

LAHC 2023/355 - Canley Heights

DA Acoustic Assessment

Project ID	20231276.1
Document Title	DA Acoustic Assessment
Attention To	Shed Pty Ltd

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
0	27/09/2024	20231276.1/2709A/R0/RF	RF		
1	18/10/2024	20231276.1/1810A/R1/RF	RF		RF

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1 INTRODUCTION

An acoustic assessment has been prepared on behalf of the applicant for the proposed residential development known as LAHC 2023/355 - Canley Heights, located at 26-28 Stevenage Rd & 53 Welwyn Rd, Canley Heights. The proposed development is described in Section 4 of the report.

The assessment:

- Reviews the impact on occupant amenity from traffic noise on surrounding roadways; and
- Provides noise emission criteria for noise from the site to surrounding sensitive receivers and predicts noise emissions.

Noise and vibration levels at the site have been measured using EPA recommended methodologies. The predicted likely impacts have been assessed using criteria established using the following policies and guidelines:

- EPA Guidelines
- NSW Department of Planning
- Fairfield DCP

The subject site and local context are indicated in Figure 1.

The report has been prepared for the sole purpose of a development application assessment and should not be used or relied on for any other purpose.

2 REFERENCED DOCUMENTS

2.1 BACKGROUND INFORMATION USED

The assessment is based on the following drawings and reports:

- Architectural concept drawings (option F) prepared by Become, dated 31/7/24;
- Traffic Impact Assessment prepared by Amber Traffic & Transportation Direction, Ref Reference: 838 rep 240911 draft, dated Sept 2024 ("**Traffic Assessment**").

2.2 GUIDELINES

The following planning instruments and guidelines have been used in the assessment:

- NSW EPA – 'Noise Policy for Industry' ("**NPfi**") October 2017;
- Fairfield DCP – Citywide - 2013;
- NSW Department of Planning – 'Development Near Rail Corridors and Busy Roads – Interim Guideline' (2008) ("**DNRCBR**").

3 ABBREVIATIONS AND DEFINITIONS

The following Abbreviations and definitions are used in this noise impact assessment.

dB	Decibels - unit for the measurement of sound
dB(A)	A-weighted decibels. Unit of measurement for broadband sound with the A-frequency weighting applied to approximate human loudness perception to sounds of different pitch.
L_{eq}	Energy, time averaged sound level
L_{max}	Maximum sound pressure level, fast response
L₉₀	Sound level exceeded for 90% of the measurement period
R_w	Frequency weighted sound reduction index.
NRC	Average absorption co-efficient for the octave bands with centre frequencies of 250Hz to 2 kHz inclusive.
Day*	For noise emissions assessment - the period from 7 am to 6 pm (Monday to Saturday) and 8 am to 6 pm(Sundays and public holidays). For transportation noise - the period from 7 am to 10 pm
Evening*	Refers to the period from 6 pm to 10 pm.
Night*	The period from 10 pm to 7 am (Monday to Saturday), and 10 pm to 8 am(Sundays and public holidays). For transportation noise - the period from 10 pm to 7am
Project Trigger Level	Target receiver noise levels for a particular noise-generating facility.
Assessment Background Level (ABL)	A-weighted background noise level representative of a single period. (Calculated in accordance with NPfI unless noted otherwise)
Rating Background Level (RBL)	The overall, single-figure A-weighted background level representing each assessment period (day/evening/night) over the whole monitoring period. (Calculated in accordance with NPfI unless noted otherwise)

* Unless nominated otherwise.

4 SITE AND PROPOSAL DESCRIPTION

4.1 DESCRIPTION OF THE PROPOSAL

The project site is a senior's living development located at 26-28 Stevenage Rd & 53 Welwyn Rd, Canley Heights and consists of:

- 13 apartments comprising:
 - 7 x 1 bedroom apartments
 - 6 x 2 bedroom apartments
- 6 on grade parking spaces
- Communal open space

4.2 SENSITIVE RECEIVERS

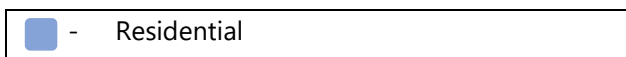
The following table lists the nearest/potentially most impacted sensitive receivers surrounding the site. An aerial photo of the site indicating nearby noise sensitive receivers and measurement locations is presented in Figure 1.

Table 1 – Sensitive Receivers

Receiver (Refer Figure 1)	Receiver Type	Comment
R1	Residential	Single storey residential dwellings located north of the project site across Welwyn Road
R2	Residential	Single storey residential dwellings located east of the project site across Stevenage Road
R3	Residential	Single storey residential dwellings located immediately south of the project site
R4	Residential	Single storey residential dwellings located immediately west of the project site



Figure 1 – Site Plan Showing Local Context



5 TRAFFIC NOISE INTRUSION ASSESSMENT

5.1 ASSESSMENT CRITERIA

5.1.1 Fairfield DCP – Citywide - 2013

The Fairfield DCP – Citywide – 2013 contains no specific numerical controls for noise intrusion.

5.1.2 Development Near Rail Corridors and Busy Roads – Interim Guideline

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. This guideline will be used to assess traffic noise impacts in lieu of any specific applicable guidelines.

5.1.2.1 Screening Tests

DNRCBR provides screening tests that can be used to indicate whether the development site is likely to be adversely impacted by road noise. Standard building constructions will achieve compliance with the levels recommended in DNRCBR if the screening tests indicate the site is not impacted by noise.

Road Noise Screening Tests

Figures 3.4a & 3.4b in the guideline provide screening tests for road traffic noise depending on the traffic speed zone.

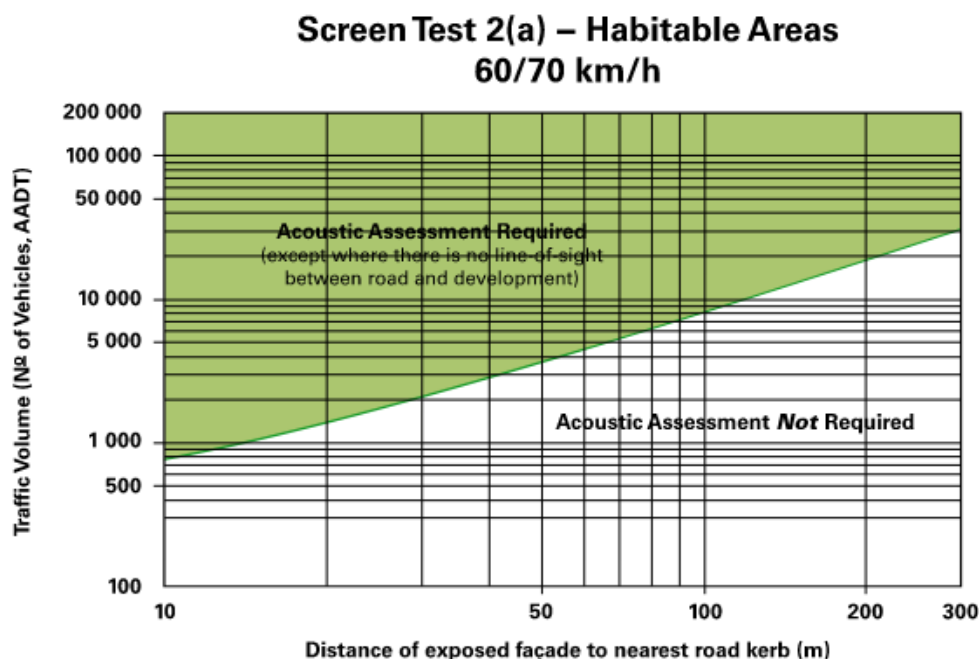


Figure 3.4(a): Screen tests for habitable areas of multiple dwellings (noting that any exposed façade is direct line-of-sight)

Figure 2 – DNRCBR's Screening Test Near Busy Roads

Screening Test Assessment

Assessment using the relevant screening tests indicates that the site is not adversely impacted by noise, and mitigation is not required.

6 SITE OPERATIONAL NOISE EMISSIONS ASSESSMENT

6.1 ENVIRONMENTAL NOISE AND VIBRATION SOURCES

The following significant noise sources have been identified as requiring assessment:

- Air conditioning and ventilation plant.
- Vehicle movements on site.

6.2 NOISE ASSESSMENT CRITERIA FOR ON-SITE NOISE SOURCES

Criteria to assess noise emissions from the operation of the proposed development have been developed using the NPfI. This policy was primarily developed to assess noise impacts from industrial development, but can also be adapted to assess other types of development such as commercial buildings and air conditioning plant.

For each receiver type:

- Receivers have been grouped into “catchments”. These are receivers that have been assessed as having similar characteristics (receiver type and ambient noise level). These are shown in Figure 1
- For each catchment, representative noise assessment trigger levels have been determined based on NPfI guidelines. The trigger levels have been adopted in this assessment as criteria. These will be used to indicate whether additional mitigation is needed to manage noise emissions.
- For each catchment, noise emissions have been assessed to the most impacted receiver. This means that impacts at all other receivers within that catchment will be less. Compliance at the most impacted receiver will therefore also result in compliance at all other receivers within the catchment.

For residential receivers, three criteria are assessed:

- Intrusive assessment– that is, how audible is the emitted noise compared to ambient, background noise). Criteria are determined relative to the measured rating background noise level.
- Amenity assessment – that is, how loud is the absolute level of industrial noise, including cumulative noise from other industrial sources. The NPfI nominates appropriate amenity noise levels depending on the receiver type and prevailing noise environment/zoning.
- Maximum Noise assessment – will high level, short term noise events cause adversely impact sleep at night? Trigger levels are determined relative to the measured night rating background, and assessed outside rooms where sleep is likely to occur.

For residential receivers, noise emissions are assessed against the trigger levels to determine the likely extent of impacts. The lower of the relevant intrusiveness and amenity trigger levels are adopted. Noise emissions lower than the trigger levels indicate there is no adverse impact. A maximum noise level assessment is separately undertaken if night time emissions occur.

For other receiver types, only an “amenity” assessment is required.

Appendix A summarises the results of ambient noise monitoring. Appendix B provides the derivation of NPfI trigger levels for each of the receivers. These are summarised in the following table.

Table 2 – Project Noise Trigger Levels

Location/Receiver Type	Time	RBL dB(A) L_{90}	Trigger Noise Level (dB(A) $L_{eq,15min}$)		
			Intrusiveness	Amenity	Max Event
R1/R2/R3/R4 - Residential	Day	35	40	58	n/a
	Evening	35	40	48	n/a
	Night	31	36	43	40 L_{eq} 52 L_{max}

6.3 RECEIVER NOISE PREDICTIONS

Operational noise levels have been predicted at each of the identified most affected receivers by:

- Determining noise emission levels for each significant noise source.
- Correcting for any attenuation between the noise source including enclosures, distance, directivity and barrier effects, where present.
- Adding the contribution from multiple noise sources at each receiver to determine the L_{eq} noise level.

The following assumptions have been made with respect to the noise emission predictions from vehicle movements on site:

- Vehicle sound power level of 84 dB(A) L_{eq} based on measurement data held by this office.
- 5 vehicle movements in a weekday evening peak hour period based on information provided in the Traffic Assessment.
- That the complying mitigations detailed in Section 7 have been adopted.

It is noted that predictions have been made to the most impacted receivers. Compliance at these receivers will result in compliance at all other receivers located further from the site.

Table 3 – Predicted Noise Emissions from Vehicle Movements on Site

Receiver	Time of Day	Predicted Noise Level, dB(A) $L_{eq,15min}$	Project Noise Trigger Level, dB(A) $L_{eq,15min}$	Comment
R3	Evening Peak Hour Period	28	40	Complies with PNTL
R4		31		

6.4 MECHANICAL PLANT NOISE (IN PRINCIPLE)

Plant selections have not been determined at this stage. Detailed acoustic review should be undertaken at CC stage to determine acoustic treatments to control noise emissions to satisfactory levels. Satisfactory levels will be achievable through appropriate plant selection and location and, if necessary, standard acoustic treatments such as duct lining, acoustic silencers and enclosures.

Noise emissions from all mechanical services plant to the closest residential receiver should comply with the noise emission criteria detailed in Table 2.

7 SUMMARY OF COMPLYING MITIGATION

Initial modelling indicated that additional mitigation is needed to achieve compliance with the trigger levels. This additional mitigation is described below, along with other measures to minimise impacts.

7.1 PHYSICAL CONTROLS

- 1.8m high boundary fence to be constructed to the south and west boundaries.
- Fences shall be imperforated and construction from one or more of the following: Colorbond steel fencing, min 12mm thick external grade plywood, min 6mm FC sheet, 3mm thick acrylic plastic or any other imperforated material with a surface density $> 3.5 \text{ kg/m}^2$ or a sound transmission loss $> R_w 18$.

7.2 ADDITIONAL ASSESSMENT

- Noise emissions from all mechanical services plant to the closest residential receiver should comply with the noise emission criteria detailed in Table 2. A detailed assessment should be conducted once plant selections are finalised.

8 CONCLUSION

An assessment of noise impacts associated with the proposed residential development known as LAHC 2023/355 - Canley Heights, located at 26-28 Stevenage Rd & 53 Welwyn Rd, Canley Heights has been presented in this report.

- An assessment of traffic noise impacts on the site has been conducted in accordance with the DNRCBR. Screening Test Assessment using the relevant screening tests indicates that the site is not adversely impacted by noise, and mitigation is not required.
- An assessment of operational noise emissions has been undertaken using Noise Policy for Industry guidelines. Site noise emissions from the development have been predicted and assessed against criteria adopted from the trigger levels determined using the Policy.
- It is concluded that with the implementation of the mitigation in Section 7, operational noise emissions from the proposed development will comply with noise criteria established for the site.

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

Yours faithfully,



Acoustic Logic Pty Ltd
Ross Ferraro

A.1 UNATTENDED LONG TERM NOISE MONITORING

A.1.1 Equipment Used

Unattended noise monitoring was conducted using the following equipment:

- Rion NL-42 (Type 2)
- Rion Sound Level calibrator Type NC 74

Monitoring was continuous, with statistical noise levels recorded at 15-minute intervals throughout the monitoring period. Measurements were taken on "A" frequency weighting and fast time response, unless noted otherwise.

All monitoring equipment used retains current calibration - either manufacturers' calibration or NATA certified calibration. The monitors were field calibrated at the beginning and the end of the measurement with no significant drift in calibration noted.

A.1.2 Locations Monitored

The locations monitored are indicated Figure A-1. Photographs of the monitoring locations are provided below:

A.1.3 Weather Affected and Extraneous/Outlying Data

Periods affected by adverse weather conditions (as defined by Fact Sheet B) are indicated on the following data graphs, and have been excluded from the assessment. Weather data was obtained from records provided by the Bureau of Meteorology for the following station:

As the Bureau of Meteorology wind data is typically obtained at an exposed location at 10m above ground level, and the monitoring locations were at approximately 1.5m above ground in more sheltered locations a wind multiplying factor of 0.5 has been applied to the BOM data to estimate the wind speed at the microphone location.

- Bankstown Airport

The following additional periods have been identified as likely to contain significant periods of non-representative data and have been excluded from the assessment:

- 2/10/2024 Day
- 4/10/2024 Night

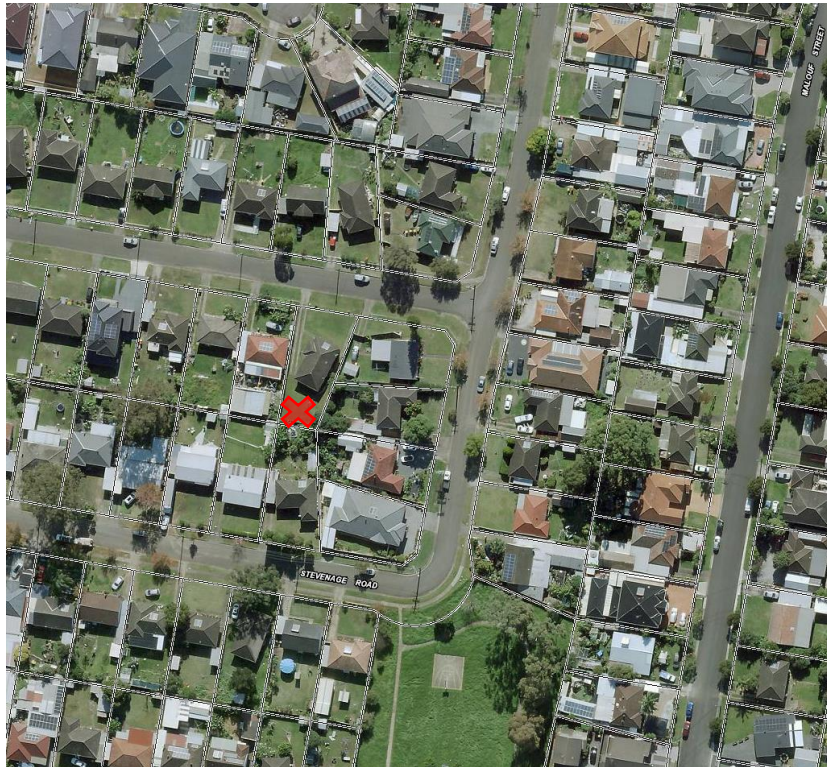


Figure A- 3 – Noise Monitoring Locations

✗ Unattended Monitoring Location

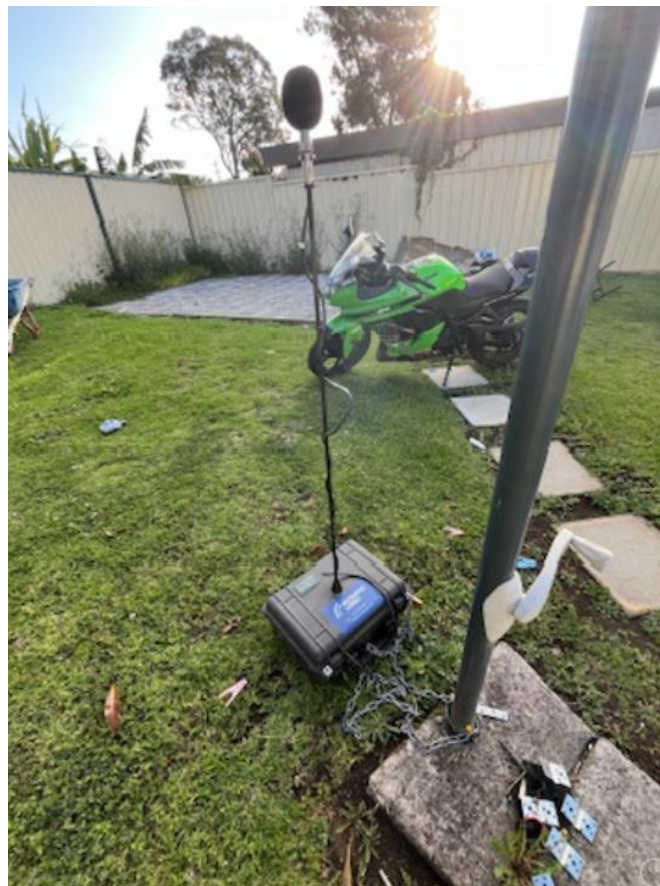


Figure A- 4 – Noise Monitoring Installed on site

A.2 CALCULATION OF REPRESENTATIVE AMBIENT NOISE LEVELS

The assessment and rating background levels have been determined from the unattended, long-term noise monitoring data based on the methodology in the Noise Policy for Industry Fact Sheet B.

A.3 RATING BACKGROUND NOISE LEVELS

The following table summarises the assessment background noise levels (ABL) for each location. Note that where no ABL is indicated, this is because that period was significantly affected by adverse weather or other extraneous noise.

In accordance with the NPfl:

- If the calculated evening rating background noise level is higher than the day level, the day rating background noise level has been adopted for the evening period.
- If the calculated night rating background noise level is higher than the evening level, the evening rating background noise level has been adopted for the evening period.
- If the calculated day rating background noise level was less than 35 dB(A), a "default" background of 35 dB(A) has been adopted.
- If the calculated evening or night rating background noise level was less than 30 dB(A), a "default" background of 30 dB(A) has been adopted.
- Where monitoring was conducted within 3m of a significant sound reflecting surface, 2.5 dB(A) has been subtracted from the calculated rating background to account for an increase in noise from reflections.

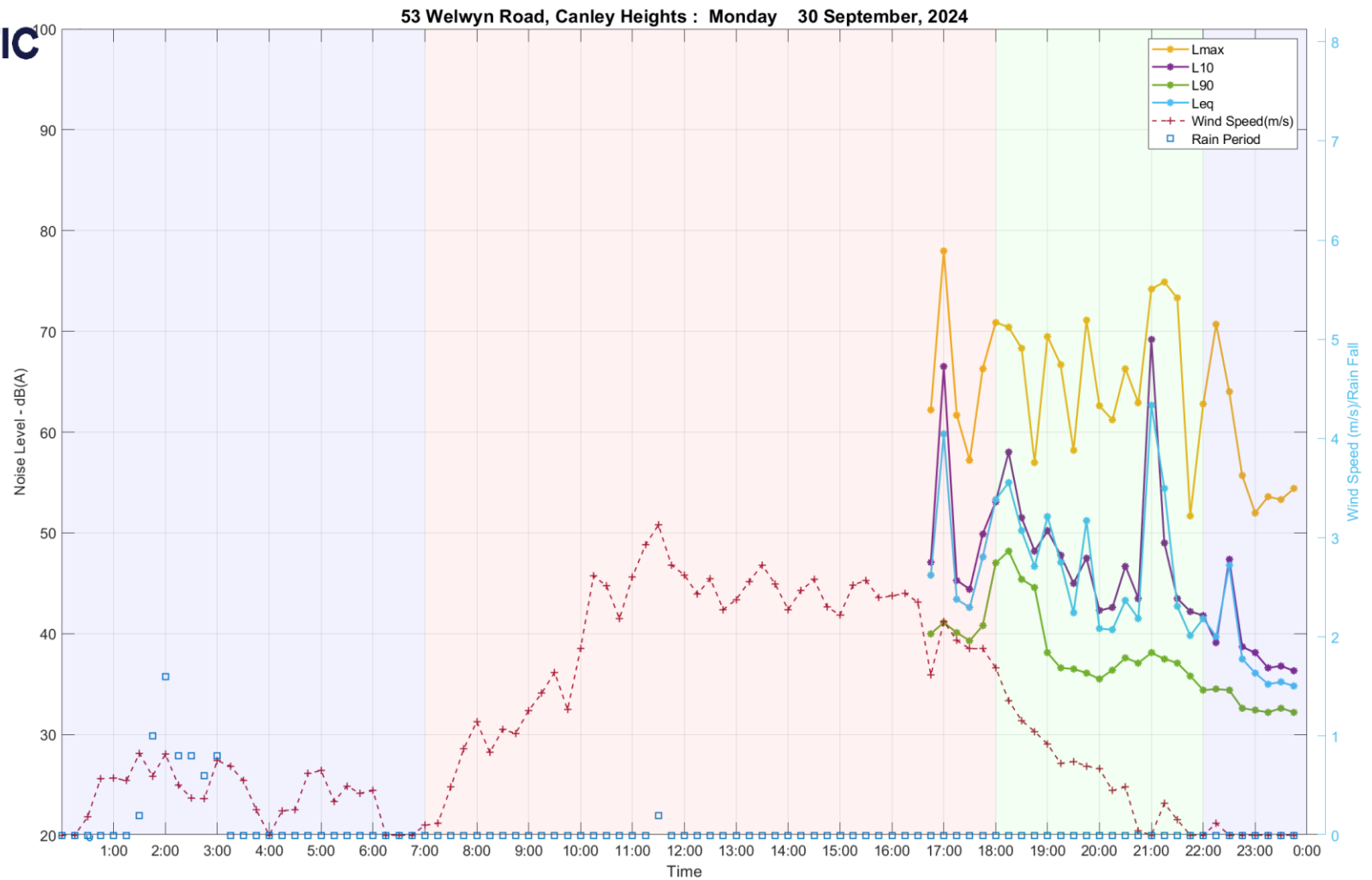
Table 4 –Assessment Background Noise Levels – Location 1

Location	Date	ABL		
		Day	Evening	Night
53 Welwyn Road, Canley Heights	30/09/2024	-	35.8	30.5
	01/10/2024	33.1	33.2	27
	02/10/2024	-	34.3	28.6
	03/10/2024	33.1	39.5	33.8
	04/10/2024	35.2	39.4	-
	05/10/2024	36.9	38.4	32.9
	06/10/2024	35	36.1	31.6
	07/10/2024	35.8	37.6	31.2
	08/10/2024	36.9	32.7	28.6
	09/10/2024	35.9	32.3	29.1
	10/10/2024	35.2	37.1	31.6
	Calculated RBL	35	36	31
	Adopted RBL	35	35	31

A.4 UNATTENDED MONITORING DATA GRAPHS

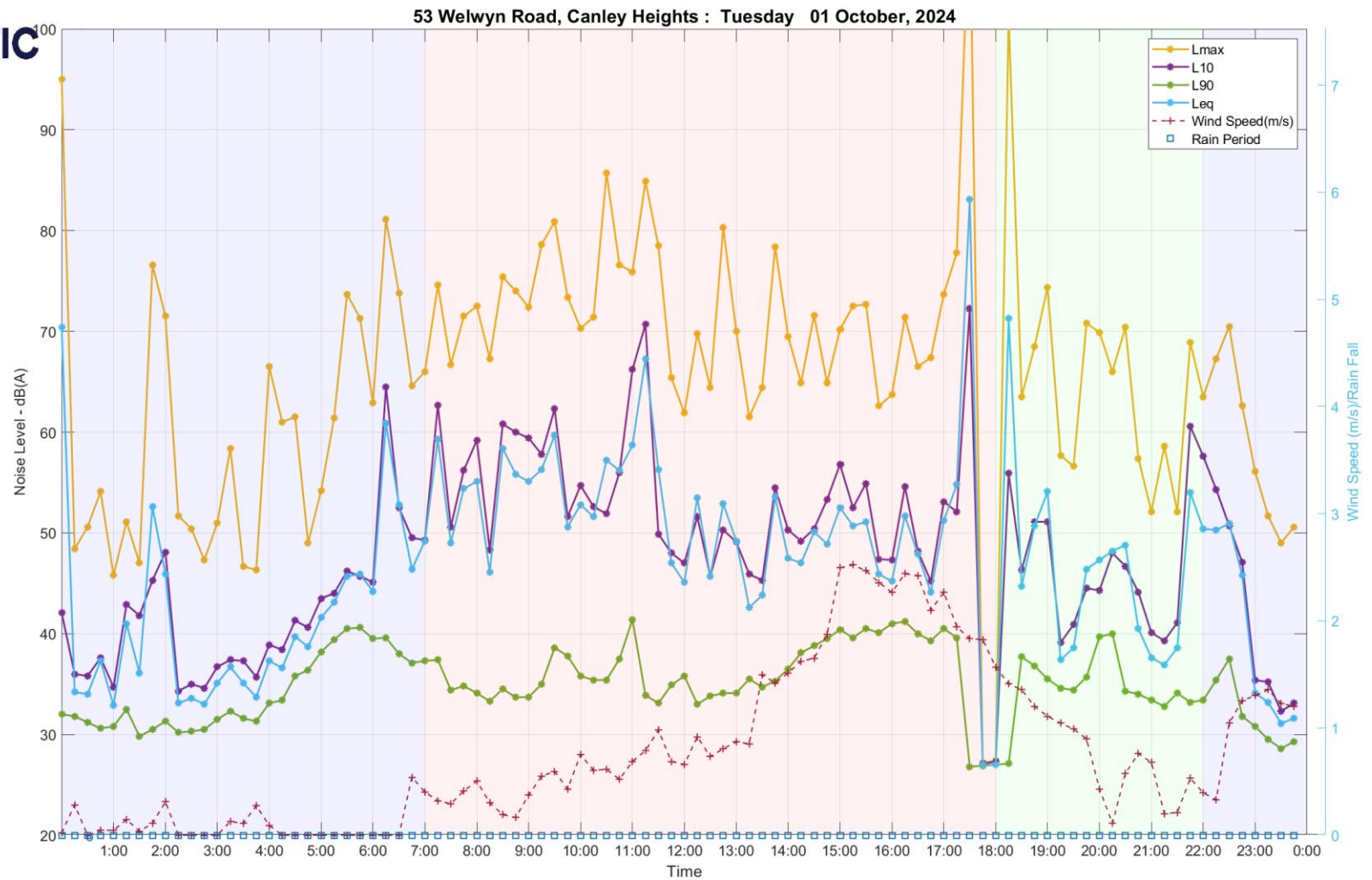


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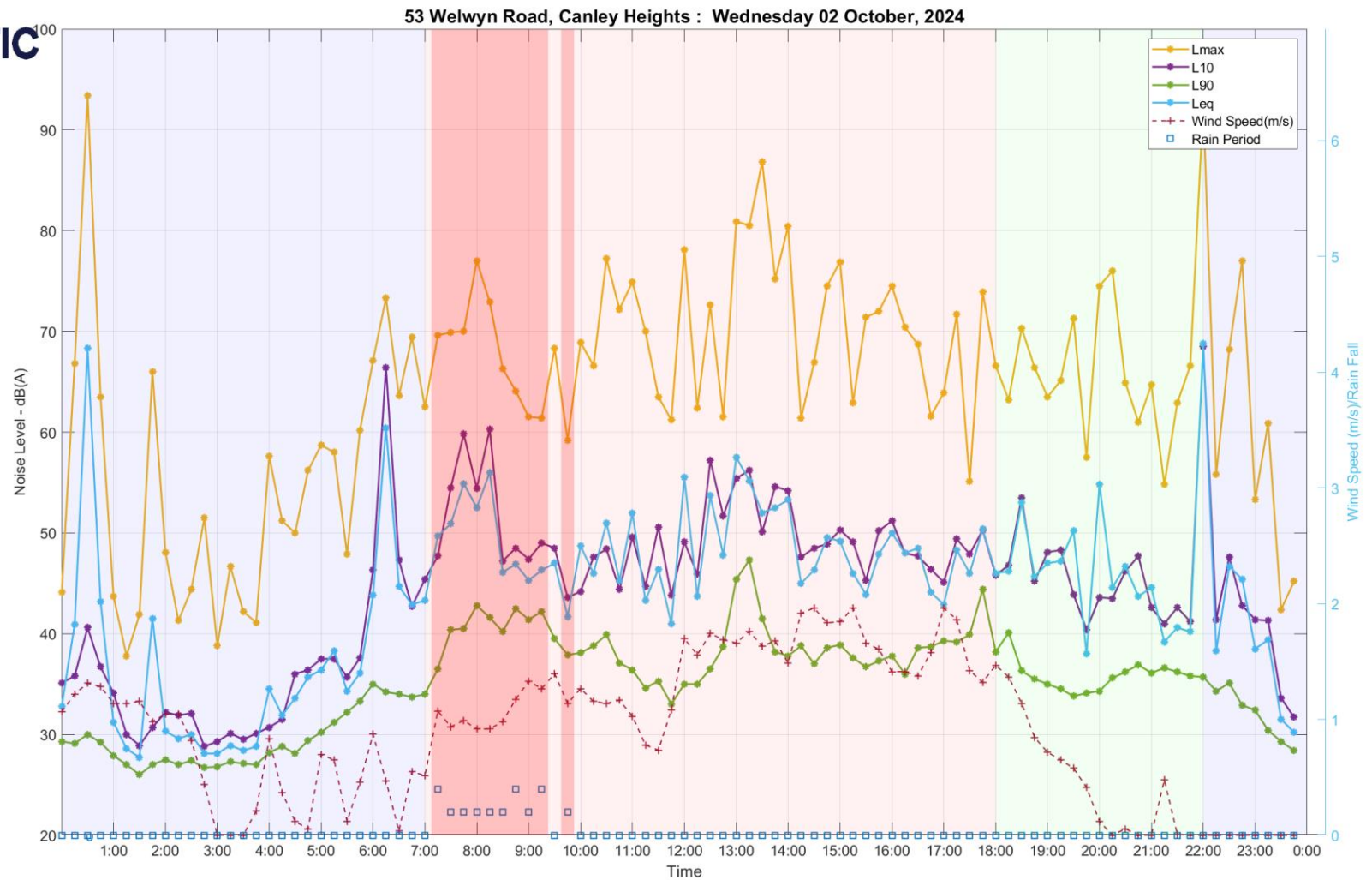


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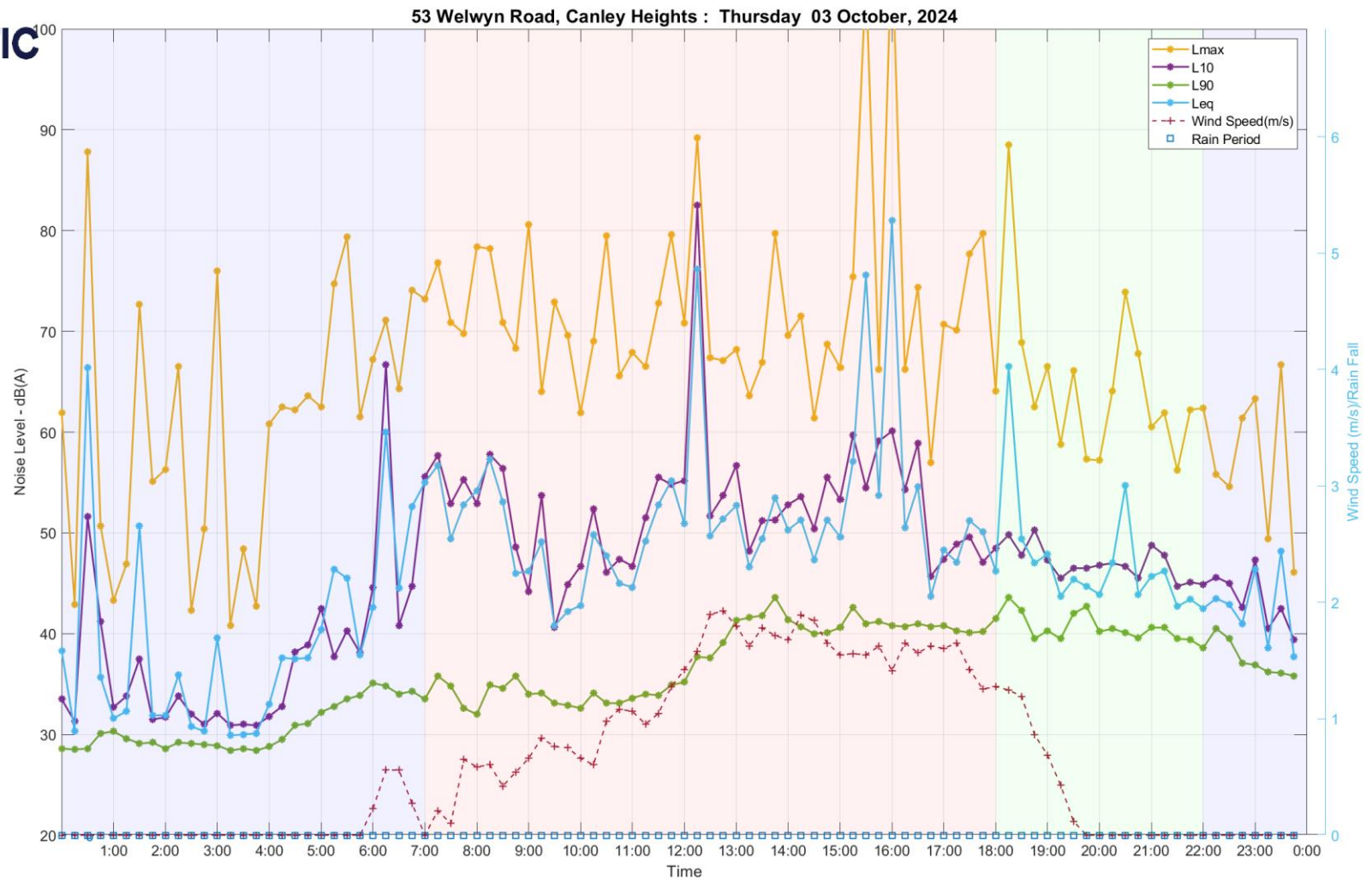


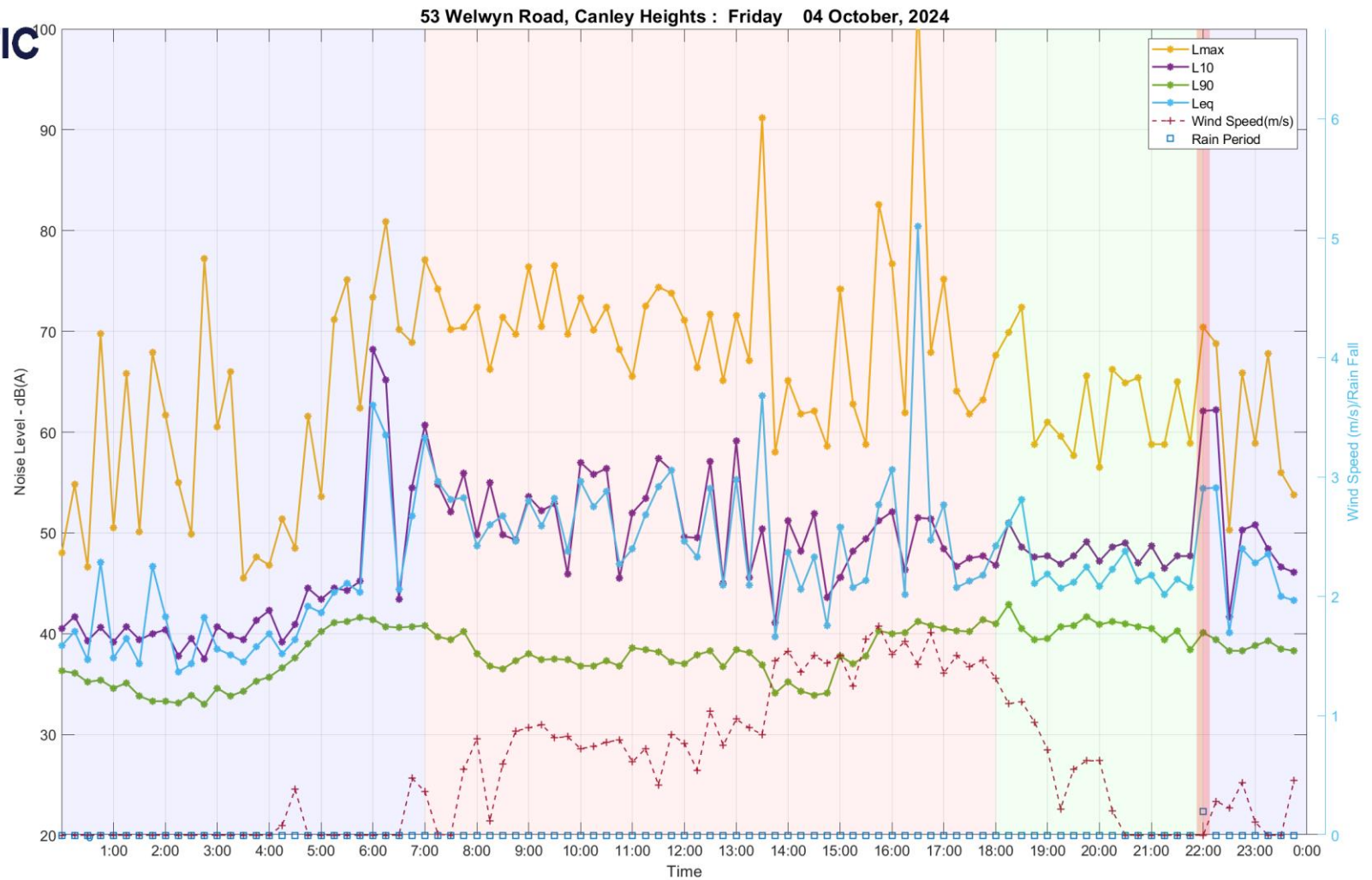
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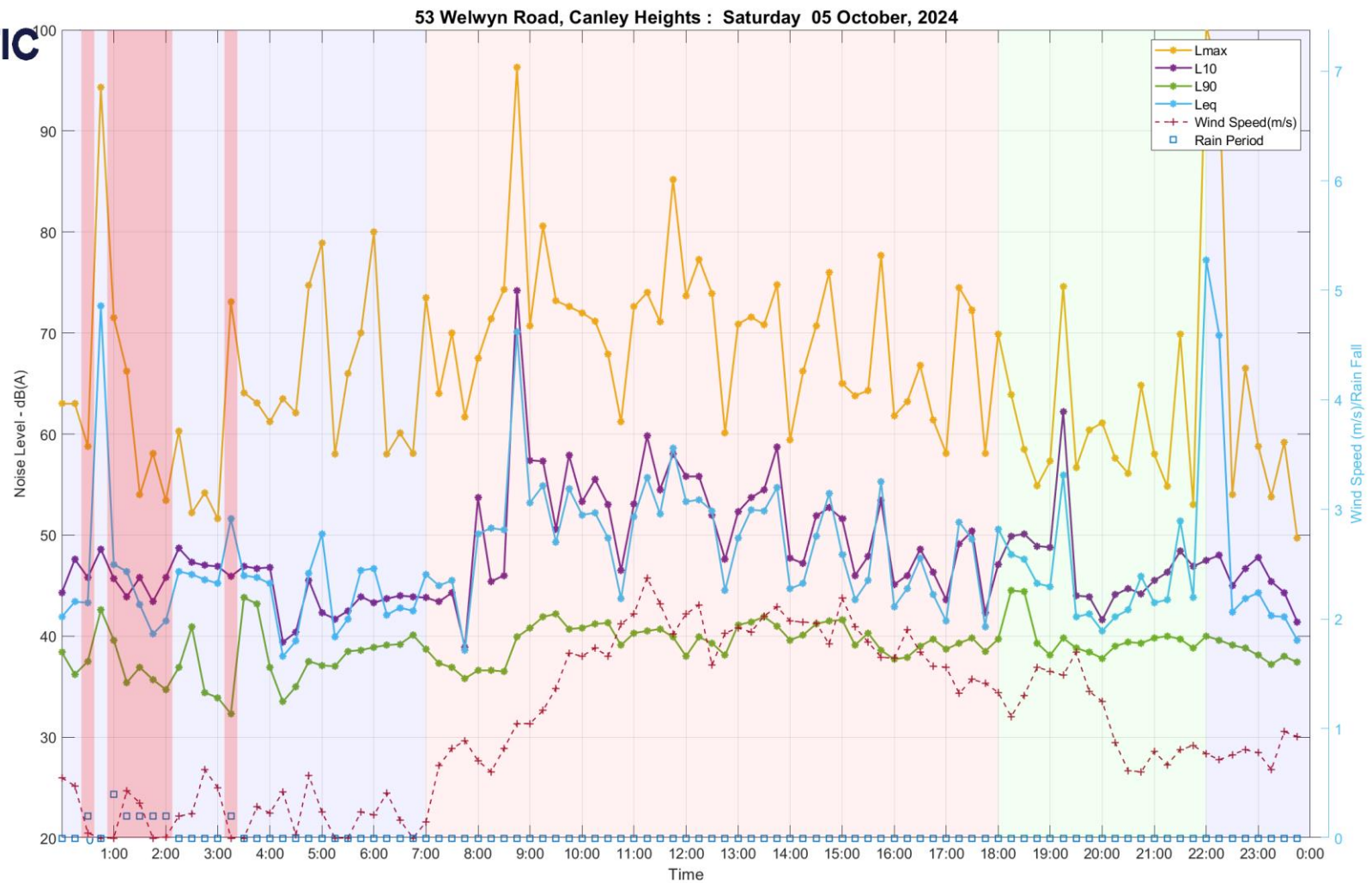


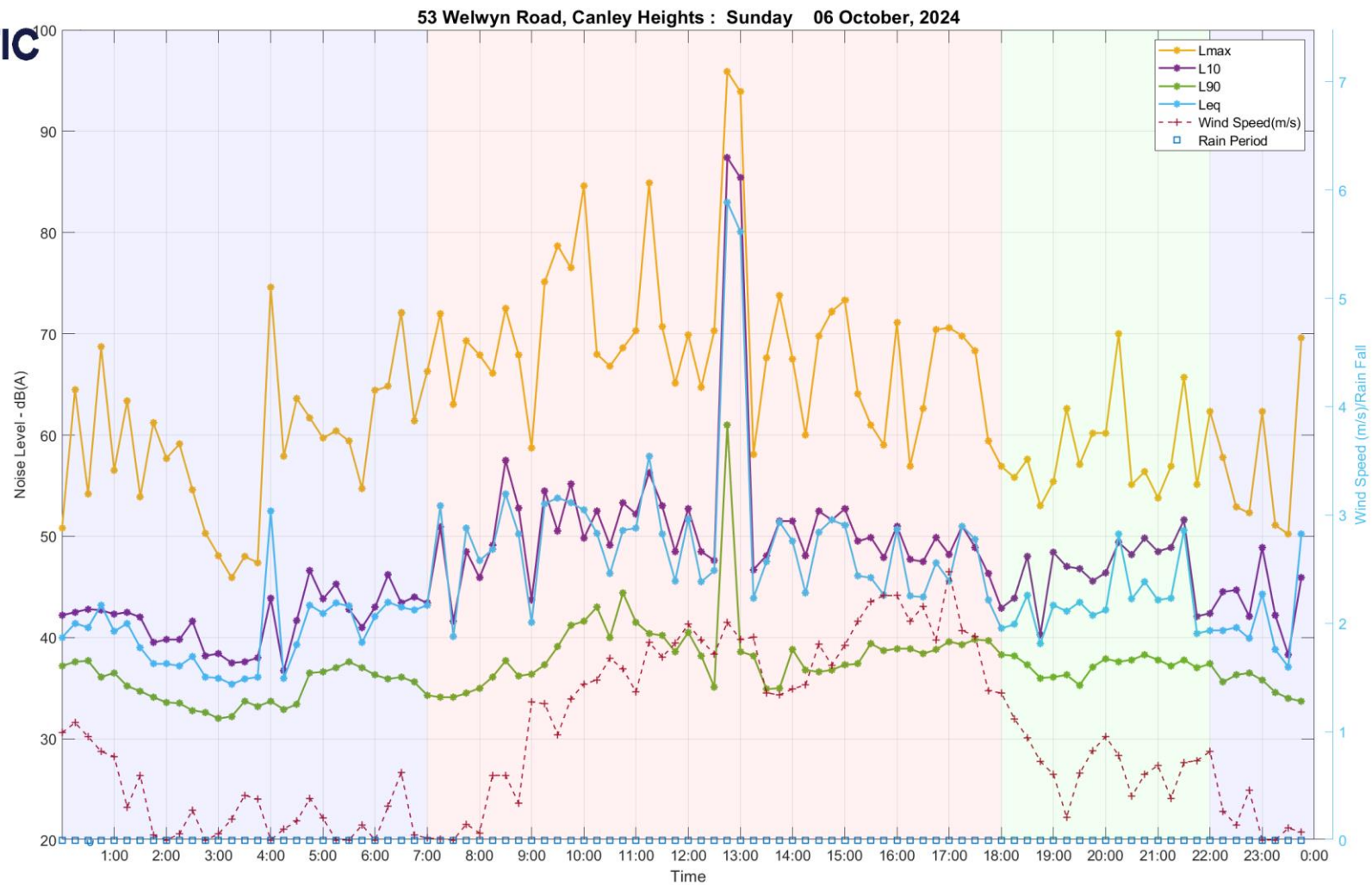


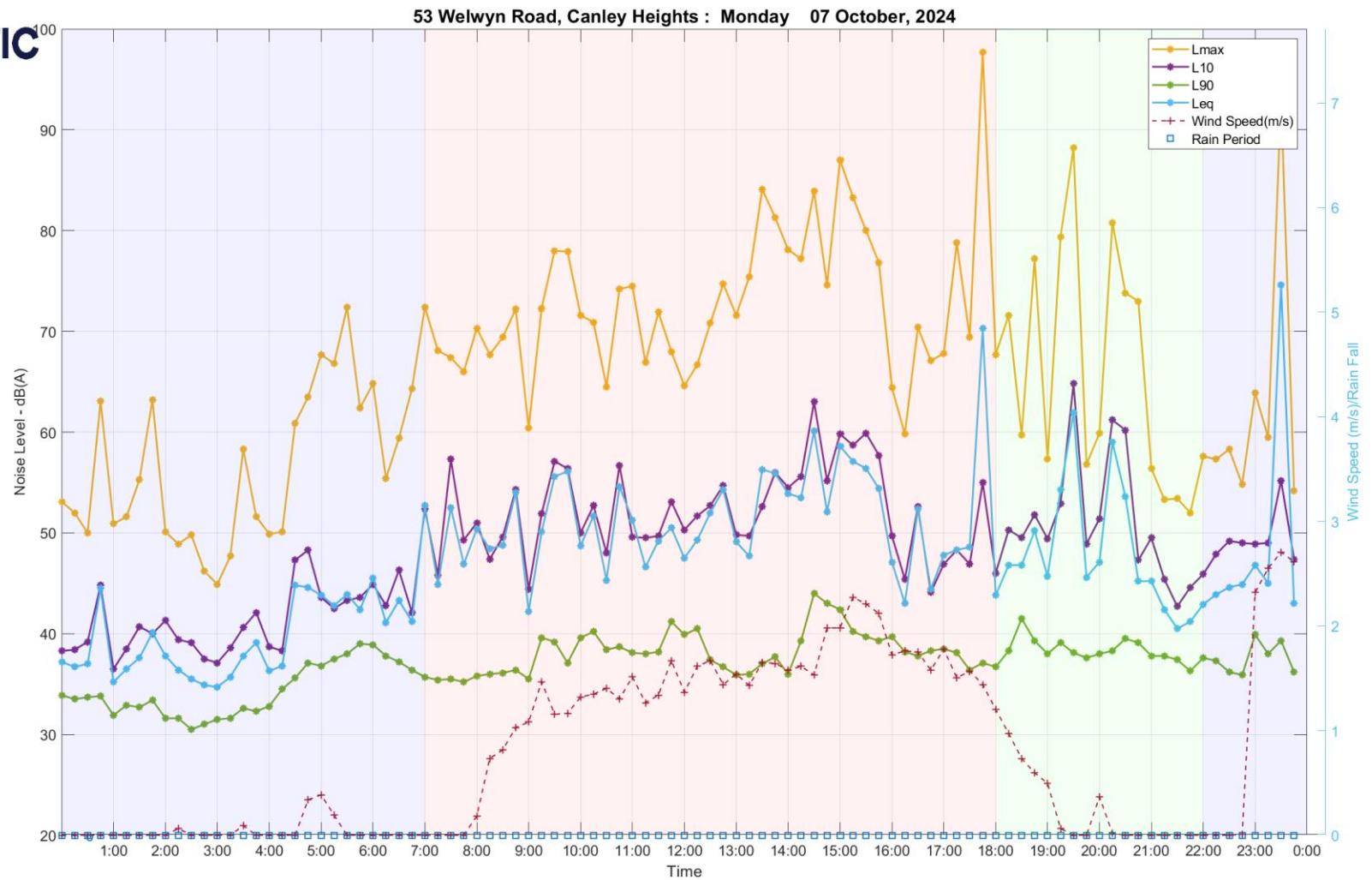
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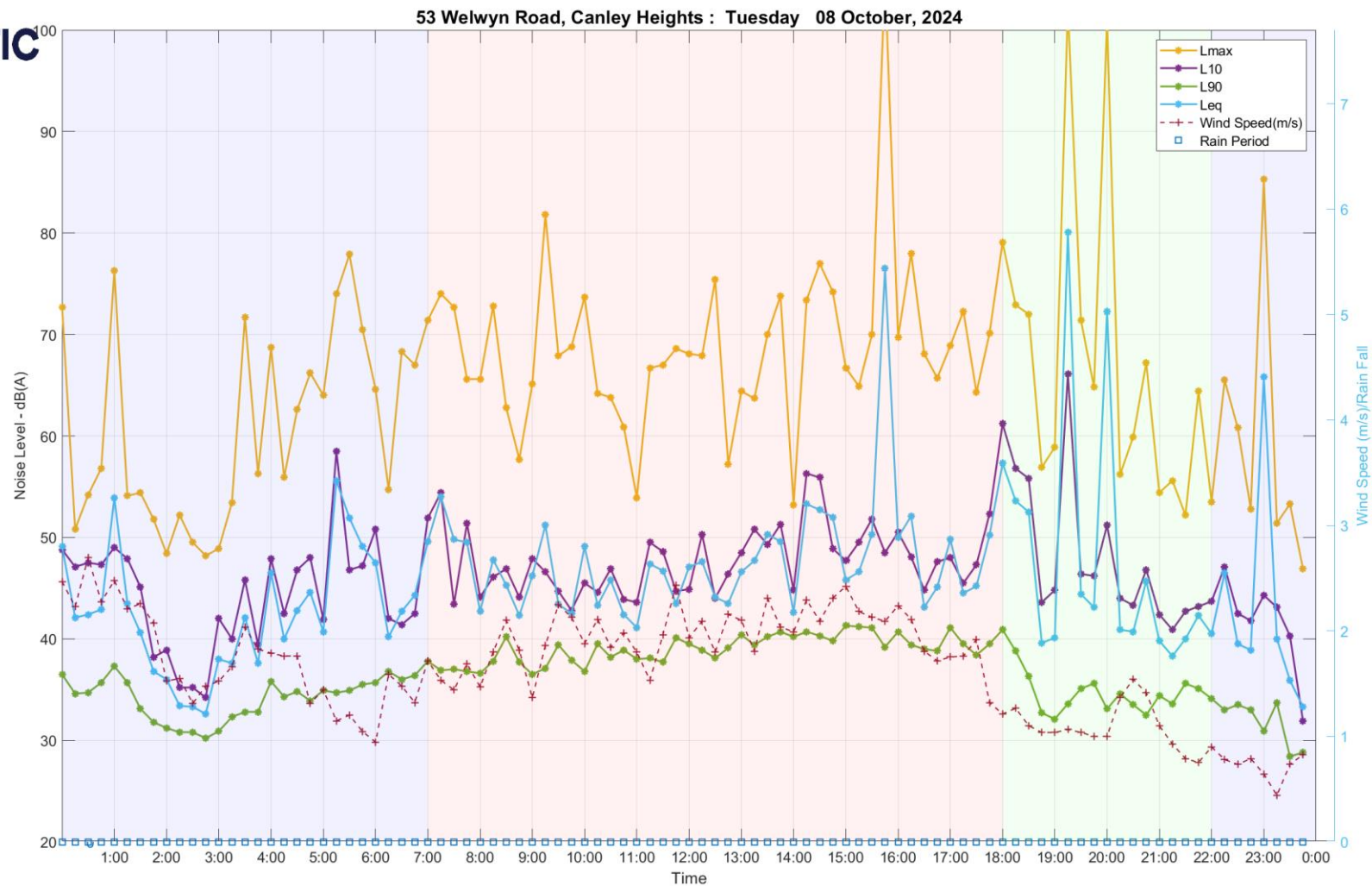






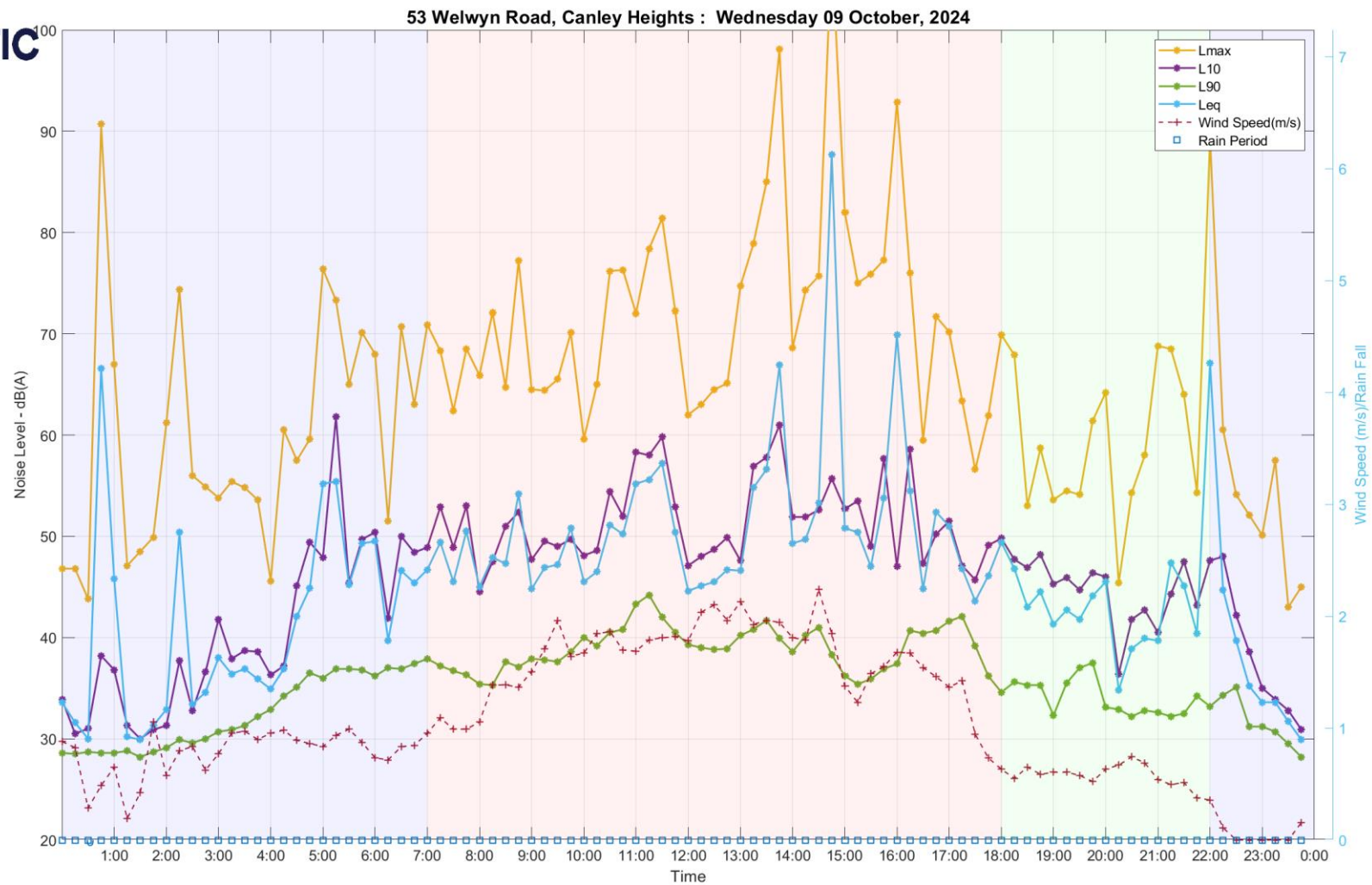


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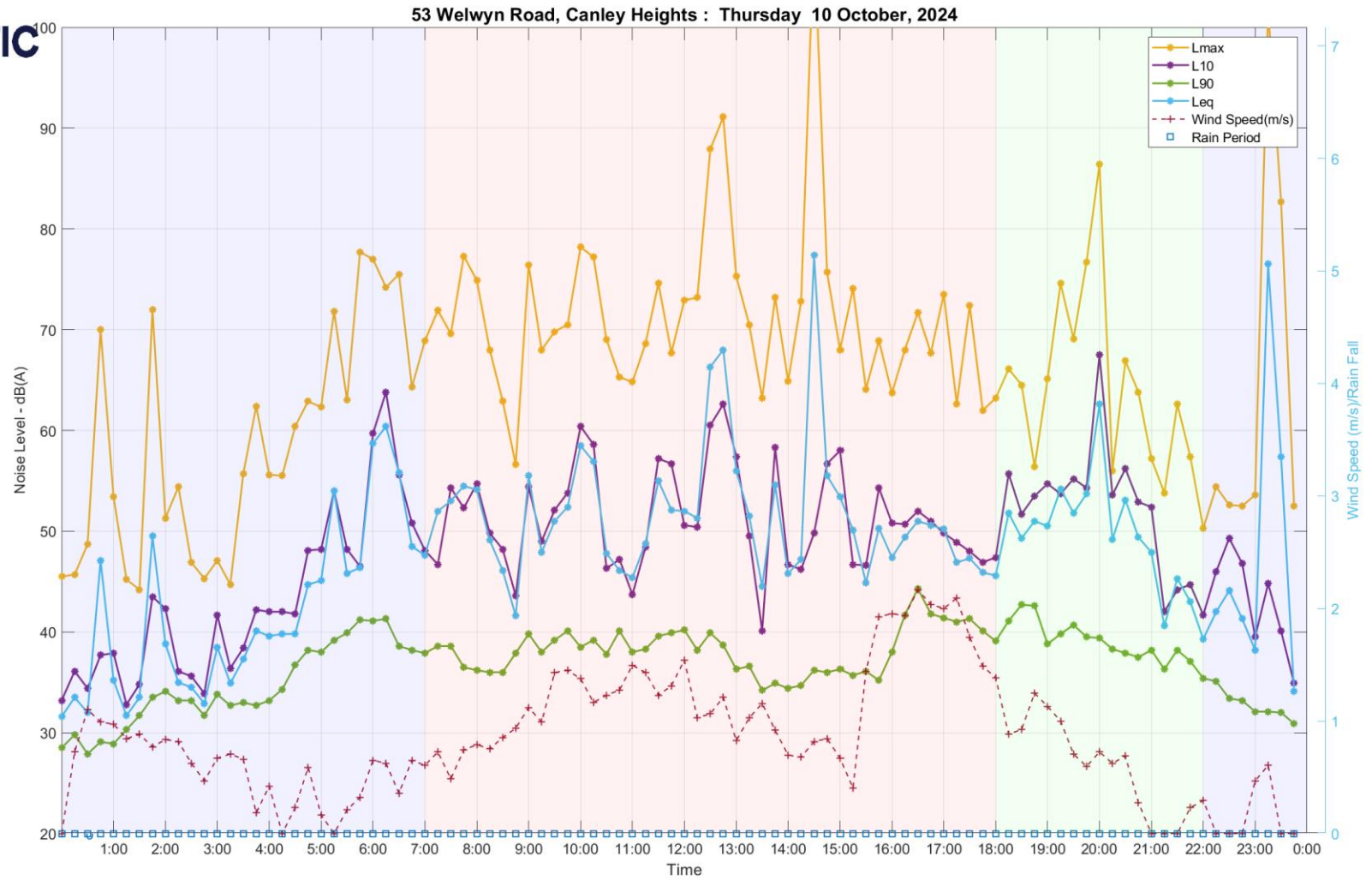


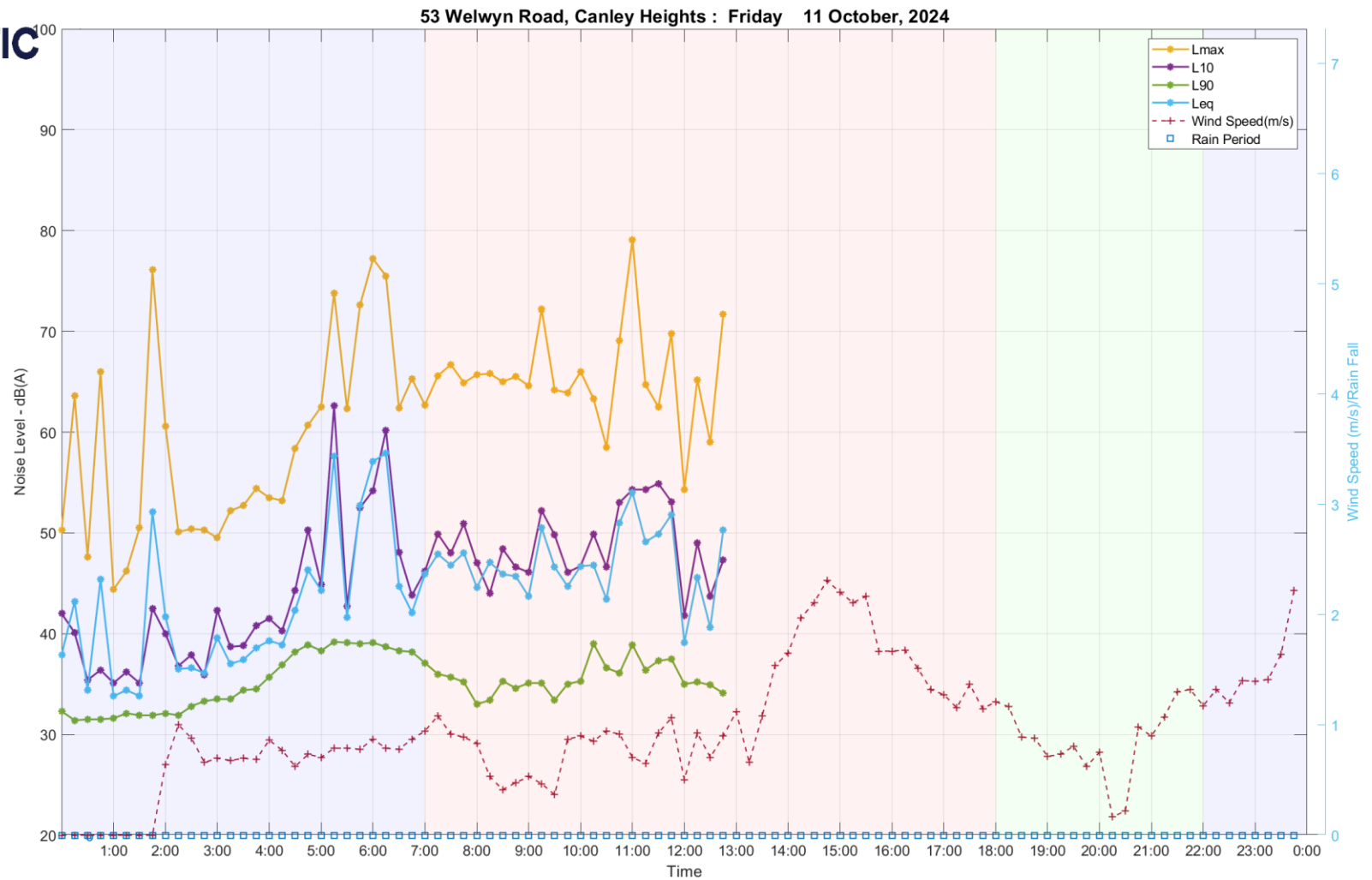
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Wind Speed is corrected using factor 0.3300 based on logger location

APPENDIX B EPA NOISE POLICY FOR INDUSTRY TRIGGER LEVELS

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

B.1 NPFI TRIGGER LEVELS

The NPFI 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.

B.1.1 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.

B.1.2 Amenity

Table 2.2 of the NPFI (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 "suburban" 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:

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

Section 2.4 of the NPFI states:

Where cumulative industrial noise is not a necessary consideration because no other industries are present in the area, or likely to be introduced into the area in the future. In such cases the relevant amenity noise level is assigned as the project amenity noise level for the development.

Given there are no other nearby "industrial" noise sources, and nor are any likely in the future, the applicable amenity $L_{Aeq,15min}$ trigger level can be calculated without the 5 dB(A) adjustment.

NPfI Table 2.2: Amenity Noise Levels

<i>Receiver</i>	<i>Noise Amenity Area</i>	<i>Time of Day</i>	<i>Recommended Amenity Noise Level 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>	35 (see notes for table)
<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 $L_{Aeq}(1hr)$.

B.1.3 Noise Characteristic Modifying Factors

Where applicable, the emitted intrusive noise level should be modified (increased or decreased) to account for characteristics such as tonality, low frequency, duration, etc according to NPfI Fact Sheet C.

B.1.4 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 L_{AFmax} 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.

B.2 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 B1 –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
R1/R2/R3/R4 - Residential	Day	35	40	58	n/a
	Evening	35	40	48	n/a
	Night	31	36	43	40 L_{eq} 52 L_{max}