19 December 2018

WM Project Number: 18419
Our Ref: CPM191218 NG
Email: harrison@chesterpm.com

Mr Harrison Morgan
Chester Project Management
PO Box 302
TURRAMURRA NSW 2074

Dear Harrison

Re: Bullecourt Avenue RAC - DA Noise Assessment

Introduction

Wilkinson Murray has been engaged to review and update a previous DA noise assessment prepared in 2017 for this site by Acoustic Logic Consulting (ALC); their report is appended to this letter.

We have visited the site and undertaken some short-term measurements to confirm the previous monitoring data is still valid. A site plan is shown in Figure 1.

The ALC report assessed and established criteria for noise generated by the development in accordance with EPA *INP*. This policy has been updated to the *Noise Policy for Industry (NPfI)* so this letter adopts the previous measurements data to establish criteria.

The ALC report also provides recommended glazing construction in order to meet internal noise requirements.

Further, this letter reviews potential noise ingress to the site from the adjoining industrial area.

We have confirmed the site is located outside the ANEF20 contour from Bankstown Aerodrome, so whilst there is occasional aircraft noise, there is no specific controls required. This aspect is not discussed further.

Operational Noise Limits

Our site measurements indicated the previous data is still suitable to establish noise limits. The use of the *NPfI* still adopts intrusive criteria based on the background + 5dBA approach and established amenity criteria based on a suburban area. We have established criteria for receivers on the south side of Bullecourt Avenue and at the rear of residences along Keysor Place. Since in the north-western corner of the site, this development will be the only noise source the following limits apply.

A short-term background noise measurement was undertaken at the north-east boundary of the site on the 30 November 2018 at 5.15pm. The daytime background noise measurement of 46dBA (L_{90}) was recorded. This measurement is similar to the previous measurement undertaken by Acoustic Logic Consulting at the northern boundary. Therefore, the previous noise measurements are still considered valid.

Table 1 summarises noise trigger levels. The most stringent limits are highlighted in **bold**.

Table 1 – Noise Trigger Levels

Location	Period	L_{A90}	Intrusive Trigger	Amenity Trigger
Bullecourt Avenue	Day	44	**49**	53 (55 - 5 + 3)
	Evening	45	50	**48** (50 - 5 + 3)
	Night	38	43	**38** (40 - 5 + 3)
Keysor Place	Day	40	**45**	58 (55+3)
	Evening	40	**45**	48 (45+3)
	Night	38	**43**	43 (40+3)

These limits should apply to the cumulative on-site noise from mechanical plant, noting there is also a requirement for air conditioning equipment to be inaudible inside residences between 10.00pm and 7.00/8.00am.

Figure 1 – Area Plan showing Site & Surrounding Residential and Commercial Buildings

Traffic Noise Ingress

The closest facades of the development are similar; hence the previous indicative glazing advice is still suitable at this updated DA stage and will be refined at CC.

Table 4 – Indicative treatments for glazed elements (windows, doors)

Façade	Space	Glazing Thickness	Acoustic Seals Required
Spaces/Rooms in Building C and RC Building directly facing Bullecourt Avenue (facing south)	Bedrooms	10.38mm laminated	Yes
	Living Areas	10.38mm laminated	Yes
	Common Areas	6.38mm laminated	Yes
All remaining units/spaces	Bedrooms	6.38mm laminated	Yes
	Living Areas	6mm float	Yes
	Common Areas	4mm float	Yes

Industrial Noise Ingress

There are three industrial buildings on the neighbouring industrial zone on the opposite side of Bullecourt Lane, which are primarily sealed facades. Details of the current use of the buildings from our visit or searches on the internet are presented in Table 2. The rear building of the industrial lot of 112 Ashford Avenue contains 5 different businesses, with unit 16 being at the northern end and unit 20 at the southern end.

During our visits on 30 November and 19 December 2018 there was no noise generation from these sites which would result in unacceptable impacts at a residential aged care facility on a site adjoining a light industrial zone. It was also found that Units 19 and 20 of 112 Ashford Avenue were unoccupied.

The site plan shows a set back to the RAC buildings from the boundary. Detailed design will address glazing construction to address noise ingress. Photos of the industrial buildings are also provided from Figure 1 to Figure 5. These photos show there are few openings (except Figure 2)

Table 2 – Summary of Industrial

Site	Address	Trading Hours	Type of Activities
Steve's Realistic Engineering	25 Bullecourt Ave	7.00am – 5.00pm	Hand tools, Truck noise
Absolute Commercial Kitchen	16/112 Ashford Ave	Mon to Fri 9.00am 5.00pm	Hand tools
Austral brass Foundry	17/112 Ashford Ave	Mon to Fri 7.00am 7.00pm	Plant Noise, Hand tools
Glory Gym Milperra	18/112 Ashford Ave	Mon to Fri 4.30pm-9.00pm	Music, People noise
a.hartrodt Australia Pty Ltd	90 Ashford Ave	7.00am – 5.00pm	Warehouse and Logistics - Truck Deliveries

Figure 1 – Front of Steve's Realistic Engineering

Figure 2 – Rear of Steve's Realistic Engineering

Figure 3 – Exotic Smash Repair

Figure 4 – Rear of a.hartrodt Australia Pty Ltd

Figure 5 – Rear of a.hartrodt Australia Pty Ltd

We trust this information is sufficient. Please contact us if you have any further queries.

Yours faithfully
WILKINSON MURRAY

Neil Gross
Director

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AAAC
This firm is a member firm of the Association of Australasian Acoustical Consultants and the work here reported has been carried out in accordance with the terms of that membership.

MANAGING DIRECTORS
MATTHEW PALAVIDIS
VICTOR FATTORETTO

DIRECTORS
MATTHEW SHIELDS
BEN WHITE

Milperra Village

DA Acoustic Assessment

SYDNEY
A: 9 Sarah St Mascot NSW 2020
T: (02) 8339 8000
F: (02) 8338 8399

SYDNEY MELBOURNE BRISBANE CANBERRA
LONDON DUBAI SINGAPORE GREECE

ABN: 11 068 954 343

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Revision	Date	Document Reference	Prepared By	Checked By	Approved By
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TABLE OF CONTENTS

1 INTRODUCTION

This report presents an acoustic assessment of noise impacts associated with the Milperra Village development proposed to be located at Bullecourt Avenue, Milperra.

This report will assess external noise impacts on internal spaces on the proposed development in order to determine whether upgrading of the building shell is required in order to ensure reasonable amenity in internal spaces.

This report then recommends treatments to ensure that compliance with acoustic requirements from Canterbury-Bankstown Council and NSW EPA Industrial Noise Policy will be achieved.

This assessment is based on the architectural drawings produced by Bickerton Masters Architecture (project 973) and dated October 2017.

2 SITE DESCRIPTION

The proposal includes four multi-storey blocks including the following uses:

- Residential aged care facilities;
- Apartments;
- Basement levels and ground floor car parking;
- Lawn bowls green;
- A café.

The site is bounded by the following:

- Bullecourt Avenue, which carries medium traffic volumes, to the south;
- Residential properties to the west, along Keysor Place;
- Industrial uses to the east
- Bankstown Golf Club to the north;

The site will be accessible from driveways on Bullecourt Avenue to the south and Bullecourt lane to the east.

Bullecourt Avenue is a 2-lane local road carrying medium traffic volumes.

Bankstown Airport is located approximately 1.5 kilometres to the north of the site. The subject site is located outside of the Aircraft Noise Exposure Forecast contours lines and therefore aircraft noise does not require assessment.

Figure 1 below illustrates the existing site and monitoring locations.

Figure 1 - Site Survey and Monitoring Location

- Attended noise measurement location
- Unattended noise monitoring location
- Subject site
- Nearest Residential properties
- Industrial properties

3 NOISE DESCRIPTORS

Traffic noise constantly varies in level, due to fluctuations in traffic speed, vehicle types, road conditions and traffic densities. Accordingly, it is not possible to accurately determine prevailing traffic noise conditions by measuring a single, instantaneous noise level. To accurately determine the effects of traffic noise a 15-20 minute measurement interval is utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine noise description parameters. These parameters are used to measure how much annoyance would be caused by a particular noise source.

In the case of environmental noise three principal measurement parameters are used, namely L_{10}, L_{90} and L_{eq}.

The L_{10} and L_{90} measurement parameters are statistical levels that represent the average maximum and average minimum noise levels respectively, over the measurement interval.

The L_{10} parameter is commonly used to measure noise produced by a particular intrusive noise source since it represents the average of the loudest noise levels produced by the source.

Conversely, the L_{90} level (which is commonly referred to as the background noise level) represents the noise level heard in the quieter periods during a measurement interval. The L_{90} parameter is used to set the allowable noise level for new, potentially intrusive noise sources since the disturbance caused by the new source will depend on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L_{90} level.

The L_{eq} parameter represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the measurement period. L_{eq} is important in the assessment of traffic noise impact as it closely corresponds with human perception of a changing noise environment; such is the character of traffic noise.

Current practice favours the L_{eq} parameter as a means of measuring traffic noise, whereas the L_{10} parameter has been used in the past and is still incorporated in some codes. For the reasons outlined above, the L_{90} parameter is not used to assess traffic noise intrusion.

4 NOISE INTRUSION CRITERIA

Traffic noise impacts should comply with the requirements of Bankstown Council DCP 2015, the Australian Standard AS2107:2016 Acoustics - Recommended design sound levels and reverberation times for building interiors and Australian Standard AS3671 – 1989 Acoustics—Road traffic noise intrusion—Building siting and construction.

4.1 ACOUSTIC OBJECTIVES

The determination of an acceptable level of traffic noise within spaces requires consideration of the activities carried out within the space and the degree to which noise will interfere with those activities.

As sleep is the activity most affected by traffic noise, bedrooms are the most sensitive rooms. Higher levels of noise are acceptable in living areas without interfering with activities such as reading, listening to television, etc. Noise levels in utility spaces such as kitchens, bathrooms, laundries, etc can be higher.

Traffic noise will be assessed to the following criteria:

- Bankstown Council DCP 2015;
- AS2107 :2016 "Acoustics - Recommended Design Sound Levels & Reverberation Times for Building Interiors";
- AS3671 – 1989 "Acoustics - Road Traffic Noise Intrusion – Building Siting & Construction;

4.2 TRAFFIC NOISE CRITERIA

4.2.1 Requirements by Bankstown Council DCP 2015

Bankstown Council DCP States;

"Development Control Plan No. 13 - Multiple Unit Development Code

17.2.2 - All dwellings, in particular dwellings facing Canterbury Road, are to incorporate appropriate noise mitigation measures (for example double glazing, noise insulation) to minimise the intrusion of unwanted noise. Proposed measures are to be demonstrated in the Development Application and justified by supporting documentation prepared by suitably qualified practitioners. Reference should be made to AS 2107 Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors, AS 3671 – 1989 Acoustics – Road Traffic Noise Intrusion – Building Siting and Construction, and The Environmental Criteria for Road Traffic Noise (May 1999) by the Environmental Protection Authority."

4.2.2 AS3671 – 1989 "Acoustics Road Traffic Noise Intrusion – Building Siting & Construction".

AS3671 documents the process of calculating internal noise levels based on external traffic noise. AS3671 refers to AS2107 – Recommended design levels and reverberation times for building interiors, for actual allowable internal levels.

4.2.3 AS2107 "Acoustics – Recommended Design Sound Levels & Reverberation Times for Building Interiors"

AS2107-2016: Recommended design sound levels and reverberation times for building interiors specifies allowable internal noise levels for internal spaces within residential and commercial buildings. Table 1, in section 5 of AS2107-2016, gives the following maximum internal noise levels for commercial buildings and residential buildings near major roads;

Table 1 – Recommended Design Sound Level

Space /Activity Type	Recommended Maximum Design Sound Level dB(A)L_{eq}
Living Areas	45 dB(A) $L_{eq,\ day}$
Sleeping Areas	40 dB(A) $L_{eq,\ night}$
Retail / Commercial	50 dB(A) $L_{eq,\ when\ in\ use}$

4.3 RESULTING CRITERIA

This assessment shall be conducted in accordance with the more stringent criteria set out above which is the criteria set out in AS2107:2016, The summarised noise criteria shown in the tables below.

Table 2 - Internal Noise Level Criteria for Residential and Retail Areas

LOCATION	TIME OF DAY	CRITERIA
Living Areas	10:00pm – 7:00am	40dB(A) $L_{eq(15\ hour)}$
Sleeping Areas	7:00am – 10:00pm	35dB(A) $L_{eq(9\ hour)}$
Retail / Commercial	When in use	50 dB(A) $L_{eq,\ when\ in\ use}$

5 NOISE MONITORING

As part of this investigation, traffic noise from the surrounding perimeter roadways has been measured. The results of this measurement will be used to determine the treatments required to reduce noise levels to within the project acoustic objectives.

Measurements included attended and unattended noise levels measurements conducted at the locations detailed in Figure 1.

5.1 MEASUREMENT LOCATION

Traffic noise measurement locations are detailed above in figure 1.

5.2 ATTENDED MEASUREMENTS

Measurements were taken using a Norsonic-140 precision sound level analyser, set to A-weighted fast response. The sound level meter was calibrated before and after the measurements using a RION NC73 precision sound calibrator and no significant drift was recorded. Measurements were taken on 4th August 2017 between 11:30am and 12:00pm. There were no periods of adverse weather during the measurement.

5.3 UNATTENDED MEASUREMENTS

Unattended noise measurements were obtained using an Acoustic Research Laboratories Pty Ltd noise logger. The logger was programmed to store 15-minute statistical noise levels throughout the monitoring period. The noises monitors were calibrated at the beginning and the end of the measurement using a Rion NC-73 calibrator. No significant drift was detected. All measurements were taken on A-weighted fast response mode. There were no significant periods of adverse weather conditions during the measurement period. The logger was on site from the 4th August 2017 to 11th August 2017. Refer to Appendices 1 and 2 for unmanned noise monitoring data.

5.4 RESULTANT NOISE LEVELS

The following table presents the resultant noise levels at the proposed northern boundary of the development. The noise levels are based on both the attended and unattended noise measurements results conducted by this office. The noise levels are based on the manned background noise measurement results adjusted by the difference with the noise monitor results of similar time periods and distance attenuation.

Table 3 – Measured Noise Levels

Location	Time of Day	Traffic Noise Level
Monitoring location (175m from Bullecourt Avenue)	Day (7am-10pm)	52 dB(A) $L_{eq(15\ hour)}$
	Night (10pm-7am)	47 dB(A) $L_{eq(9\ hour)}$
Bullecourt Avenue (5m from nearest lane)	Day (7am-10pm)	65 dB(A) $L_{eq(15\ hour)}$
	Night (10pm-7am)	60 dB(A) $L_{eq(9\ hour)}$

5.5 RECOMMENDATIONS

Traffic noise intrusion into the proposed development was assessed using the measured external noise levels reported above as a basis.

Calculations were performed taking into account the orientation of windows, the total area of glazing, facade transmission loss and room sound absorption characteristics. In this way the likely interior noise levels can be predicted. Acoustic treatment required to ensure compliance with the assessment criteria are detailed in this section.

Internal noise levels will primarily be as a result of noise transfer through the windows and doors as these are relatively light building elements that offer less resistance to the transmission of sound. Noise transfer through the masonry elements will not be significant and need not be considered further.

5.5.1 Recommended Glazing

The constructions necessary to achieve the noise levels are detailed below. The predicted noise levels have been based on the expected level and spectral characteristics of the external noise, the area of building elements exposed to traffic noise, the absorption characteristics of the rooms and the noise reduction performance of the building elements.

Table 4 – Indicative treatments for glazed elements (windows, doors)

Façade	Space	Glazing Thickness	Acoustic Seals Required
Spaces/Rooms in Building C and RC Building directly facing Bullecourt Avenue (facing south)	Bedrooms	10.38mm laminated	Yes
	Living Areas	10.38mm laminated	Yes
	Common Areas	6.38mm laminated	Yes
All remaining units/spaces	Bedrooms	6.38mm laminated	Yes
	Living Areas	6mm float	Yes
	Common Areas	4mm float	Yes

5.5.2 STC Requirements

In addition to meeting the minimum glazing thickness requirements given, the design of the window mullions, perimeter seals and the installation of the windows/doors in the building openings shall not reduce the STC rating of the glazing assembly below the values nominated in the table above. Note that mohair or mohair/fin type seals will not be acceptable for the windows requiring acoustic seals.

The window/door suppliers should provide evidence that the systems proposed have been tested in a registered laboratory with the recommended glass thicknesses and comply with the minimum listed STC requirements. Also, the glazing installer should certify that the window/doors installed in a manner equivalent to the tested samples.

The glazing installer should provide test data to certify that the stacking sliding door system (i.e. glass and frame system combined) complies with the STC ratings nominated in the following table.

Table 5 – Minimum STC of Glazing (with Acoustic Seals)

GLAZING ASSEMBLY	MINIMUM STC OF INSTALLED WINDOW
4mm Float	27
6mm Float	29
6.38 mm Laminated	31
10.38mm laminated	35

5.5.3 External Walls

5.5.3.1 External Masonry Walls

External masonry / concrete wall structure will not require any further acoustic upgrading.

5.5.3.2 External Lightweight Walls

External light weight walls will not be sufficient in achieving acoustic requirements; we recommend the following construction:

Table 6 – External Light Weight Wall Construction

Façade	Space	External Lining	Stud / Truss System	Internal Lining
All	Bedrooms	75mm Hebel Powerpanel	90mm Timber Stud with 75mm thick 11kg/m^3 glasswool insulation in truss cavity	1x13mm Standard Plasterboard
	Living Areas	75mm Hebel Powerpanel		1x13mm Standard Plasterboard
	Common areas	75mm Hebel Powerpanel		1x13mm Standard Plasterboard

In the event any penetrations are required thru the external lining of any of the system for other building services, they should be acoustically treated to maintain the acoustic integrity of the wall construction.

5.5.4 Roof/Ceiling

5.5.4.1 Concrete Roof/Ceiling

Concrete roof systems will not require upgrading to achieve acoustic requirements. Acoustic rating of any concrete element will exceed Rw 45, and will be sufficient to meeting internal noise level requirements.

5.5.4.2 Colorbond Metal Roofing

The recommended roof/ceiling construction is shown in the Figure below. Penetrations in all ceilings (such as for light fittings etc.) must be acoustically treated and sealed gap free with a flexible sealant.

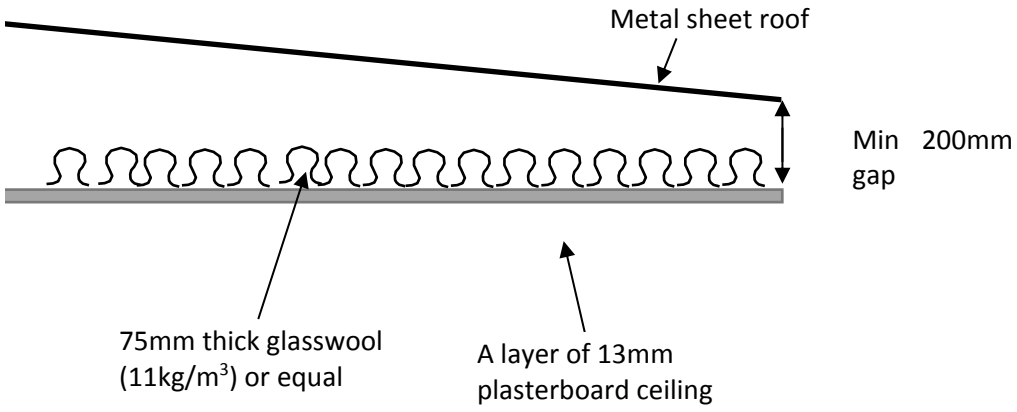


Figure 2 **– Roof / Ceiling Construction**

5.5.4.3 Plasterboard Corner Details

The recommended plasterboard ceiling/wall corner construction options over top floor rooms facing Bullecourt Avenue are shown in figure 2.

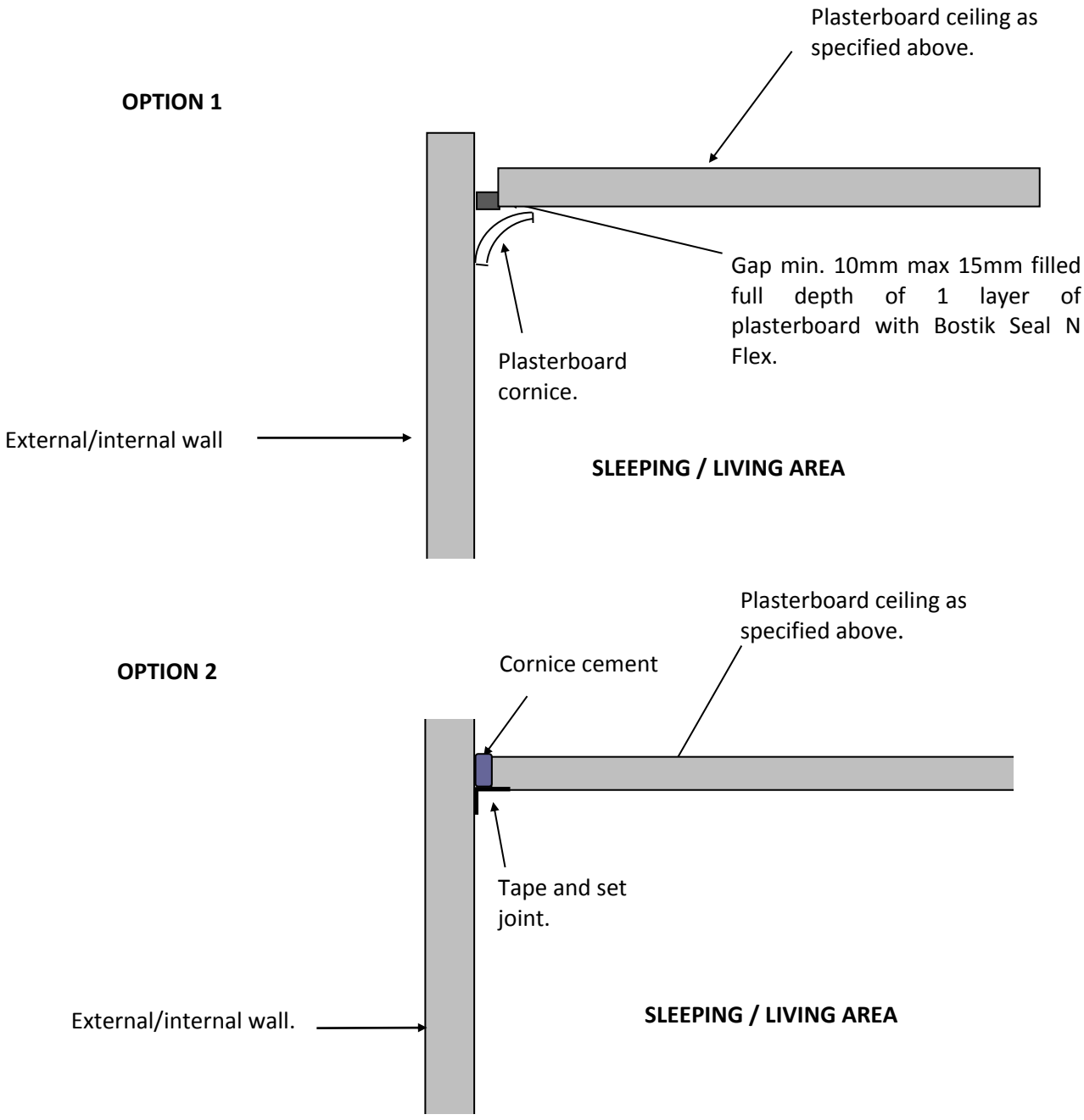


Figure 2 - Plasterboard Corner Details.

6 NOISE EMISSION ASSESSMENT

Noise emissions from the site should be assessed to ensure that the amenity of nearby land users is not adversely affected.

Potential noise sources which should be assessed are:

- Noise generated by mechanical plant.

The nearest potentially affected noise receivers are:

- Residential properties bounding the site to the west;
- Residential properties across Bullecourt Avenue, to the south;

6.1 BACKGROUND NOISE MONITORING

Background noise levels on site have also been measured using the unattended noise logging undertaken by this office as outlined in section 5.3.

Measured background noise levels are presented below. Refer to Appendices 1 and 2 for noise monitoring data.

Table 7 – Measured Background Noise Levels

Location	Background noise level dB(A)L_{90}		
	Daytime (7am-6pm)	Evening (6pm-10pm)	Night (10pm-7am)
Milperra Village	44	45	38

6.2 ACOUSTIC OBJECTIVES

In the absence of any relevant criteria stipulated by Canterbury Bankstown Council, in DCP 2015, noise emissions from all external mechanical plant and equipment must comply with the requirements of the Environment Protection Authority's (EPA) acoustic requirements detailed below.

6.2.1 NSW EPA Industrial Noise Policy (INP)

The INP provides guidelines for assessing noise impacts from equipment installed for the operation of a proposed development. The recommended assessment objectives vary depending on the potentially affected receivers, the time of day, and the type of noise source. The policy has two requirements which both have to be complied with, namely an amenity criterion and an intrusiveness criterion. In addition, the EPA in its Environmental Noise Control Manual states that noise controls should be applied with the general intent to protect residences from sleep arousal.

6.2.1.1 Intrusiveness Criterion

The guideline is intended to limit the audibility of noise emissions at the boundary of the affected residential receivers, and requires that noise emissions measured using the L_{eq} descriptor, not exceed the background noise level by more than 5 dB(A). Where applicable, the intrusive noise level should be penalised *(increased)* to account for any annoying characteristics such as tonality.

Allowable noise level is as follows:

Table 8 – Allowable Intrusive Noise Levels

Boundary of any affected residential receiver	Intrusiveness Noise Goals dB(A) $L_{eq(15\ minutes)}$		
	Daytime (7am – 6pm)	Evening (6pm – 10pm)	Night-time (10pm – 7am)
Milperra Village Northern boundary	49	50	43

6.2.1.2 Amenity Criterion

The guideline is intended to limit the absolute noise level from all identified noise sources, to a level that is consistent with the general environment.

The INP sets out acceptable noise levels for various localities. Table 2.1 on page 16 of the policy indicates 4 categories to distinguish different residential areas. They are rural, suburban, urban and urban/industrial interface.

Table 9 provides the recommended ambient noise levels for the suburban residential receivers for the day, evening and night periods. For the purposes of this condition:

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays;
- Evening is defined as the period from 6pm to 10pm; and
- Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays.

Table 9 – INP Recommended Amenity Noise Levels

Type of Receiver	Time of day	Recommended Acceptable Noise Level dB(A) $L_{eq(period)}$
Residential – Suburban	Day (7am-6pm)	55
	Evening (6pm-10pm)	45
	Night (10pm-7am)	40

6.2.2 Protection of the Environment Operations Act Regulation

Protection of the Environmental Operations regulation limits the noise levels associated within the operation of domestic air conditioning criteria during night time periods which is presented below:

Protection of the Environmental Operations (Noise Control) Regulation 2000-Sect 52

52 Air Conditioners

(1) A person must not cause or permit an air conditioner to be used on residential premises in such a manner that it emits noise that can be herd within a habitable room in any other residential premises (regardless of whether any door or window to that room is open):

(a) before 8 am or after 10 pm on any Saturday, Sunday or public holiday, or

(b) before 7 am or after 10 pm on any other day.

6.2.3 Project Specific Noise Assessment Objectives

Based on the requirements of the INP, Table 10 below provides a summary of the assessment criteria applicable to the proposed development, at the neighbouring potentially affected residential properties.

Table 10 – Noise Objectives for Residential Receivers

Time of day	Amenity Criteria dB(A) $L_{eq(period)}$	Intrusiveness Criteria Background + 5 dB(A) $L_{eq(15minutes)}$	EPA Criteria for Residential Condensers
Day	55	49	N/A
Evening	45	50	N/A
Night	40	43	Inaudible within neighbouring premises

6.3 RECOMMENDATIONS

Mechanical plant items are not typically selected at selected at DA stage.

Detailed review of all external mechanical plant should be undertaken at construction certificate stage (once plant selections and locations are finalised). Suitable acoustic treatments should be determined, to ensure compliance with the noise emission objectives outlined in Table 10 of this report.

All plant can be satisfactorily attenuated to levels complying with the noise emission criteria through appropriate location and (if necessary) standard acoustic treatments such as noise screens, enclosures, in-duct treatments (silencers/lined ducting) or similar.

7 CONCLUSION

Potential noise impacts associated with the proposed seniors housing development at Milperra Village have been assessed.

Noise impacts from nearby noise sources (primarily traffic noise) on future occupants of the proposed developments have been assessed in accordance with Canterbury Bankstown acoustic requirements. The acoustic treatments necessary to achieve these guidelines have been set out in section 5.5.

Noise emissions objectives for the site have also been determined, based on the measured background noise levels on site and on the NSW EPA requirements; and have been presented in section 6.2.

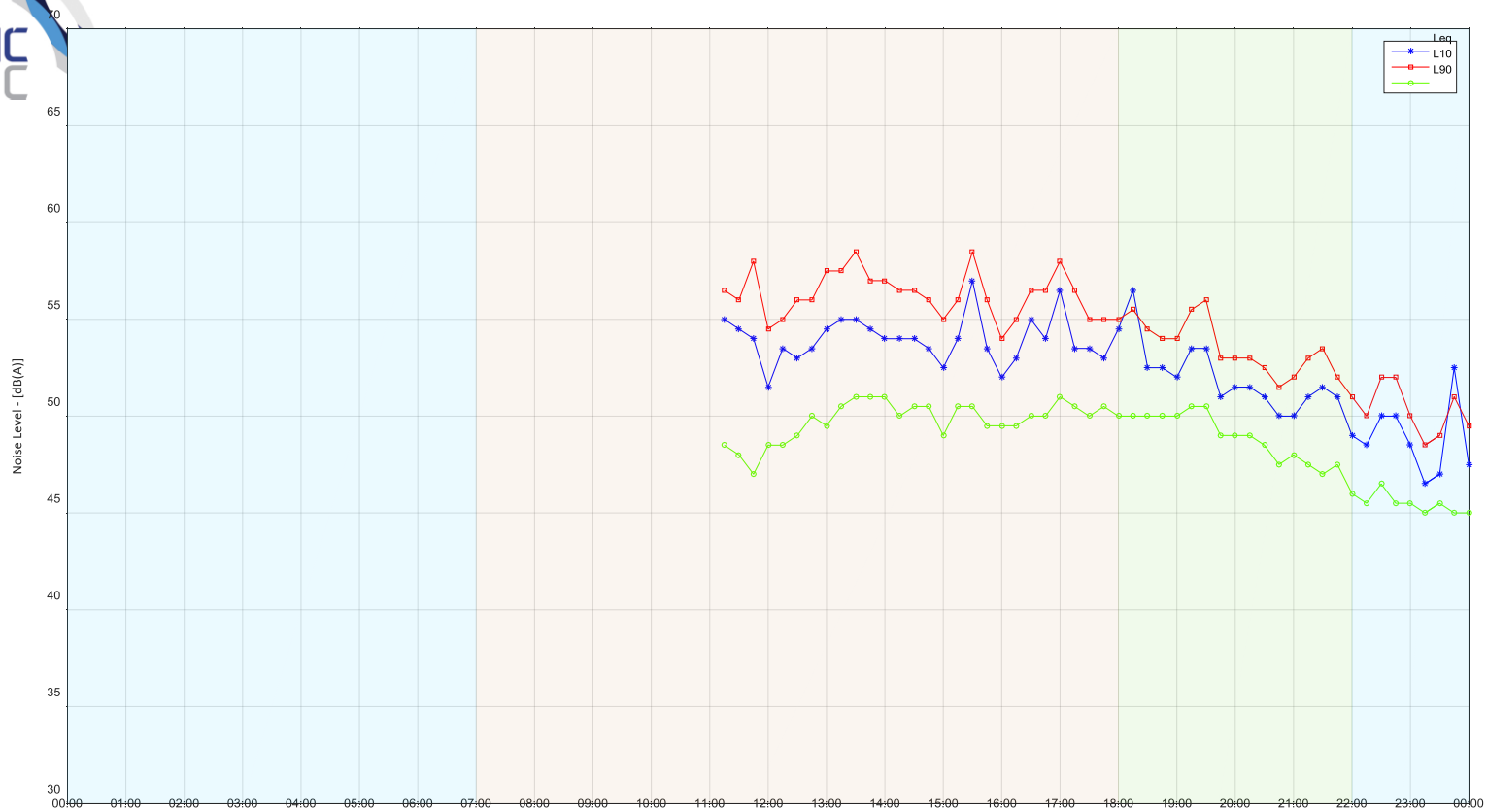
Please contact us should you have any further queries.

Yours faithfully,

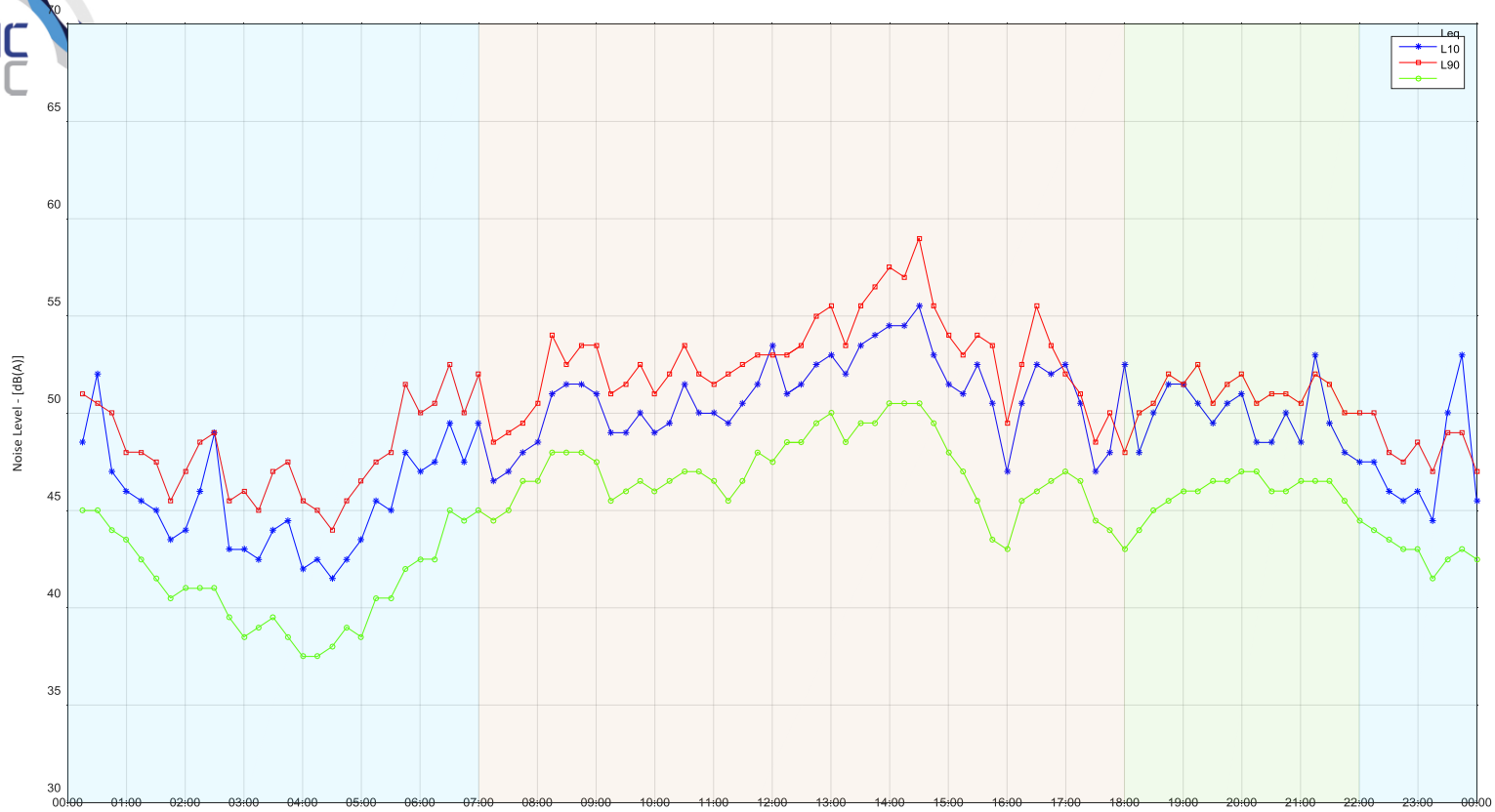
Remi Larmandieu

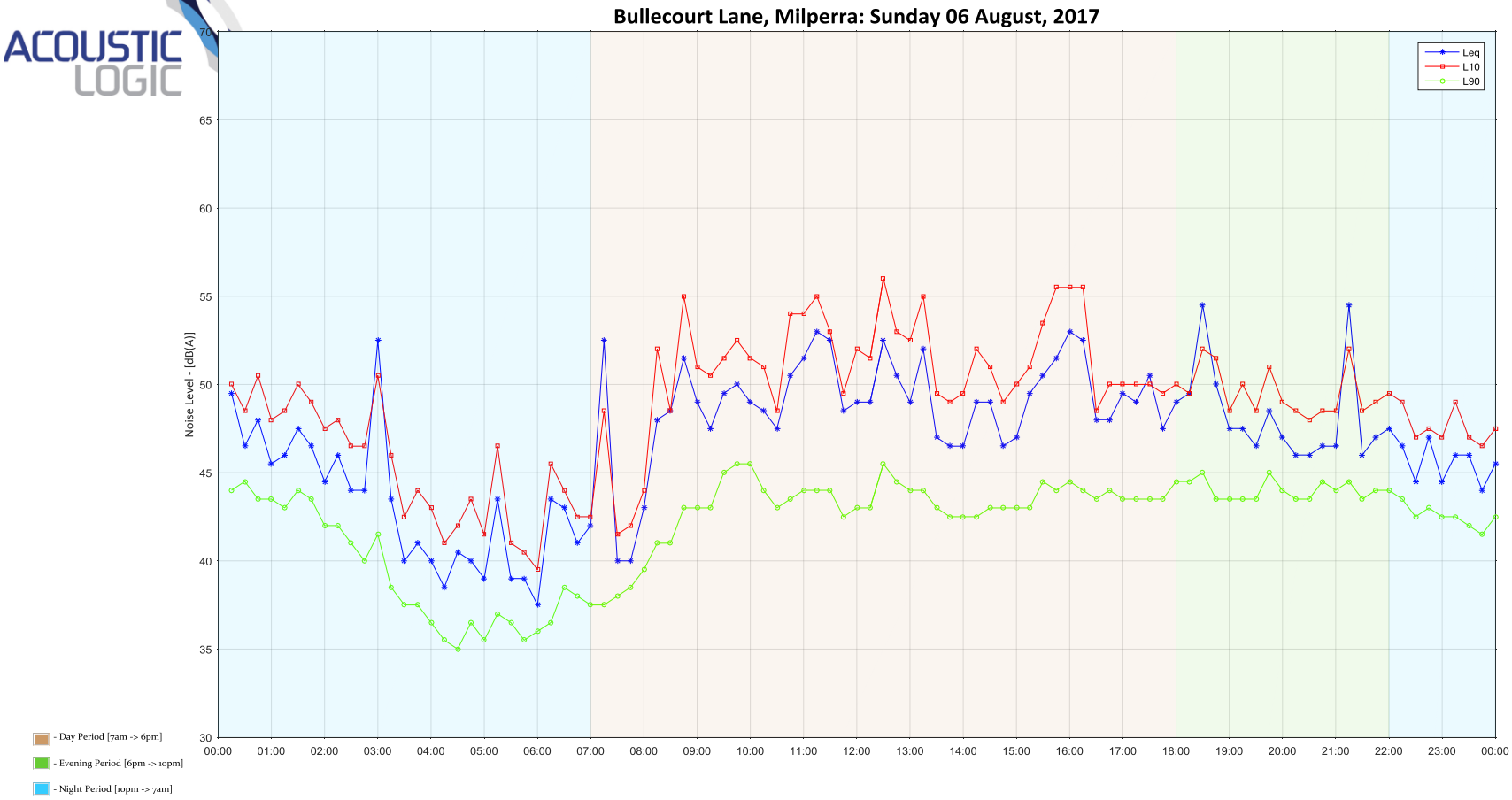
APPENDIX 1 – UNATTENDED NOISE MONITORING DATA

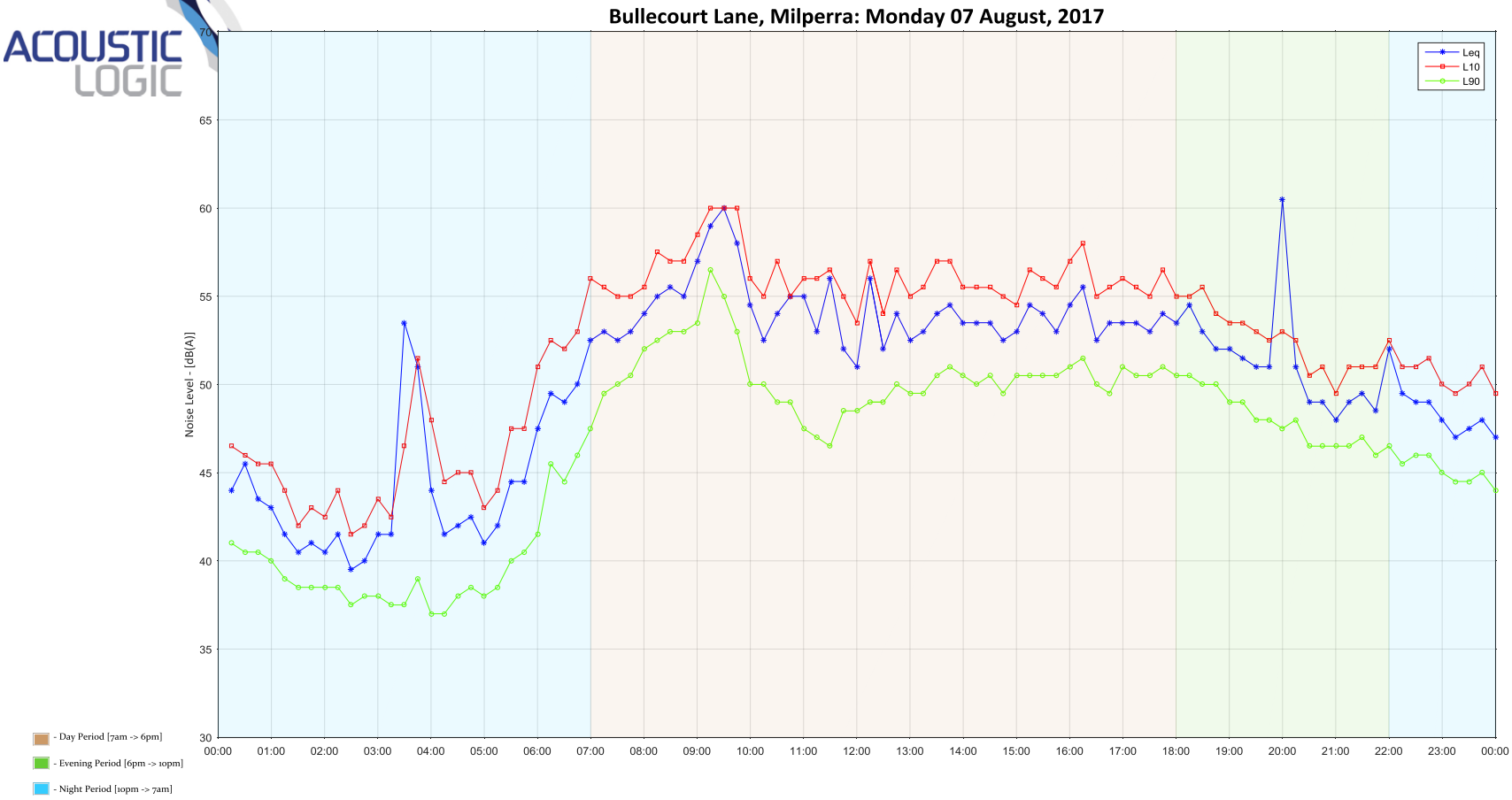
Bullecourt Lane, Milperra: Friday 04 August, 2017

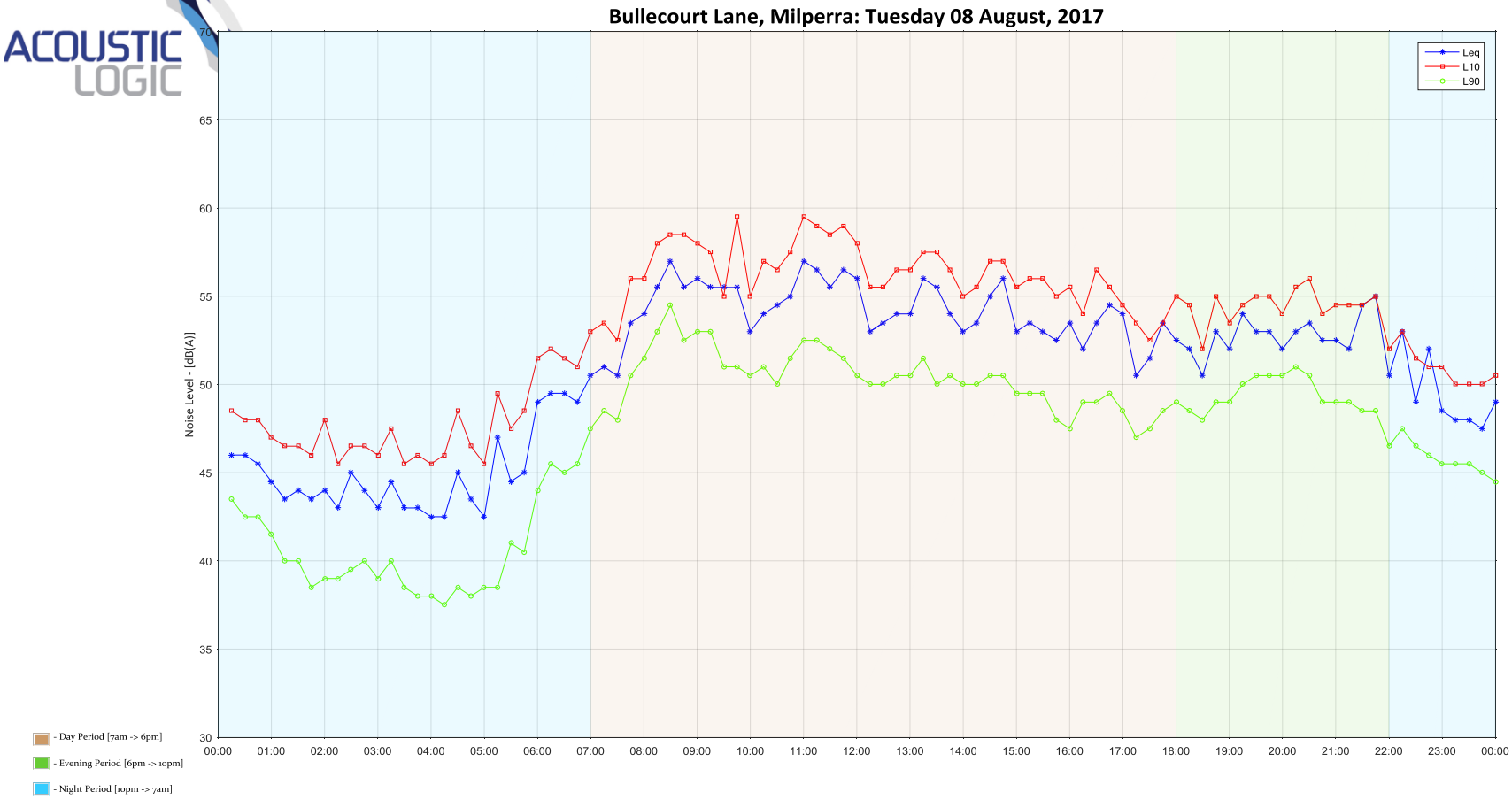


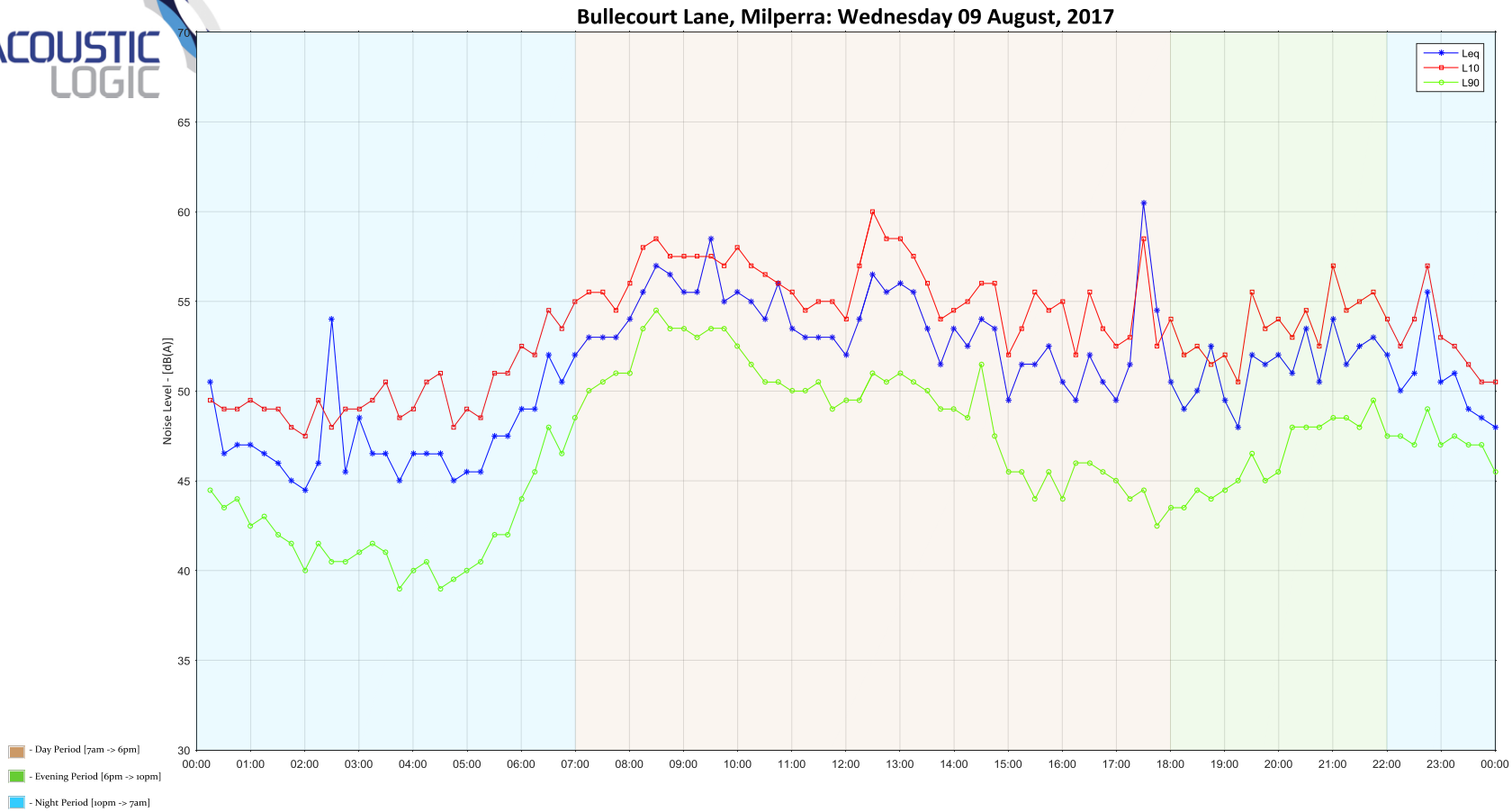
Bullecourt Lane, Milperra: Saturday 05 August, 2017




Bullecourt Lane, Milperra: Sunday 06 August, 2017
Noise Level - [dB(A)]
70
65
60
55
50
45
40
35
30
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Leq
L10
L90
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


Bullecourt Lane, Milperra: Monday 07 August, 2017
Noise Level - [dB(A)]
70
65
60
55
50
45
40
35
30
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Leq
L10
L90
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


Bullecourt Lane, Milperra: Tuesday 08 August, 2017
Noise Level - [dB(A)]
70
65
60
55
50
45
40
35
30
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Leq
L10
L90
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


Bullecourt Lane, Milperra: Wednesday 09 August, 2017
Noise Level - [dB(A)]
70
65
60
55
50
45
40
35
30
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
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13:00
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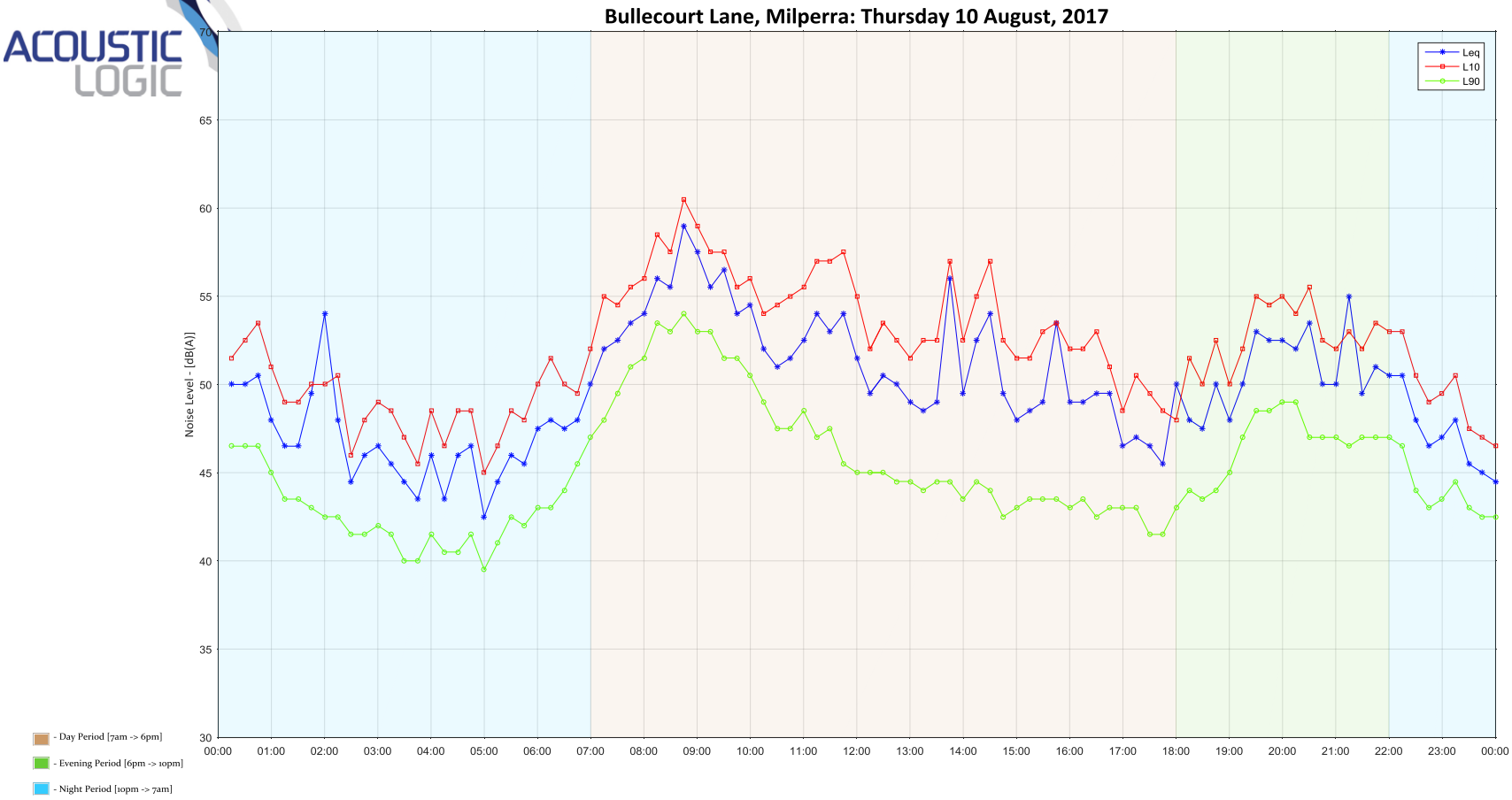
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Leq
L10
L90
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


Bullecourt Lane, Milperra: Thursday 10 August, 2017
Noise Level - [dB(A)]
70
65
60
55
50
45
40
35
30
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
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09:00
10:00
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15:00
16:00
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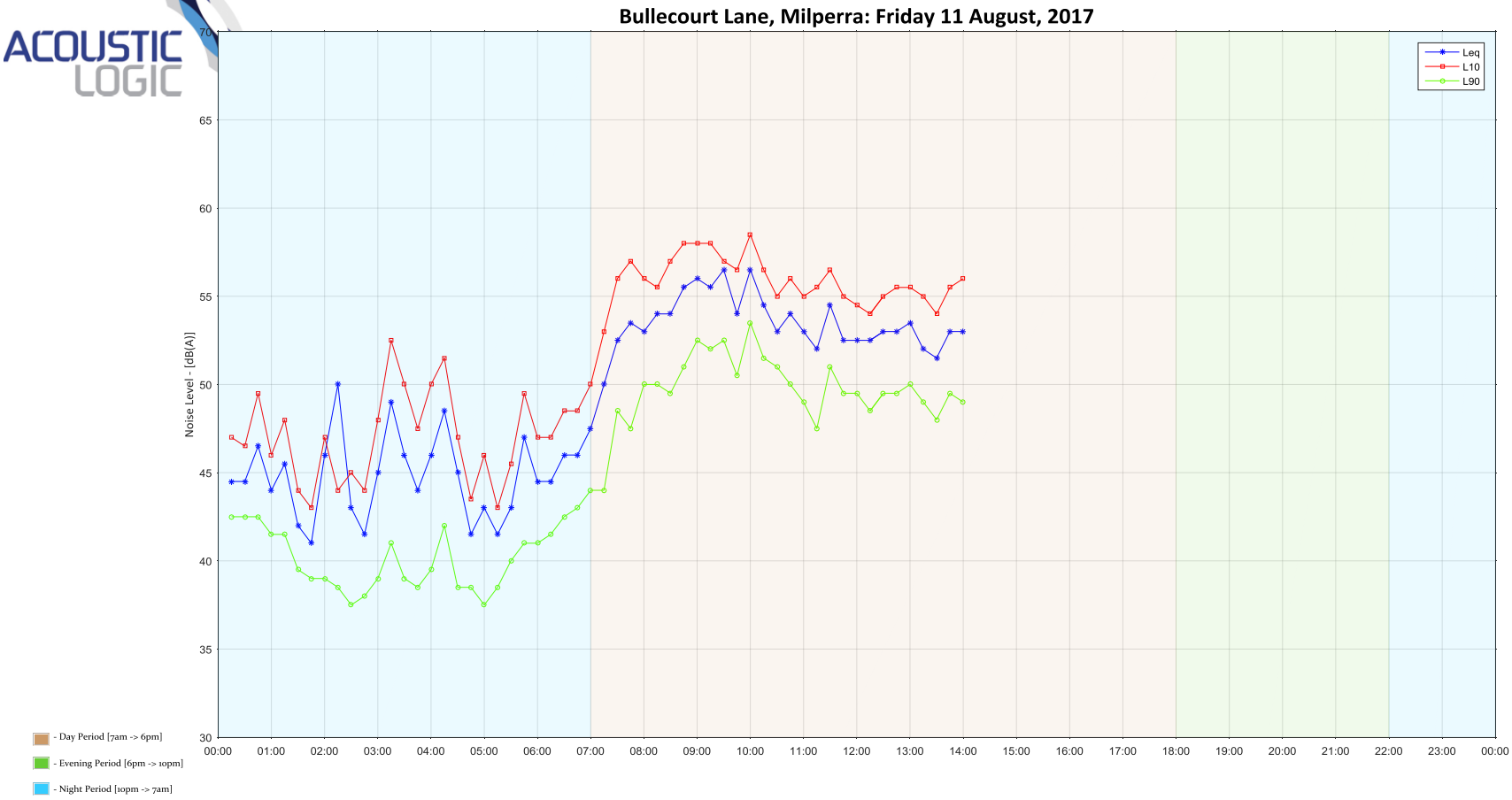
19:00
20:00
21:00
22:00
23:00
00:00
Leq
L10
L90
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


Bullecourt Lane, Milperra: Friday 11 August, 2017
Noise Level - [dB(A)]
70
65
60
55
50
45
40
35
30
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
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16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Leq
L10
L90
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]