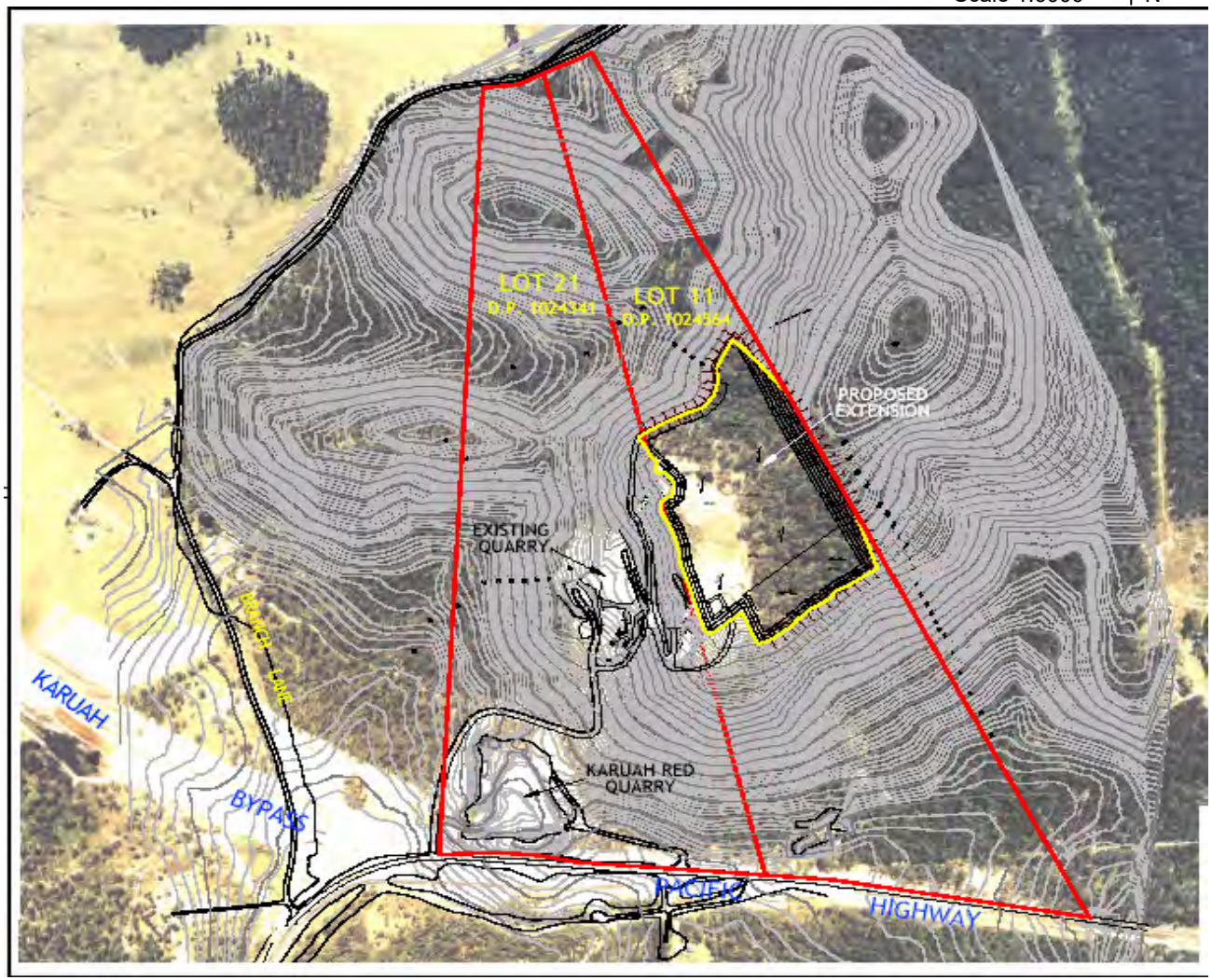
In addition, the Applicant shall, at its own expense:
(a) ensure that 2 of its representatives attend the Committee's meetings;
(b) provide the Committee with regular information on the environmental performance and management of the development;
(c) provide meeting facilities for the Committee;
(d) arrange site inspections for the Committee, if necessary;
(e) take minutes of the Committee's meetings;
(f) make these minutes available to the public for inspection within 14 days of the Committee meeting, or as agreed to by the Committee;
(g) respond to any advice or recommendations the Committee may have in relation to the environmental management or performance of the development; and
(h) forward a copy of the minutes of each Committee meeting, and any responses to the Committee's recommendations to the Director-General within a month of acceptance of the minutes by the Committee.

10. If the Applicant does not receive at least two expressions of interest to serve on the CCC the Applicant shall instead develop a communications strategy for consulting with Council and residents within 2 km of the development, to the satisfaction of the Director-General. This strategy should outline how the Applicant will advise Council and nearby residents on its environmental management plans, monitoring results, audit reports or complaints. This communication should occur twice a year.

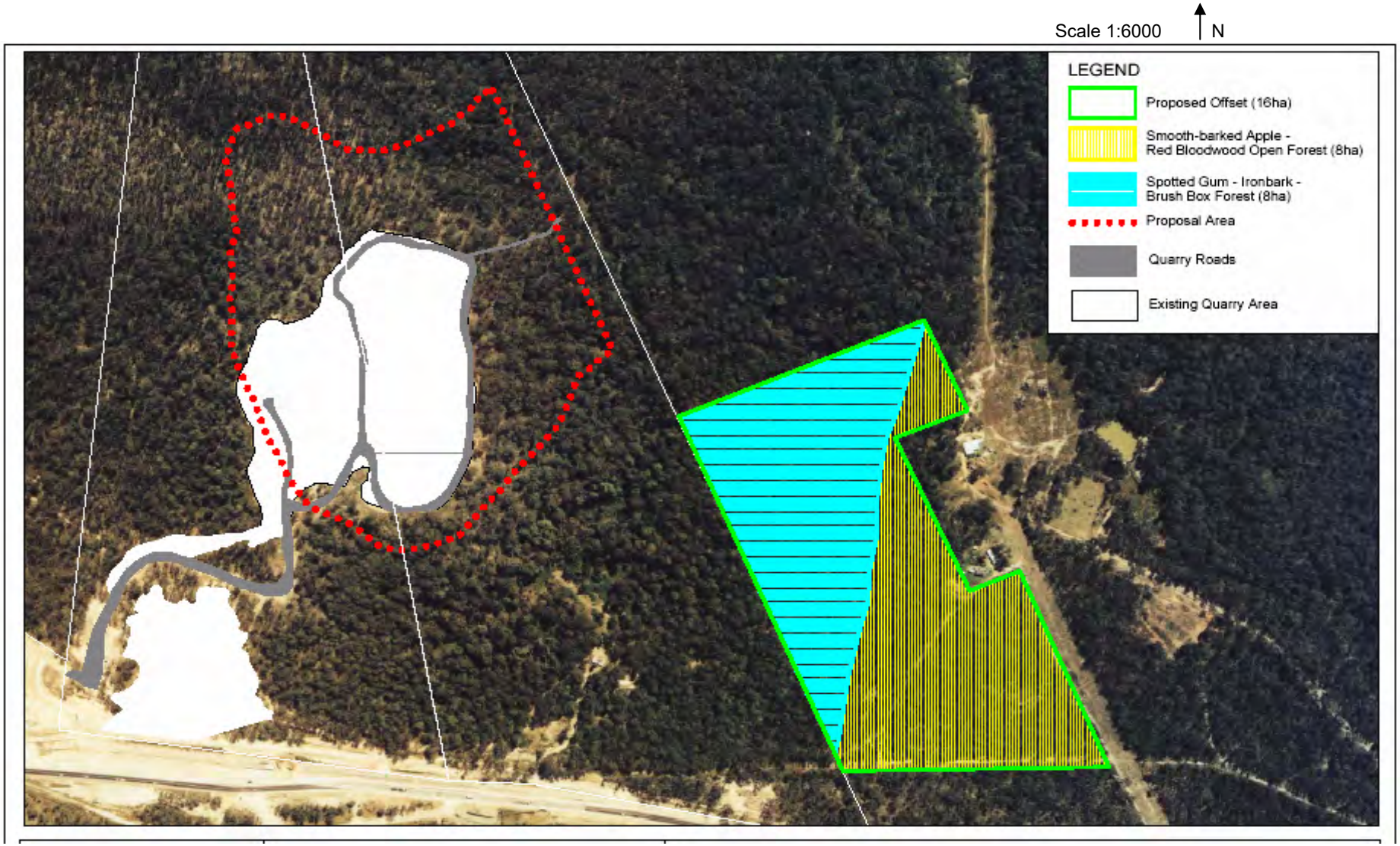
Notes: If during the course of the development, a Community Consultative Committee that has been established is found to be no longer effective, the Director-General may agree to its disbandment.

APPENDIX 1: STAGE 1 AND STAGE 2 QUARRY OPERATIONS

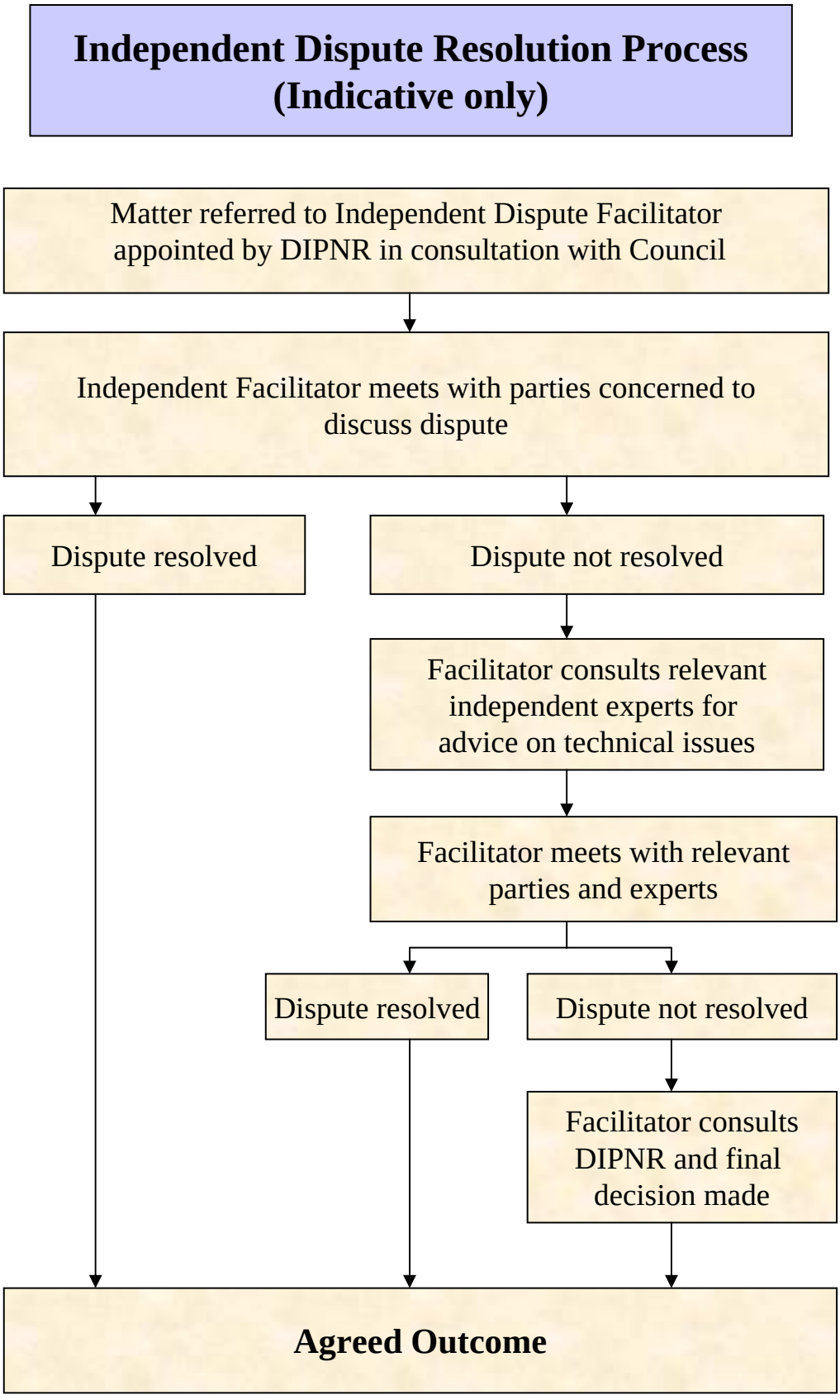
Scale 1:6000 N



APPENDIX 2: CONSERVATION OFFSET AREA



APPENDIX 3: DISPUTE RESOLUTION PROCESS



APPENDIX 2 – Environment Protection Licence

Environment Protection Licence

Licence - 11569

Licence Details	
Number:	11569
Anniversary Date:	16-January

Licensee

HUNTER QUARRIES PTY LTD

PO BOX 3284

THORNTON NSW 2322

Premises

KARUAH QUARRY

CORNER OF ANDERSITE ROAD AND THE BRANCH LANE

KARUAH NSW 2324

Scheduled Activity

Crushing, grinding or separating

Extractive activities

Fee Based Activity	Scale
Crushing, grinding or separating	> 100000-500000 T annual processing capacity
Land-based extractive activity	> 100000-500000 T annual capacity to extract, process or store

Region

North - Hunter

Ground Floor, NSW Govt Offices, 117 Bull Street

NEWCASTLE WEST NSW 2302

Phone: (02) 4908 6800

Fax: (02) 4908 6810

PO Box 488G NEWCASTLE

NSW 2300

Environment Protection Licence

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Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

Licence - 11569

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

HUNTER QUARRIES PTY LTD
PO BOX 3284
THORNTON NSW 2322

subject to the conditions which follow.

Environment Protection Licence

Licence - 11569

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Crushing, grinding or separating	Crushing, grinding or separating	> 100000 - 500000 T annual processing capacity
Extractive activities	Land-based extractive activity	> 100000 - 500000 T annual capacity to extract, process or store

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
KARUAH QUARRY
CORNER OF ANDERSITE ROAD AND THE BRANCH LANE
KARUAH
NSW 2324
LOT 21 DP 1024341, LOT 11 DP 1024564, LOT 12 DP 1024564

A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

Environment Protection Licence

Licence - 11569

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Discharge to waters Discharge quality monitoring	Discharge to waters Discharge quality monitoring	Discharge from sediment dam No 2 identified as "Water Monitoring Site" as shown on map titled "Karuah Hard Rock Quarry Environmental Monitoring Locations, Figure 1" dated 23/06/2014 and filed as EPA document DOC16/422333 on File EF13/3101

P1.3 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Air

EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
2	Dust deposition monitoring		Dust deposition gauge DDG1, as shown on map titled "Karuah Hard Rock Quarry Environmental Monitoring Locations, Figure 1" dated 23/06/2014 and filed as EPA document DOC16/422333 on File EF13/3101
3	Dust deposition monitoring		Dust deposition gauge DDG2, as shown on map titled "Karuah Hard Rock Quarry Environmental Monitoring Locations, Figure 1" dated 23/06/2014 and filed as EPA document DOC16/422333 on File EF13/3101
4	Dust deposition monitoring		Dust deposition gauge DDG3, as shown on map titled "Karuah Hard Rock Quarry Environmental Monitoring Locations, Figure 1" dated 23/06/2014 and filed as EPA document DOC16/422333 on File EF13/3101
5	Dust deposition monitoring		Dust deposition gauge DDG4, as shown on map titled "Karuah Hard Rock Quarry Environmental Monitoring Locations, Figure 1" dated 23/06/2014 and filed as EPA document DOC16/422333 on File EF13/3101

Environment Protection Licence

Licence - 11569

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Concentration limits

L2.1 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.

L2.4 Water and/or Land Concentration Limits

POINT 1

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Oil and Grease	Visible				5 &/or non-visible
pH	pH				6.5 - 8.5
Total suspended solids	milligrams per litre				50

Note: The oil and grease limit specified in the table above is defined as not more than 5 milligrams per litre (mg/L) and/or no visible oil and grease.

L3 Waste

L3.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the

premises to be disposed of at the premises, except as expressly permitted by the licence.

L3.2 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.

L4 Blasting

L4.1 Blasting in or on the premises must only be carried out between 0900 hours and 1500 hours, Monday to Friday. Blasting in or on the premises must not take place on weekends or Public Holidays without the prior approval of the EPA.

L4.2 The airblast overpressure level from blasting operations in or on the premises must not exceed:
115 dB (Lin Peak) for more than 5% of the total number of blasts during each reporting period at any residence or noise sensitive location (such as a school or hospital) that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee as to an alternative overpressure level.

L4.3 The airblast overpressure level from blasting operations in or on the premises must not exceed:
120 dB (Lin Peak) at any time at any residence or noise sensitive location (such as a school or hospital) that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee as to an alternative overpressure level.

L4.4 The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed 5 mm/second for more than 5% of the total number of blasts during each reporting period at any residence or noise sensitive location (such as a school or hospital) that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee as to an alternative overpressure level.

L4.5 The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed 10 mm/second at any time at any residence or noise sensitive location (such as a school or hospital) that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee as to an alternative overpressure level.

L4.6 Error margins associated with any monitoring equipment used to measure airblast overpressure or peak particle velocity are not to be taken into account in determing whether or not the limit(s) has been exceeded.

L4.7 Offensive blast fume must not be emitted from the premises.

Definition:

Offensive blast fume means post-blast gases from the detonation of explosives at the premises that by reason of their nature, duration, character or quality, or the time at which they are emitted, or any other circumstances:
1. *are harmful to (or likely to be harmful to) a person that is outside the premises from which it is emitted, or*
2. *interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted.*

Environment Protection Licence

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 All areas in or on the premises must be maintained in a condition that prevents or minimises the emission of dust to the air.

O3.2 Any activity carried out in or on the premises must be carried out by such practical means as to prevent dust or minimise the emission of dust to the air.

O3.3 Any plant operated in or on the premises must be operated by such practical means to prevent or minimise dust or other air pollutants.

O3.4 All trafficable areas and vehicle manoeuvring areas in or on the premises must be maintained, at all times, in a condition that will minimise the emmission of dust to the air, or emmission from the premises of wind-blown or traffic generated dust.

O4 Emergency response

O4.1 The licensee must maintain, and implement as necessary, a current Pollution Incident Response Management Plan (PIRMP) for the premises. The licensee must keep the incident response plan on the premises at all times. The incident response plan must document systems and procedures to deal with all types of incidents (e.g. spills, explosions or fire) that may occur at the premises or that may be associated with activities that occur at the premises and which are likely to cause harm to the environment.

The PIRMP must be tested at least annually or following a pollution incident.

The licensee must develop the Pollution Incident Response Management Plan in accordance with the

requirements in Part 5.7A of the Protection of the Environment Operations (POEO) Act 1997 and POEO regulations.

O5 Processes and management

O5.1 All tanks and storage areas for drums containing material that has potential to cause environmental harm must be bunded or have an alternative spill containment system in-place.

The bunding and/or spill containment systems must be properly designed, engineered, and constructed to be suitable for the material types and quantities stored therein in accordance with all appropriate standards, including Australian Standards (AS)1940 and AS1596.

O5.2 Bunds must:
a) have walls and floors constructed of impervious materials;
b) be of sufficient capacity to contain 110% of the volume of the tank (or 110% volume of the largest tank where a group of tanks are installed);
c) have floors graded to a collection sump; and
d) not have a drain valve incorporated in the bund structure,

or be constructed and operated in a manner that achieves the same environmental outcome.

O5.3 The drainage from all areas at the premises which will liberate suspended solids when stormwater runs over these areas must be diverted into adequately sized sedimentation basins.

O5.4 The sedimentation basins must be maintained to ensure that their design capacity is available for the storage of all runoff from cleared areas.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 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.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

Environment Protection Licence

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M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Air Monitoring Requirements

POINT 2,3,4,5

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	AM-19

M2.3 Water and/ or Land Monitoring Requirements

POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Nitrogen (total)	milligrams per litre	Daily during any discharge	Grab sample
Oil and Grease	Visible	Daily during any discharge	Visual Inspection
pH	pH	Daily during any discharge	Grab sample
Phosphorus (total)	milligrams per litre	Daily during any discharge	Grab sample
Total suspended solids	milligrams per litre	Daily during any discharge	Grab sample

M3 Testing methods - concentration limits

M3.1 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M3.2 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:

a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

M4 Recording of pollution complaints

M4.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M4.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M4.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M4.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M5 Telephone complaints line

M5.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M5.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M5.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

M6 Blasting

M6.1 The licensee must monitor all blasts carried out in or on the premises at or near the nearest residence or noise sensitive location (such as a school or hospital) that is likely to be most affected by the blast and that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee relating to alternative blasting limits.

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6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

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R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Note: The licensee or its employees 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 requirements of Part 5.7 of the Act.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

R4 Other reporting conditions

R4.1 The licensee must report any exceedence of the licence blasting limits to the regional office of the EPA as soon as practicable after the exceedence becomes known to the licensee or to one of the licensee's

employees or agents.

R4.2 **Blast Monitoring Report**

The licensee must supply, with each Annual Return, a Blast Monitoring Report which must include the following information relating to each blast carried out within the premises during the reporting period covered by the Annual Return:
a) the date and time of the blast;
b) the location of the blast on the premises;
c) the blast monitoring results at each blast monitoring station; and
d) an explanation for any missing blast monitoring results.

7 General Conditions

G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

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Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder describe d at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

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TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Ms Michelle Bruce

Environment Protection Authority

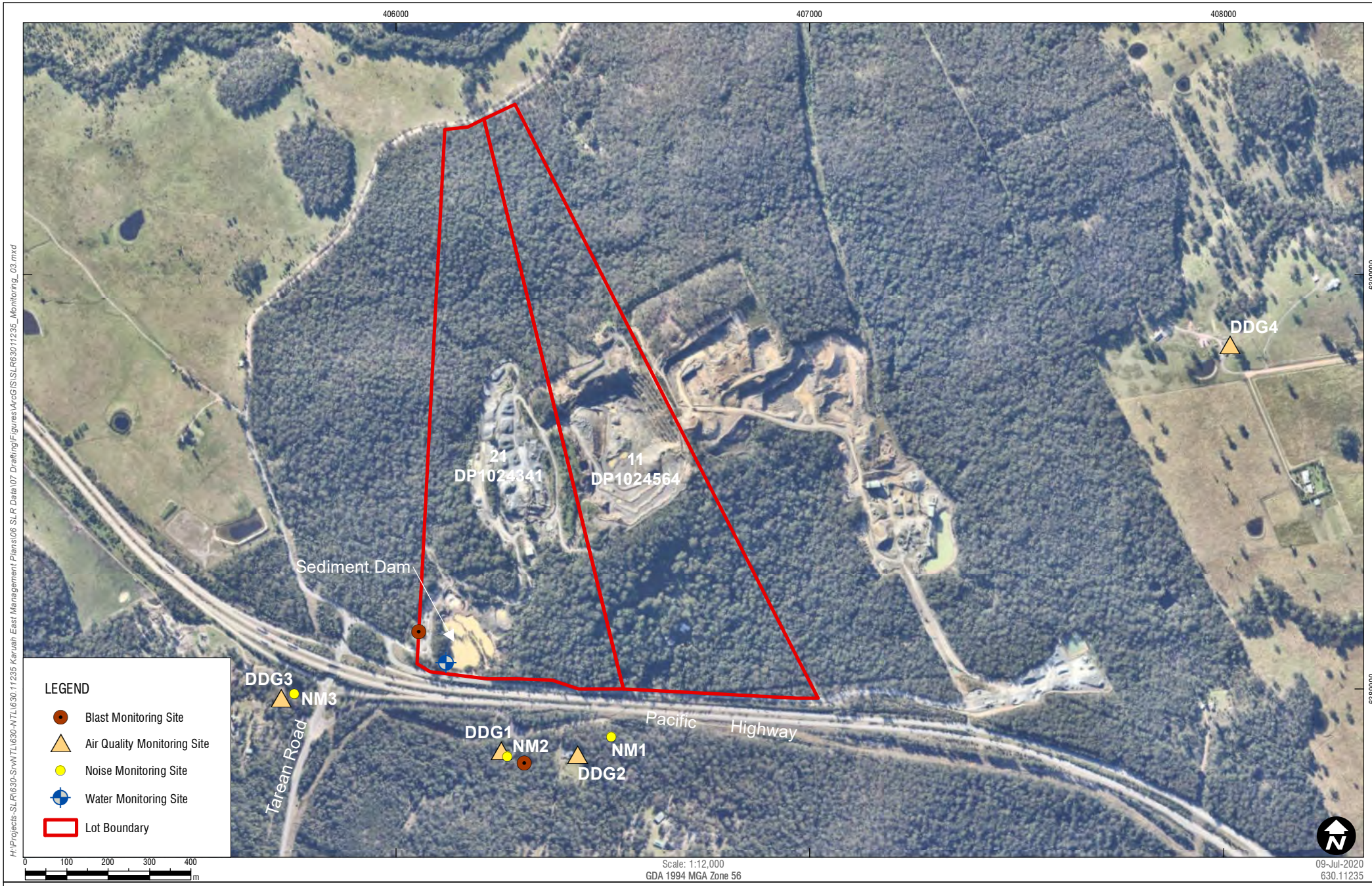
(By Delegation)

Date of this edition: 16-January-2002

End Notes

1	Licence varied by notice 1015394, issued on 11-Jul-2002, which came into effect on 05-Aug-2002.
2	Licence varied by notice 1048149, issued on 30-Jun-2005, which came into effect on 25-Jul-2005.
3	Licence varied by notice 1061485, issued on 14-Sep-2006, which came into effect on 14-Sep-2006.
4	Licence varied by notice 1072188, issued on 16-Apr-2007, which came into effect on 16-Apr-2007.
5	Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
6	Licence varied by notice 1113805, issued on 04-May-2010, which came into effect on 04-May-2010.
7	Licence varied by notice 1502901 issued on 29-Dec-2011
8	Licence varied by notice 1528535 issued on 26-Aug-2016

APPENDIX 3 – Environmental Monitoring Locations and Figures



Source: Nearmap (June 2020)

Sheet Size : A4

SLR

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Karuah Hard Rock Quarry
Environmental Monitoring Locations

FIGURE 1

APPENDIX 4 – Noise Monitoring Reports

KARUAH QUARRY

Biannual Noise Monitoring Assessment
May 2019

Prepared for:

Hunter Quarries Pty Ltd
PO Box 3284
Thornton NSW 2322

SLR Ref: 630.01541-R26
Version No: -v1.0
March 2020

PREPARED BY

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Hunter Quarries Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
630.01541-R26-v1.0	13 March 2020	Jordan Murray	Martin Davenport	Martin Davenport

CONTENTS

DOCUMENT REFERENCES

TABLES

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FIGURES

APPENDICES

1 Introduction

1.1 Background

Hunter Quarries Pty Ltd (Hunter Quarries) has operated a hard rock quarry located approximately four (4) kilometres north of Karuah since 1997. In October 2004, Hunter Quarries applied to the Department of Planning and Infrastructure (DP&I) for approval to expand the quarry. The Minister for Planning granted development consent on 3 June 2005 (DA 265-10-2004).

Hunter Quarries has commissioned SLR Consulting Australia Pty Ltd (SLR) to prepare and implement a noise monitoring program for the Karuah Quarry in accordance with the conditions of consent specified by DP&I.

1.2 Objectives of this Report

The noise monitoring program requires biannual noise monitoring surveys. This report presents the results of the noise monitoring survey for the period up to June 2019.

The objectives of the noise monitoring survey for this operating period were as follows:

- Measure the ambient noise levels at four (4) key focus receptor locations surrounding the quarry.
- Qualify discernible sources of noise within each of the attended surveys, including estimated contribution or maximum level of individual noise sources.

Assess the noise emissions of Karuah Quarry with respect to the limits contained in the Development Consent.

1.3 Acoustic Terminology

The following report uses specialist acoustic terminology. An explanation of common terms is provided in **Appendix A.**

2 Karuah Quarry Development Consent Conditions

Development Consent Section 5.4.1, Schedule 4, Condition 3 provides the following:

Within 6 months of the date of this consent, the Applicant shall prepare and implement a Noise Monitoring Program, for the development to evaluate compliance with the noise impact assessment criteria in this consent, in consultation with the DEC, and to the satisfaction of the Director-General.

Condition 1 of the Development Consent requires Hunter Quarries to ensure noise generated by the development does not exceed criteria outlined in **Table 1** at any residence, or any noise sensitive receptor on privately owned land.

Table 1 Development Consent Noise Impact Criteria – Karuah Quarry

Time Period	Noise Limit (dBA) - $L_{Aeq(15minute)}$
Day 7:00am to 6:00pm Monday to Friday 7:00am to 1:00pm Saturday	48
Evening 6:00pm to 10:00pm Monday to Friday	47
At All Other Times	46

3 Equipment Operation

Hours of operation of the Karuah Quarry are from 7:00 am to 6:00 pm Monday to Friday and 7:00 am to 1:00 pm Saturday.

Equipment operating hours for Karuah Quarry during the noise monitoring period are presented in **Table 2**.

Table 2 Karuah Quarry Equipment Operation

Equipment Description	Weekday Operation, Monday – Friday (7:00 am – 6:00 pm)	Weekend Operation, Saturday (7:00 am – 1:00 pm)
Front End loader – Komatsu WA 470	✓	✓
Front End loader – CAT 980G	✓	✓
Excavator	✓	✓
Jaw Crusher	✓	✓
Primary Screen	✓	✓
Secondary Crusher/Screen	✓	✓
Dump Trucks	✓	✓

4 Noise Monitoring Methodology

4.1 General Requirements

The operational noise monitoring programme was conducted with reference to Development Consent DA 265-10-2004, AS 1055-2018 "*Acoustics - Description and Measurement of Environmental Noise*" and the NSW *Industrial Noise Policy* (INP).

All acoustic instrumentation employed throughout the monitoring programme has been designed to comply with the requirements of AS IEC 61672 (parts 1 and 2) 2004 *Electroacoustics - Sound Level Meters* and carries current NATA or manufacturer calibration certificates. Instrument calibration was checked before and after each measurement survey, with the variation in calibrated levels not exceeding ±0.5 dBA.

4.2 Monitoring Locations

The Karuah Quarry is located just north of Karuah adjacent to the Pacific Highway. The Pacific Highway is situated between residences and Karuah Quarry.

Operator-attended and unattended continuous noise monitoring was conducted at the three (3) nearest residences to the Karuah Quarry as presented in **Table 3** and shown in **Figure 1**.

Table 3 Residential Monitoring Locations

Noise Monitoring Location	Property Name	Distance from Karuah Quarry
NM1	Lot 3 DP785172 5772 Pacific Hwy, Karuah	317 metres South of the Karuah Quarry
NM2	Lot 2 DP 785172 5760 Pacific Hwy, Karuah	200 metres South of the Karuah Quarry
NM3	Lot 22 DP 1024341	370 metres South-West of the Karuah Quarry

Due to road traffic noise from the Pacific Highway dominating the ambient noise levels at the monitoring locations contained in **Table 3**, an additional operator-attended survey was conducted closer to the Project site. The purpose of this additional noise survey was to calculate Project noise levels back to the receivers and determine compliance with the relevant criteria. Details of the supplementary monitoring location are contained in **Table 4**.

Table 4 Supplementary Monitoring Location

Survey Location	Coordinates (UTM)	
	Easting (m)	Northing (m)
Karuah East Quarry – weighbridge	406045	6389153

4.2.1 Additional Noise Monitoring Location

Noise monitoring was also undertaken at 1714 Branch Lane, Karuah (Location F) in response to the following comment from the NSW Department of Planning and Environment (DP&E) on the 2015 Annual Review:

> *Further, please undertake noise monitoring to confirm compliance with Condition 1, Schedule 3, which requires that the noise generated by the development does not exceed criteria at any residence on privately owned land, including the residence at 1714 Branch Lane, Karuah.*

Noise monitoring Location F is shown in **Figure 2**.

Figure 1 Noise Monitoring Locations

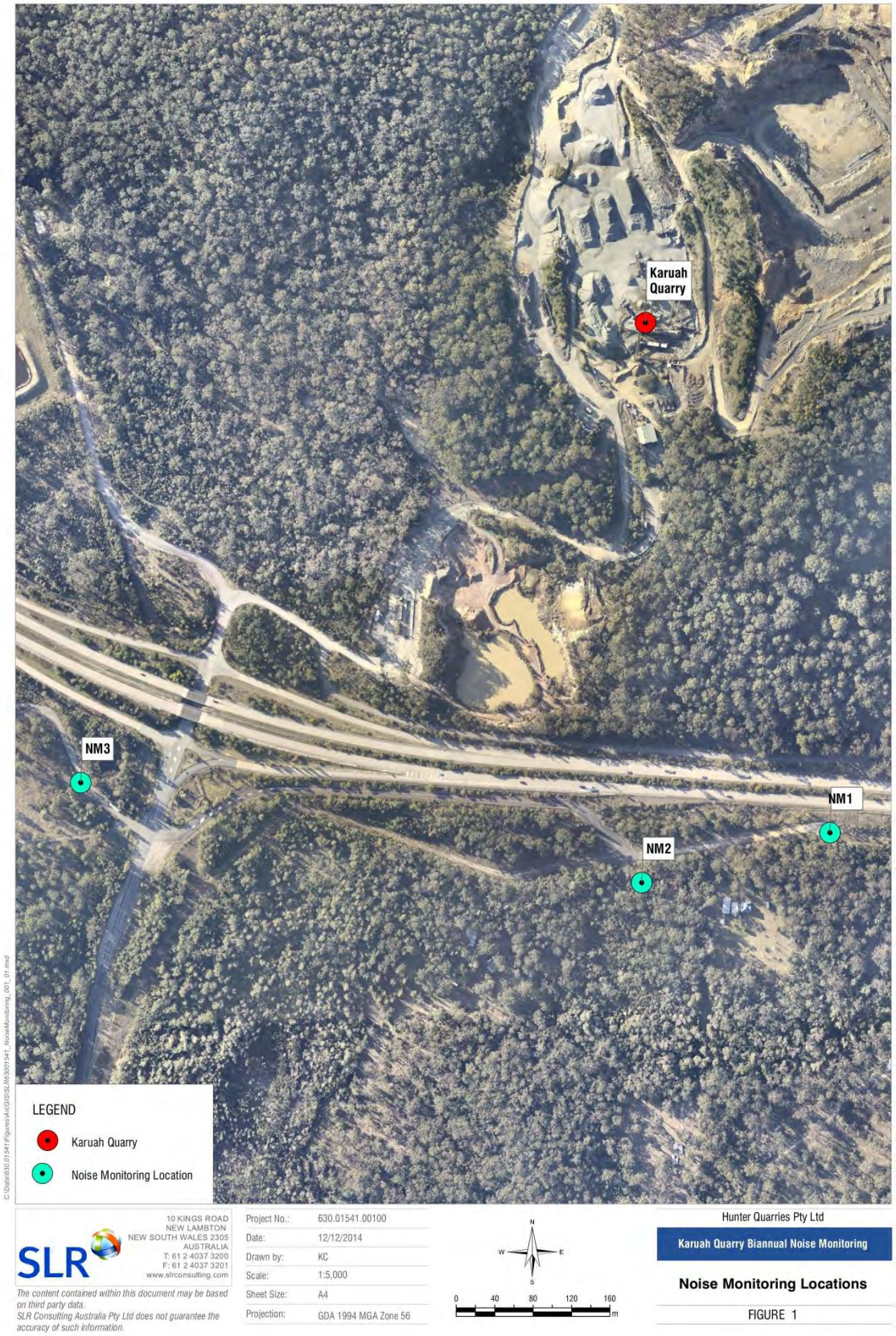


Figure 2 Location F Noise Monitoring Location

Note: "Subject site boundaries" represent Karuah East Quarry

4.3 Operator-attended Noise Surveys

An operator-attended noise survey was conducted at each of the four (4) monitoring locations (refer to **Figure 1** and **Figure 2**) on Wednesday 22 May 2019. The purpose of the noise surveys was to verify the unattended logging results and to determine the character and contribution of noise sources to the total ambient noise level.

All acoustic instrumentation employed throughout the monitoring programme has been designed to comply with the requirements of AS IEC 61672.1 – 2004 *Electroacoustics—Sound level meters – Specifications*, AS IEC 61672.2-2004, AS IEC 61672.3-2004 and carried current NATA or manufacturer calibration certificates. Instrument calibration was checked before and after each measurement survey, with the variation in calibrated levels not exceeding ±0.5 dBA.

The instrument used for the operator attended surveys was a B&K Type 2250L (serial number: 3003389).

4.4 Unattended Continuous Monitoring

Environmental noise loggers were deployed at monitoring location NM1, NM2, and NM3 (refer to **Figure 1** and **Figure 2).** For each location, noise monitoring was undertaken from Tuesday 14 May 2019 to Wednesday 22 May 2019 inclusive. Details of the noise loggers used for unattended continuous noise monitoring are given in **Table 5**.

The environmental noise loggers were programmed to record statistical noise level indices continuously in 15 minute intervals.

Table 5 Noise Logger and Noise Monitoring Location

Location	Noise Logger Serial Number	Date of Logging
NM1	16-203-505	14/05/2018 – 22/05/2019
NM2	16-203-525	14/05/2018 – 22/05/2019
NM3	16-103-494	14/05/2018 – 22/05/2019

5 Operator Attended Noise Monitoring

5.1 Results of Operator-attended Noise Monitoring

The results of operator-attended noise monitoring are presented in **Table 6**.

Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds, construction activities and quarry operations. The table provides the following information:

- Monitoring location
- Date, start time, Wind velocity (m/s) and Temperature (ºC) at the measurement location; and
- Typical maximum (L_{Amax}) and contributed noise levels.

Quarry contributions listed in the tables are from Karuah Quarry and are stated only when a contribution could be quantified.

Table 6 Operator Attended Noise Survey Results

Location	Date/ Start time/ Period/ Weather	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emission, Typical Maximum Levels L_{Amax}
		L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
NM1	22/05/2019 10:36 Day 1 m/s SW 21°C	79	73	67	56	64	Pacific Highway traffic 55 – 79 Birds 45 – 52 **Karuah Quarry Inaudible**
NM2	22/05/2019 10:53 Day 1 m/s SW 21°C	70	67	62	54	58	Pacific Highway traffic 53 – 72 Insects 50 – 52 Birds 58 – 62 **Karuah Quarry Audible in Lulls** Crusher 41-44 **Estimated $L_{Aeq(15minute)}$ 43 dBA**
NM3	22/05/2019 10:15 Day 1 m/s SW 20°C	73	67	63	56	61	Pacific Highway traffic 55 – 69 Birds 56 – 73 **Karuah Quarry Audible in Lulls** Crusher 40-46 **Estimated $L_{Aeq(15minute)}$ 45 dBA**

Location	Date/ Start time/ Period/ Weather	Primary Noise Descriptor (dBA re 20 μPa)					Description of Noise Emission, Typical Maximum Levels L_{Amax}
		L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
F	22/05/2019 09:54 Day 1 m/s SW 19°C	84	58	54	45	54	Pacific Highway traffic 45 – 52 Local traffic 70 – 84 Plane 50 **Karuah Quarry Inaudible**

5.2 Operator-attended Noise Monitoring Summary

Noise generated by traffic on the Pacific Highway and insect noise dominated ambient noise levels at noise monitoring locations NM1, NM2 and NM3. Noise generated by traffic on the Pacific Highway and Branch Lane dominated ambient noise levels at noise monitoring Location F.

The quarry was inaudible and unmeasurable at NM1, NM2 and NM3 monitoring locations due to high ambient noise levels from Pacific Highway traffic.

Results of the operational compliance assessment are given in **Table 7**.

Table 7 Compliance Noise Assessment – Operations

Location	Estimated Karuah $L_{Aeq(15minute)}$ Contribution	Consent Conditions $L_{Aeq(15minute)}$	Compliance
	Day	Day	Day
NM1	Inaudible at all times	48	Yes
NM2	43 dBA	48	Yes
NM3	45 dBA	48	Yes
Location F	Inaudible at all times	48	Yes

6 Unattended Continuous Noise Monitoring

6.1 Results of Unattended Continuous Monitoring

The unattended ambient noise logger data from monitoring location NM1, NM2 and NM3 are presented graphically on a daily basis and are attached as **Appendix B**, **Appendix C** and **Appendix D** respectively. A summary of the results of the unattended continuous noise monitoring is given in **Table 8.** The ambient noise level data quantifies the overall noise level at a given location independent of its source or character.

The measured ambient noise levels were divided into three periods representing day, evening and night as defined in the INP. The INP time classifications differ slightly from the conditions of consent in that the INP daytime includes weekends; Saturday 7:00 am to 6:00 pm as well as Sunday 8:00 am to 6:00 pm, whereas the allowable operating conditions include only Saturday 7:00 am to 1:00 pm. The evening time classifications are the same and where the conditions of consent refer to all other times, the INP nominates this as "night".

Precautions were taken to minimise influences from extraneous noise sources (eg optimum placement of the loggers away from creeks, trees, houses, etc), however, not all these sources or their effects can be eliminated. This is particularly the case during the warmer times of year when noise from insects, frogs, birds and other animals can become quite prevalent.

Weather data was obtained from the automatic weather station located at Karuah Quarry. Unattended noise data corresponding with periods of rainfall and/or wind speeds in excess of 5 m/s (approximately 18km/hr) were discarded in accordance with the INP data exclusion methodology.

Table 8 Unattended Continuous Monitoring Ambient Noise Levels (dBA)

INP Period	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}
NM1				
Daytime during Operational Hours[1]	65	65	53	60
Daytime outside Operational Hours[2]	65	64	54	59
Evening[3]	67	64	62	61
Night[4]	66	63	39	59
NM2				
Daytime during Operational Hours[1]	68	64	36	60
Daytime outside Operational Hours[2]	67	63	36	60
Evening[3]	69	64	48	60
Night[4]	69	62	36	58
NM3				
Daytime during Operational Hours[1]	73	75	56	65
Daytime outside Operational Hours[2]	72	74	56	65

INP Period	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}
Evening[3]	75	69	53	65
Night[4]	74	68	42	63

Note:
1. Daytime - 7.00 am to 6.00 pm Monday to Friday, 8.00 am to 1.00 pm Saturday, not operational on Sunday.
2. Daytime - 5.00 pm to 6.00 pm Monday to Friday, 12.00 pm to 6.00 pm Saturday, 8.00 am to 6.00 pm Sunday.
3. Evening - 6.00 pm 10.00 pm.
4. Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.

6.2 Unattended Continuous Noise Monitoring Summary

Ambient L_{A90} noise levels during the daytime period at monitoring locations NM1, NM2 and NM3 outside the quarry's operational hours are consistent with those during operational hours. This indicates that the quarry is not the dominant contributor to ambient noise levels during the daytime, consistent with observations made during the operator-attended noise survey. The main contributors to ambient noise levels at all monitoring locations are considered to be traffic along the Pacific Highway and natural sources such as birds and wind related noise.

7 Conclusion

SLR was engaged by Hunter Quarries to prepare and implement a noise monitoring program for the Karuah Quarry in accordance with the Conditions of Consent for the operation. This report presents the biannual noise monitoring survey results for the period up to the end of June 2019 in accordance with the noise monitoring program.

Operator-attended and unattended noise monitoring was conducted at the three (3) nearest residences to determine noise levels produced by Karuah Quarry operations. An additional operator-attended noise survey was conducted at location F as requested by NSW DP&E and at the Project site in order to determine likely compliance.

The noise contribution of Karuah Quarry operations was found to be significantly lower than that from road traffic on the Pacific Highway during all operator-attended noise surveys. The noise compliance results presented in **Table 7** indicate compliance with the relevant consent conditions at all noise monitoring locations during the operator-attended survey.

Results from the unattended ambient noise measurements conducted at three (3) noise monitoring locations were also consistent with site observations which indicate that the Karuah Quarry is not a major contributor to ambient noise levels at these locations during the survey period.

APPENDIX A

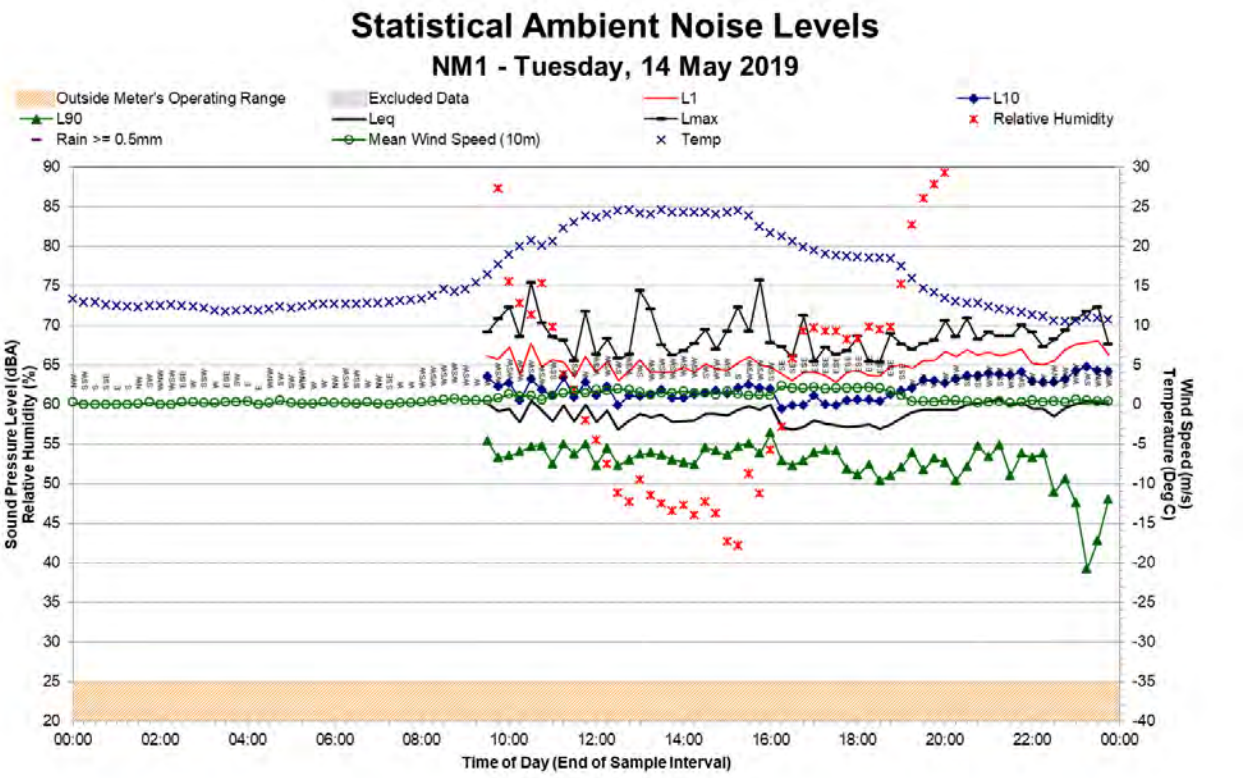
Acoustic Terminology

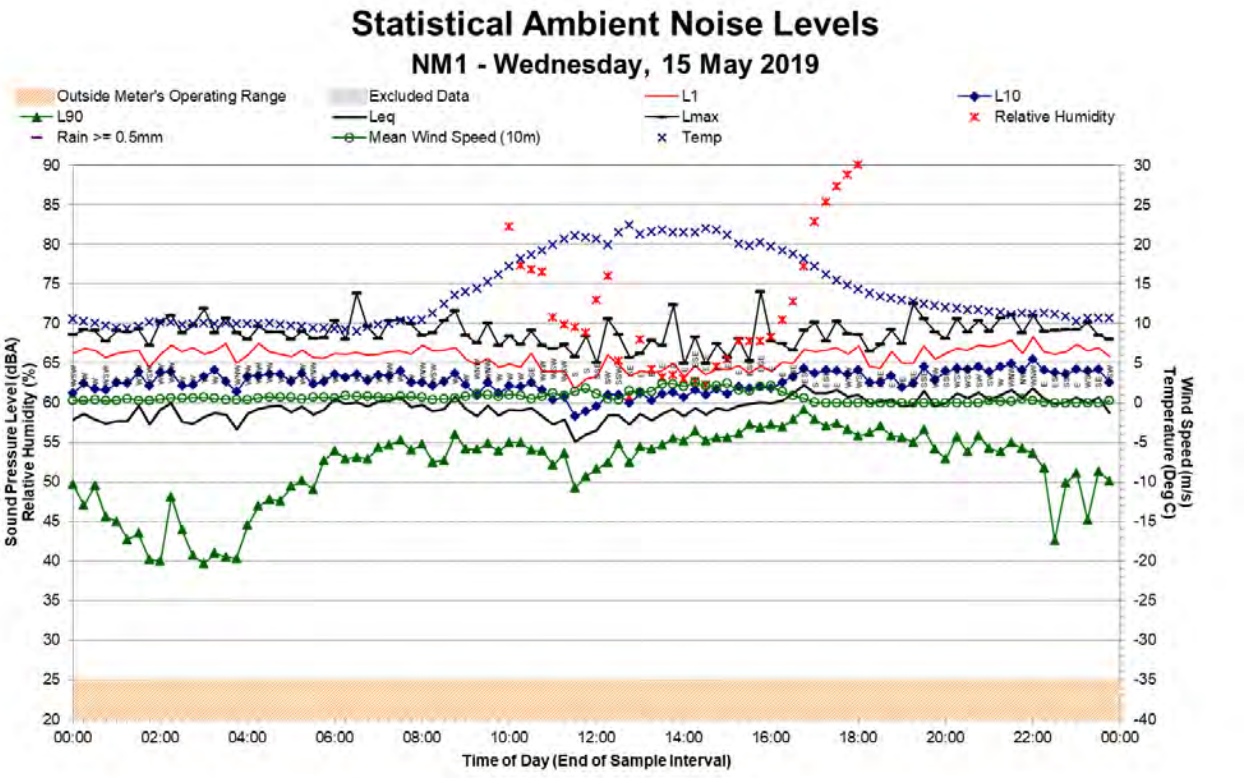
The following is a brief description of the acoustic terminology.

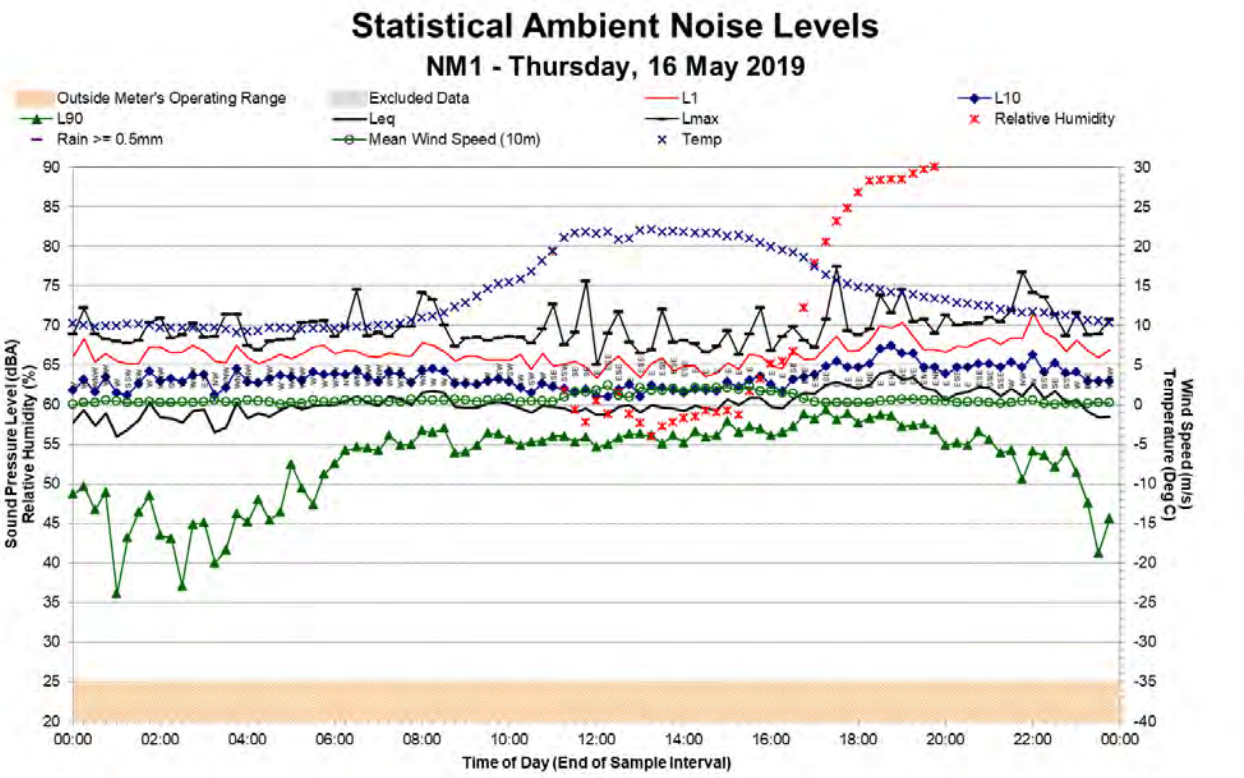
Acoustic Terminology	Description
'A' Weighted	Frequency filter applied to measured noise levels to represent how humans hear sounds.
dBA	'A' Weighted overall sound pressure level.
L_{90} , L_{10}	A statistical measurement giving the sound pressure level which is exceeded for the given percentile of an observation period, i.e., L_{90} is the level which is exceeded for 90 percent of an observation period. L_{90} is commonly referred to as the background sound level.
L_{Amax}	Highest value of the A-weighted sound pressure level with a specified time weighting that occurs during a given event.

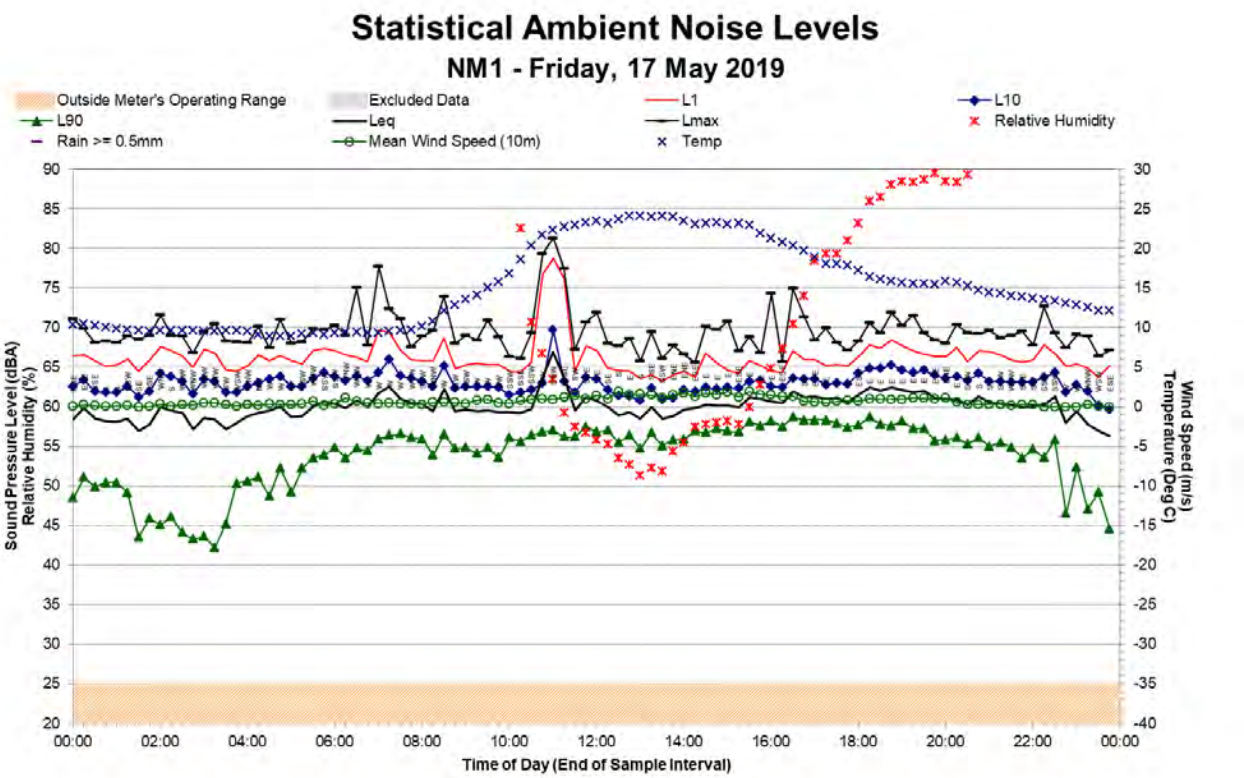
APPENDIX B

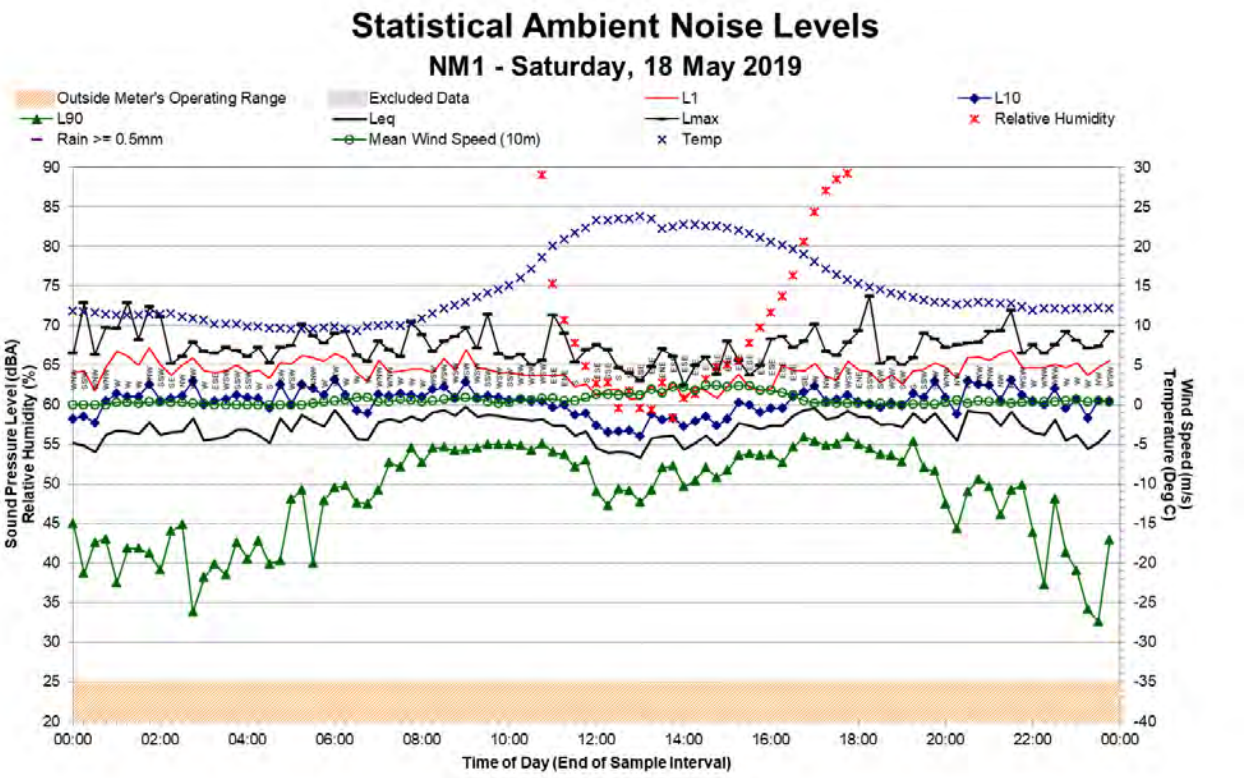
NM1 – Statistical Ambient Noise Levels

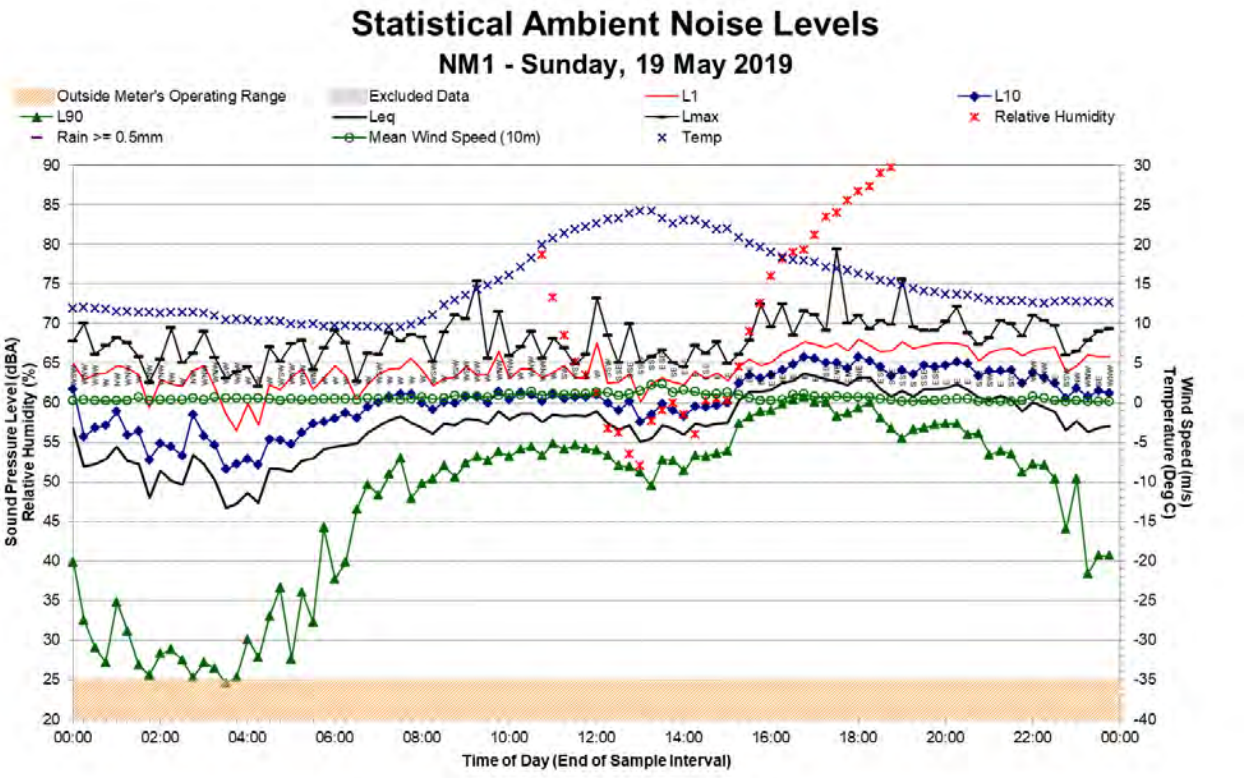

Statistical Ambient Noise Levels
NM1 - Tuesday, 14 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

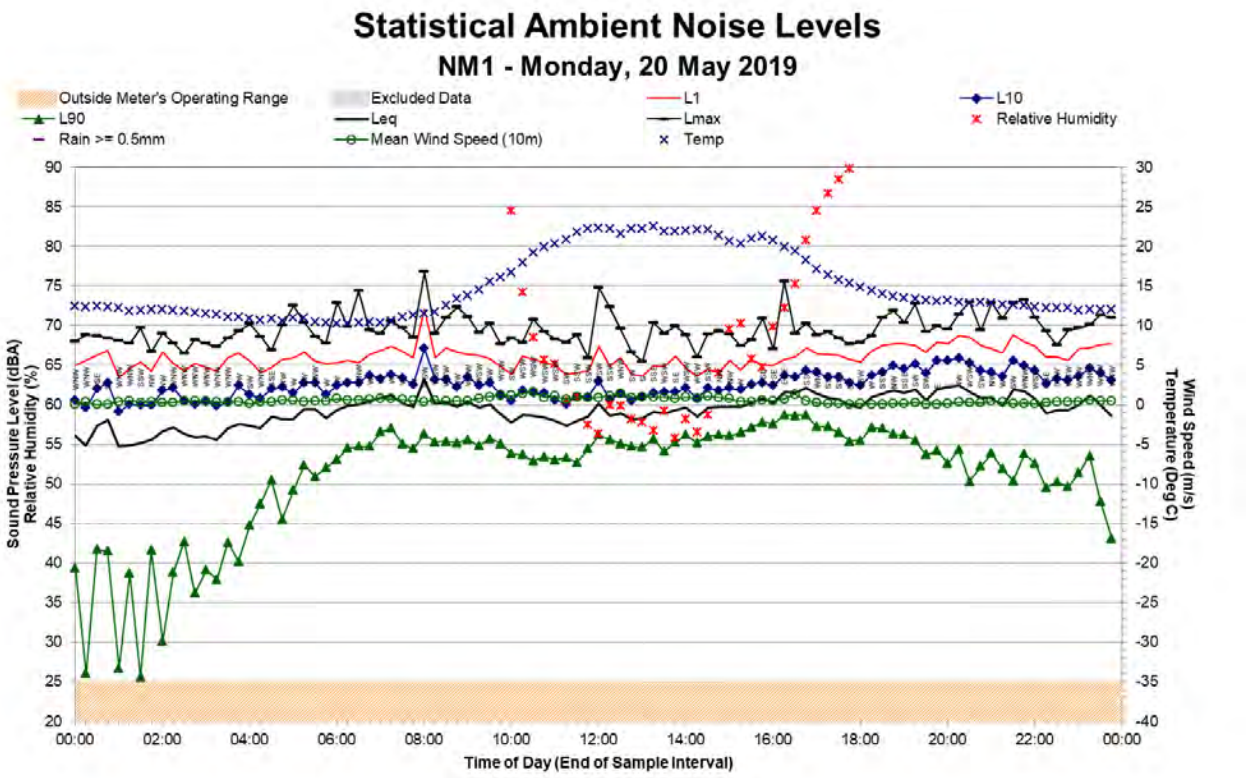

Statistical Ambient Noise Levels
NM1 - Wednesday, 15 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

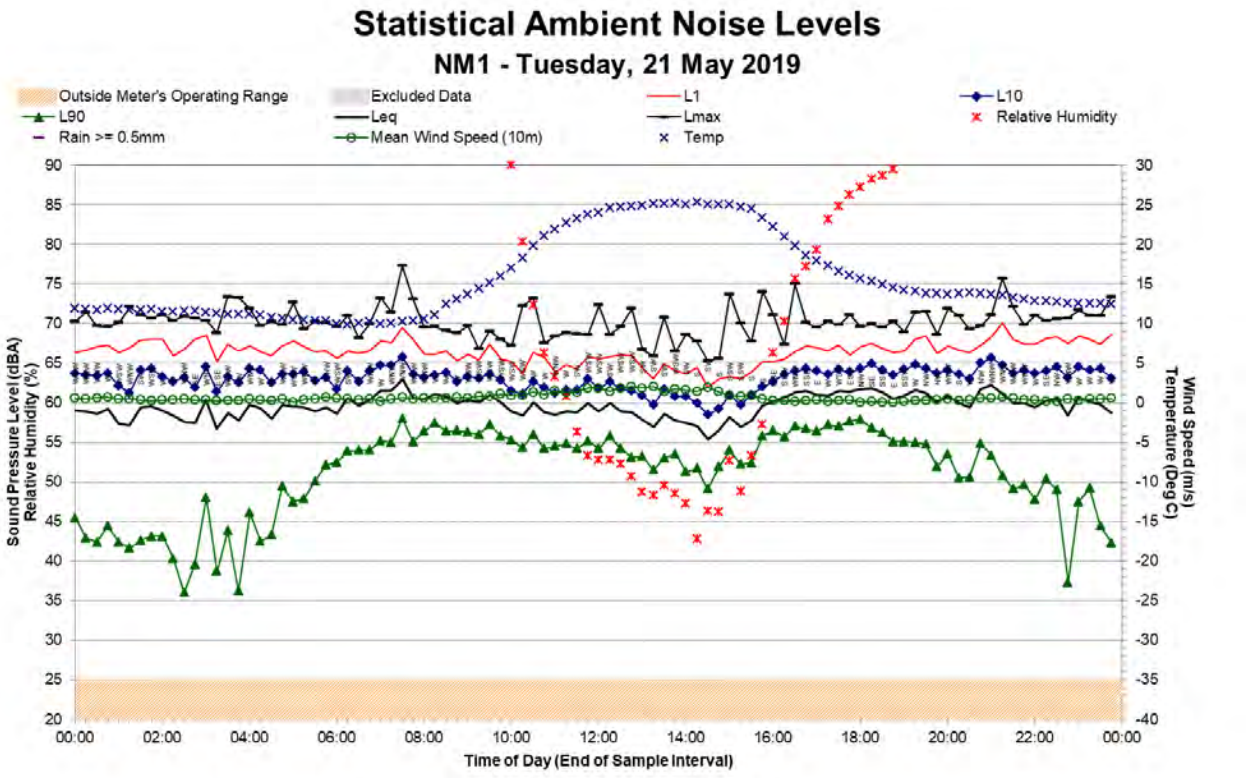

Statistical Ambient Noise Levels
NM1 - Thursday, 16 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

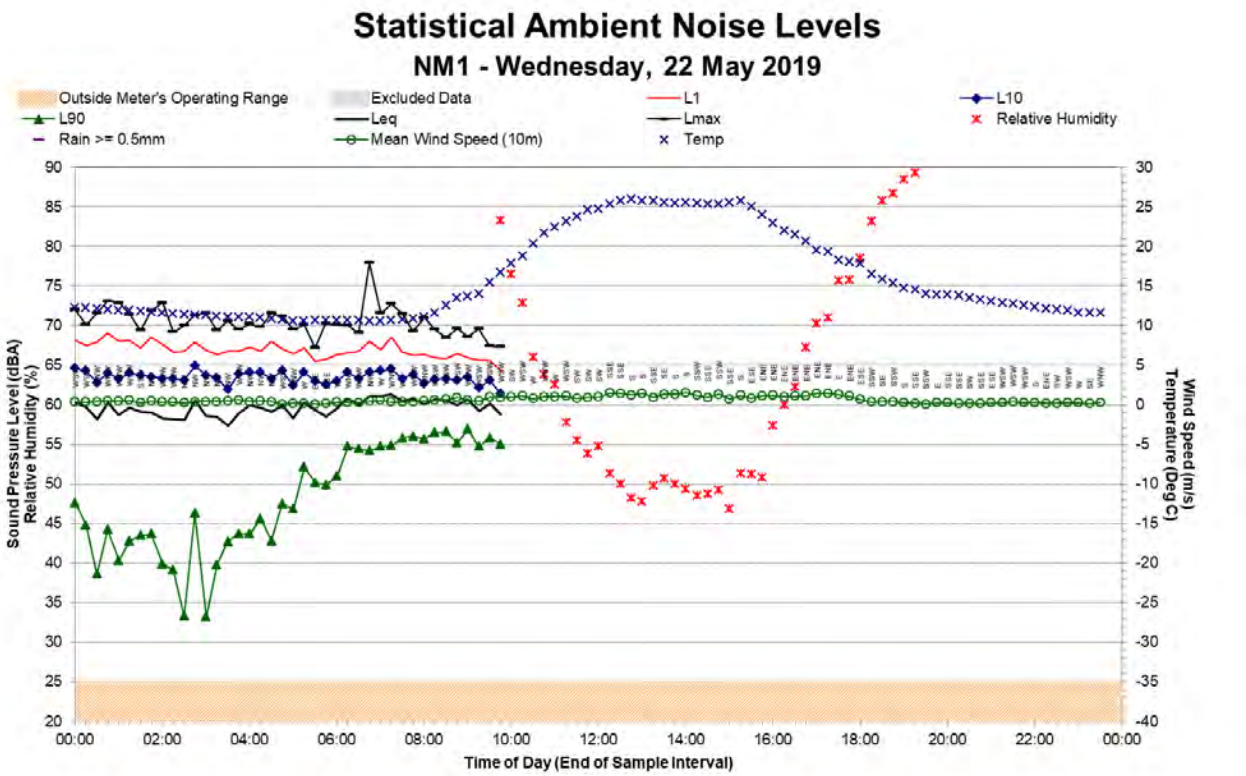

Statistical Ambient Noise Levels
NM1 - Friday, 17 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
NM1 - Saturday, 18 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
NM1 - Sunday, 19 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

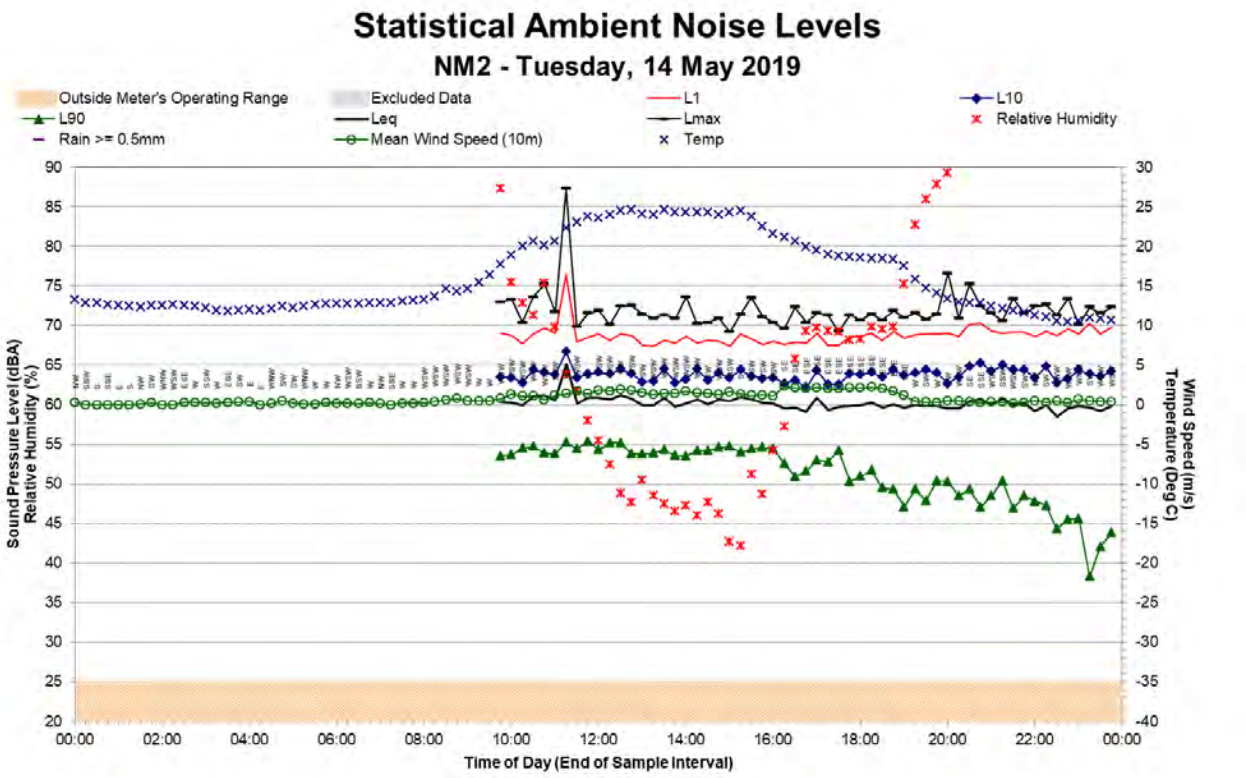

Statistical Ambient Noise Levels
NM1 - Monday, 20 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

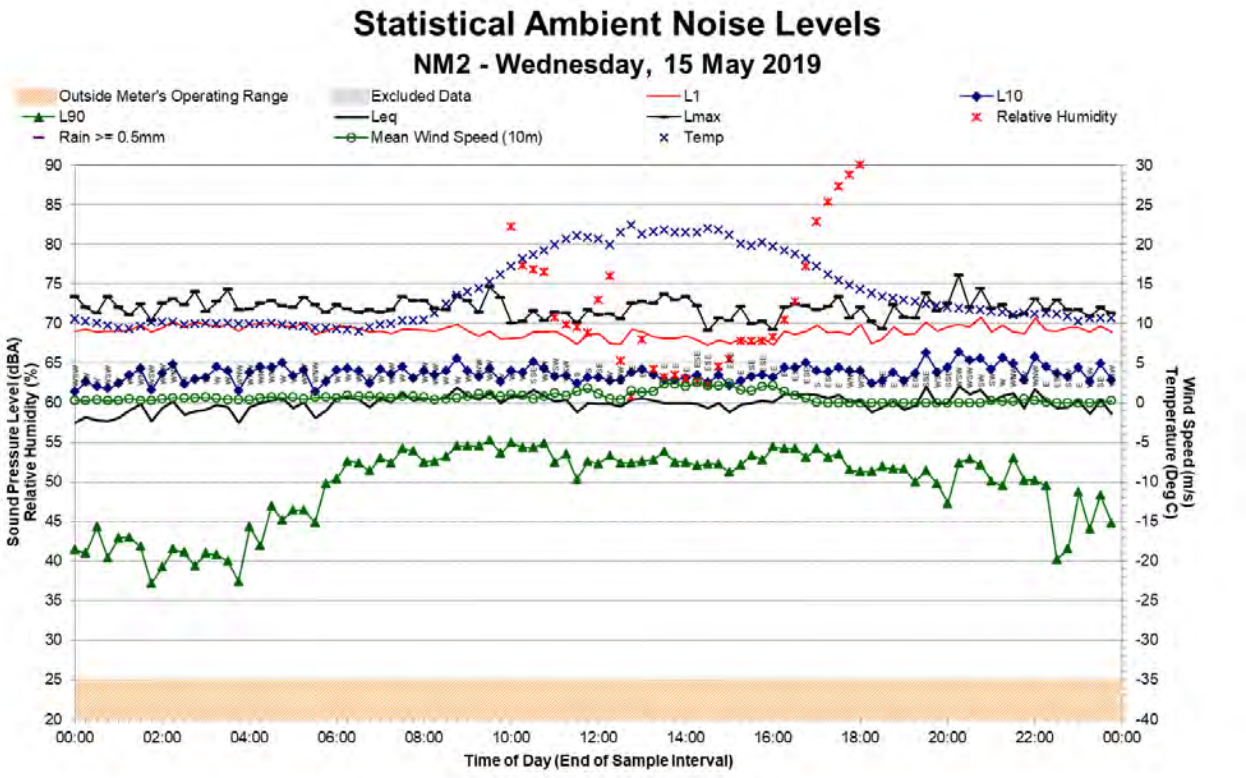

Statistical Ambient Noise Levels
NM1 - Tuesday, 21 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

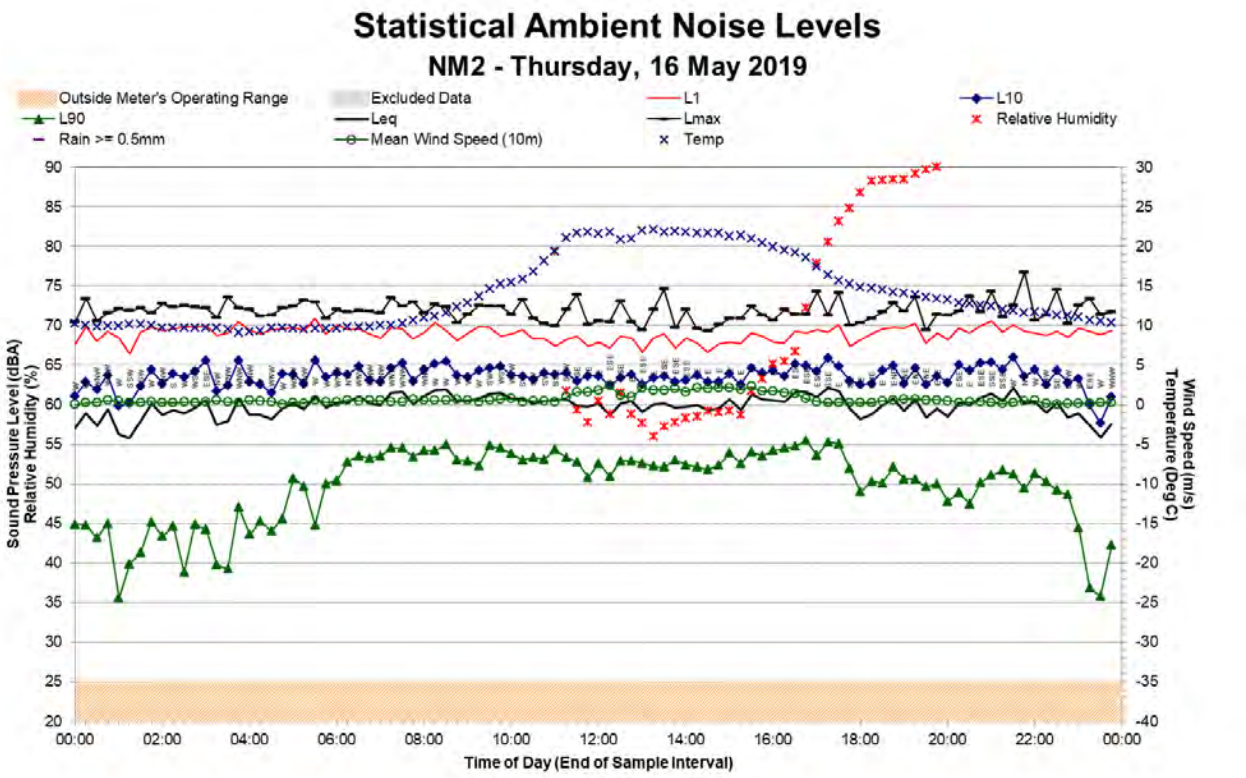

Statistical Ambient Noise Levels
NM1 - Wednesday, 22 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

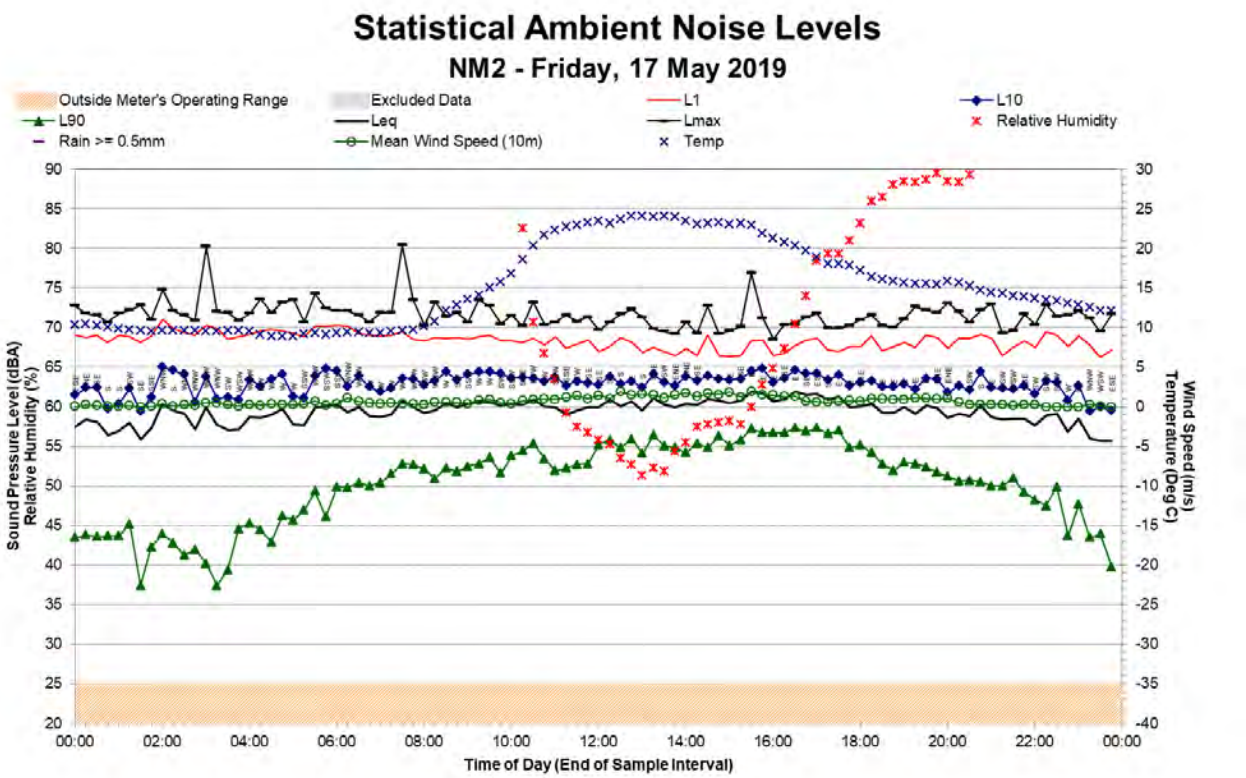
APPENDIX C

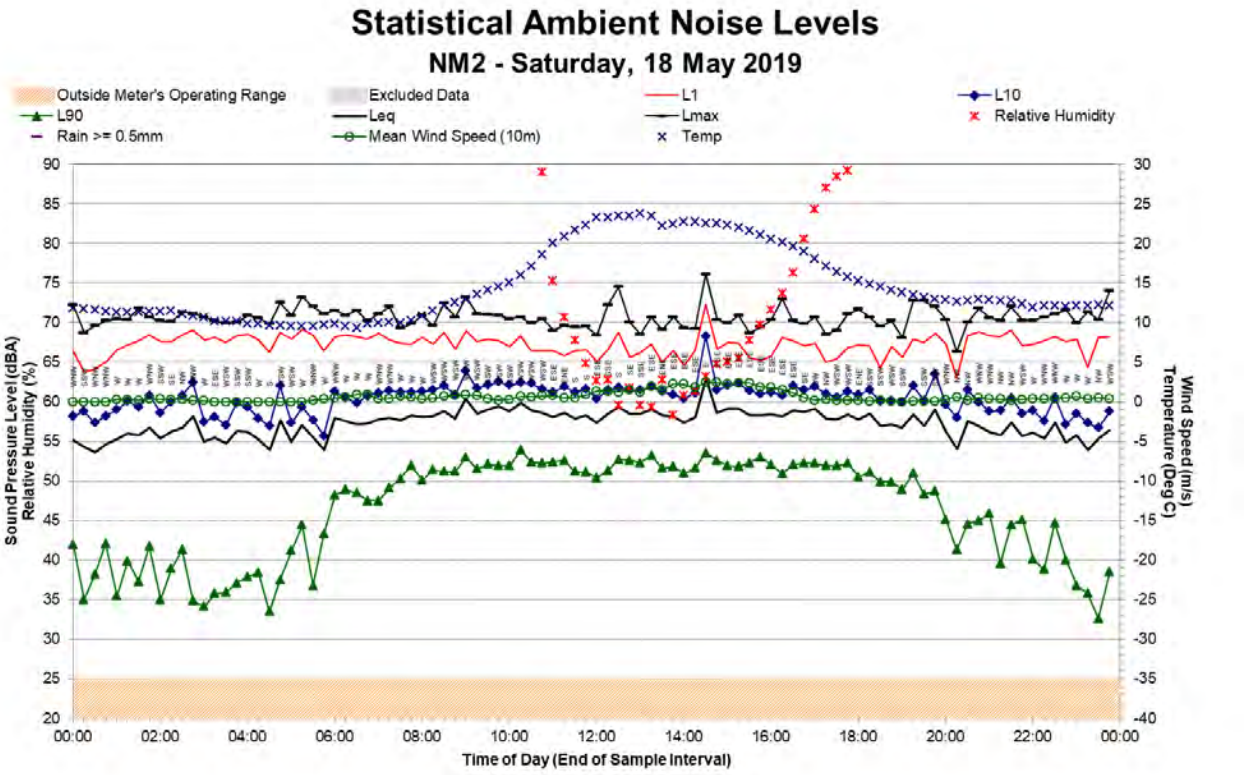
NM2 – Statistical Ambient Noise Levels

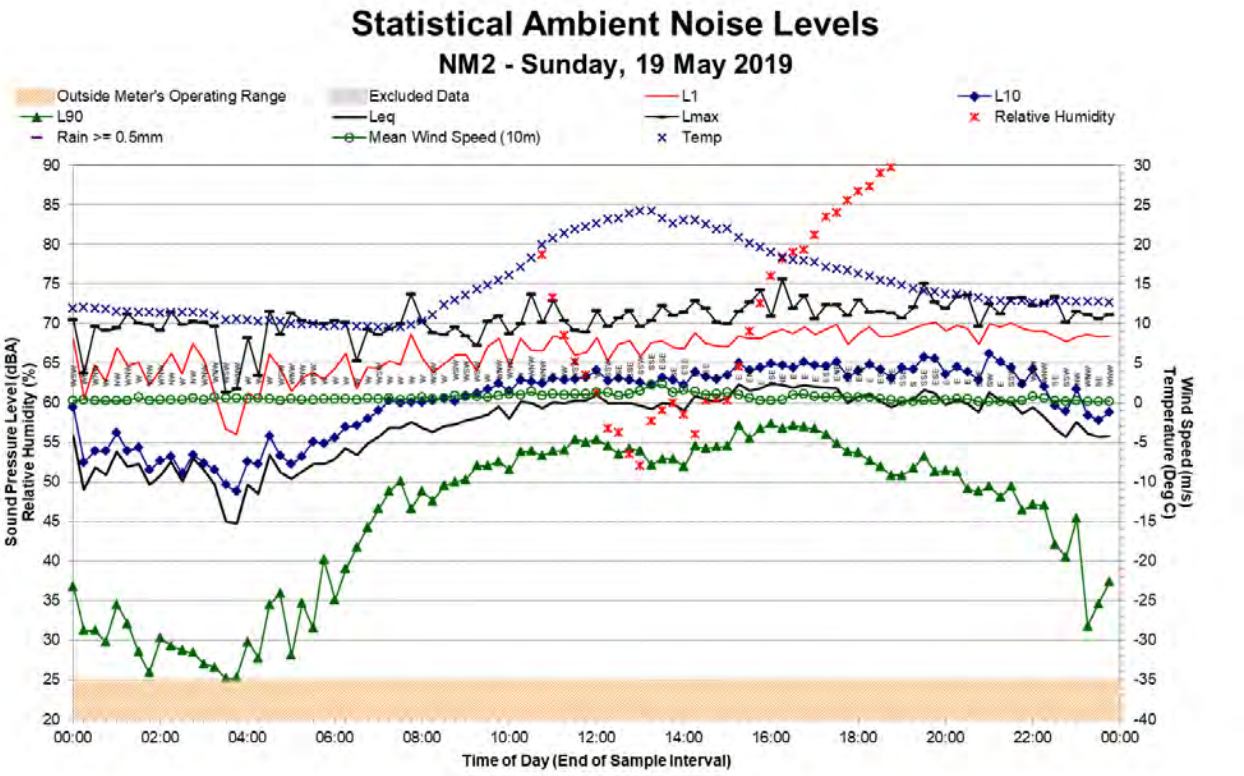

Statistical Ambient Noise Levels
NM2 - Tuesday, 14 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

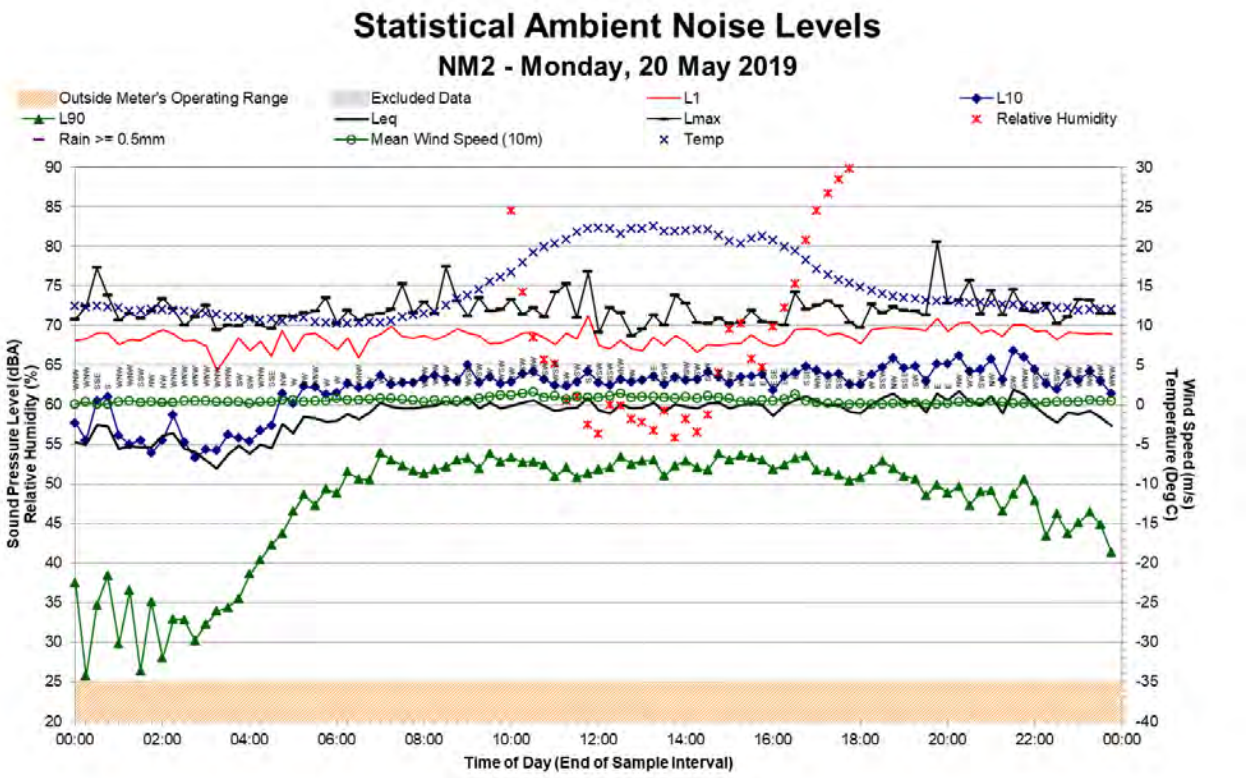

Statistical Ambient Noise Levels
NM2 - Wednesday, 15 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

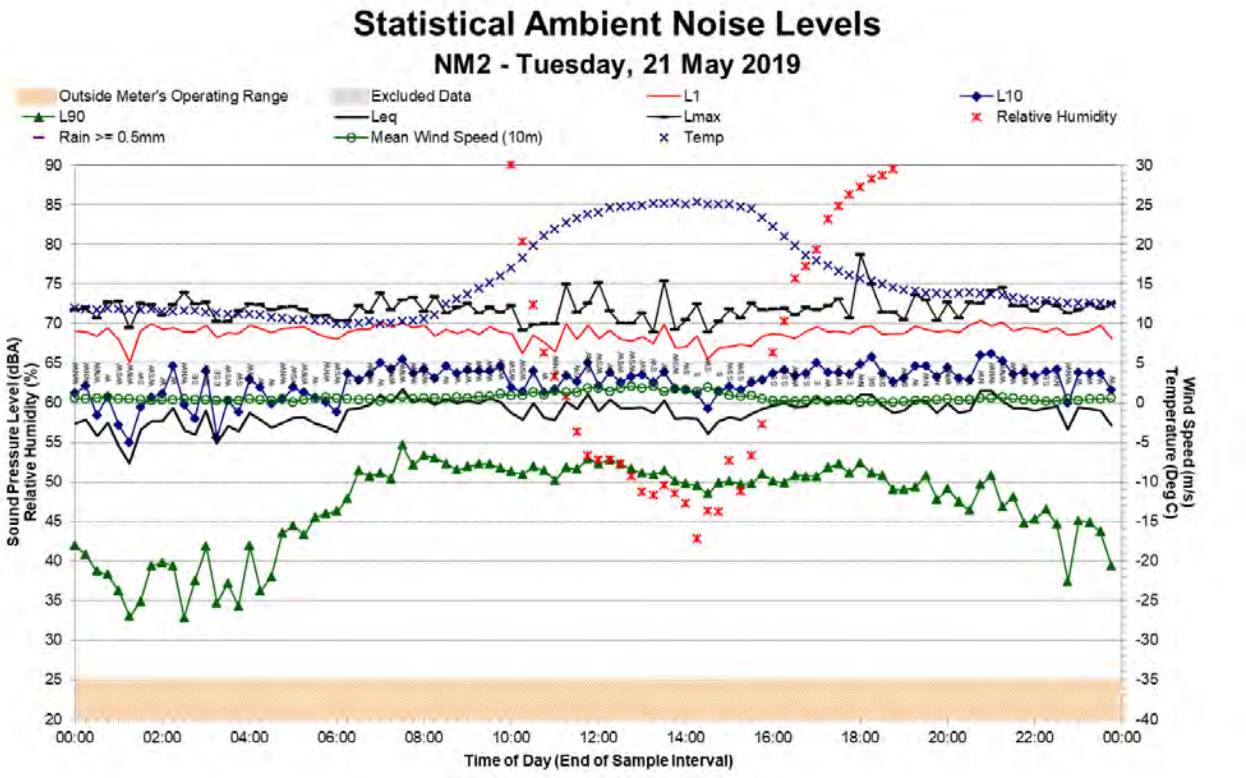

Statistical Ambient Noise Levels
NM2 - Thursday, 16 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

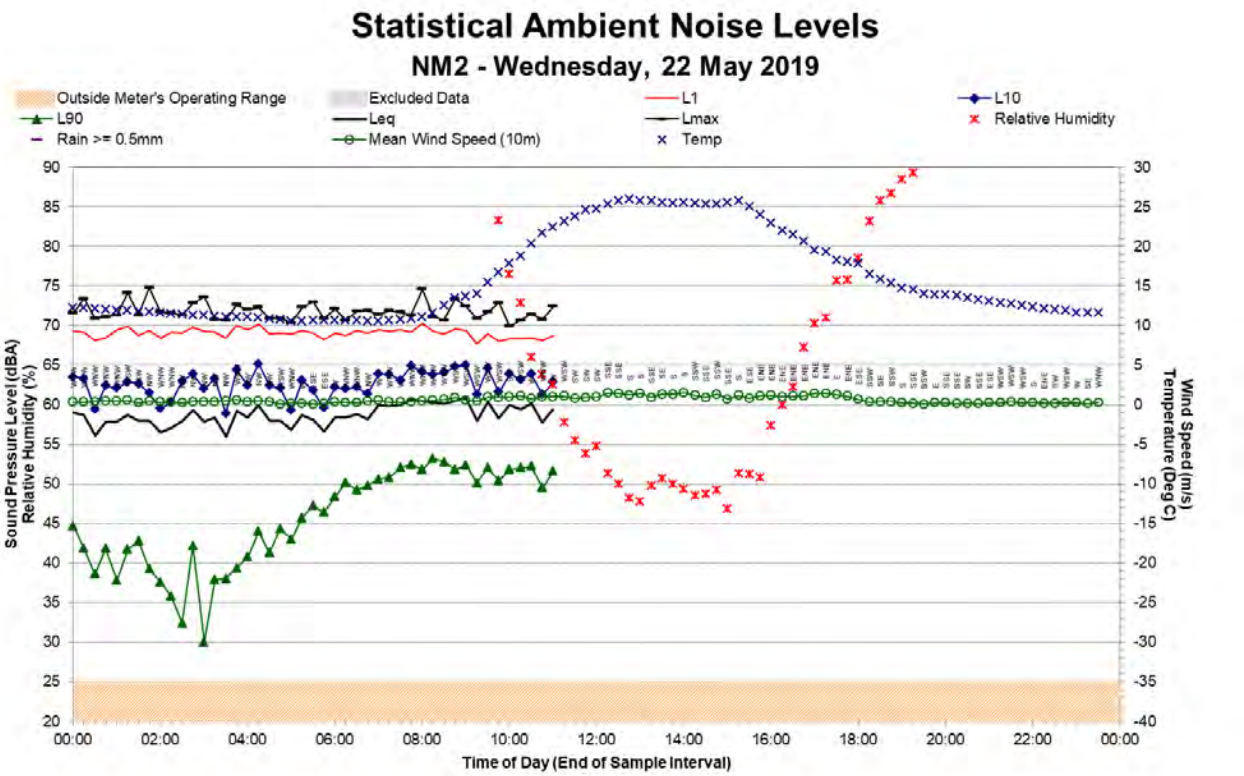

Statistical Ambient Noise Levels
NM2 - Friday, 17 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
NM2 - Saturday, 18 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
NM2 - Sunday, 19 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

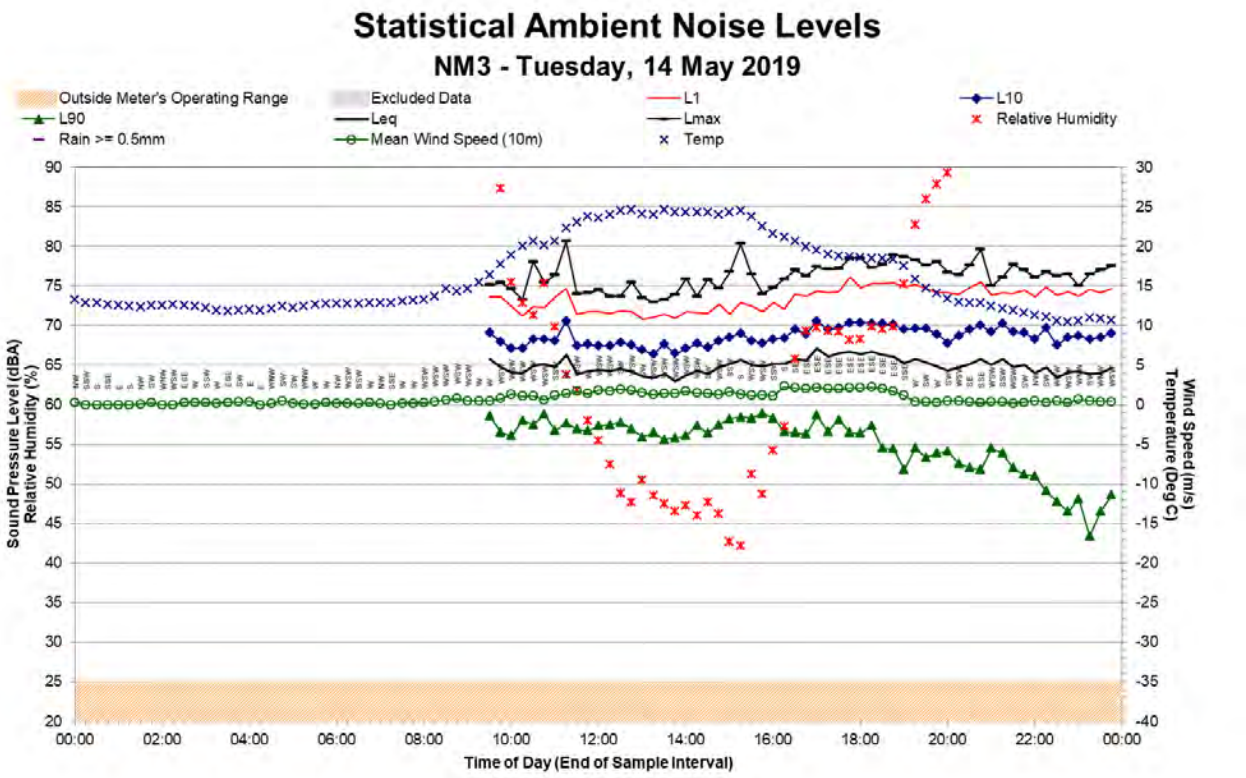

Statistical Ambient Noise Levels
NM2 - Monday, 20 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

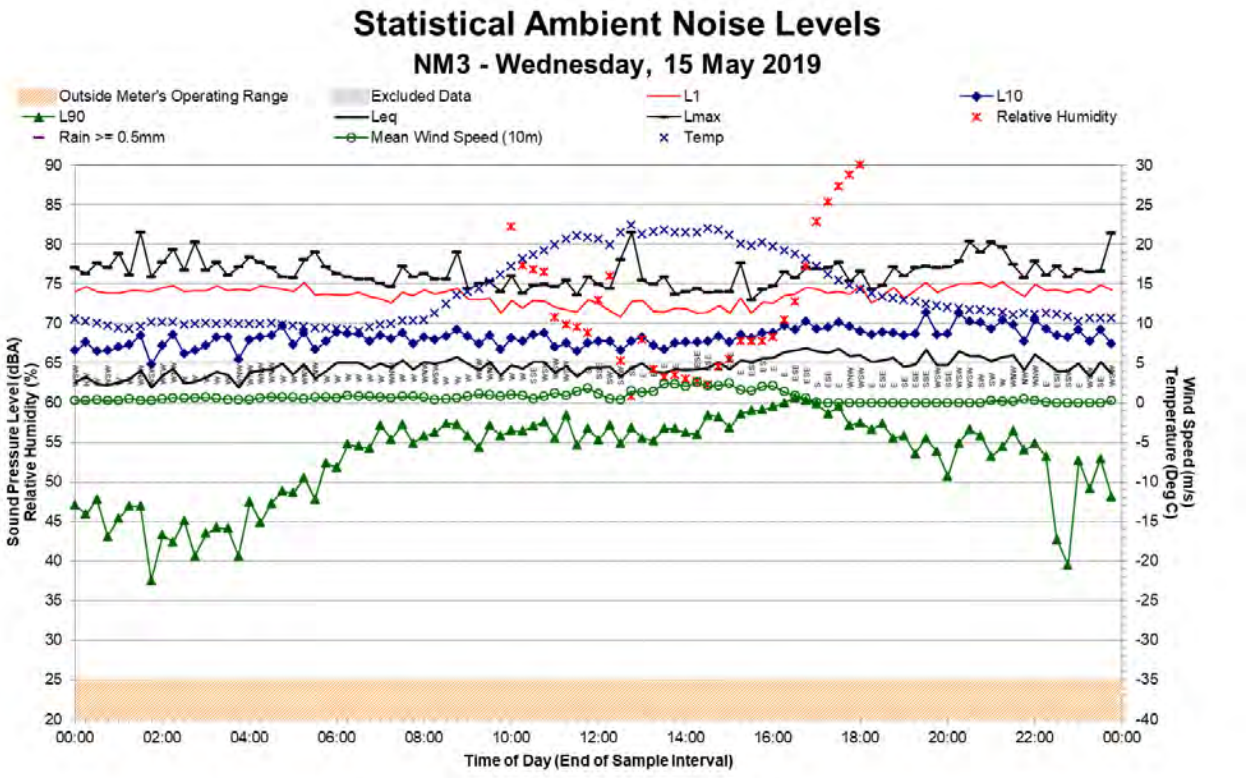

Statistical Ambient Noise Levels
NM2 - Tuesday, 21 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
NM2 - Wednesday, 22 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

APPENDIX D

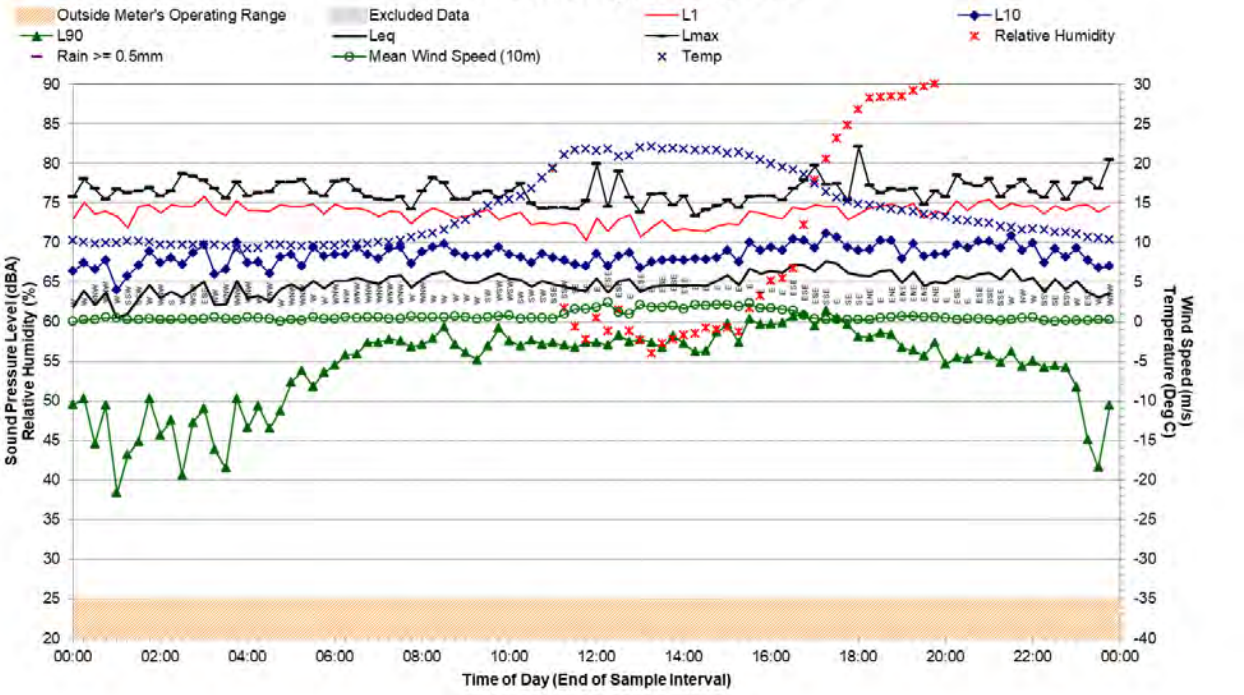
NM3 – Statistical Ambient Noise Levels


Statistical Ambient Noise Levels
NM3 - Tuesday, 14 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
NM3 - Wednesday, 15 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

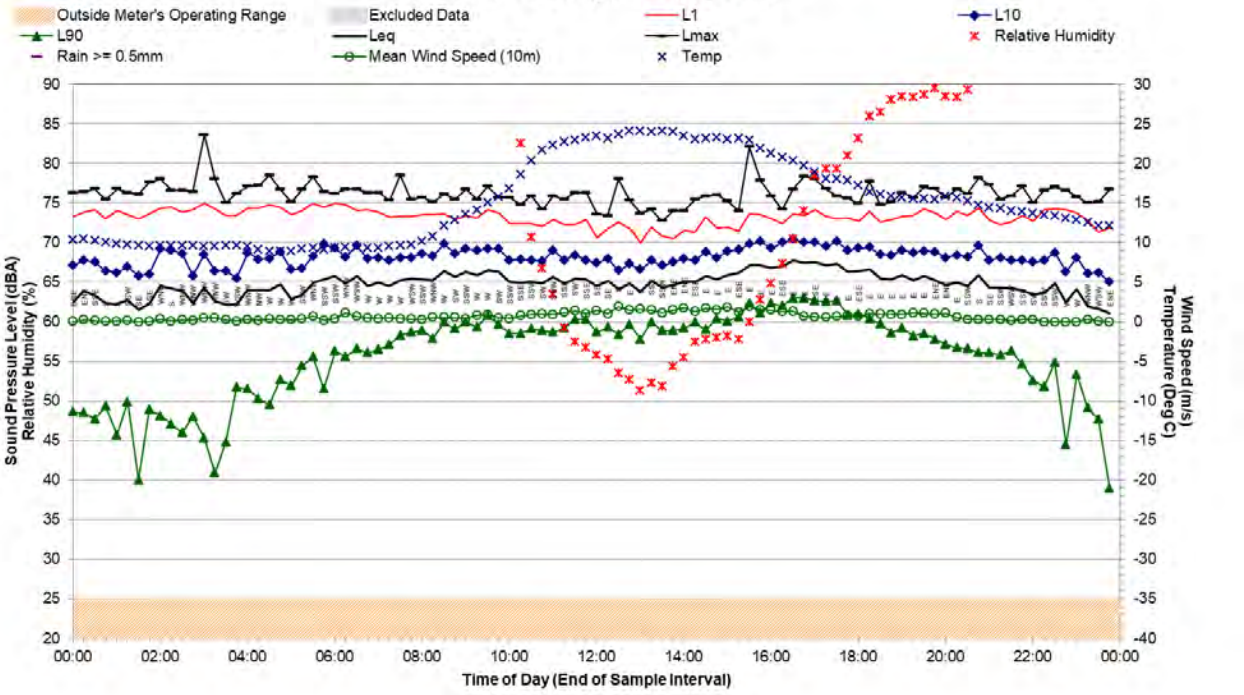
Statistical Ambient Noise Levels

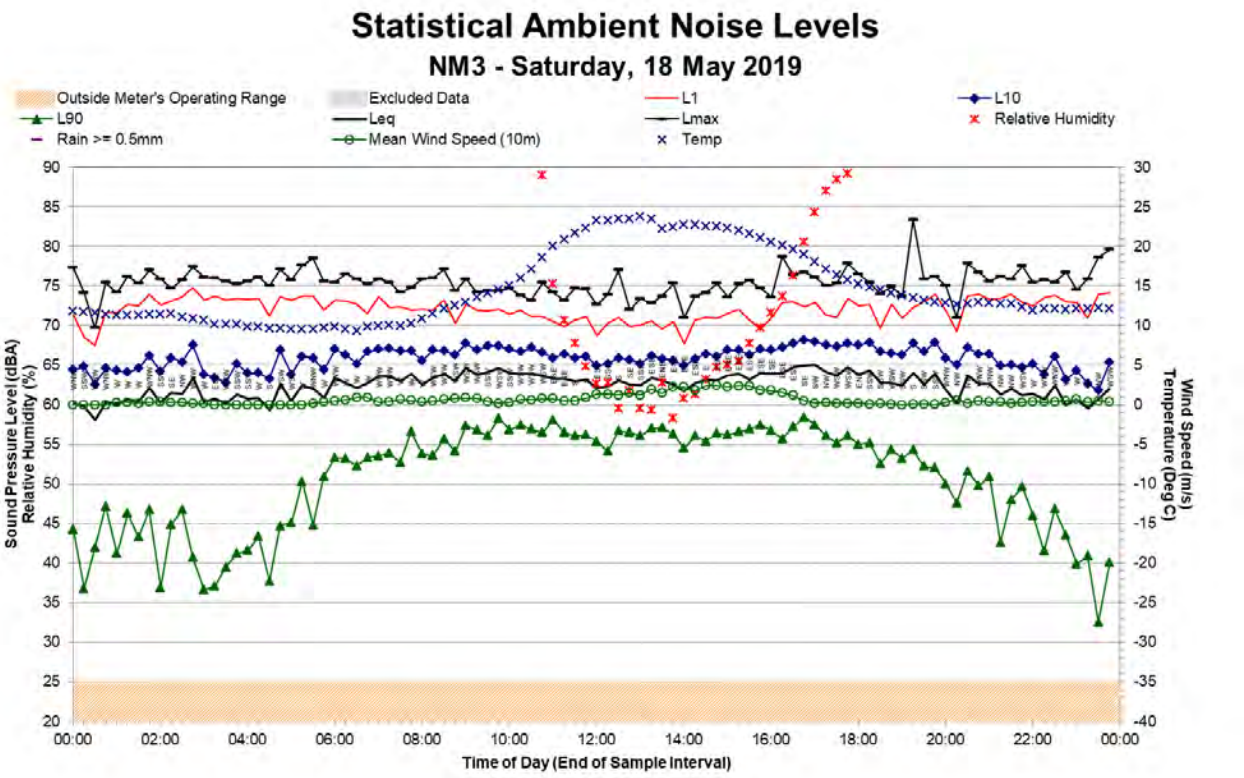
NM3 - Thursday, 16 May 2019

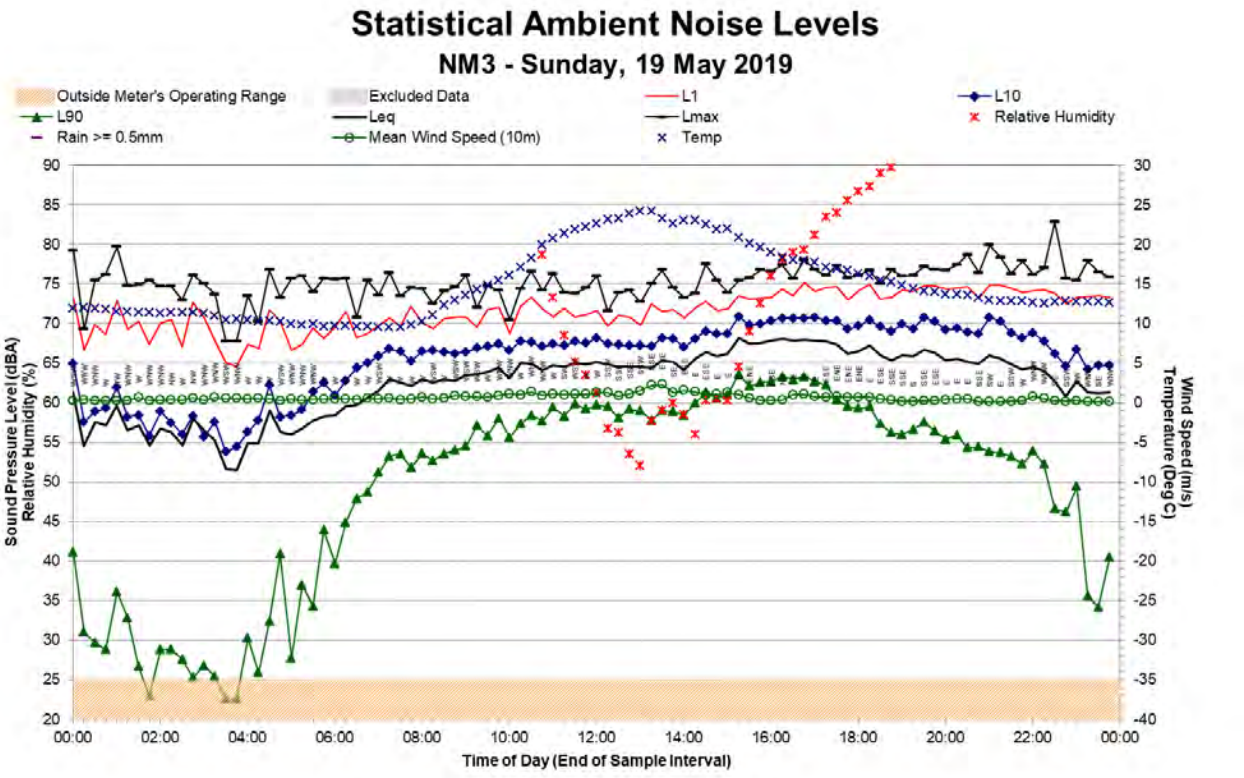


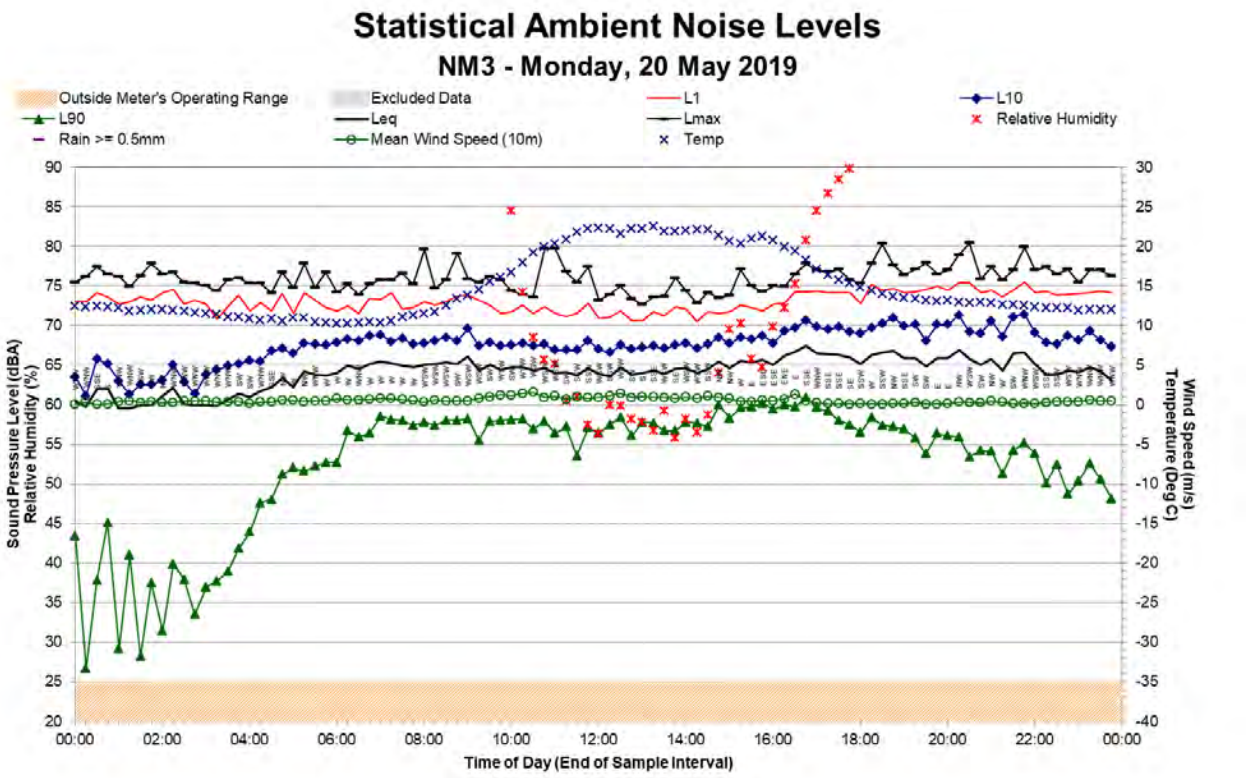
Statistical Ambient Noise Levels

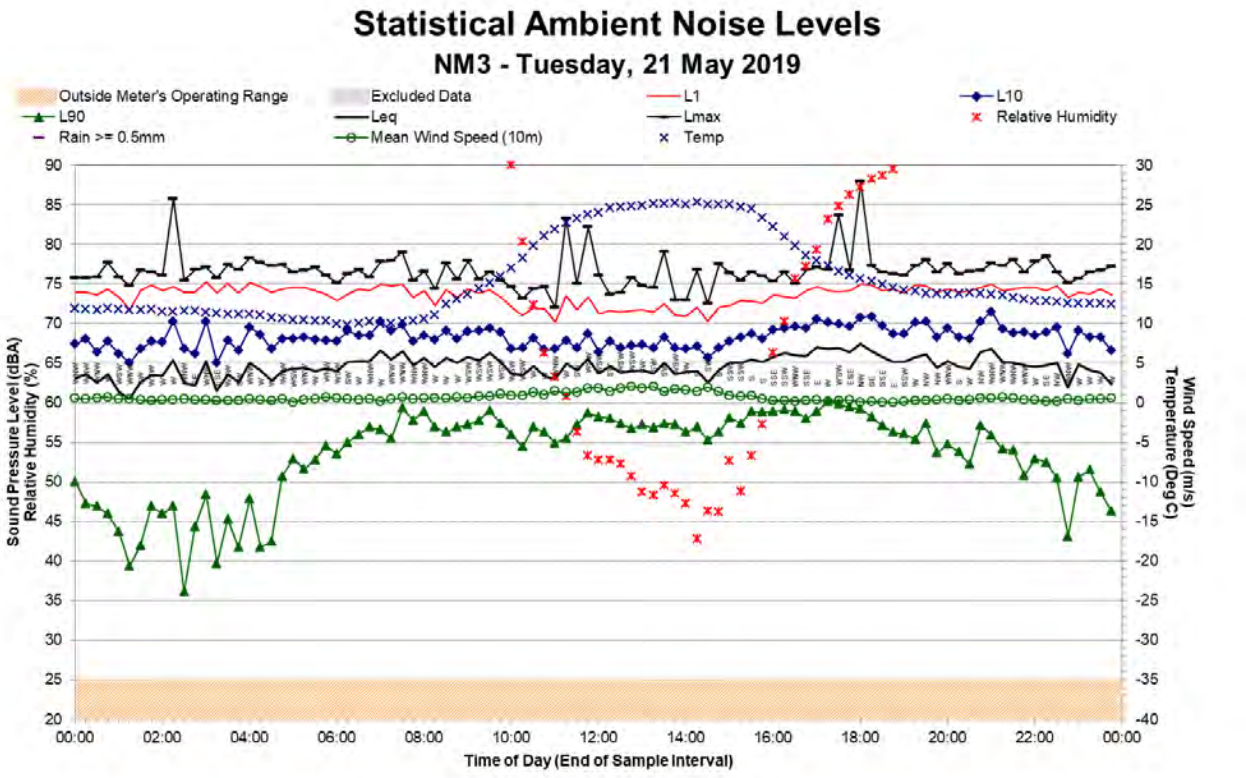
NM3 - Friday, 17 May 2019

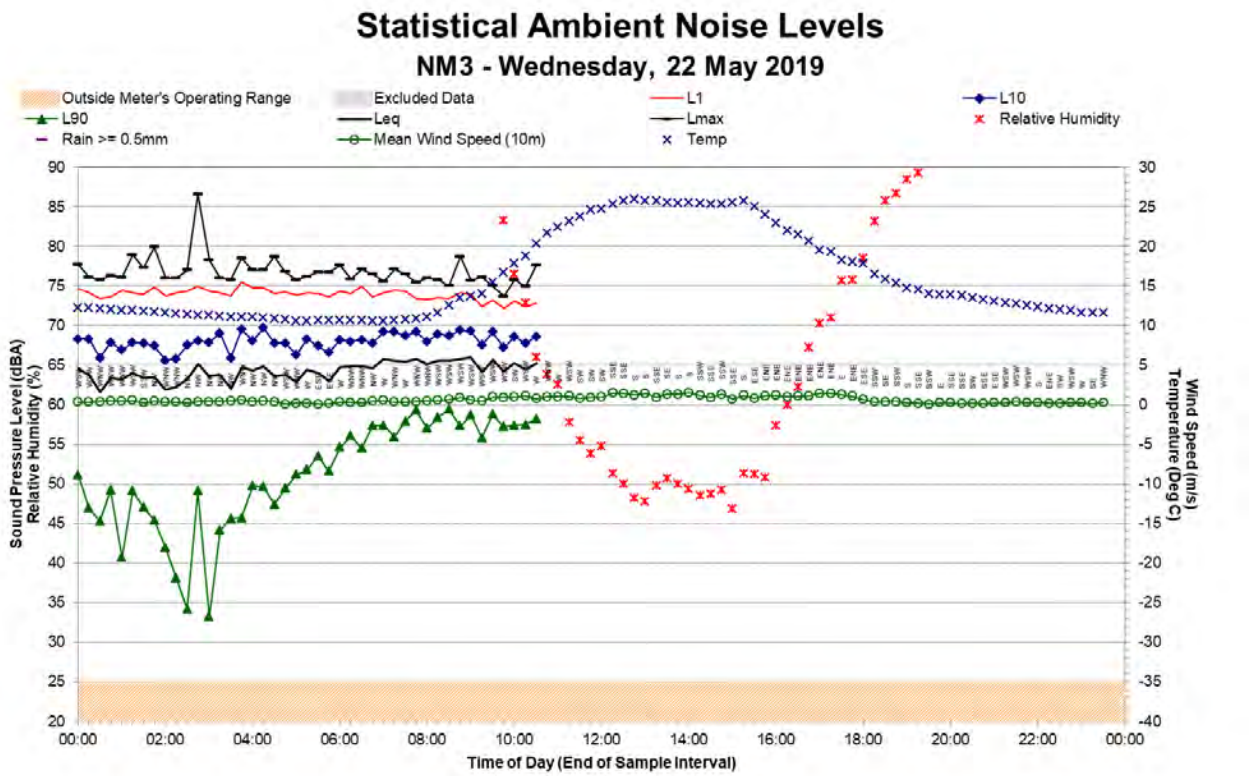



Statistical Ambient Noise Levels
NM3 - Saturday, 18 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
NM3 - Sunday, 19 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
NM3 - Monday, 20 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
NM3 - Tuesday, 21 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
NM3 - Wednesday, 22 May 2019
Outside Meter's Operating Range
Excluded Data
L1
L10
L90
Leq
Lmax
Relative Humidity
Rain >= 0.5mm
Mean Wind Speed (10m)
Temp
Sound Pressure Level (dBA)
Relative Humidity (%)
Wind Speed (m/s)
Temperature (Deg C)
Time of Day (End of Sample Interval)

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KARUAH QUARRY

Noise Monitoring

October 2019

4/56 Industrial Drive
East Mayfield NSW 2304

1. INTRODUCTION

This report summarises the quarterly noise monitoring at Karuah Quarry completed to meet the requirements of Section 66(6) of the Protection of the Environment Operations Act 1997 and the NSW Environmental Protection Authority's Requirements for Publishing Pollution Monitoring Data (October 2013). Included is the required monitoring data under Environmental Protection License (EPL) 11569 and Development Consent DA 265-10-2004

Table 1 – Licence Information

Environmental Protection License Number	11569
Licensee's Name	Karuah Quarry Pty Ltd
Licensee's Address	Postal Address: PO Box 3284 Thornton NSW 2322 Quarry Location: Corner of Andesite Rd and The Branch Lane Karuah NSW 2324

The report has been prepared in accordance with the requirements of the NSW Noise Policy for Industry (2017).

Table 2 – Operational Noise Criteria (dBA $LA_{eq(15min)}$)

TIME PERIOD	CRITERIA (DAY[1])
DAY 7:00 AM TO 6:00 PM MONDAY TO FRIDAY 7:00 AM TO 1:00 PM SATURDAY	48
EVENING 6:00 PM TO 10:00 PM MONDAY TO FRIDAY	47
AT ALL OTHER TIMES	46

The Environmental Monitoring Program notes that monitoring will be undertaken at the two nearest residences downwind and/or in line of sight from the quarry (not owned or under agreement with Karuah Quarry). Locations selected for noise monitoring are:

Table 3 – Noise Monitoring Locations

TIME PERIOD	CRITERIA (DAY[1])
NM1	Lot 3 DP785172 5772 Pacific Hwy, Karuah
NM2	Lot 2 DP 785172 5760 Pacific Hwy, Karuah

The noise monitoring has been completed in accordance with the Environmental Monitoring Prgram (SLR, 2014). A summary of requirements is presented in Table 3.

Figure 1 – Noise Monitoring Locations

2. OPERATOR ATTENDED MONITORING RESULTS

Results are presented in Table 4. Ambient noise levels in the table include all sources such as traffic, insects, birds, Karuah Quarry and Karuah East Quarry.

Quarry contributions listed are noted only when a contribution could be quantified.

Table 4 – Attended Noise Monitoring Results

LOCATION	DATE START TIME WEATHER	L_{AMAX}	L_{A1}	L_{A10}	L_{A90}	L_{AEQ}	DESCRIPTION OF NOISE AND TYPICAL MAXIMUM NOISE LEVELS (DBA)
NM1	15/10/2019 8:50 am W = Calm	74	68	64	56	61	Pacific Highway 60 Birds 50 **Karuah Quarry Inaudible**
NM2	24/10/2019 9:02 am W = Calm	79	73	68	58	65	Pacific Highway 65 Birds 50 **Karuah Quarry Inaudible**

3. UNATTENDED NOISE MONITORING

Table 5 – Unattended Noise Monitoring Results NM1

INP PERIOD	L_{A1}	L_{A10}	L_{A90}	L_{AEQ}
DAY	67	64	55	61
EVENING	71	66	56	63
ALL OTHER TIMES	74	72	58	68

Table 6 – Unattended Noise Monitoring Results NM2

INP PERIOD	L_{A1}	L_{A10}	L_{A90}	L_{AEQ}
DAY	73	69	59	66
EVENING	74	69	56	65
ALL OTHER TIMES	75	68	47	64

4. SUMMARY

The attended noise monitoring conducted during October 2019 identified that Karuah Quarry was not audible at location NM1 and NM2.

APPENDIX 5 – Audit Action Plan

Hunter Quarries - Karuah Quarry
Independent Environmental Audit - Response to Audit Recommendations

Approval ID	Requirement	Evidence collected	Independent Audit Findings/Recommendations	Compliance Status	Hunter Quarries Commitment	Timing / Effective By
Blast Hours	6. Blasting at the site may only take place: a) between 9am and 3pm Monday to Friday inclusive; b) once per week; and c) at such other times as may be approved by the DEC.	AEMRs; EMP (2014); Biannual Noise Monitoring Reports (2014- to current)	As reported in the 2018 AEMR, a blasting event occurred on 8 October 2018 at 3:05pm. As outlined in this condition, blasting is to occur between 9am and 3pm (Monday to Friday) inclusive. No evidence was provided during the audit to suggest that approval had been received by EPA or DPE to allow blasting to be undertaken outside of standard hours. Based on the above Hunter Quarries are deemed non-compliant with this condition. It is reported in AEMRs that two blasting events occurred on the same day, up to 10 minutes apart on: - 30/1/2018. - 3/2/2017 - 8/4/2016 - 8/7/2016 - 14/11/2014 and - 1/12/2014 subcondition b) of this condition outlines blasting events may only take once per week. Hunter Quarries should seek advice from DPIE as to whether these events are considered to be the same blasting 'event' due to the small amount of time between blasts.	Non-Compliant	HQ agrees with EMMs recommendation for this non-compliance. HQ will consult with the DPIE to determine what constitutes a blast event and then review the Blast Management Plan and make any necessary updates.	29 May 2020
Air Quality Impact Assessment Criteria	13. The Applicant shall ensure that the dust emissions generated by the development do not cause additional exceedances of the ambient air quality impact assessment criteria listed in Tables 6, 7, and 8 at any residence on, or on more than 25 percent of, any privately owned land. Pollutant Averaging period Criterion Total suspended particulate (TSP) matter Annual 90 µg/m3 Particulate matter < 10 µm (PM10) Annual 30 µg/m3	AEMRs; and EMP (2014)	The last audit (MCW 2014) outlines a letter from DECC dated 17 July 2008 describing that the Department no longer requires Heggies (the company monitoring at the time) to undertake regular PM10 monitoring. Therefore, the requirement for ongoing monitoring using the High Volume Air Sampler (HVAS) did not appear to be required. This condition requires the monitoring of PM10 and TSP in order to show compliance. It is recommended that Hunter Quarries enter formal discussions regarding the requirement for PM10 / TSP monitoring with DPIE following this audit, and following agreement with DPIE, amend the EMP to include HVAS, PM10 and TSP monitoring for Karuah and report data in future AEMRs, in accordance with development consent.	Non-Compliant	HQ undertakes regular TSP and PM10 monitoring for Karuah East Quarry operation using HVAS located at the closest resident to operation. In line with EMMS recommendation, HQ will update the EMP to include reporting of TSP and PM10 monitoring in future environmental monitoring reports.	30 June 2020

Air Quality Impact Assessment Criteria	Pollutant Averaging Period Criterion Particulate matter < 10 µm (PM10) 24 hour 50 µg/m3	AEMRs; and EMP (2014)	The last audit (MCW 2014) outlines a letter from DECC dated 17 July 2008 describing that the Department no longer requires Heggies (the company monitoring at the time) to undertake regular PM10 monitoring. Therefore, the requirement for ongoing monitoring using the High Volume Air Sampler (HVAS) did not appear to be required. This condition requires the monitoring of PM10 and TSP in order to show compliance. It is recommended that Hunter Quarries enter formal discussions regarding the requirement for PM10 / TSP monitoring with DPIE following this audit, and following agreement with DPIE, amend the EMP to include HVAS, PM10 and TSP monitoring for Karuah and report data in future AEMRs, in accordance with development consent.	Non-Compliant	HQ undertakes regular TSP and PM10 monitoring for Karuah East Quarry operation using HVAS located at the closest resident to operation. In line with EMMS recommendation, HQ will update the EMP to include reporting of TSP and PM10 monitoring in future environmental monitoring reports.	30 June 2020
Conservation Offset Area	18. Within 3 years of this consent, the Applicant shall implement suitable arrangements to provide long term security for the conservation offset area, to the satisfaction of the Director-General. Note: The long term security of the offset can be achieved through a combination of the following: Deed of Agreement with the Minister, rezoning the land under the Great Lakes Local Environment Plan 1996, caveats on the title under the Conveyancing Act 191, etc….	No conservation deed supplied	The last audit (MCW 2014) outlined that the Lot 12 (offset area) is not currently secured in 'perpetuity' at the time and classed the condition as 'non-compliant'. During the previous audit, Hunter Quarries were reported as stating that 'they were hoping to put a restriction (caveat) on the title, which would be registered with land titles office'. This would mean the area would only be used for conservation. MCW 2014 recommended that Hunter Quarries seek Lot 12 security in perpetuity through a formal land title change through NSW Land and Property in consultation with the DPIE. As outlined in the 2016 AEMR, on the 23 June 206, Hunter Quarries provided a submission seeking long term security for the conservation area through the implementation of a caveat on the title of Lot 12. It is stated in AEMR 2018 and AEMR 2017 that the caveat would be progressed further with the DPIE during 2019. No formalised evidence or correspondence was observed during the audit period (e.g. no deed or conservation bond for offset security). It is recommended Hunter Quarries follow up with DPIE and OEH in regards to arrangement (e.g. deed or agreement) which details long term security for the conservation offset area.	Non-Compliant	HQ will consult with the DPIE and OEH in regards to the conservation offset area. HQ will be guided by DPIE and/or OEH in meeting compliance with this condition.	30 October 2020

Conservation Offset Area	19. Before carrying out any clearing associated with Stage 2 of the development, the Applicant shall prepare, and subsequently implement, a Flora and Fauna Management Plan for the development to the satisfaction of the Director-General. This plan must include: a) a Vegetation Clearing Protocol; b) a Remnant Vegetation Conservation Plan; and c) a Conservation Offset Management Plan.	AEMRs; EMP (2014); EMS (2016); and Flora and Fauna Management Plan (2014)	The Flora and Fauna Management Plan (2014) was sighted as part of the audit. No evidence of correspondence with DPIE for the approval of the 2014 version of the management plan was able to be provided. It is recommended that Hunter Quarries reviews and updates Flora and Fauna Management Plan (including sub-plans).	Non-Compliant	HQ agrees with EMMs recommendation for this non-compliance. HQ will revise the Flora and Fauna Management Plan and seek approval from DPIE.	30 June 2020
Conservation Offset Area	21. The Remnant Vegetation Conservation Plan shall: a) describe what measures would be implemented to conserve, maintain and enhance the vegetation on the site which will not be cleared as part of the development (in particular sub-populations of Tetratheca juncea (Black-eyed Susan)); and b) describe how the performance of these measures would be monitored over time.	AEMRs; EMP (2014); EMS (2016); and Flora and Fauna Management Plan (2014)	Hunter Quarries has prepared and implemented a Remnant Vegetation Conservation Plan which adequately addressed measures for conservation, maintenance and enhancement of the vegetation on site and includes performance measures over time. It is noted that monitoring efforts for remnant vegetation areas ceased in 2011. The last audit (MCW 2014) recommended that Environmental Monitoring be conducted biannually to ensure all ecological values are monitored to determine any changes within communities.	Non-Compliant	HQ will review the EMP and in consultation with DPIE, look to address this non-compliance.	30 June 2020
Site Water Management Plan	26. Within 12 months of the date of this consent, the Applicant shall prepare, and subsequently implement, a Site Water Management Plan for the development, in consultation with the DEC, and to the satisfaction of the Director-General. The plan shall detail how site water management on site will be integrated with existing surface water management and erosion and sediment control systems and address surface water management and erosion and sediment control at both the construction and operation phases of the development. This plan must include: a) an Erosion and Sediment Control Plan; b) a Surface Water Monitoring Program; and c) a site water balance.	AEMRs; Site Water Management Plans (2014, 2015, 2016); and EPL 11569	Site Water Management Plan 2016 approved by DPIE in letter dated 1 April 2016, sighted and meets conditions of consent. Audit actions from the previous audit, while addressed in Table 1 of the current Site Water Management Plan (2016), do not appear to be fully implemented at the site, as evidenced by the discharge scenario identified during the site inspection (refer to Condition 24 above). It was unclear during the site inspection if a water level sensor was installed on Dam 2 or if an alarm was set for high water levels in the dam. The WMP states that these items have been installed and implemented. EMM recommends that Hunter Quarries update the Site Water Management Plan to formalise adequate management procedures of discharge point.	Non-Compliant	HQ will revise the Site Water Management Plan, including review of the discharge procedure, and seek approval from the DPIE. NOTE: LDP001 is fitted with a metered discharge valve and capacity indicator. HQ would not look to install a lock on the valve lever as this could result in future issues with the leave and whole valve.	30 June 2020

Surface Water Monitoring	28. The Applicant shall: a) measure: • the volume of water discharged from the site via licensed discharge points; • water use on the site; • water transfers across the site; and • dam and water structure storage levels. b) regularly monitor the quality of the surface water discharged from the licensed discharge points on the site; to the satisfaction of the DEC and the Director-General.	Site Water Management Plans (2014 and 2015) (Erosion and Sediment Control Plan, Surface Water Monitoring Program and site water balance) Water Usage Information	The last audit (MCW 2014) considered part a) of this condition 'non-compliant' and part b) 'compliant'. The following recommendations were made in light of this, including: - Revise and update SWMP to formalise adequate management procedures for discharge point, including the review of the monitoring and notification of high-water levels at Sediment dam 2; and - Formalise roles and responsibilities in relation to water discharge events. The WMP (2016) states that the water level in Sediment Dam 2 is monitored via an electronic height sensor, however the sensor did not appear to be operating during the site inspection. The SWMP describes that the flow of water can be estimated based on the flow through the discharge pipeline. The 2018 AEMR outlines that the site has the ability to pump water back up into the pit area (unused section) to increase capacity. Based on the site inspection it is not evident that any of the audit actions from the previous audit had been addressed, as discharge was occurring during the inspection after a 10 mm rainfall event, when no discharges had previously occurred at the site according to documentation reviewed for the audit. Recommendations as per response to Condition 26	Non-Compliant	HQ will revise the Site Water Management Plan, including review of the discharge procedure, and seek approval from the DPIE. NOTE: LDP001 is fitted with a metered discharge valve and capacity indicator. HQ would not look to install a lock on the valve lever as this could result in future issues with the leave and whole valve.	30 June 2020
Bushfire Management	36. The Applicant shall: a) ensure that the development is suitably equipped to respond to any fires on-site; and b) assist the Rural Fire Service and Emergency Services as much as possible if there is a fire on-site.; and within 6 months of the date of this consent, the Applicant shall prepare a conservation sensitive Bushfire Management Plan for the development, to the satisfaction of Council and the Rural Fire Service.	Bushfire Management Plan 2014; AEMRs;	The Bushfire Management Plan (BMP-GSSE dated August 2006) was updated and finalised in December 2014. No evidence of approval of the plan from council or RFS was available for observation. A copy of the plan was sighted during the audit. Plant and equipment available onsite for firefighting purposes includes: - water storage dam (Sediment Dam 2) with a permanent fill point for tankers, and a 50,000 L clean water tank; - water tanker and earth tanking equipment; fire extinguishers; warning alarm siren; and - portable radios. Hunter Quarries also employee site induction training specific to emergency response. Site Induction Training was observed and noted. It is recommended that Hunter Quarries follow-up with Council and RFS regarding the approval of this plan so that it is approved in accordance with the condition requirement.	Non-Compliant	HQ agrees with EMMs recommendation for this non-compliance. HQ will revise the Bushfire Management Plan with consultation from MidCoast Council and the RFS, and then seek approval from the DPIE.	30 June 2020

Environmnetal Monitoring Program	4. Within 3 months of the completion of the Independent Environmental Audit (see condition 6 below), the Applicant shall review, and if necessary revise, the Environmental Monitoring Program to the satisfaction of the Director-General.	EMP (2014)	The EMP does not appear to have been updated following the previous IEA. No formalised correspondence from DPIE regarding Environmental Monitoring Plan (2014) was sighted. Hunter Quarries is to review and update EMP within specified timeframe of the completion of the IEA (2019).	Non-Compliant	HQ agrees with EMMs recommendation for this non-compliance. HQ will revise the EMP and seek approval from DPIE.	31 January 2020
Community Consultative Committee	10. If the Applicant does not receive at least two expressions of interest to serve on the CCC the Applicant shall instead develop a communications strategy for consulting with Council and residents within 2 km of the development, to the satisfaction of the Director-General. This strategy should outline how the Applicant will advise Council and nearby residents on its environmental management plans, monitoring results, audit reports or complaints. This communication should occur twice a year. Notes: If during the course of the development, a Community Consultative Committee that has been established is found to be no longer effective, the Director-General may agree to its disbandment.	EMS 2016	No evidence supplied of submission of reports in accordance with the communications strategy detailed in the EMS. EMM recommend that these reports are prepared as discussed in the EMS and as required by this condition of consent. Alternatively, a CCC for Karuah Quarry should be implemented .	Non-Compliant	HQ agrees with EMMs recommendation for this non-compliance. HQ will review the Community Communication Strategy and revise accordingly with consultation from the DPIE.	30 April 2020