REPORT

CALGA SAND QUARRY

LOT 151 PEATS RIDGE ROAD, CALGA, NSW, 2250

ANNUAL COMPLIANCE NOISE MONITORING
RWDI # 2102196.04
28 July 2021

SUBMITTED TO

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SUBMITTED BY

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DOCUMENT CONTROL

Version	Status	Date	Prepared By	Reviewed By
A	Final	28 July 2021	Roman Haverkamp	John Wassermann

NOTE

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In October 2020, Wilkinson Murray Pty Ltd merged with RWDI Group, a leading international consulting firm. Wilkinson Murrays core practice areas of noise, acoustics, vibration and air quality consulting built since 1962 servicing Australia and Asia-Pacific region will complement RWDI practice areas. Combined, RWDI+Wilkinson Murray is one of the largest teams globally specialising in the area of noise, acoustics, vibration and air quality.

RWDI

RWDI is a team of highly-specialised consulting engineers and scientists working to improve the built environment through three core areas of practice: building performance, climate engineering and environmental engineering. More information is available at www.rwdi.com.

QUALITY ASSURANCE

RWDI Australia Pty Ltd operates a Quality Management System which complies with the requirements of AS/NZS ISO 9001:2015. This management system has been externally certified by SAI Global and Licence No. QEC 13457 has been issued for the following scope: The provision of consultancy services in acoustic engineering and air quality; and the sale, service, support and installation of acoustic monitoring and related systems and technologies.

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1 INTRODUCTION

Noise monitoring of the Calga Sand Quarry (the Site) was carried out by RWDI Australia (RWDI) in order to assess compliance with the relevant noise limits set by the Environment Protection Authority's (EPA) Environment Protection Licence (Licence No. 11295).

The compliance assessment is based on noise monitoring conducted on Monday 12 July, Tuesday 13 July, and Wednesday 14 July 2021.

Noise monitoring was undertaken in accordance with the *NSW Industrial Noise Policy* which is relevant to the Project's Environment Protection Licence (EPL).

2 ENVIRONMENT PROTECTION LICENCE

EPL Conditions relevant to noise limits (L3) and noise monitoring (M7) are reproduced below. Figure 3 of the Noise Management Plan is also included (**Figure 1**) to show the identified noise-sensitive receivers referred to in the EPL.

L3 Noise limits

L3.1 Noise from premises must not exceed the following limits at the locations and times specified. Where L_{Aeq} means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels over a measurement period.

Location	Noise Limit ($L_{Aeq,15minute}$)	Noise Limit ($L_{Aeq,15minute}$)	Noise Limit ($L_{Aeq,15minute}$)	Noise Limit ($L_{A1,1minute}$)
(As shown on Figure 4.5 of the EIS for the Calga Sand Quarry Extension dated May 2004)	**Day (7am - 6pm)**	**Evening (6pm - 10pm)**	**Night (10pm - 7am)**	**Night (10pm - 7am)**
Residence 3	41	35	35	45
Residence 4	40	35	35	45
Residence 5	39	35	35	45
Residence 8	36	35	35	45
Any other residence not subject to a negotiated agreement	35	35	35	45

L3.2 The noise emission limits identified in this licence apply under all meteorological conditions except for:

a) wind speeds greater than 3 metres/second at 10 metres above ground level; or

b) temperature inversion conditions between 1.5 degrees Celsius and 3 degrees Celsius per 100 metres and wind speed up to 2 metres per second at 10 metres above ground level; or

c) temperature inversion conditions greater than 3 degrees Celsius per 100 metres.

L3.3 For the purpose of condition L3.1:

a) Data recorded by the meteorological station identified as EPA Licence Point 2 must be used to determine meteorological conditions; and

b) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW *Industrial Noise Policy*.

L3.4 To determine compliance:

a) with the $L_{eq(15minute)}$ noise limits in condition L3.1, the noise measurement equipment must be located:

- approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or
- within 30 metres of a dwelling facade, but not closer than 3 metres, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable
- within approximately 50 metres of the boundary of a National Park or a Nature Reserve.

b) with the $L_{1(1min)}$ noise limits in condition L3.1, the noise measurement equipment must be located within 1 metre of a dwelling façade.

c) with the noise limits in condition L3.1, the noise measurements equipment must be located:

- at the most affected point at a location where there is no dwelling at the location; or
- at the most affected point within an area at a location prescribed by condition L3.4(a) or L3.4(b).

L3.5 A non-compliance of condition L3.1 will still occur where noise generated from the premises in excess of the appropriate limit is measured:

a) at a location other than an area prescribed by condition L3.3(a) and L3.3(b); and/or

b) at a point other than the most affected point at a location.

L3.6 For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

M7 Noise monitoring

M7.1 To assess compliance with the noise limits presented in the noise monitoring table in condition L3.1, attended noise monitoring must be undertaken in accordance with condition L3.4 and:

a) at each one of the locations listed in Condition L3.1;

b) occur annually in a reporting period;

c) occur during each day, evening and night period as defined in the NSW *Industrial Noise Policy* for a minimum of:

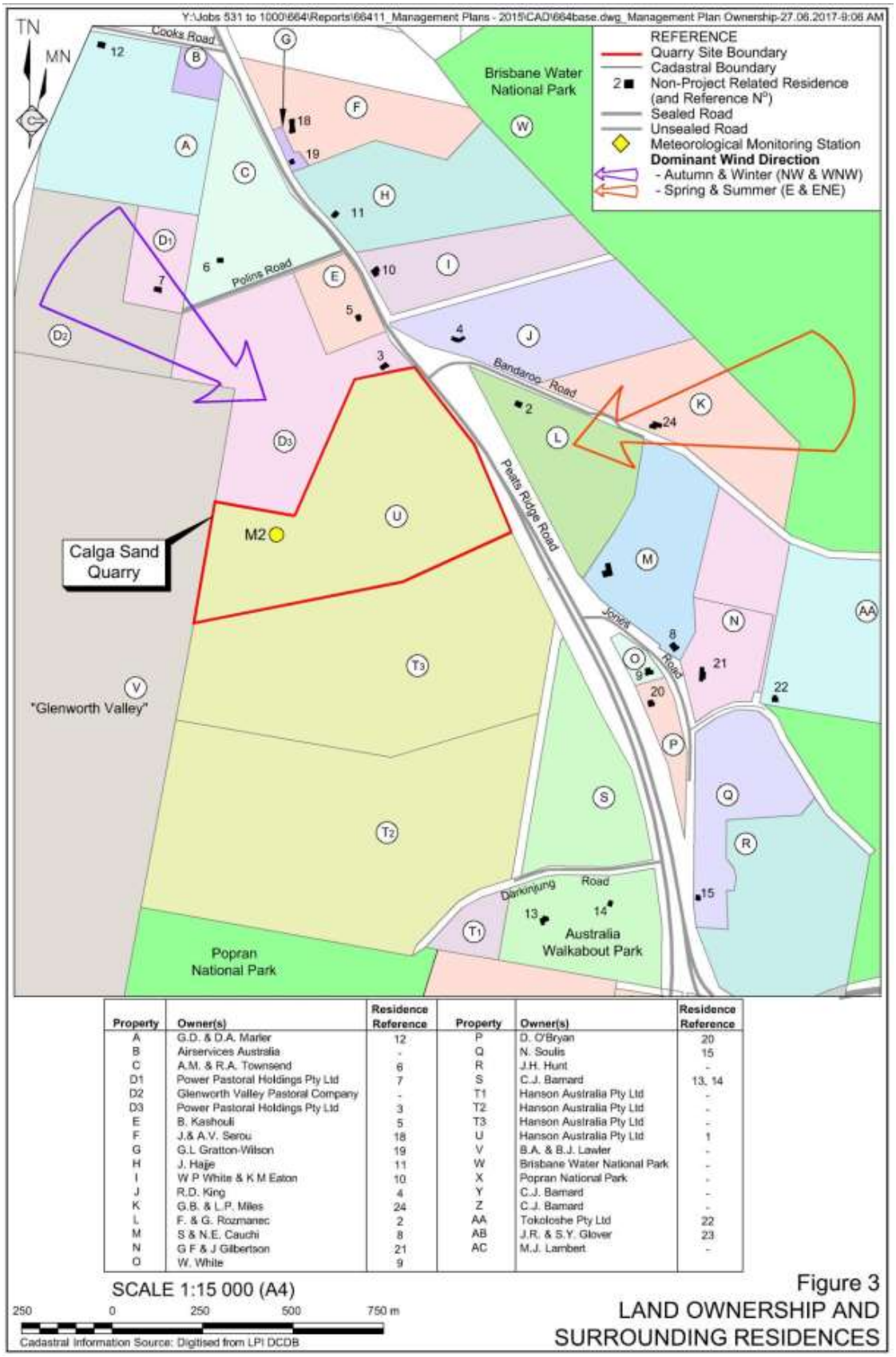
i) 1.5 hours during the day;

ii) 30 minutes during the evening; and

iii) 1 hour during the night.

d) occur for three consecutive operating days.

Note: The frequency of monitoring may be varied by the EPA once the variability of the noise impact is established.



Property	Owner(s)	Residence Reference	Property	Owner(s)	Residence Reference
A	G.D. & D.A. Marler	12	P	D. O'Bryan	20
B	Airservices Australia	-	Q	N. Soulis	15
C	A.M. & R.A. Townsend	6	R	J.H. Hunt	-
D1	Power Pastoral Holdings Pty Ltd	7	S	C.J. Barnard	13, 14
D2	Glenworth Valley Pastoral Company	-	T1	Hanson Australia Pty Ltd	-
D3	Power Pastoral Holdings Pty Ltd	3	T2	Hanson Australia Pty Ltd	-
E	B. Kashouli	5	T3	Hanson Australia Pty Ltd	-
F	J.& A.V. Serou	18	U	Hanson Australia Pty Ltd	1
G	G.L Gratton-Wilson	19	V	B.A. & B.J. Lawler	-
H	J. Hajje	11	W	Brisbane Water National Park	-
I	W P White & K M Eaton	10	X	Popran National Park	-
J	R.D. King	4	Y	C.J. Barnard	-
K	G.B. & L.P. Miles	24	Z	C.J. Barnard	-
L	F. & G. Rozmanec	2	AA	Tokoloshe Pty Ltd	22
M	S & N.E. Cauchi	8	AB	J.R. & S.Y. Glover	23
N	G F & J Gilbertson	21	AC	M.J. Lambert	-
O	W. White	9			

Figure 1: Land Ownership and Surrounding Receivers

3 MONITORING METHODOLOGY

3.1 Monitoring Locations

Monitoring was conducted at Residences 3, 4, 8 and 13. Note that Residence 5 was not included in the noise monitoring. It is assumed that achieving compliance at Residence 3 would infer compliance at Residence 5.

For Residence 3, daytime monitoring was conducted inside the property approximately 30 meters (m) west of the dwelling. Evening and night measurements were carried out along Peats Ridge Road adjacent to the property, approximately 20 m away from the dwelling.

Monitoring at Residence 4 was conducted 30 m away from the dwelling on the property's access road.

For Residence 8, noise monitoring was conducted on Jones Road adjacent to the property. Due to the location of the residence relative to the quarry, site-related noise levels at the monitoring location are expected to be representative of those at the residence.

Monitoring at Residence 13 were carried out on Darkinjung Road at the entrance gate to Australia Walkabout Wildlife Park.

3.2 Monitoring Periods

Monitoring was conducted across three consecutive days on:

- Monday 12 July;
- Tuesday 13 July; and
- Wednesday 14 July 2021.

Daytime measurements were conducted between the hours of 11:00 am and 6:00 pm. Evening monitoring was completed directly after the daytime measurements, between approximately 6:00 pm and 8:30 pm.

Night monitoring was undertaken between the hours of 5:00 am and 7:00 am as no activities occur on site between 10:00 pm and 5:00 am. In order to complete the night measurements in three consecutive nights, two RWDI representatives conducted measurements simultaneously at different locations. It should be noted that due to the limited time available to conduct the night monitoring (i.e. between 5:00 am and 7:00 am) and the time required to move from one monitoring location to the next, night measurements finished just after 7:00 am.

3.3 Monitoring Equipment

Noise levels were measured with a Bruel & Kjaer Type 2236, Bruel & Kjaer Type 2250, and NTi XL2 sound level meters (SLMs).

The Bruel & Kjaer Type 2236 SLM conforms to Australian Standard 1259 "Acoustics – Sound Level Meters" as a Type 1 Precision SLM which has an accuracy suitable for laboratory use. The A-Weighting filter of the meter was selected and the time weighting was set to 'fast'. The meter was field calibrated both before and after the measurements with a Brüel & Kjær Type 4230 sound level calibrator (SLC). No significant system drift was noted (i.e. the SLM calibrated 94.0 dBA before and after each of the 15-minute measurements).

The Brüel & Kjær Type 2250 SLM is a type approved system, offering Class 1 performance according to IEC 61672-1:2013 *Electroacoustics – Sound level meters – Part 1: Specifications* and has current calibration with *National Association of Testing Authorities*, Australia requirements (NATA). It is calibrated in accordance with IEC 61672-3:2013 *Electroacoustics – Sound level meters – Part 3: Periodic tests.* The A-weighting filter of the meter was selected, and the time weighting was set to "Fast". The field calibration of the meter was checked before and after the measurements with a Brüel & Kjær Type 4231 SLC and no significant drift was noted (i.e. the SLM calibrated 94.0 dBA before and after each of the 15-minute measurements). This SLC is a Class 1 calibrator according to AS IEC 60942-2004 *Electroacoustics – Sound calibrators* and has been calibrated to the same Standard.

The NTi Type XL2 SLM is a type approved system offering Class 1 performance according to IEC 61672-1:2013 *Electroacoustics – Sound level meters – Part 1: Specifications* and has current with *National Association of Testing Authorities*, Australia requirements (NATA) calibrated and has current with National Association of Testing Authorities, Australia requirements (NATA) calibrated to IEC 61672-3:2013 *Electroacoustics – Sound level meters – Part 3: Periodic tests.* The A-weighting filter of the meter was selected, and the time weighting was set to "Fast". The field calibration of the meter was checked before and after the measurements with a Brüel & Kjær Type 4231 SLC and no significant drift was noted (i.e. the SLM calibrated 93.8 dBA before and after each of the 15-minute measurements). This SLC is a Class 1 calibrator according to AS IEC 60942-2004 *Electroacoustics – Sound calibrators* and has been calibrated to the same Standard

The Brüel & Kjær Type 2236, Brüel & Kjær Type 2250, NTi Type XL2, Brüel & Kjær Type 4230, and Brüel & Kjær Type 4231 hold current laboratory calibrations in accordance with NATA and our in-house Quality Assurance Procedures. Calibration Certificates for the three SLMs used for the monitoring are included in **Appendix B**. Note that Calibration Certificates are valid for 2 years.

3.4 Meteorological Conditions

The measurements were conducted in suitable meteorological conditions for valid measurements (wind less than 5 meters per second [m/s] at microphone height and no rain). Wind speed was determined by the RWDI representatives using a hand-held digital anemometer AR816.

Meteorological data was also obtained from the Site's weather station to determine the applicability of the EPL noise limits under the meteorological conditions present during the measurements. The data is summarised in **Appendix C**. It demonstrates that monitoring was generally conducted during meteorological conditions under which the EPL noise limits apply.

It should be noted that the Site's weather station does not capture sigma-theta and as such temperature inversions during the measurements could not be determined. With respect to the EPL Conditions, the presence of temperature inversions is of no consequence in the event of compliance (i.e. noise levels increase in the presence of temperature inversions).

4 MEASUREMENT RESULTS

Table 1 summarises the measured $L_{Aeq,15min}$ and $L_{A1,1min}$ noise levels generated by the Site. Individual noise levels measured at the same locations were collated into ranges of noise levels for ease of reference. Detailed results of all measurements are summarised in **Appendix D**.

Table 1: Summary of Measured Noise Levels

Monitoring Period	Location	Day 1 (12/7/21)		Day 2 (13/7/21)		Day 3 (14/7/21)		Noise Limits	
		$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ (dBA)	$L_{A1,1min}$ (dBA)
Day (7.00am – 6.00pm)	Res. 3	< 30	n/a	< 30	n/a	< 30	n/a	41	n/a
	Res. 4	< 30	n/a	< 30	n/a	< 30	n/a	40	n/a
	Res. 8	Inaudible	n/a	Inaudible	n/a	Inaudible	n/a	36	n/a
	Res. 13	Inaudible	n/a	Inaudible	n/a	Inaudible	n/a	35	n/a
Evening (6.00pm – 10.00pm)	Res. 3	Inaudible	n/a	Inaudible	n/a	Inaudible	n/a	35	n/a
	Res. 4	Inaudible	n/a	Inaudible	n/a	Inaudible	n/a	35	n/a
	Res. 8	Inaudible	n/a	Inaudible	n/a	Inaudible	n/a	35	n/a
	Res. 13	Inaudible	n/a	Inaudible	n/a	Inaudible	n/a	35	n/a
Night (10.00pm – 7am)	Res. 3	< 30	44	Inaudible	Inaudible	< 30	41-42	35	45
	Res. 4	< 30	42	< 30	42	< 30	43-44	35	45
	Res. 8	Inaudible	Inaudible	Inaudible	Inaudible	Inaudible	Inaudible	35	45
	Res. 13	Inaudible	Inaudible	Inaudible	Inaudible	Inaudible	Inaudible	35	45

Table 1 indicates that measured $L_{Aeq,15min}$ and $L_{A1,1min}$ noise levels generated by the Site complied with the relevant noise limits set in the EPL.

5 CONCLUSION

Noise monitoring of the Calga Sand Quarry was carried out by RWDI in order to assess compliance with the relevant noise limits set by the Environment Protection Authority's Environment Protection Licence (Licence No. 11295).

The compliance assessment is based on noise monitoring conducted on Monday 12 July, Tuesday 13 July, and Wednesday 14 July 2021.

Monitoring results indicate that measured $L_{Aeq,15min}$ and $L_{A1,1min}$ noise levels generated by the Site complied with the relevant noise limits set in the EPL.

APPENDIX A: GLOSSARY OF ACOUSTIC TERMINOLOGY

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors are here defined.

Maximum Noise Level (L_{Amax}) – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

dB(A) – A-weighted decibels. The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter.

Frequency – Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.

Impulsive Noise – Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.

Intermittent Noise – The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.

L_{A1} – The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

L_{A10} – The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise.

L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

L_{Aeq} – The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

ABL – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L_{A90}) for each period.

RBL – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.

Sound Absorption – The ability of a material to absorb sound energy through its conversion into thermal energy.

Sound Level Meter – An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure level.

Sound Pressure Level – The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.

Tonal Noise – Containing a prominent frequency and characterised by a definite pitch.

APPENDIX B: CALIBRATION CERTIFICATES

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: SLM 42170

Equipment Description:	Sound Level Meter		
Manufacturer:	B & K		
Model No:	2236	**Serial No:**	2030550
Microphone Type:	4188	**Serial No:**	1903087
Preamplifier Type:	-	**Serial No:**	-
Comments:	All tests passed for type 1. (See over for details)		
Owner:	Wilkinson Murray Pty Ltd L4, 272 Pacific Highway Crows Nest, NSW 2065		
Ambient Pressure:	1004 hPa ±1.5 hPa		
Temperature:	25 °C ±2° C	**Relative Humidity:**	36 % ±5%
Date of Calibration:	08/10/2019	**Issue Date:**	09/10/2019

Acu-Vib Test Procedure: AVP05 (SLM)

CHECKED BY: **AUTHORISED SIGNATURE:**

Accredited for compliance with ISO/IEC 17025 - Calibration
The results of the tests, calibration and/or measurements included in this document are traceable to Australian/national standards.
The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

NATA ACCREDITATION

Accredited Lab. No. 9262
Acoustic and Vibration Measurements

ACU-VIB ELECTRONICS

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HBK HOTTINGER BRÜEL & KJÆR

NATA WORLD RECOGNISED ACCREDITATION

Australian Calibration Laboratory
Suite 2, 6-10 Talavera Road, North Ryde NSW 2113, Australia
Accredited for compliance with ISO/IEC 17025 - Calibration. Laboratory No. 1301

CERTIFICATE OF CALIBRATION

Certificate No: CAU2000738

CALIBRATION OF:

Sound Level Meter:	Bruel & Kjaer	2250	No: 3008381
Microphone:	Bruel & Kjaer	4189	No: 2021257
Preamplifier:	Bruel & Kjaer	ZC-0032	No: 22697
Supplied Calibrator:	N/A	N/A	No: N/A
Software version:	BZ7223 Version 4.7.5	Pattern Approval:	PTB
Instruction manual:	BE1712-22	Identification:	N/A

CUSTOMER:

Wilkinson Murray Pty Ltd
Level 4, 272 Pacific Highway
Crows Nest NSW 2065

CALIBRATION CONDITIONS:

Preconditioning: 4 hours at 23 °C

Environment conditions: *see actual values in **Environmental conditions** sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-1:2013 class 1. Procedures from IEC 61672-3:2013 were used to perform the periodic tests.

PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System B&K 3630 with application software type 7763 (version 8.1 - DB: 8.10) and test procedure 2250-4189.

RESULTS:

	Initial calibration		Calibration prior to repair/adjustment
X	Calibration without repair/adjustment		Calibration after repair/adjustment

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of Calibration: 24/09/2020

Sajeeb Tharayil
Calibration Technician

Certificate issued: 25/09/2020

Craig Patrick
Approved signatory

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Sound Level Meter
IEC 61672-3.2013
Calibration Certificate

Calibration Number C21363

Client Details	RWDI Level 4, 272 Pacific Highway Crows Nest NSW 2065
Equipment Tested/ Model Number :	Nti XL2
Instrument Serial Number :	A2A-15945-E0
Microphone Serial Number :	A17354
Pre-amplifier Serial Number :	8379

Pre-Test Atmospheric Conditions		**Post-Test Atmospheric Conditions**	
Ambient Temperature :	21.6°C	**Ambient Temperature :**	21.9°C
Relative Humidity :	48%	**Relative Humidity :**	47.9%
Barometric Pressure :	100.3kPa	**Barometric Pressure :**	100.3kPa

Calibration Technician :	Lucky Jaiswal	**Secondary Check:**	Rhys Gravelle
Calibration Date :	3 Jun 2021	**Report Issue Date :**	3 Jun 2021

Approved Signatory : Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	*Pass*	17: Level linearity incl. the level range control	*Pass*
13: Electrical Sig. tests of frequency weightings	*Pass*	18: Toneburst response	*Pass*
14: Frequency and time weightings at 1 kHz	*Pass*	19: C Weighted Peak Sound Level	*Pass*
15: Long Term Stability	*Pass*	20: Overload Indication	*Pass*
16: Level linearity on the reference level range	*Pass*	21: High Level Stability	*Pass*

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Least Uncertainties of Measurement -

Acoustic Tests		Environmental Conditions	
125Hz	*±0.12dB*	*Temperature*	*±0.2°C*
1kHz	*±0.11dB*	*Relative Humidity*	*±2.4%*
8kHz	*±0.13dB*	*Barometric Pressure*	*±0.015kPa*
Electrical Tests	*±0.10dB*		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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APPENDIX C: METEOROLOGICAL DATA

Day	Assessment Period	Time Period	Wind Speed (m/s)	Wind Direction	Rain (mm)
Day 1 (12/7/21)	Night (10.00pm – 7.00am)	5.00am – 5.15am	0	---	0
		5.15am – 5.30am	0	---	0
		5.30am – 5.45am	0	---	0
		5.45am – 6.00am	0	---	0
		6.00am – 6.15am	0.4	ENE	0.2
		6.15am – 6.30am	0.4	ENE	0
		6.30am – 6.45am	0	---	0
		6.45am – 7.00am	0	---	0
		7.00am – 7.15am	0	---	0
	Day (7.00am – 6.00pm)	11.00am -11.15am	0.4	W	0
		11.15am -11.30am	1.3	W	0
		11.30am – 11.45am	1.3	WSW	0
		11.45am -12.00pm	0.9	WSW	0
		12.00pm – 12.15pm	1.3	NNW	0
		12.15pm – 12.30pm	1.8	WNW	0
		12.30pm – 12.45pm	1.3	WNW	0
		12.45pm – 1.00pm	0.9	NNW	0
		1.00pm – 1.15pm	1.3	NNW	0
		1.15pm – 1.30pm	1.3	NNW	0
		1.30pm – 1.45pm	1.3	NNW	0
		1.45pm – 2.00pm	1.3	NW	0
		2.00pm – 2.15pm	0.9	N	0
		2.15pm – 2.30pm	1.3	N	0
		2.30pm – 2.45pm	1.3	NNE	0
		2.45pm – 3.00pm	0.9	N	0
		3.00pm – 3.15pm	1.8	ENE	0
		3.15pm – 3.30pm	0.9	NE	0
		3.30pm – 3.45pm	1.8	ENE	0

Day	Assessment Period	Time Period	Wind Speed (m/s)	Wind Direction	Rain (mm)
		3.45pm – 4.00pm	2.2	ENE	0
		4.00pm – 4.15pm	1.3	ENE	0
		4.15pm – 4.30pm	1.8	NE	0
		4.30pm – 4.45pm	2.2	NE	0
		4.45pm – 5.00pm	2.2	NE	0
		5.00pm – 5.15pm	2.7	NE	0
		5.15pm – 5.30pm	3.1	NE	0
		5.30pm – 5.45pm	3.1	NE	0
		5.45pm – 6.00pm	2.7	NE	0
	Evening (6.00pm – 10.00pm)	6.00pm – 6.15pm	1.3	NNE	0
		6.15pm – 6.30pm	0.9	NNE	0
		6.30pm – 6.45pm	1.8	NE	0
		6.45pm – 7.00pm	2.2	NE	0
		7.00pm – 7.15pm	2.2	NE	0
		7.15pm – 7.30pm	1.8	NE	0
		7.30pm – 7.45pm	2.2	NE	0
		7.45pm – 8.00pm	1.8	NE	0
		8.00pm – 8.15pm	0.9	NNE	0
		8.15pm – 8.30pm	1.3	NE	0
Day 2 (13/7/21)	Night (10.00pm – 7.00am)	5.00am – 5.15am	1.3	NNW	0
		5.15am – 5.30am	1.3	WNW	0
		5.30am – 5.45am	0.9	WNW	0
		5.45am – 6.00am	0	WNW	0
		6.00am – 6.15am	0	WNW	0
		6.15am – 6.30am	0.9	NW	0
		6.30am – 6.45am	0	NNE	0
		6.45am – 7.00am	0.4	NW	0
		7.00am – 7.15am	1.8	NW	0
	Day (7.00am – 6.00pm)	11.00am -11.15am	1.8	W	0
		11.15am -11.30am	1.8	W	0

Day	Assessment Period	Time Period	Wind Speed (m/s)	Wind Direction	Rain (mm)
		11.30am – 11.45am	2.2	W	0
		11.45am -12.00pm	2.2	WNW	0
		12.00pm – 12.15pm	1.8	W	0
		12.15pm – 12.30pm	1.8	WNW	0
		12.30pm – 12.45pm	1.8	WNW	0
		12.45pm – 1.00pm	1.8	WNW	0
		1.00pm – 1.15pm	1.3	NW	0
		1.15pm – 1.30pm	1.3	NW	0
		1.30pm – 1.45pm	1.3	NW	0
		1.45pm – 2.00pm	1.8	WNW	0
		2.00pm – 2.15pm	1.3	NW	0
		2.15pm – 2.30pm	1.3	NNW	0
		2.30pm – 2.45pm	0.9	NW	0
		2.45pm – 3.00pm	1.3	WNW	0
		3.00pm – 3.15pm	1.3	WNW	0
		3.15pm – 3.30pm	1.3	WNW	0
		3.30pm – 3.45pm	0.4	NW	0
		3.45pm – 4.00pm	0	N	0
		4.00pm – 4.15pm	0	N	0
		4.15pm – 4.30pm	0.4	NNE	0
		4.30pm – 4.45pm	1.3	NNE	0
		4.45pm – 5.00pm	1.3	NNE	0
		5.00pm – 5.15pm	1.3	NNE	0
		5.15pm – 5.30pm	0.4	N	0
		5.30pm – 5.45pm	0.4	NNE	0
		5.45pm – 6.00pm	0.9	NNE	0
	Evening (6.00pm – 10.00pm)	6.00pm – 6.15pm	0.4	N	0
		6.15pm – 6.30pm	0.4	N	0
		6.30pm – 6.45pm	0	N	0
		6.45pm – 7.00pm	0.4	N	0

Day	Assessment Period	Time Period	Wind Speed (m/s)	Wind Direction	Rain (mm)
		7.00pm – 7.15pm	0.4	NNW	0
		7.15pm – 7.30pm	0.9	NNW	0
		7.30pm – 7.45pm	0.4	N	0
		7.45pm – 8.00pm	0.4	N	0
		8.00pm – 8.15pm	0.9	NNE	0
		8.15pm – 8.30pm	0.4	N	0
Day 3 (14/7/21)	Night (10.00pm – 7.00am)	5.00am – 5.15am	0.9	NNW	0
		5.15am – 5.30am	0.4	NNW	0
		5.30am – 5.45am	1.3	NW	0
		5.45am – 6.00am	1.3	NNW	0
		6.00am – 6.15am	0.9	NW	0
		6.15am – 6.30am	1.3	NW	0
		6.30am – 6.45am	1.8	NNW	0
		6.45am – 7.00am	1.3	NW	0
		7.00am – 7.15am	0.9	NNW	0
	Day (7.00am – 6.00pm)	11.00am -11.15am	0.9	NNE	0
		11.15am -11.30am	1.3	N	0
		11.30am – 11.45am	0.9	N	0
		11.45am -12.00pm	0.9	N	0
		12.00pm – 12.15pm	0	NNW	0
		12.15pm – 12.30pm	0.4	W	0
		12.30pm – 12.45pm	0	---	0
		12.45pm – 1.00pm	0	WSW	0.2
		1.00pm – 1.15pm	0	WSW	0
		1.15pm – 1.30pm	1.8	NW	0
		1.30pm – 1.45pm	1.8	WNW	0
		1.45pm – 2.00pm	2.7	WNW	0
		2.00pm – 2.15pm	1.8	WNW	0
		2.15pm – 2.30pm	1.3	WNW	0
		2.30pm – 2.45pm	1.8	NW	0

Day	Assessment Period	Time Period	Wind Speed (m/s)	Wind Direction	Rain (mm)
		2.45pm – 3.00pm	1.3	NNW	0
		3.00pm – 3.15pm	0.9	NNW	0
		3.15pm – 3.30pm	0	---	0
		3.30pm – 3.45pm	0	---	0
		3.45pm – 4.00pm	0	---	0
		4.00pm – 4.15pm	0	---	0
		4.15pm – 4.30pm	1.3	NE	0
		4.30pm – 4.45pm	1.8	NNE	0
		4.45pm – 5.00pm	1.8	NE	0
		5.00pm – 5.15pm	0.9	NE	0
		5.15pm – 5.30pm	0.9	NE	0
		5.30pm – 5.45pm	1.3	NE	0
		5.45pm – 6.00pm	0.9	NE	0
	Evening (6.00pm – 10.00pm)	6.00pm – 6.15pm	0.4	NE	0
		6.15pm – 6.30pm	0.9	NE	0
		6.30pm – 6.45pm	0	NE	0
		6.45pm – 7.00pm	0.4	NE	0
		7.00pm – 7.15pm	1.3	NE	0
		7.15pm – 7.30pm	1.8	NE	0
		7.30pm – 7.45pm	0.9	NE	0
		7.45pm – 8.00pm	0	---	0
		8.00pm – 8.15pm	0	NE	0
		8.15pm – 8.30pm	0.4	NE	0

APPENDIX D: DETAILED MEASUREMENT RESULTS

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
Day 1 (12/7/21)	Night (10.00pm – 7.00am)	5.00am - 5.15am	Residence 3	71	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 80-90 dBA.
		5.16am - 5.30am	Residence 3	70	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 80-90 dBA.
		5.30am - 5.45am	Residence 3	73	< 30	44	35	45	One truck movement associated with Site briefly audible 40-44 dBA. Peats Ridge Road traffic noise 80-91 dBA.
		5.45am - 6.00am	Residence 3	72	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 80-92 dBA.
		6.03am - 6.18am	Residence 4	57	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 60-74 dBA.
		6.18am - 6.33am	Residence 4	56	< 30	42	35	45	Truck movement associated with Site briefly audible 40-42 dBA. Peats Ridge Road traffic noise 60-72 dBA.
		6.33am - 6.48am	Residence 4	58	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 60-72 dBA.
		6.48am - 7.03am	Residence 4	57	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 60-72 dBA.
		5.00am - 5.15am	Residence 13	49	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 45-50 dBA. Peats Ridge Road traffic noise 60-66 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		5.15am - 5.30am	Residence 13	50	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 45-50 dBA. Peats Ridge Road traffic noise 60-66 dBA.
		5.30am - 5.45am	Residence 13	54	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 45-50 dBA. Peats Ridge Road traffic noise 60-71 dBA.
		5.45am - 6.00am	Residence 13	52	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 45-50 dBA. Peats Ridge Road traffic noise 60-67 dBA.
		6.03am - 6.18am	Residence 8	57	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 35-42 dBA. Peats Ridge Road traffic noise 60-69 dBA.
		6.18am - 6.33am	Residence 8	56	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 35-42 dBA. Peats Ridge Road traffic noise 60-70 dBA.
		6.33am - 6.48am	Residence 8	57	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 35-42 dBA. Peats Ridge Road traffic noise 60-69 dBA.
		6.48am - 7.03am	Residence 8	57	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 35-42 dBA. Peats Ridge Road traffic noise 60-67 dBA.
	Day (7.00am – 6.00pm)	11.30am - 11.45am	Residence 3	64	< 30	n/a	41	n/a	Site noise just audible at times: typical engine noise < 30 dBA. Peats Ridge Road traffic noise 45-65 dBA.
		11.45am - 12.00pm	Residence 3	60	< 30	n/a	41	n/a	Site noise just audible at times: typical engine noise < 30 dBA. Peats Ridge Road traffic noise 45-62 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		12.00pm - 12.15pm	Residence 3	51	< 30	n/a	41	n/a	Site noise just audible at times: typical engine noise < 30 dBA. Peats Ridge Road traffic noise 45-60 dBA.
		12.15pm – 12.30pm	Residence 3	46	Inaudible	n/a	41	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 45-60 dBA.
		12.30pm – 12.45pm	Residence 3	49	< 30	n/a	41	n/a	Site noise just audible at times: typical engine noise < 30 dBA. Peats Ridge Road traffic noise 45-63 dBA.
		12.45pm - 1.00pm	Residence 3	50	< 30	n/a	41	n/a	Site noise just audible at times: typical engine noise < 30 dBA. Peats Ridge Road traffic noise 45-62 dBA.
		1.05pm - 1.20pm	Residence 4	53	< 30	n/a	40	n/a	Truck movement associated with Site briefly audible 40-42 dBA. Peats Ridge Road traffic noise 50-65 dBA.
		1.20pm - 1.35pm	Residence 4	53	Inaudible	n/a	40	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 50-67 dBA.
		1.35pm – 1.50pm	Residence 4	52	Inaudible	n/a	40	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 50-67 dBA.
		1.50pm – 2.05pm	Residence 4	53	< 30	n/a	40	n/a	Truck movements associated with Site briefly audible 40-43 dBA. . Peats Ridge Road traffic noise 50-67 dBA.
		2.05pm – 2.20pm	Residence 4	53	< 30	n/a	40	n/a	Truck movements associated with Site briefly audible 40-42 dBA. . Peats Ridge Road traffic noise 50-70 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		2.20pm – 2.35pm	Residence 4	53	< 30	n/a	40	n/a	Truck movements associated with Site briefly audible 40-42 dBA. . Peats Ridge Road traffic noise 50-68 dBA.
		2.40pm – 2.55pm	Residence 13	48	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 43-46 dBA. Peats Ridge Road traffic noise 50-60 dBA.
		2.55pm – 3.10pm	Residence 13	47	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 43-46 dBA. Peats Ridge Road traffic noise 50-60 dBA.
		3.10pm – 3.25pm	Residence 13	47	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 43-46 dBA. Peats Ridge Road traffic noise 50-61 dBA.
		3.25pm – 3.40pm	Residence 13	47	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 43-46 dBA. Peats Ridge Road traffic noise 50-62 dBA.
		3.40pm – 3.55pm	Residence 13	48	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 43-47 dBA. Peats Ridge Road traffic noise 50-61 dBA.
		3.55pm – 4.10pm	Residence 13	47	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 43-46 dBA. Peats Ridge Road traffic noise 50-60 dBA.
		4.20pm – 4.35pm	Residence 8	56	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 36-40 dBA. Peats Ridge Road traffic noise 40-46 dBA.
		4.35pm – 4.50pm	Residence 8	52	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 36-40 dBA. Peats Ridge Road traffic noise 40-45 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		4.50pm – 5.05pm	Residence 8	58	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 36-40 dBA. Peats Ridge Road traffic noise 40-45 dBA.
		5.05pm – 5.20pm	Residence 8	54	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 36-40 dBA. Peats Ridge Road traffic noise 40-46 dBA.
		5.20pm – 5.35pm	Residence 8	55	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 36-40 dBA. Peats Ridge Road traffic noise 40-47 dBA.
		5.35pm – 5.50pm	Residence 8	49	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 36-40 dBA. Peats Ridge Road traffic noise 40-46 dBA.
	Evening (6.00pm – 10.00pm)	6.00pm – 6.15pm	Residence 3	69	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 60-90 dBA.
		6.15pm – 6.30pm	Residence 3	69	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 60-90 dBA.
		6.35pm – 6.50pm	Residence 4	52	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 60-72 dBA.
		6.50pm – 7.05pm	Residence 4	53	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 60-73 dBA.
		7.10pm – 7.25pm	Residence 13	49	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 43-46 dBA. Peats Ridge Road traffic noise 50-60 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		7.25pm – 7.40pm	Residence 13	49	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 43-46 dBA. Peats Ridge Road traffic noise 50-61 dBA.
		7.45pm – 8.00pm	Residence 8	51	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 36-40 dBA. Peats Ridge Road traffic noise 40-58 dBA.
		8.00pm – 8.15pm	Residence 8	50	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 36-41 dBA. Peats Ridge Road traffic noise 40-58 dBA.
Day 2 (13/7/21)	Night (10.00pm – 7.00am)	5.00am - 5.15am	Residence 3	70	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 70-90 dBA.
		5.15am - 5.30am	Residence 3	72	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 70-90 dBA.
		5.30am - 5.45am	Residence 3	70	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 70-90 dBA.
		5.45am - 6.00am	Residence 3	72	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 70-90 dBA.
		6.03am - 6.18am	Residence 4	59	< 30	42	35	45	Truck movements associated with Site briefly audible 40-42 dBA. Peats Ridge Road traffic noise 60-70 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		6.18am - 6.33am	Residence 4	59	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 60-70 dBA.
		6.33am - 6.48am	Residence 4	59	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 60-70 dBA.
		6.48am - 7.03am	Residence 4	60	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Peats Ridge Road traffic noise 60-70 dBA.
		5.00am - 5.15am	Residence 13	52	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 45-50 dBA. Peats Ridge Road traffic noise 60-72 dBA.
		5.15am - 5.30am	Residence 13	53	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 45-50 dBA. Peats Ridge Road traffic noise 60-72 dBA.
		5.30am - 5.45am	Residence 13	52	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 45-50 dBA. Peats Ridge Road traffic noise 60-70 dBA.
		5.45am - 6.00am	Residence 13	55	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 45-50 dBA. Peats Ridge Road traffic noise 60-72 dBA.
		6.04am - 6.19am	Residence 8	54	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 35-42 dBA. Peats Ridge Road traffic noise 60-64 dBA.
		6.19am - 6.34am	Residence 8	49	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 35-42 dBA. Peats Ridge Road traffic noise 60-64 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		6.34am - 6.49am	Residence 8	54	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 35-42 dBA. Peats Ridge Road traffic noise 60-68 dBA.
		6.49am - 7.04am	Residence 8	51	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 35-42 dBA. Peats Ridge Road traffic noise 60-65 dBA.
	Day (7.00am – 6.00pm)	11.45am - 12.00pm	Residence 3	46	< 30	n/a	41	n/a	Site noise just audible at times: typical engine noise < 30 dBA. Peats Ridge Road traffic noise 50-60 dBA.
		12.00pm - 12.15pm	Residence 3	47	< 30	n/a	41	n/a	Site noise just audible at times: typical engine noise < 30 dBA. Peats Ridge Road traffic noise 50-65 dBA.
		12.15pm – 12.30pm	Residence 3	47	Inaudible	n/a	41	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 50-65 dBA.
		12.30pm - 12.45pm	Residence 3	47	< 30	n/a	41	n/a	Site noise just audible at times: typical engine noise < 30 dBA. Peats Ridge Road traffic noise 50-65 dBA.
		12.45pm - 1.00pm	Residence 3	46	< 30	n/a	41	n/a	Site noise just audible at times: typical engine noise < 30 dBA. Peats Ridge Road traffic noise 50-65 dBA.
		1.00pm - 1.15pm	Residence 3	46	< 30	n/a	41	n/a	Site noise just audible at times: typical engine noise < 30 dBA. Peats Ridge Road traffic noise 50-65 dBA.
		1.20pm - 1.35pm	Residence 4	55	< 30	n/a	40	n/a	Truck movement associated with Site briefly audible 40-41 dBA. Peats Ridge Road traffic noise 50-70 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		1.35pm - 1.50pm	Residence 4	55	< 30	n/a	40	n/a	Truck movements associated with Site briefly audible 40-42 dBA. Peats Ridge Road traffic noise 50-72 dBA.
		1.50pm – 2.05pm	Residence 4	54	< 30	n/a	40	n/a	Truck movements associated with Site briefly audible 40-42 dBA. Peats Ridge Road traffic noise 50-71 dBA.
		2.05pm – 2.20pm	Residence 4	54	< 30	n/a	40	n/a	Truck movements associated with Site briefly audible 40-43 dBA. Peats Ridge Road traffic noise 50-70 dBA.
		2.20pm – 2.35pm	Residence 4	53	< 30	n/a	40	n/a	Truck movements associated with Site briefly audible 40-42 dBA. Peats Ridge Road traffic noise 50-71 dBA.
		2.35pm – 2.50pm	Residence 4	53	< 30	n/a	40	n/a	Truck movements associated with Site briefly audible 40-42 dBA. Peats Ridge Road traffic noise 50-71 dBA.
		2.55pm – 3.10pm	Residence 13	46	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 40-45 dBA. Peats Ridge Road traffic noise 50-60 dBA.
		3.10pm – 3.25pm	Residence 13	46	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 40-45 dBA. Peats Ridge Road traffic noise 50-60 dBA.
		3.25pm – 3.40pm	Residence 13	47	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 40-45 dBA. Peats Ridge Road traffic noise 50-60 dBA.
		3.40pm – 3.55pm	Residence 13	49	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 40-45 dBA. Peats Ridge Road traffic noise 50-60 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		3.55pm – 4.10pm	Residence 13	49	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 40-45 dBA. Peats Ridge Road traffic noise 50-60 dBA.
		4.10pm – 4.25pm	Residence 13	48	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 40-45 dBA. Peats Ridge Road traffic noise 50-60 dBA.
		4.30pm – 4.45pm	Residence 8	58	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 35-40 dBA. Peats Ridge Road traffic noise 40-46 dBA.
		4.45pm – 5.00pm	Residence 8	57	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 35-40 dBA. Peats Ridge Road traffic noise 40-49 dBA.
		5.00pm – 5.15pm	Residence 8	57	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 35-40 dBA. Peats Ridge Road traffic noise 40-49 dBA.
		5.15pm – 5.30pm	Residence 8	55	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 35-40 dBA. Peats Ridge Road traffic noise 40-47 dBA.
		5.30pm – 5.45pm	Residence 8	56	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 35-40 dBA. Peats Ridge Road traffic noise 40-48 dBA.
		5.45pm – 6.00pm	Residence 8	52	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 35-40 dBA. Peats Ridge Road traffic noise 40-48 dBA.
	Evening (6.00pm – 10.00pm)	6.00pm – 6.15pm	Residence 8	50	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 37-41 dBA. Peats Ridge Road traffic noise 55-60 dBA. Jones Road traffic 60-65 dBA, occasional passby.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		6.15pm – 6.30pm	Residence 8	48	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 37-42 dBA. Peats Ridge Road traffic noise 55-60 dBA. Jones Road traffic 60-65 dBA, occasional passby.
		6.32pm – 6.47pm	Residence 13	45	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 39-42 dBA. Peats Ridge Road traffic noise 55-60 dBA.
		6.47pm – 7.02pm	Residence 13	44	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway traffic noise 40-43 dBA. Peats Ridge Road traffic noise 55-60 dBA.
		7.07pm – 7.22pm	Residence 3	62	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 70-85 dBA.
		7.22pm – 7.37pm	Residence 3	64	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 70-87 dBA.
		7.40pm – 7.55pm	Residence 4	48	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 55-64 dBA.
		7.55pm – 8.10pm	Residence 4	46	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 55-65 dBA.
Day 3 (14/7/21)	Night (10.00pm – 7.00am)	5.00am - 5.15am	Residence 3	73	< 30	41	35	45	Site operations just audible at times <30 dBA. Peats Ridge Road traffic noise 60-91 dBA.
		5.15am - 5.30am	Residence 3	72	< 30	41	35	45	Site operations just audible at times <30 dBA. Peats Ridge Road traffic noise 60-91 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		5.30am - 5.45am	Residence 3	73	< 30	42	35	45	Site operations just audible at times <30 dBA. Peats Ridge Road traffic noise 60-92 dBA.
		5.45am - 6.00am	Residence 3	73	< 30	42	35	45	Site operations just audible at times <30 dBA. Peats Ridge Road traffic noise 60-91 dBA.
		6.03am - 6.18am	Residence 4	61	< 30	43	35	45	Site operations just audible at times <30 dBA. Peats Ridge Road traffic noise 60-73 dBA.
		6.18am - 6.33am	Residence 4	61	< 30	44	35	45	Truck movement associated with Site briefly audible 41-43 dBA, site operations just audible rest of the time <30 dBA. Peats Ridge Road traffic noise 60-77 dBA.
		6.33am - 6.48am	Residence 4	59	< 30	43	35	45	Site operations just audible at times <30 dBA. Peats Ridge Road traffic noise 60-75 dBA.
		6.48am - 7.03am	Residence 4	60	< 30	43	35	45	Site operations just audible at times <30 dBA. Peats Ridge Road traffic noise 60-75 dBA.
		5.00am - 5.15am	Residence 13	53	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 40-45 dBA. Peats Ridge Road traffic noise 60-68 dBA.
		5.15am - 5.30am	Residence 13	52	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 40-45 dBA. Peats Ridge Road traffic noise 60-63 dBA.
		5.30am - 5.45am	Residence 13	53	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 40-45 dBA. Peats Ridge Road traffic noise 60-65 dBA. Birds 55-59 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		5.45am - 6.00am	Residence 13	61	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 40-45 dBA. Peats Ridge Road traffic noise 60-74 dBA.
		6.05am - 6.20am	Residence 8	54	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 35-40 dBA. Peats Ridge Road traffic noise 50-63 dBA. Jones Road traffic passby, up to 78 dBA
		6.20am - 6.35am	Residence 8	53	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 35-40 dBA. Peats Ridge Road traffic noise 50-60 dBA. Jones Road traffic passby, up to 78 dBA
		6.35am - 6.50am	Residence 8	48	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 35-40 dBA. Peats Ridge Road traffic noise 49-67 dBA.
		6.50am - 7.05am	Residence 8	48	Inaudible	Inaudible	35	45	Site operations inaudible at all times. Pacific Motorway traffic noise 35-40 dBA. Peats Ridge Road traffic noise 49-61 dBA.
	Day (7.00am – 6.00pm)	11.02am - 11.17am	Residence 3	46	< 30	n/a	41	n/a	Site noise just audible at times < 30 dBA. Peats Ridge Road traffic noise 40-60 dBA.
		11.17am - 11.32am	Residence 3	47	< 30	n/a	41	n/a	Site noise just audible at times < 30 dBA. Peats Ridge Road traffic noise 40-60 dBA.
		11.32am – 11.47am	Residence 3	49	< 30	n/a	41	n/a	Site noise just audible at times < 30 dBA. Peats Ridge Road traffic noise 40-60 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		11.47am – 12.02pm	Residence 3	52	< 30	n/a	41	n/a	Site noise just audible at times < 30 dBA. Peats Ridge Road traffic noise 40-60 dBA.
		12.02pm - 12.17pm	Residence 3	60	< 30	n/a	41	n/a	Site noise just audible at times < 30 dBA. Peats Ridge Road traffic noise 40-60 dBA.
		12.17pm - 12.32pm	Residence 3	65	< 30	n/a	41	n/a	Site noise just audible at times < 30 dBA. Peats Ridge Road traffic noise 40-60 dBA.
		1.09pm - 1.24pm	Residence 4	56	< 30	n/a	40	n/a	Truck movements associated with Site briefly audible 40-42 dBA. Peats Ridge Road traffic noise 50-70 dBA.
		1.24pm – 1.39pm	Residence 4	56	< 30	n/a	40	n/a	Truck movements associated with Site briefly audible 40-42 dBA. Peats Ridge Road traffic noise 50-72 dBA.
		1.39pm – 1.54pm	Residence 4	55	< 30	n/a	40	n/a	Truck movement associated with Site briefly audible 40-43 dBA. Peats Ridge Road traffic noise 50-71 dBA.
		1.54pm – 2.09pm	Residence 4	54	< 30	n/a	40	n/a	Truck movements associated with Site briefly audible 40-43 dBA. Peats Ridge Road traffic noise 50-70 dBA.
		2.09pm – 2.24pm	Residence 4	54	< 30	n/a	40	n/a	Site just audible at times < 30 dBA. Peats Ridge Road traffic noise 50-71 dBA.
		2.24pm – 2.39pm	Residence 4	55	Inaudible	n/a	40	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 50-71 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		2.48pm – 3.03pm	Residence 8	57	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 50-66 dBA. Jones Road traffic up to 76 dBA.
		3.03pm – 3.18pm	Residence 8	55	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 50-66 dBA. Jones Road traffic up to 72 dBA.
		3.18pm – 3.33pm	Residence 8	57	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 50-69dBA. Jones Road traffic up to 72 dBA.
		3.33pm – 3.48pm	Residence 8	58	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 50-66 dBA. Jones Road traffic up to 75 dBA.
		3.48pm – 4.03pm	Residence 8	59	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 50-65 dBA. Jones Road traffic up to 75 dBA.
		4.03pm – 4.18pm	Residence 8	57	Inaudible	n/a	36	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 50-65 dBA. Jones Road traffic up to 82 dBA.
		4.30pm – 4.45pm	Residence 13	49	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway and Peats Ridge Road traffic noise 50-60 dBA.
		4.45pm – 5.00pm	Residence 13	48	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway and Peats Ridge Road traffic noise 50-66 dBA.
		5.00pm – 5.15pm	Residence 13	50	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway and Peats Ridge Road traffic noise 50-65 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		5.15pm – 5.30pm	Residence 13	50	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway and Peats Ridge Road traffic noise 50-69 dBA.
		5.30pm – 5.45pm	Residence 13	45	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway and Peats Ridge Road traffic noise 50-64 dBA.
		5.45pm – 6.00pm	Residence 13	46	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway and Peats Ridge Road traffic noise 50-64 dBA.
	Evening (6.00pm – 10.00pm)	6.00pm – 6.15pm	Residence 13	48	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway and Peats Ridge Road traffic noise 50-65 dBA.
		6.15pm – 6.30pm	Residence 13	44	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Pacific Motorway and Peats Ridge Road traffic noise 50-65 dBA.
		6.35pm – 6.50pm	Residence 8	46	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 50-63 dBA.
		6.50pm – 7.05pm	Residence 8	43	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 50-63 dBA.
		7.13pm – 7.28pm	Residence 3	48	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 70-80 dBA.
		7.28pm – 7.43pm	Residence 3	54	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 70-90 dBA.

Day	Assessment Period	Time	Location	Overall $L_{Aeq,15min}$ (dBA)	$L_{Aeq,15min}$ due to Site Noise (dBA)	$L_{A1,1min}$ due to Site Noise (dBA)	$L_{Aeq,15min}$ Noise Limit (dBA)	$L_{A1,1min}$ Noise Limit (dBA)	Comments
		7.46pm – 8.01pm	Residence 4	54	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 55-65 dBA.
		8.01pm – 8.16pm	Residence 4	50	Inaudible	n/a	35	n/a	Site operations inaudible at all times. Peats Ridge Road traffic noise 55-65 dBA.