RODNEY STEVENS ACOUSTICS
Acoustic Consultants
Member Australian Acoustical Society

Proposed School – Arrahman College

95 - 105 Seventeenth Avenue, Austral NSW

Noise Impact Assessment

REPORT R160222R0

Revision 0

Prepared for:

Mr. Hussein Oubani

Al Mabarrat Benevolent Society

5 May 2016

PO Box 522
Wahroonga NSW 2076
P 02 9943 5057
F 02 9475 1019
mail@rodneystevensacoustics.com.au

ABN 78 149 311 455
rodneystevensacoustics.com.au

Proposed School – Arrahman College

95 - 105 Seventeenth Avenue, Austral NSW

Noise Impact Assessment

PREPARED BY:

Rodney Stevens Acoustics Pty Ltd
Telephone: 61 2 9943 5057 Facsimile 61 2 9475 1019
Email: info@rodneystevensacoustics.com.au
Web: www.rodneystevensacoustics.com.au

DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
R160222R0	Revision 0	5 May 2016	Desmond Raymond	Rodney Stevens	Rodney Stevens

TABLE OF CONTENTS

1 INTRODUCTION

Al Mabarrat Benevolent Society is seeking the development application for a proposed school, Arrahman College, to be located at 95 - 105 Seventeenth Avenue, Austral NSW. It is proposed to undertake a staged development of a school providing for Kindergarten - Year 12 for approximately 800 students.

Rodney Stevens Acoustics Pty Ltd (RSA) has been engaged by Al Mabarrat Benevolent Society to prepare a Noise Assessment for the Proposed School, Arrahman College, at 95 - 105 Seventeenth Avenue, Austral NSW.

This acoustical assessment addresses the noise environment of the school and surrounding area and the potential acoustical impact on nearby residential receivers associated with the proposed development. The NSW EPA Industrial Noise Policy has been referred to for guidance in quantifying the ambient noise levels and determining criteria for the assessment of continuous operational noise emissions.

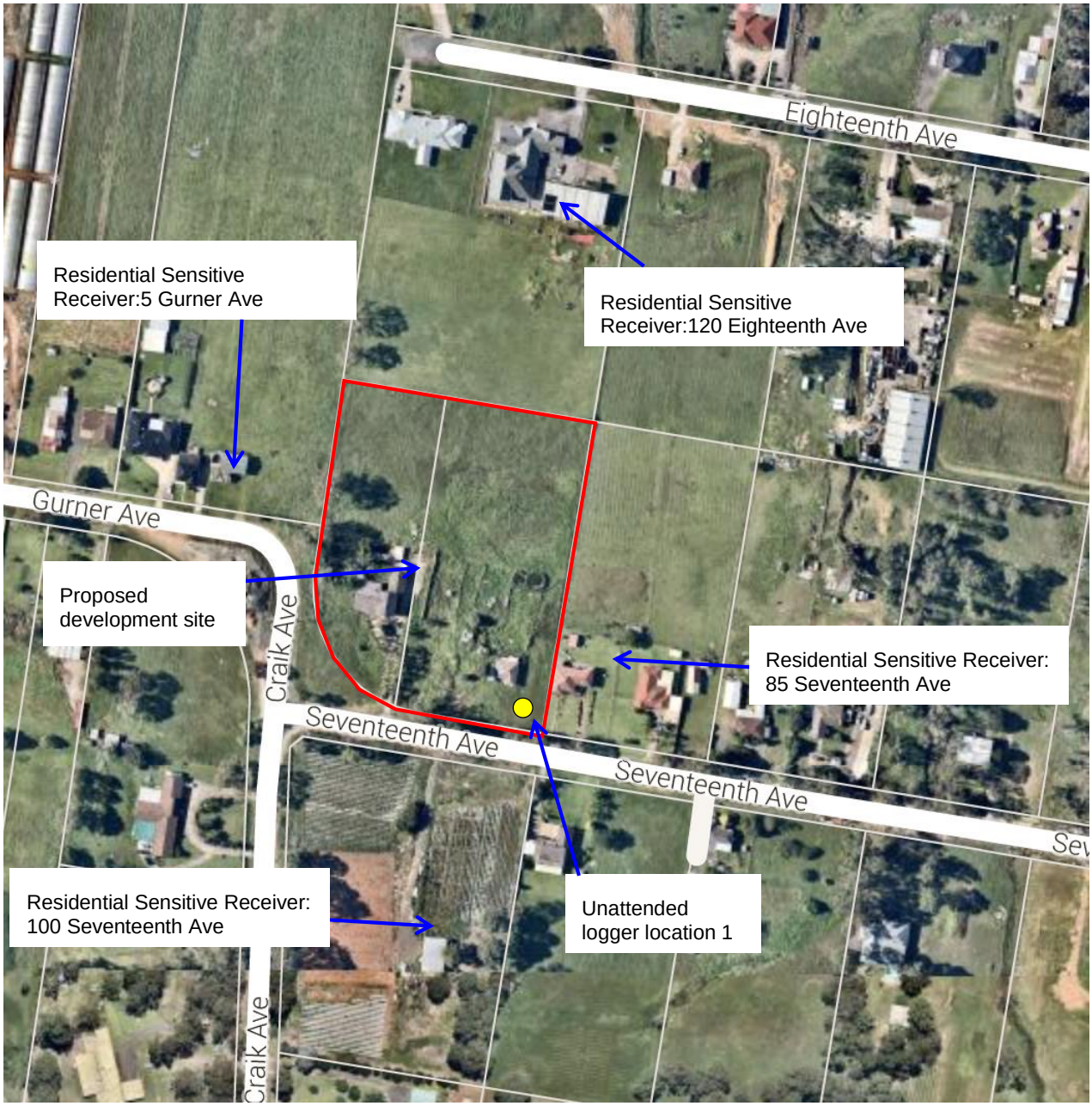
Specific acoustic terminology is used in this report. An explanation of common acoustic terms is provided in Appendix C.

2 PROJECT OVERVIEW

2.1 Project Location

The proposed development is located at 95 - 105 Seventeenth Avenue, Austral. The project area and its surrounding environment are presented in Figure 2-1 below.

Figure 2-1 Project Area and Surrounding Environment



Aerial image courtesy of © 2016 nearmap ltd

2.2 Project Description and Site Plan

The development involves the demolition of the existing buildings on the site and the construction of several separate buildings containing classrooms, a separate administration building, an assembly building, external play areas, car parking areas accessed from Seventeenth Avenue and associated landscaping. The school buildings have been sufficiently setback from the sites frontage to Seventeenth Avenue and the corner of Craik and Gurner Avenue. Separation has also been provided from the adjoining property boundaries to accommodate landscaping. The proposed development seeks approval for the following:

- Demolition of two (2) existing dwellings and associated outbuildings on the site.
- Staged development of a school providing for kindergarten – Year 12 for up to 800 students to be achieved by 2029.

- Construction of two x 2 storey buildings associated with the primary school (Kindergarten – Y6) in the north west corner of the site and three x 2 storey buildings associated with the Secondary school in the south eastern corner of the site.
- Construction of a school assembly building.
- Provision of 58 car parking spaces for staff and visitors.
- Provision of a 16 bay pick-up/drop –off area Provision of a 3 bay bus parking area. Entry and egress to the car park from Seventeenth Avenue. Provision for external play areas.
- Before and after school services for up to 40 school aged children.

The proposed site layouts of the residential development site is presented in Figure 2-2.

Figure 2-2 Proposed Site Plan

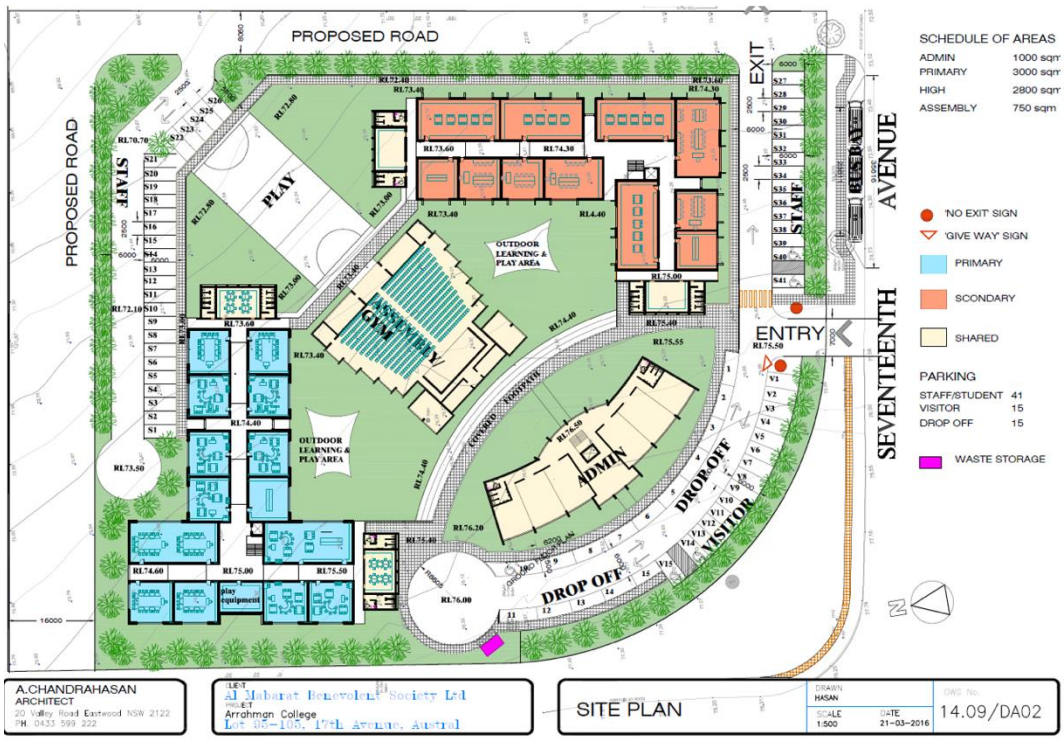


Figure 2-3 Proposed Stage 1 Plan

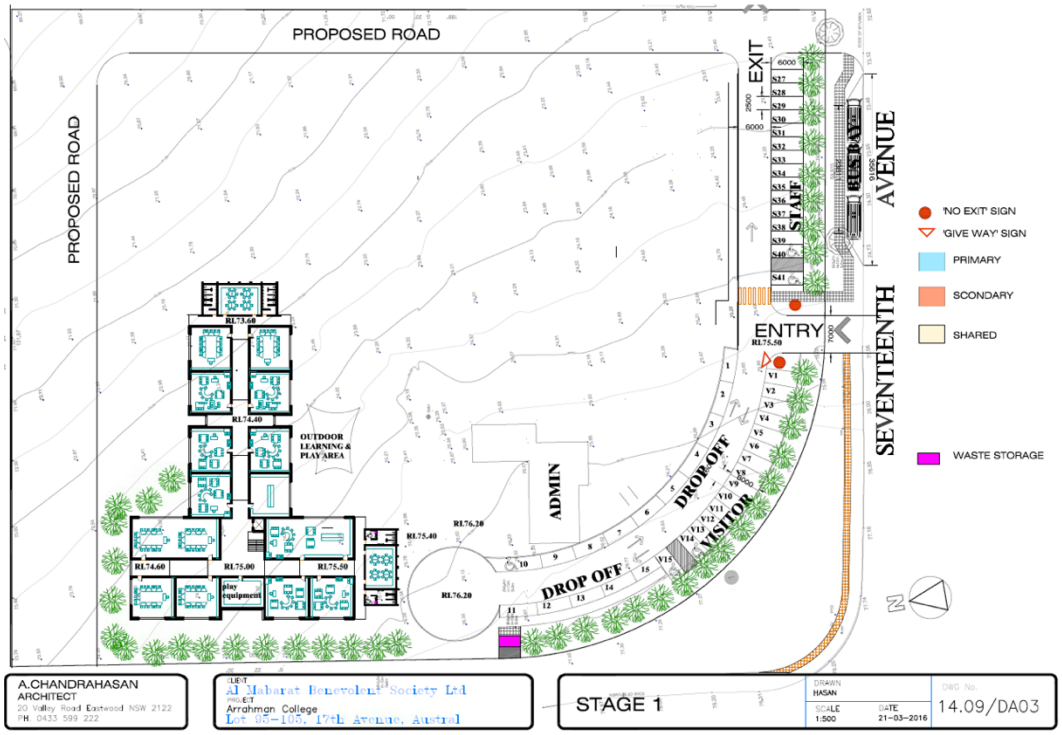


Figure 2-4 Proposed Stage 2 Plan

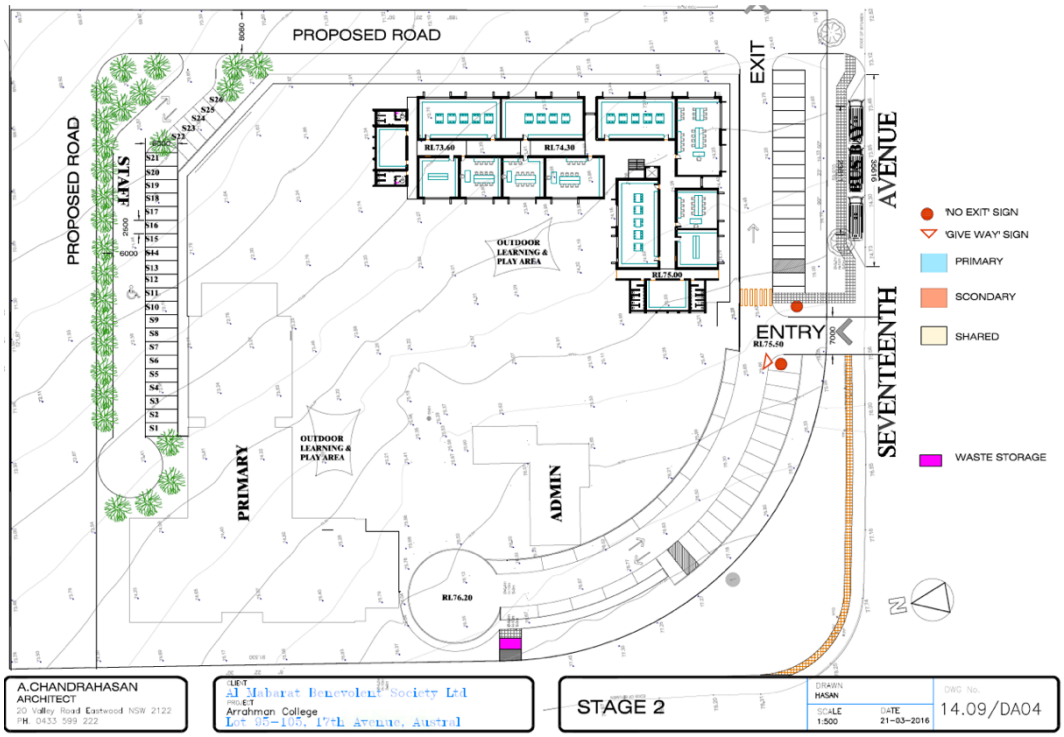


Figure 2-5 Proposed Stage 3 Plan

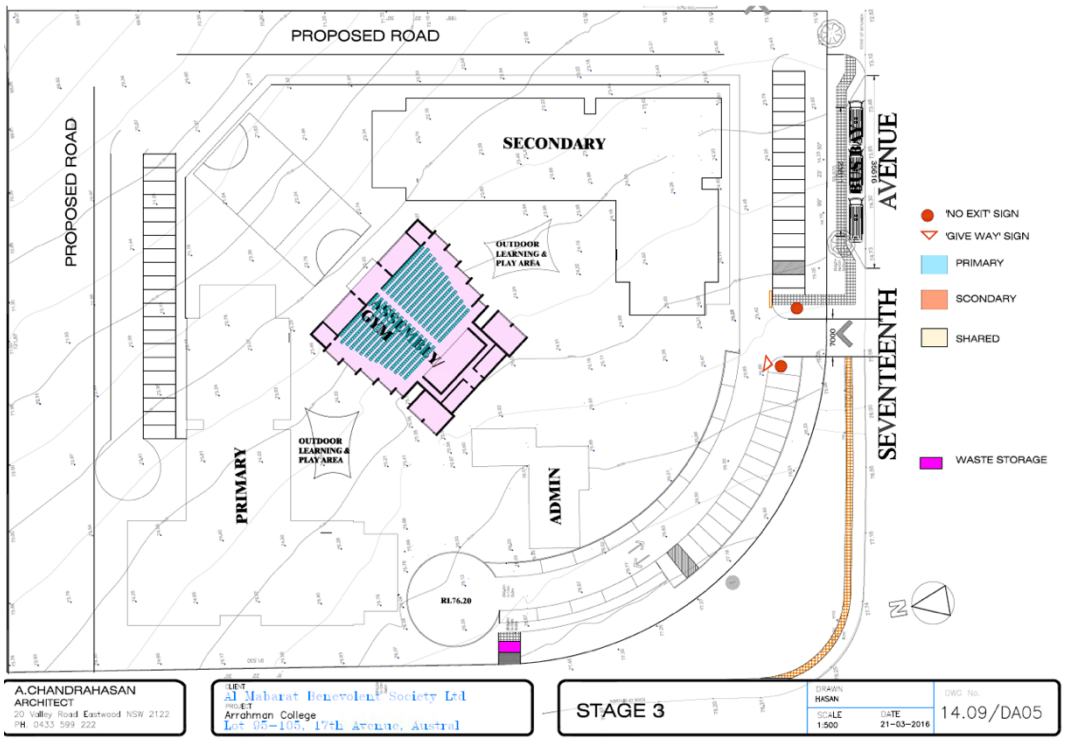
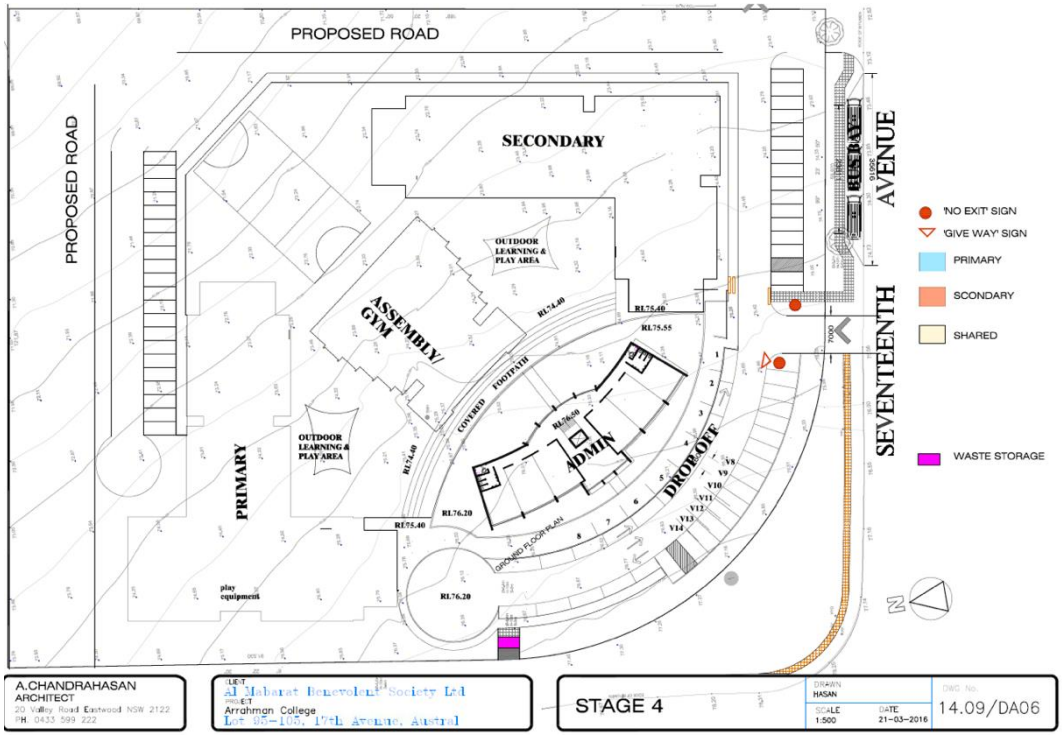


Figure 2-6 Proposed Stage 4 Plan



3 EXISTING NOISE ENVIRONMENT

Unattended noise monitoring for the development was carried out between 28 April and 5 May 2016 at the locations shown in Figure 2-1.

The location was selected after a detailed inspection of the project area giving consideration to other noise sources that may influence the readings, the proximity of noise-sensitive receivers and security issues for the noise monitoring device and gaining permission for access from the residents or landowners. The results of the ambient noise monitoring are shown in Table 3-1.

Instrumentation for the survey comprised of a RION NL-42 Environmental Noise Logger (serial number 546395) fitted with a microphone windshield. Calibration of the logger was checked prior to and following measurements. Drift in calibration did not exceed ±0.5 dBA. All equipment carried appropriate and current NATA (or manufacturer) calibration certificates.

From the measured noise levels, the results have been summarised and presented in Table 3-1.

Table 3-1 Measured Existing Noise Levels Corresponding Assessment Time Periods

Location	Measurement Descriptor	Measured Noise Level – dBA re 20 µPa		
		Daytime 7.00 am – 6.00 pm	Evening 6.00 pm – 10.00 pm	Night Time 10.00 pm – 7.00 am
On site	L_{Aeq}[1]	50	43	43
	RBL (Background)[2]	41	35	35

Note 1: The LAeq 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.
Note 2: 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.

4 ASSESSMENT CRITERIA

The issues identified as being of potential significance in the context of an acoustic assessment supporting the proposed Development Application are:

- The student capacity of 800.
- The use of the 14 space visitor car park and 27 space staff car park
- The operation of mechanical plants and equipment

Liverpool council currently has no objectives in relation to acoustic privacy and management issues associated with schools.

In previous developments of schools in NSW, Rodney Stevens Acoustics has adopted the following key aspects with regard to acoustic intrusion to nearby and adjoining residential dwellings:

- It is important to balance the operation of schools with community expectations. To achieve this outcome, many councils consider it necessary to seek appropriate acoustic privacy measures that are compatible with the prevailing character of residential areas. This is the preferred outcome rather than resorting to noise attenuation walls.

- There is also recognition that the good long term operation and management of schools can help to ensure development continues to harmoniously co-exist with the surrounding residential amenity.

- The location and design of school must consider the projection of noise from various activities to avoid any adverse impacts on the residential amenity of adjoining land.

- Schools traditionally form an essential part of all residential communities. Noise emissions from students engaged in active outdoor play are unlikely to achieve a "background + 5 dBA" or even a "background + 10 dBA" criterion at the site boundary. This is common across all educational facilities, particularly if the students are located near the boundary, and is often the case, in close proximity to residences.

In general, the impact of outdoor activity noise from schools is considered to be sufficiently mitigated by the site zoning and the limited periods of outdoor recreational activities, that is during PE classes, recess and lunch breaks, occurring between Monday to Friday during the relatively short school year and as such, does not warrant quantitative assessment.

The area surrounding the school is residential and does not contain industrial noise sources (with the exception of residential air-conditioning units). Under the procedures documented in the INP, the amenity criterion recommended for residences in a rural area is the most appropriate classification and in the absence of "industrial" noise sources, the amenity criterion becomes equal to the recommended Acceptable Noise Level (ANL) for this receiver type.

Applying the INP guidelines, the Project Specific Noise Levels (PSNL) for continuous operational noise emissions applicable to any continuous noise sources (such as mechanical plant) during the daytime assessment period at nearby residential receivers are shown in bold in Table 4-1, being the lower of either the intrusiveness or amenity criterion.

Table 4-1 Project Specific INP Criteria

Assessment Period	ANL LAeq(Period)	Existing Noise Level - dBA		INP Criteria - dBA	
		RBL	LAeq(Period)	Intrusive LAeq(15min)	Amenity LAeq(Period)
Daytime	50	41	50	**46**	47

The limiting criterion for continuous operational noise emissions from the mechanical plant is **44 dBA**.

Obtaining a noise criterion of "background + 10dB" for the assessment of children engaged in outdoor activities results in a project specific noise criteria of **51 dBA**.

However, in accordance with INP principles, where a noise source occurs over a limited duration throughout the day, adjustments are applied to the acceptable noise level at the receiver. These adjustments generally apply where a single-event noise is continuous for a period less than two and a half hours in any 24-hour period. Applying such an adjustment to the assessment criterion for school carpark operation would not seem unreasonable given the operation of the source of noise is mainly concentrated over a one-hour period (at most) during the morning arrival and afternoon departure periods. Although it could be argued that this is not a single event noise (since it occurs over two separate periods throughout the day) the essentially (and expected) short duration nature of the activity does not warrant the application of an intrusiveness-based criterion.

In consultation with the INP procedures, a more reasonable criterion against which to compare and assess noise emissions associated with the proposed carpark is an additional 5 dBA increase in the acceptable noise level at the receptor, (ie L_{A90} + 10 dBA) or **51 dBA**.

5 NOISE ASSESSMENT

5.1 Outdoor Play Noise Assessment

5.1.1 Typical Noise Levels

There is potential for student noise impact upon nearby residences. Calculations of students' loud vocal levels being transmitted to residential receivers from the development have been based on a typical adult male sound power level of a "Raised" voice.

The sound power levels have been derived from Table 16.1 in "Handbook of Acoustical Measurements and Noise Control" by C.M. Harris. Harris indicates that a typical casual male voice is 53 dBA at 1 m, a typical normal voice is 58 dBA at 1 m, a typical raised voice is 65 dBA at 1 m, a typical loud voice is 75 dBA at 1 m and a shouting voice is 88 dBA at 1 m. Taking the standard conversion of adding 8 dBA to convert sound pressure level at 1 m to sound power level, the sound power level of a typical raised voice of an adult or loud voice of a student equates to 73 dBA. The following worst-case operational scenarios have been assumed for our assessment:

- A total of 800 students have been proposed for Arrahman School.

Therefore, the worst case scenario will be 800 students talking loudly at any one time. Noise predictions at the residential boundaries are based upon the above vocal sound power levels.

5.1.2 Predicted Noise Impact Assessment

For the purposes of this assessment, it is assumed that the all the 800 school students will be playing in the outdoor play area at the same time and will have a total sound power level of 103 dBA.

The following assumptions have been made to predict student outdoor activities noise level at the adjoining receiver boundaries:

- Up to 800 students engaged in outdoor activities
- Student activities will be spread out in all the outdoor play areas
- Students will only be engaged in outdoor activities during recess (for 15 minutes) and lunch (45 minutes) only. This accounts for 1 hour of the day.
- Shielding will be provided by the proposed primary school classrooms and secondary school class rooms

The predicted noise levels to the nearest residential, based on the above conditions, are presented below:

- 120 Eighteenth Avenue (132m from the nearest play area): predicted to be up to 70 dB(A);
- 5 Gumer Avenue (73m from the nearest play area): predicted to be up to 69 dB(A);
- 85 Seventeenth Avenue (215m from the nearest play area): predicted to be up to 49 dB(A);

- 100 Seventeenth Avenue (87m from the nearest play area): predicted to be up to 51 dB(A);

The predicted noise levels show an exceedance to noise criteria with all the children playing outside during recess and lunch at 120 Eighteenth Avenue and 5 Gumer Avenue.

5.2 Car Park Noise Assessment

Noise associated with the operation of the car park can cause disturbance to the identified receptors to noise. Noise will be generated by activities associated with cars arriving and leaving the premises (opening and closing of doors, starting, maneuvering, accelerating etc). Typical sound power levels for low speed vehicle activities are included in Table 5-1 along with the corresponding predicted noise levels at the closest residential premises as identified in Figure 2-1. The calculations include noise attenuation provided by existing building façades, distance and height of the residential receivers and the assumption that the carpark will predominantly be used in the morning drop off and pick up times.

Table 5-1 Vehicle Related Noise Assessment

Noise Source	Typical Maximum Sound Power Level L_w(dBA)	Resultant Noise Level at Sensitive Receiver	Criteria	Compliance (Y/N)
120 Eighteenth Avenue (132m from the nearest carpark)				
Car Accelerating	93-95	32 dB(A)	INP Day: 46 dB(A)	Y
Car Starting	91-93	30 dB(A)		Y
Car Door Closing	88-91	23 dB(A)		Y
Car Moving	83-85	28 dB(A)		Y
5 Gumer Avenue (73m from the nearest carpark)				
Car Accelerating	93-95	37 dB(A)	INP Day: 46 dB(A)	Y
Car Starting	91-93	34 dB(A)		Y
Car Door Closing	88-91	27 dB(A)		Y
Car Moving	83-85	32 dB(A)		Y
85 Seventeenth Avenue (215m from the nearest carpark)				
Car Accelerating	93-95	27 dB(A)	INP Day: 46 dB(A)	Y
Car Starting	91-93	25 dB(A)		Y
Car Door Closing	88-91	18 dB(A)		Y
Car Moving	83-85	23 dB(A)		Y

100 Seventeenth Avenue (87m from the nearest carpark)				
Car Accelerating	93-95	35 dB(A)	INP Day: 46 dB(A)	Y
Car Starting	91-93	32 dB(A)		Y
Car Door Closing	88-91	25 dB(A)		Y
Car Moving	83-85	31 dB(A)		Y

The predicted noise levels show compliance to the established noise criteria.

5.3 Mechanical Plant Noise Assessment

No equipment for the mechanical has been selected at this stage. However, given the background noise levels in the area, the plant would need to be selected on the basis of quiet operation.

It is recommended that any air-conditioning plant be located on the western boundary to provide maximum distance loss to neighbouring residential receivers. It is envisaged that any mechanical noise emissions will be controllable by selection of low-noise equipment and judicious location of plant, as well as installation of an acoustic enclosure.

6 RECOMMENDATIONS

The predicted noise levels at the residential boundary to the north and west shows an exceedance to the established noise criteria with children playing in the outdoor play area during recess and lunch. To maintain acoustic amenity at nearby residential receivers if the below measures are incorporated within the proposed design:

- There is to be no amplified music in the outdoor play area.
- PA system is to be used for announcement purposes only. There is to be no speakers facing any of the residents.
- Acoustic fencing is recommended to be installed on the northern boundary of the outdoor play area. The boundary fence should have a boundary fence of solid continuous construction (ie free of gaps) Colorbond aluminium, glass, masonry construction or a combination of either should be installed. Figure below outlines the location of the acoustic fencing and minimum height of 1.8m.

7 CONCLUSION

Rodney Stevens Acoustics has conducted a Noise Impact Assessment for the Proposed School site at 95 - 105 Seventeenth Avenue, Austral NSW. The assessment has been conducted to satisfy relevant regulatory requirements.

Noise emissions from outdoor playground areas cannot readily be effectively controlled and the playground areas are only fully operational for a maximum for 1 hour per day. They also do not appear to constitute a serious threat to the acoustical amenity of the surrounding residential community and cannot be realistically defined as “offensive noise”.

Approved:-

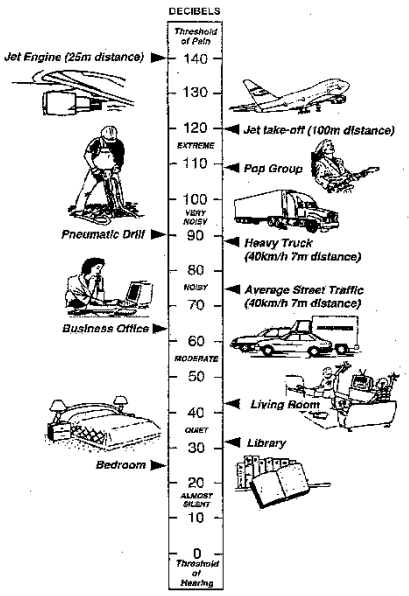
Rodney Stevens - MAAS

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 10^{th} 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)*.

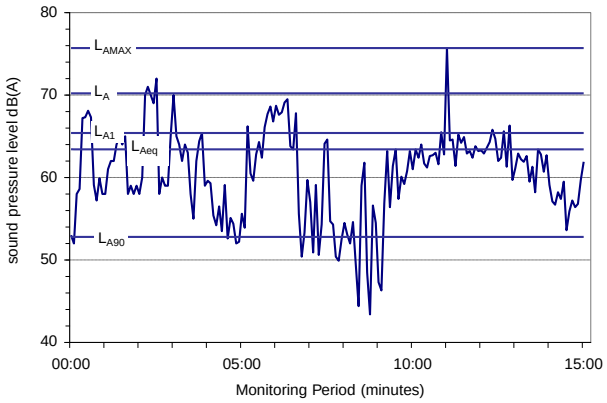
Sound Pressure Level (SPL)

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.

Statistical 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 descriptor

- LAmax 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 refer
- L_{Aeq} Equivalent continuous (energy average) A-weighted sound pressure le
- L_{A90} Noise level exceeded for 90% of time (background level). The average

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 dBA penalty is typically applied to noise sources with tonal characteristics.

Appendix B – Calibration Certificates

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 C15557

Client Details	Rodney Stevens Acoustics Pty Ltd 1 Majura Close St Ives Chase NSW 2075
Equipment Tested/ Model Number :	Rion NL-42
Instrument Serial Number :	00810779
Microphone Serial Number :	148338
Pre-amplifier Serial Number :	22257

Pre-Test Atmospheric Conditions		**Post-Test Atmospheric Conditions**	
Ambient Temperature :	20.8°C	**Ambient Temperature :**	20.7°C
Relative Humidity :	51.4%	**Relative Humidity :**	51.4%
Barometric Pressure :	99.85kPa	**Barometric Pressure :**	99.81kPa

Calibration Technician :	Dennis Kim	**Secondary Check:**	Kate Alchin
Calibration Date :	20/10/2015	**Report Issue Date :**	20/10/2015

Approved Signatory : Ken Williams

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	*±0.120dB*	*Temperature*	*±0.3°C*
12.5kHz	*±0.165dB*	*Relative Humidity*	*±4.1%*
16kHz	*±0.245dB*	*Barometric Pressure*	*±0.1kPa*
Electrical Tests			
31.5 Hz to 20 kHz	*±0.121dB*		

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

NATA
WORLD RECOGNISED ACCREDITATION

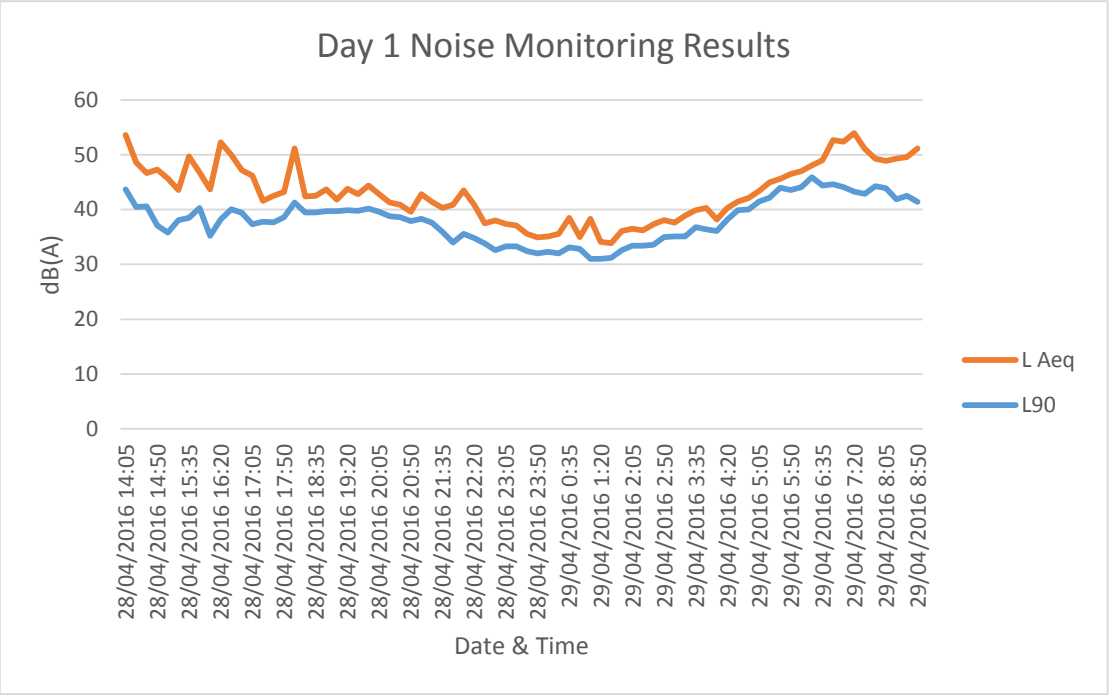
This calibration certificate is to be read in conjunction with the calibration test report.

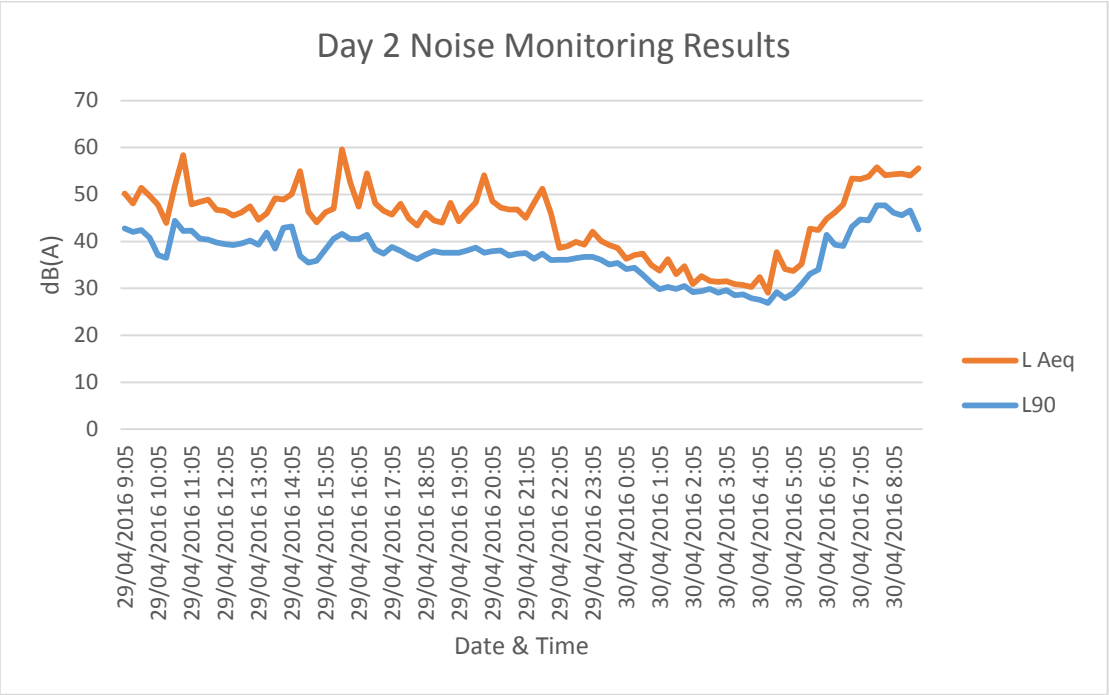
Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025.

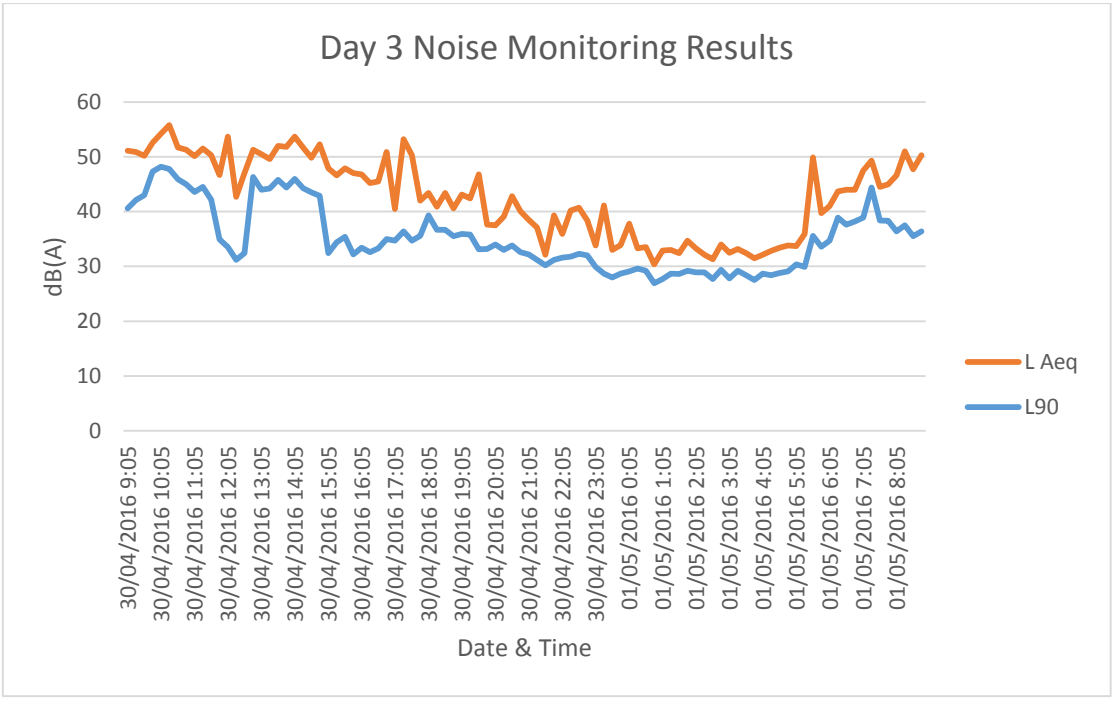
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/National standards.

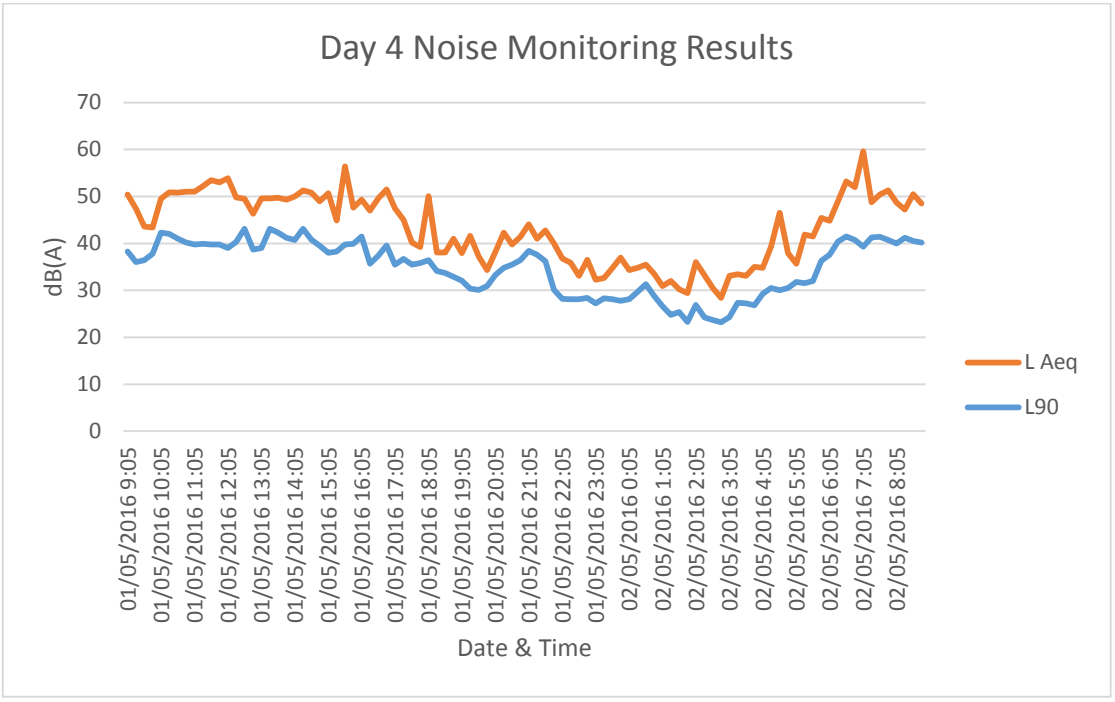
PAGE 1 OF 1

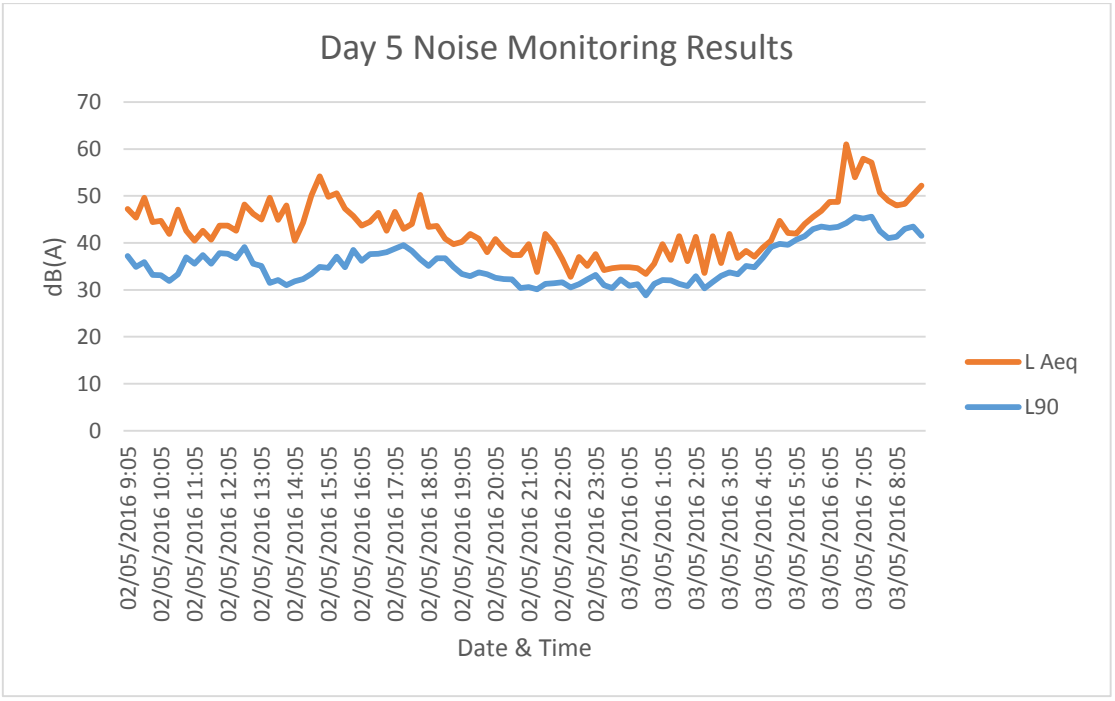
Appendix C – Unattended Noise Monitoring Results

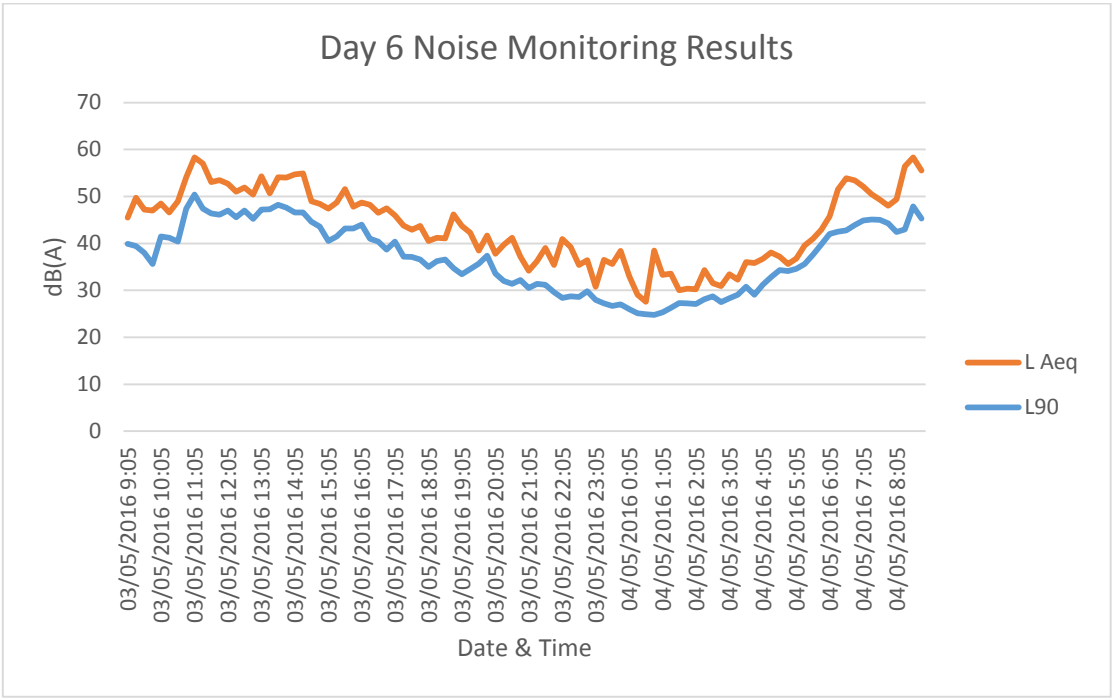


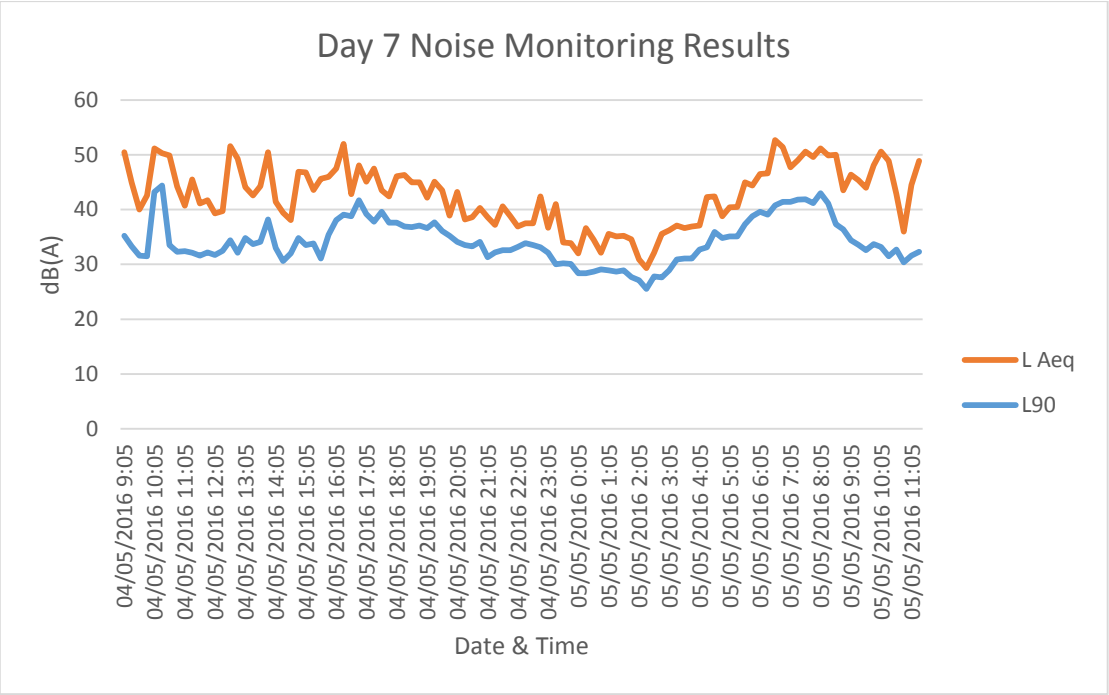



Day 3 Noise Monitoring Results
60
50
40
30
20
10
0
dB(A)
30/04/2016 9:05
30/04/2016 10:05
30/04/2016 11:05
30/04/2016 12:05
30/04/2016 13:05
30/04/2016 14:05
30/04/2016 15:05
30/04/2016 16:05
30/04/2016 17:05
30/04/2016 18:05
30/04/2016 19:05
30/04/2016 20:05
30/04/2016 21:05
30/04/2016 22:05
30/04/2016 23:05
01/05/2016 0:05
01/05/2016 1:05
01/05/2016 2:05
01/05/2016 3:05
01/05/2016 4:05
01/05/2016 5:05
01/05/2016 6:05
01/05/2016 7:05
01/05/2016 8:05
Date & Time
L Aeq
L90


Day 4 Noise Monitoring Results
70
60
50
40
30
20
10
0
dB(A)
01/05/2016 9:05
01/05/2016 10:05
01/05/2016 11:05
01/05/2016 12:05
01/05/2016 13:05
01/05/2016 14:05
01/05/2016 15:05
01/05/2016 16:05
01/05/2016 17:05
01/05/2016 18:05
01/05/2016 19:05
01/05/2016 20:05
01/05/2016 21:05
01/05/2016 22:05
01/05/2016 23:05
02/05/2016 0:05
02/05/2016 1:05
02/05/2016 2:05
02/05/2016 3:05
02/05/2016 4:05
02/05/2016 5:05
02/05/2016 6:05
02/05/2016 7:05
02/05/2016 8:05
Date & Time
L Aeq
L90


Day 5 Noise Monitoring Results
dB(A)
70
60
50
40
30
20
10
0
02/05/2016 9:05
02/05/2016 10:05
02/05/2016 11:05
02/05/2016 12:05
02/05/2016 13:05
02/05/2016 14:05
02/05/2016 15:05
02/05/2016 16:05
02/05/2016 17:05
02/05/2016 18:05
02/05/2016 19:05
02/05/2016 20:05
02/05/2016 21:05
02/05/2016 22:05
02/05/2016 23:05
03/05/2016 0:05
03/05/2016 1:05
03/05/2016 2:05
03/05/2016 3:05
03/05/2016 4:05
03/05/2016 5:05
03/05/2016 6:05
03/05/2016 7:05
03/05/2016 8:05
Date & Time
L Aeq
L90


Day 6 Noise Monitoring Results
dB(A)
70
60
50
40
30
20
10
0
03/05/2016 9:05
03/05/2016 10:05
03/05/2016 11:05
03/05/2016 12:05
03/05/2016 13:05
03/05/2016 14:05
03/05/2016 15:05
03/05/2016 16:05
03/05/2016 17:05
03/05/2016 18:05
03/05/2016 19:05
03/05/2016 20:05
03/05/2016 21:05
03/05/2016 22:05
03/05/2016 23:05
04/05/2016 0:05
04/05/2016 1:05
04/05/2016 2:05
04/05/2016 3:05
04/05/2016 4:05
04/05/2016 5:05
04/05/2016 6:05
04/05/2016 7:05
04/05/2016 8:05
Date & Time
L Aeq
L90


Day 7 Noise Monitoring Results
60
50
40
30
20
10
0
dB(A)
04/05/2016 9:05
04/05/2016 10:05
04/05/2016 11:05
04/05/2016 12:05
04/05/2016 13:05
04/05/2016 14:05
04/05/2016 15:05
04/05/2016 16:05
04/05/2016 17:05
04/05/2016 18:05
04/05/2016 19:05
04/05/2016 20:05
04/05/2016 21:05
04/05/2016 22:05
04/05/2016 23:05
05/05/2016 0:05
05/05/2016 1:05
05/05/2016 2:05
05/05/2016 3:05
05/05/2016 4:05
05/05/2016 5:05
05/05/2016 6:05
05/05/2016 7:05
05/05/2016 8:05
05/05/2016 9:05
05/05/2016 10:05
05/05/2016 11:05
Date & Time
L Aeq
L90