RODNEY STEVENS ACOUSTICS
Acoustic Consultants
Member Australian Acoustical Society

REPORT 170292R1

Revision 0

Noise and Vibration Impact Assessment
Proposed Residential Development
600 West Parade, Buxton

PREPARED FOR:
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25 October 2017

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Noise and Vibration Impact Assessment

Proposed Residential Development

600 West Parade, Buxton

PREPARED BY:

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DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
170292R1	Revision 0	25 October 2017	Dani Awad	Rodney Stevens	Rodney Stevens

TABLE OF CONTENTS

1 INTRODUCTION

Rodney Stevens Acoustics Pty Ltd (here forth referred to as RSA), has been engaged by Joanne Tapp Town Planning to conduct a Noise Impact Assessment of the proposed residential development site located at 600 West Parade Buxton. The report addresses the noise and vibration impact from the Quarry north of the site on the future amenity of the proposed residential development site.

This assessment is to form part of the supporting documentation as required in the Planning Proposal to Wollondilly Shire Council.

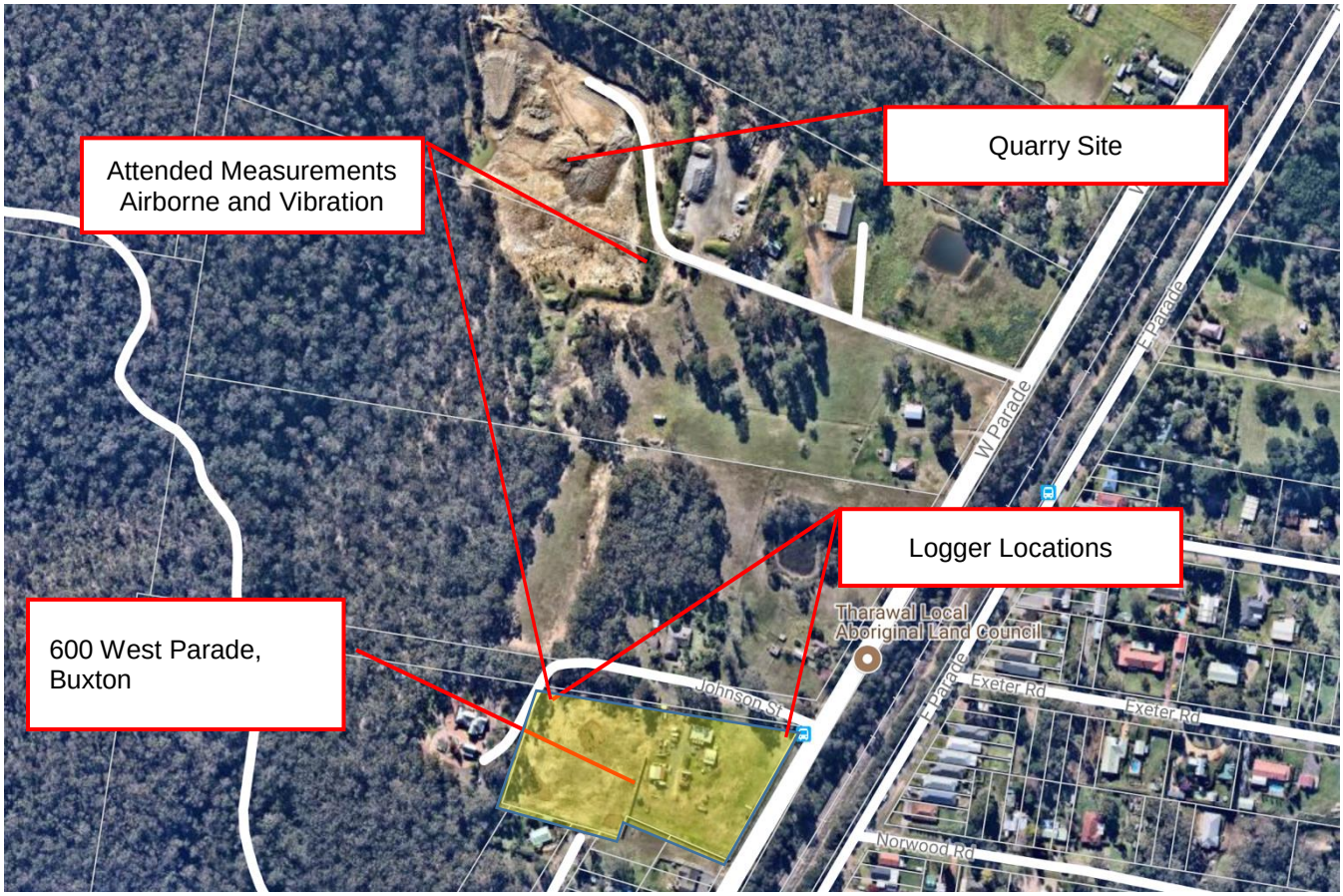
Specific acoustic terminology is present throughout this report. An explanation of these acoustic terms is provided in Appendix A

2 PROPOSED DEVELOPMENT

2.1 Site Location

The proposed residential development site is located at 600 West Parade, Buxton. It is bounded by rural/residential premises to the north, south and west, with the quarry approximately 300 meters to the north and West Parade to the east. The location of the proposed site and surrounding area is presented in Figure 2-1.

Figure 2-1 Site Location



Aerial image courtesy of Near Map © 2017

2.2 Proposed Development

The proposal seeks to rezone the primary production zoned land in order to enable large lot residential development on the site.

3 EXISTING ACOUSTIC ENVIRONMENT

3.1 Unattended Noise Monitoring

In order to characterize the existing acoustical environment of the area, particularly the operation of the Quarry, RSA carried out unattended noise monitoring between Thursday 5 October and Thursday 12 2017 at the logging location shown in Figure 2-1. The noise monitoring at this location is representative of the acoustic environment at the project site.

RSA selects logger location with consideration to; other noise sources, which may influence readings, equipment security issues and gaining permission for access from other landowners.

Instrumentation for the survey comprised of two NL-42 RION environmental noise loggers (serial numbers 546393 and 572559) fitted with a microphone windshield. Calibration of the logger was checked prior to and following measurements. Drift in calibration did not exceed ±0.5 dB (A). All equipment carried appropriate and current NATA (or manufacturer) calibration certificates.

3.2 Ambient Noise Level Results

In order to assess the acoustical amenity of the proposed development from the levels of noise received at the rear boundary of the site, the measured data was processed according to the NSW Environment Protection Authority (EPA) and Industrial Noise Policy (INP) assessment time periods. Table 3-1 details the RBL (background) and L_{Aeq} noise levels recorded during the daytime, evening and nighttime periods.

Table 3-1 Unattended Noise Monitoring – INP Time Periods

Noise Level – dB(A) re 20 µPa					
Day		Evening		Night	
RBL [1]	L_{Aeq} [2]	RBL [1]	L_{Aeq} [2]	RBL [1]	L_{Aeq} [2]
37	44	27	41	19	39

Note 1: The RBL noise level is representative of the average minimum background sound level (in the absence of the source under consideration), or simply the background level.

Note 2: The L_{Aeq} is essentially the average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

The time periods used for this assessment are as defined in the NSW Environmental Protection Authority's (EPA) Road Noise Policy (RNP, 2011). Results are presented below in. The results of the ambient noise monitoring are shown in Table 3-2.

Table 3-2 Unattended Noise Monitoring – SEPP Criteria

Location	Period	External Noise Levels dB(A)
Front Boundary	Day Time 7:00 am - 10:00 pm	62 $L_{Aeq(15hour)}$
	Night Time 10:00 pm - 7:00 am	56 $L_{Aeq(9hour)}$

4 NOISE CRITERIA

4.1 Noise Criteria

The NSW Government's State Environmental Planning Policy (Infrastructure) 2007 (SEPP (Infrastructure) 2007) was introduced to facilitate the delivery of infrastructure across the State by improving regulatory certainty and efficiency. In accordance with the SEPP, Table 3.1 of the NSW Department of Planning and Infrastructure's "*Development near Rail Corridors and Busy Roads - Interim Guideline"* (the DP&I Guideline) of December 2008 provides noise criteria for residential and non-residential buildings. These criteria are summarised in Table 4-1.

Table 4-1 DP&I Interim Guideline Noise Criteria

Type of occupancy	Noise Level dB(A)	Applicable time period
Sleeping areas (bedroom)	35	Night 10 pm to 7 am
Other habitable rooms (excl. garages, kitchens, bathrooms & hallways)	40	At any time

Note 1: Airborne noise is calculated as $L_{Aeq(15hour)}$ daytime and $L_{Aeq(9hour)}$ night-time

The following guidance is also provided in the DP&I Guideline:

> *"These criteria apply to all forms of residential buildings as well as aged care and nursing home facilities. For some residential buildings, the applicants may wish to apply more stringent design goals in response to market demand for a higher quality living environment.*
>
> *The night-time "sleeping areas" criterion is 5 dB(A) more stringent than the "living areas" criteria to promote passive acoustic design principles. For example, designing the building such that sleeping areas are less exposed to road or rail noise than living areas may result in less onerous requirements for glazing, wall construction and acoustic seals. If internal noise levels with windows or doors open exceed the criteria by more than 10 dB(A), the design of the ventilation for these rooms should be such that occupants can leave windows closed, if they so desire, and also to meet the ventilation requirements of the Building Code of Australia."*

The noise criteria presented in Table 4-1 apply to a 'windows closed condition'. Standard window glazing of a building will typically attenuate noise ingress by 20 dB(A) with windows closed and 10 dB(A) with windows open (allowing for natural ventilation). Accordingly, the external noise threshold above which a dwelling will require mechanical ventilation is an $L_{Aeq(9hour)}$ of 55 dB(A) for bedrooms and $L_{Aeq(15hour)}$ of 60 dB(A) for other areas.

Where windows must be kept closed, the adopted ventilation systems must meet the requirements of the Building Code of Australia and Australian Standard 1668 – The use of ventilation and air conditioning in buildings.

For the purposes of assessing noise from the Quarry into the proposed residential spaces.

4.2 Vibration Criteria

Vibration during the operation of the Quarry is considered an intermittent source associated with two main types of impact; disturbance at receivers and potential architectural/structural damage to buildings.

Generally, if disturbance issues are controlled, there is limited potential for structural damage to buildings.

Wollondilly Shire City Council currently does not have specific criteria concerning vibration emanating from construction. It is recommended the criteria outlined in *Environmental Noise Management Assessing Vibration* be adopted for the operation of the nearby Quarry.

Detailed in Table 4-2, the ICNG guidance adopts the *Environmental Noise Management Assessing Vibration: a technical guideline* (2006) for the assessment of human annoyance due to vibration. German Standard DIN 4150: Part 3-1999, provides guidelines for evaluating the effects of vibration on structures.

Table 4-2 Adopted Vibration Constriction Criteria

Receiver	Annoyance VDV criteria, $m/s^{1.75}$		Structural PPV criteria, mm/s
	Preferred	Maximum	
Residential	0.2	0.4	5 - 20

Notes: structural vibration goals established for < 10 – 100 Hz dominant frequency of vibration. VDV = vibration dose value;

PPV = peak particle velocity

5 NOISE AND VIBRATION IMPACT ASSESSMENT

5.1 Airborne Noise Assessment

Unattended measurements were carried out on site at the quarry approximately 20 meters from the field of operations. Measurements were conducted using a NTI XL2 TA (Serial No A2A-11435-E0) Sound Analyser. The meter calibration setting was reference checked at the start and end of the monitoring period with a BSWA sound level calibrator. No significant drift was detected. Weather conditions were fine.

Measurements conducted were of continuous operations taking place at the quarry. This included trucks loading and offloading equipment, earth movers and excavators in various modes of operation.

The following table presents the results of the measurements.

Table 5-1 Measured Noise Levels

Location	Measurement Descriptor	Measured Noise Level – dB(A) 15 Minute	Noise level at Boundary	Compliance
20m from quarry operations	L_{Aeq}	61	40	**Yes**

Notes: All values expressed as dB(A) and rounded to nearest 1 dB(A);

L_{Aeq} Equivalent continuous (energy average) A-weighted sound pressure level. It is defined as the steady sound level that contains the same amount of acoustic energy as the corresponding time-varying sound.

Near field measurements were conducted with the operation of the Quarry. Attended noise monitoring was conducted with the following machinery in operation:

- Excavators with a front bucket
- Heavy Rigid Trucks
- Forklifts
- Reversing alarms
- Power generators

The noise measurement was conducted over a 15 minute period with a result of $L_{Aeq(15min)}$ 61 dBA. When compared with the unattended noise monitor for the same time period, the noise levels were measured to be $L_{Aeq(15min)}$ 40 dBA. It is envisaged that this will comply with the project specific criteria for noise.

5.2 Vibration Assessment

Attended vibration measurements were performed at the indicated location shown in Figure 2-1 this location was chosen because it is the closest point onsite in relation to the field of operation at the quarry. Measurements were conducted using a Svantek SVAN 958 Type 1 Precision Sound Level Meter (serial number: 14282) and Svantek SV80 accelerometer (serial number C2831).

The following table presents the results of the measurements.

Table 5-2 Calculated VDV Values

Location	Calculated VDV $m/s^{1.75}$	Criteria VDV $m/s^{1.75}$
Northern Facade	0.002	0.2

The vibration levels are negligible and well below the criteria and therefore comply with the established vibration criteria.

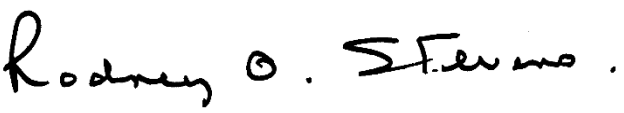
6 CONCLUSION & RECOMMENDATIONS

Rodney Stevens Acoustics has conducted an assessment of the proposed residential development site at 600 West Parade, Buxton. The review has assessed potential noise and vibration intrusion created by the operation of the Quarry north of the site and compared it with the noise criteria required by Wollondilly Council and other relevant.

It is of the opinion of Rodney Stevens Acoustics that the aforementioned Quarry will not likely have any significant effect upon the amenity of the planned future large scale residential development site on the basis of acoustics and vibration.

However once architectural plans are finalised for the development a full Road Traffic Impact Assessment must be undertaken by a qualified acoustic consultant. The unattended noise monitoring resulted in possible noise intrusion from the operation of nearby West Parade.

Approved:-



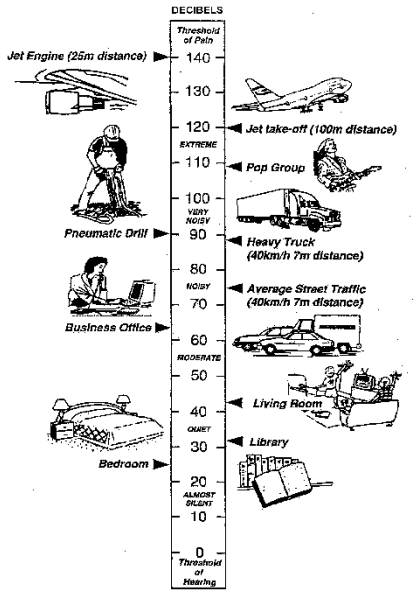
Rodney Stevens

Manager/Principal

Appendix A. Acoustic Terminology

A-weighted sound pressure	The human ear is not equally sensitive to sound at different frequencies. People are more sensitive to sound in the range of 1 to 4 kHz (1000 – 4000 vibrations per second) and less sensitive to lower and higher frequency sound. During noise measurement an electronic '*A-weighting*' frequency filter is applied to the measured sound level *dB(A)* to account for these sensitivities. Other frequency weightings (B, C and D) are less commonly used. Sound measured without a filter is denoted as linear weighted dB(linear).
Ambient noise	The total noise in a given situation, inclusive of all noise source contributions in the near and far field.
Community annoyance	Includes noise annoyance due to: ▪ character of the noise (e.g. sound pressure level, tonality, impulsiveness, low-frequency content) ▪ character of the environment (e.g. very quiet suburban, suburban, urban, near industry) ▪ miscellaneous circumstances (e.g. noise avoidance possibilities, cognitive noise, unpleasant associations) ▪ human activity being interrupted (e.g. sleep, communicating, reading, working, listening to radio/TV, recreation).
Compliance	The process of checking that source noise levels meet with the noise limits in a statutory context.
Cumulative noise level	The total level of noise from all sources.
Extraneous noise	Noise resulting from activities that are not typical to the area. Atypical activities may include construction, and traffic generated by holiday periods and by special events such as concerts or sporting events. Normal daily traffic is not considered to be extraneous.
Feasible and reasonable measures	Feasibility relates to engineering considerations and what is practical to build; reasonableness relates to the application of judgement in arriving at a decision, taking into account the following factors: ▪ Noise mitigation benefits (amount of noise reduction provided, number of people protected). ▪ Cost of mitigation (cost of mitigation versus benefit provided). ▪ Community views (aesthetic impacts and community wishes). ▪ Noise levels for affected land uses (existing and future levels, and changes in noise levels).
Impulsiveness	Impulsive noise is noise with a high peak of short duration or a sequence of these peaks. Impulsive noise is also considered annoying.

Low frequency	Noise containing major components in the low-frequency range (20 to 250 Hz) of the frequency spectrum.
Noise criteria	The general set of non-mandatory noise levels for protecting against intrusive noise (for example, background noise plus 5 dB) and loss of amenity (e.g. noise levels for various land use).
Noise level (goal)	A noise level that should be adopted for planning purposes as the highest acceptable noise level for the specific area, land use and time of day.
Noise limits	Enforceable noise levels that appear in conditions on consents and licences. The noise limits are based on achievable noise levels, which the proponent has predicted can be met during the environmental assessment. Exceedance of the noise limits can result in the requirement for either the development of noise management plans or legal action.
Performance-based goals	Goals specified in terms of the outcomes/performance to be achieved, but not in terms of the means of achieving them.
Rating Background Level (RBL)	The rating background level is the overall single figure background level representing each day, evening and night time period. The rating background level is the 10th percentile min L_{A90} noise level measured over all day, evening and night time monitoring periods.
Receptor	The noise-sensitive land use at which noise from a development can be heard.
Sleep disturbance	Awakenings and disturbance of sleep stages.
Sound and decibels (dB)	Sound (or noise) is caused by minute changes in atmospheric pressure that are detected by the human ear. The ratio between the quietest noise audible and that which should cause permanent hearing damage is a million times the change in sound pressure. To simplify this range the sound pressures are logarithmically converted to decibels from a reference level of 2 x 10-5 Pa. The picture below indicates typical noise levels from common noise sources.



dB is the abbreviation for decibel – a unit of sound measurement. It is equivalent to 10 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure.

Sound power Level (SWL)

The sound power level of a noise source is the sound energy emitted by the source. Notated as SWL, sound power levels are typically presented in *dB(A)*.

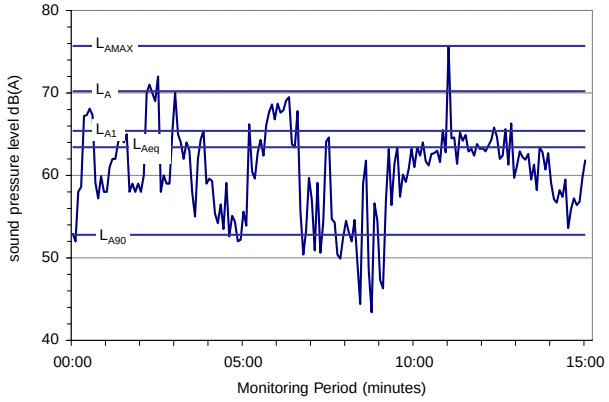
Sound Pressure Level (SPL)

The level of noise, usually expressed as SPL in *dB(A)*, as measured by a standard sound level meter with a pressure microphone. The sound pressure level in *dB(A)* gives a close indication of the subjective loudness of the noise.

Statistic noise levels

Noise levels varying over time (e.g. community noise, traffic noise, construction noise) are described in terms of the statistical exceedance level.

A hypothetical example of A weighted noise levels over a 15 minute measurement period is indicated in the following figure:



Key descriptors:

L_{Amax} Maximum recorded noise level.

L_{A1} The noise level exceeded for 1% of the 15 minute interval.

L_{A10} Noise level present for 10% of the 15-minute interval. Commonly referred to the average maximum noise level.

L_{Aeq} Equivalent continuous (energy average) A-weighted sound pressure level. It is defined as the steady sound level that contains the same amount of acoustic energy as the corresponding time-varying sound.

L_{A90} Noise level exceeded for 90% of time (background level). The average minimum background sound level (in the absence of the source under consideration).

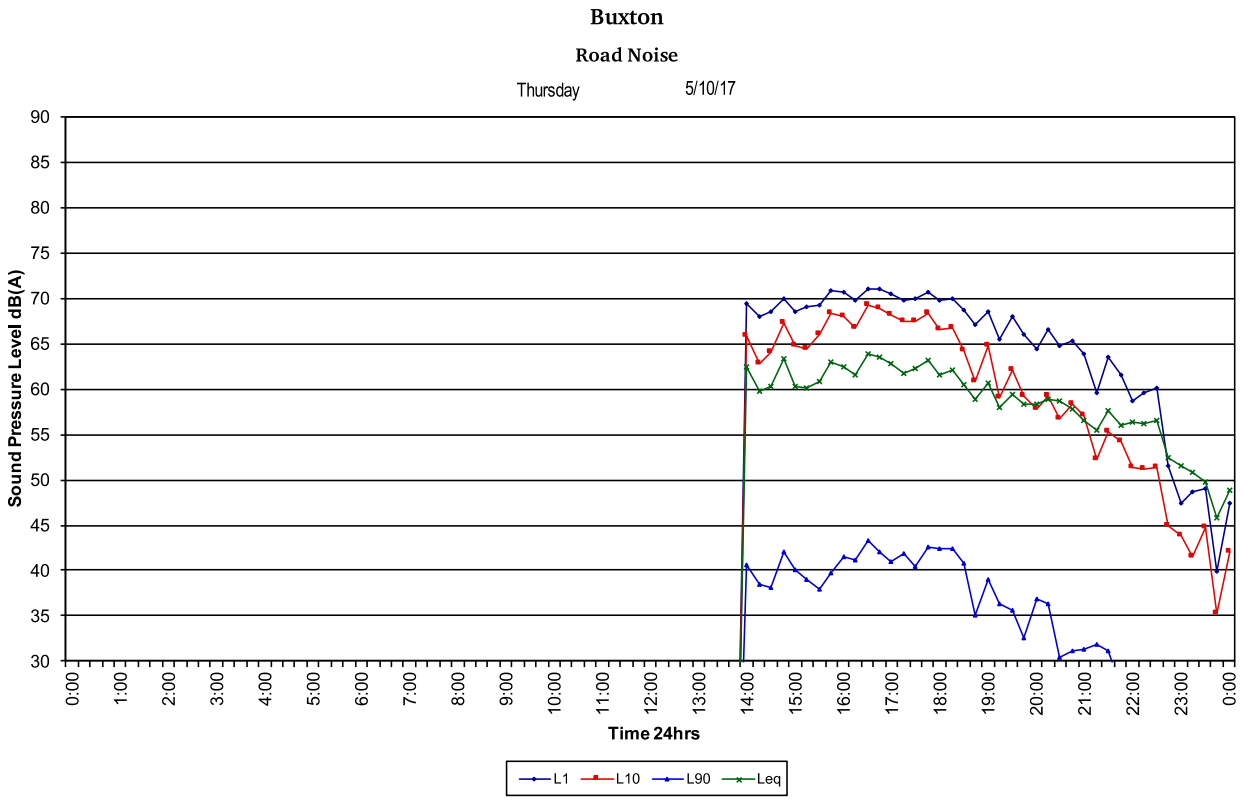
Threshold

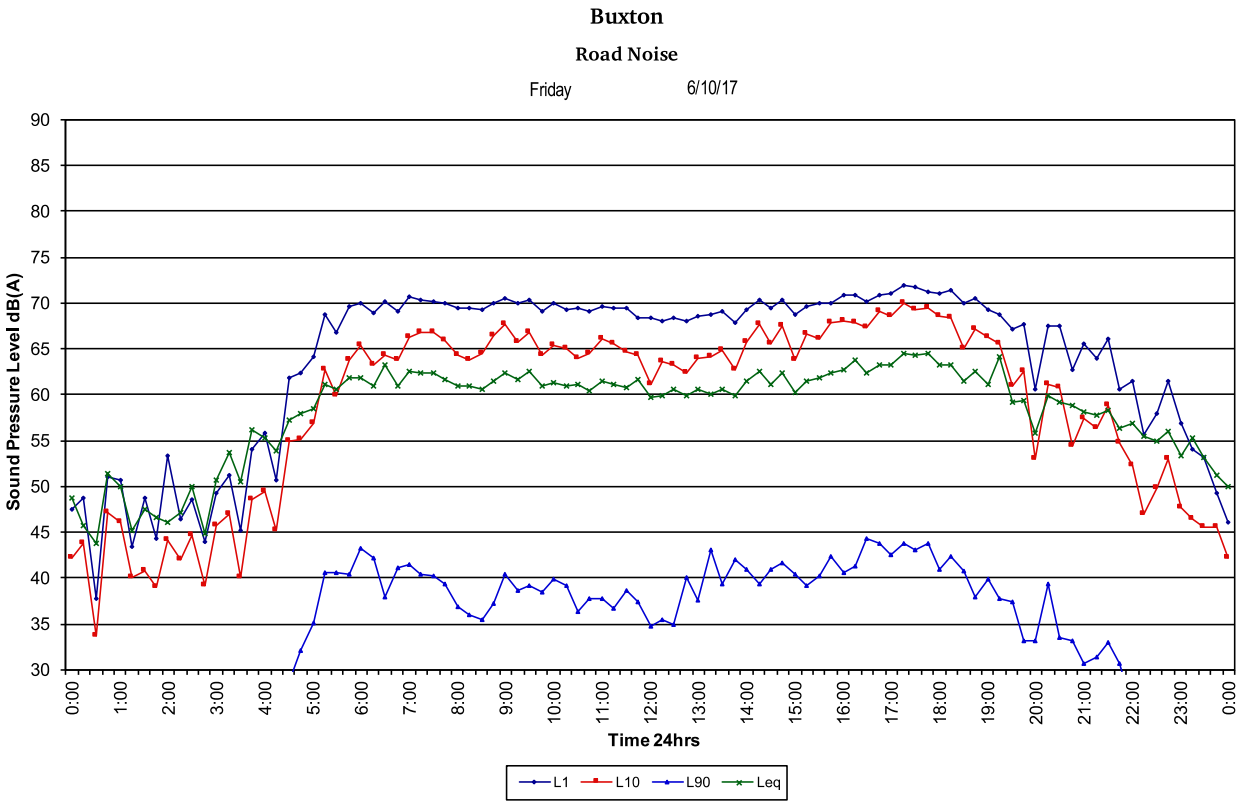
The lowest sound pressure level that produces a detectable response (in an instrument/person).

Tonality

Tonal noise contains one or more prominent tones (and characterised by a distinct frequency components) and is considered more annoying. A 2 to 5 dB(A) penalty is typically applied to noise sources with tonal characteristics

Appendix B Logger Graphs

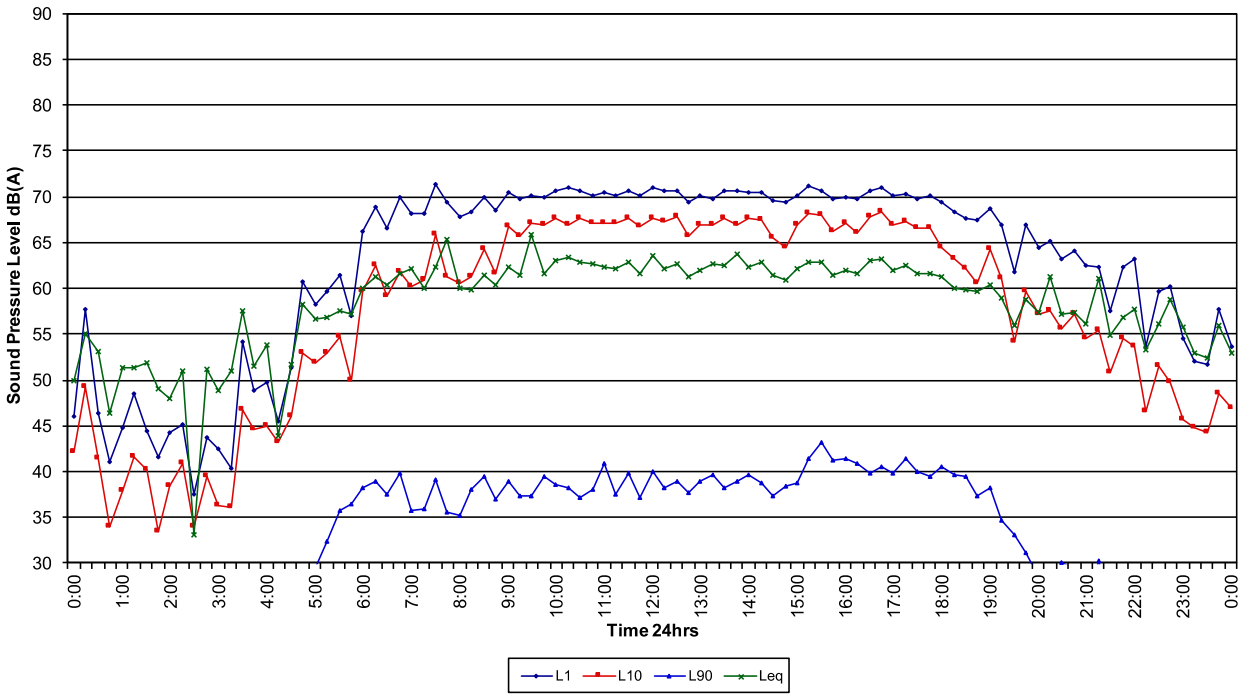




Buxton

Road Noise

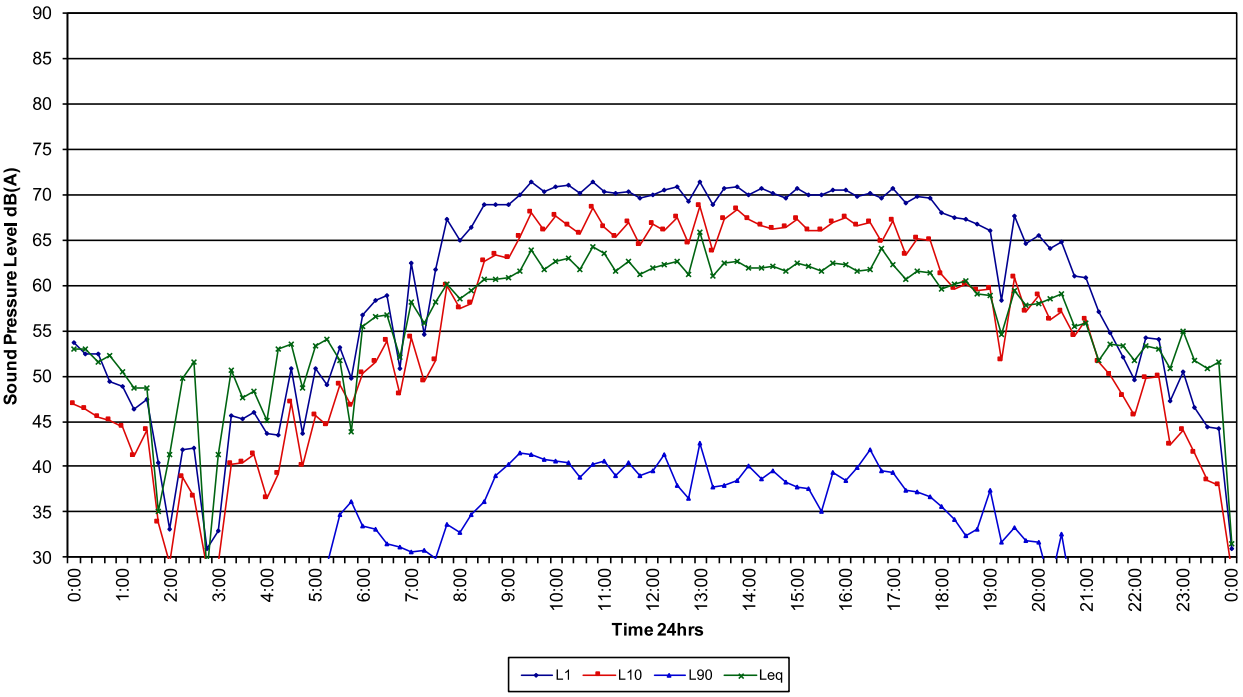
Saturday 7/10/17



Buxton

Road Noise

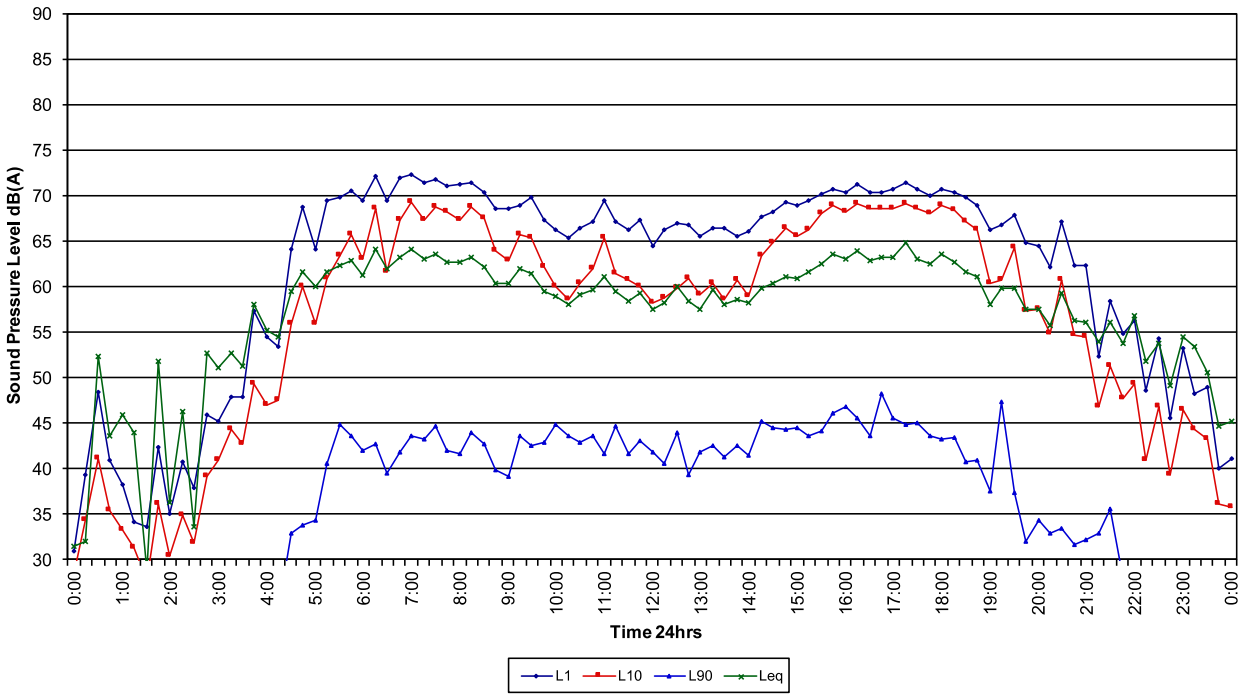
Sunday 8/10/17



Buxton

Road Noise

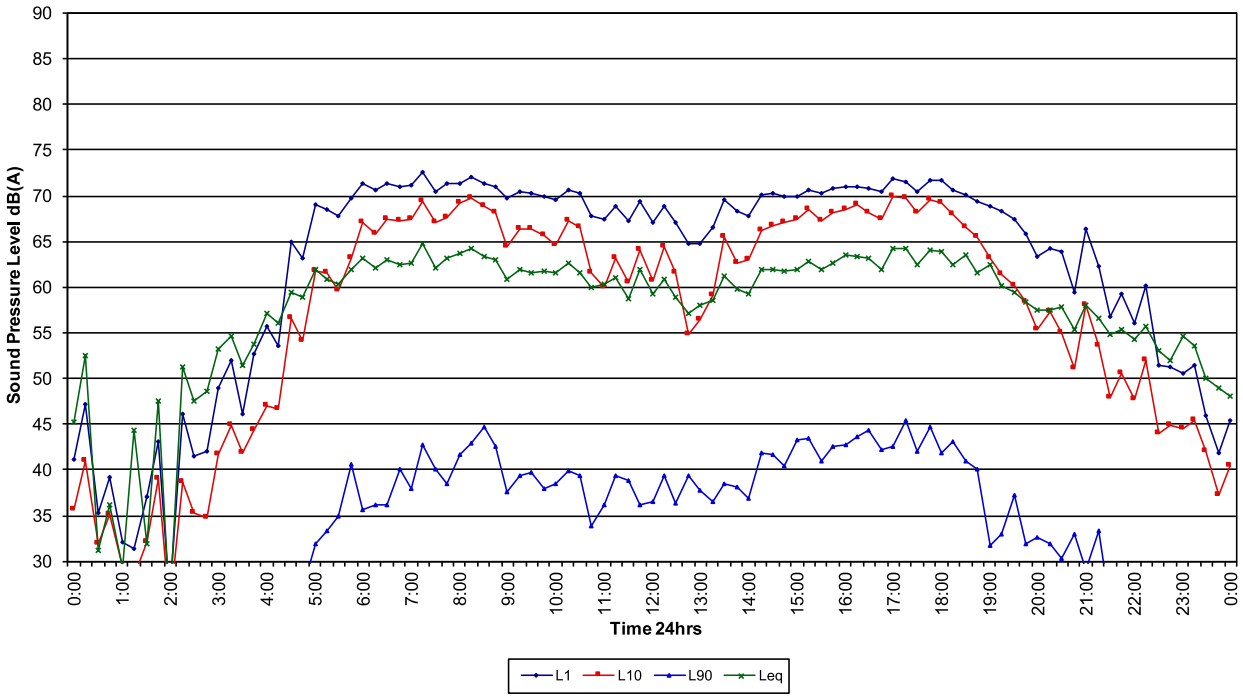
Monday 9/10/17



Buxton

Road Noise

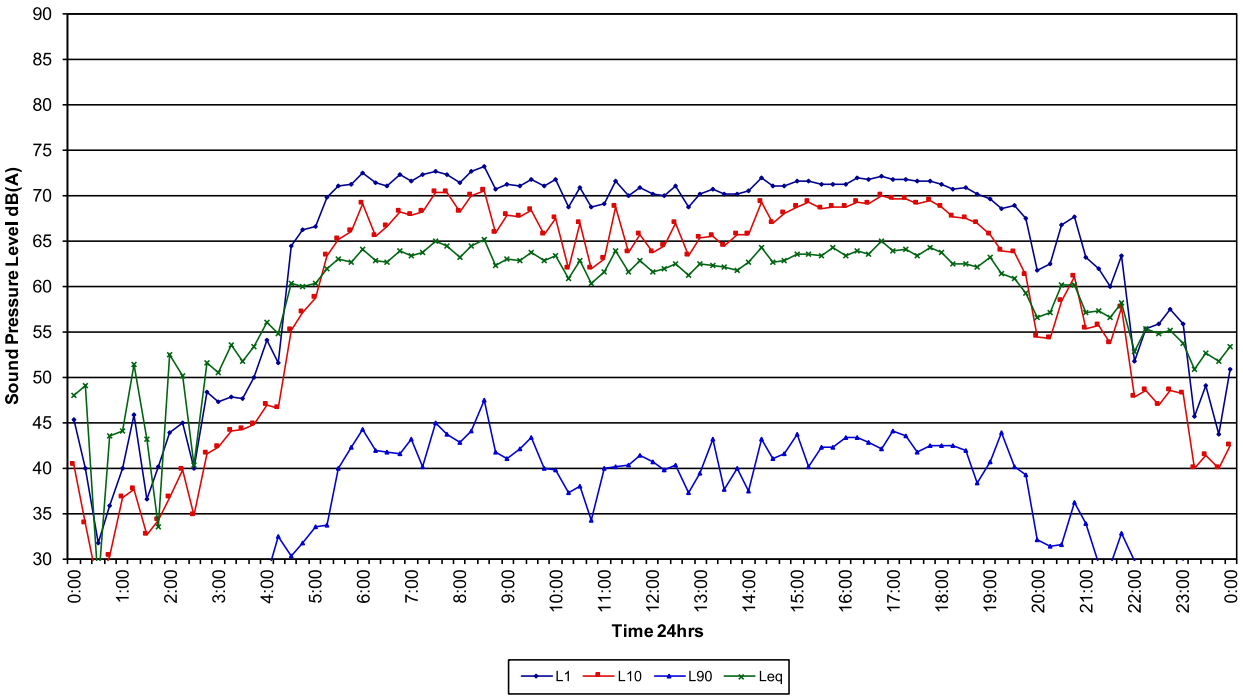
Tuesday 10/10/17



Buxton

Road Noise

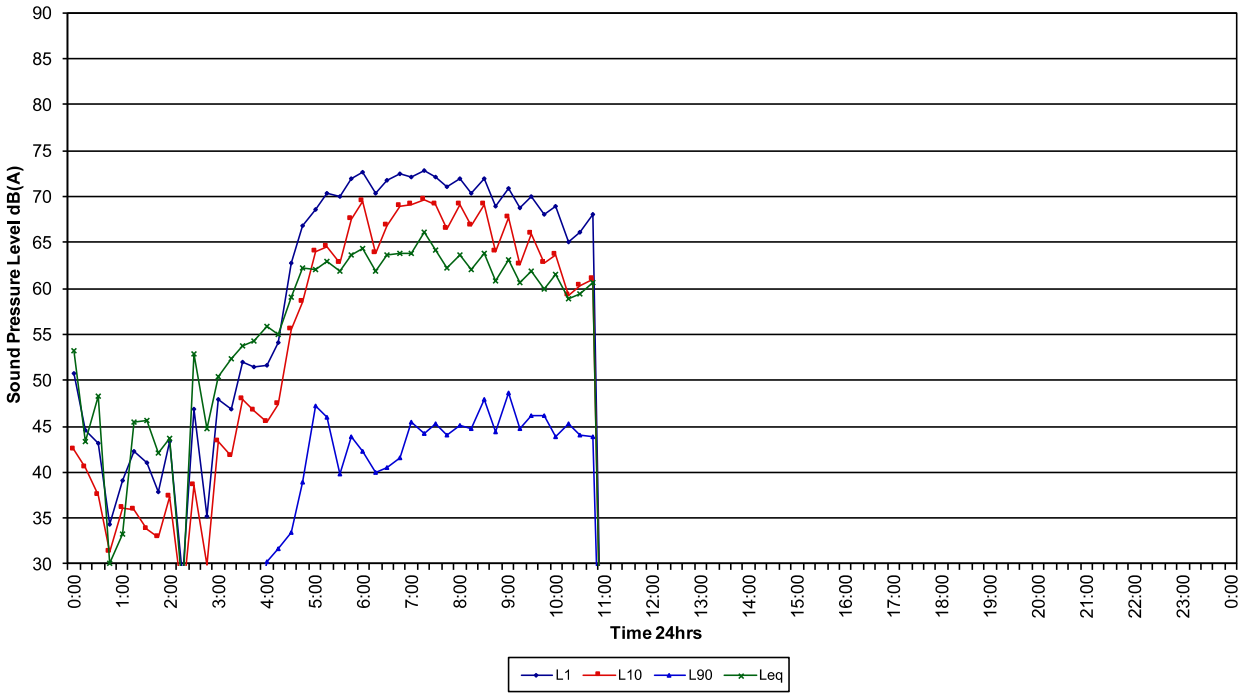
Wednesday 11/10/17

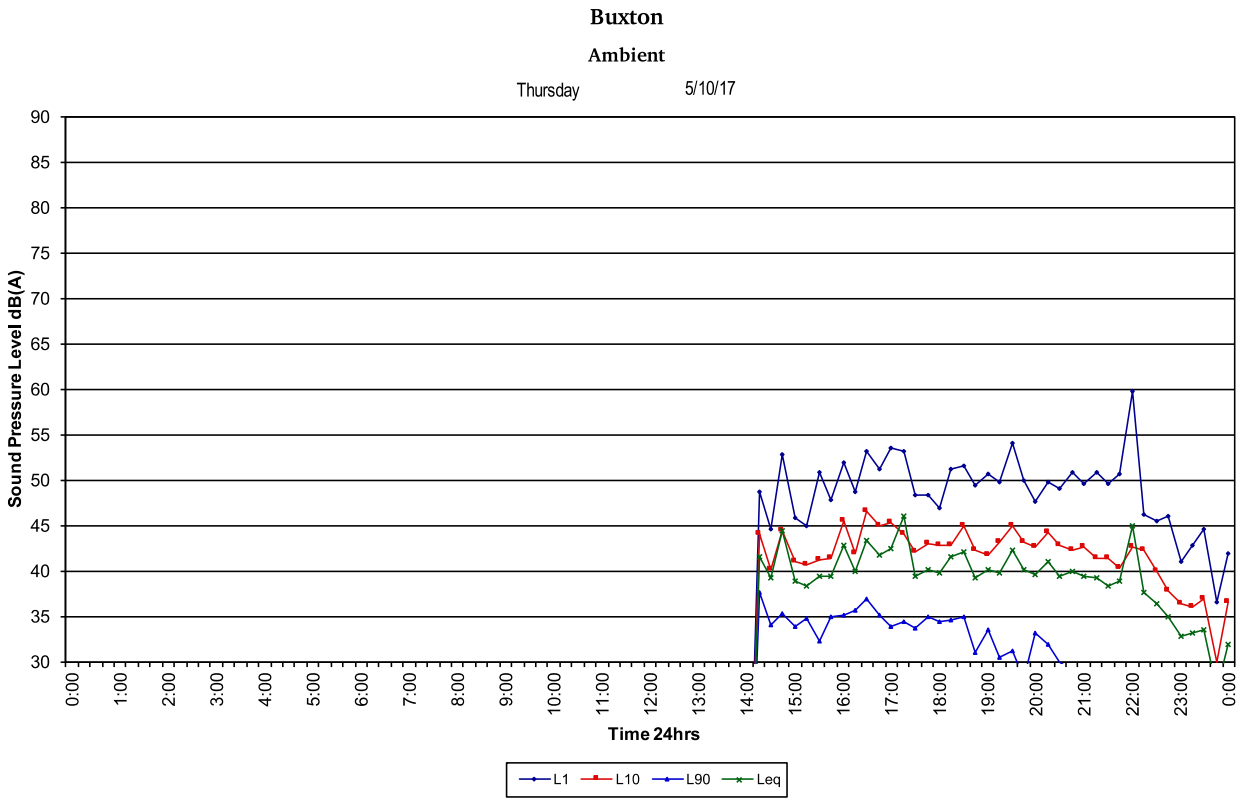


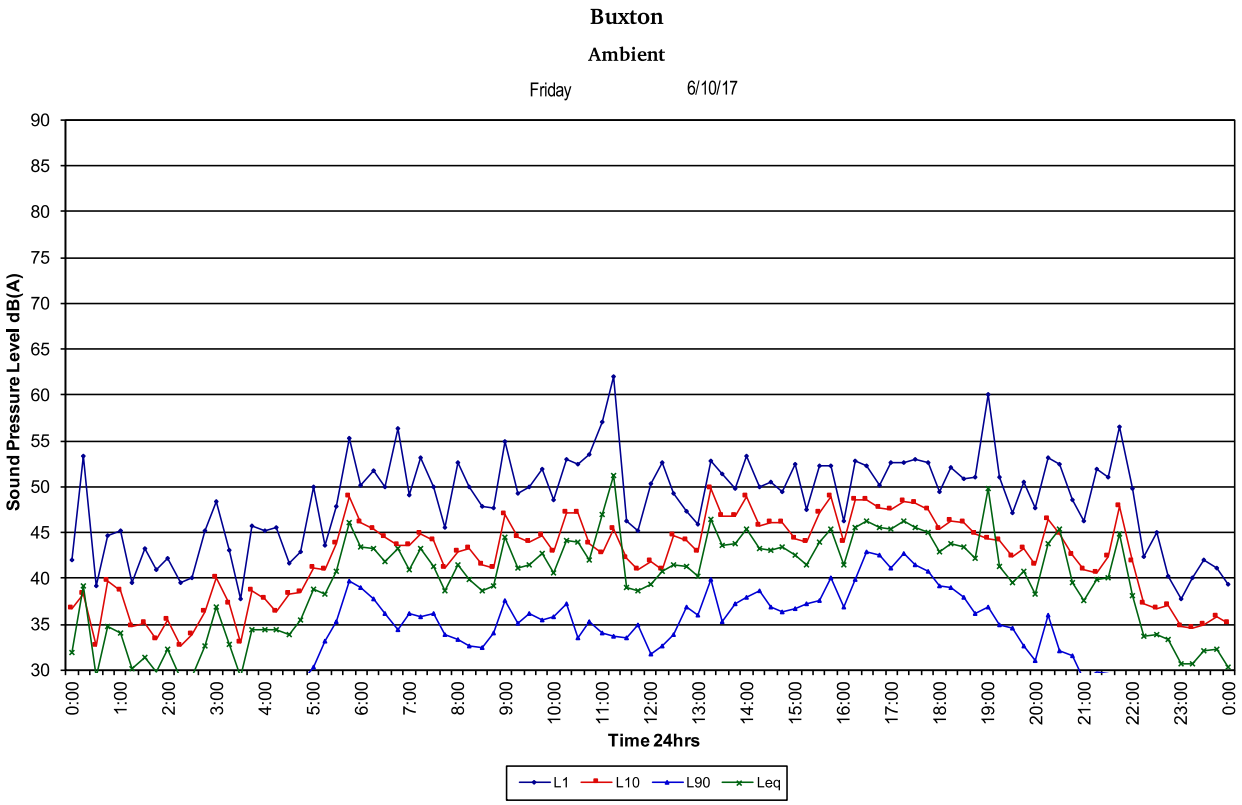
Buxton

Road Noise

Thursday 12/10/17



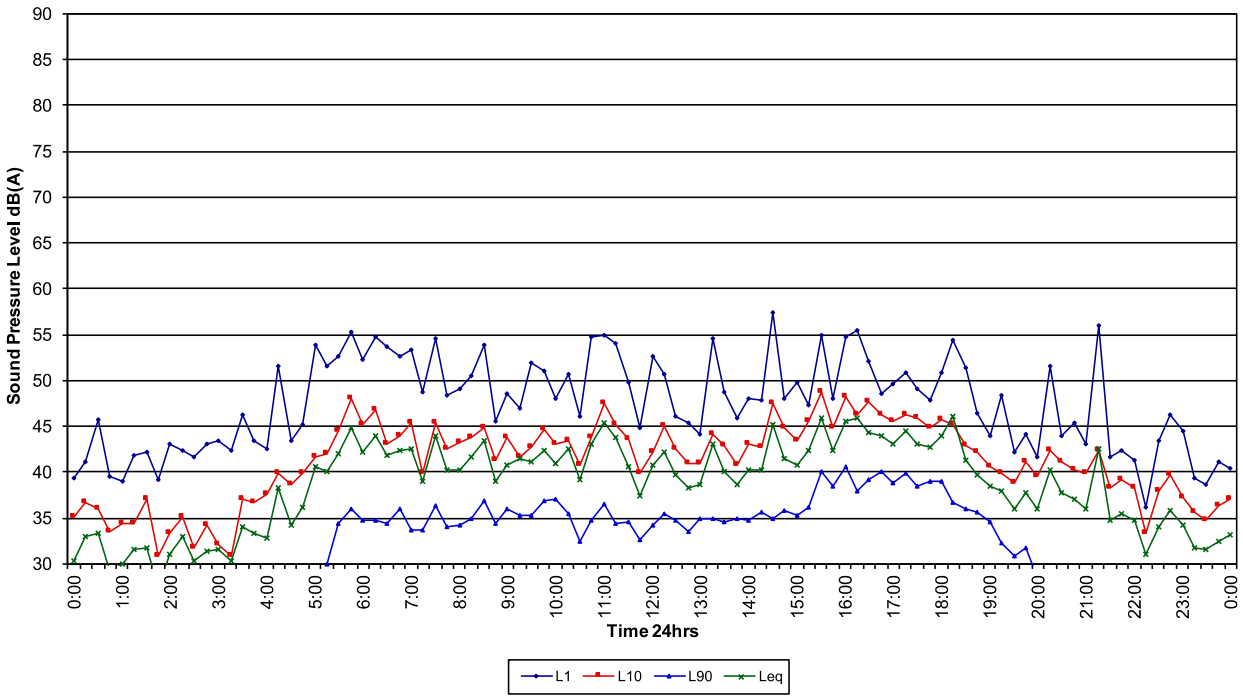

Buxton
Ambient
Thursday 5/10/17
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
L90
Leq


Buxton
Ambient
Friday 6/10/17
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
L90
Leq

Buxton

Ambient

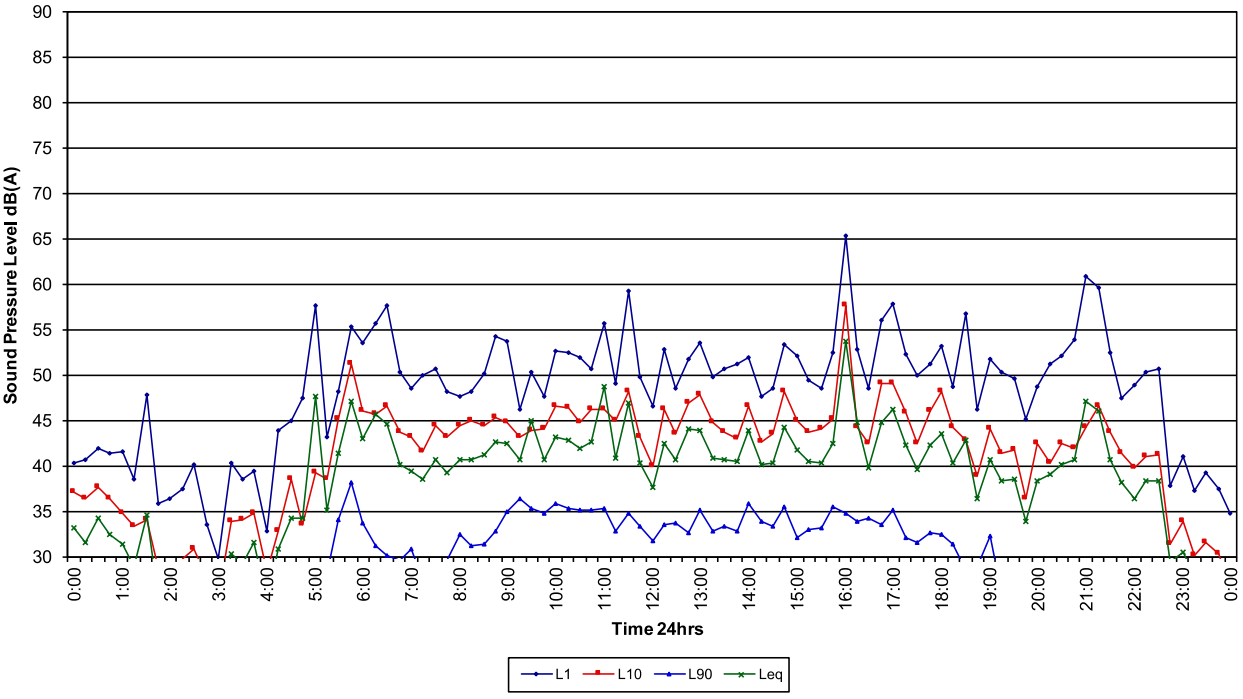
Saturday 7/10/17



Buxton

Ambient

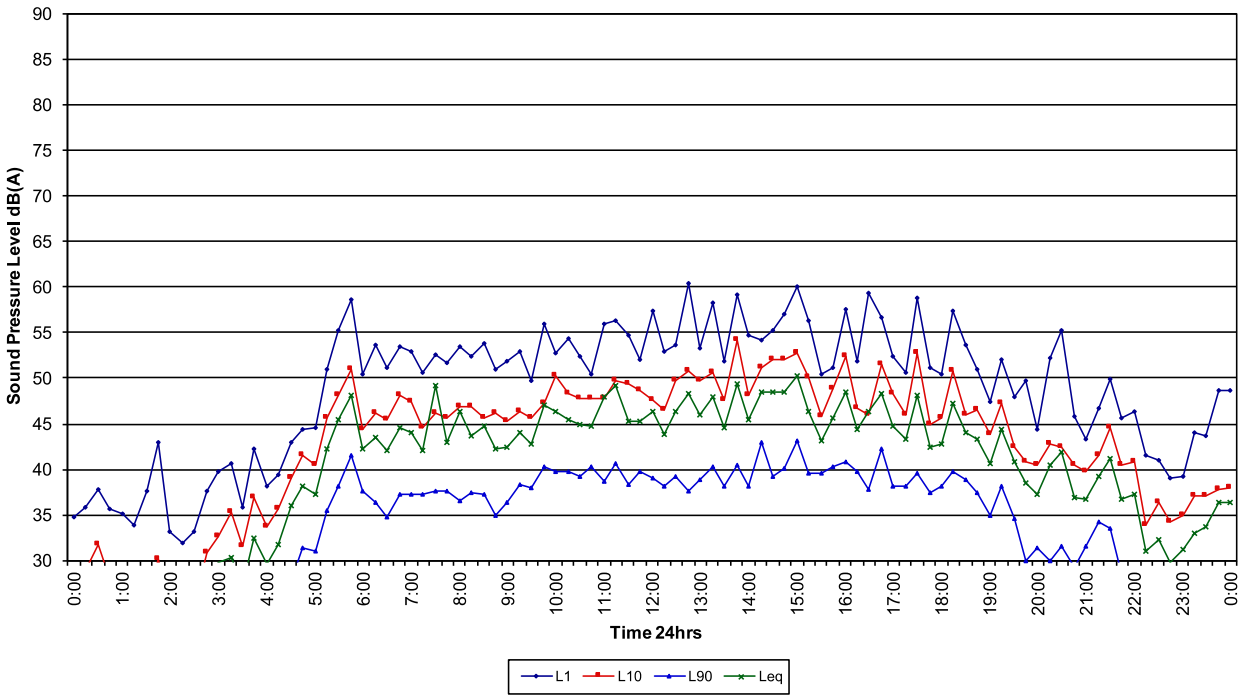
Sunday 8/10/17



Buxton

Ambient

Monday 9/10/17



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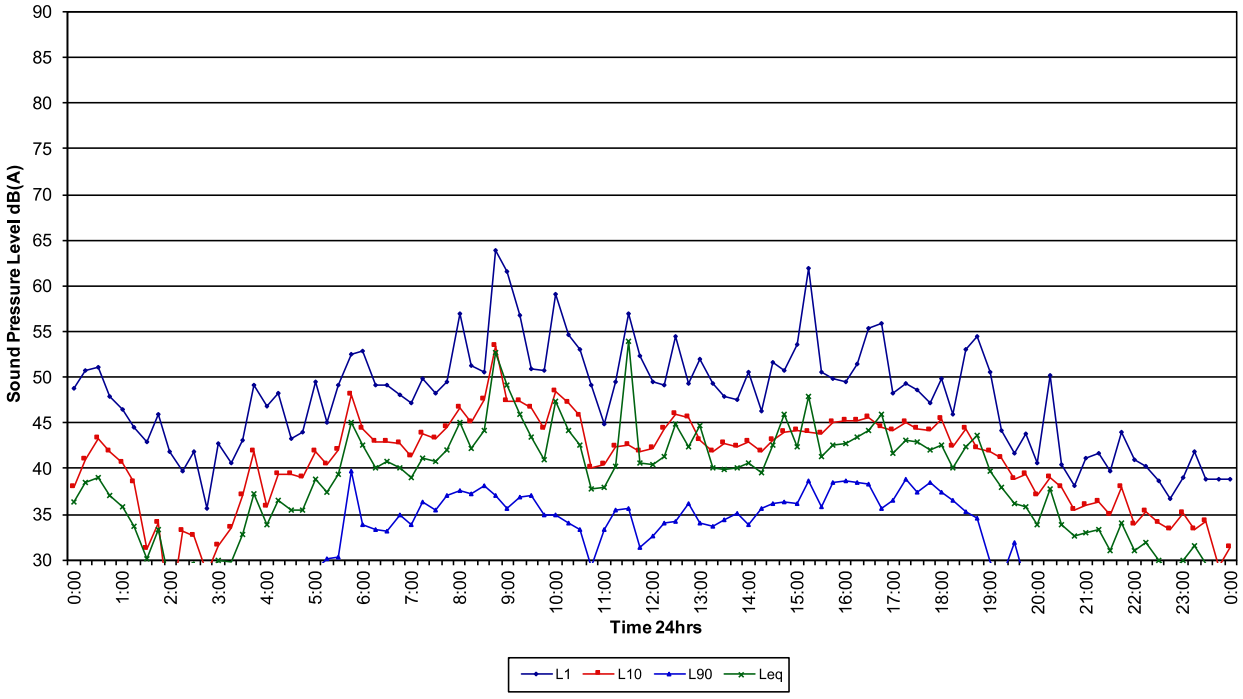
Ambient

Tuesday 10/10/17



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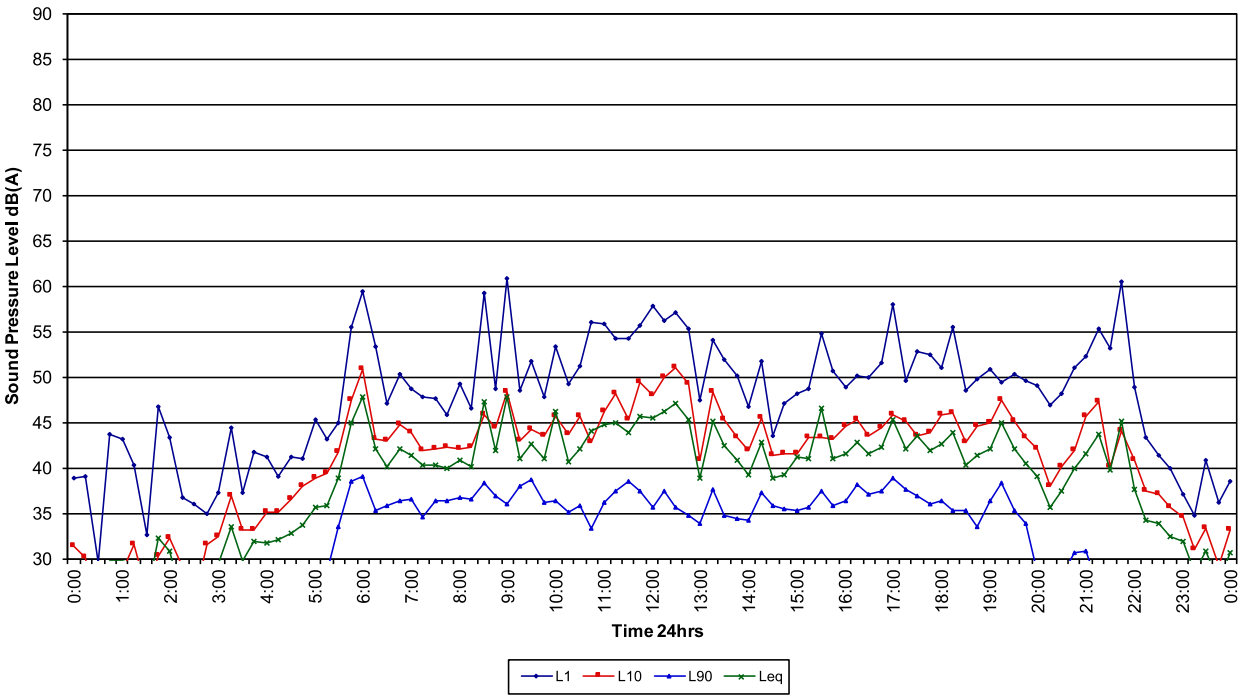
Ambient

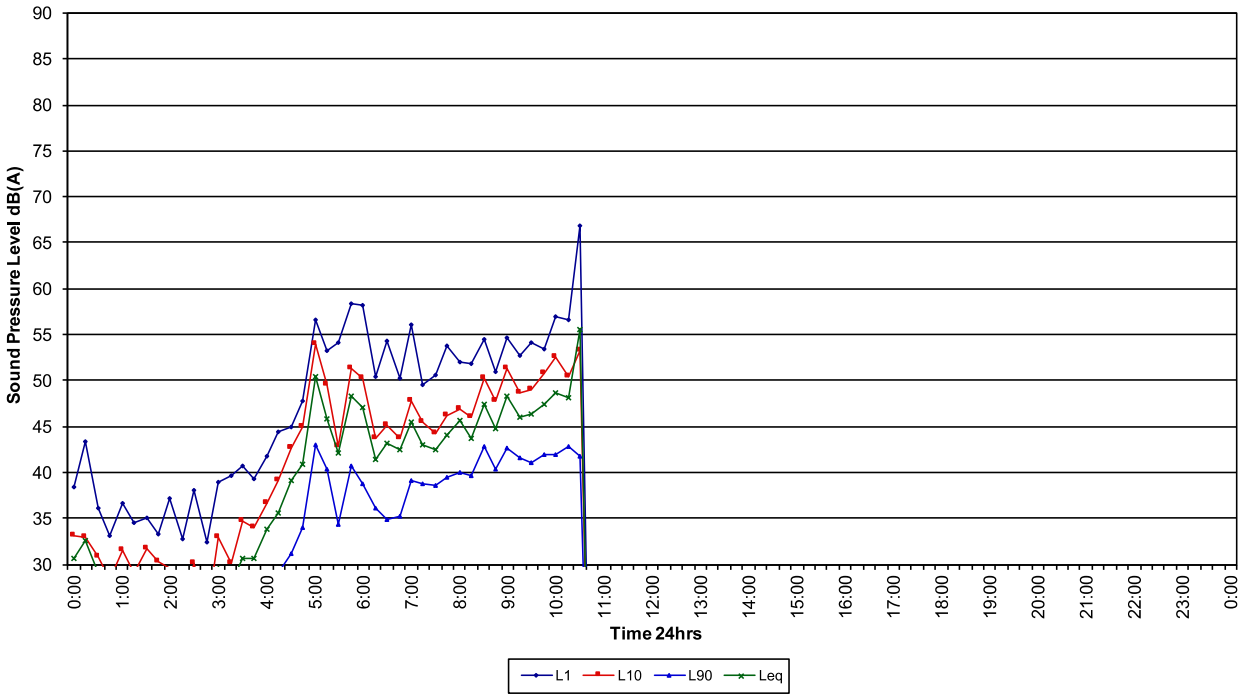
Wednesday 11/10/17



Buxton

Ambient

Thursday 12/10/17



Appendix C Calibration Certificate

Acoustic Research Labs Pty Ltd
Level 7 Building 2 423 Pennant Hills Rd
Pennant Hills NSW AUSTRALIA 2120
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3.2006

Calibration Certificate

Calibration Number C16716

Client Details Rodney Stevens Acoustics Pty Ltd
1 Majura Close
St Ives Chase NSW 2075

Equipment Tested/ Model Number : Rion NL-42EX
Instrument Serial Number : 00546393
Microphone Serial Number : 152907
Pre-amplifier Serial Number : 46605

Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature :	23.5°C	**Ambient Temperature :**	23.6°C
Relative Humidity :	51.6%	**Relative Humidity :**	50.8%
Barometric Pressure :	98.97kPa	**Barometric Pressure :**	98.87kPa

Calibration Technician : Vicky Jaiswal
Calibration Date : 09/01/2017
Secondary Check: Riley Cooper
Report Issue Date : 10/01/2017

Approved Signatory : Juan Aguero

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
10: Self-generated noise	*Pass*	14: Level linearity on the reference level range	*Pass*
11: Acoustical tests of a frequency weighting	*Pass*	15: Level linearity incl. the level range control	*Pass*
12: Electrical tests of frequency weightings	*Pass*	16: Toneburst response	*Pass*
13: Frequency and time weightings at 1 kHz	*Pass*	17: Peak C sound level	*Pass*
		18: Overload Indication	*Pass*

The sound level meter submitted for testing has successfully completed the class 2 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2002 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002 and because the periodic tests of IEC 61672-3:2006 cover only a limited subset of the specifications in IEC 61672-1:2002.

Least Uncertainties of Measurement -

Acoustic Tests		Environmental Conditions	
31.5 Hz to 8kHz	*±0.12dB*	*Temperature*	*±0.05°C*
12.5kHz	*±0.18dB*	*Relative Humidity*	*±0.46%*
16kHz	*±0.31dB*	*Barometric Pressure*	*±0.017kPa*
Electrical Tests			
31.5 Hz to 20 kHz	*±0.12dB*		

NATA
WORLD RECOGNISED ACCREDITATION

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.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

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.

PAGE 1 OF 2

Acoustic Research Labs Pty Ltd
Level 7 Building 2 423 Pennant Hills Rd
Pennant Hills NSW AUSTRALIA 2120
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3.2013
Calibration Certificate

Calibration Number C17321

Client Details	Rodney Stevens Acoustics Pty Ltd 1 Majura Close St Ives Chase NSW 2075
Equipment Tested/ Model Number :	Rion NL-42EX
Instrument Serial Number :	00572559
Microphone Serial Number :	170395
Pre-amplifier Serial Number :	72897

Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature :	21.4°C	**Ambient Temperature :**	21.5°C
Relative Humidity :	42.9%	**Relative Humidity :**	42.3%
Barometric Pressure :	99.19kPa	**Barometric Pressure :**	99.15kPa

Calibration Technician :	Lucky Jaiswal	**Secondary Check:**	Riley Cooper
Calibration Date :	04/07/2017	**Report Issue Date :**	04/07/2017

Approved Signatory : Juan Aguero

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 2 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2002 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002 and because the periodic tests of IEC 61672-3:2006 cover only a limited subset of the specifications in IEC 61672-1:2002.

Least Uncertainties of Measurement -

Acoustic Tests		Environmental Conditions	
31.5 Hz to 8kHz	*±0.16dB*	*Temperature*	*±0.05°C*
12.5kHz	*±0.2dB*	*Relative Humidity*	*±0.46%*
16kHz	*±0.29dB*	*Barometric Pressure*	*±0.017kPa*
Electrical Tests			
31.5 Hz to 20 kHz	*±0.12dB*		

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.

NATA
WORLD RECOGNISED ACCREDITATION

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

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NATacoustic
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A division of Renzo Tonin & Associates (NSW) Pty Ltd ABN 29 117 462 861

Certificate of Calibration
Sound Level Meter

Calibration Date	12/8/2016	**Job No**	RB484	**Operator**	SN
Client Name	RODNEY STEVENS ACOUSTICS				
Client Address	PO Box 552, WAHROONGA NSW, 2076				

Test Item

Instrument Make	NTI	**Model**	XL2-TA	**Serial No**	#A2A-11435-E0
Microphone Make	NTI	**Model**	MC230	**Serial No**	#9283
Preamplifier Make	NTI	**Model**	MA220	**Serial No**	#5786
Ext'n Cable Make	Nil	**Model**	N/A	**Serial No**	N/A
Accessories	Nil			**Firmware**	3.11

SLM Type	1
Filters Class	1

Environmental Conditions	Measured	
	Start	**End**
Air Temp. (°C)	24.5	25.0
Rel. Humidity (%)	55.0	56.0
Air Pressure (kPa)	101.0	101.0

Applicable Standards:
Periodic tests were performed in accordance with procedures from IEC 61672-3 :2013

Applicable Work Instruction:
RWi-08 SLM & Calibrator Verification

Laboratory Equipment :
B&K4226 Multifunction Acoustic Calibrator SN 2288472
Agilent Function Generator Model 33220A SN MY43004013
Agilent Digital Multimeter Model 34401A SN MY41004386

Traceability:
Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards. This document shall not be reproduced, except in full.

Scope:
This certificate is issued on the basis that the instrument complies with the manufacturer's specification. See "Sound Level Meter Verification - Summary of Tests" page for an itemised list of results for each test.

Uncertainty:
The uncertainty is stated at a confidence level of 95% using a k factor of 2.

Calibration Statement:
The sound level meter submitted for testing has successfully completed the 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 organization responsible for approving the results of pattern evaluation tests performed in accordance with AS IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in AS IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of AS IEC 61672-1:2013.

NATA WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory Number 14966

Authorized Signatory

Print Name: Renzo Tonin Date: 14 Aug 2016

Template Document Name: RQT-05 (rev 42) SLM ISO Verification

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: SLM 19996 & FILT 1552

Equipment Description:	Sound & Vibration Analyser		
Manufacturer:	Svantek		
Model No:	Svan-958	**Serial No:**	14282
Microphone Type:	SV-22	**Serial No:**	4012798
Filter Type:	1/3 Octave	**Serial No:**	14282
Comments:	All tests passed for class 1. (See over for details)		
Owner:	Rodney Stevens Acoustics 1 Majura Close St Ives Chase, NSW 2075		
Ambient Pressure:	998 hPa ±1.5 hPa		
Temperature:	23 °C ±2° C	**Relative Humidity:**	57% ±5%
Date of Calibration:	21/12/2016	**Issue Date:**	21/12/2016

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** ..... Jack Klett

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Accredited Lab. No. 9262
Acoustic and Vibration Measurements

ACU-VIB
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