

185 Hunter Street, East End, QT Newcastle

Building B, Lyrique Bar Noise Assessment

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1 INTRODUCTION

Acoustic Logic has been engaged to conduct an assessment of potential noise impacts associated with the proposed extension of operation hours for the existing Sports Bar/Gaming Lounge (known as Lyrique Bar) at Ground floor, Building B, East End, Newcastle.

This document addresses noise impacts assessed with the following:

- Noise emission from the proposed operation of the tenancy. This will include general use of gaming machines and music noise from the use of the premises.
- Identify noise emission controls based on NSW Liquor & Gaming requirements, and
- Determine acoustic treatments/management controls as necessary to ensure ongoing compliance with noise emission requirements.

2 SITE DESCRIPTION

The site located at ground floor, 185 Hunter Street, Newcastle NSW 2300, to the south-eastern corner of Building B facing Laneway.

The proposed change to the operating of the bar is summarised below:

- Extend the operating hour from 12am (midnight) to 2am, from Monday to Saturday, and
- Extend the operating hour and from 10pm to 12am (midnight) on Sundays.

A site survey has been carried out by this office to identify surrounding noise sensitive receivers and the existing acoustic environment. Nearest sensitive receivers are as follows:

- **R1: Residential Receiver 1:** Mixed used development to the east with retail on ground floor and residential apartment above, Building C, Washington House at 163 Hunter Street, East End, Newcastle
- **R2: Residential Receiver 2:** Mixed used development to the southeast with retail on ground floor and residential apartment above, Building D, Fabric House at 169/185 Hunter Street, East End, Newcastle
- **R3: Residential Receiver 3:** Mixed used development to the south with retail on ground floor and residential apartment above, Building A, Perkins & King House at 11 Perkins St, East End, Newcastle
- **R4: Residential Receiver 4:** Shop-top hotel to the west, The Crown & Anchor Hotel at 189 Hunter Street, East End, Newcastle
- **C1: Commercial Receiver 1:** Commercial development to the west across Perkins Street, at 4, 8-10 Perkins Street, East End, Newcastle

A site map, measurement locations and surrounding receivers are presented in Figure 1. Floor plan of the bar is shown in Figure 2.

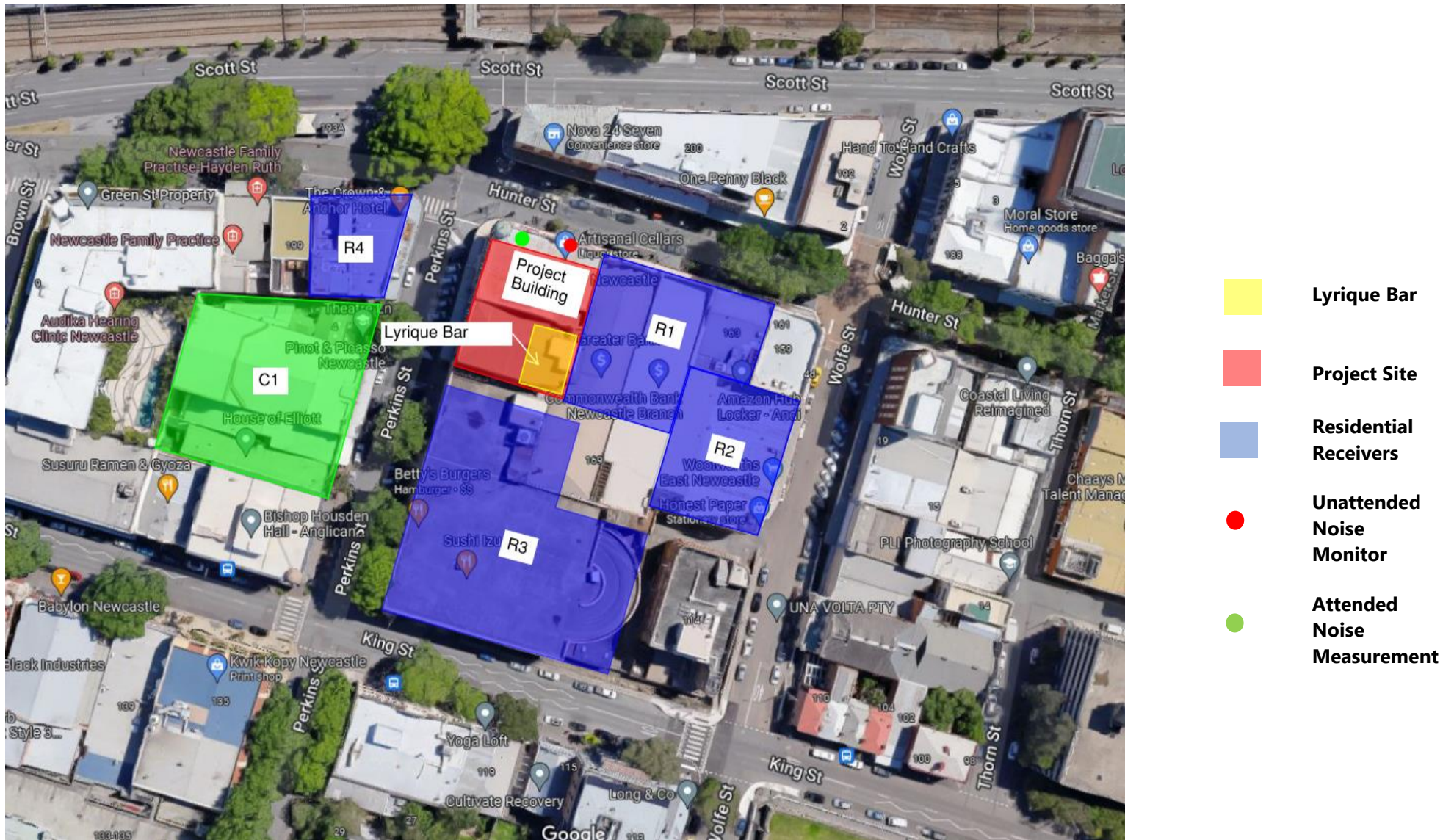


Figure 1 – Project Site and Noise Measurement (Source from: Six Map NSW)

3 NOISE DESCRIPTORS

Ambient noise constantly varies in level from moment to moment, so it is not possible to accurately determine prevailing noise conditions by measuring a single, instantaneous noise level.

To quantify ambient noise, a 15-minute measurement interval is typically utilised. Noise levels are monitored continuously during this period, and then statistical and integrating techniques are used to characterise the noise being measured.

The principal measurement parameters obtained from the data are:

L_{eq} - 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 noise impact as it closely corresponds with how humans perceive the loudness of time-varying noise sources (such as traffic noise).

L₉₀ – This is commonly used as a measure of the background noise level as it represents the noise level heard in the typical, quiet periods during the measurement interval. The L₉₀ parameter is used to set noise emission criteria for potentially intrusive noise sources since the disturbance caused by a noise source will depend on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L₉₀ level.

L₁₀ is used in some guidelines to measure noise produced by an intrusive noise source since it represents the average of the loudest noise levels produced at the source. Typically, this is used to assess noise from licenced venues.

L_{max} is the highest noise level produced during a noise event and is typically used to assess sleep arousal impacts from short term noise events during the night. It is also used to assess internal noise levels resulting from aircraft and railway ground vibration induced noise.

L₁ is sometimes used in place of L_{max} to represent a typical noise level from a number of high-level, short-term noise events.

4 ENVIRONMENTAL NOISE SURVEY

4.1 MEASUREMENT LOCATION

One unattended noise monitor was located on the level 5 balcony of Building B apartment, facing Hunter Street. Refer to Figure 1 for detailed location. Attended measurements were conducted at the roof top bar facing Hunter Street.

4.2 MEASUREMENT PERIOD

Unattended noise monitoring was conducted from Thursday 27th of October 2022 to Friday 4th of November 2022. Attended measurements were conducted on Thursday 27th of October 2022.

4.3 MEASUREMENT EQUIPMENT

Unattended noise monitoring was conducted using one Acoustic Research Laboratories Pty Ltd noise logger. The logger was set to A-weighted fast response mode and was programmed to store 15-minute statistical noise levels throughout the monitoring period. The equipment was calibrated at the start and end of the monitoring period using a Rion NC-74 calibrator. No significant drift was noted.

Attended noise measurements were conducted using a Norsonic 140 Sound Analyser. The analyser was set to fast response and calibrated before and after the measurements using a Norsonic Sound Calibrator type 1251. No significant drift was noted.

4.4 SUMMARISED RATING BACKGROUND NOISE LEVELS

NSW EPA's RBL assessment procedure requires determination of background noise levels for each day (the ABL) then the median of the individual days as set out for the entire monitoring period.

Appendix A provides detailed results of the unattended noise monitoring. Weather affected data was excluded from the assessment. The processed Rating Background Noise Levels (lowest 10th percentile noise levels during operation time period) are outlined in the table below.

Table 1 – Rating Background Noise Levels

Time of Day	Measured Background Noise Level dB(A)L _{90(period)}
Night (10pm – Midnight Sunday)	45
Night (Midnight – 2am Monday to Saturday)	43

A background noise spectrum measurement was also measured on site and adjusted based on day/night difference, as presented below.

Table 2 – Background Noise Spectrum

Location	31.5Hz	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
Building B (Night)	57	53	49	45	44	38	35	32	30	45

5 NOISE EMISSION CRITERIA

Noise emissions from the bar will be assessed to comply with the criteria outlined in NSW Liquor & Gaming requirements.

5.1 NSW LIQUOR & GAMING

NSW Liquor & Gaming requirements are as follows:

- *The L_{10} noise level emitted from the premises shall not exceed 5dB above the background L_{90} sound level in any Octave Band Centre Frequency (31.5kHz to 8kHz inclusive) between the hours of 7.00am to 12.00 midnight when assessed at the boundary of the nearest affected residential premises.*
- *L_{10} noise level emitted from the premises shall not exceed the background L_{90} sound level in any Octave Band Centre Frequency (31.5kHz to 8kHz inclusive) after midnight when assessed at the boundary of the nearest affected residential premises.*

After midnight, noise emissions from the Place of Public Entertainment are to be inaudible within any habitable rooms in nearby residential properties.

5.2 SUMMARISED NOISE EMISSION CRITERIA

Based on the noise emission criteria detailed above, a summary of the noise emission criteria for the usage between 10:00pm – 2:00am is presented in the table below.

Table 3 – Summarised Liquor & Gaming Noise Emission Goals – Residential Receivers

Time of Day	Noise Level dB – Frequency (Hz)									A-wt
	31.5	63	125	250	500	1k	2k	4k	8k	
Sunday- Before midnight 10pm-12am (BG + 5)	62	58	54	50	49	43	40	37	33	50
Monday to Saturday midnight 12am-2am (BG)	55	51	47	43	42	36	33	30	28	43

6 NOISE EMISSION ASSESSMENT

This section of the report examines the cumulative potential noise impacts from gaming area of the project site between 10pm and 2am. The emission levels presented within this assessment were corrected for distance attenuation and barrier effects (building shielding) where applicable.

6.1 ASSUMPTIONS

Predicted operational noise levels have been assessed using the following assumptions:

- The gaming lounge is to be used by patrons using poker machines only – no congregation of patrons not actively gaming permitted.
- Gaming area has an averaged sound pressure level of 68dB(A) with the following spectrum:

Table 4 – Cumulative L10 Sound Pressure Level for External Gaming Area

Noise Level dB – Frequency (Hz)									A-weighted level
31.5	63	125	250	500	1k	2k	4k	8k	
56	60	59	69	66	64	57	51	47	68

- The recommendations set out in Section 7 of this report have been implemented.

6.2 PREDICTED NOISE LEVELS AT SURROUNDING RECEIVERS

Maximum predicted noise levels for all nearby developments against the relevant acoustic criteria are presented in the following table.

Table 5 – Gaming Area Noise Emission to R1 (10pm-2am)

Receivers	Noise Level dB – Frequency (Hz)									A-wt
	31.5	63	125	250	500	1k	2k	4k	8k	
R1	34	34	33	43	38	31	18	12	8	39
Criteria Sunday- Before midnight 10pm-12am	62	58	54	50	49	43	40	37	33	50
Criteria Monday to Saturday midnight 12am-2am	55	51	47	43	42	36	33	30	28	43
Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 6 – Gaming Area Noise Emission to R2 (10pm-2am)

Receivers	Noise Level dB – Frequency (Hz)									A-wt
	31.5	63	125	250	500	1k	2k	4k	8k	
R2	20	20	19	29	24	17	4	0	0	24
Criteria Sunday- Before midnight 10pm-12am	62	58	54	50	49	43	40	37	33	50
Criteria Monday to Saturday midnight 12am-2am	55	51	47	43	42	36	33	30	28	43
Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 7 – Gaming Area Noise Emission to R3 (10pm-2am)

Receivers	Noise Level dB – Frequency (Hz)									A-wt
	31.5	63	125	250	500	1k	2k	4k	8k	
R3	29	29	28	38	33	26	13	7	3	33
Criteria Sunday- Before midnight 10pm-12am	62	58	54	50	49	43	40	37	33	50
Criteria Monday to Saturday midnight 12am-2am	55	51	47	43	42	36	33	30	28	43
Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 8 – Gaming Area Noise Emission to R4 (10pm-2am)

Receivers	Noise Level dB – Frequency (Hz)									A-wt
	31.5	63	125	250	500	1k	2k	4k	8k	
R4	20	20	19	29	24	17	4	0	0	24
Criteria Sunday- Before midnight 10pm-12am	62	58	54	50	49	43	40	37	33	50
Criteria Monday to Saturday midnight 12am-2am	55	51	47	43	42	36	33	30	28	43
Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

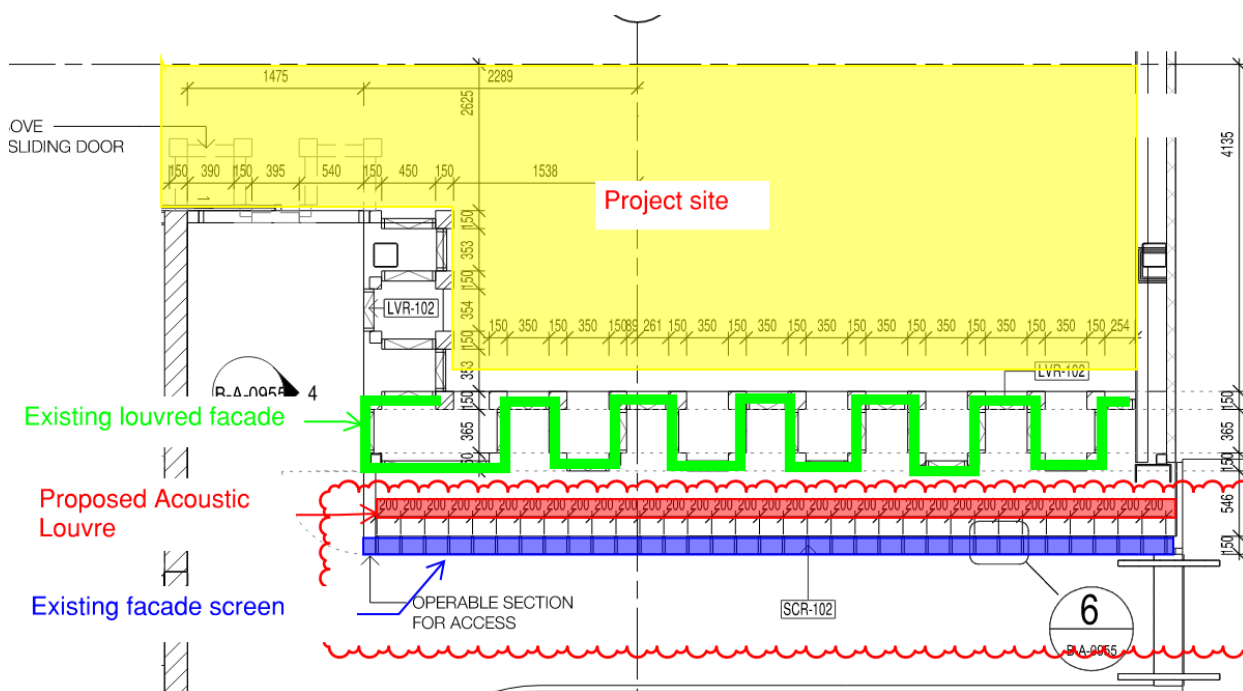
7 COMPLYING CONTROLS AND MANAGING MEASURES

The following noise emission controls should be imposed for the project site:

- Operating hours for the premises are to be restricted to 10am to 2am Monday to Saturday, 10am to 12am (midnight) Sunday.
- Entry doors of the premises are to remain closed after 10pm except for ingress and egress.
- Noise Limiter is recommended to be installed in front of the louvre location to ensure that the internal noise level is not to exceed 70dB(A)_{L10} as a spatial average between 10pm to 12am. No music is allowed between 12am to 2am Monday to Saturday.
- Install an acoustic louvre between the existing Lyrique Bar metal louvred facade and existing metal architectural façade screen adjacent the Lyrique Bar southern boundary. The proposed acoustic louvre is to be of finish matching the existing Lyrique Bar façade louvres with the following minimum insertion loss as indicated in the table below. Acoustic louvre products of equivalent performance can be obtained from suppliers such as ACRAN, Fantech, Holyoak, etc.

Hz	63	125	250	500	1k	2k	4k	8k
Insertion Loss	8	8	8	10	15	21	21	21

A picture of existing façade is presented in Appendix B. A detailed mark up for proposed acoustic louvre is presented below:



- Signages are to be displayed at the entrance of the development reminding patrons to minimise noise when departing the premise, especially during evening and night time.
- It is recommended that the manager keep a complaint register on site and that noise complaints are registered (if any) and what course of remedial action has been taken. This register should be stored on site and be accessible at all times.

8 CONCLUSION

This report has been prepared to assess noise impacts associated with the proposed extension of operating hour to 2am from Monday to Saturday, and to 12am (midnight) on Sundays for Lyrique Bar on Ground Level at Building B, East End, Newcastle, 2300.

Provided that the recommendations in Section 7 of this report are adopted, noise emissions to all nearby development will be compliant with the noise emission guidelines.

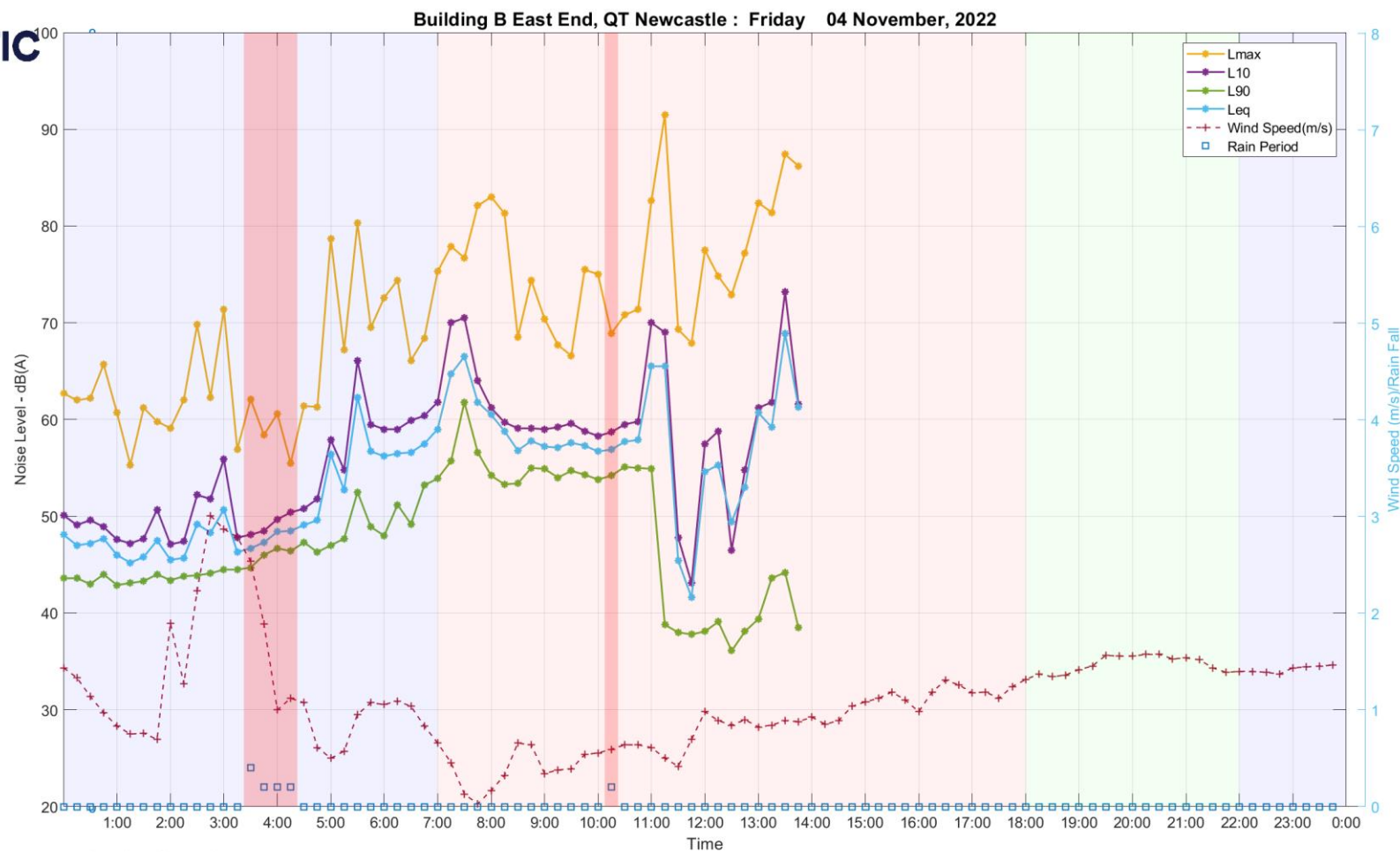
Please contact us should you have any further queries.

Yours faithfully,



Acoustic Logic Pty Ltd
PeiPei Feng

APPENDIX A – UNATTENDED NOISE MONITORING DATA



Wind Speed is corrected using factor 0.3333 based on logger location

APPENDIX B – PICTURE OF EXISITNG LOUVRED FAÇADE

