

Central Coast Quarter Stage 2, 26-32 Mann St, Gosford

SSDA Noise & Vibration Impact Assessment

Project ID	20250553.1
Document Title	SSDA Noise & Vibration Impact Assessment
Attention To	UPG Waterfront Pty Ltd

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
0	17/12/2025	20250553.1/0512A/R0/RF	RF		RF
1	18/12/2025	20250553.1/1812A/R1/RF	RF		RF
2	19/02/2026	20250553.1/1002A/R2/RF	RF		RF

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY.....	4
2	INTRODUCTION	5
2.1	PROPOSAL/SITE DESCRIPTION	5
3	RESPONSE TO SEARS	6
3.1	SENSITIVE RECEIVERS.....	6
4	EXISTING AMBIENT NOISE LEVELS	8
5	TRAFFIC NOISE INTRUSION AND VIBRATION ASSESSMENT	9
5.1	GUIDELINES AND ASSESSMENT CRITERIA	9
5.1.1	State Environmental Planning Policy (Transport and Infrastructure) 2021.....	9
5.1.2	Development Near Rail Corridors and Busy Roads – Interim Guideline (DNRCBR). 10	
5.2	PROJECT SPECIFIC NOISE AND VIBRATION CRITERIA	10
5.3	SITE AMBIENT NOISE LEVELS	11
5.3.1	Noise	11
5.4	AIRBORNE NOISE ASSESSMENT	11
5.4.1	External Noise Levels.....	12
5.5	INDICATIVE COMPLYING MITIGATION.....	12
5.5.1	Glazed Windows and Doors	12
5.5.2	External Roof/Ceiling.....	13
5.5.3	External Walls	13
5.5.4	Apartment Entry Doors	13
5.5.5	Ventilation Requirements.....	13
6	NOISE AND VIBRATION EMISSIONS ASSESSMENT.....	14
6.1	OPERATIONAL NOISE EMISSION CRITERIA	14
6.1.1	Gosford City Centre DCP	14
6.1.2	EPA – Noise Policy for Industry 2017	14
6.1.3	Project Specific Trigger Levels	17
6.2	ROAD TRAFFIC NOISE GENERATED BY THE PROPOSED DEVELOPMENT	17
6.3	CONSTRUCTION NOISE AND VIBRATION.....	18
6.3.1	Noise & Vibration Sources.....	18
6.3.2	Construction Noise Management Levels.....	19
6.3.3	Construction Vibration management levels.....	21
6.4	ANALYSIS OF NOISE AND VIBRATION EMISSIONS/COMPLYING MITIGATION	24
6.4.1	Noise from Mechanical Plant.....	24
6.4.2	Commercial/Retail Spaces/Pavilion	24
6.4.3	Noise from Increased Traffic Generation on Public Streets.....	25
6.4.4	Construction Noise & Vibration.....	26
6.4.5	Management Plan	27
6.4.6	Noise and Vibration Control	27
7	CONCLUSION.....	31
	APPENDIX A – UNATTENDED NOISE MONITORING DATA	32
	UNATTENDED NOISE MONITORING DATA FOR LOCATION L1	33
	UNATTENDED NOISE MONITORING DATA FOR LOCATION L2	42
	UNATTENDED NOISE MONITORING DATA FOR LOCATION L3	51
	UNATTENDED NOISE MONITORING DATA FOR LOCATION L4	63

1 EXECUTIVE SUMMARY

This Noise & Vibration Impact Assessment has been prepared by Acoustic logic on behalf of UPG Waterfront Pty Ltd (the Applicant) to accompany a concurrent rezoning and State Significant Development Application (SSDA) at 26-30 Mann Street, Gosford, also known as 'Central Coast Quarter' (the site). The assessment has been prepared to address the relevant project SEARs repeated below:

Provide a noise and vibration assessment prepared in accordance with the relevant NSW Environment Protection Authority (EPA) guidelines. The assessment must detail construction and operational noise and vibration impacts on nearby sensitive receivers and structures and outline the proposed management and mitigation measures that would be implemented.

The assessment is based on the following drawings, reports and information:

- Architectural drawings prepared by DKO; Project number 13122, dated 13/2/2026
- Transport Impact Assessment prepared by Urbis, Project Code P0061198, Report No 02, dated February 2026 (**TIA**)

Noise intrusion to the development has been assessed in accordance with the following planning instruments and guidelines:

- State Environmental Planning Policy (Transport and Infrastructure) ("TISEPP") 2021
- NSW Department of Planning – 'Development Near Rail Corridors and Busy Roads – Interim Guideline' (2008) ("**DNRCBR**")
- Gosford City Centre DCP (**DCP**)

Complying mitigation is provided in Section 5.5 to ensure the development complies with the adopted criteria.

Operational noise emissions have been assessed in accordance with the following planning instruments and guidelines:

- NSW EPA – 'Noise Policy for Industry' ("**NPfi**") October 2017
- NSW EPA – 'Noise Guide for Local Government' ("**NGLG**") January 2023
- NSW EPA – 'Road Noise Policy' ("**RNP**") March 2011

An analysis of noise emissions has been conducted and complying mitigation measures to be implemented are detailed in Section 6.4 to ensure the development complies with the adopted criteria.

Construction Noise & Vibration management levels have been established in accordance with the following guidelines:

- NSW EOPA Interim Construction Noise guideline ("**ICNG**") 2008
- NSW Department of Environment and Conservation Assessing Vibration: A Technical Guideline ("**Assessing Vibration Guideline**") February 2006

A preliminary analysis is provided in Section 6.4.4.

Provided the mitigation measures and recommendations for further assessment detailed in this report are adopted, the development is capable of compliance with all relevant requirements and as such will satisfy the SEARs.

2 INTRODUCTION

2.1 PROPOSAL/SITE DESCRIPTION

This Noise & Vibration Impact Assessment has been prepared by Acoustic logic on behalf of UPG Waterfront Pty Ltd (the Applicant) to accompany a concurrent rezoning and State Significant Development Application (SSDA) at 26-30 Mann Street, Gosford, also known as 'Central Coast Quarter' (the site).

The site is located on the Stage 2 component of the Central Coast Quarter site in Gosford City Centre, within the Central Coast Local Government Area (LGA). The Stage 2 site is legally described as Lots 3 and 4 in Deposited Plan 1319239.

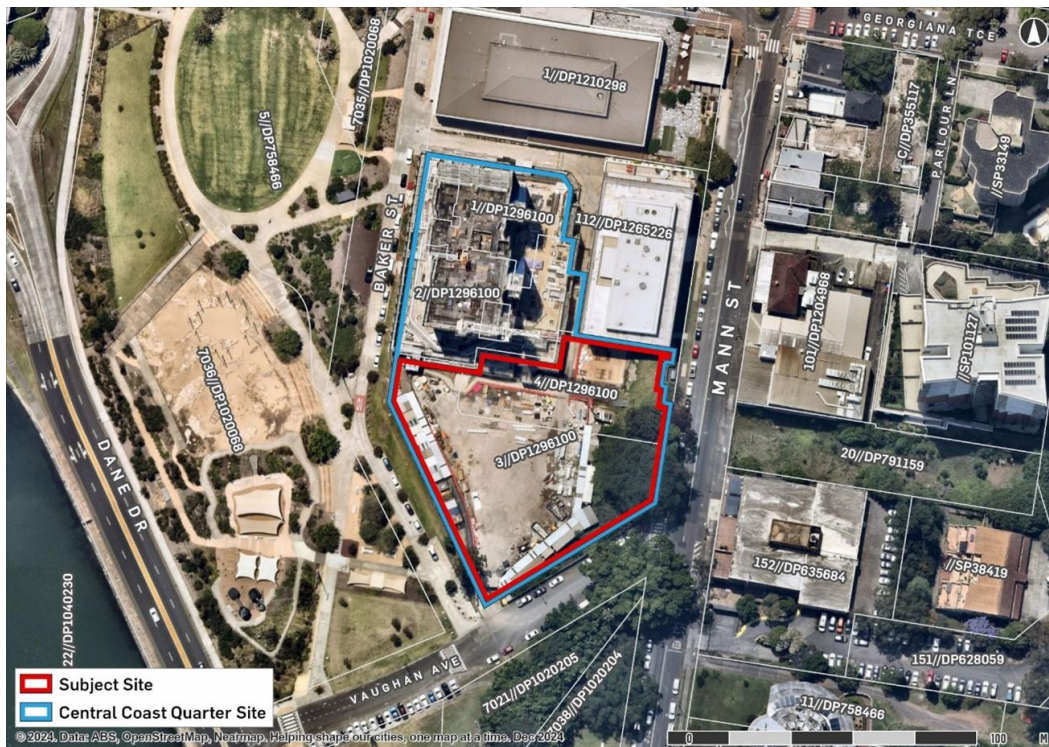


Figure 1 - Aerial Photograph of Site

Source: Urbis

SSD-90960208 seeks consent for the detailed design, construction and operation of a mixed-use development comprising:

- Construction of two towers (36 and 42 storeys in height) above a retail podium (including pavilion building), comprising:
 - Retail, residential and hotel gross floor area (GFA).
 - 394 apartments, comprising the following mix:
 - 296 market apartments.
 - 98 affordable housing apartments to be managed by a CHP for 15 years (equating to approximately 20% of the residential GFA).
 - 152 hotel keys (eastern tower).
- Five parking levels, with vehicular access from Vaughan Avenue.
- Storage areas and services.

- Communal open space and deep soil planting (including retention of the Port Jackson Fig).
- Publicly accessible through site links, including stairs, walkways public art and landscaping.
- Provision of utilities and services infrastructure, as required.

To facilitate the built form proposed under SSD-90960208, concurrent amendments are sought to the State Environmental Planning Policy (Precincts – Regional) 2021 (Regional SEPP) pursuant to the concurrent SEPP Amendment process facilitated by the HDA planning pathway.

3 RESPONSE TO SEARS

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 20 August 2025 issued for the SSDA (SSD-90960208). Specifically, this report has been prepared to respond to the SEARS requirement issued below.

Table 1 – SEARS Compliance

Item	Description of Requirement	Section Reference (this Report)
12. Noise & Vibration	<u>Noise and Vibration Impact Assessment</u> Provide a noise and vibration assessment prepared in accordance with the relevant NSW Environment Protection Authority (EPA) guidelines. The assessment must detail construction and operational noise and vibration impacts on nearby sensitive receivers and structures and outline the proposed management and mitigation measures that would be implemented.	Section 6

3.1 SENSITIVE RECEIVERS

The nearest/potentially most impacted sensitive receivers surrounding the site representative of noise catchments have been identified and as summarised in the following table. An aerial photo of the site indicating nearby noise sensitive receivers and the catchment areas, and the ambient noise measurement locations is presented in Figure 2.

Table 2 – Sensitive Receivers

Receiver Number	Receiver Type	Description
R1	Commercial	Existing multi-commercial building to the north at 99 Georgina Terrace.
R2	Commercial	Existing multi-commercial building adjoining the project site adjacent to the north of the site at 32 Mann Street.
R3	Residential	Existing multi-story residential apartment building approximately 100m east of the project site at 25 Mann Street.
R4	Active Recreation	Existing Leagues Club Field and Gosford Waterfront Park active recreation areas adjoining the site to the west.
R5	Residential	Central Coast Quarter Stage 1 development to the north. Expected to be completed and occupied during construction of Stage 2.
R6	Commercial	Commercial development across Mann Street to the east



Figure 2: Aerial Photo of Site, Receiver Locations and Monitoring Positions

4 EXISTING AMBIENT NOISE LEVELS

Given that early works at the site are currently underway, it was not possible to carry out long term noise monitoring to establish background noise levels as the results would be impacted by construction noise. As such, ambient and background noise levels have been based on the noise monitoring conducted by this office for previous development applications for the site and detailed in the following reports:

- *Noise Impact Assessment* with reference 20180179.2/0815A/TT/R1 dated 27th August 2019;
- *Noise and Vibration Impact Assessment* with reference 20201083.2/0709A/R3/AS dated 7th September 2021).
- *plea*

The measurements, analysis and RBL's determined for this project are summarised in the report which is included in Appendix A.

To supplement the long term measurements, short term attended measurements were carried out on Thursday 28th November 2024 between the hours of 5pm and 6pm after the Stage 1 site was closed to ensure noise levels were consistent with the adopted RBLs.

The measurements were carried out using a Norsonics SA 131 (Type 1) sound analyser. The sound level meter equipment used retain current calibration - either manufacturers' calibration or NATA certified calibration, and were field calibrated at the beginning and the end of the measurement with no significant drift in calibration noted. The following table summarises the results of the measurements.

Refer to Figure 2 for detailed measurement locations around site. The table below summarises the results obtained from the unattended and attended monitoring.

**Table 3 – Measurement Data
(Rating Background Noise Levels and Ambient Noise Levels)**

Location	Time of Day*			Supplementary Attended Measurement**
	Day	Evening	Night	
Noise Monitor Location 1 – Southwest corner of subject site	55dB(A) _{Leq(Period)} 51dB(A) _{L90}	55dB(A) _{Leq(Period)} 49dB(A) _{L90}	53dB(A) _{Leq(Period)} 41dB(A) _{L90}	-
Noise Monitor Location 2 – Rear of 79-87 Henry Parry Drive	57dB(A) _{Leq(Period)} 54dB(A) _{L90}	55dB(A) _{Leq(Period)} 51dB(A) _{L90}	53dB(A) _{Leq(Period)} 41dB(A) _{L90}	69 dB(A) _{Leq, 15 minute} 57 dB(A) _{L90, 15 minute}
Noise Monitor Location 3 – Balcony of Apartment 804 at 25 Mann Street	64dB(A) _{Leq(Period)} 55dB(A) _{L90}	61dB(A) _{Leq(Period)} 45dB(A) _{L90}	57dB(A) _{Leq(Period)} 41dB(A) _{L90}	67 dB(A) _{Leq, 15 minute} 59 dB(A) _{L90, 15 minute}
Noise Monitor Location 4 – Corner of Vaughan Avenue and Mann Street	62dB(A) _{Leq(Period)} 51dB(A) _{L90}	59dB(A) _{Leq(Period)} 46dB(A) _{L90}	56dB(A) _{Leq(Period)} 43dB(A) _{L90}	66 dB(A) _{Leq, 15 minute} 56 dB(A) _{L90, 15 minute}

*Time of day as defined in the NSW EPA Noise Policy for Industry 2017

**The supplementary measurements have been reviewed with reference to the long term monitoring data. The analysis indicates that background noise levels have not decreased since the long term measurements were carried out. As such, the previous long term measurements are suitable to be adopted to formulate noise management levels.

5 TRAFFIC NOISE INTRUSION AND VIBRATION ASSESSMENT

The noise sources assessed as potentially impacting the proposed development are traffic noise from Mann Street and the Central Coast Highway.

5.1 GUIDELINES AND ASSESSMENT CRITERIA

5.1.1 State Environmental Planning Policy (Transport and Infrastructure) 2021

Sensitive development adjacent to major roadways and railway infrastructure must have regard to TI SEPP Clause 2.99 and 2.119.

Section 2.100 Impact of Rail Noise or Vibration on Non-Rail Development

- (1) *This section applies to development for any of the following purposes that is on land in or adjacent to a rail corridor and that the consent authority considers is likely to be adversely affected by rail noise or vibration—*
 - (a) *residential accommodation,*
 - (b) *a place of public worship,*
 - (c) *a hospital,*
 - (d) *an educational establishment or centre-based child care facility.*
- (2) *Before determining a development application for development to which this clause applies, the consent authority must take into consideration any guidelines that are issued by the Secretary for the purposes of this section and published in the Gazette.*
- (3) *If the development is for the purposes of residential accommodation, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded—*
 - (a) *in any bedroom in the residential accommodation—35 dB(A) at any time between 10.00 pm and 7.00 am,*
 - (b) *anywhere else in the residential accommodation (other than a garage, kitchen, bathroom, or hallway)—40 dB(A) at any time.*

Section 2.120 Impact of Road Noise or Vibration on Non-Road Development

- (1) *This section applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transitway or any other road with an annual average daily traffic volume of more than 20,000 vehicles (based on the traffic volume data published on the website of TfNSW) and that the consent authority considers is likely to be adversely affected by road noise or vibration—*
 - (a) *residential accommodation,*
 - (b) *a place of public worship,*
 - (c) *a hospital,*
 - (d) *an educational establishment or centre-based child care facility.*
- (2) *If the development is for the purposes of residential accommodation, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded:*
 - (e) *in any bedroom in the residential accommodation—35 dB(A) at any time between 10 pm and 7am,*
 - (f) *anywhere else in the residential accommodation (other than a garage, kitchen, bathroom, or hallway)—40 dB(A) at any time*

5.1.2 Development Near Rail Corridors and Busy Roads – Interim Guideline (DNRCBR)

This guideline provides general and specific advice for the planning and assessment of noise sensitive development impacted by roads and railways, and in particular those uses required to be addressed under the TI SEPP and ADG. The assessment criteria broadly mirror those in the TI SEPP.

5.1.2.1 Internal Noise Criteria – Airborne Noise

Table 3.1 of the guideline (repeated below) summarises the internal noise levels that should be achieved in noise sensitive developments. The $L_{eq,15hr}$ descriptor is recommended to assess noise levels in habitable rooms of non-residential development.

Table 4 – DNRCBR Airborne Noise Criteria

Building Use	Room	Noise Level dB(A) L_{eq}
Residential	Sleeping Area (Bedroom)	35 (10pm to 7am)
	Other habitable rooms (excl. garages, kitchens, bathrooms & hallways)	40 (7am to 10pm)

5.2 PROJECT SPECIFIC NOISE AND VIBRATION CRITERIA

The site is impacted by a road having an average daily traffic volume of greater than 20,000 vehicles per day. Therefore, the TISEPP requirements apply to the site.

The following criteria have been adopted following a review of the applicable guidelines.

Table 5 –Airborne Noise Criteria

Building Use	Room	Noise Level dB(A) L_{eq}
Residential	Sleeping Area (Bedroom)	35 (10pm to 7am)
	Other habitable rooms (excl. garages, kitchens, bathrooms & hallways)	40 (7am to 10pm)

5.3 SITE AMBIENT NOISE LEVELS

A survey of ambient noise and vibration has been undertaken to characterise the existing environment. Representative noise levels have been determined from the data using the methodology outlined in Appendix B3 of the RNP. The survey data is provided in Appendix A.

A summary of the site data used in the assessment is provided below.

5.3.1 Noise

Table 6 -Summary of Existing Traffic Noise Levels

Location	Summary of Existing Traffic Noise Level	
	Day Time	Night Time
5m from Mann Street	58dB(A) $L_{eq(15hour)}$	54dB(A) $L_{eq(9hour)}$ *
3m from Central Coast Highway	68dB(A) $L_{eq(15hour)}$	64dB(A) $L_{eq(9hour)}$ *

**Note - Determined based on the $L_{eq(15hr)}/L_{eq(9hr)}$ difference from the long-term noise logging data gathered at the site.*

5.4 AIRBORNE NOISE ASSESSMENT

An assessment of noise impact has been undertaken using the following methodology:

- Windows Closed Noise Levels

Windows closed noise levels were calculated to the centre of the room using the predicted octave band façade incident external noise levels and, for each façade element, correcting for the exposed area, octave band sound transmission loss and room sound power to pressure correction. The room noise level was calculated by accumulating all significant noise paths.

Envelope performance requirements to comply with the noise criteria stipulated in Section 5.2 have been assessed.

- Windows Open Noise Levels

"Windows open" noise levels have been calculated by subtracting 10 dB(A) from the façade incident noise level, as promulgated by the RNP (Table 7). The noise reduction assumes the open area of window is equivalent to 5% of the room floor area. Where openable windows to the room are located on different facades, the façade opening(s) with the lowest noise levels have been assessed first.

5.4.1 External Noise Levels

The measured noise levels have been used as a basis for predicting façade-incident noise levels around the development by:

- Accounting for any likely changes in traffic volumes in the long term.
For the subject roads, analysis of traffic volumes on the TfNSW website indicates there has been no significant increase in traffic volumes. Given this, and the trend to quieter electric vehicles, a zero long term increase in noise has been adopted.
- Correcting for different distances between the noise source compared to the monitoring location.
- Barrier effects, where applicable.
- Reflections off adjacent structures, where significant.

The CoRTN traffic noise prediction model has been used to calculate the above adjustments indicated above.

5.5 INDICATIVE COMPLYING MITIGATION

While final acoustic review of façade systems should be conducted once façade design is complete, the following sections outline indicative minimum façade treatments.

5.5.1 Glazed Windows and Doors

Acoustically rated external windows and doors are required. Aluminium framed/sliding glass doors and windows will be satisfactory provided they meet the following criteria.

All external windows and doors listed are required to be fitted with Q-lon type (or equal) acoustic seals. (**Mohair Seals are unacceptable**). The suitability of alternative seal types should be determined to an appropriately qualified acoustic expert.

The complying constructions are listed below.

Table 7 – – Complying Glazing Constructions

Floor	Space	Facade	Glazing Construction	Acoustic Seals
All	Bedroom or Other Habitable Room	All	6mm float glass, or 6/12/6 IGU	Yes

Thicker glazing may be required for structural, safety or other purposes. Where it is required to use thicker glazing than scheduled, this will also be acoustically acceptable.

It is recommended that only window systems having test results indicating compliance with the required ratings obtained in a certified laboratory be used where windows with acoustic seals have been recommended.

In addition to complying with the minimum complying glazing construction, the R_w rating of the glazing fitted into open-able frames and fixed into the building opening should not be lower than the values listed in the following table. This will require the use of acoustic seals around the full perimeter of open-able frames and the frame will need to be sealed into the building opening using a flexible sealant.

Table 8 – Minimum R_w of Glazing (with Acoustic Seals)

Glazing Assembly	Minimum R_w/R_w+C_{tr} of Installed Window
6mm float or toughened	30
6/12AG/6 IGU	33/30

5.5.2 External Roof/Ceiling

No additional acoustic treatment to the roof/ceiling is required. Any penetrations in the external roof should be acoustically sealed.

5.5.3 External Walls

No additional acoustic treatment to the external walls is required. Any penetrations in the façade should be acoustically sealed.

5.5.4 Apartment Entry Doors

Entry doors will be via internal corridors and as such constructions will be formulated pursuant to the Building Code of Australia.

5.5.5 Ventilation Requirements

The analysis indicates that noise levels incident on the façade meet the recommended 'windows open' internal noise level. As such, alternative ventilation is not indicated.

6 NOISE AND VIBRATION EMISSIONS ASSESSMENT

6.1 OPERATIONAL NOISE EMISSION CRITERIA

6.1.1 Gosford City Centre DCP

The DCP has general objectives in respect of limiting noise emissions from plant and activities on the site so that surrounding receivers are not adversely impacted. Because no specific controls are recommended, noise emissions objectives have been adopted based on guidelines within the EPA Noise Policy for Industry.

6.1.2 EPA – Noise Policy for Industry 2017

Project specific assessment trigger levels have been determined for each noise source applying at the identified potentially most impacted receivers.

6.1.2.1 NPfl Trigger Levels

The NPfl requires noise impacts at residential receivers to be assessed in 3 ways:

Whether the emitted noise is unreasonably loud relative to ambient background noise. (which the EPA calls the “intrusiveness” trigger level).

Whether the noise emitted is unreasonably loud in an absolute sense, and consistent with surrounding land use and environment. (“amenity” trigger level)

For night noise emissions, whether discrete noise events are likely to adversely impact sleep (“maximum noise level” trigger levels).

For other receiver types only the amenity trigger level is relevant.

6.1.2.2 Intrusiveness

The $L_{eq,15min}$ descriptor is used for the intrusiveness trigger level, and is set at a level that is 5dB(A) above the rating background noise level.

6.1.2.3 Amenity

Table 2.2 of the NPfl (repeated below) sets out acceptable noise levels for various receiver types.

There are 3 categories of residential receivers - rural, suburban, urban. The nearest residential receivers to the subject site are categorised as “urban” receivers. Categories for non-residential uses are also indicated in the table.

The NPI typically requires project amenity noise levels to be calculated in the following manner:

$$L_{Aeq,15min} = \text{Recommended Amenity Noise Level} - 5 \text{ dB(A)} + 3 \text{ dB(A)}$$

NPfI Table 2.2: Amenity Noise Levels

Receiver	Noise Amenity Area	Time of Day	Recommended Amenity Noise Level <i>L_{Aeq}</i>
<i>Residential</i>	<i>Rural</i>	<i>Day</i>	50
		<i>Evening</i>	45
		<i>Night</i>	40
	<i>Suburban</i>	<i>Day</i>	55
		<i>Evening</i>	45
		<i>Night</i>	40
	<i>Urban</i>	<i>Day</i>	60
		<i>Evening</i>	50
		<i>Night</i>	45
<i>Hotels motels caretakers' quarters holiday accommodation permanent resident caravan parks</i>	<i>See column 4</i>	<i>See column 4</i>	<i>5 dB(A) above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day</i>
<i>School classroom – internal</i>	<i>All</i>	<i>Noisiest 1-hour period when in use</i>	<i>35 (see notes for table)</i>
<i>Hospital ward internal external</i>	<i>All</i>	<i>Noisiest 1-hour</i>	35
	<i>All</i>	<i>Noisiest 1-hour</i>	50
<i>Place of worship – internal</i>	<i>All</i>	<i>When in use</i>	40
<i>Area specifically reserved for passive recreation (e.g. national park)</i>	<i>All</i>	<i>When in use</i>	50
<i>Active recreation area (e.g. school playground golf course)</i>	<i>All</i>	<i>When in use</i>	55
<i>Commercial premises</i>	<i>All</i>	<i>When in use</i>	65
<i>Industrial premises</i>	<i>All</i>	<i>When in use</i>	70
<i>Industrial interface (applicable only to residential noise amenity areas)</i>	<i>All</i>	<i>All</i>	<i>Add 5 dB(A) to recommended noise amenity area</i>

Notes: The recommended amenity noise levels refer only to noise from industrial sources. However, they refer to noise from all such sources at the receiver location, and not only noise due to a specific project under consideration. The levels represent outdoor levels except where otherwise stated.

Types of receivers are defined as follows:

- rural residential – see Table 2.3
- suburban residential – see Table 2.3
- urban residential – see Table 2.3
- industrial interface – an area that is in close proximity to existing industrial premises and that extends out to a point where the existing industrial noise from the source has fallen by 5 dB or an area defined in a planning instrument. Beyond this region the amenity noise level for the applicable category applies. This category may be used only for existing situations (further explanation on how this category applies is outlined in Section 2.7)
- commercial – commercial activities being undertaken in a planning zone that allows commercial land uses
- industrial – an area defined as an industrial zone on a local environment plan; for isolated residences within an industrial zone the industrial amenity level would usually apply.

Time of day is defined as follows:

- day – the period from 7 am to 6 pm Monday to Saturday or 8 am to 6 pm on Sundays and public holidays
- evening – the period from 6 pm to 10 pm
- night – the remaining periods.

(These periods may be varied where appropriate, for example, see A3 in Fact Sheet A.)

In the case where existing schools are affected by noise from existing industrial noise sources, the acceptable L_{Aeq} noise level may be increased to 40 dB $L_{Aeq}(1hr)$.

6.1.2.4 Maximum Noise Level Assessment

The purpose of this assessment is to identify whether discrete, night time noise events have the potential to produce adverse sleep impacts.

Section 2.5 of NPfI recommends the following procedure to assess the potential for adverse sleep disturbance.

Where the subject development/ premises night -time noise levels at a residential location exceed:

$L_{eq(15min)}$ 40 dB(A) or the prevailing RBL (L_{90}) plus 5 dB, whichever is the greater, and/or

L_{max} 52 dB(A) or the prevailing RBL (L_{90}) plus 15 dB, whichever is the greater,

a detailed maximum noise level event assessment should be undertaken.

The detailed assessment should cover the maximum noise level, the extent to which the maximum noise level exceeds the rating background noise level, and the number of times this happens during the night-time period. Some guidance on possible impact is contained in the review of research results in the NSW Road Noise Policy.

Other factors that may be important in assessing the extent of impacts on sleep include:

- *how often high noise events will occur*
- *the distribution of likely events across the night-time period and the existing ambient maximum events in the absence of the subject development*
- *whether there are times of day when there is a clear change in the noise environment (such as during early-morning shoulder periods)*
- *current scientific literature available at the time of the assessment regarding the impact of maximum noise level events at night.*

Maximum noise level event assessments should be based on the LAFmax descriptor on an event basis under 'fast' time response. The detailed assessment should consider all feasible and reasonable noise mitigation measures with a goal of achieving the above trigger levels.

6.1.3 Project Specific Trigger Levels

The following table summarises the trigger levels applying at each of the identified “most impacted” receivers. These have been determined based on the NPfI methodology described above and the measured rating background noise levels.

The trigger levels in bold indicate the most stringent trigger level at each location.

Table 9 – Project Specific Trigger Levels

Location/Receiver Type	Time	RBL dB(A) L ₉₀	Trigger Noise Level (dB(A) L _{eq,15min})		
			Intrusiveness	Amenity	Max Event
R3, R5 - Residential	Day	55	60	58	n/a
	Evening	45	50	48	n/a
	Night	41	46	43	46 L_{eq} 56 L_{max}
R1, R2, R6 - Commercial	When in use	n/a	n/a	63	n/a
R4 – Active Recreation	When in use	n/a	n/a	53	n/a

6.2 ROAD TRAFFIC NOISE GENERATED BY THE PROPOSED DEVELOPMENT

The impact of additional traffic generated by the proposed development has been assessed using the EPA RNP, which states the following:

- Section 2.3 of the RNP provides noise assessment criteria at residential (Table 3) and non-residential receivers (Table 4), and for different road classifications.
- Where existing traffic noise is already close to or exceeds the criteria in Tables 3 or 4, the RNP indicates the increase in noise should be assessed instead of the absolute level. For sensitive land uses affected by additional traffic on existing roads, any increase in the total traffic noise level should be limited to 2dB above that of the corresponding ‘no build option’. The RNP indicates that an increase of up to 2dB(A) represents a minor impact that is considered barely perceptible to the average person.

Where night time traffic movements are proposed, the impact on sleep from maximum noise events generated by these movements should also be considered.

6.3 CONSTRUCTION NOISE AND VIBRATION

6.3.1 Noise & Vibration Sources

At this stage, construction methodologies are not finalised. Notwithstanding, the main noise and vibration sources typically associated with the works have been identified, and are summarised in this section.

Table 10 – Primary Construction Noise Sources

Phase/Activity	Plant
Construction & Fitout	Hand Tools
	Bobcat
	Truck
	Elevated work platforms
	Forklifts/Materials handling
	Concrete Pump
	Concrete Truck
	Concrete Float
	Concrete Vibrator
	Crane
	Hoist

6.3.2 Construction Noise Management Levels

6.3.2.1 Residential Receivers

Residential noise management levels are based on the “rating background noise level” (“**RBL**”) applicable to the receivers. Refer to Section 4 and Appendix A for details.

The ICNG construction noise management levels are summarised in the following table, along with how they should be used to manage impacts.

Table 11 – Construction Noise Management Levels

Management Level L_{Aeq,(15min)} *	How to Apply
Noise affected Management Level (“ NML ”) RBL + 10dB	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured L _{Aeq (15 min)} is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
Highly noise affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur.

*** Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m of the residence. Noise levels may be higher at upper floors of the noise affected residence.**

6.3.2.2 Other Land Uses

For other land uses, the management levels are absolute noise levels, independent of the prevailing noise environment, so monitoring of the prevailing environment is not generally required for these uses. The ICNG construction noise management levels for uses other than residential dwellings are summarised in the following table.

Table 12 – Construction Noise Management Levels – Non Residential Uses

Land Use	Management Level, L_{Aeq} (15min) (applies for times when properties are being used)
Commercial and Retail Outlets	70 (external)*
Industrial Premises	75 (external)*
Other Businesses	Project by project basis, consider maximum noise level recommended in AS 2107 for similar occupancies.*
Classrooms at schools and other educational institutions	45 (Internal noise level)
Hospital wards and operating theatres	45 (Internal noise level)
Places of worship	45 (Internal noise level)
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	65 (External noise level)
Passive recreation areas (characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External noise level 60 dB(A)
Community centres	Depends on the intended use of the centre. Refer to the recommended 'maximum' internal levels in AS2107 for specific uses.

* Noise levels apply at the most affected occupied point of the premises. For other occupancies, noise levels are applied at the most affected point within 50m of the area boundary. Internal noise levels are assessed at the centre of an occupied room. Where internal noise levels cannot be measured, external noise levels may be used, with the equivalent external noise level determined using an appropriate external to internal noise reduction.

6.3.2.3 Project Specific Noise Management Levels

The project specific NML's for the most impacted receivers are summarised in the following table using the objectives tabled above and the adopted RBL's.

Table 13 – Noise Management Levels for Most Impacted Receivers

Location/Receiver	RBL dB(A) L_{90}	NML dB(A) L_{eq}	HANML dB(A) L_{eq}
R1, R2, R3, R6 (Commercial)	-	70	-
R3 (Residential)	55	65	75
R4 (Active Recreation)	-	65	-
R5 (Residential)	51	61	75

* An external noise level of 65 dB(A) would result in an internal noise level of 45 dB(A) assuming a typical 20 dB(A) reduction for a standard façade. Therefore, compliance with the external NML will also result in compliance with the internal NML.

6.3.3 Construction Vibration management levels

6.3.3.1 Amenity Management

Vibration goals for the amenity of nearby land users are those recommended by the EPA document *Assessing Vibration: A technical guideline*. These levels (extracted from Tables 2.2 and 2.4 of the guideline) are presented in the following table for various types of vibration:

Table 14 -(Table 2.2 Assessing Vibration: A Technical Guideline) – Preferred and Maximum Weighted RMS Values for Continuous and Impulsive Vibration Acceleration (m/s²) 1-80Hz

Location	Assessment Period ¹	Preferred values		Maximum Values	
		z-axis	x- and y- axes	z-axis	x- and y-axes
Continuous Vibration					
Critical areas ²	Day or night-time	0.0050	0.0036	0.010	0.0072
Residences	Daytime	0.010	0.0071	0.02	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day or night-time	0.020	0.014	0.040	0.028
Workshops	Day or night-time	0.04	0.029	0.080	0.058
Impulsive Vibration					
Critical areas ²	Day or night-time	0.0050	0.0036	0.010	0.0072
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day or night-time	0.64	0.46	1.28	0.92
Workshops	Day or night-time	0.64	0.46	1.28	0.92

¹ Daytime is 7:00am to 10:00pm and night-time is 10:00pm to 7:00am.

² Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. There may be cases where sensitive equipment or delicate task require more stringent criteria than the human comfort criteria specified above. Stipulation of such criteria is outside the scope of this policy, and other guidance documents (e.g. relevant standards) should be referred to. Source: BS6472-1992.

Table 15 -(Table 2.4 Assessing Vibration: A technical guideline) – Acceptable Vibration Dose Values for Intermittent Vibration (m/s^{1.75})

Location	Daytime ¹		Night-time ¹	
	Preferred value	Maximum Value	Preferred value	Maximum Value
Critical areas ²	0.10	0.20	0.10	0.20
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

1 Daytime is 7:00am to 10:00pm and night-time is 10:00pm to 7:00am.

2 Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. These criteria are only indicative, and there may be a need to assess intermittent values against the continuous or impulsive criteria for critical areas. Source: BS6472-1992.

6.3.3.2 Structure Damage Risk Criteria

6.3.3.2.1 Generally

German Standard DIN 4150-3 (2016) provides a guideline for acceptable levels of vibration velocity in building foundations, to assess the effects of vibration on structures. The table give guidance on the maximum accepted values of velocity at the foundation and in the plane of the highest floor of various types of buildings, to prevent any structural damage.

The table following lists the peak particle velocity, which is the maximum absolute value of the velocity signals for the three orthogonal components. This is measured as a maximum value of any of the three orthogonal component particle velocities when measured at the foundation, and the maximum levels measured in the x- and y-horizontal directions in the plane of the floor of the uppermost storey.

It is noted that if measured vibration levels do not exceed the guidelines listed in the following table, damage that will reduce the serviceability of the building will not occur, and if damage to the building does occur, it is assumed that the damage is related to other causes. Furthermore, the DIN4150-3 guideline states the following regarding the limits presented in Table 1 of the standard:

“Exceeding the guideline values does not necessarily lead to damage. Should they be exceeded, however, further investigations may be necessary, such as determining and evaluating the stresses as detailed in 4.3 and 4.4.”.

Table 16 -(Table 1 – DIN 4150-3 (2016)) – Guideline Values for Vibration Velocity, $v_{i,max}$, for Evaluating the Effects of Short-Term Vibration on Structures

	TYPE OF STRUCTURE	Guideline values for $v_{i,max}$ in mm/s				
		Foundation, all directions, $i = x, y, z$, at a frequency of			Topmost floor, horizontal direction, $i = x, y$	Floor slabs, vertical direction, $i = z$
		1Hz to 10Hz	10Hz to 50Hz	50Hz to 100Hz ^(a)	All Frequencies	All Frequencies
L/C	1	2	3	4	5	6
1	Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20 to 40	40 to 50	40	20
2	Residential buildings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20	15	20
3	Structures that, because of their particular sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (e.g. listed buildings) buildings that are under a preservation order)	3	3 to 8	8 to 10	8	20 ^(b)

NOTE Even if guideline values as in line 1, columns 2 to 5, are complied with, minor damage cannot be excluded.

a At frequencies above 100 Hz, the guideline values for 100 Hz can be applied as minimum values.

b It may be necessary to lower the guideline value markedly to prevent minor damage

6.4 ANALYSIS OF NOISE AND VIBRATION EMISSIONS/COMPLYING MITIGATION

6.4.1 Noise from Mechanical Plant

Detailed acoustic design of mechanical plant cannot be undertaken at concept approval stage as plant selections and locations are not finalised. Compliance with NPfL acoustic criteria as set out in Section will be achievable with typical acoustic treatments.

A detailed acoustic review of plant items is to be undertaken once plant is selected. Plant treatment may include a combination of plant siting, selection of low noise generating plant, speed controllers and scheduling to limit night operation, barriers and enclosures, in-duct treatment and the like to achieve the nominated noise criteria.

6.4.2 Commercial/Retail Spaces/Pavilion

The primary sources of noise generated by commercial/retail uses are likely to include loading dock activities, mechanical plant servicing the building, and outdoor patron noise associated with food and beverage outlets.

It is expected that tenancies with the potential for noise generation would be subject to a separate development application, at which time the specific measures required to control noise emissions can be addressed. Key acoustic considerations for the proposed tenancies are outlined below:

- General retail outlets are expected to have minimal acoustic impact on the proposed residential uses.
- Licensed tenancies, particularly those proposed to operate during the night-time period, have a higher potential acoustic impact depending on their capacity, operating characteristics, and siting. Tenancies of this nature would require a site-specific noise impact assessment to determine appropriate management controls and building treatments necessary to mitigate noise impacts to nearby residents.

In light of the above, the proposal includes a pavilion with proposed usage as an F&B/entertainment outlet operating between the hours of 7:00am and 12:00 am and require a separate noise impact assessment. Subject to the implementation of any acoustic mitigation measures recommended in the report, the proposed use is considered capable of being acoustically acceptable.

Any other potential noise generating use would also be subject to separate acoustic assessment and approval.

6.4.3 Noise from Increased Traffic Generation on Public Streets

The impact of additional traffic generated by the proposed development has been assessed using the EPA RNP, which states the following:

- Section 2.3 of the RNP provides noise assessment criteria at residential (Table 3) and non-residential receivers (Table 4), and for different road classifications.
- Where existing traffic noise is already close to or exceeds the criteria in Tables 3 or 4, the RNP indicates the increase in noise should be assessed instead of the absolute level. For sensitive land uses affected by additional traffic on existing roads, any increase in the total traffic noise level should be limited to 2dB above that of the corresponding 'no build option'. The RNP indicates that an increase of up to 2dB(A) represents a minor impact that is considered barely perceptible to the average person.
- Where night time traffic movements are proposed, the impact on sleep from maximum noise events generated by these movements should also be considered for residential receivers.

Traffic noise data obtained from the TIA indicates the proposed development will generate the following traffic movements:

- 266 movements in the AM peak hour period
- 242 movements in the PM peak hour period

There is no indication as to the distribution of the traffic generated.

Appendix A of the TIA provides data detailing the following "no build" peak hour traffic volumes on surrounding roadways. As the surveys were conducted in 2022, 2% annual growth to the year 2025 has been added to these figures for the purposes of this assessment.

The increase in noise levels have been predicted based on the FHWA noise prediction model using the following:

- The no-build and predicted development vehicle movement numbers.
- Vehicle speed of 50 km/hr.
- Hard ground between the source and the measurement location.
- FHWA vehicle noise emission levels for the relevant vehicle type, speed and road conditions.
- Neutral weather conditions.

The predicted increase in the L_{eq} noise level is <2 dB(A).

As the increase in road traffic noise levels are predicted to be ≤ 2 dB, it is concluded that any increase in road traffic noise as a result of the proposal would be inaudible, would not adversely impact any residential receiver, and is compliant with the objectives of the RNP.

6.4.4 Construction Noise & Vibration

Noise and vibration management levels relevant to the project have been formulated in accordance with the EPA Interim Construction Noise Guideline (ICNG) and detailed in Section 6.3 of this report.

It is noted that the primary noise and vibration activities and plant are associated with the early works. An assessment of construction noise and vibration from these works has been provided in the Construction Noise & Vibration Management Plan with reference *20241288.1/0512A/R1/RF, dated 5/12/2024*.

Detailed construction methodology and programming is not available and therefore there is insufficient information with which to conduct a detailed assessment for the construction and fitout stages of works. Notwithstanding, a cursory assessment is presented below.

Typically, the activities which generate the highest noise levels during these stages are concrete pours and use of cranes. The impact on nearby development will be dependent on the activity in question and where on the site the activity is undertaken. Work close to the northern and eastern boundary of the site will have greatest potential impact (given the proximity to the existing nearby R5 residential and R2 commercial buildings respectively). In order to minimise impacts, it is recommended that the plant/activities are located as far from these receivers as is feasible. Impacts can be further managed through implementation of reasonable and feasible mitigation measures as detailed in the ICNG. These may include acoustic treatment to plant, community notification and careful scheduling of noisy activities.

The Early Works CNVMP recommends vibration monitoring during the early works stage however, vibration monitoring during the construction and fitout stages is unlikely to be necessary given that these works do not typically generate significant ground vibration. Noise and vibration monitoring may be implemented in the event if a complaint from surrounding receivers.

Once construction methodology is finalised, it is recommended that a project specific Construction Noise and Vibration Management Plan should be developed using the noise and vibration management levels detailed in this report. The Plan will be used to manage construction noise and vibration impacts, which may include monitoring, community liaison and complaints handling, noise mitigation to be adopted, training and management, etc.

The following sections provide general guidance to be implemented to minimise construction noise and vibration impacts as is feasible and reasonable based on the ICNG.

6.4.5 Management Plan

The assessment indicates that the proposed activities will produce noise or vibration that may exceed the adopted management levels. These impacts should be minimised by developing and adopting a project specific management plan to regulate site activities.

The plan should be revised as the works proceed in response to changing or latent conditions and to incorporate the results of additional analysis, monitoring or modified work practices implemented to minimise impacts.

The management plan should be prepared in accordance with ICNG guideline and include:

- Identification of sensitive receivers and applicable noise and vibration management levels
- A description of the main noise or vibration producing activities, processes and equipment that will be employed and an indicative construction programme.
- Proposed construction hours.
- A prediction of likely noise/vibration levels at the most impacted receivers.
- The assessment and recommendation of mitigation methods to be applied where the predicted levels exceed the management levels, as indicated below.
- A monitoring plan including the type and extent of monitoring, reporting procedures.
- Recommended management procedures including complaints handling, response to monitoring exceedances, reporting, site training, etc.
- Community liaison.

6.4.6 Noise and Vibration Control

The flow chart that follows illustrate the process followed to assess construction activities prior to the start of work on site, and for the ongoing investigation of noise and vibration impacts during the construction period.

The ICNG recommends “feasible and reasonable” mitigation measures to be implemented where works generate noise levels above the out of normal hours NML but does not specify what mitigation measures or to what extent these measures should be applied.

6.4.6.1 General Noise Control Methods

The determination of appropriate additional noise control measures will be dependent on the particular activities and the construction equipment and plant identified as requiring future acoustic treatments to those already identified in this report. This section provides an outline of available methods which have previously been used on similar construction sites and may be possible on this site.

6.4.6.1.1 Selection of Alternate Appliance or Process

Where a particular activity or plant and equipment is found to generate noise levels that exceed the management levels, it may be possible to select an alternative approach or plant and equipment. For example, the use of excavator mounted hydraulic hammers of the site may potentially generate high levels of noise. By carrying this activity by using concrete saws or smaller plant here practical, construction noise levels and/or length of exposure to construction noise levels may be reduced.

6.4.6.1.2 Acoustic Barriers

The placement of barriers at the source is generally only effective for static plant. Placing barriers at the source cannot effectively attenuate equipment which is on the move or working in rough or undulating terrain.

The degree of noise reduction provided by barriers is dependent on the amount by which the line of sight can be blocked by the barrier. If the receiver is totally shielded from the noise source reductions of up to 15 dB(A) can be effected. Where only partial obstruction of line of sight occurs, noise reductions of 5 to 8 dB(A) may be achieved. Where the barrier does not obstruct line of sight, generally no noise reduction will occur.

Barriers are used to provide shielding and do not act as an enclosure. The material they are constructed from should have a noise reduction performance which is approximately 10dB(A) greater than the maximum reduction provided by the barrier screening. In this case, the use of a material such as 15mm plywood (or equivalent material) would be acceptable for the barriers.

6.4.6.1.3 Silencing Devices

Where construction methodologies or plant and equipment permit, investigate the use of silencing devices. These may take the form of engine shrouding, or special industrial silencers fitted to exhausts, for example.

6.4.6.1.4 Treatment of Specific Equipment

In certain cases it may be possible to specially treat a piece of equipment to dramatically reduce the sound levels emitted.

6.4.6.1.5 Establishment of Site Practices

This involves the formulation of work practices to reduce noise generation. This includes, for example, investigating the possibility of locating fixed plant items as far as possible from residents, rotating plant and activities around the site to provide respite to receivers, scheduling activities after the construction of buildings that will screen receivers, avoiding noise sensitive periods for receivers, identify "safe" working distances, etc.

6.4.6.1.6 Vibration Management

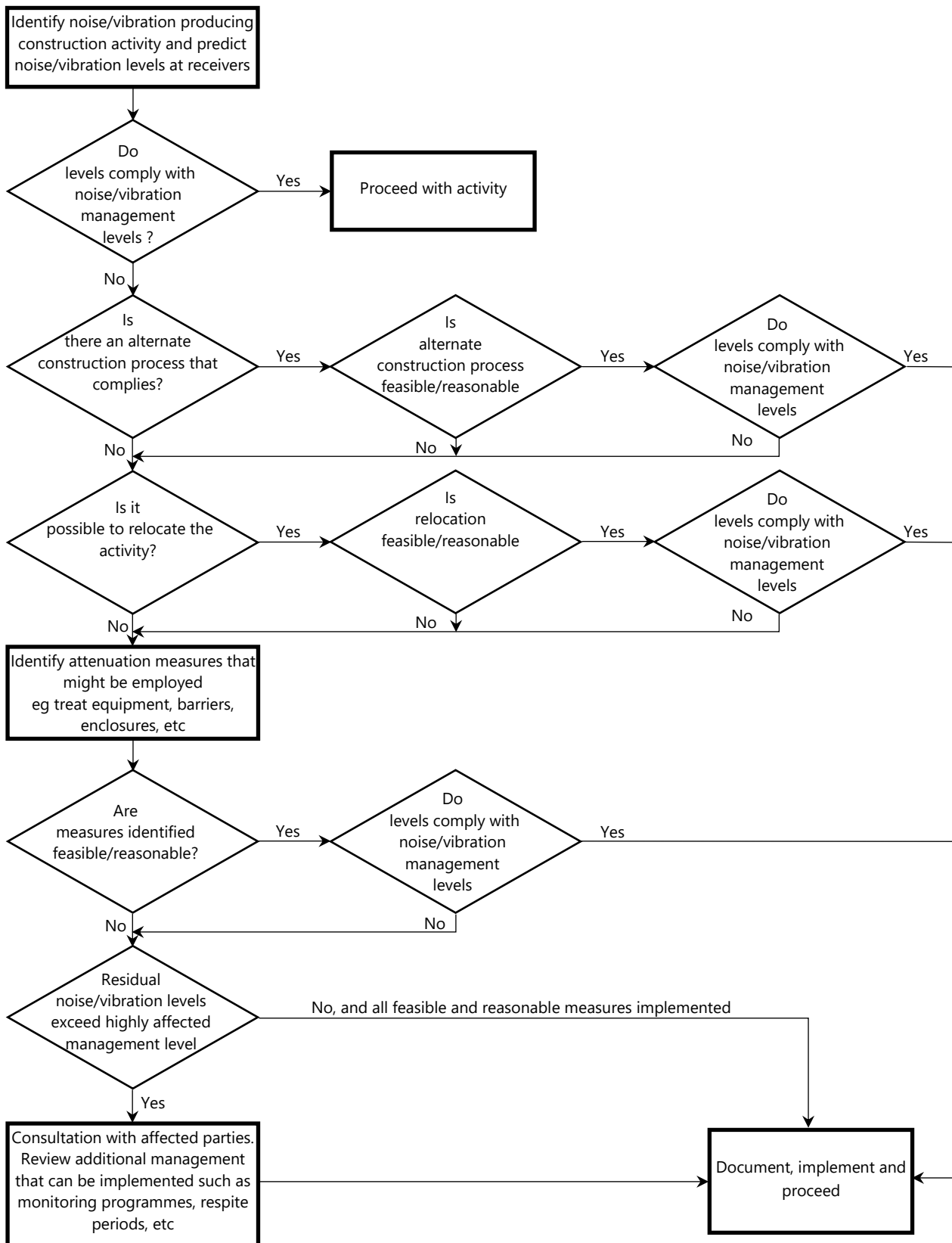
The following principles should be considered to manage adverse vibration impacts identified:

- Obtaining separate structural or specialist advice for critical or fragile structures as to the level of damage risk.
- Selection of processes that minimise structure and ground vibration – generally avoiding percussive methods.
- Use smallest plant that is able to efficiently undertake the work activity.
- Lay vibration absorbing mats to cushion impacts from falling debris.
- Application of vibration dampening pads to metal surfaces subject to impacts.
- When demolishing, cut control joints in structures to form vibration "breaks", or work away from sensitive receiver locations to form natural vibration breaks in propagation path.
- Monitoring of structures using attended and/or unattended monitors with alarms.
- Time scheduling works to minimise amenity impacts.
- Communicating with affected receivers.

- Identify “safe” working distances to sensitive receivers/structures for various activities by conducting site simulation tests and limiting activities within those distances to those that are not likely to exceed vibration goals. The outcome of the simulation testing is a table of minimum working distances for each operation likely to cause significant vibration. The table below indicates an estimate of typical minimum working distances for initial planning purposes, which should be confirmed by site testing.

6.4.6.1.7 Notification

Notification of affected receivers of the progress of works, particularly when short-term activities likely to create higher noise levels occur, can in many cases minimise community reaction.



Noise and Vibration Management Flow Chart

7 CONCLUSION

This report presents the assessment of noise and vibration impacts associated with the State Significant Development Application (SSD-90960208) at 26-30 Mann Street, Gosford, also known as the 'Central Coast Quarter'.

A review of the traffic noise impact on the development as per the requirements of SEPP (T&I) and DNRCBR has been conducted in Section 5. Provided that the complying mitigation detailed in Section 5.5 are adopted, suitable internal noise levels/residential amenity will be achieved. Notwithstanding, a detailed review should be undertaken at CC Stage.

Noise emission criteria have been determined based on guidelines in the NSW EPA Noise Policy for Industry 2017. A detailed review of noise emissions should be undertaken at CC stage to ensure noise from site will be compliant with EPA guidelines.

Construction Noise & Vibration Management Levels have been determined in accordance with the NSW EPA ICNG and detailed in Section 6.3. Once construction methodology is finalised, it is recommended that a project specific Construction Noise and Vibration Management Plan should be developed in accordance with NSW EPA guidelines using the noise and vibration management levels detailed in this report.

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,

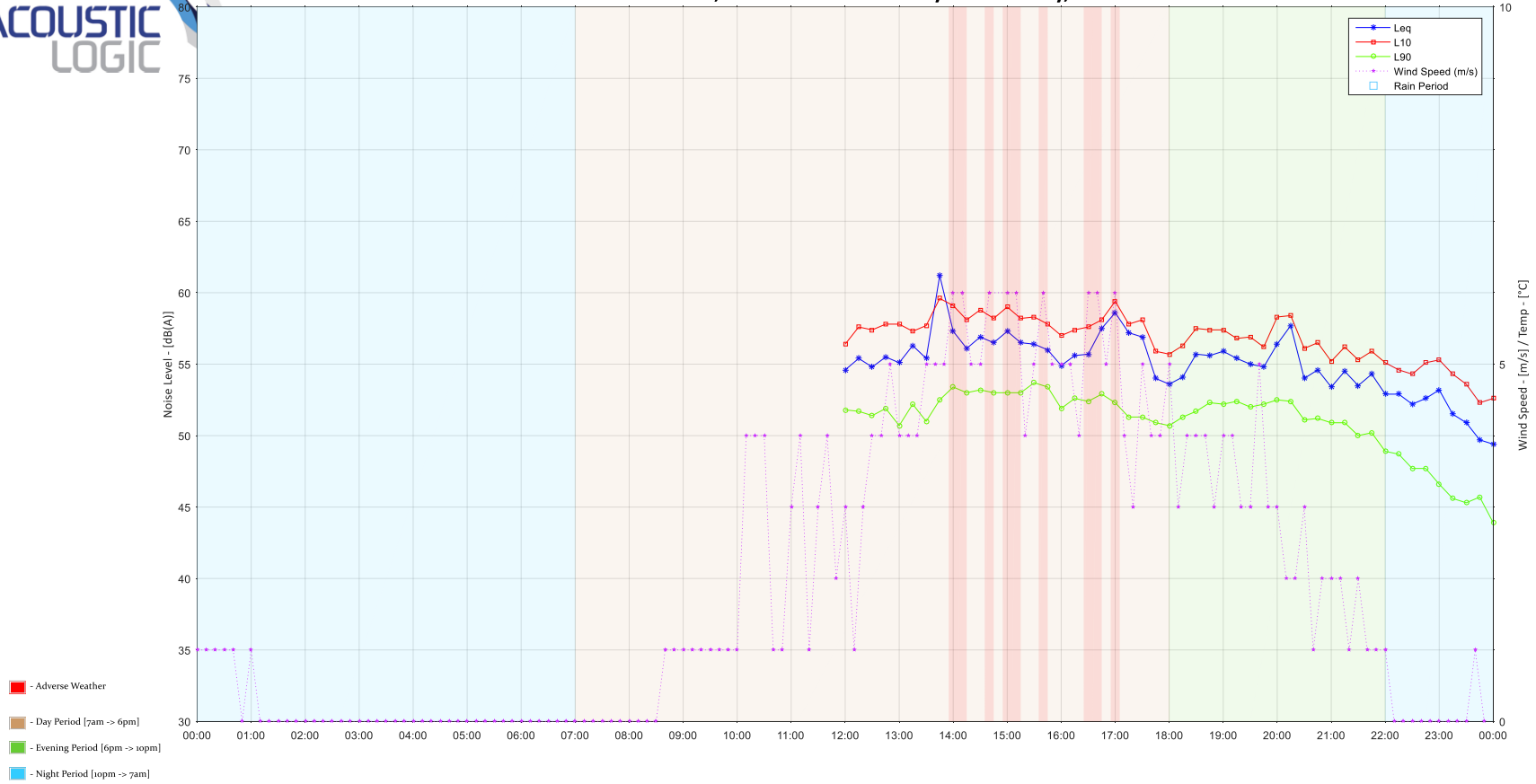
A handwritten signature in black ink, appearing to be 'RF' followed by a long horizontal stroke.

Acoustic Logic Pty Ltd
Ross Ferraro

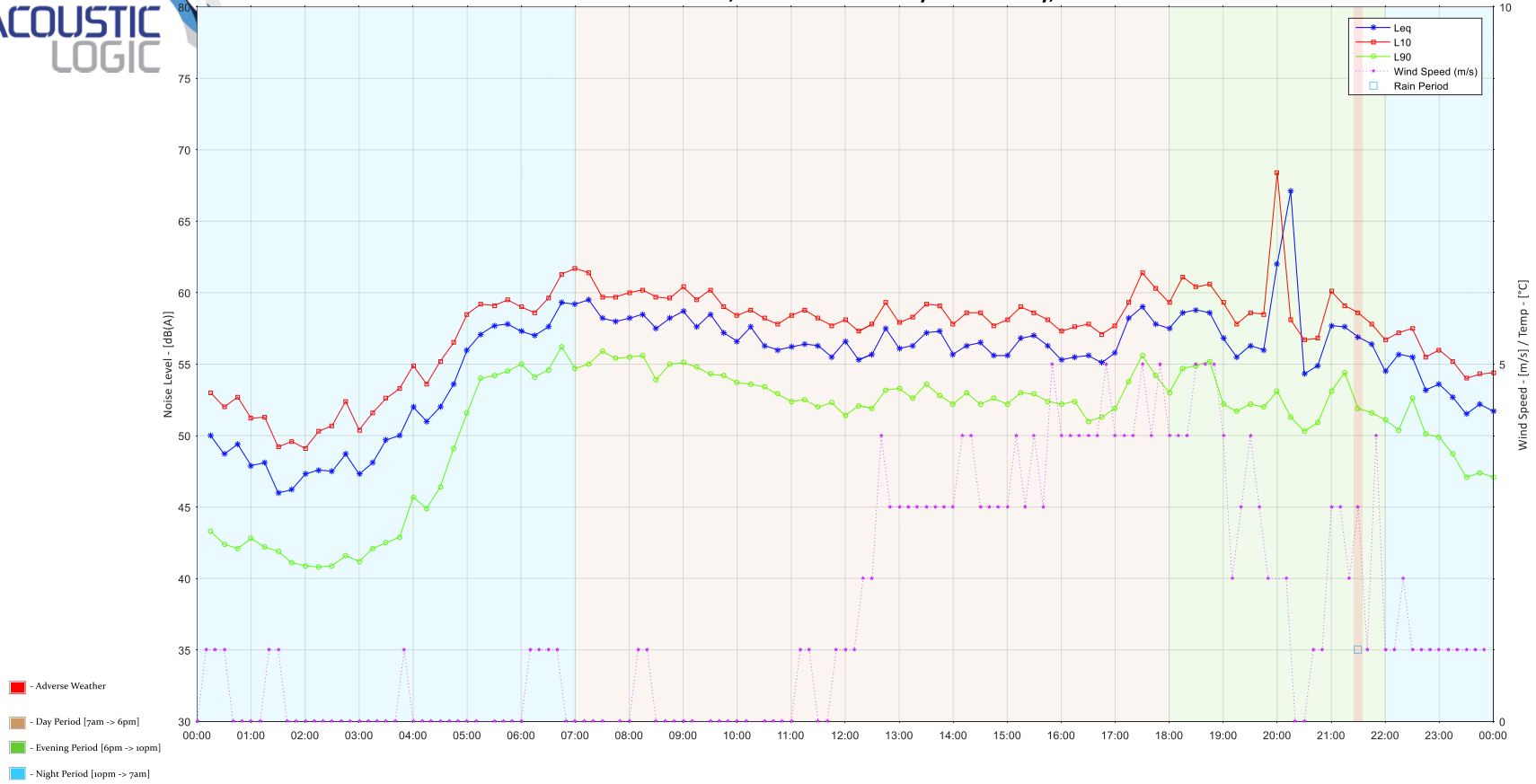
APPENDIX A – UNATTENDED NOISE MONITORING DATA

UNATTENDED NOISE MONITORING DATA FOR LOCATION L1

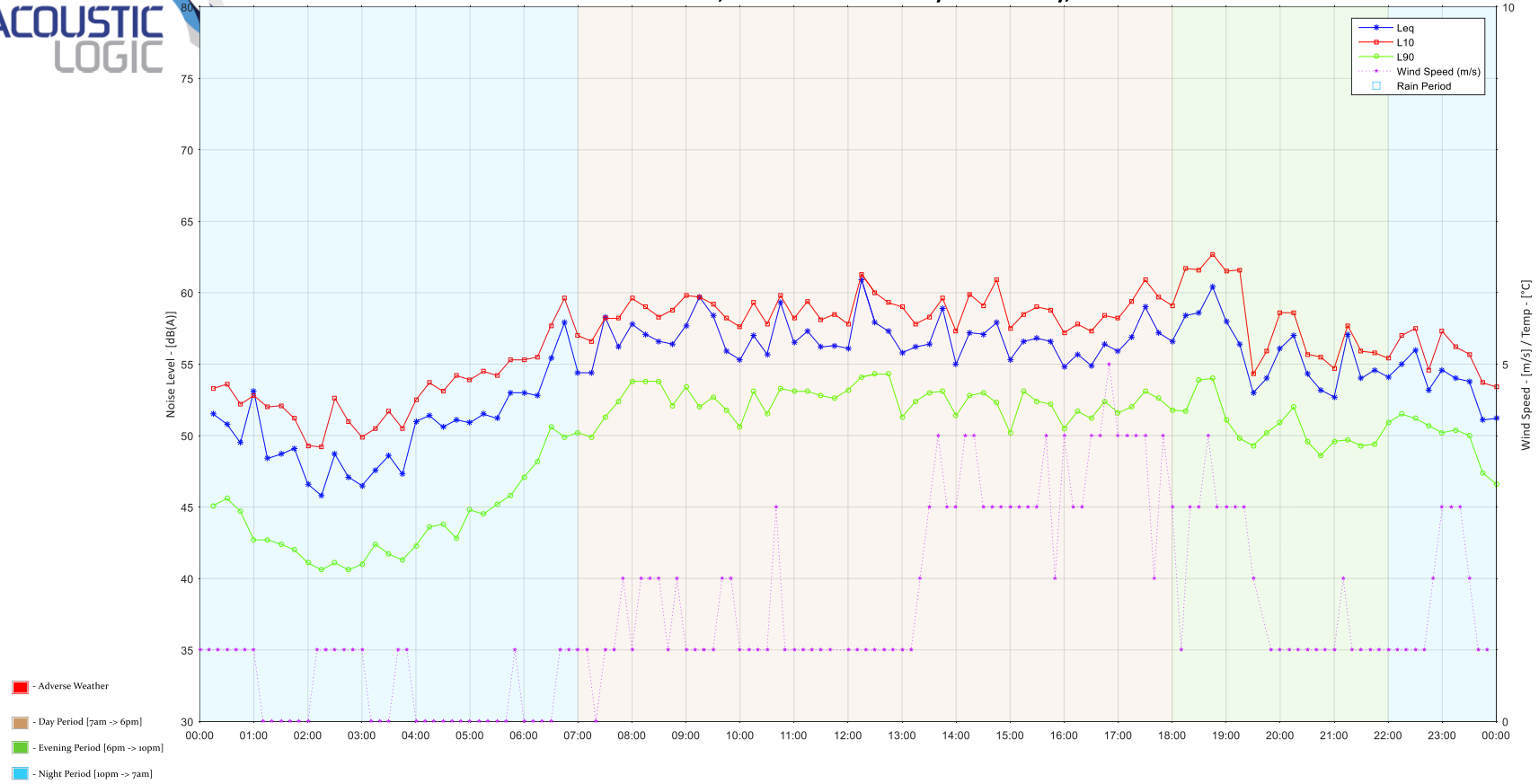
26 Mann Street, Gosford - L1: Thursday 08 February, 2018



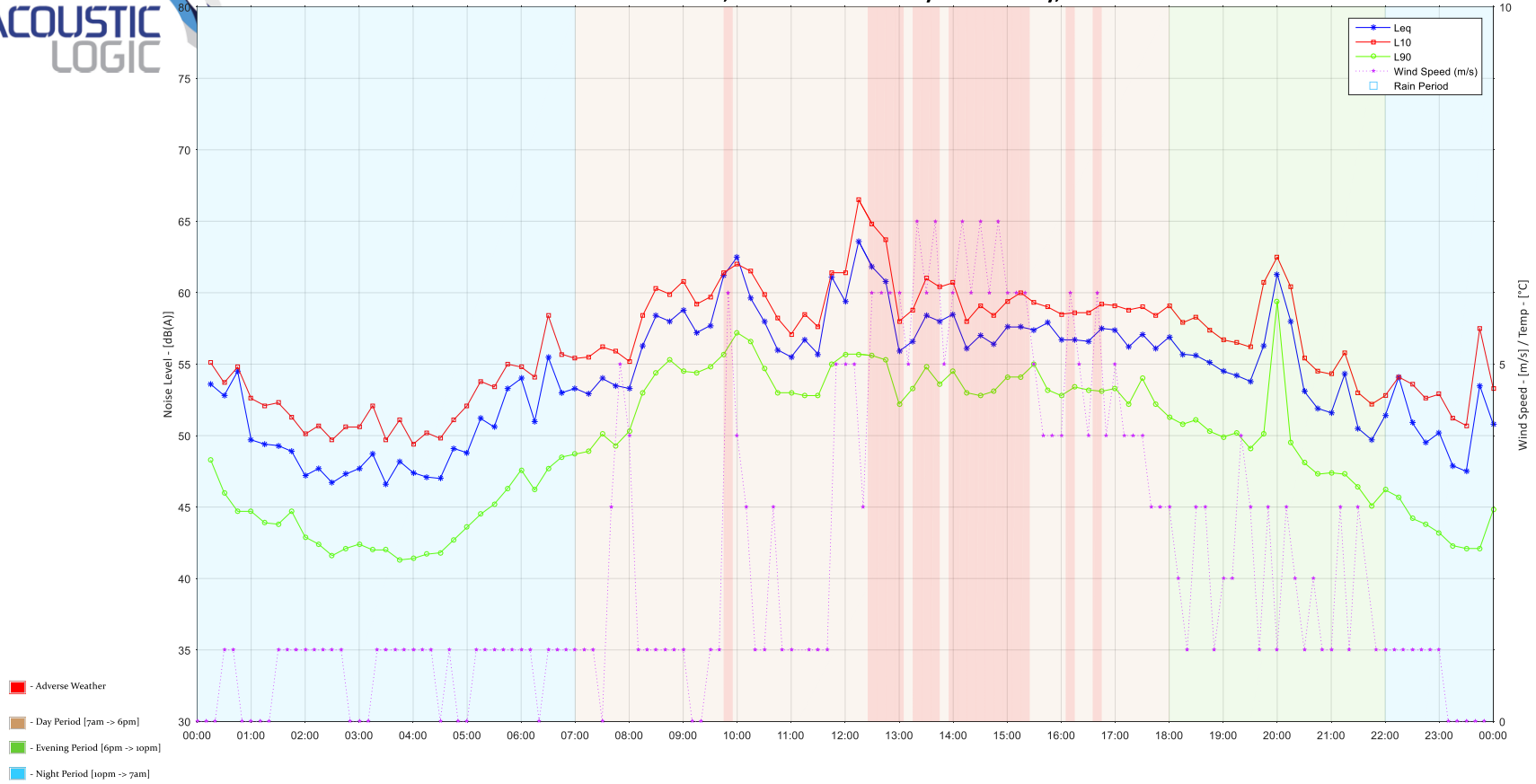
26 Mann Street, Gosford - L1: Friday 09 February, 2018



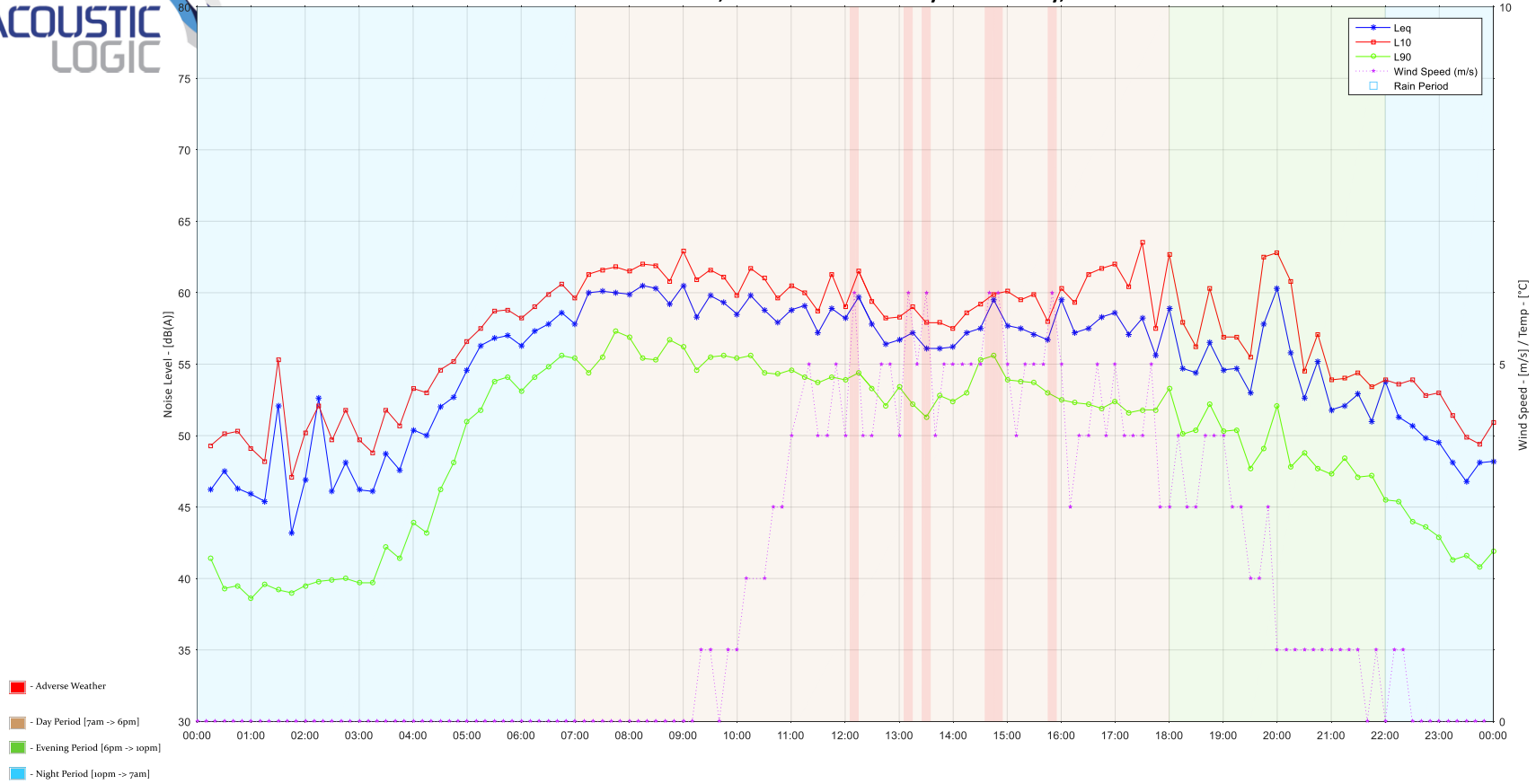
26 Mann Street, Gosford - L1: Saturday 10 February, 2018



26 Mann Street, Gosford - L1: Sunday 11 February, 2018

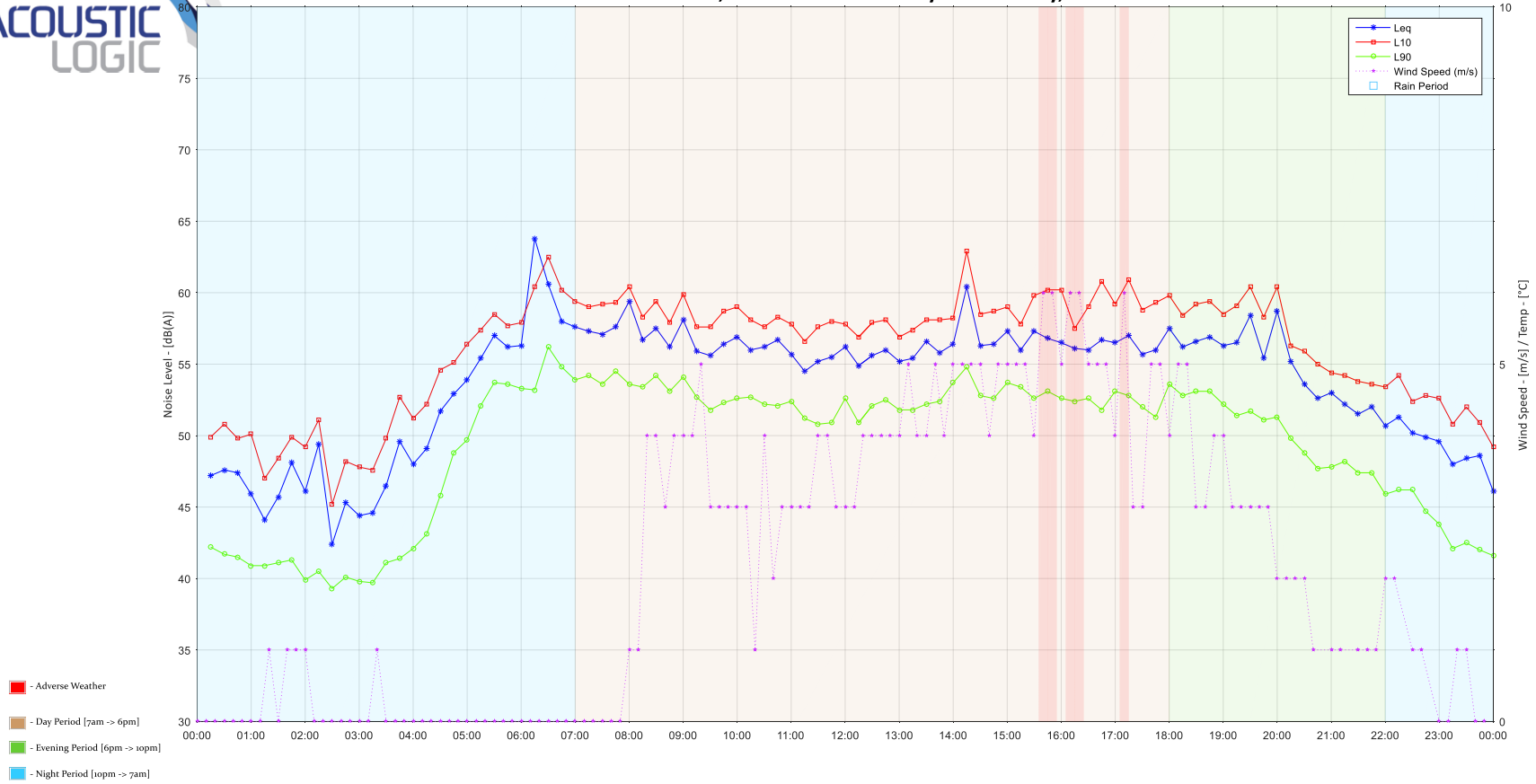


26 Mann Street, Gosford - L1: Monday 12 February, 2018

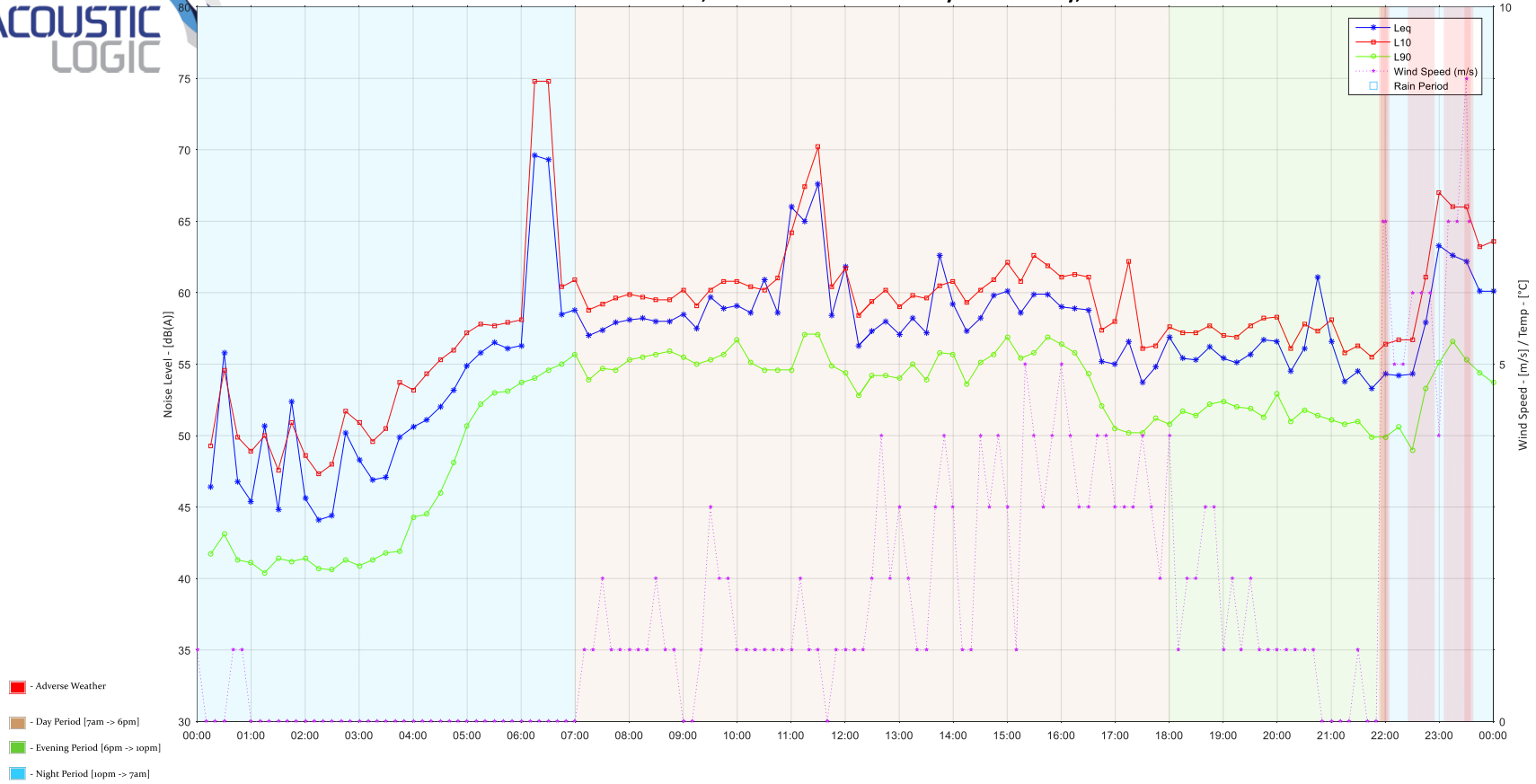




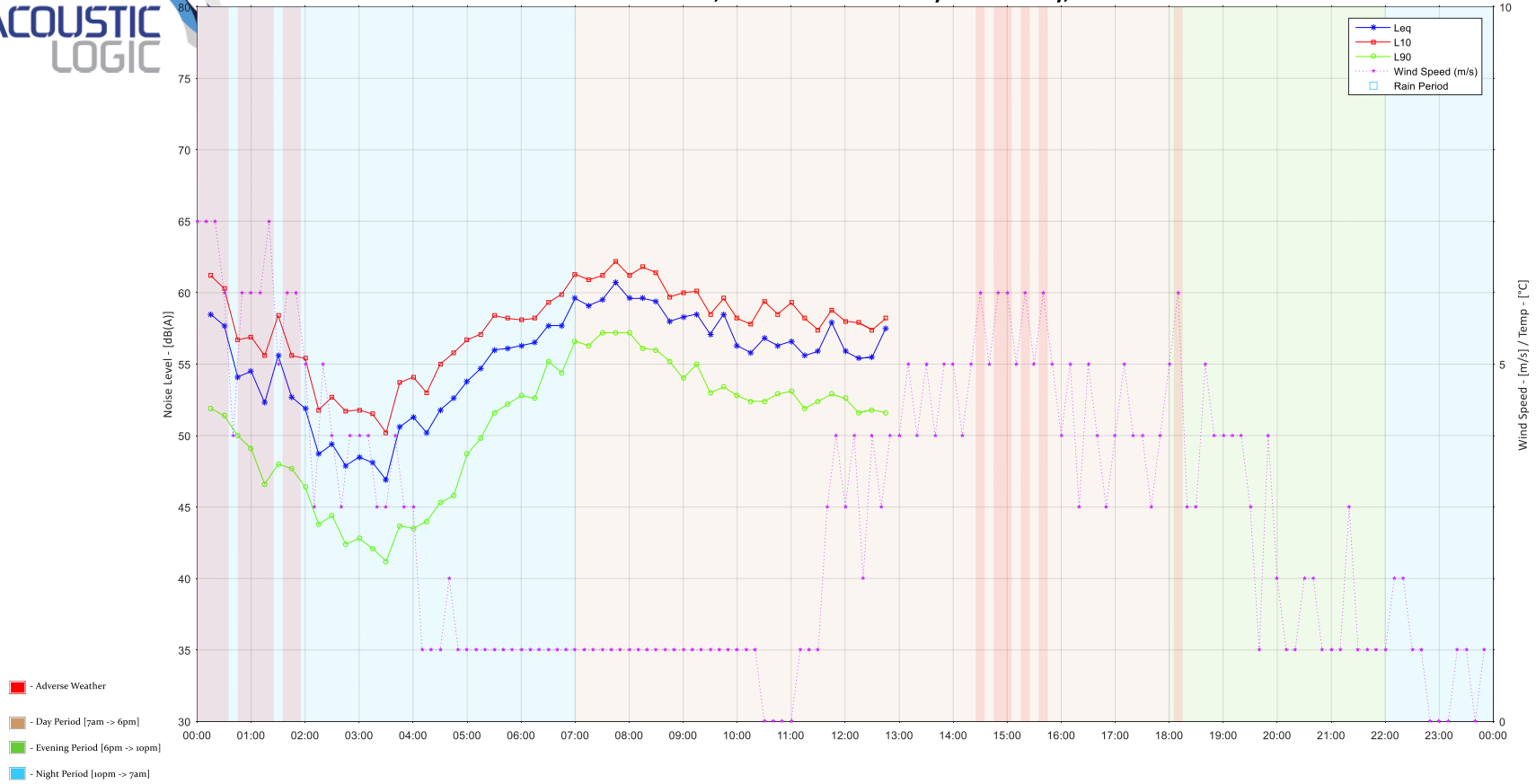
26 Mann Street, Gosford - L1: Tuesday 13 February, 2018



26 Mann Street, Gosford - L1: Wednesday 14 February, 2018



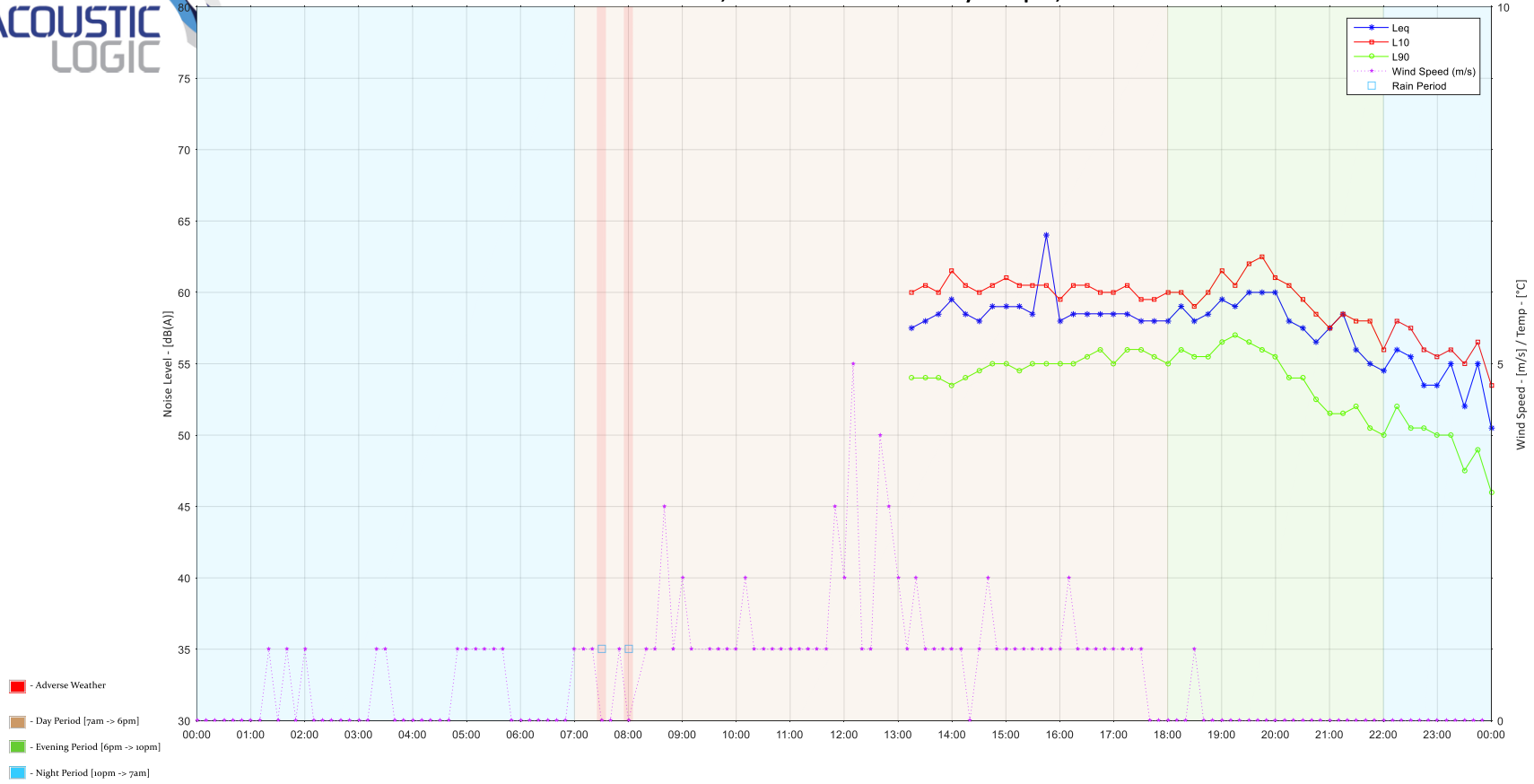
26 Mann Street, Gosford - L1: Thursday 15 February, 2018



UNATTENDED NOISE MONITORING DATA FOR LOCATION L2

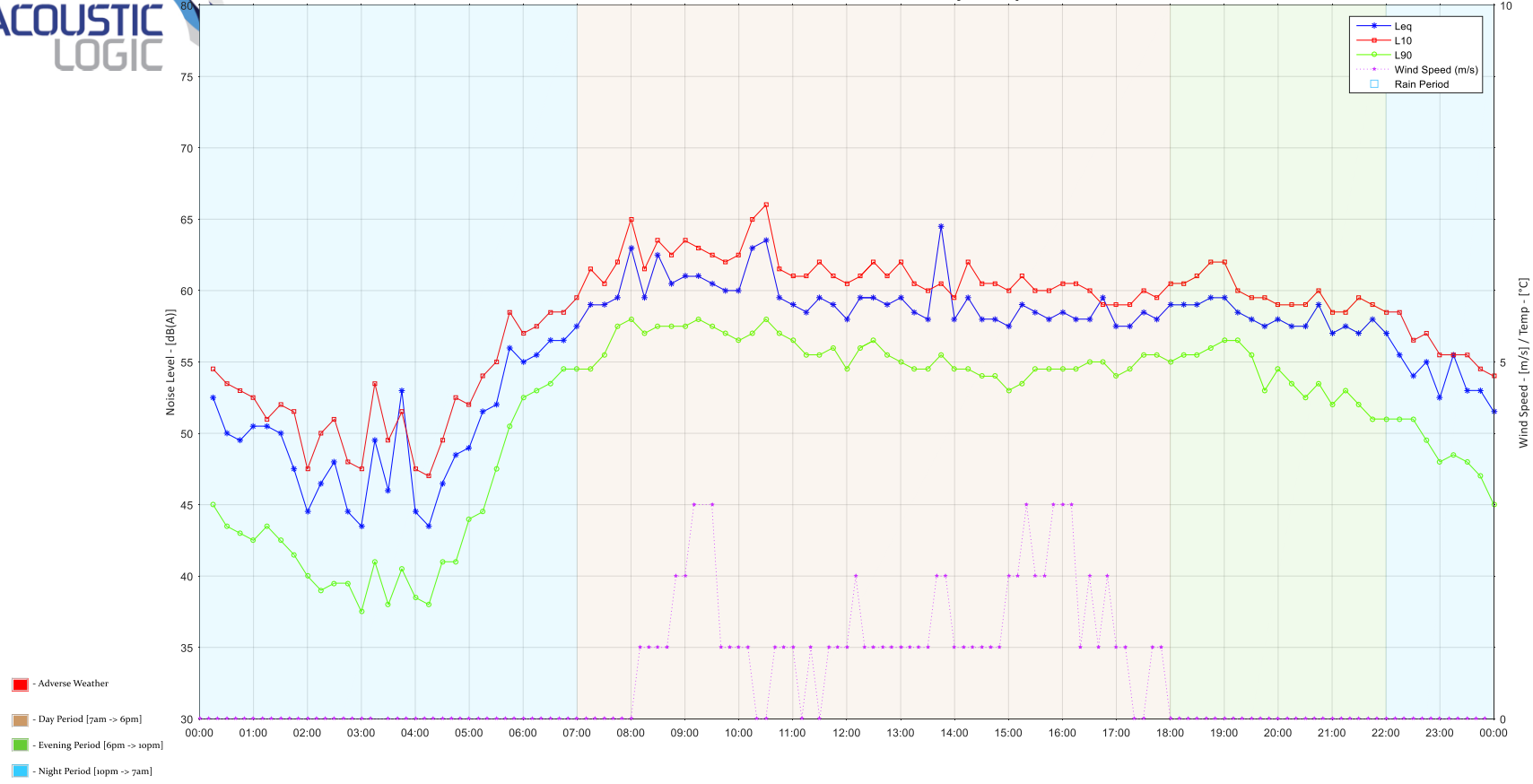


26 Mann Street, Gosford - L2: Wednesday 05 April, 2017

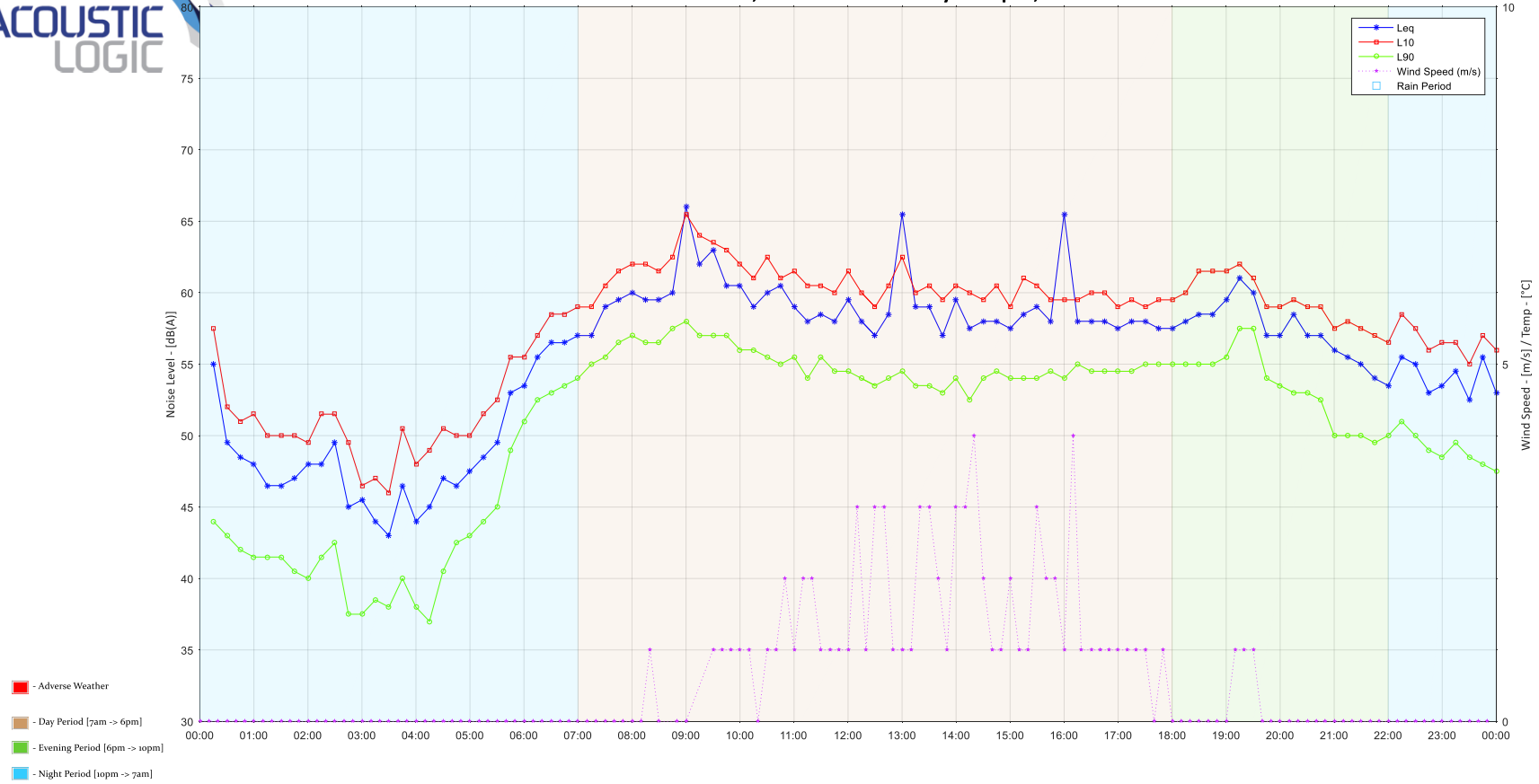




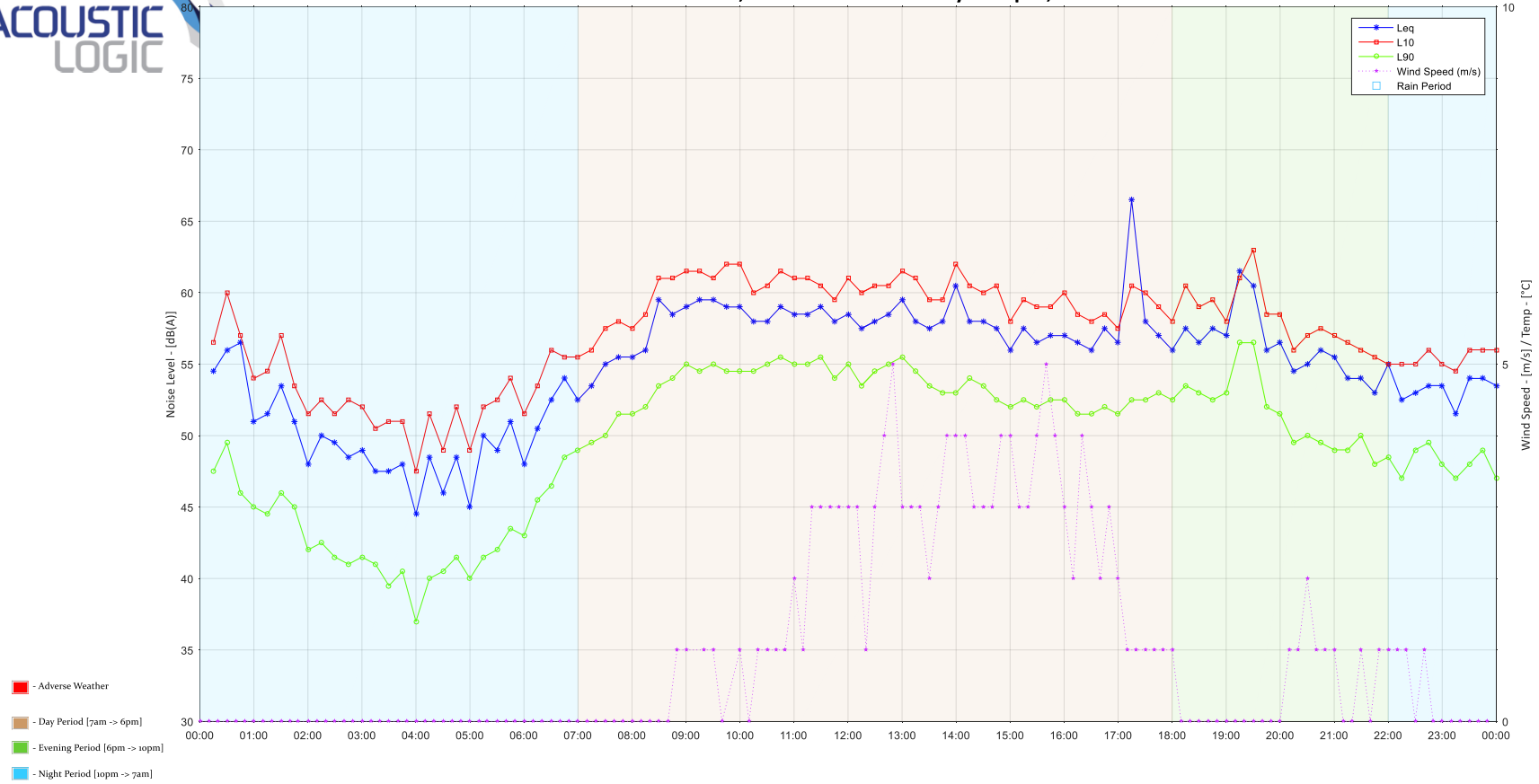
26 Mann Street, Gosford - L2: Thursday 06 April, 2017



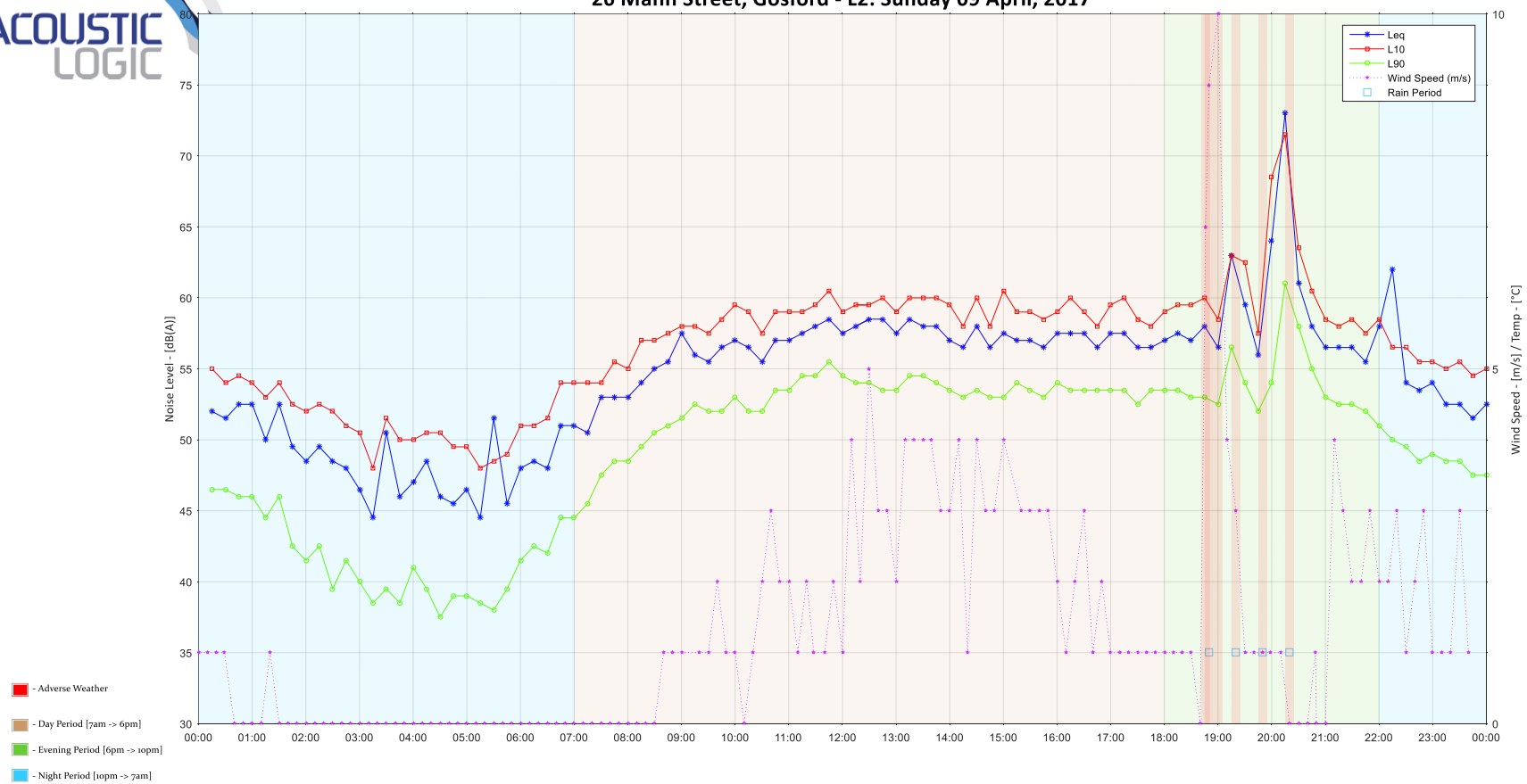
26 Mann Street, Gosford - L2: Friday 07 April, 2017



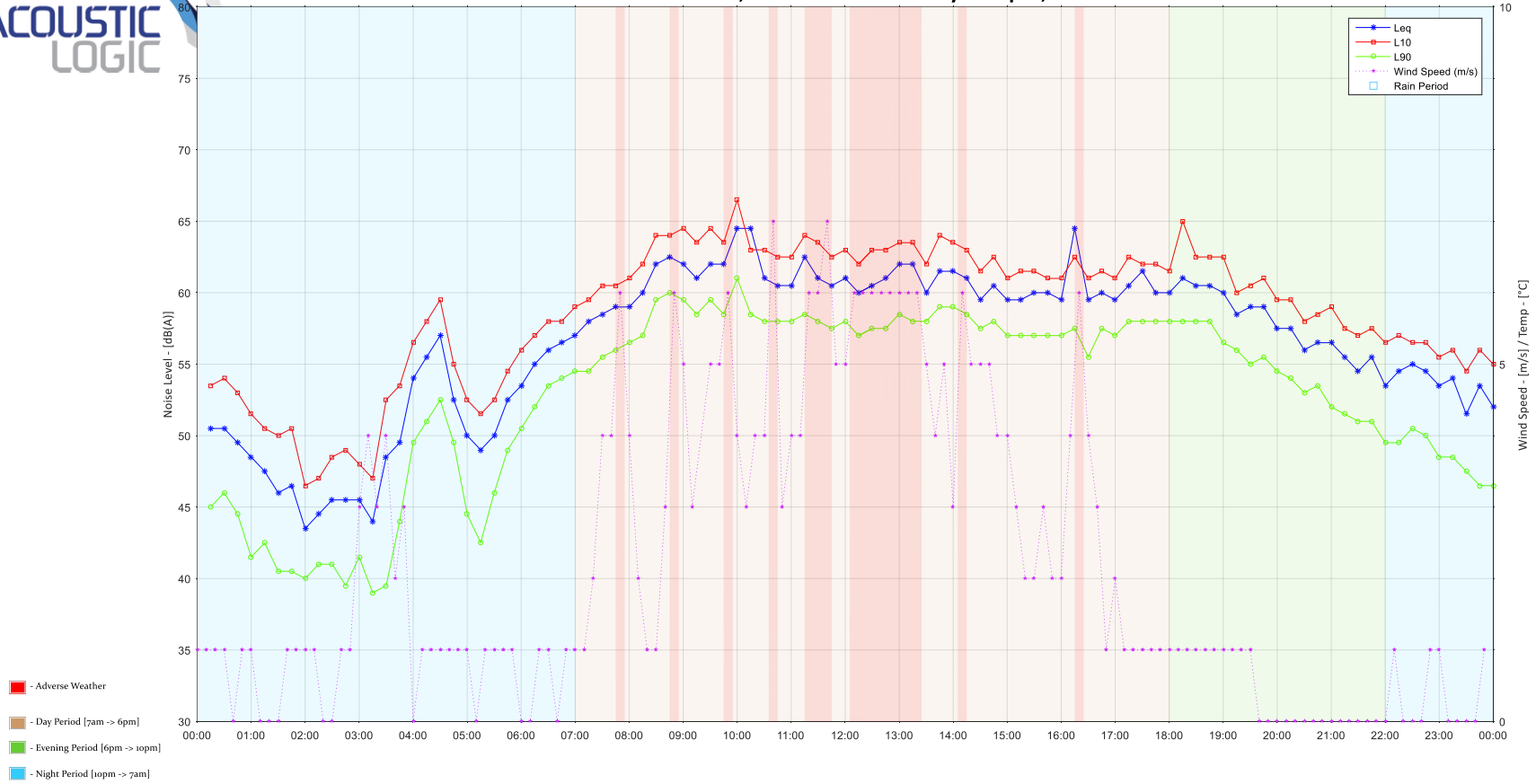
26 Mann Street, Gosford - L2: Saturday 08 April, 2017



26 Mann Street, Gosford - L2: Sunday 09 April, 2017

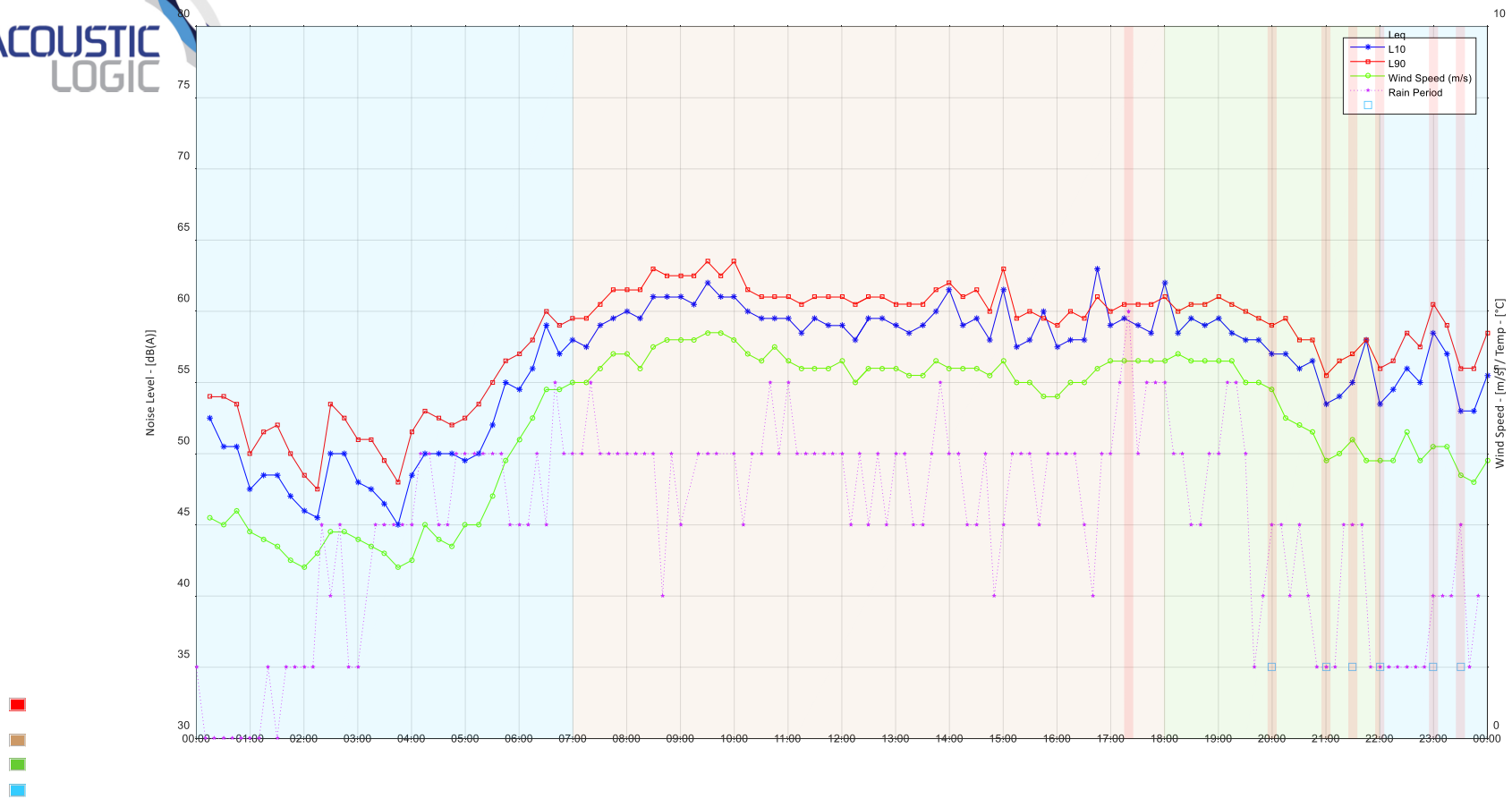


26 Mann Street, Gosford - L2: Monday 10 April, 2017



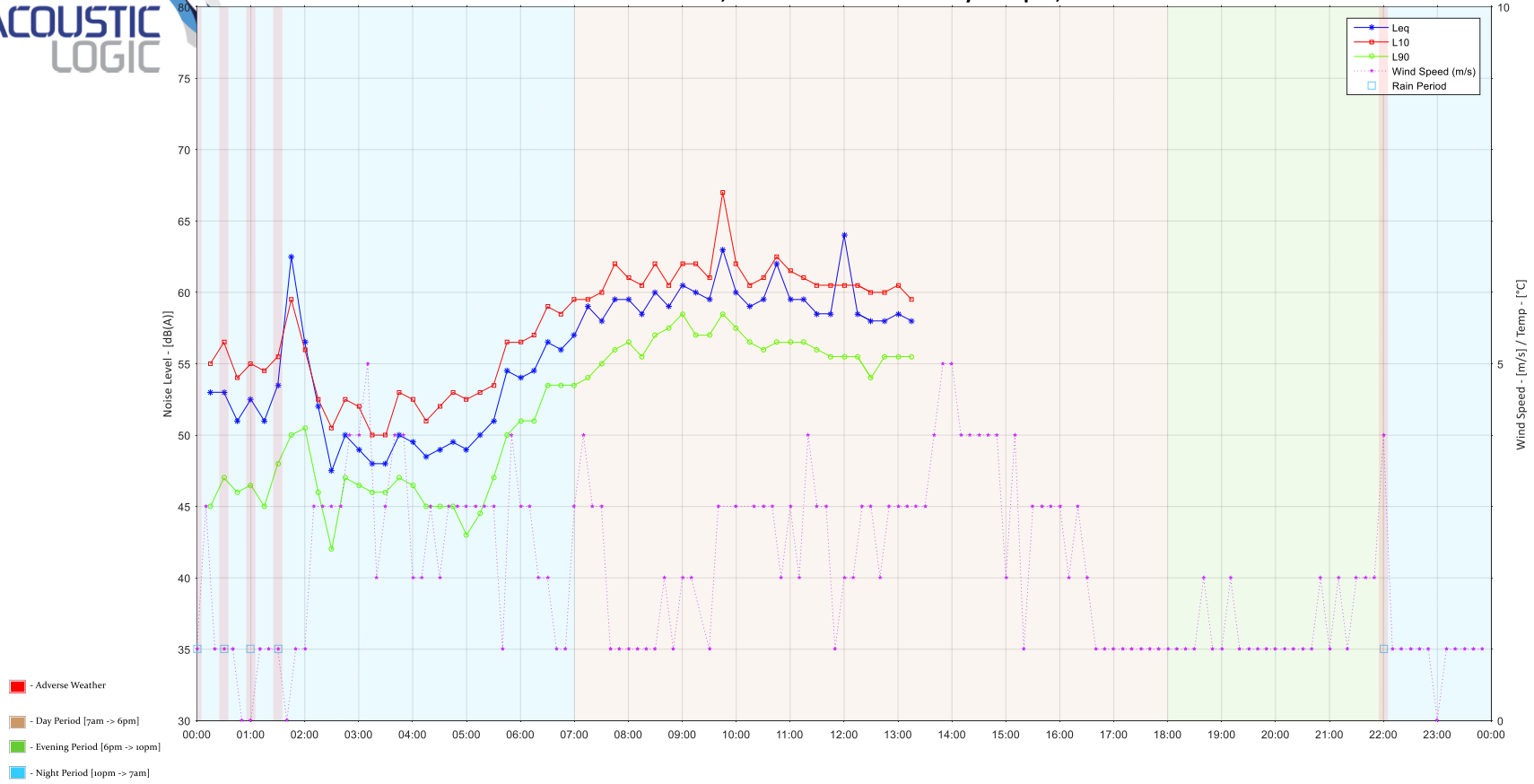


26 Mann Street, Gosford - L2: Tuesday 11 April, 2017



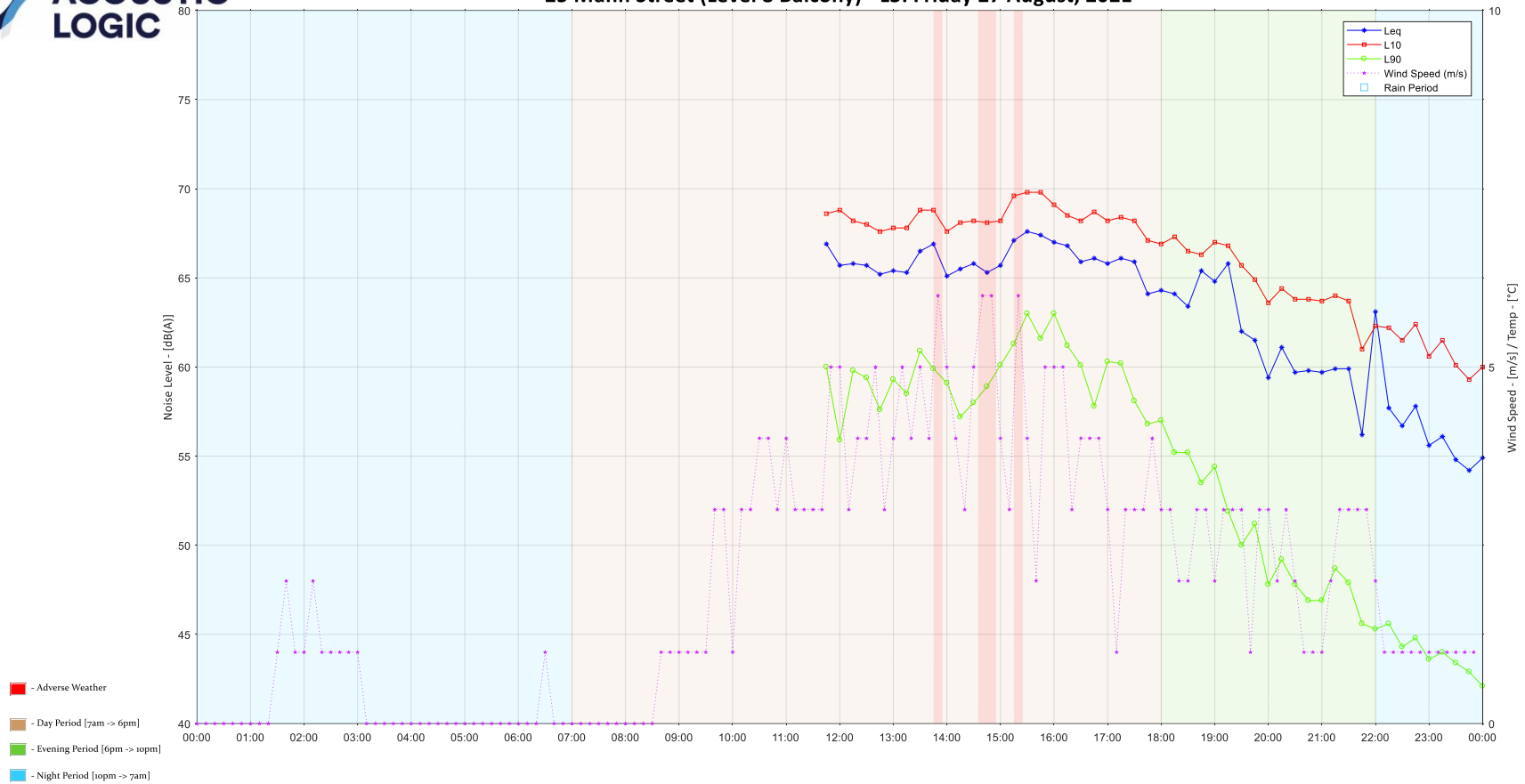


26 Mann Street, Gosford - L2: Wednesday 12 April, 2017

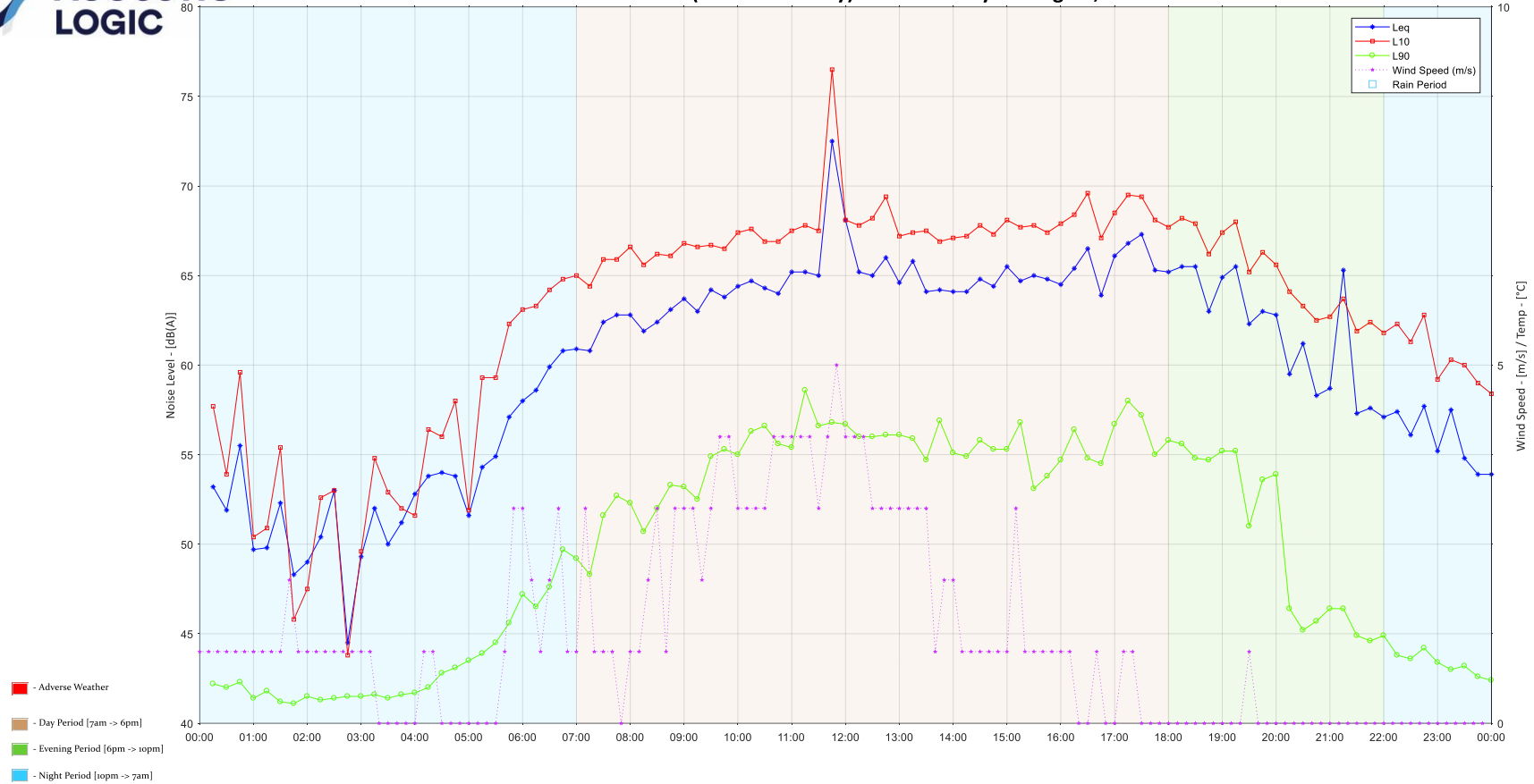


UNATTENDED NOISE MONITORING DATA FOR LOCATION L3

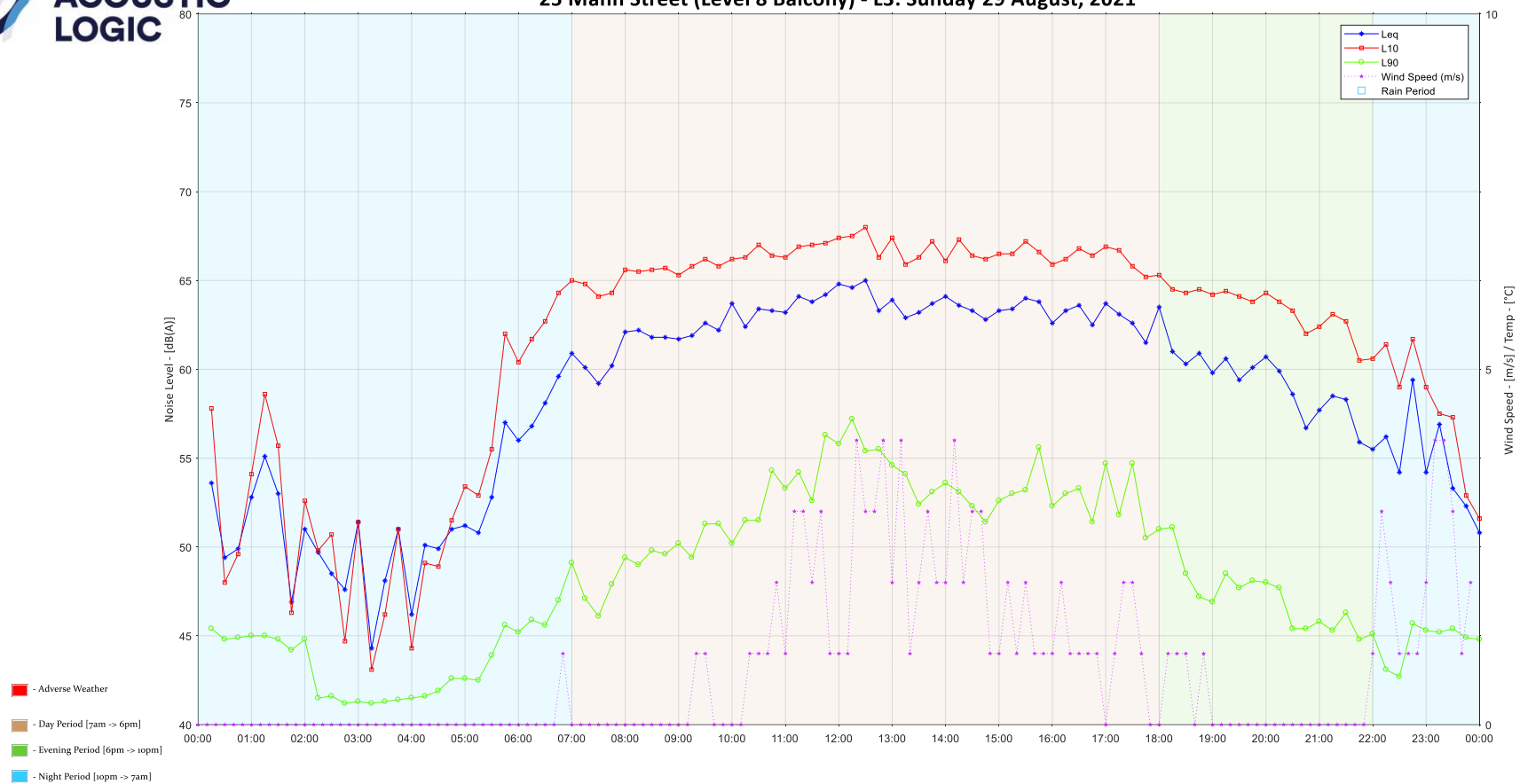
25 Mann Street (Level 8 Balcony) - L3: Friday 27 August, 2021



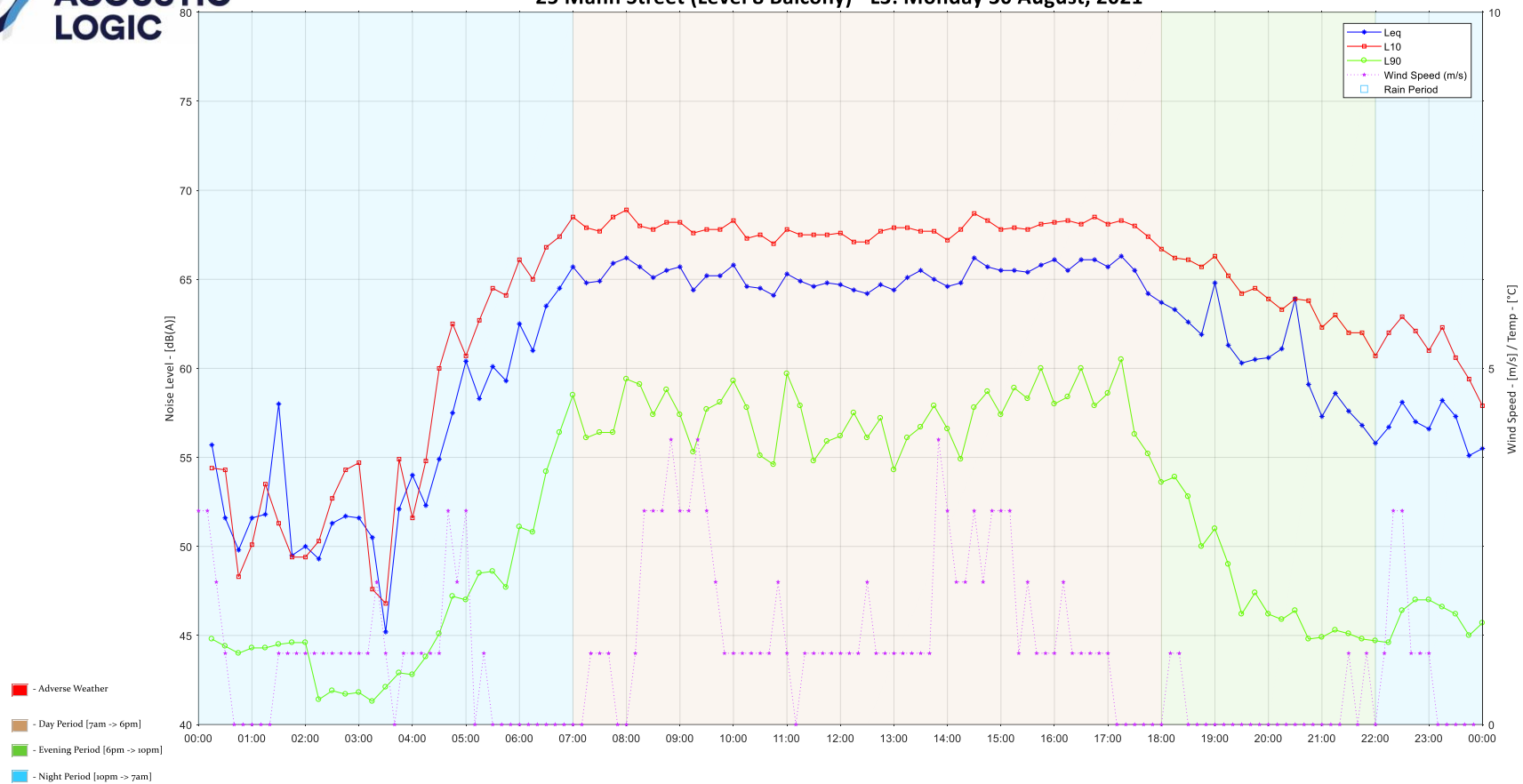
25 Mann Street (Level 8 Balcony) - L3: Saturday 28 August, 2021



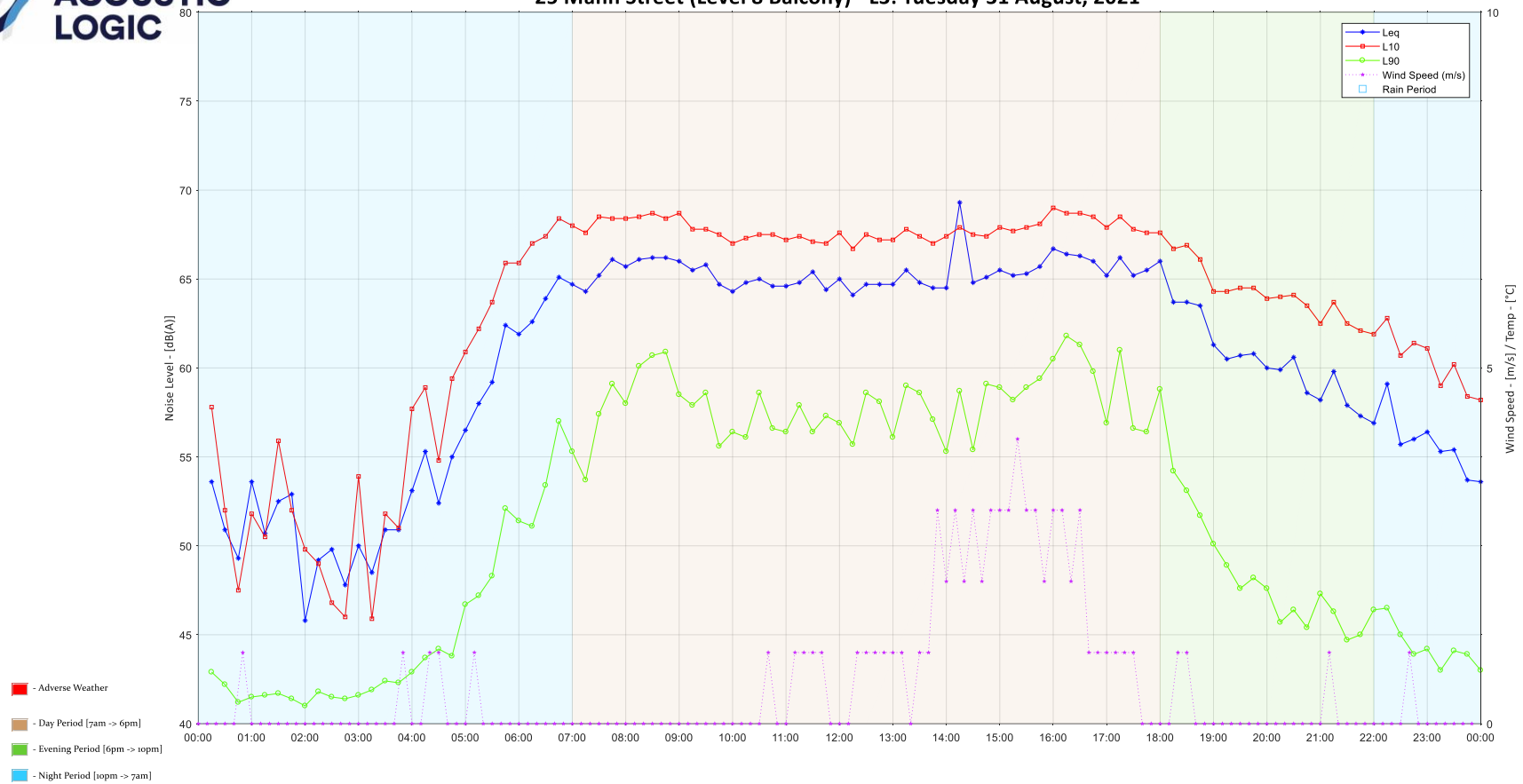
25 Mann Street (Level 8 Balcony) - L3: Sunday 29 August, 2021



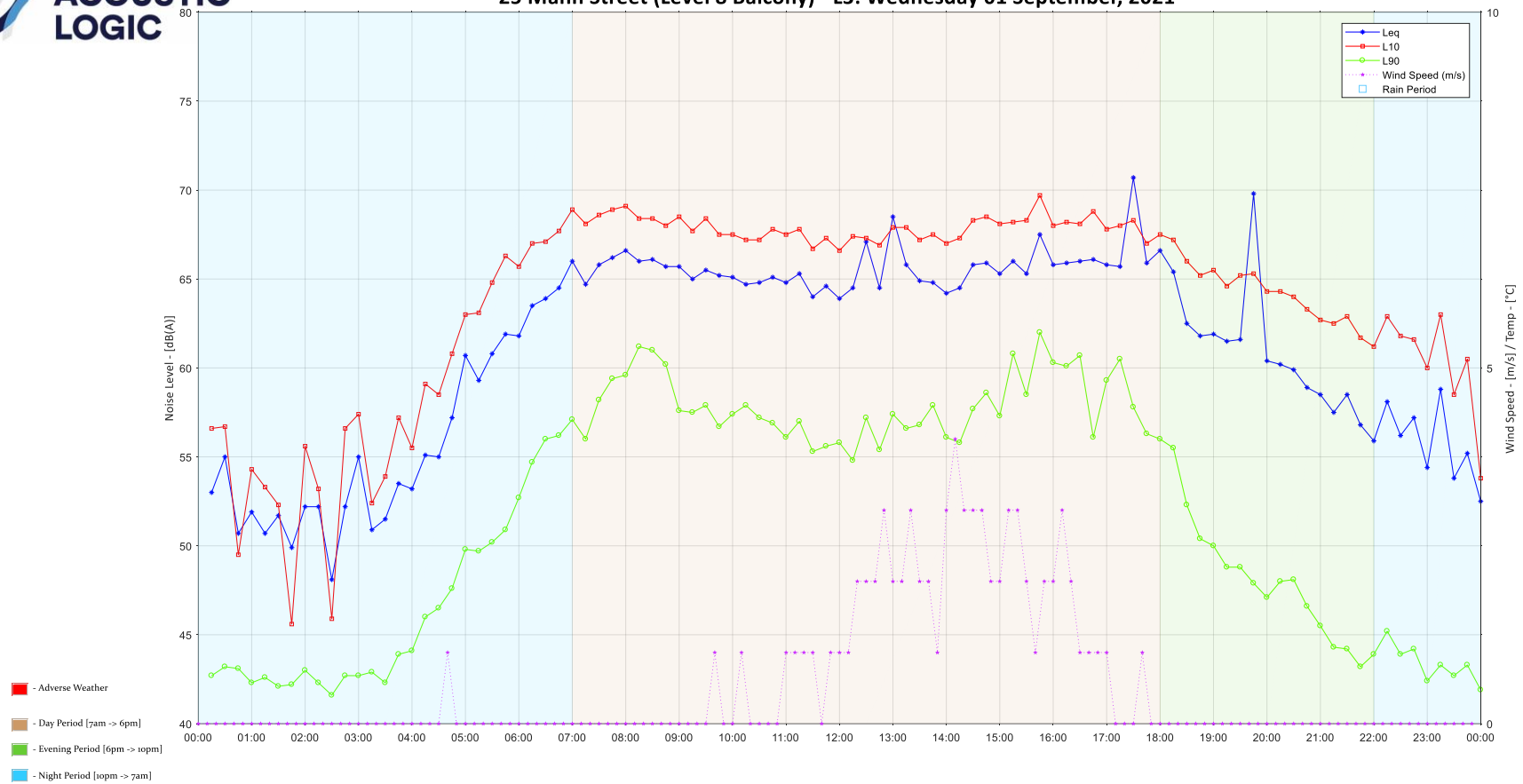
25 Mann Street (Level 8 Balcony) - L3: Monday 30 August, 2021



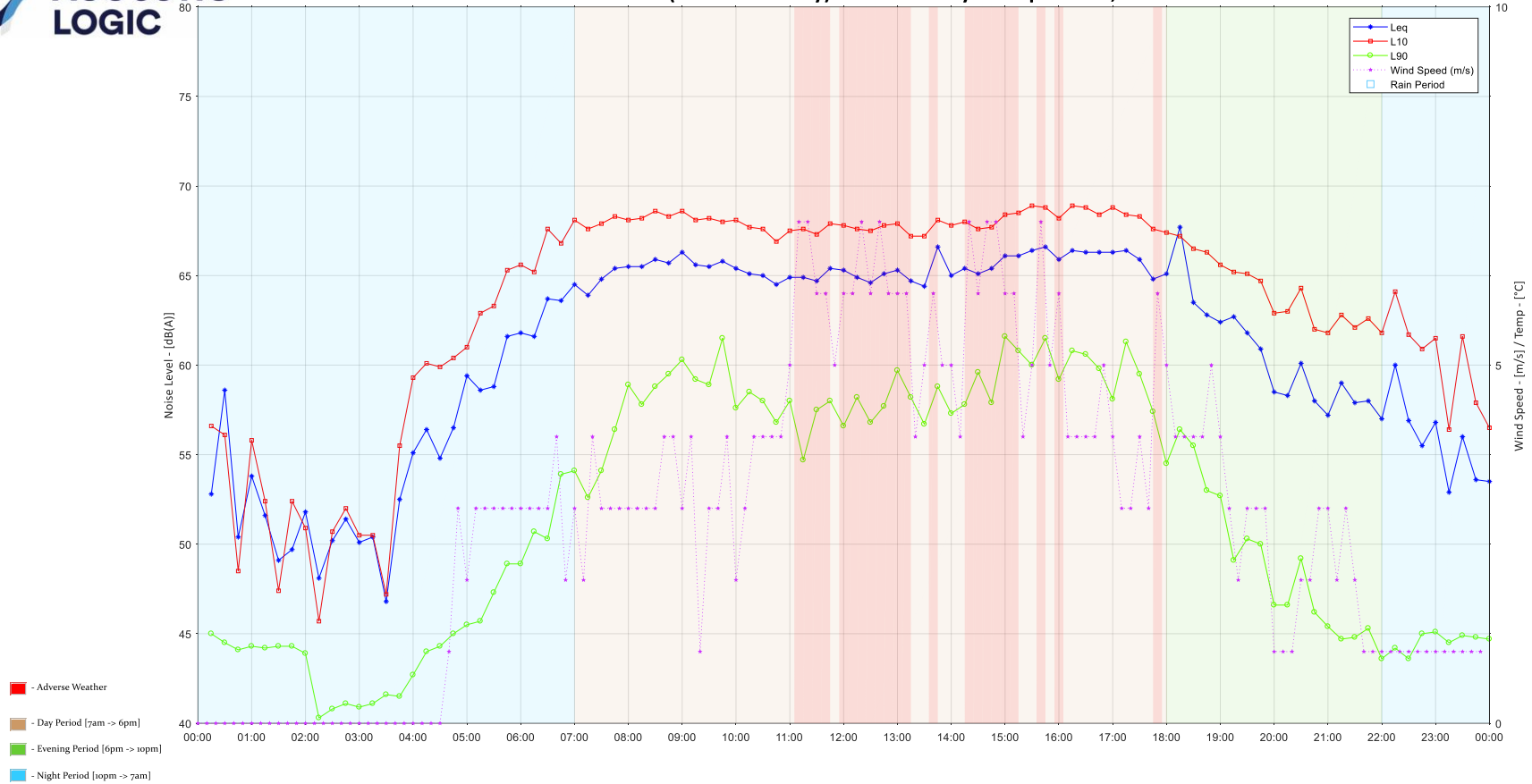
25 Mann Street (Level 8 Balcony) - L3: Tuesday 31 August, 2021



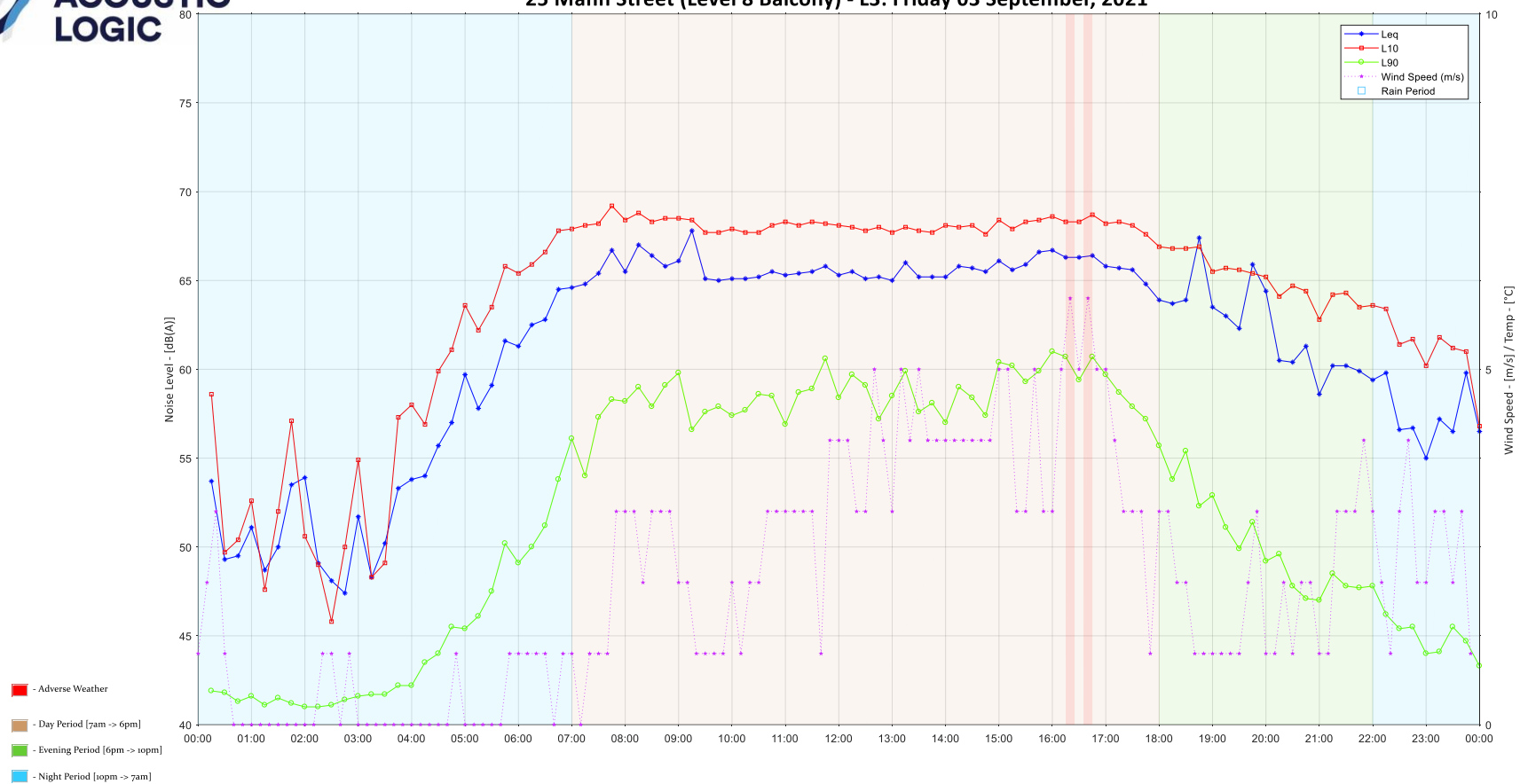
25 Mann Street (Level 8 Balcony) - L3: Wednesday 01 September, 2021



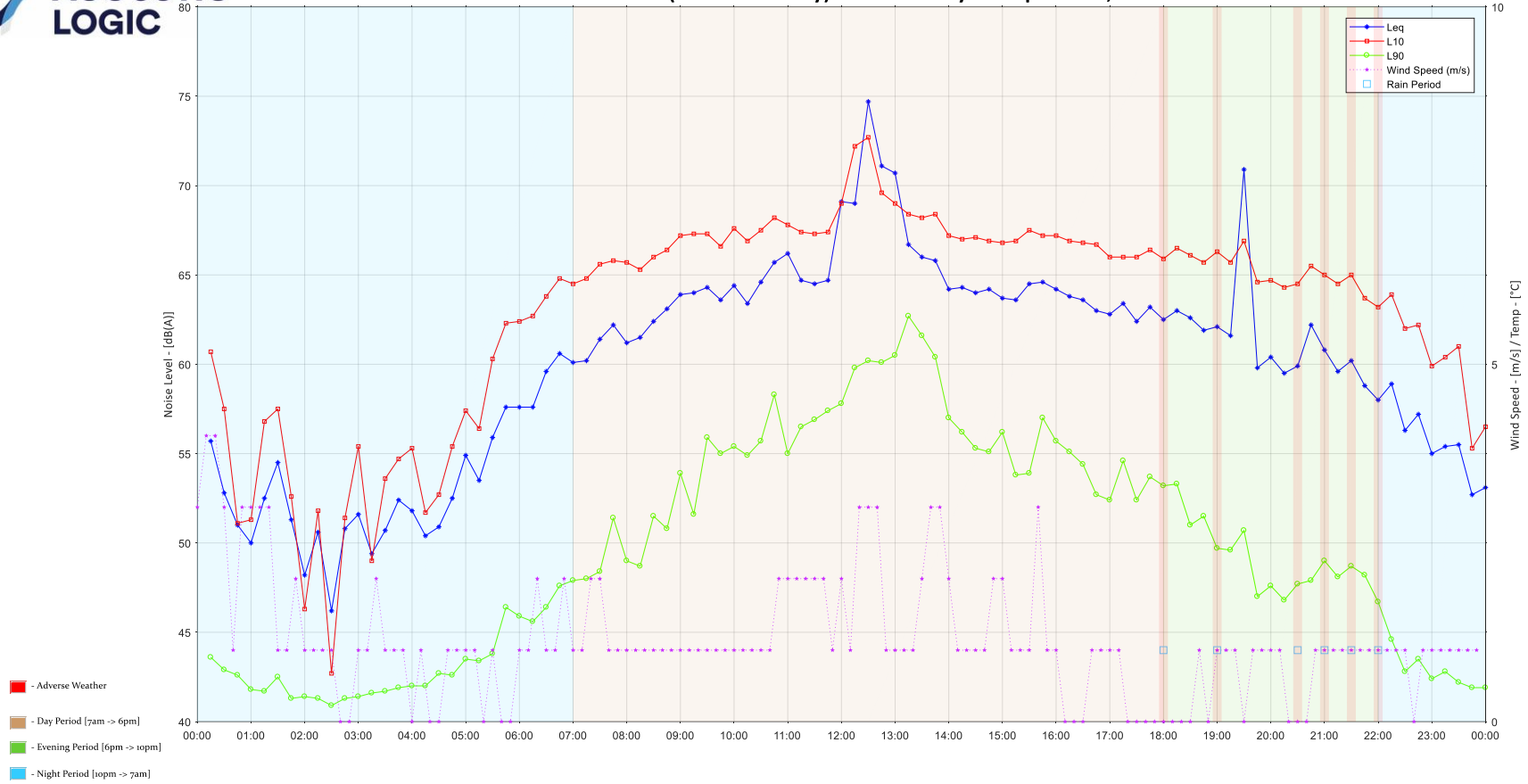
25 Mann Street (Level 8 Balcony) - L3: Thursday 02 September, 2021



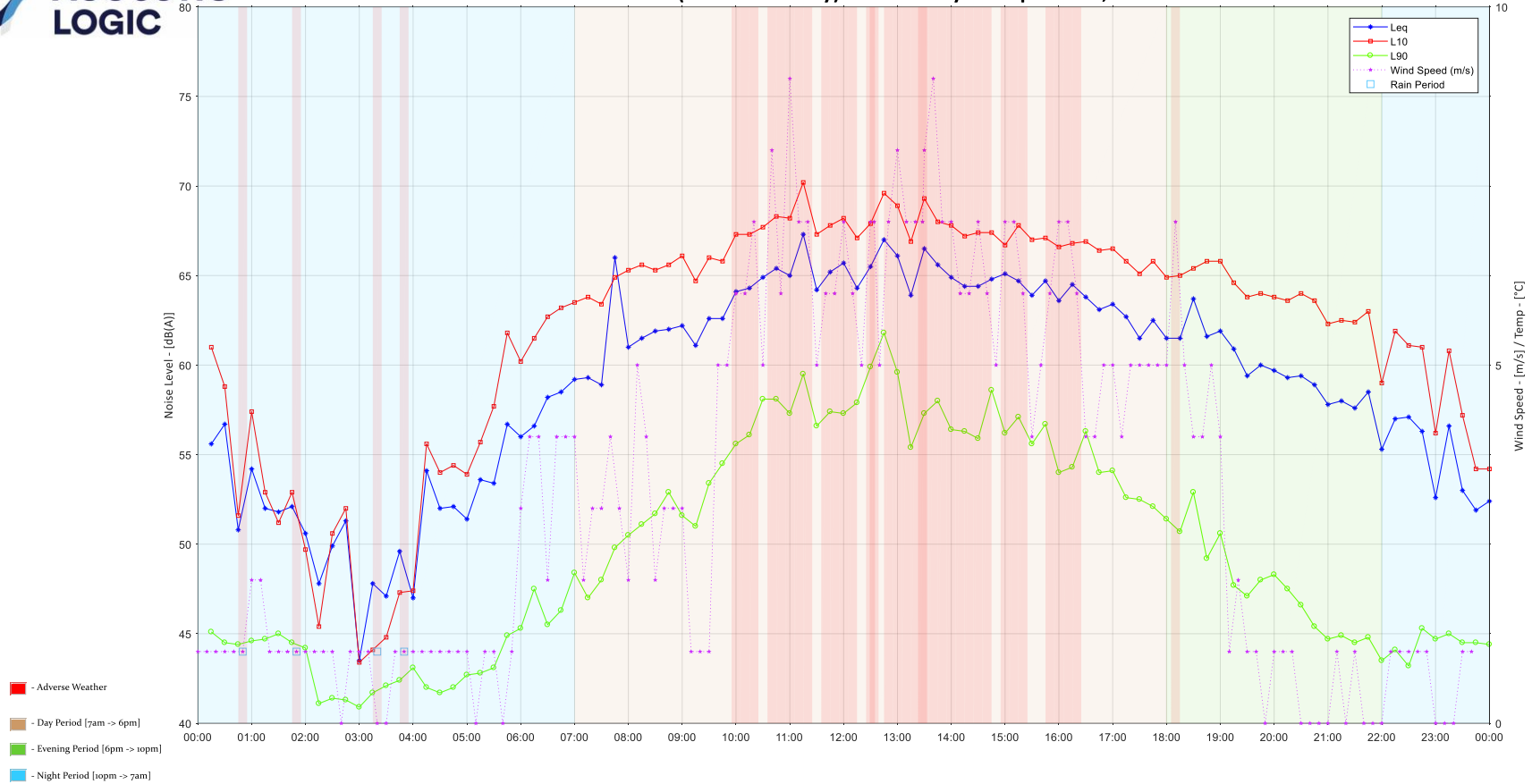
25 Mann Street (Level 8 Balcony) - L3: Friday 03 September, 2021



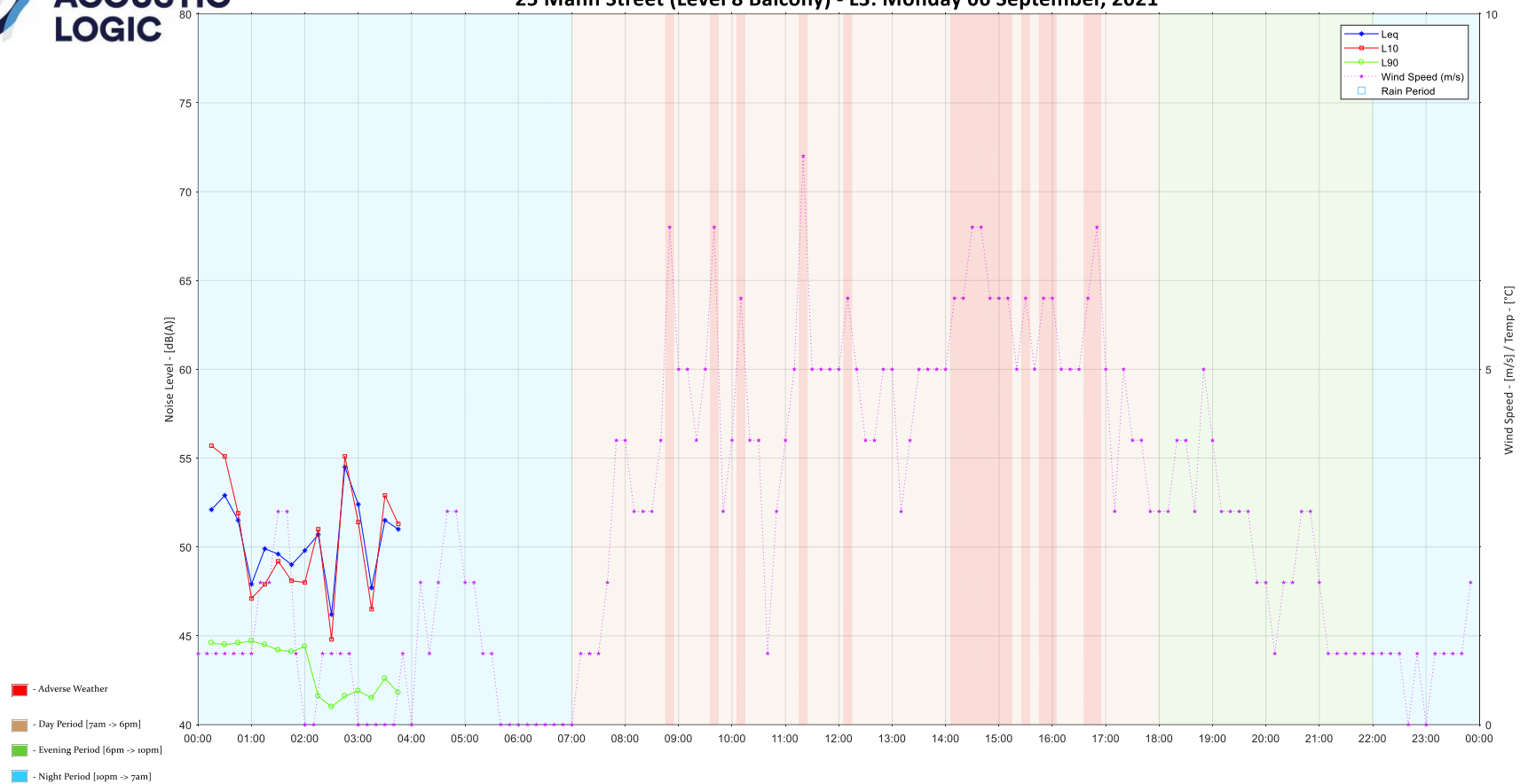
25 Mann Street (Level 8 Balcony) - L3: Saturday 04 September, 2021



25 Mann Street (Level 8 Balcony) - L3: Sunday 05 September, 2021

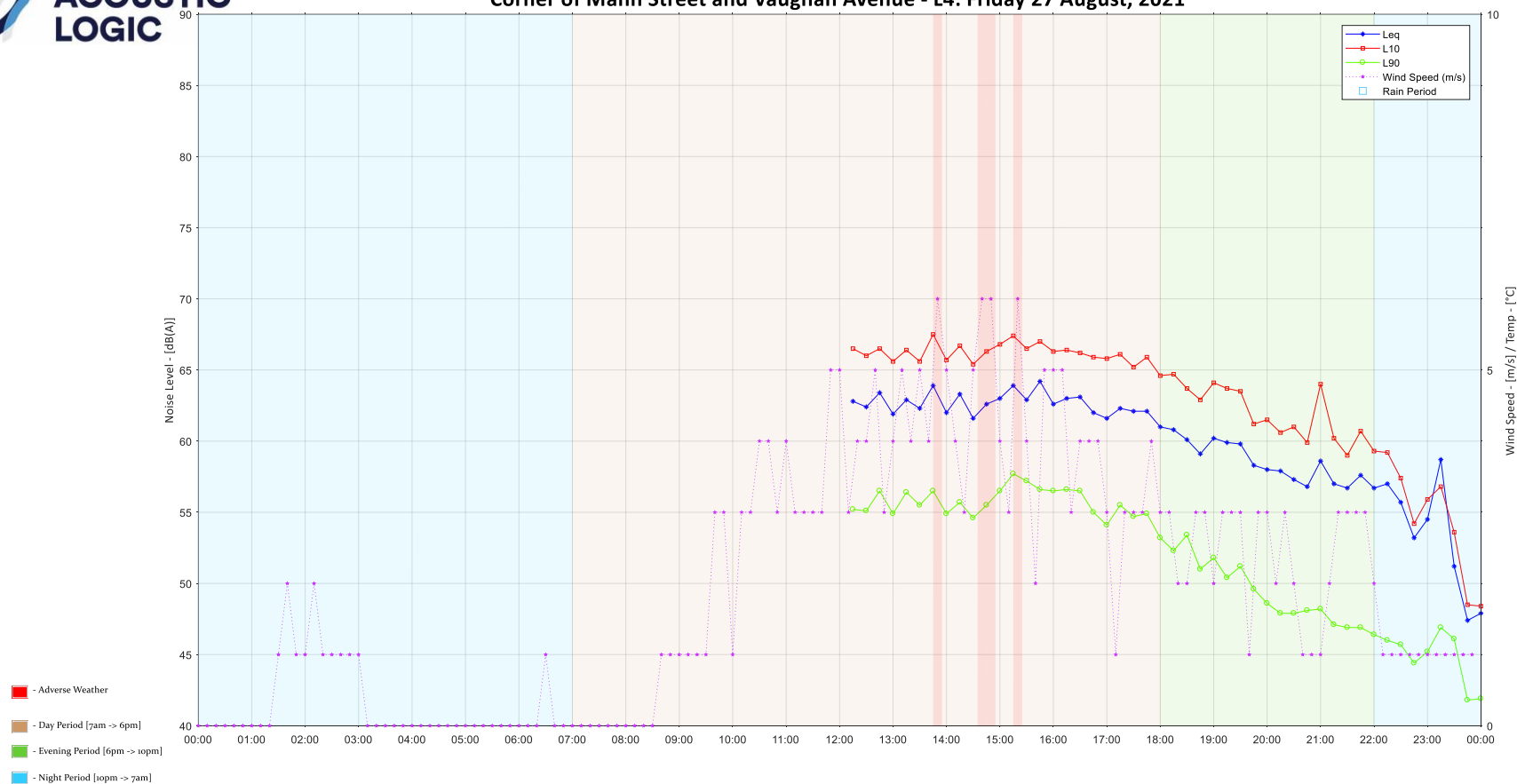


25 Mann Street (Level 8 Balcony) - L3: Monday 06 September, 2021

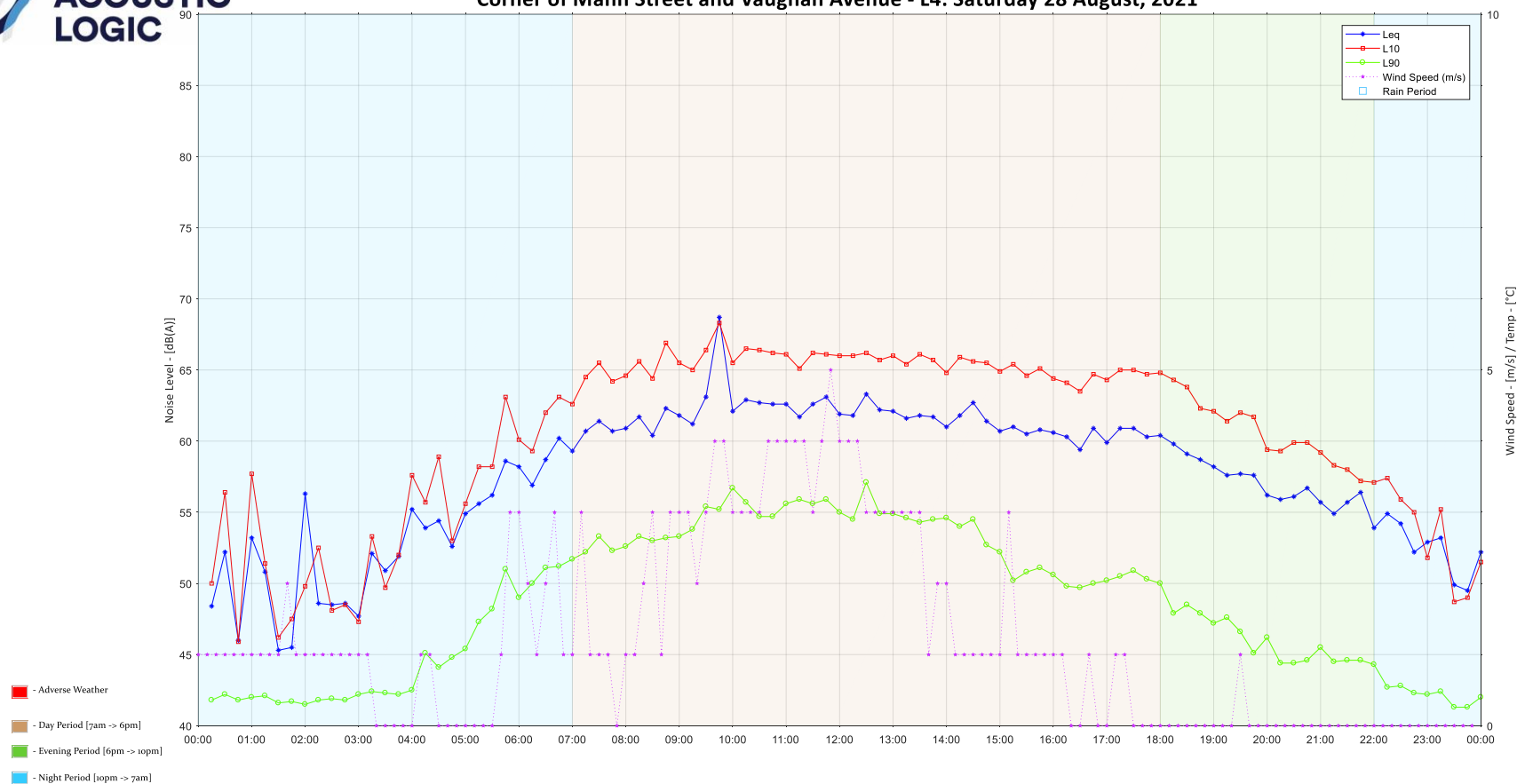


UNATTENDED NOISE MONITORING DATA FOR LOCATION L4

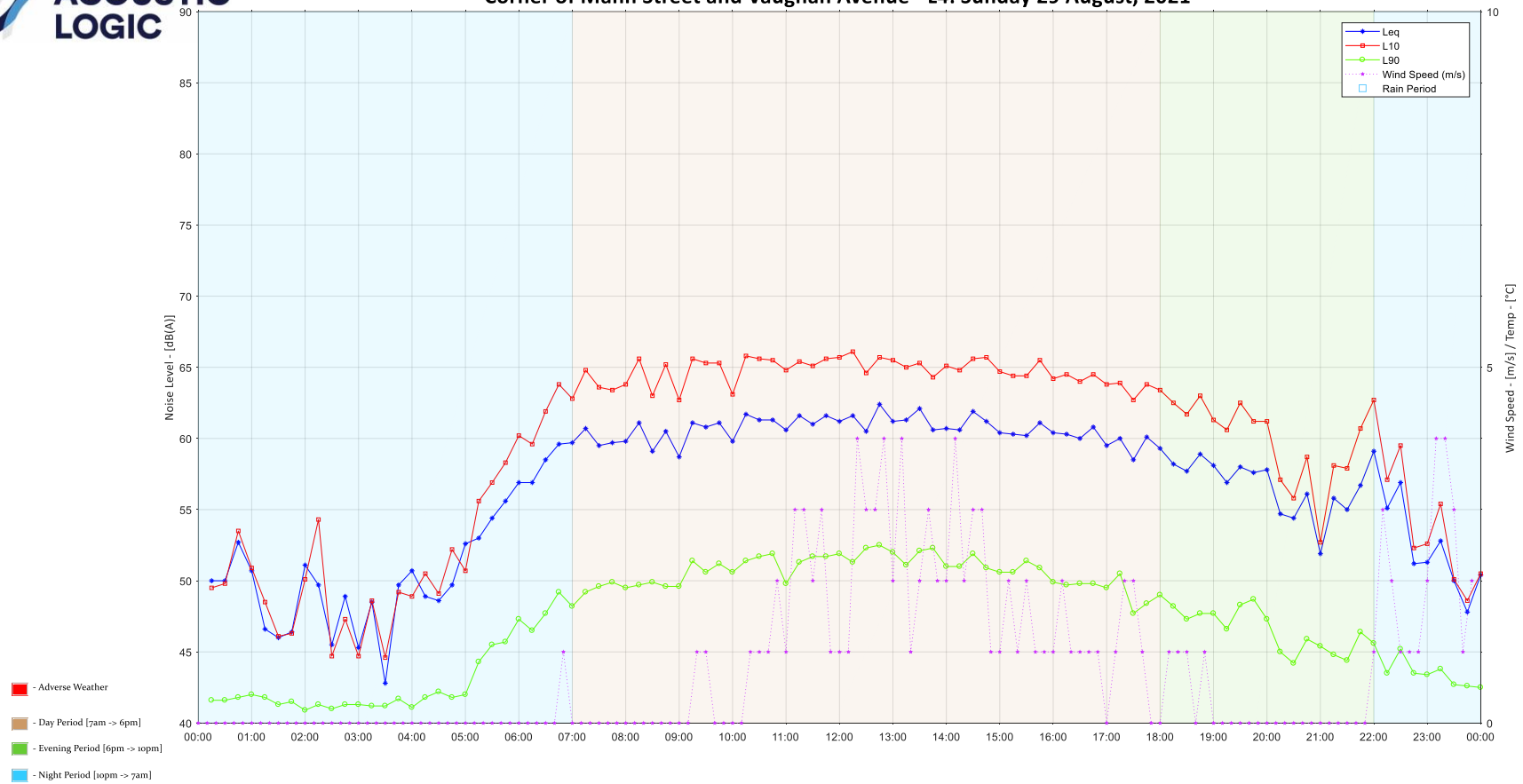
Corner of Mann Street and Vaughan Avenue - L4: Friday 27 August, 2021



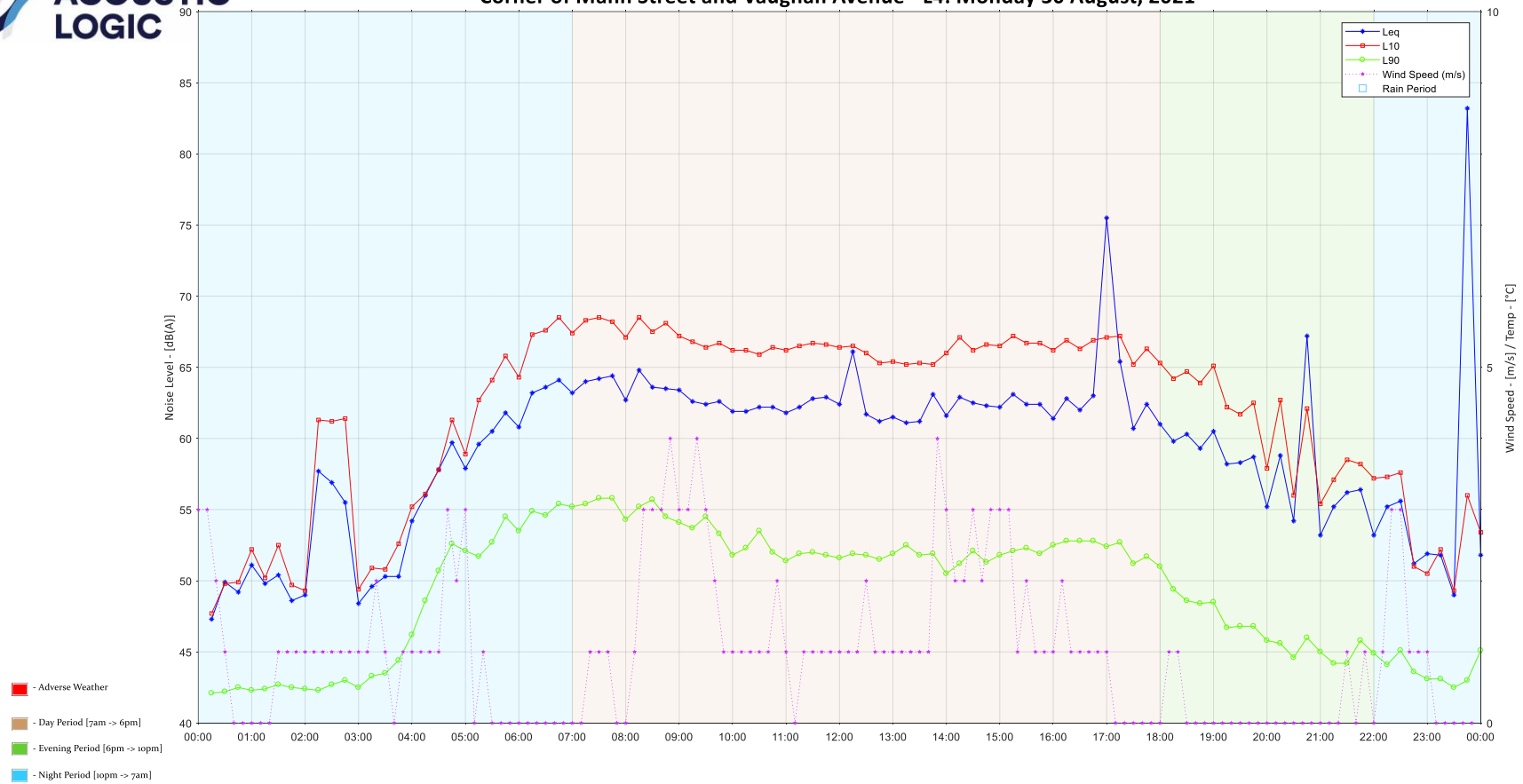
Corner of Mann Street and Vaughan Avenue - L4: Saturday 28 August, 2021



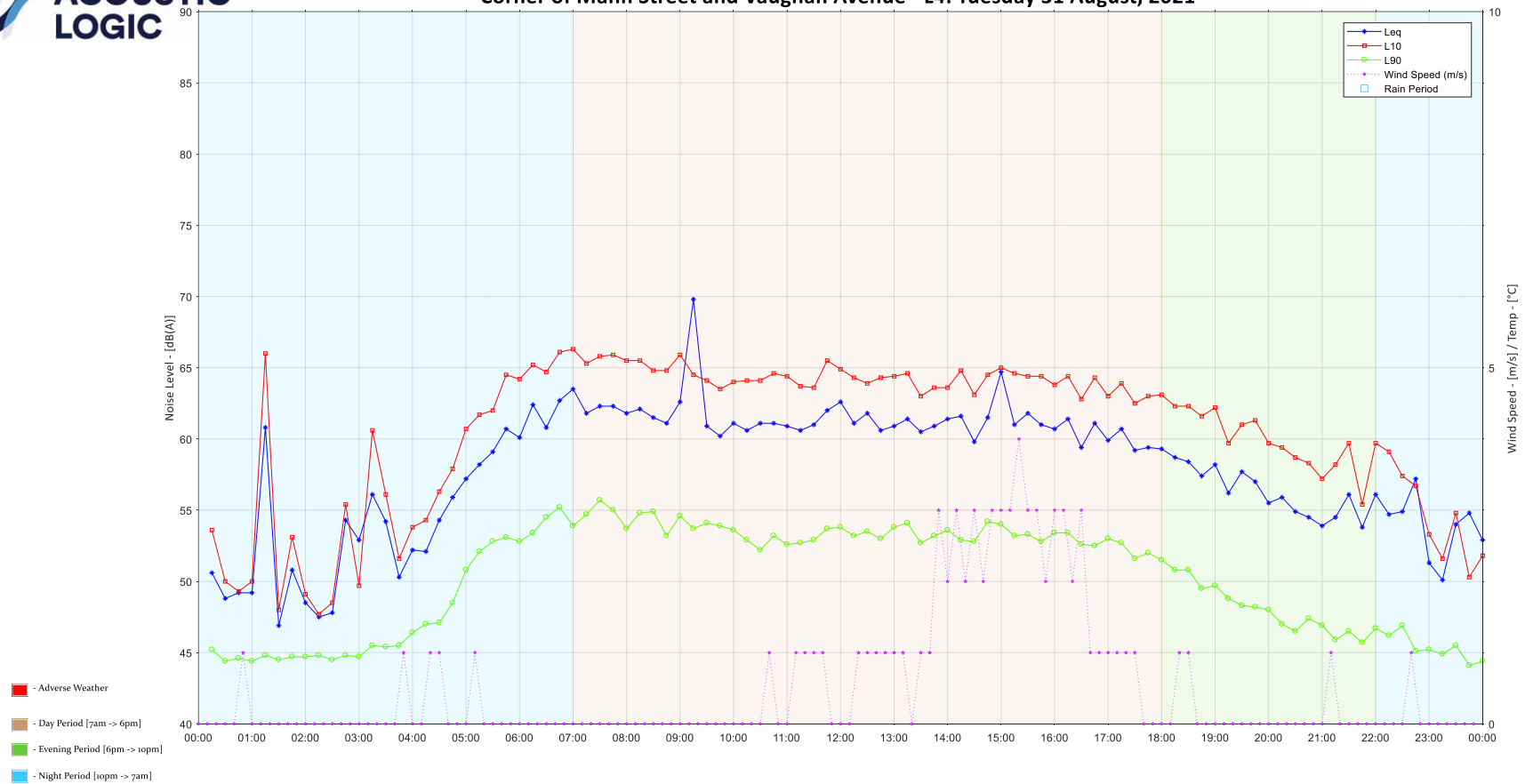
Corner of Mann Street and Vaughan Avenue - L4: Sunday 29 August, 2021



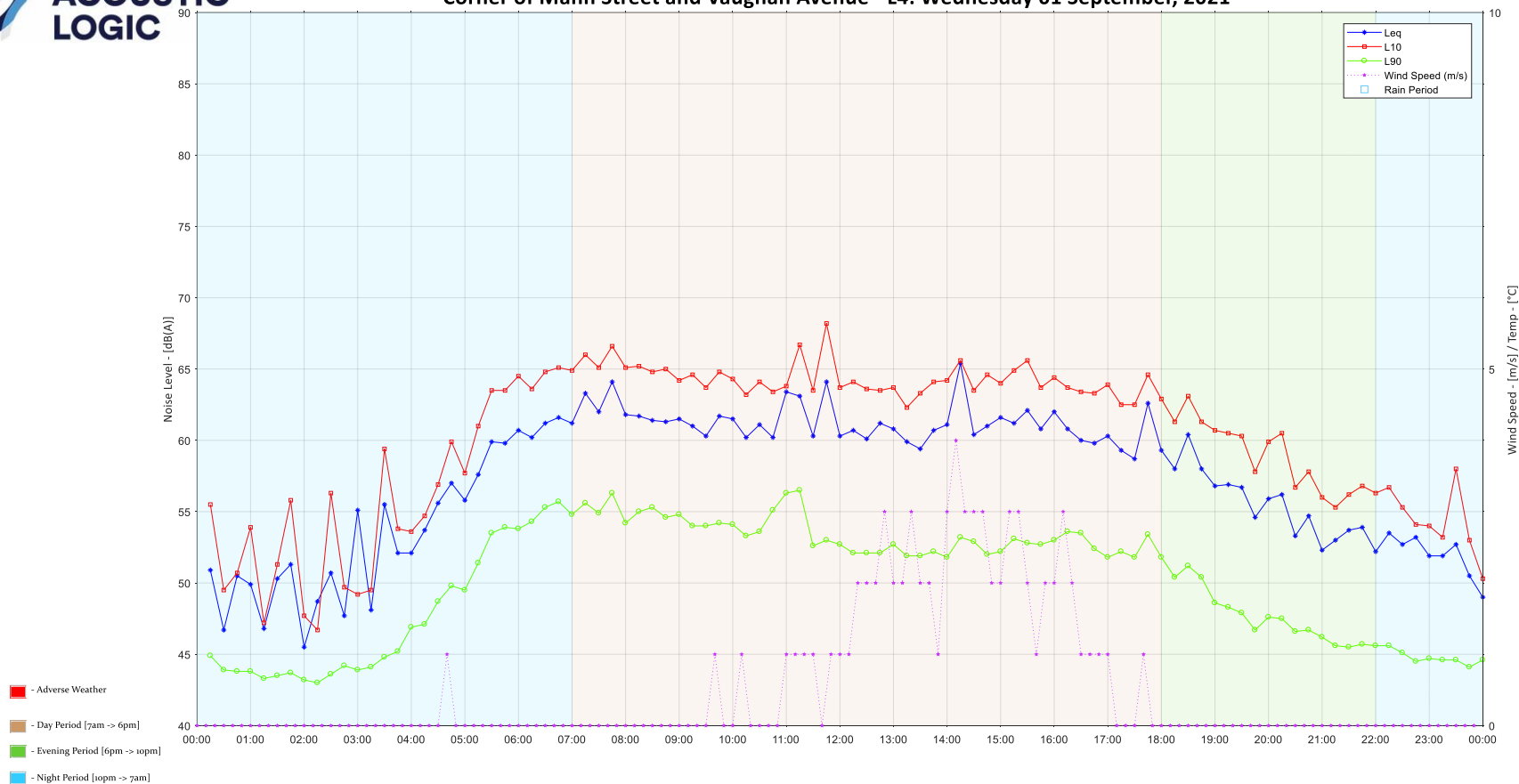
Corner of Mann Street and Vaughan Avenue - L4: Monday 30 August, 2021



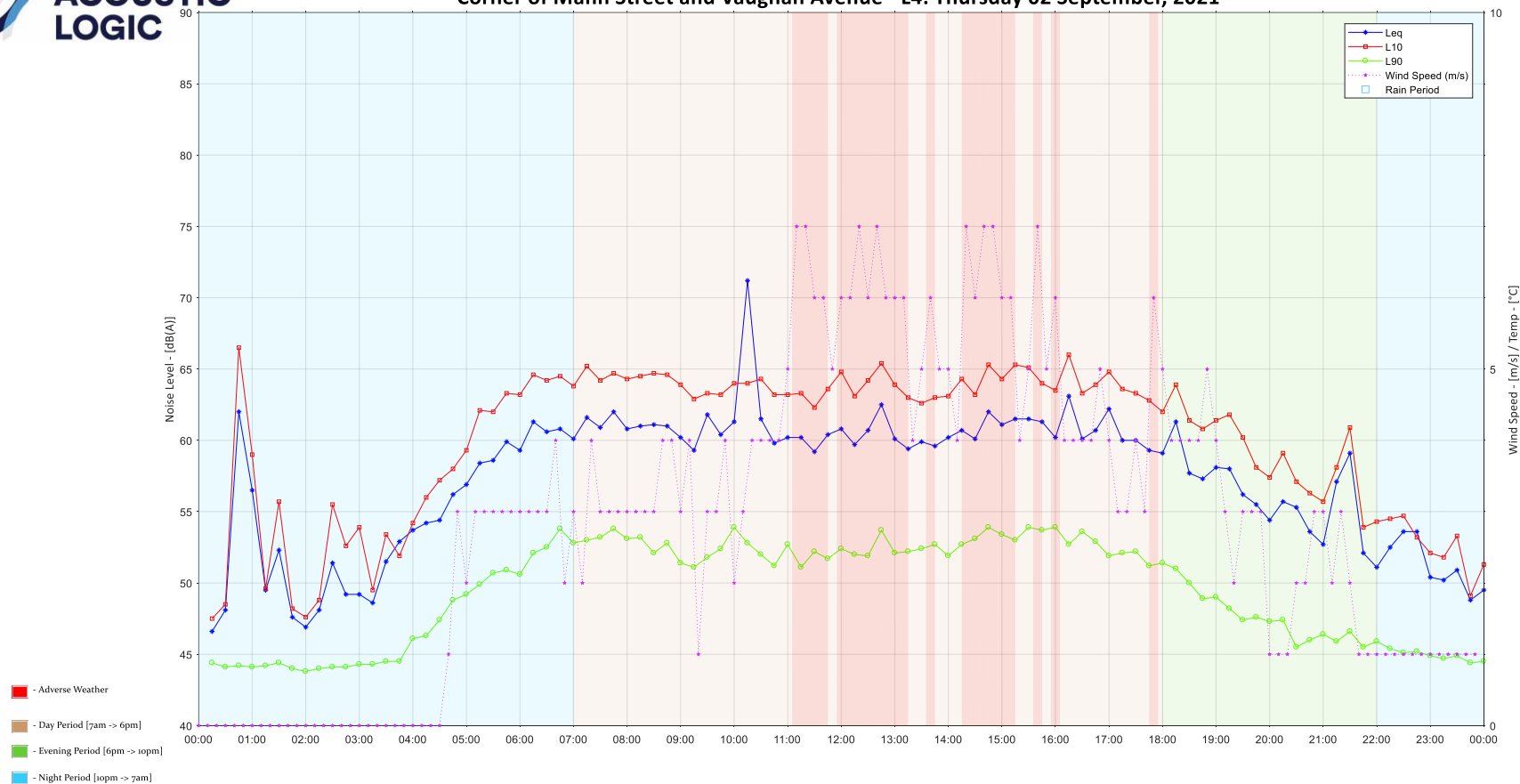
Corner of Mann Street and Vaughan Avenue - L4: Tuesday 31 August, 2021



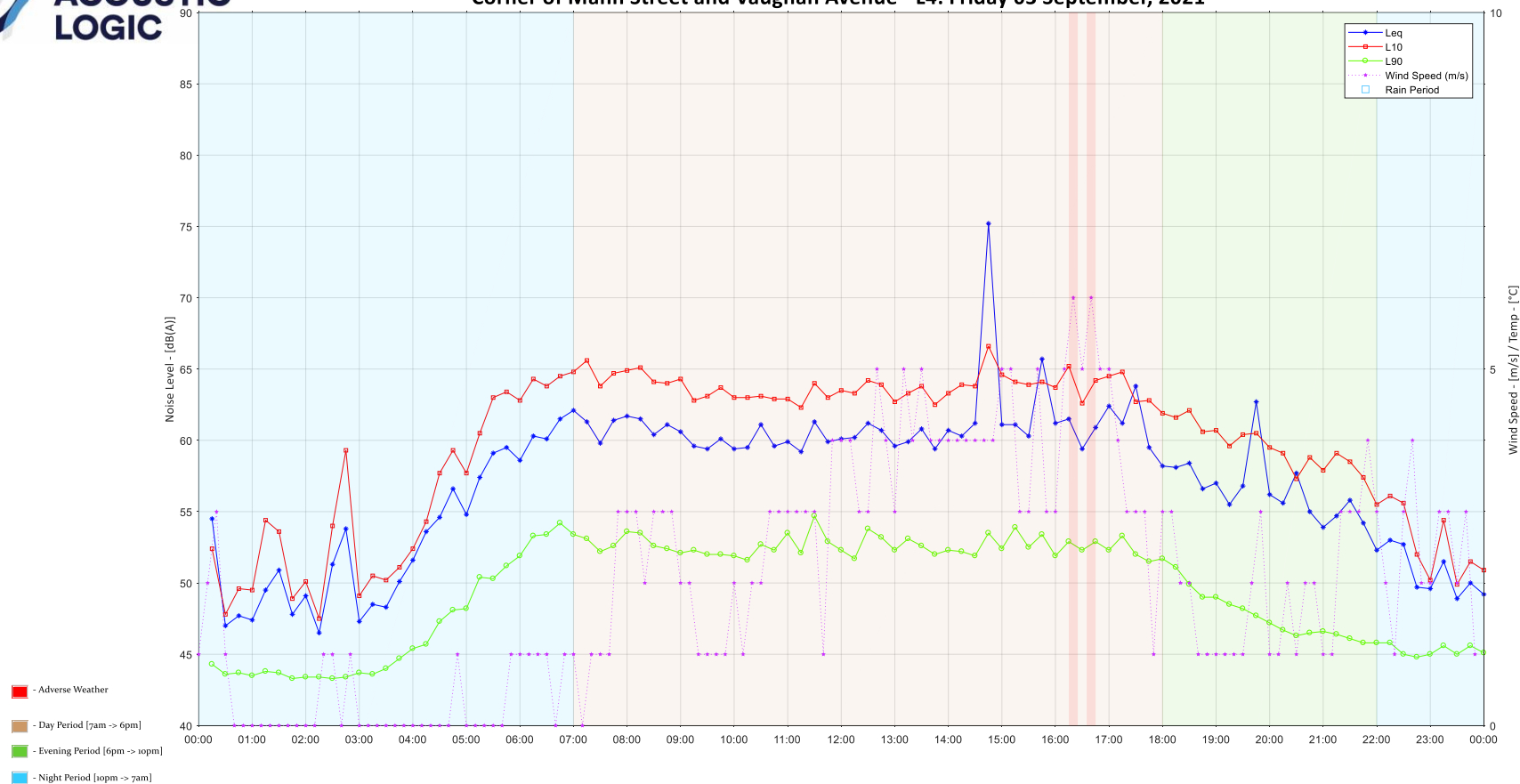
Corner of Mann Street and Vaughan Avenue - L4: Wednesday 01 September, 2021



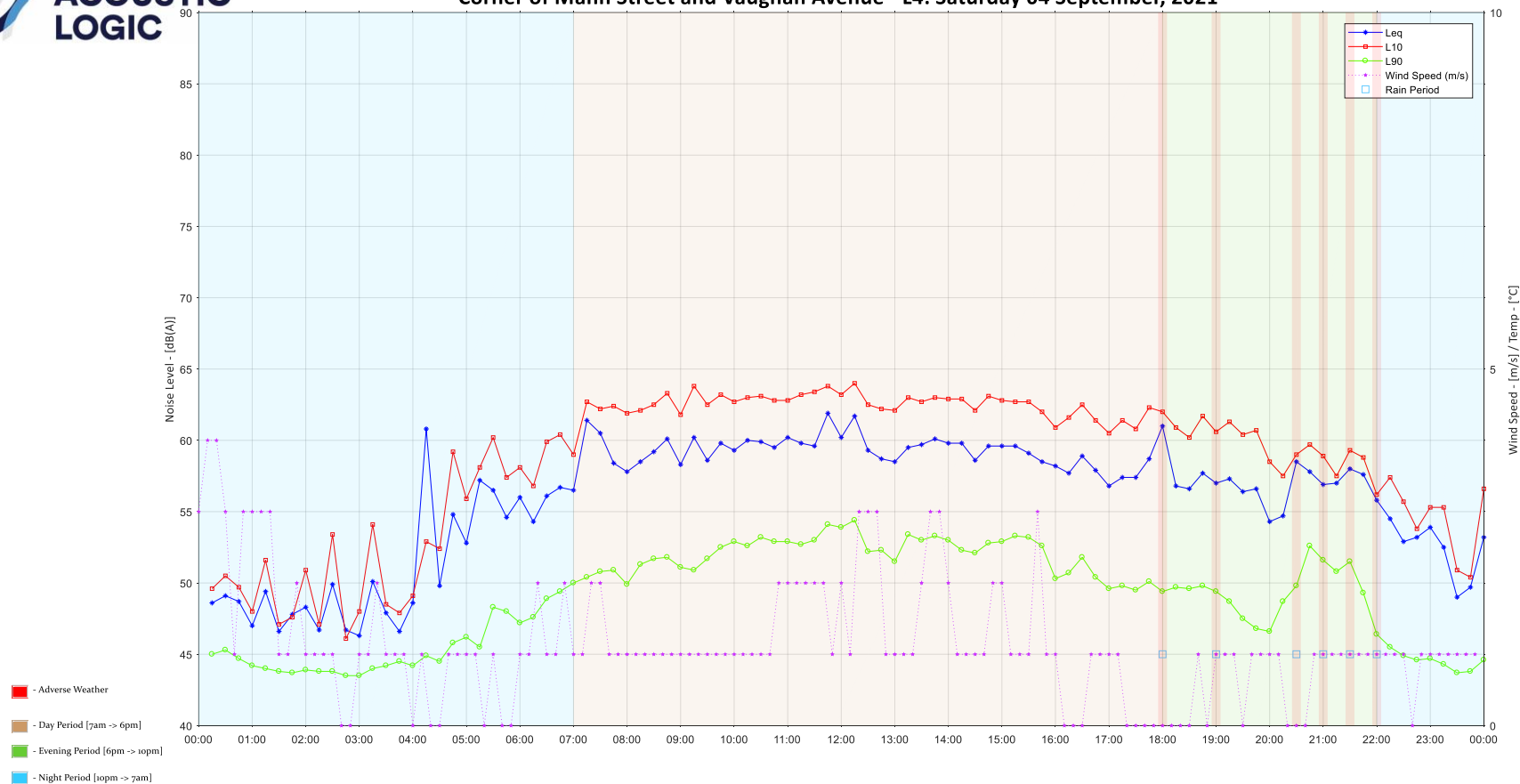
Corner of Mann Street and Vaughan Avenue - L4: Thursday 02 September, 2021



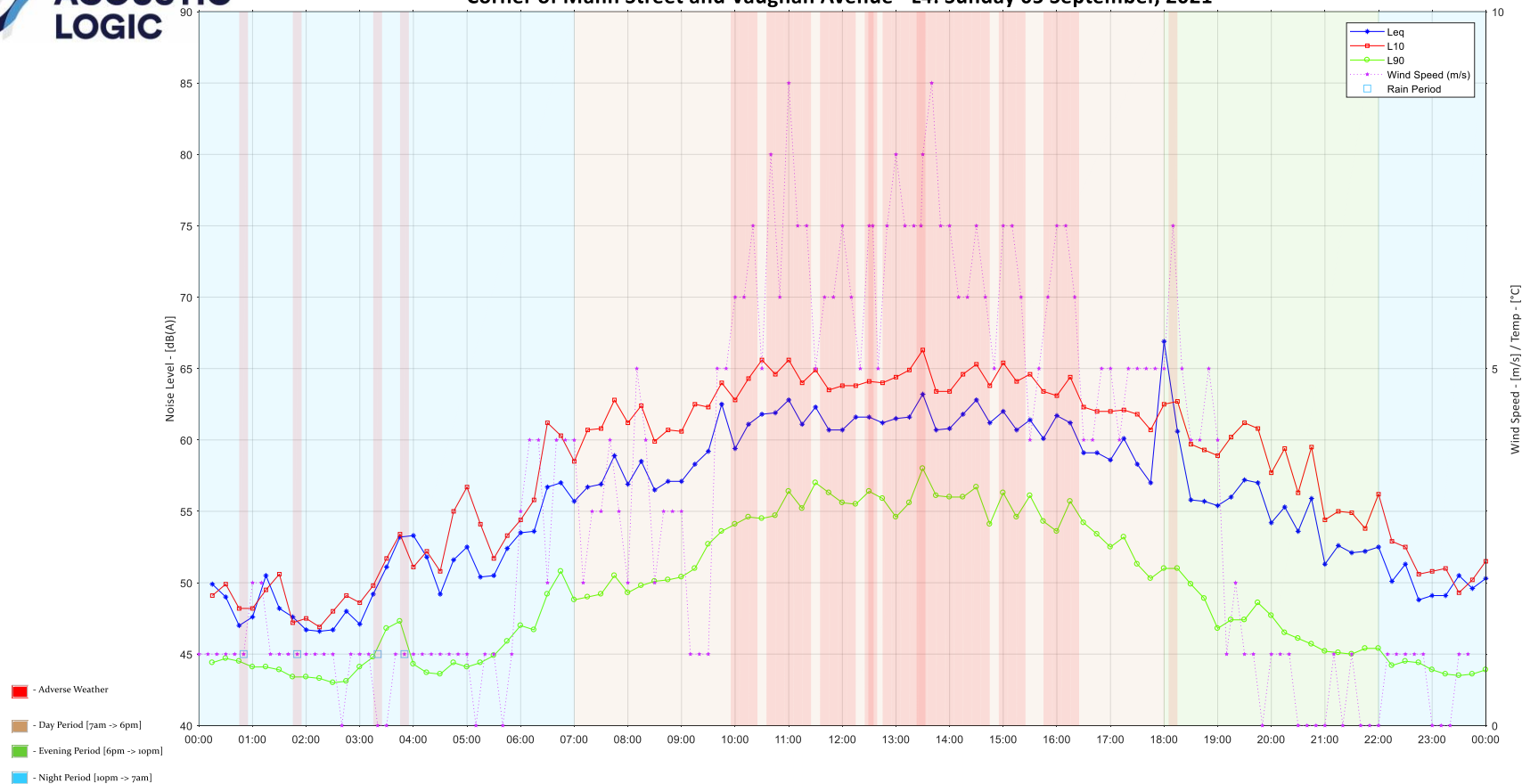
Corner of Mann Street and Vaughan Avenue - L4: Friday 03 September, 2021



Corner of Mann Street and Vaughan Avenue - L4: Saturday 04 September, 2021



Corner of Mann Street and Vaughan Avenue - L4: Sunday 05 September, 2021



Corner of Mann Street and Vaughan Avenue - L4: Monday 06 September, 2021

