MATTHEW PALAVIDIS
VICTOR FATTORETTO
MATTHEW SHIELDS

1 Cutler Road, Lansvale

Noise Impact Assessment

SYDNEY
9 Sarah St
MASCOT NSW 2020
(02) 8339 8000

ABN 98 145 324 714
www.acousticlogic.com.au

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1 INTRODUCTION

This report has been prepared to assess the potential noise impacts associated with the proposed change in land use to general industrial zone at 1 Cutler Road, Lansvale.

The following noise impacts have been assessed:

- Operational noise emissions from the using of equipment on site, and
- Noise emissions from mechanical plant to service the project site (in principle).

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

2 REFERENCED DOCUMENTS

2.1 BACKGROUND INFORMATION USED

The assessment is based on the Architectural drawings provided to us.

2.2 GUIDELINES

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

- Fairfield Council *Fairfield Citywide Development Control Plan* 2013, amendment 23 (**DCP**).
- NSW Environmental Protection Authority (**EPA**) *Noise Policy for Industry* (**NPI**) 2017.

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
L_{90}	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*	The period from 7 am to 6 pm (Monday to Saturday) and 8 am to 6 pm(Sundays and public holidays).
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).
Project Trigger Level	Target noise levels for a particular noise-generating facility.
Assessment Background Level (ABL)	Background noise level representative of a single period.
Rating Background Level (RBL)	The overall, single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period. (Calculated in accordance with NPI unless noted otherwise)

* Unless nominated otherwise.

4 SITE DESCRIPTION AND THE PROPOSAL

4.1 DESCRIPTION OF THE PROPOSAL

The project site is located at 1 Cutler Road, Lansvale. The site is an undeveloped area with existing fences along site boundaries and a driveway facing the Cutler Road. The current site zoning is R2 and the proposal is to change the site zoning to E4. The site is proposed to be used as a vehicle storage and display place.

4.2 HOURS OF OPERATION

The site is proposed to be operated between 8:00 am – 5:00 pm Monday to Friday.

4.3 NOISE RECEIVERS IDENTIFIED

The nearest noise receivers around the site include:

- **R1**: Residential Receiver 1 – Single-storey residential houses to the southeast of the site at 3-5 Cutler Road, Lansvale
- **C1**: Commercial Receiver 1 – Commercial development to the east of the site across Cutler Road at 206 Hume Hwy, Lansvale NSW
- **I1**: Industrial Receiver 1 – Multi-storey industrial development to the west of the site at 230-240 Hume Hwy, Lansvale NSW
- **I2**: Industrial Receiver 2 – Multi-storey developments to the southeast across Cutler Road at 2-8 Cutler Road, Lansvale
- **RE1**: Passive recreation 1 – Dan Park to the south of the project site

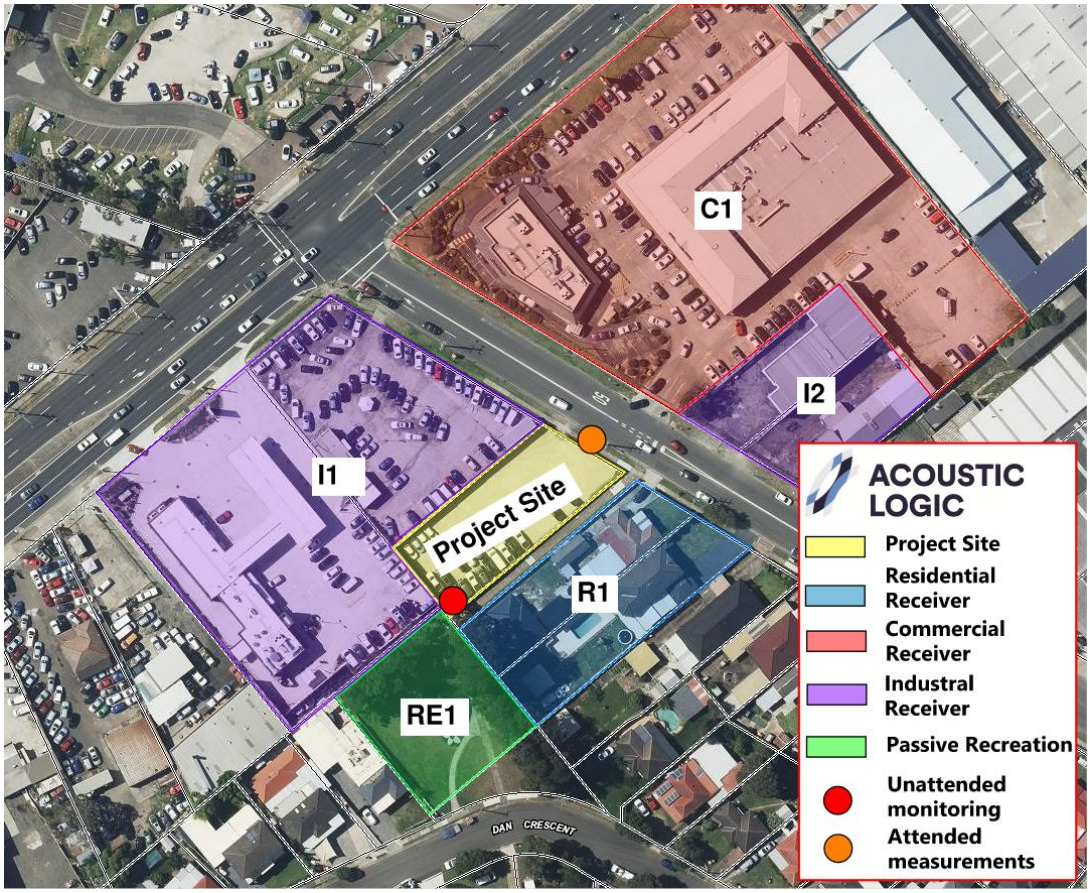


Figure 1 – Site Plan Showing Local Context and Noise Monitoring Locations (Source from: Six Map)

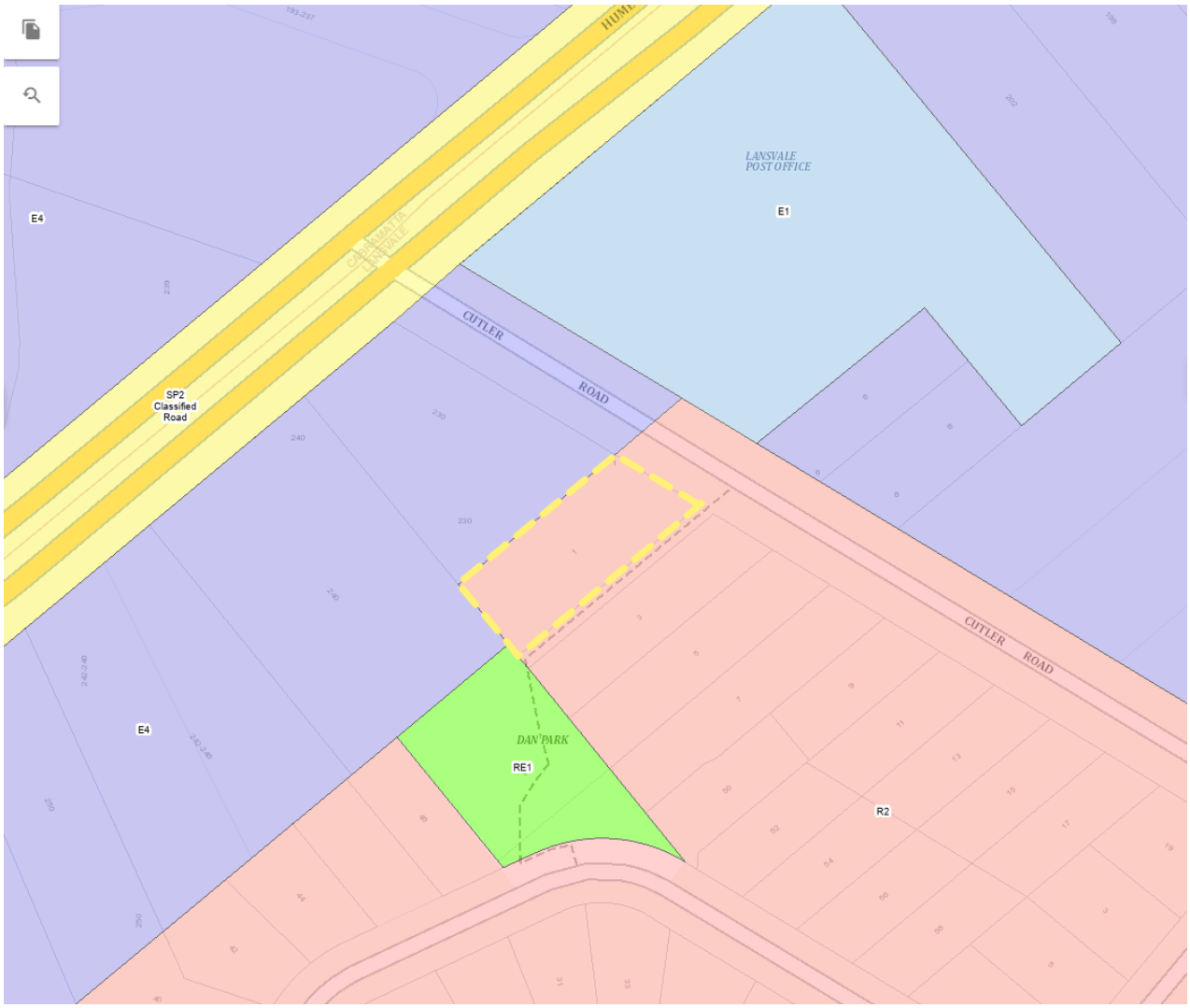


Figure 2 – Current Project Site Zoning (Source from: NSW Planning Portal Spatial Viewer)

5 SITE OPERATIONAL NOISE EMISSION ASSESSMENT

5.1 ENVIRONMENTAL NOISE SOURCES

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

- Staff vehicle movements on the site.
- Patron vehicle movements on the site.

5.1.1 Acoustic Data

The following noise level data for potential noise sources have been used for the assessment. These noise levels have been taken from measurements conducted by this office.

Table 1 – Sound Power Levels of Typical Automotive Movements Within the Site

Noise Source	Noise Level, dB(A)	Noise Characteristic	Applied Noise Source
Automobile Manoeuvring @ 10km/h	84 L_{eq} SWL	Quasi-steady	Passenger/Staff vehicles on site

5.2 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 NPI. 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 NPI 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 NPI 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 not required for this project as the site only operates during the day.

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 NPI trigger levels for each of the receivers. These are summarised in the following table.

Table 2 – EPA NPI Noise Emission Criteria

Receiver	Time Period	Assessment Background Noise Level dB(A)L_{90}	Project Amenity Criteria dB(A) L_{eq}	Intrusiveness Criteria $L_{eq(15min)}$
Residential Receiver **R1**	Day	43	53	**48**
Commercial Receiver **C1**			**53**	N/A
Industrial Receiver **I1 & I2**			**58**	N/A
Passive Recreation Receiver **RE1**			**48**	N/A

Project noise trigger levels have been bolded above.

5.3 RECEIVER NOISE PREDICTIONS

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

- Determining noise emission levels based on noise source data presented in Section 5.1.1 and an assumption that there will be 10 vehicle movements in a given 15-minute period as the worst-case scenario.
- 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.

5.4 RESULTS

Predicated noise levels are presented below to the most sensitive receivers around the development. The highest predicted noise level at each receiver is summarised below.

Table 3 – Predicted Cumulative Noise Levels

Operational Source	Prediction Location	Predicted Noise Level	Criteria	Comment
Noise from Site Operation, i.e., vehicles movements (Refer Section 5.3)	**R1** Worst Affected Façade	42 dB(A) L_{eq}	48 dB(A) L_{eq} Daytime (7am–6pm)	Meets NSW EPA Noise Emission Requirements
	C1 Worst Affected Façade	< 40 dB(A) L_{eq}	53 dB(A) L_{eq} (When in use)	
	I1 Worst Affected Façade	<40 dB(A) L_{eq}	68 dB(A) L_{eq} (When in use)	
	I2 Worst Affected Façade	<40 dB(A) L_{eq}		
	RE1	<40 dB(A) L_{eq}	48 dB(A) L_{eq} (When in use)	

Predicted noise levels from the operation of the industrial development show that it will meet the noise emission requirements of the NSW EPA NPI 2017 during the proposed operational hours for all nearby receivers.

5.5 MECHANICAL PLANT NOISE

No mechanical plant is to be installed on stie at this stage. In the case of new mechanical plant to be installed, noise emissions from all mechanical services plant to the closest residential receiver should comply with the noise emission criteria in Section 5.2.

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.

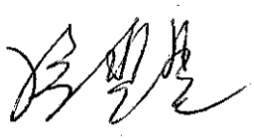
6 CONCLUSION

This report has been prepared to assess the potential noise impacts associated with the proposed change in land use to general industrial zone at 1 Cutler Road, Lansvale.

External noise emissions criteria have been setup in this report to satisfy the requirements from NSW EPA NPI 2017 and Council requirements.

Assessment shows that operational noise emissions will satisfy the requirements presented in Section 5.2.

Yours faithfully,



Acoustic Logic Pty Ltd
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APPENDIX A AMBIENT NOISE MONITORING

This appendix summarises the ambient noise data measured near the subject site, and the calculated noise level descriptors adopted to characterise the existing noise environment.

Monitoring has been undertaken to provide the background noise levels for the nearby residential receivers of the project site.

A.1 UNATTENDED LONG TERM NOISE MONITORING

A.1.1 Ambient Noise Descriptors

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

To quantify ambient noise, a 15 minute measurement interval is typically utilised. Noise levels are monitored on a continuous basis over this period, and statistical and integrating techniques are used to characterise the noise being measured.

The principal measurement parameters are:

L_{eq} - represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the measurement period. L_{eq} is important in the assessment of noise impact as it closely corresponds with how humans perceive the loudness of steady state and quasi-steady state noise sources (such as traffic noise).

L_{90} – This is commonly used as a measure of the background noise level as it represents the noise level heard in the quieter periods during the measurement interval. The L_{90} parameter is used to set noise emission criteria for potentially intrusive noise sources since the disturbance caused by a noise source will depend on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L_{90} level.

L_{10} is used in some guidelines to measure noise produced by an intrusive noise source since it represents the average of the loudest noise levels produced at the source. Typically, this is used to assess noise from licenced venues.

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

L_1 is sometimes used in place of L_{max} to represent a typical noise level from a number of high-level, short-term noise events.

A.1.2 Equipment Used

Unattended noise monitoring was conducted using the following equipment:

- Ngara S Pack
- Rion Sound Level calibrator Type NC 74

The 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.1.3 Locations Monitored

Detailed locations of the noise monitoring are presented in Figure 1. Photographs of the monitoring locations are provided below:

Noise monitor on site

A.1.4 Weather Affected and Extraneous/Outlying Data

Periods affected by adverse weather conditions are indicated on the following data graphs. Weather data was obtained from records provided by the Bureau of Meteorology for Bankstown Airport.

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

- 4/4/2023 Day/Evening/Night
- 5/4/2023 Day/Evening/Night
- 9/4/2023 Day/Evening

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 1.8m above ground in more sheltered locations a wind multiplying factor of 0.33 has been applied to the BOM data to estimate the wind speed at the microphone location.

A.2 CALCULATION OF REPRESENTATIVE AMBIENT NOISE LEVELS

The 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.2.1 Rating Background Noise Levels

The following tables summarise 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 NPI, 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.
- night rating background noise level is higher than the evening level, the evening rating background noise level has been adopted for the evening period.
- day rating background noise level was less than 35 dB(A), a "default" background of 35 dB(A) has been adopted.
- evening or night rating background noise level was less than 30 dB(A), a "default" background of 30 dB(A) has been adopted.

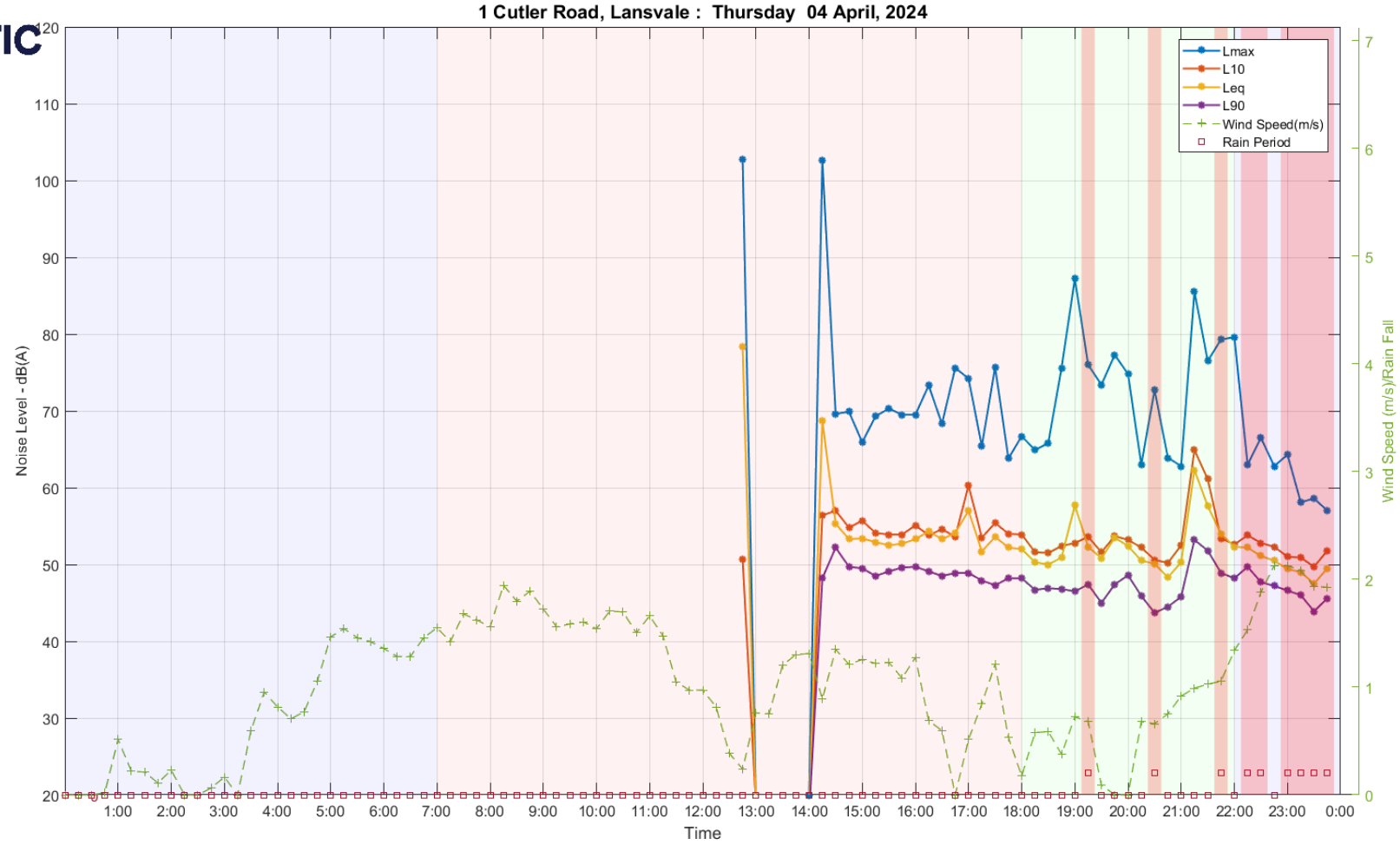
Where monitoring was conducted within 3m of a significant sound reflecting surface, 2.5 dB(A) has been subtracted from the calculated rating background to account for an increase in noise from reflections.

Table 4 – Ambient Noise Levels

Date	Noise Level dB(A) $L_{eq,\ period}$		
	Day	Evening	Night
4/04/2024	-	-	-
5/04/2024	-	-	-
6/04/2024	47.7	47.2	37.4
7/04/2024	43.2	43.3	36.8
8/04/2024	43.3	43.4	36.9
9/04/2024	-	-	38.1
10/04/2024	45.6	43.9	37.3
11/04/2024	43.3	43.6	36.4
12/04/2024	44.2	45.5	37.4
13/04/2024	43	42.7	36.1
14/04/2024	42.8	43.6	36.2
Measured	**43**	**43***	**37**

*Evening time RBL has been adjusted as it's higher than Daytime RBL

A.3 UNATTENDED MONITORING DATA GRAPHS


1 Cutler Road, Lansvale : Thursday 04 April, 2024
Noise Level - dB(A)
Wind Speed (m/s)/Rain Fall
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Wind Speed(m/s)
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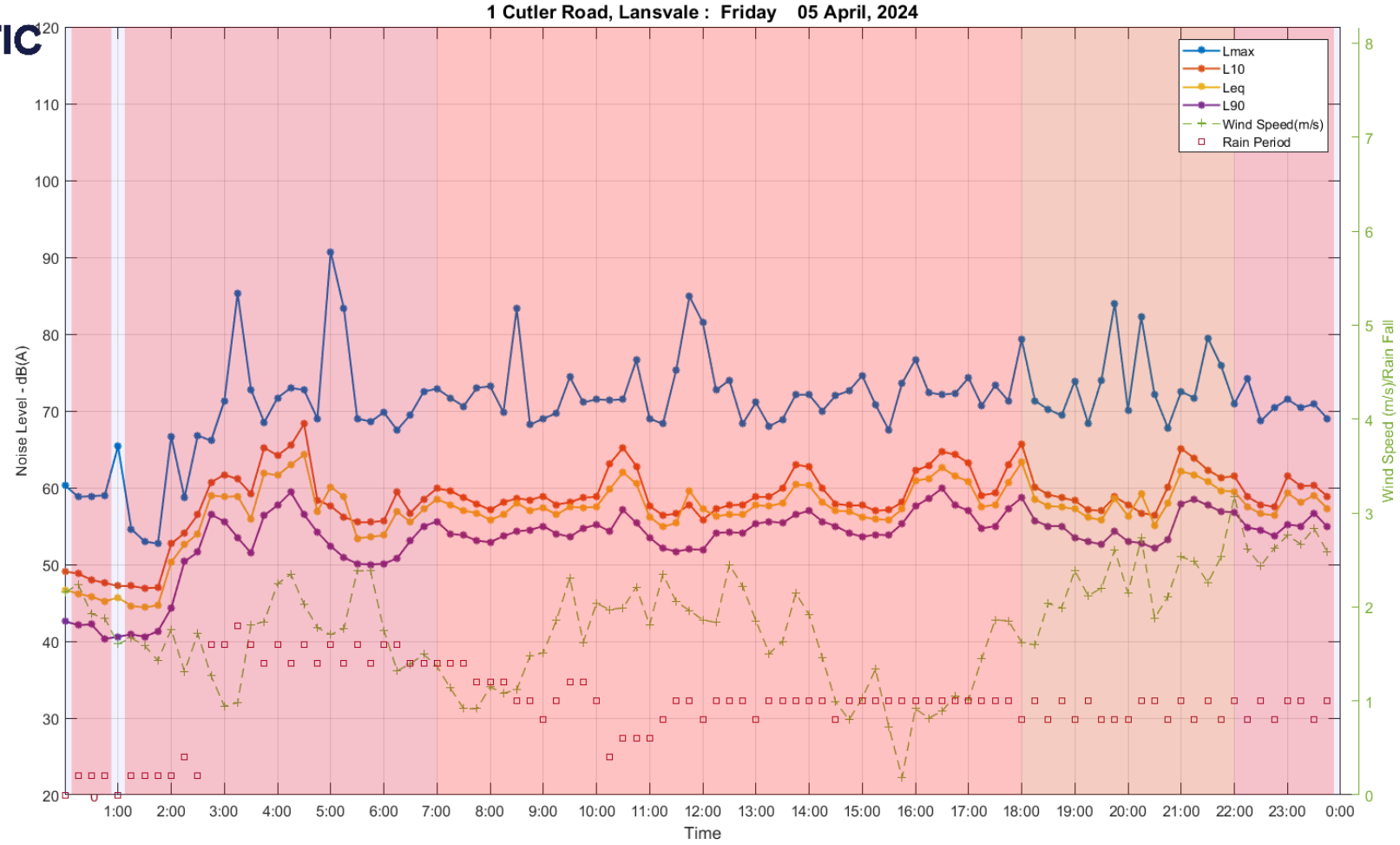
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Wind Speed(m/s)
Rain Period
Noise Level - dB(A)
Wind Speed (m/s)/Rain Fall
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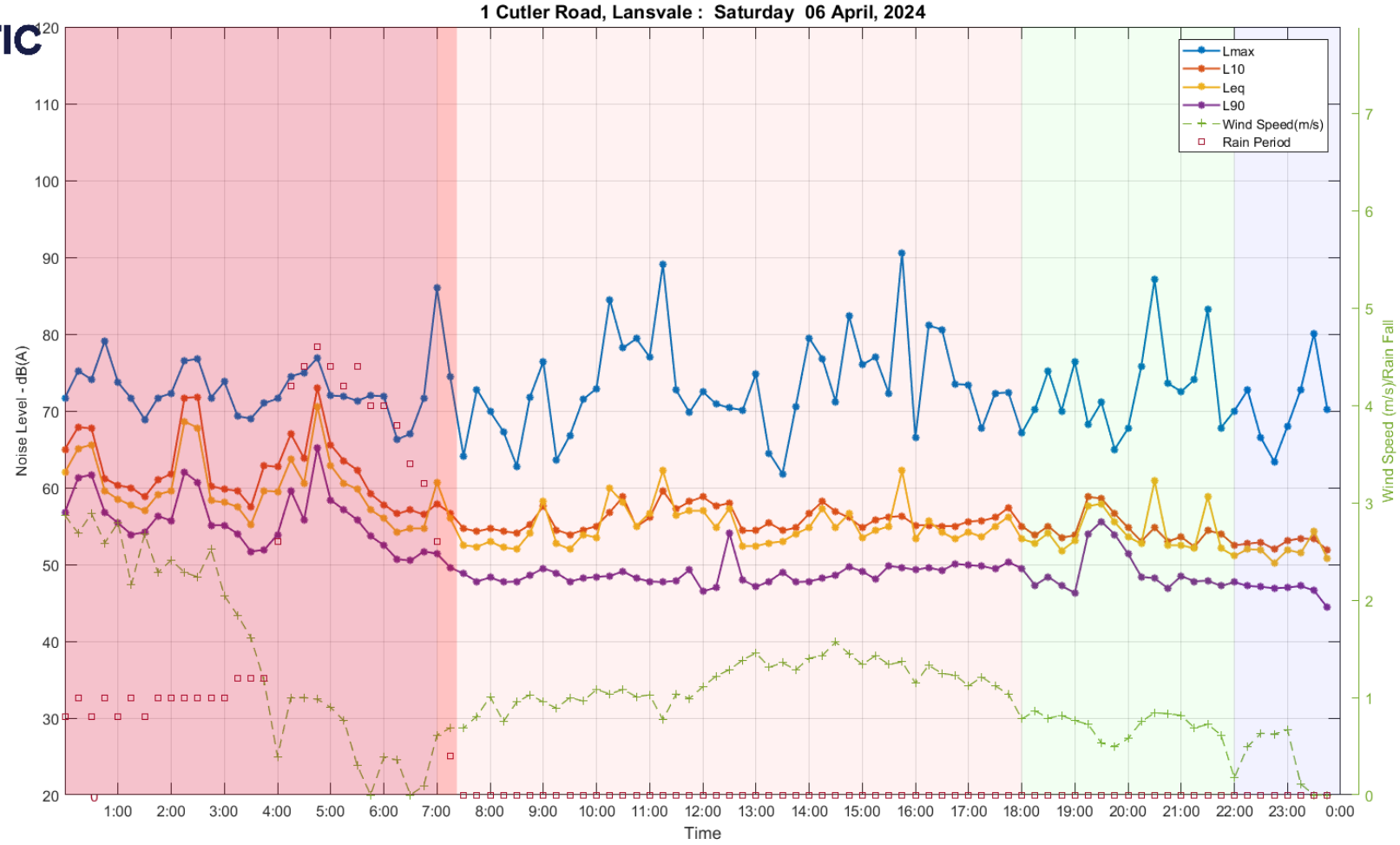
1 Cutler Road, Lansvale : Saturday 06 April, 2024
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Wind Speed(m/s)
Rain Period
Noise Level - dB(A)
Wind Speed (m/s)/Rain Fall
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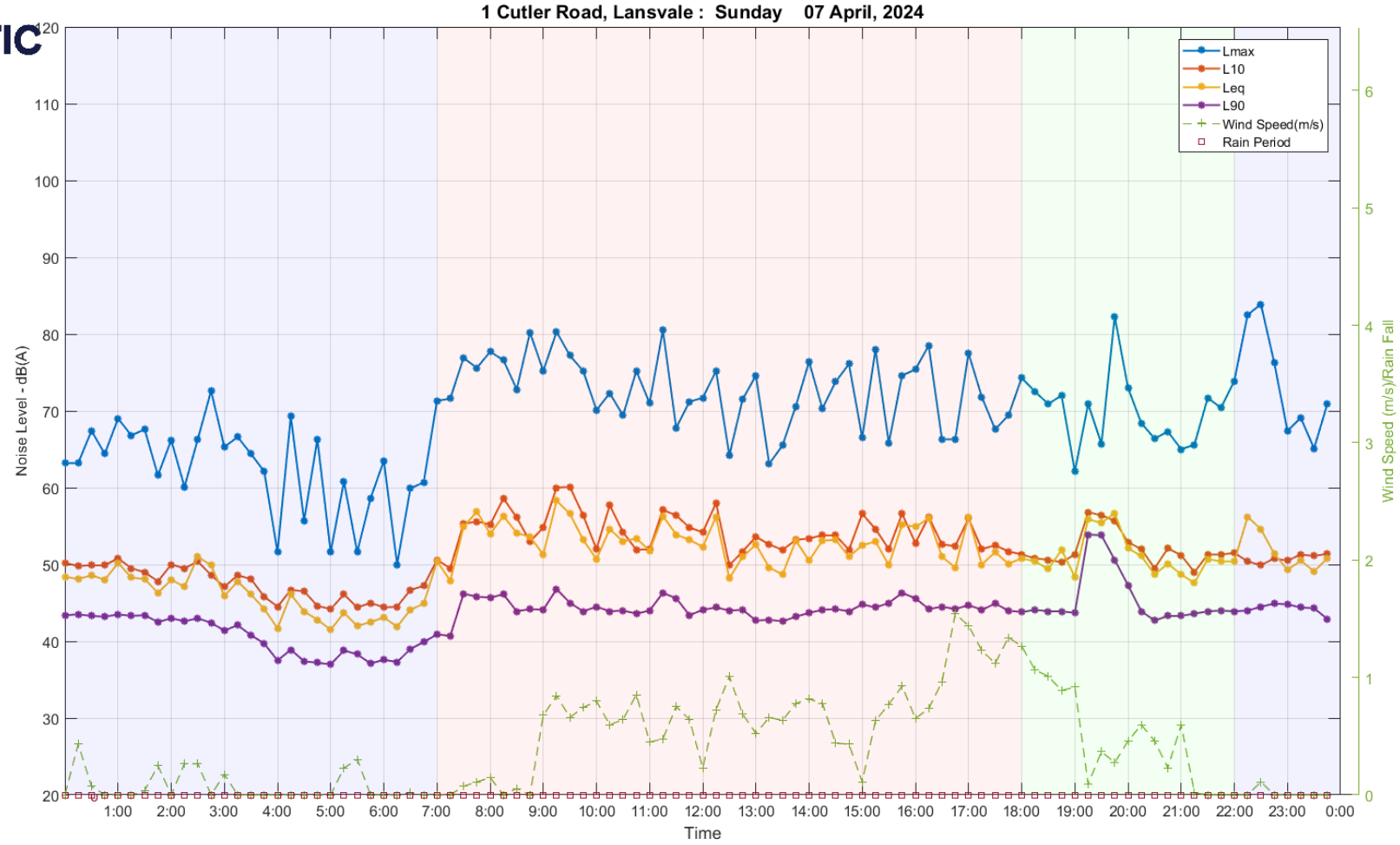
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Wind Speed(m/s)
Rain Period
Noise Level - dB(A)
Wind Speed (m/s)/Rain Fall
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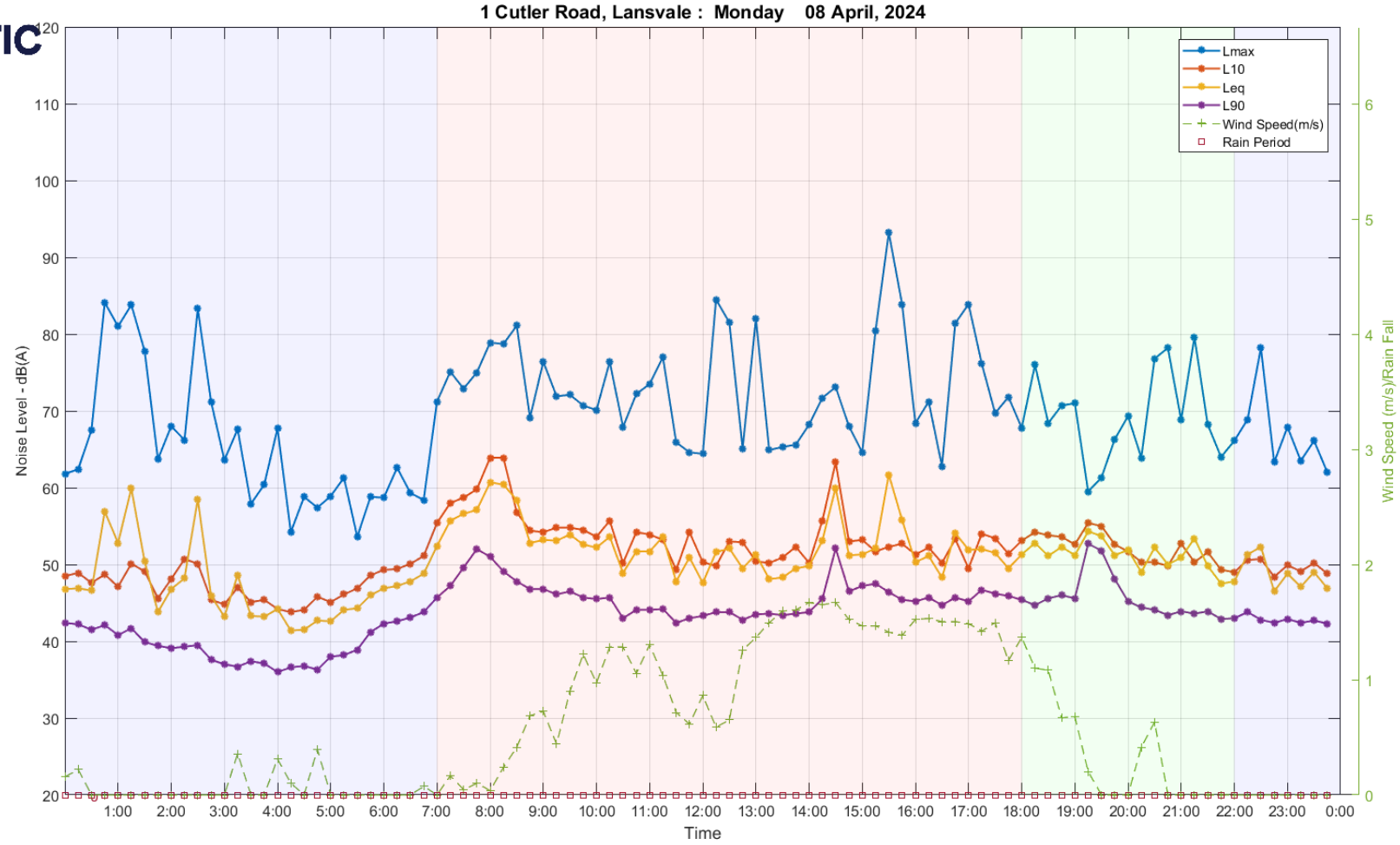
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Wind Speed(m/s)
Rain Period
Noise Level - dB(A)
Wind Speed (m/s)/Rain Fall
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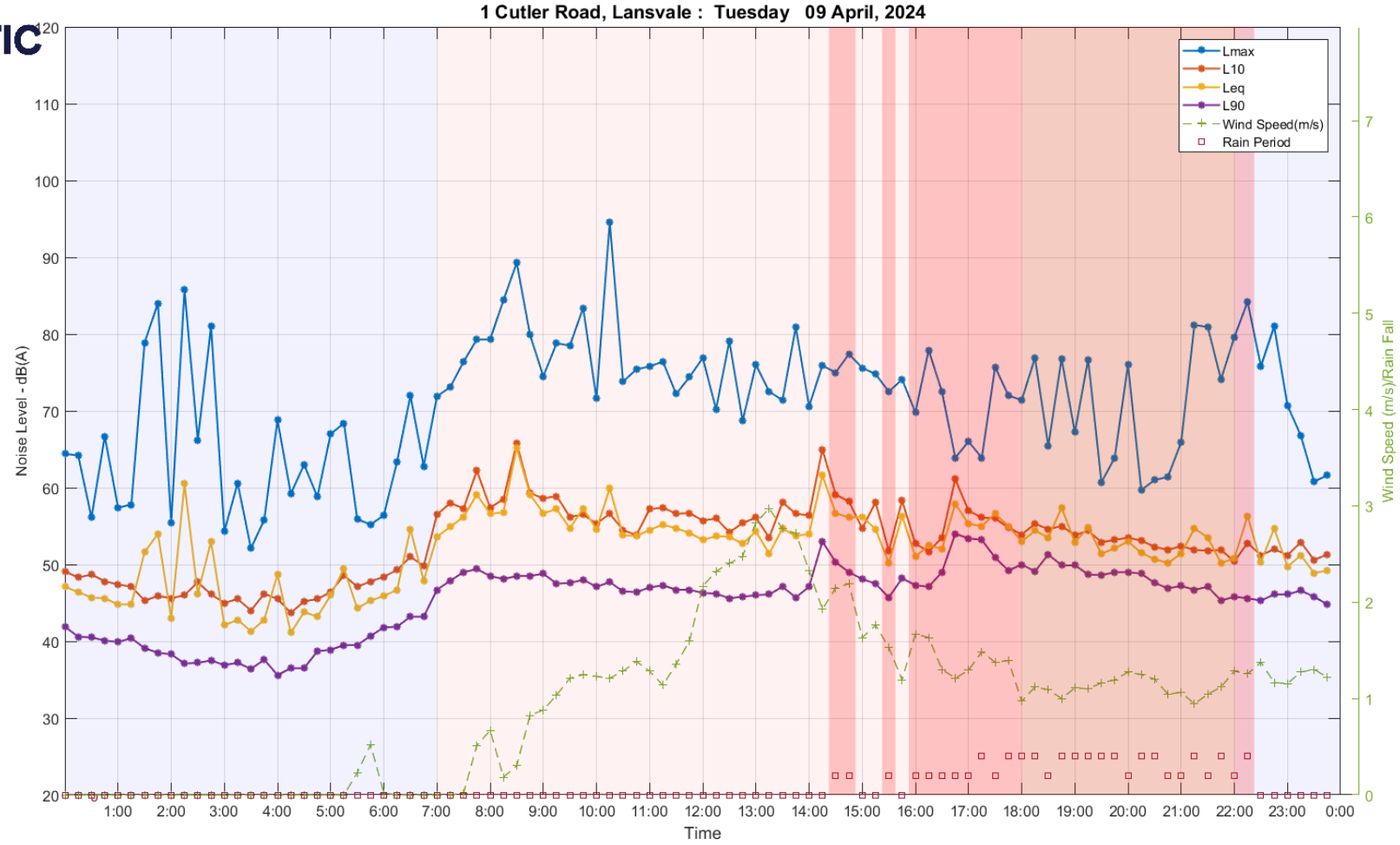
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Noise Level - dB(A)
Wind Speed (m/s)/Rain Fall
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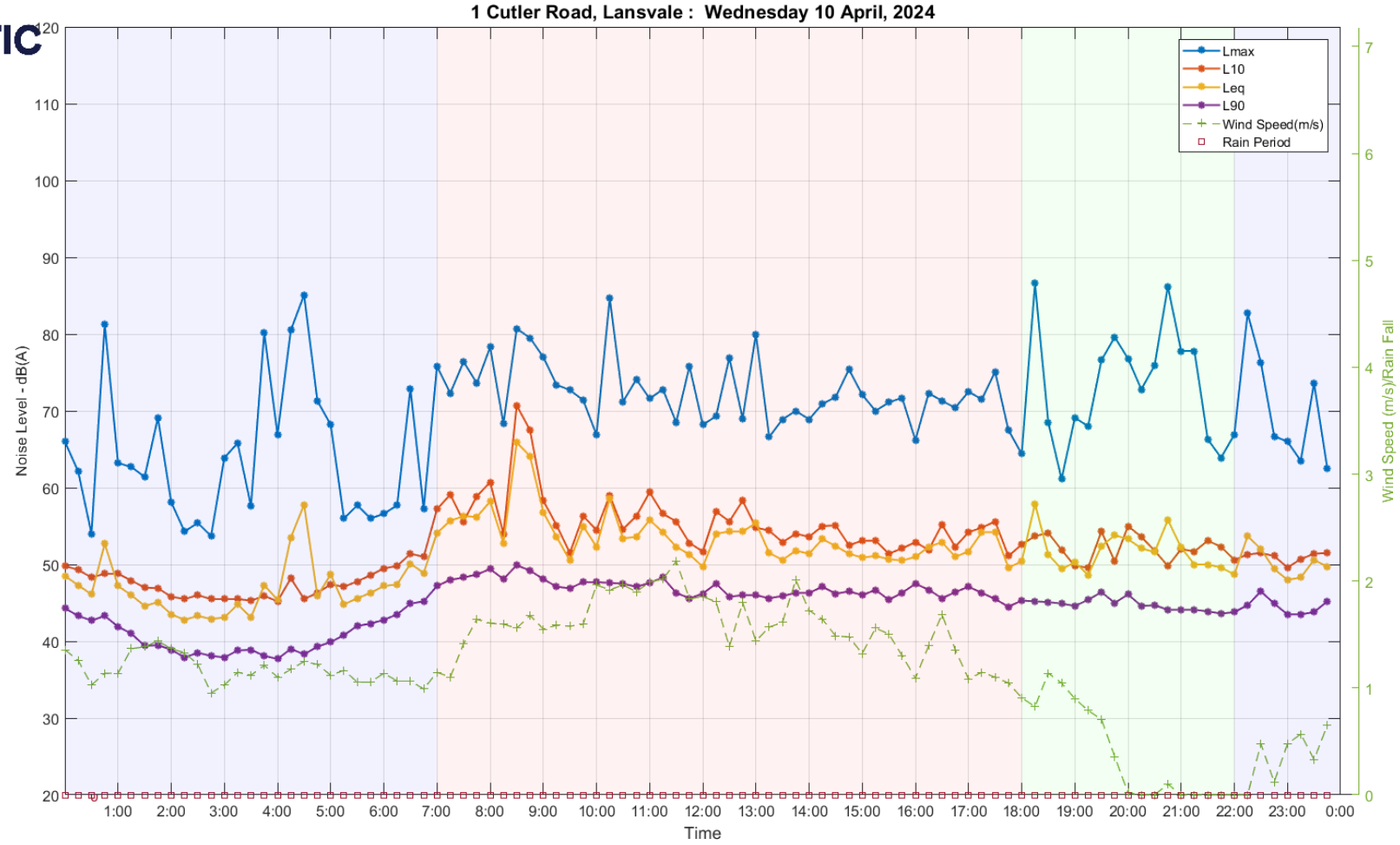
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Wind Speed(m/s)
Rain Period
Noise Level - dB(A)
Wind Speed (m/s)/Rain Fall
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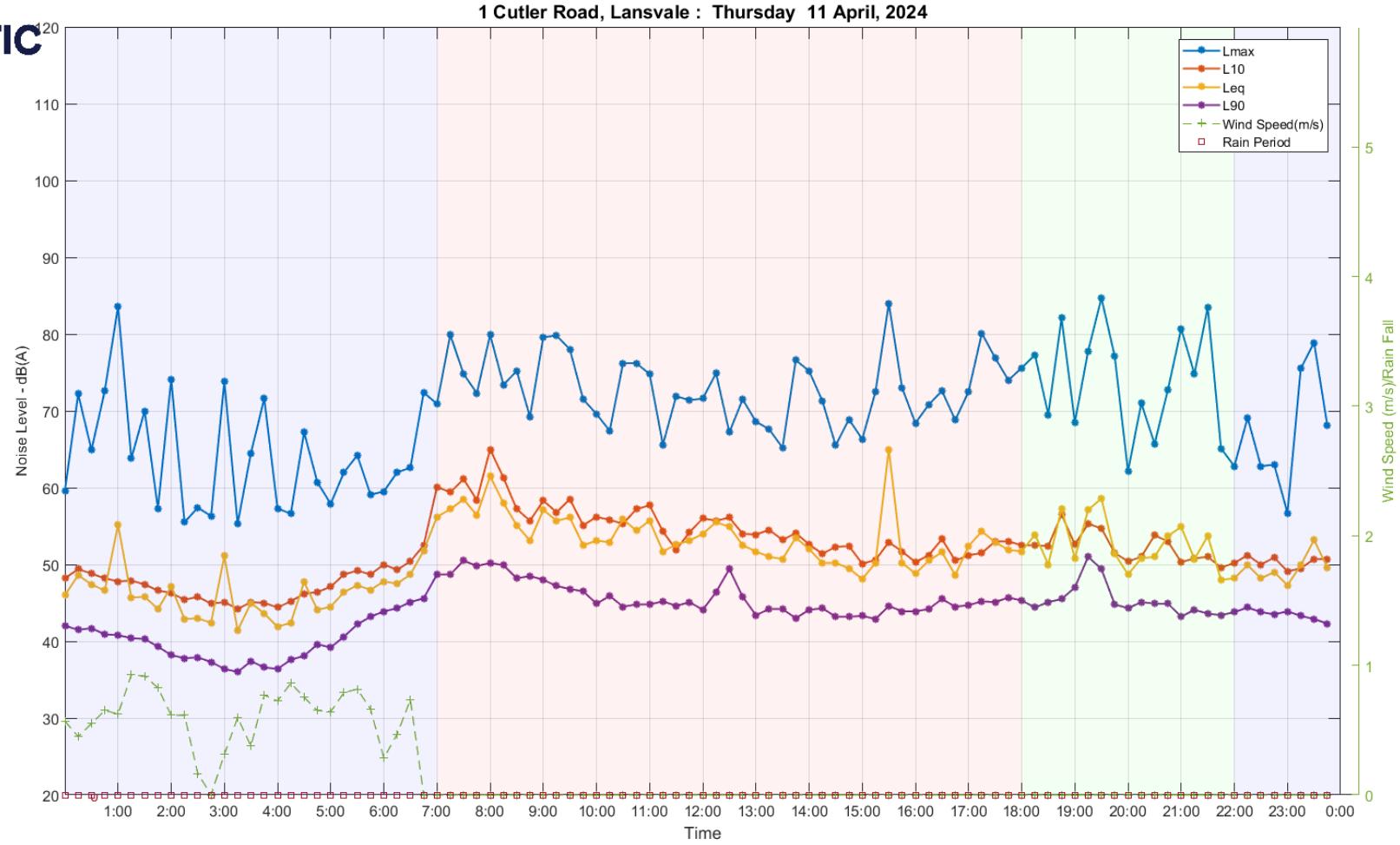
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Wind Speed(m/s)
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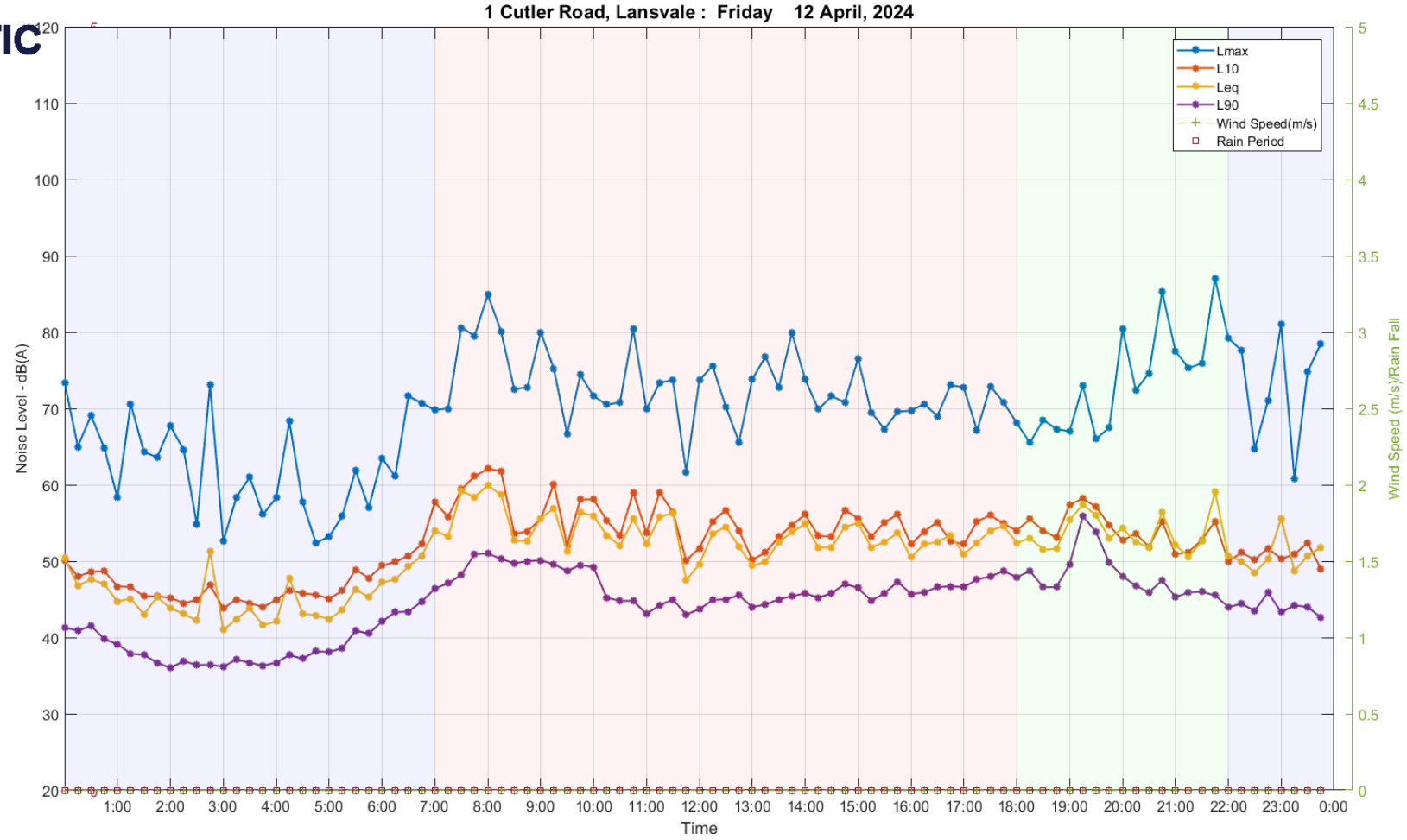
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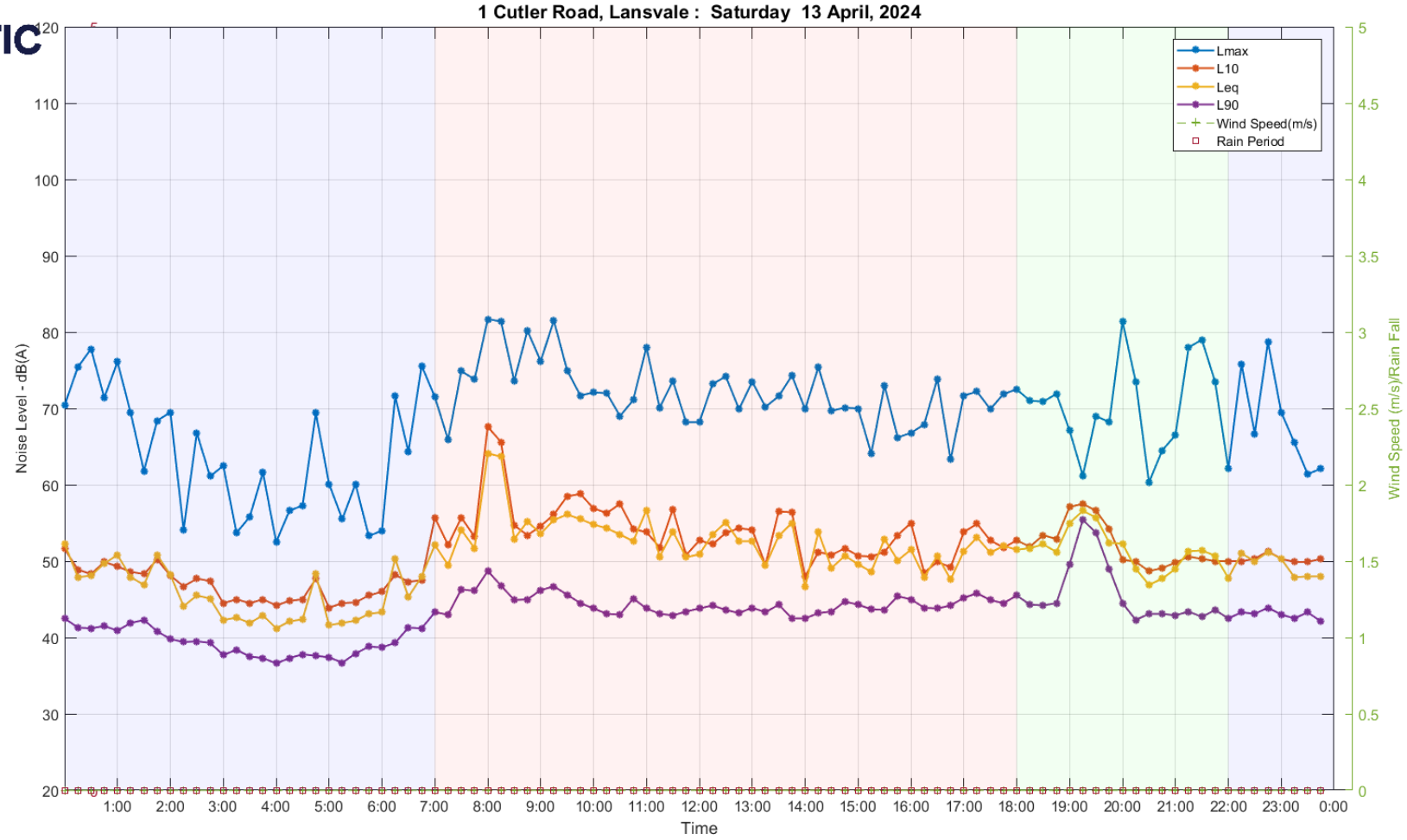
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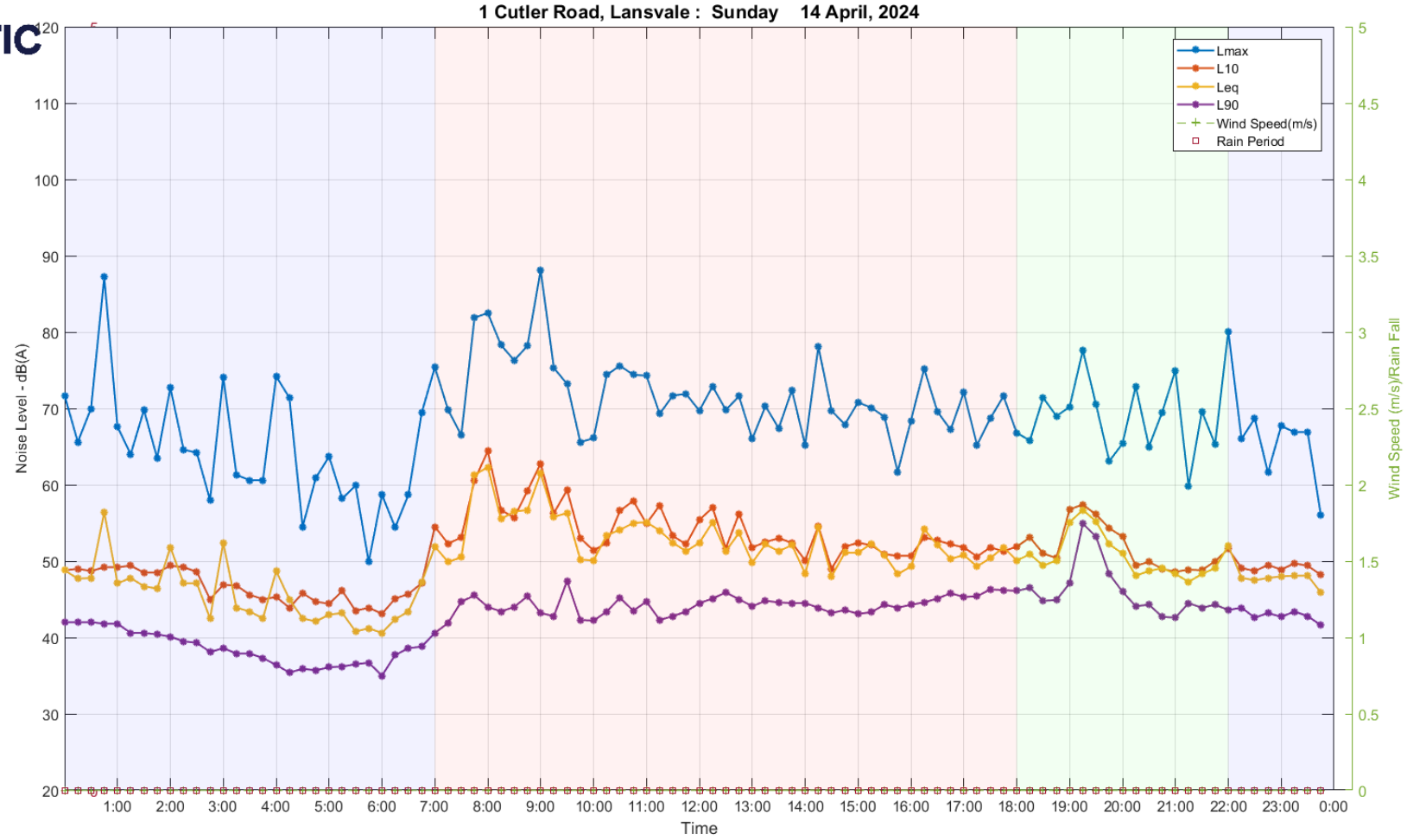
1 Cutler Road, Lansvale : Sunday 14 April, 2024
Lmax
L10
Leq
L90
Wind Speed(m/s)
Rain Period
Noise Level - dB(A)
Wind Speed (m/s)/Rain Fall
Time
120
110
100
90
80
70
60
50
40
30
20
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
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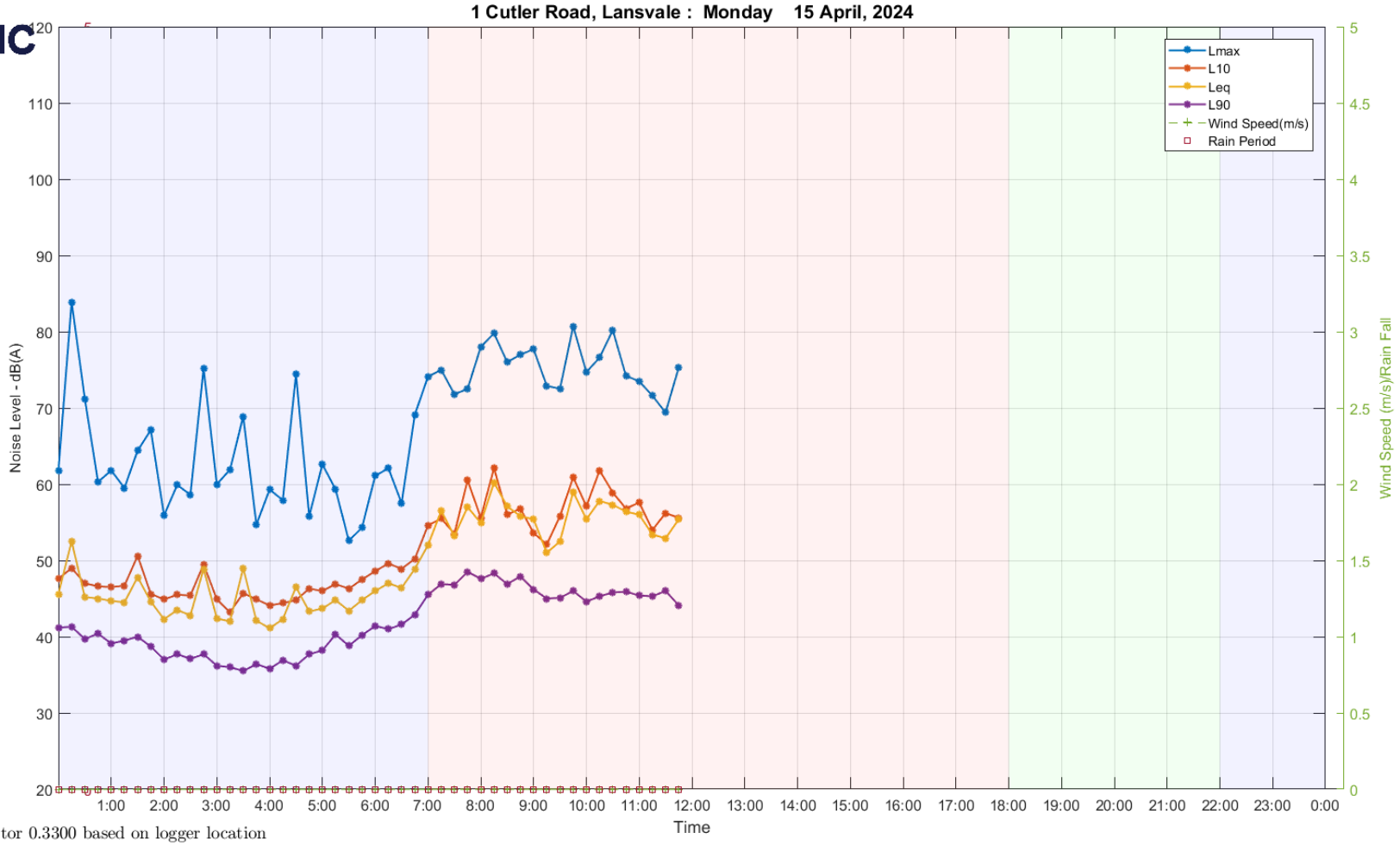

Wind Speed is corrected using factor 0.3300 based on logger location

APPENDIX B 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 NPI TRIGGER LEVELS

The NPI 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 NPI (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:

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

The NPI permits the project specific amenity level to be increased in areas where ambient noise levels already significantly exceed the levels in Table 2.2 of the NPI.

NPI *Table 2.2: Amenity* Noise Levels			
Receiver	***Noise* Amenity Area**	***Time of* Day**	***Recommended* Amenity Noise Level L_{Aeq}**
Residential	*Rural*	*Day*	*50*
		Evening	*45*
		Night	*40*
	Suburban	*Day*	*55*
		Evening	*45*
		Night	*40*
	Urban	*Day*	*60*
		Evening	*50*
		Night	*45*
Hotels motels caretakers' quarters holiday accommodation permanent resident caravan parks	*See column 4*	*See column 4*	*5 dB(A) above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day*
School classroom – internal	*All*	*Noisiest 1-hour period when in use*	*35 (see notes for table)*
Hospital ward internal external	*All* *All*	*Noisiest 1-hour* *Noisiest 1-hour*	*35* *50*
Place of worship – internal	*All*	*When in use*	*40*
Area specifically reserved for passive recreation (e.g. national park)	*All*	*When in use*	*50*
Active recreation area (e.g. school playground golf course)	*All*	*When in use*	55
Commercial premises	*All*	*When in use*	*65*
Industrial premises	*All*	*When in use*	*70*
Industrial interface (applicable only to residential noise amenity areas)	*All*	*All*	*Add 5 dB(A) to recommended noise amenity area*

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 LAeq noise level may be increased to 40 dB LAeq(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 NPI 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 NPI 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.

Given the site is only proposed to operate during daytime, this criteria does not apply to the project.

B.2 PROJECT SPECIFIC TRIGGERS LEVELS

The following table summarises the trigger levels applying at each of the identified "most impacted" receivers. These have been determined based on the NPI 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 5 – EPA NPI Noise Emission Criteria

Receiver	Time Period	Assessment Background Noise Level dB(A)L_{90}	Project Amenity Criteria dB(A) L_{eq}	Intrusiveness Criteria $L_{eq(15min)}$
Residential Receiver **R1**	Day	43	53	**48**
Commercial Receiver **C1**			**63**	N/A
Industrial Receiver **I1 & I2**			**68**	N/A
Passive Recreation Receiver **RE1**			**48**	N/A

As the proposed development does not operate during the night a maximum noise level assessment is not required.