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2-34 Davidson St, Greenacre NSW

Noise Impact Assessment

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Attention To	Next Level Up Construction Services Pty Ltd

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TABLE OF CONTENTS

1	INTRODUCTION	4
2	SITE DESCRIPTION	5
3	NOISE DESCRIPTORS	7
4	AMBIENT NOISE SURVEY	8
4.1	SUMMARISED EXISTING TRAFFIC/ RAIL NOISE LEVELS	8
4.2	SUMMARISED RATING BACKGROUND NOISE LEVELS	9
5	NOISE EMISSION CRITERIA	10
5.1	STRATHFIELD DCP 2005	10
5.2	NSW EPA ROAD NOISE POLICY 2011	11
5.3	NSW EPA NOISE POLICY FOR INDUSTRY (NPI) 2017	11
5.3.1	Intrusiveness Criterion	11
5.3.2	Project Amenity Criterion	11
5.3.3	Sleep Arousal Criteria	12
5.4	SUMMARISED NOISE EMISSION CRITERIA	13
6	NOISE EMISSIONS ASSESSMENT	14
6.1	NOISE FROM MECHANICAL PLANT WITHIN PROPOSED SITE GENERALLY	14
6.1.1	Preliminary Mechanical Treatment Advice	14
6.2	NOISE GENERATED BY ADDITIONAL TRAFFIC ON PUBLIC ROADS	15
6.3	LOADING DOCKS & CARPARK MOVEMENTS	16
6.4	SOUNDPLAN NOISE MODELLING	20
6.4.1	Day Time SoundPlan Prediction	21
6.4.2	Evening Time SoundPlan Prediction	25
6.4.3	Night Time SoundPlan Prediction	29
6.4.4	Night Time SoundPlan Prediction Lmax	33
6.5	RECOMMENDATIONS	35
7	CONCLUSION	37
APPENDIX ONE – UNATTENDED NOISE MONITORING		38
NEAR 5-7 DAVIDSON STREET		38
CORNER OF HUME HIGHWAY AND CENTENARY DRIVE		50

1 INTRODUCTION

Acoustic Logic (AL) has been engaged to conduct an acoustic assessment of potential noise impacts from operation of warehouses at 2-34 Davidson Street, Greenacre

AL have utilised the following documents and regulations in the noise assessment of the development:

- Strathfield Council Pre-Development Application Meeting Minutes – 2/34 Davidson Street, Greenacre
- Strathfield Council DCP 2005
- NSW Environmental Protection Authority (EPA) – ‘Road Noise Policy’ (RNP) 2011, and
- NSW Environmental Protection Authority (EPA) – ‘Noise Policy for Industry’ (NPI) 2017.

This assessment has been conducted using the Reid Campbell architectural drawings for DA submission (*Project No: 119038*, dated January 2022).

2 SITE DESCRIPTION

Investigation has been carried out by this office in regards to the existing properties and noise impacts surrounding the proposed development, which is detailed below:

- Existing residential blocks to the west east along Davidson Street and Marlene Crescent; and
- Existing industrial receivers surrounding the site.

The nearest noise receivers around the site include:

- **R1:** Residential Receiver 1 – Single storey residential development to the west along Davidson Street and Marlene Crescent.
- **R2:** Residential Receiver 2 – Four storey residential development to the northwest at 5-11 Marlene Crescent.
- **R3:** Residential Receiver 3 – Single storey residential developments to the southwest at 33 and 39 Marlene Crescent.
- **R4:** Residential Receiver 4 – Multi storey residential developments to the east at 84-86 Centenary Drive.
- **R5:** Commercial Receiver 5 – Commercial development to the south along Davidson Street.
- **R6:** Commercial Receiver 6 – Commercial development to the southwest along Davidson Street.
- **R7:** Commercial Receiver 7 – Commercial development to the south along Hume Highway.
- **R8:** Commercial Receiver 8 – Commercial development to the southeast along Braidwood Street.
- **R9:** Active Recreation Receiver 9 – Strathfield South High School playground to the east.

A site map, measurement description and surrounding receivers are presented in Figure 1 below.

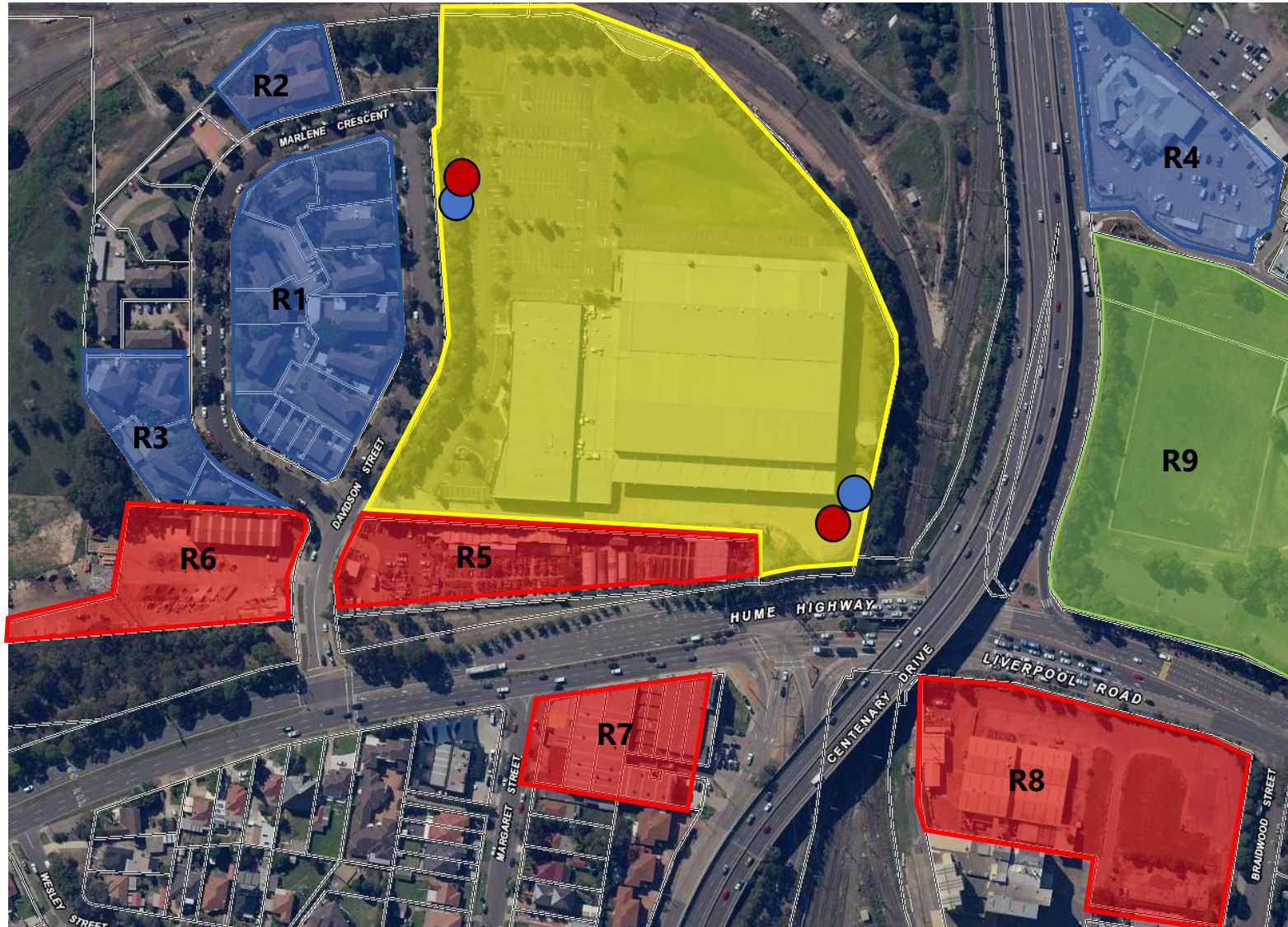


Figure 1 – Project Site
Source: NSW Six Maps

- Project Site
- Residential Receivers
- Commercial Receivers
- Active Play Receivers

- Attended Measurements
- Unattended Noise Monitor

3 NOISE DESCRIPTORS

Environmental noise constantly varies. Accordingly, it is not possible to accurately determine prevailing environmental noise conditions by measuring a single, instantaneous noise level.

To accurately determine the environmental noise a 15-minute measurement interval is utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine noise description parameters.

In analysing environmental noise, three principal measurement parameters are used, namely L_{10} , L_{90} and L_{eq} . The L_{10} and L_{90} measurement parameters are statistical levels that represent the average maximum and average minimum noise levels respectively, over the measurement intervals.

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

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

The L_{eq} parameter represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the 15-minute period. L_{eq} is important in the assessment of environmental noise impact as it closely corresponds with human perception of a changing noise environment; such is the character of environmental noise.

4 AMBIENT NOISE SURVEY

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

Appendices in this report present results of unattended noise monitoring conducted at the project site. Weather affected data was excluded from the assessment. The processed RBL (lowest 10th percentile noise levels during operation time period) are presented in the tables below.

Measurement Position

Two unattended noise monitors were installed at the project site. One monitor was located at Refer to Figure 1 for detailed location.

Measurement Period

Unattended noise monitoring was conducted from Friday 20th of November 2020 to Monday 30th of November 2020. Attended noise measurements were undertaken between the hours of 2:00pm and 5:00pm on 20th of October 2020.

Measurement Equipment

Equipment used consisted of an Acoustic Research Laboratories Pty Ltd noise logger. The logger was set to A-weighted fast response and was programmed to store 15-minute statistical noise levels throughout the monitoring period. The monitor was calibrated at the start and end of the monitoring period using a Rion NC-73 calibrator. No significant drift was noted. Noise logger data is provided in appendix of this report.

4.1 SUMMARISED EXISTING TRAFFIC/ RAIL NOISE LEVELS

Summarised existing traffic/ rail noise levels for the project site and immediate surroundings are presented below.

Table 4-1 – Measured Noise Levels

Monitor	Time of day	Environmental Noise Level dB(A) _{Leq(Period)}
Davidson Street	Day & Evening (7am – 10pm)	54
	Night (10pm – 7am)	51
Hume Highway	Day & Evening (7am – 10pm)	63
	Night (10pm – 7am)	61

Table 4-2 – Measured Noise Levels (Worst 1 Hour)

Monitor	Time of day	Environmental Noise Level dB(A) _{Leq(1 Hour)}
Davidson Street	Day & Evening (7am – 10pm)	56
	Night (10pm – 7am)	54
Hume Highway	Day & Evening (7am – 10pm)	64
	Night (10pm – 7am)	63

4.2 SUMMARISED RATING BACKGROUND NOISE LEVELS

Summarised rating background noise levels for the project site and immediate surroundings are presented below. Weather affected data has been removed in line with the recommendations of Fact Sheets A & B of the NSW EPA Noise Policy for Industry.

Table 4-3 – Measured Noise Levels

Monitor	Time of day	Rating Background Noise Level dB(A)_{L90(Period)}
Davidson Street	Day (7am – 6pm)	46
	Evening (6pm – 10pm)	49
	Night (10pm – 7am)	45
Hume Highway	Day (7am – 6pm)	58
	Evening (6pm – 10pm)	57
	Night (10pm – 7am)	53

5 NOISE EMISSION CRITERIA

The noise emission from the project site shall comply with the requirements of the following documents.

- Strathfield DCP 2005
- NSW EPA Road Noise Policy 2011, and
- NSW EPA Noise Policy for Industry (NPI) 2017.

5.1 STRATHFIELD DCP 2005

Part D of the Strathfield DCP 2005 states the following with regard to noise emissions, specifically in relation to acoustic privacy relating to commercial developments.

2.4 – Development Adjoining Residential Zones

Guidelines:

5. Noise associated with the premises including plant and equipment will be subject to the NSW Environmental Protection Authority's *Environmental Noise Control Manual* and *Industrial Noise Policy 2000* and the *Protection of the Environment Operations Act 1997*.
6. Noise generated from fixed sources or motor vehicles associated with the proposed industrial development must be effectively insulated or otherwise minimised.
7. The operating noise level of plant and equipment shall generally not exceed 5dB(A) above the background noise level when measured at the boundaries of the premises between the hours of 7.00am and 10.00pm. If existing background levels are above the Environmental Protection Authority (EPA) criteria, then a merit based assessment will be carried out.
8. If operating noise levels of plant and equipment are proposed outside the hours of 7.00pm and 10.00pm, the applicant may be subject to a merit based assessment which may need to be supported by an Acoustical Engineers' report.

2.14 – Air, Noise and Water Pollution

2.14.2 – Noise

2. The proximity of the proposal to residential areas will influence the type of land use or machinery that will be permissible.
3. The proposed building(s) must be designed (orientated, insulated etc) to inhibit the transmission of noise. Hours of operation and access to the site through residential streets may be restricted where the proposed development involves the generation of noise likely to affect residential areas. Council may require an acoustic report from a suitably qualified acoustic consultant where a proposed development may create excessive noise.
4. The use of the premises including plant and equipment will be subject to strict compliance with the NSW Environmental Protection Authority's *Environmental Noise Control Manual* and the *Industrial Noise Policy 2000*.

5.2 NSW EPA ROAD NOISE POLICY 2011

For land use developments with the potential to create additional traffic on public streets the development should comply with the EPA Road Noise Policy.

Noise levels generated by traffic should not exceed the noise levels set out in the table below when measured at a nearby property.

Table 5-1 – Criteria for Traffic Noise Generated by New Developments

Road Type	Time of day	Permissible Noise Generation
Local Roads (Davidson Street)	Day (7am to 10pm)	55 dB(A) $L_{eq}(1hr)$
	Night (10pm to 7am)	50 dB(A) $L_{eq}(1hr)$

However, if existing noise levels exceed those in the table above, Section 3.4 of the Road Noise Policy is applicable, *which requires noise impacts are reduced through feasible and reasonable measures. In determining what is feasible/reasonable, the Policy notes that an increase of less than 2dB(A) is a minor impact and would be barely perceptible.*

5.3 NSW EPA NOISE POLICY FOR INDUSTRY (NPI) 2017

The EPA NPI has two criteria which both are required to be satisfied, namely Intrusiveness and amenity. The NPI sets out acceptable noise levels for various localities. The policy indicates four categories to assess the appropriate noise level at a site. They are rural, suburban, urban and urban/industrial interface. Under the policy the nearest residential receivers would be assessed against the urban criteria.

Noise levels are to be assessed at the property boundary or nearby dwelling, or at the balcony or façade of an apartment.

5.3.1 Intrusiveness Criterion

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

Background noise levels adopted are presented in Table 4-3. Noise emissions from the site should comply with the noise levels presented below when measured at nearby property boundary.

5.3.2 Project Amenity Criterion

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

The EPA's NPI sets out acceptable noise levels for various localities. The recommended noise amenity area is based upon the measured background noise levels at the sensitive receiver. Based on the measured background noise levels detailed in Table 4-3, the Noise Policy for Industry suggests the adoption of the 'urban' categorisation.

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

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

The amenity levels appropriate for the receivers surrounding the site are presented in Table 5-2.

Table 5-2 – EPA Amenity Noise Levels

Type of Receiver	Time of day	Recommended Noise Level dB(A) $L_{eq}(\text{period})$	Project Amenity Noise Level dB(A) $L_{eq}(15 \text{ minute})$
Residential – Urban	Day	60	58
	Evening	50	48
	Night	45	43

Table 5-3 – EPA NPI Noise Emission Criteria (Non-Residences Surrounding Project Site)

Type of Receiver	Time of day	Recommended Noise Level dB(A) $L_{eq}(\text{period})$
Commercial Premises	When in use	65
Active Recreation	When in use	55

The NSW EPA Noise Policy for Industry (2017) defines;

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

5.3.3 Sleep Arousal Criteria

The Noise Policy for Industry recommends the following noise limits to mitigate sleeping 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 plus 5 dB, whichever is the greater, and/or
- L_{Fmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater,

a detailed maximum noise level even assessment should be undertaken.

Table 5-4 – Sleep Arousal Criteria for Residential Receivers

Receiver	Rating Background Noise Level (Night) dB(A) L_{90}	Emergence Level
Residences Surrounding Site Night (10pm – 7am)	45 dB(A) L_{90}	50 dB(A) $L_{eq, 15min}$; 60 dB(A) L_{Fmax}

5.4 SUMMARISED NOISE EMISSION CRITERIA

Table 5-5 – EPA NPI Noise Emission Criteria (Residents Surrounding Project Site)

Time Period	Assessment Background Noise Level dB(A) L_{90}	Project Amenity Criteria dB(A) L_{eq}	Intrusiveness Criteria $L_{eq}(15min)$	NPI Criteria for Sleep Disturbance
Day	46	58	51	N/A
Evening	49	48	54	N/A
Night	45	43	50	50 dB(A)$L_{eq, 15min}$; 60 dB(A)L_{Fmax}

The project noise trigger levels are indicated by the bolded values in the table above.

Table 5-6 – EPA NPI Noise Emission Criteria (Non-Residences Surrounding Project Site)

Type of Receiver	Time of day	Recommended Noise Level dB(A) $L_{eq(period)}$
Commercial premises	When in use	65
Active Recreation	When in use	55

Table 5-7 – Criteria for Traffic Noise Generated by New Developments

Road Type	Time of day	Permissible Noise Generation*
Local Roads (Davidson Street)	Day (7am to 10pm)	58 dB(A) $L_{eq}(1hr)$
	Night (10pm to 7am)	56 dB(A) $L_{eq}(1hr)$

*Note: A worst one hour +2 dB(A) criteria is permissible as detailed in Section 5.2.

6 NOISE EMISSIONS ASSESSMENT

6.1 NOISE FROM MECHANICAL PLANT WITHIN PROPOSED SITE GENERALLY

Detailed plant selection and location has not been undertaken at this stage. Satisfactory levels will be achievable through appropriate plant selection, location and if necessary, standard acoustic treatments such as duct lining, acoustic silencers and enclosures.

Noise emissions from all mechanical services to the closest residential and commercial receivers should comply with the requirements of Section 5.4.

Detailed acoustic review should be undertaken at CC stage to determine acoustic treatments to control noise emissions to satisfactory levels.

6.1.1 Preliminary Mechanical Treatment Advice

An indicative assessment of initial design of primary plant items is presented below.

- Generators may be used for standby power, to ensure compliance these may require attenuation to radiators and air intakes, as well as silencers/mufflers to the exhaust.
- Refrigeration equipment:
 - Refrigeration compressors are recommended to be located within enclosure plant rooms.
 - Locate refrigeration condensers as far as practicable from adjacent noise sensitive development. Noise screening (using either a dedicated noise screen or the building shell between the condensers and noise sensitive buildings).
 - Night time operational speeds shall be restricted.
- Major fans (typically with a sound power over 80dB(A) – such as kitchen exhaust, major toilet exhaust and major relief air fans) may require acoustic treatment if located externally near sensitive receivers. It is recommended that axial (as opposed to roof mounted fans) are to be used as this will enable acoustic treatment to be incorporated within ductwork running to atmosphere and with attenuators if necessary. Indicatively a 1d unpodded attenuator with 2m of 50mm internally lined ductwork.
- The location of external PAC units is likely to be spaced around the warehouse roof. Conservative calculation with a sound power up to 90 dB(A) shows compliance with noise emission levels through the erection of an acoustic barrier facing residential receivers to break line of sight.
- The location of air-cooled chillers shall be placed away from noise sensitive receivers. Conservative calculation with a sound power up to 90 dB(A) shows compliance with noise emission levels through the erection of an acoustic barrier facing residential receivers to break line of sight if situated close to the residents.

Cumulative assessment of both plant noise with other noise sources is recommended when conducting acoustic design of plant items.

Compliance with EPA acoustic criteria (as set out in Section 5.4) will be achievable, provided that detailed acoustic review of plant items is undertaken once plant is selected, and acoustic treatments similar to those outlined above are adopted.

The above recommendations are indicative. Detailed acoustic review should be undertaken at CC stage to determine acoustic treatments to control noise emissions to satisfactory levels.

6.2 NOISE GENERATED BY ADDITIONAL TRAFFIC ON PUBLIC ROADS

Noise created as a result an increase in traffic on public roads is assessed with reference to the EPA Road Noise Policy. CoRTN road traffic modelling was used to calculate traffic noise levels resultant on the façades of residential receivers based on the measured traffic noise levels on site and the increased traffic volumes from the site. Traffic generation numbers and movement paths have been taken from the McLaren Traffic Engineering “Traffic and Parking Impact Assessment” (Ref: 200876.01DB, dated 3rd February 2021), noting that total traffic generation includes trucks not just cars.

3.5 Servicing & Loading

During the day, the servicing and loading operation of heavy vehicles in the site will be to enter and exit the same driveway which they arrive in. That is, heavy vehicles up to and including 20m long AVs serving warehouses 2 and 3 will enter and exit the site via the northern driveway, while the same sized vehicles serving warehouses 1 and 4 will enter and exit the site via the southern driveway. Vehicles up to and including 26m long B-Doubles will serve the site during the day by travelling one-way clockwise around the site (entering the northern driveway and exiting the southern driveway). After hours, access will be restricted to a 20m long AV and only the southernmost driveway will be operational such that, two-way traffic flow will be required.

5 Conclusion

The traffic generation of the proposed development is expected to generate a total of 180 vehicle trips in both the AM (144 in, 36 out) and PM (36 in, 144 out) peak hour periods. Consideration has also been made to the existing development such that the proposed change of use results in a net increase of 78 vehicle trips in both the AM (62 in; 16 out) and PM (16 in; 62 out) peak hour periods.

The following noise emission data for vehicle-related noise sources measured by this office have been used for the assessment.

Table 6-1 – Sound Power Levels of Typical Movements

Car Movement	Sound Power Level, dB(A)
Car Manoeuvring @ 40km/h	94 $L_{eq(15 \text{ min})}$
Trucks Manoeuvring @ 40km/h	105 $L_{eq(15 \text{ min})}$

With the traffic generation numbers detailed in the traffic report (180 movements for day and evening) and the calculated allowable peak number of trucks for the day and night periods (discussed in Section 6.3 below), the following noise generation is predicted. Night time car movements has been conservatively taken as 98 movements (49 cars in and out within a 1 hour period) to service warehouses 2 and 3.

Table 6-2 – Noise Generated by Additional Road Traffic – Noise Impact Assessment

Receiver Location	Predicted Noise Level dB(A) $L_{eq(1hr)}$	Compliance
9 Davidson Street (worst affected resident receiver near northern driveway at R1)	Day: 56	Complies (< 58dB(A) day time criteria) *
	Night: 52	Complies (< 56dB(A) night time criteria) *
38 Marlene Crescent (worst affected resident receiver near southern driveway at R1)	Day: 56	Complies (< 58dB(A) day time criteria) *
	Night: 53	Complies (< 56dB(A) night time criteria) *

*As discussed with reference to the measured traffic noise levels in Section 4.1.

Predicted noise as a result of additional traffic generation is compliant with the EPA Road Noise Policy.

6.3 LOADING DOCKS & CARPARK MOVEMENTS

Assessment of the carpark noise emissions has been undertaken based on the size of the new carparks. Calculations have been made to predict noise levels occurring at sensitive receivers during a one hour peak of traffic movements for day and evening periods with all spaces filled within the hour, and a one hour maximum of half the carpark spaces filled within the hour during the night time period. The worst affected residential receivers are residents at **R1** and **R2**.

Traffic movement paths have been taken from the McLaren Traffic Engineering "Traffic and Parking Impact Assessment" (Ref: 200876.01DB, dated 3rd February 2021).

3.5 Servicing & Loading

During the day, the servicing and loading operation of heavy vehicles in the site will be to enter and exit the same driveway which they arrive in. That is, heavy vehicles up to and including 20m long AVs serving warehouses 2 and 3 will enter and exit the site via the northern driveway, while the same sized vehicles serving warehouses 1 and 4 will enter and exit the site via the southern driveway. Vehicles up to and including 26m long B-Doubles will serve the site during the day by travelling one-way clockwise around the site (entering the northern driveway and exiting the southern driveway). After hours, access will be restricted to a 20m long AV and only the southernmost driveway will be operational such that, two-way traffic flow will be required.

The following noise emission data for vehicle-related noise sources measured by this office have been used for the assessment. Note that the sound power level below has been adjusted for a tonality penalty per Factsheet C of the Noise Policy for Industry for a reverse beacon, typical of large articulated vehicles. This noise emission level has been obtained from noise measurements carried out at a similar loading dock facility. Noise measurements were obtained using a Norsonics Nor118 sound level analyser set to fast response. The sound level analyser was calibrated before and after the measurements using a Rion NC-73 calibrator with no significant drift detected during the measurement.

Table 6-3 – Sound Power Levels of Typical Activities

Item	Sound Power Level, dB(A)
Car Manoeuvring @ 10km/h	84 $L_{eq(15 \text{ min})}$
Car Door Slamming	96 L_{max}
Truck Manoeuvring @ 10km/h (up to 26m long B-Double)	105 $L_{eq(15 \text{ min})}$
Truck Reversing @ 10km/h (up to 26m long B-Double)	**110 $L_{eq(15 \text{ min})}$
Truck Reverse	108 L_{max}
Air brake	121 $L_{eq(1 \text{ second})}$
Internal operational noise of warehouse*	Day/Evening 78 L_{eq} Night 70 L_{eq}

*Note: Internal operational noise levels are based on measurements conducted by this office for typical warehouse noise levels. This is a cumulative noise level inclusive of typical internal works including forklift loading/ unloading manoeuvres.

**A 5 dB(A) penalty has been applied for the reversing beacon.

Access/egress to the site is via Davidson Street. Predictions of noise generation are based on the following numbers and figures (movement paths have been colour coded and are in line with the following delineations provided by the Client:

General Controls:

- All articulated trucks and medium rigid vehicles include a 5 dB(A) penalty applied during reversing manoeuvres to conservatively simulate the reversing beacon.
- All articulated trucks include a one second airbrake release when parked at their respective docks.

Day & Evening Time Periods

- Warehouse 1 (day and evening period combined and evenly distributed):
 - 10 articulated trucks two-way movements
 - 21 medium rigid vehicles two-way movements
 - 25 car two-way movements
 - All inbound and outbound movements will be situated along the southern boundary (green line in Figure 2).
- Warehouse 1 expansion (day and evening period combined and evenly distributed):
 - 15 medium rigid truck two-way movements.
 - All inbound and outbound movements will be situated along the western boundary (red line in Figure 2).
- Warehouse 2 (day and evening period combined and evenly distributed):
 - 9 articulated trucks two-way movements
 - 16 medium rigid vehicles two-way movements
 - 50 car two-way movements.
 - All inbound and outbound movements will run in a clockwise direction (blue line in Figure 2.)

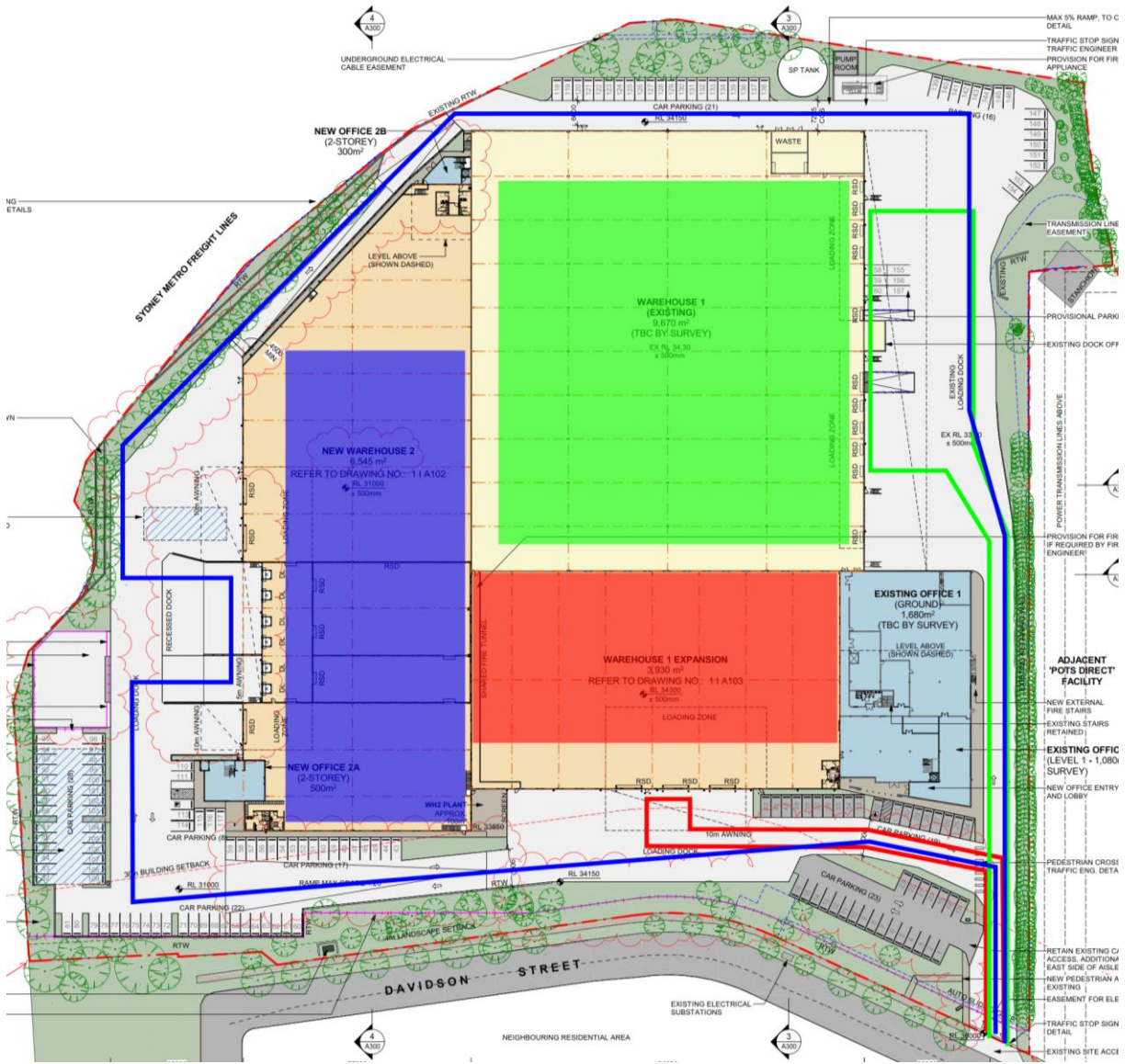


Figure 2 – Day and Evening Time General Truck Movement Paths

- Warehouse 1
- Warehouse 1 Extension
- Warehouse 2

Night Time Period

- Warehouse 1: no movements.
- Warehouse 1 expansion: no movements.
- Warehouse 2:
 - 5 medium rigid vehicle two-way movements (evenly distributed).
 - All inbound movements to run anti-clockwise to the docks, and outbound movements to run in a clockwise direction (blue line in Figure 3.)

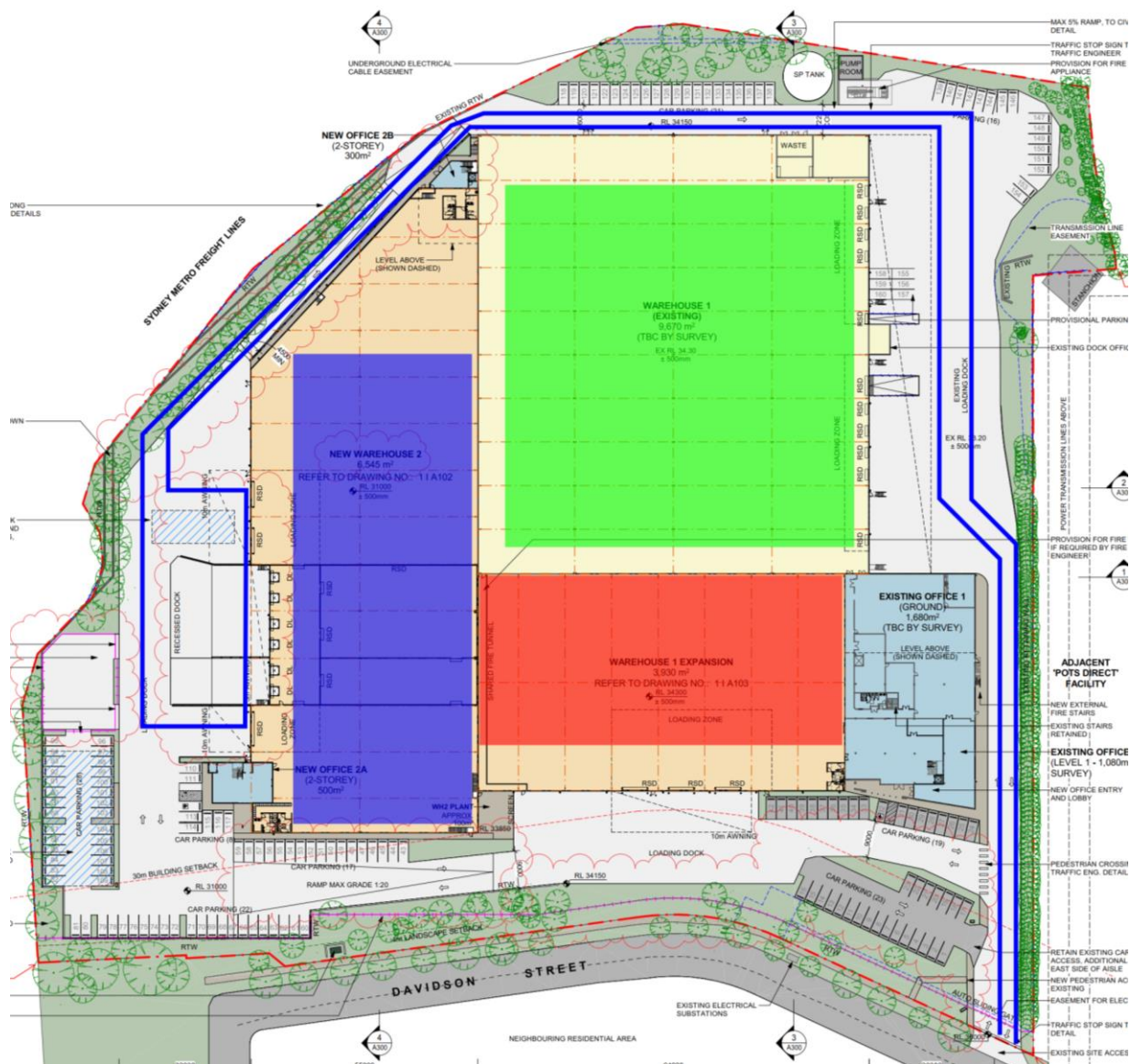
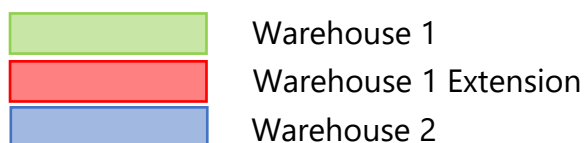


Figure 3 – Night Time General Truck Movement Paths for Warehouses 2 and 3 in Purple and Blue



6.4 SOUNDPLAN NOISE MODELLING

Noise levels from usage of the loading docks have been predicted at the nearby residential receivers using SoundPlan™ modelling software implementing the ISO 9613-2:1996 *“Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation”* noise propagation standard. The truck noise levels were calibrated to attended measurements of large refrigeration trucks previously measured by this office.

Cumulative detailed SoundPlan simulation results detailing the predicted façade noise levels as a result of loading dock and carpark usage can be found below.

6.4.1 Day Time SoundPlan Prediction

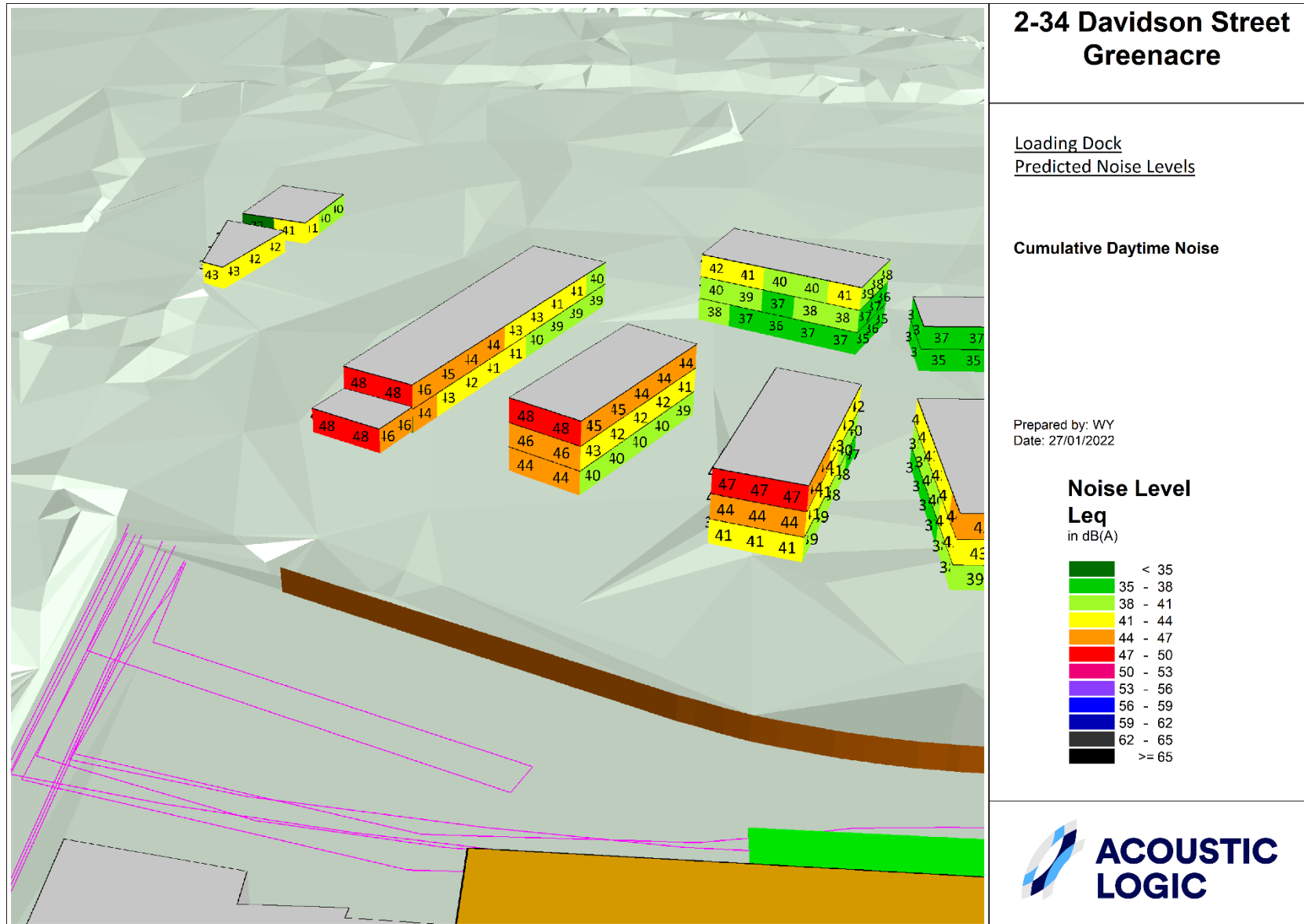
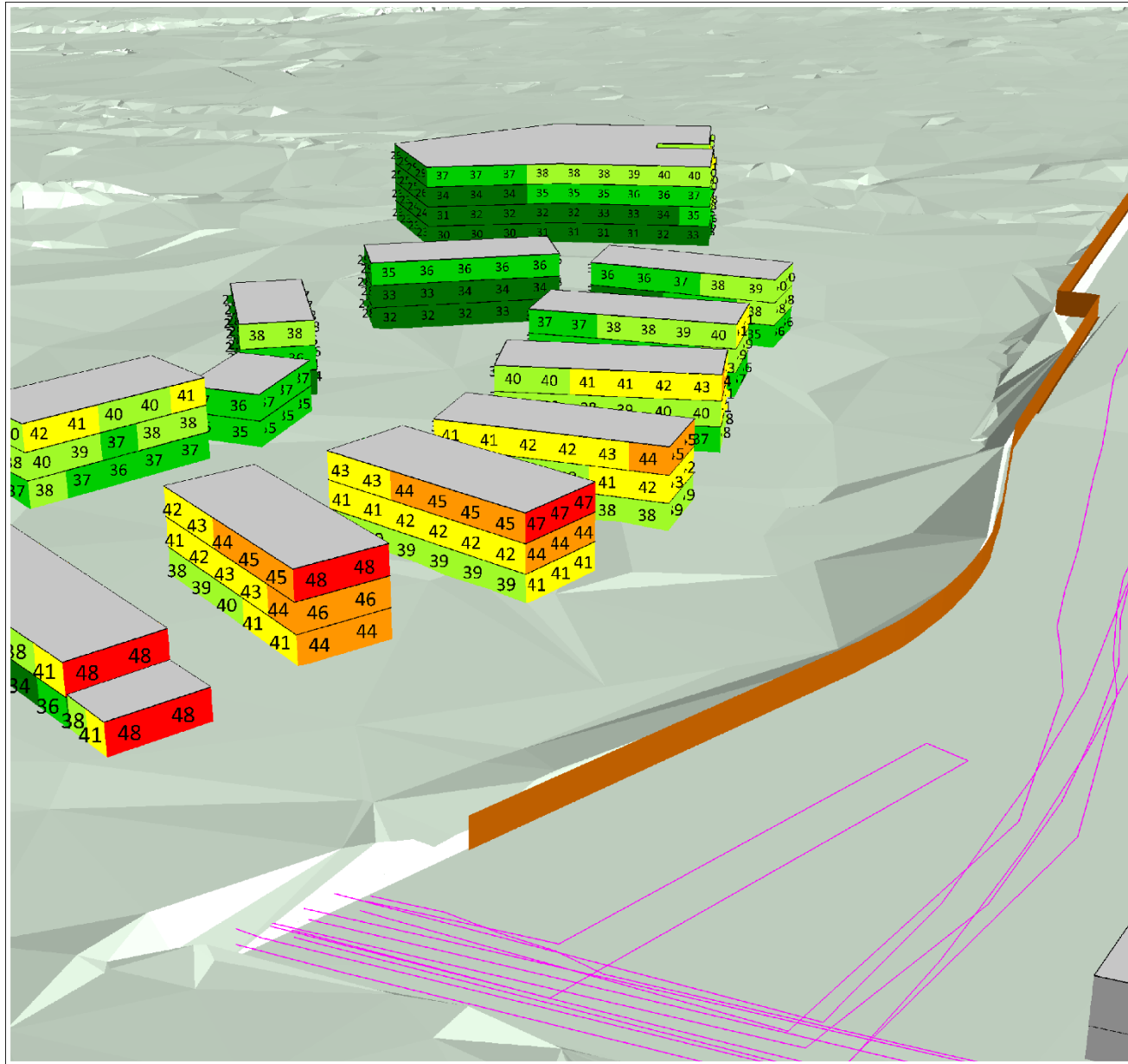


Figure 4 – Day Time SoundPlan Model View 1



2-34 Davidson Street Greenacre

Loading Dock
Predicted Noise Levels

Cumulative Daytime Noise

Prepared by: WY
Date: 27/01/2022

Noise Level
Leq
in dB(A)

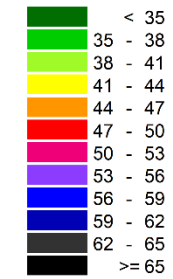
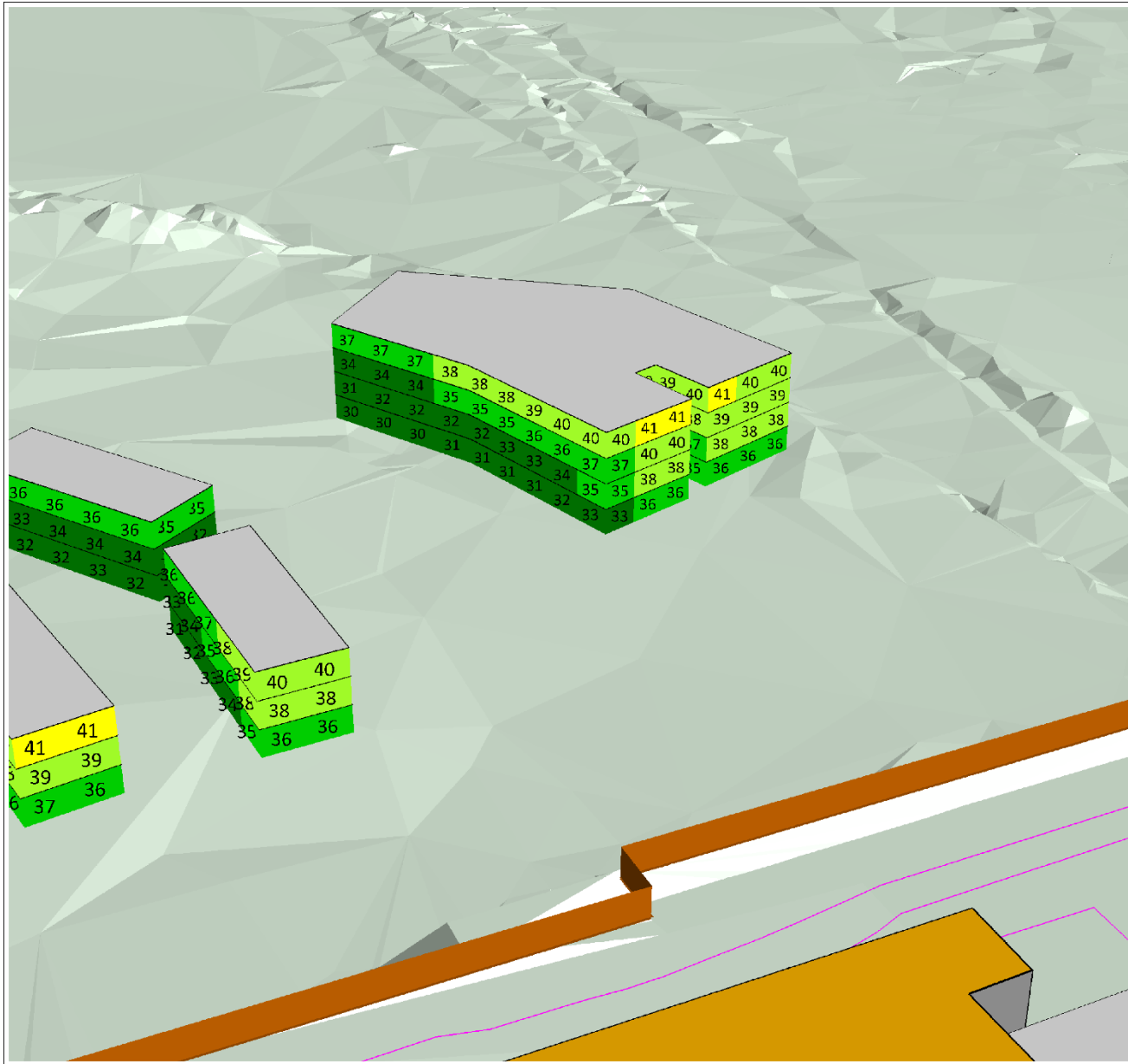


Figure 5 – Day Time SoundPlan Model View 2



2-34 Davidson Street Greenacre

Loading Dock
Predicted Noise Levels

Cumulative Daytime Noise

Prepared by: WY
Date: 27/01/2022

Noise Level
Leq
in dB(A)

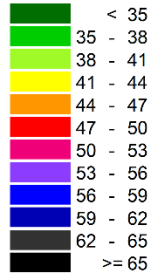
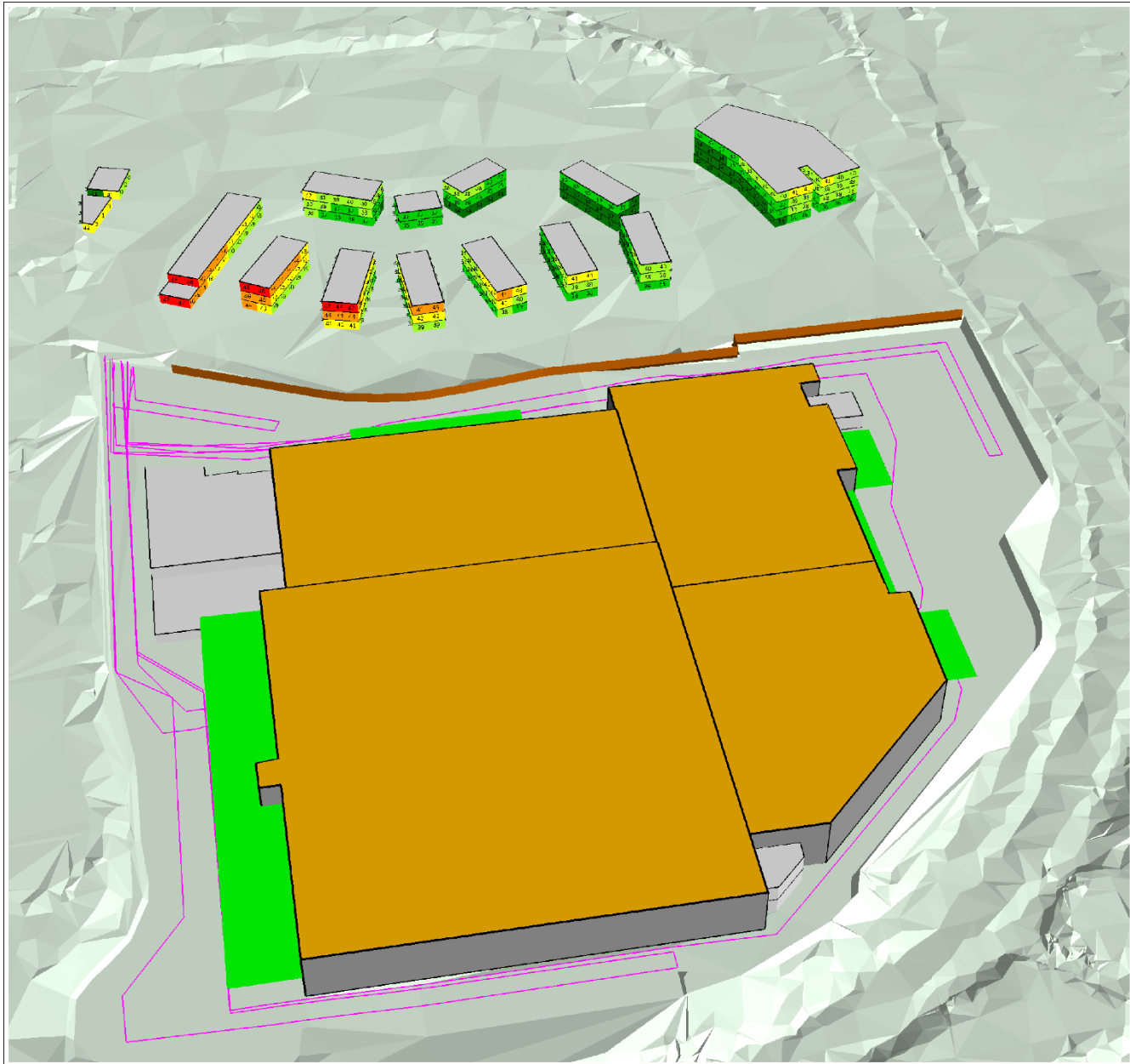


Figure 6 – Day Time SoundPlan Model View 3



2-34 Davidson Street Greenacre

Loading Dock
Predicted Noise Levels

Cumulative Nighttime Noise

Prepared by: WY
Date: 27/01/2022

Noise Level
Leq
in dB(A)

Dark Green	< 35
Light Green	35 - 38
Yellow-Green	38 - 41
Yellow	41 - 44
Orange	44 - 47
Red-Orange	47 - 50
Red	50 - 53
Pink	53 - 56
Purple	56 - 59
Blue	59 - 62
Dark Blue	62 - 65
Black	>= 65



Figure 7 – Day Time SoundPlan Model View 4

6.4.2 Evening Time SoundPlan Prediction

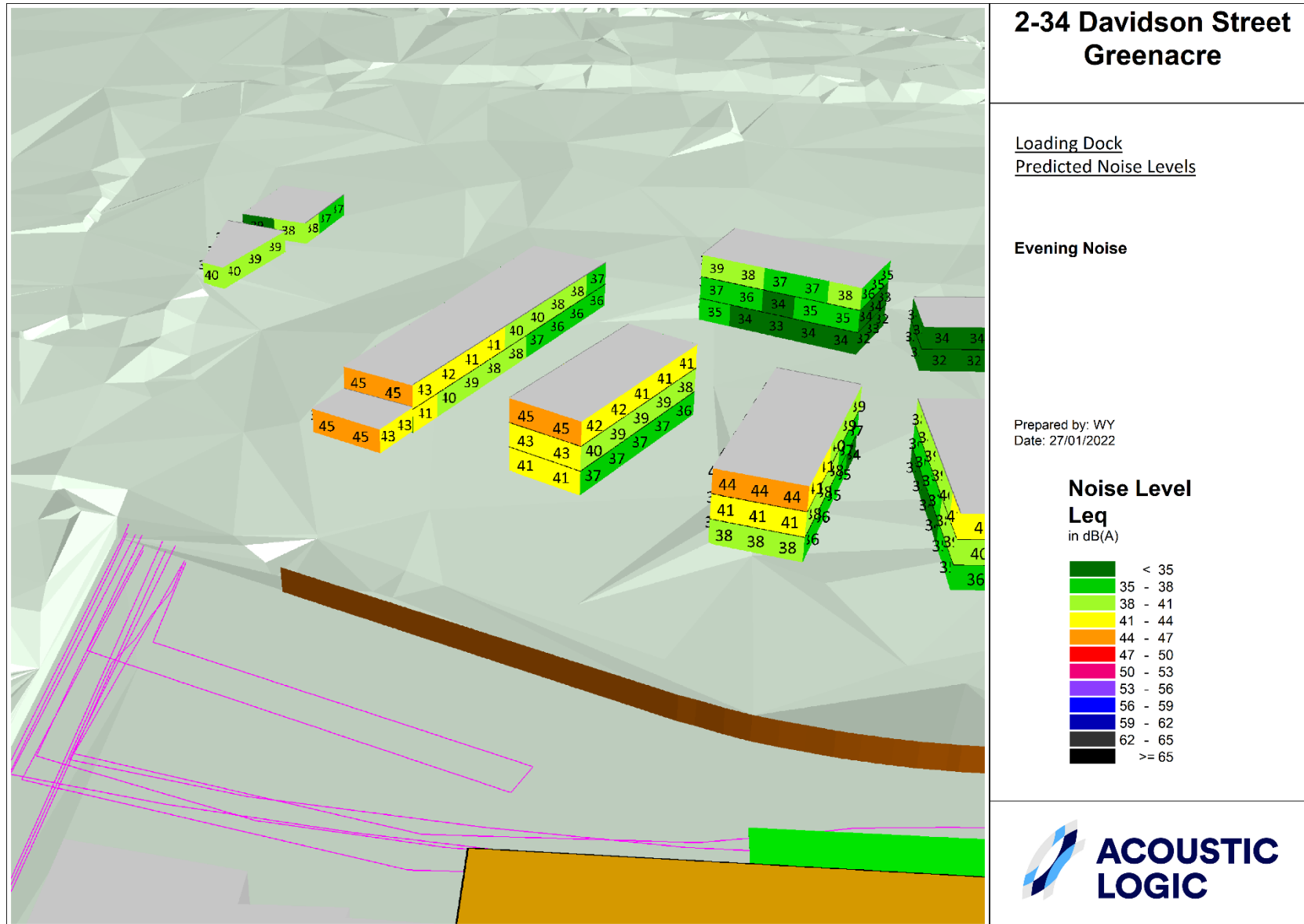
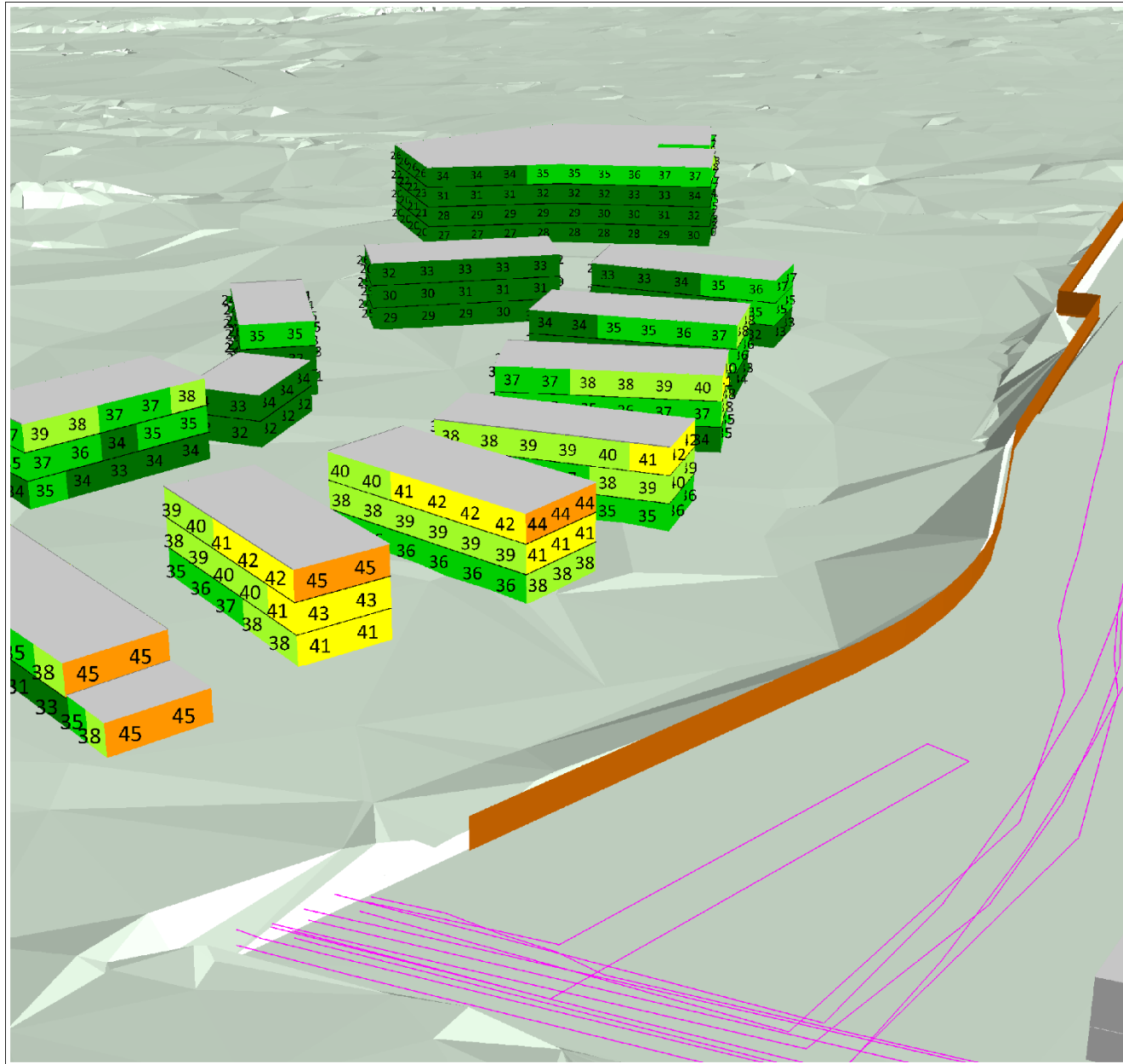


Figure 8 – Evening Time SoundPlan Model View 1



2-34 Davidson Street Greenacre

Loading Dock
Predicted Noise Levels

Evening Noise

Prepared by: WY
Date: 27/01/2022

Noise Level
Leq
in dB(A)

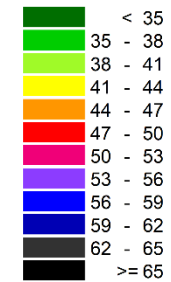
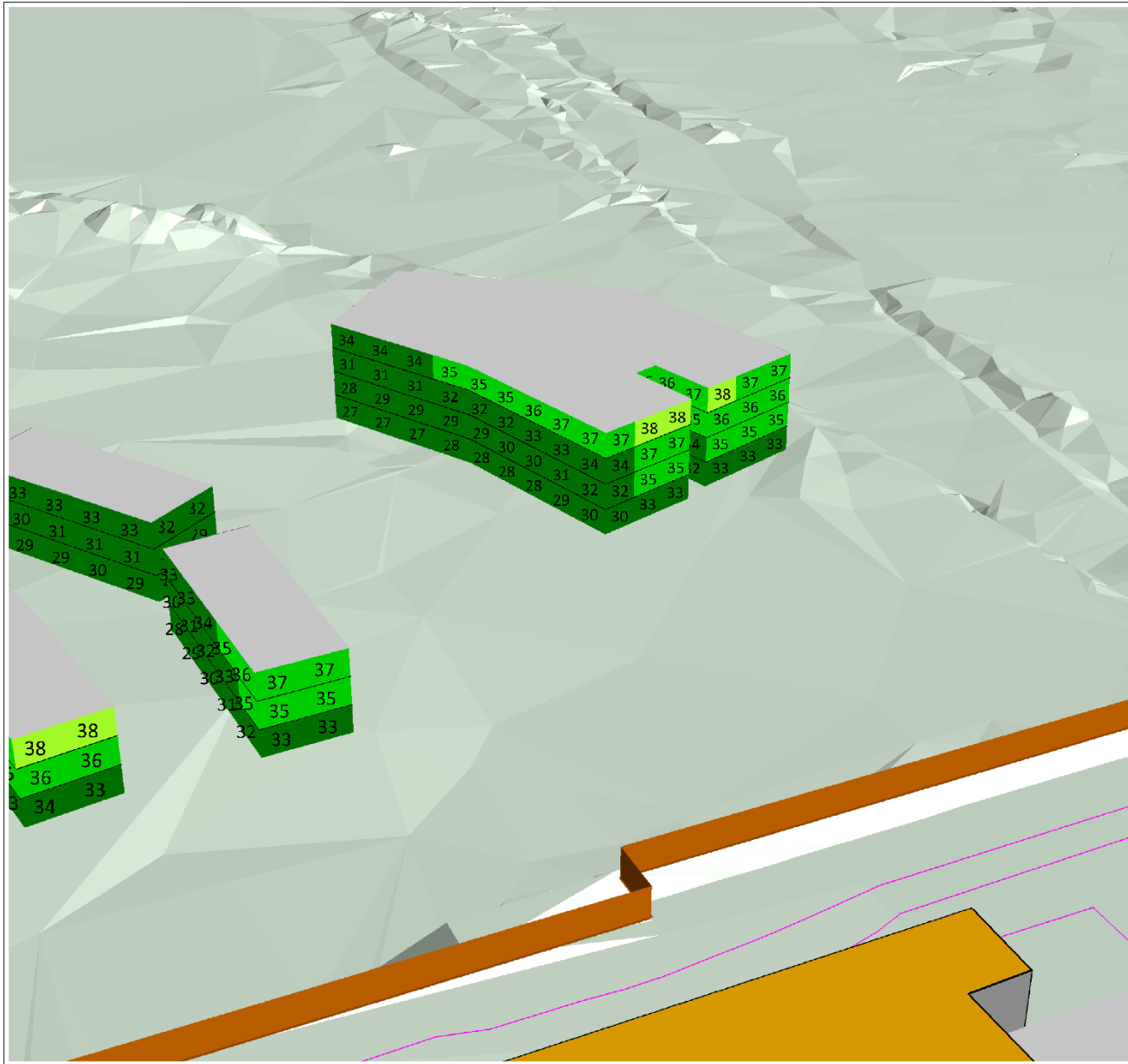


Figure 9 – Evening Time SoundPlan Model View 2



2-34 Davidson Street Greenacre

Loading Dock
Predicted Noise Levels

Evening Noise

Prepared by: WY
Date: 27/01/2022

Noise Level
Leq
in dB(A)

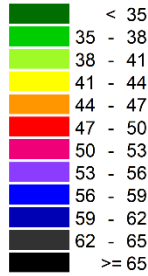
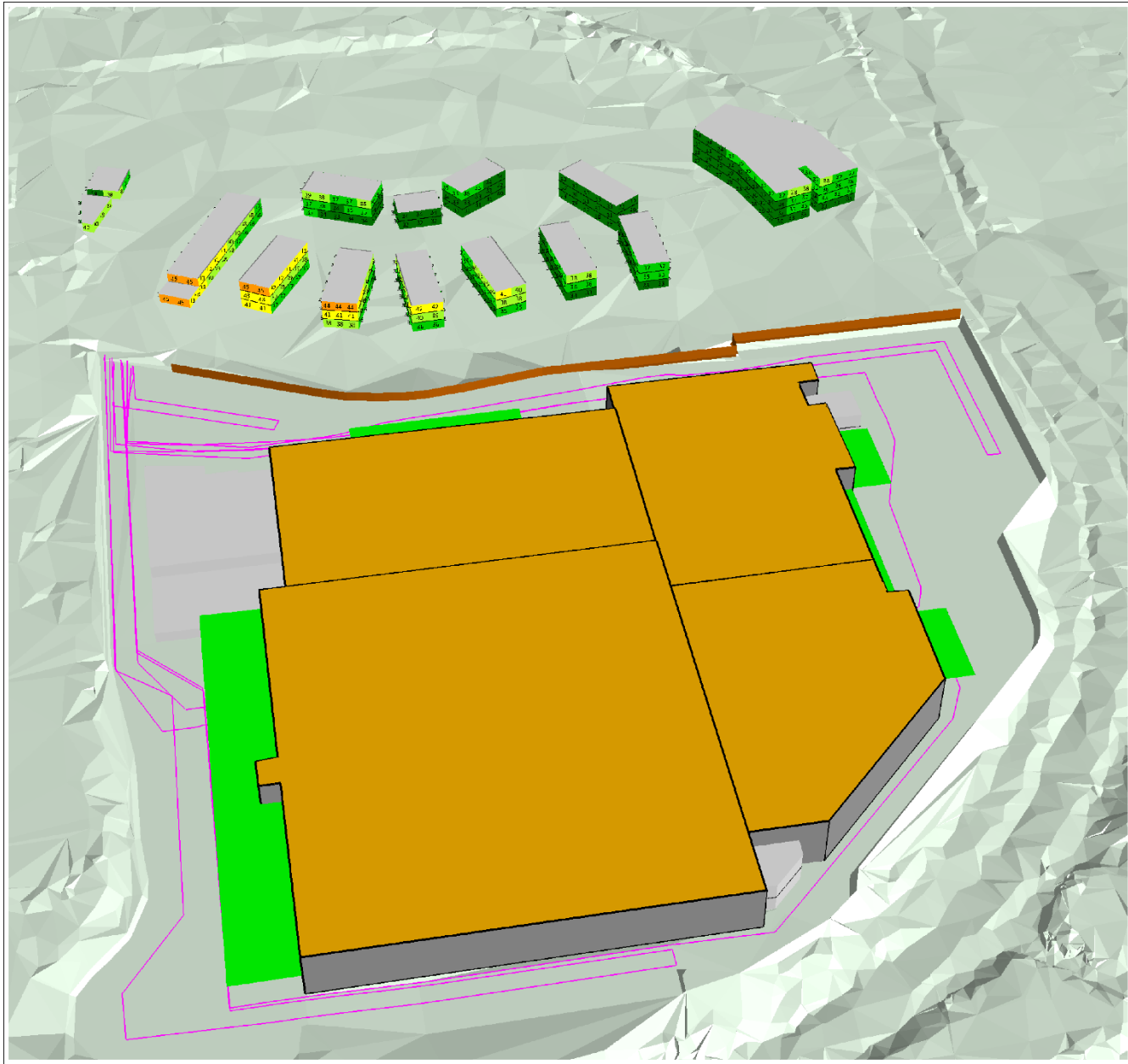


Figure 10 – Evening Time SoundPlan Model View 3



2-34 Davidson Street Greenacre

Loading Dock
Predicted Noise Levels

Evening Noise

Prepared by: WY
Date: 27/01/2022

Noise Level
Leq
in dB(A)

Dark Green	< 35
Light Green	35 - 38
Yellow-Green	38 - 41
Yellow	41 - 44
Orange	44 - 47
Red-Orange	47 - 50
Red	50 - 53
Purple	53 - 56
Blue	56 - 59
Dark Blue	59 - 62
Black	62 - 65
Dark Grey	>= 65



Figure 11 – Evening Time SoundPlan Model View 4

6.4.3 Night Time SoundPlan Prediction

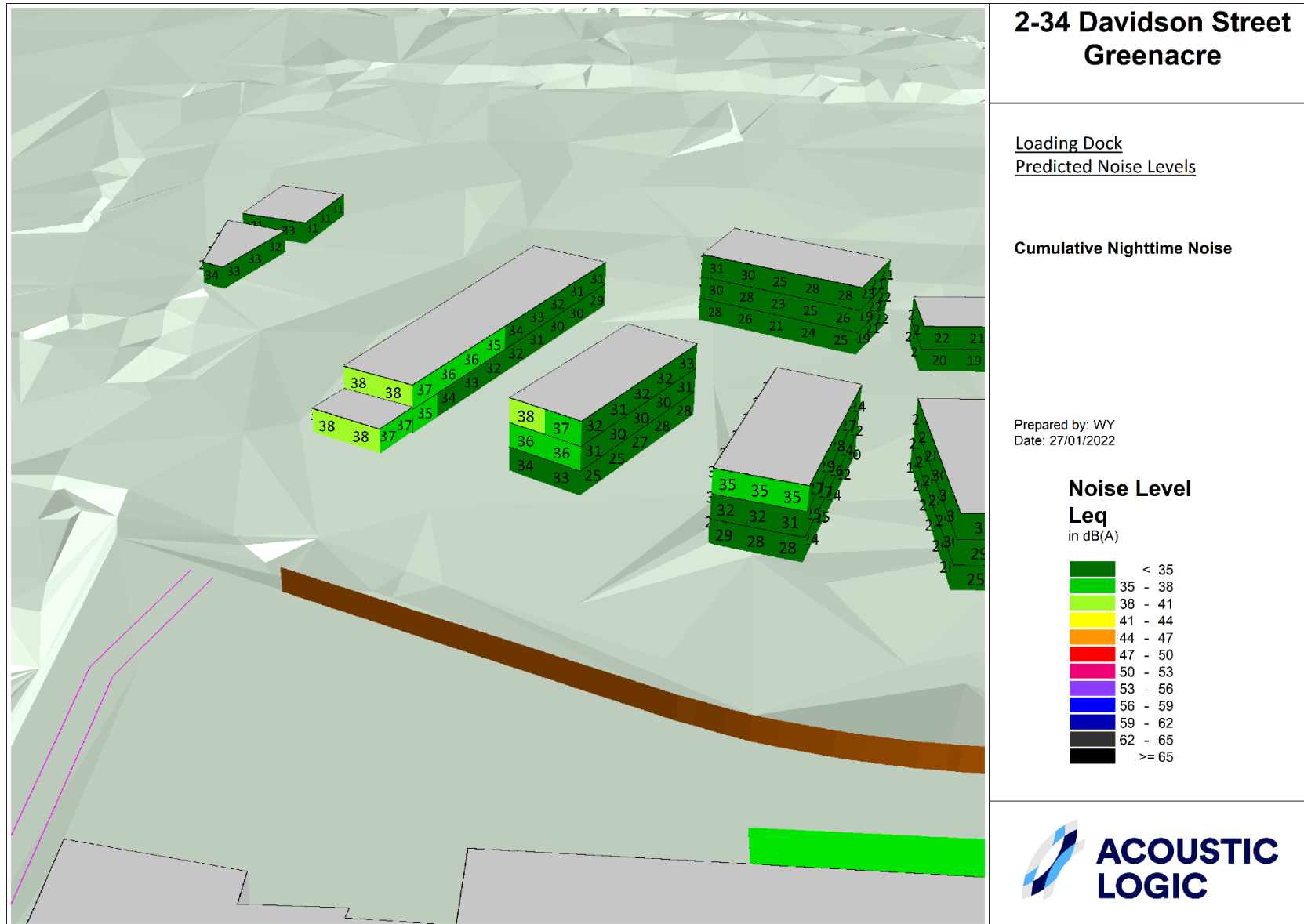
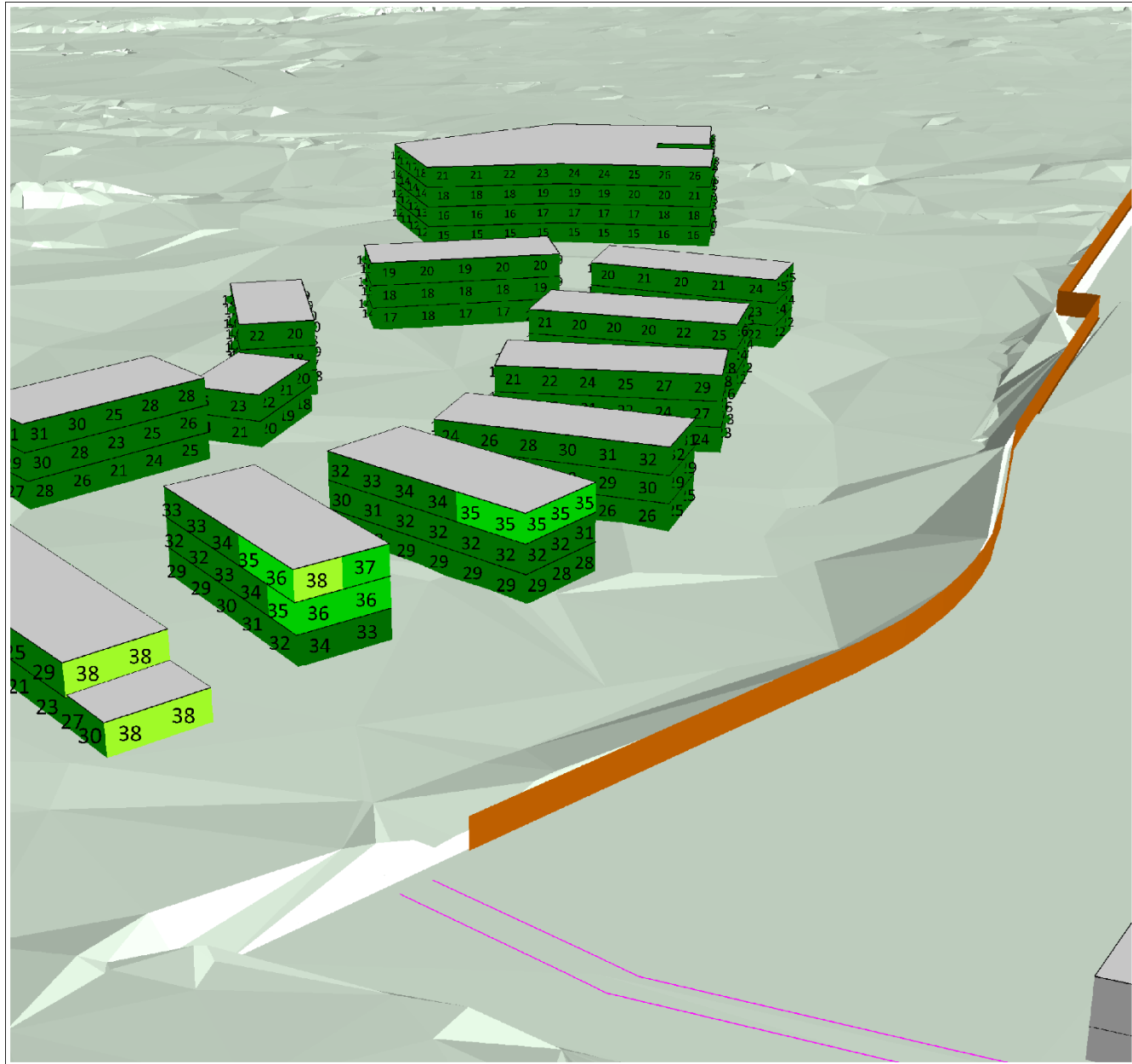


Figure 12 – Night Time SoundPlan Model View 1



2-34 Davidson Street Greenacre

Loading Dock
Predicted Noise Levels

Cumulative Night Time Noise

Prepared by: WY
Date: 27/01/2022

Noise Level
Leq
in dB(A)

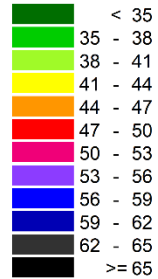
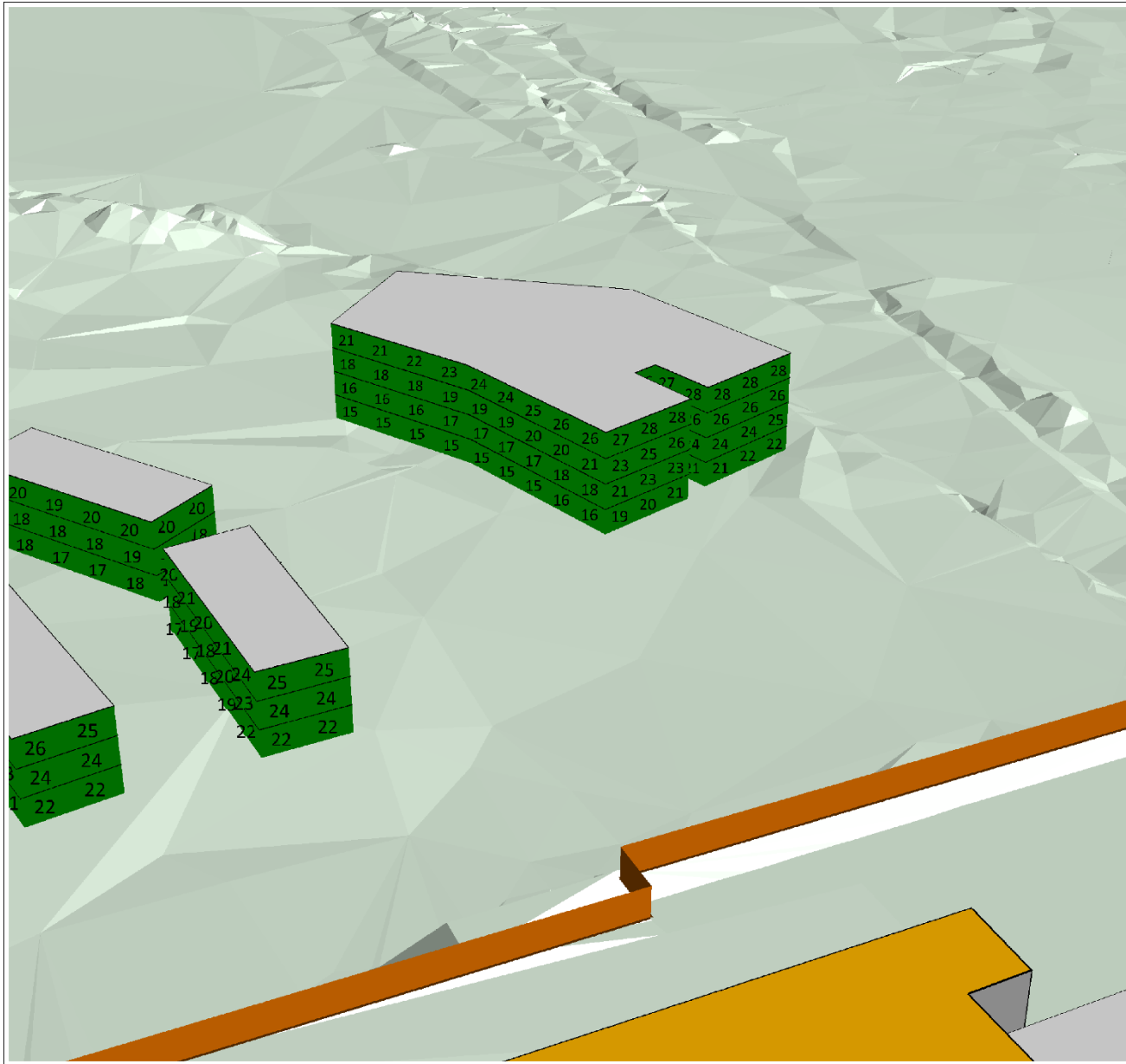


Figure 13 – Night Time SoundPlan Model View 2



2-34 Davidson Street Greenacre

Loading Dock
Predicted Noise Levels

Cumulative Night Time Noise

Prepared by: WY
Date: 27/01/2022

Noise Level
Leq
in dB(A)

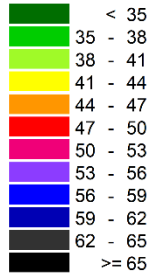
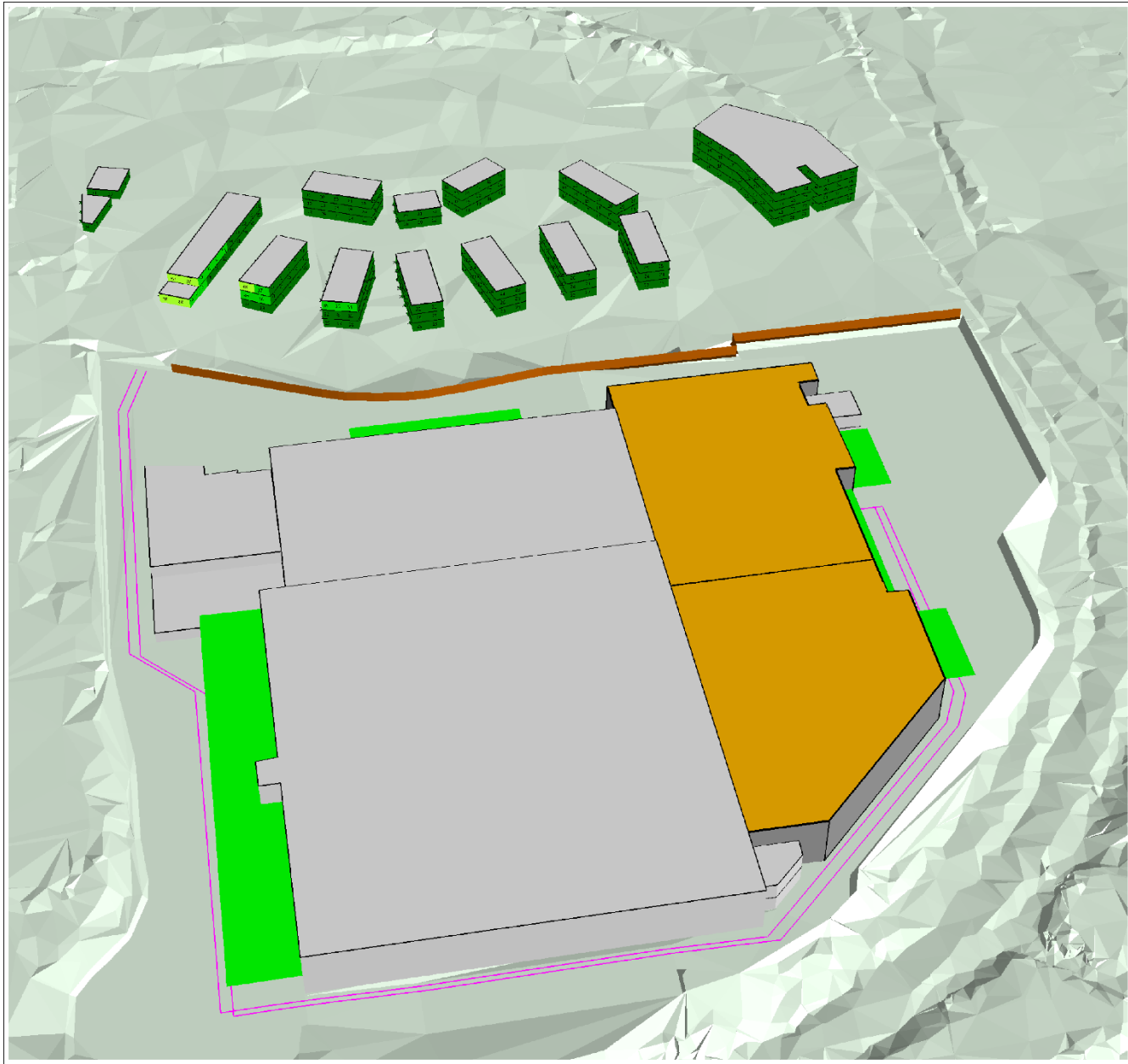


Figure 14 – Night Time SoundPlan Model View 3



2-34 Davidson Street Greenacre

Loading Dock
Predicted Noise Levels

Night Noise

Prepared by: WY
Date: 27/01/2022

Noise Level
Leq
in dB(A)

Dark Green	< 35
Light Green	35 - 38
Yellow-Green	38 - 41
Yellow	41 - 44
Orange	44 - 47
Red-Orange	47 - 50
Red	50 - 53
Pink	53 - 56
Purple	56 - 59
Blue	59 - 62
Dark Blue	62 - 65
Black	>= 65



Figure 15 – Night Time SoundPlan Model View 4

6.4.4 Night Time SoundPlan Prediction Lmax

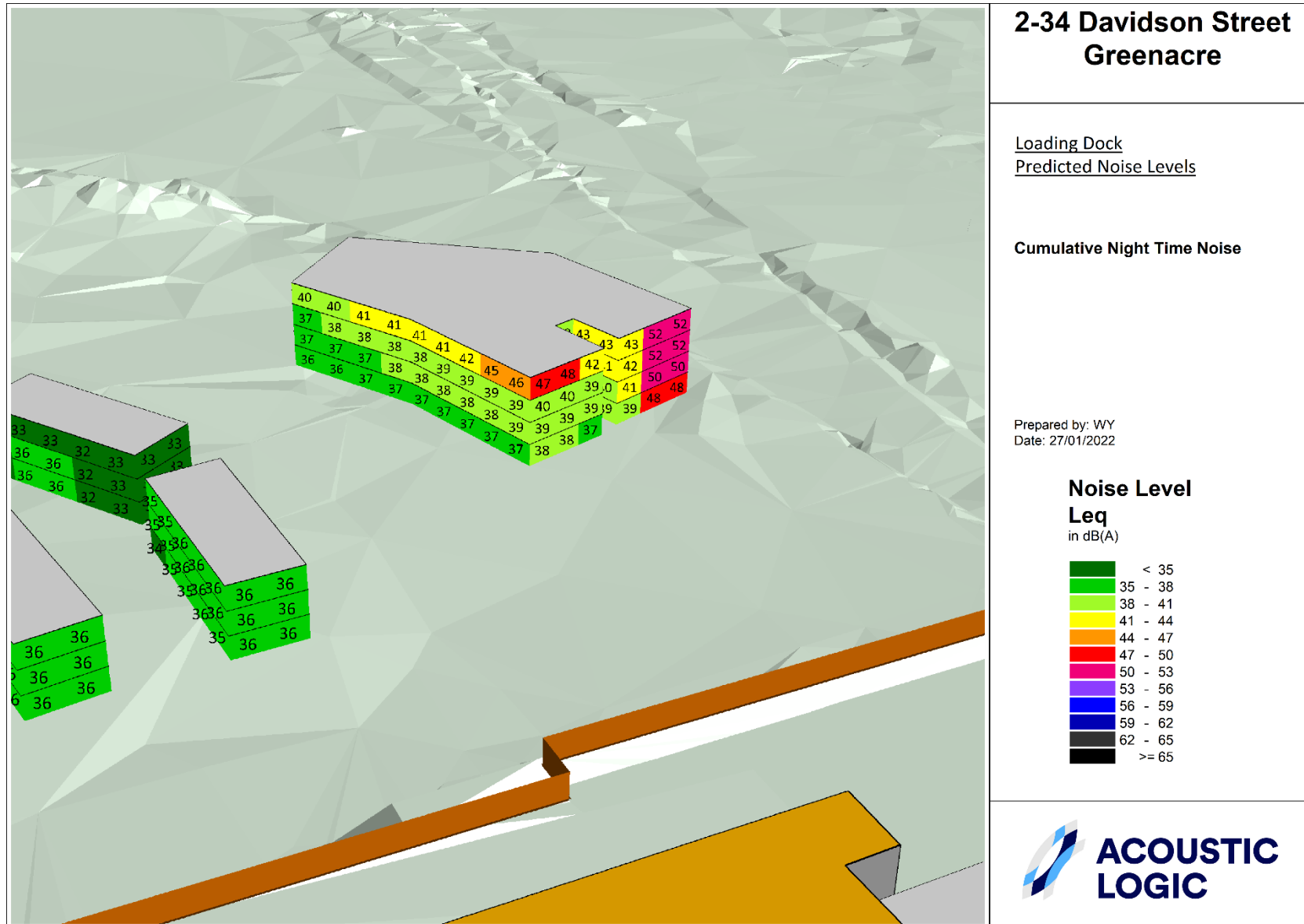
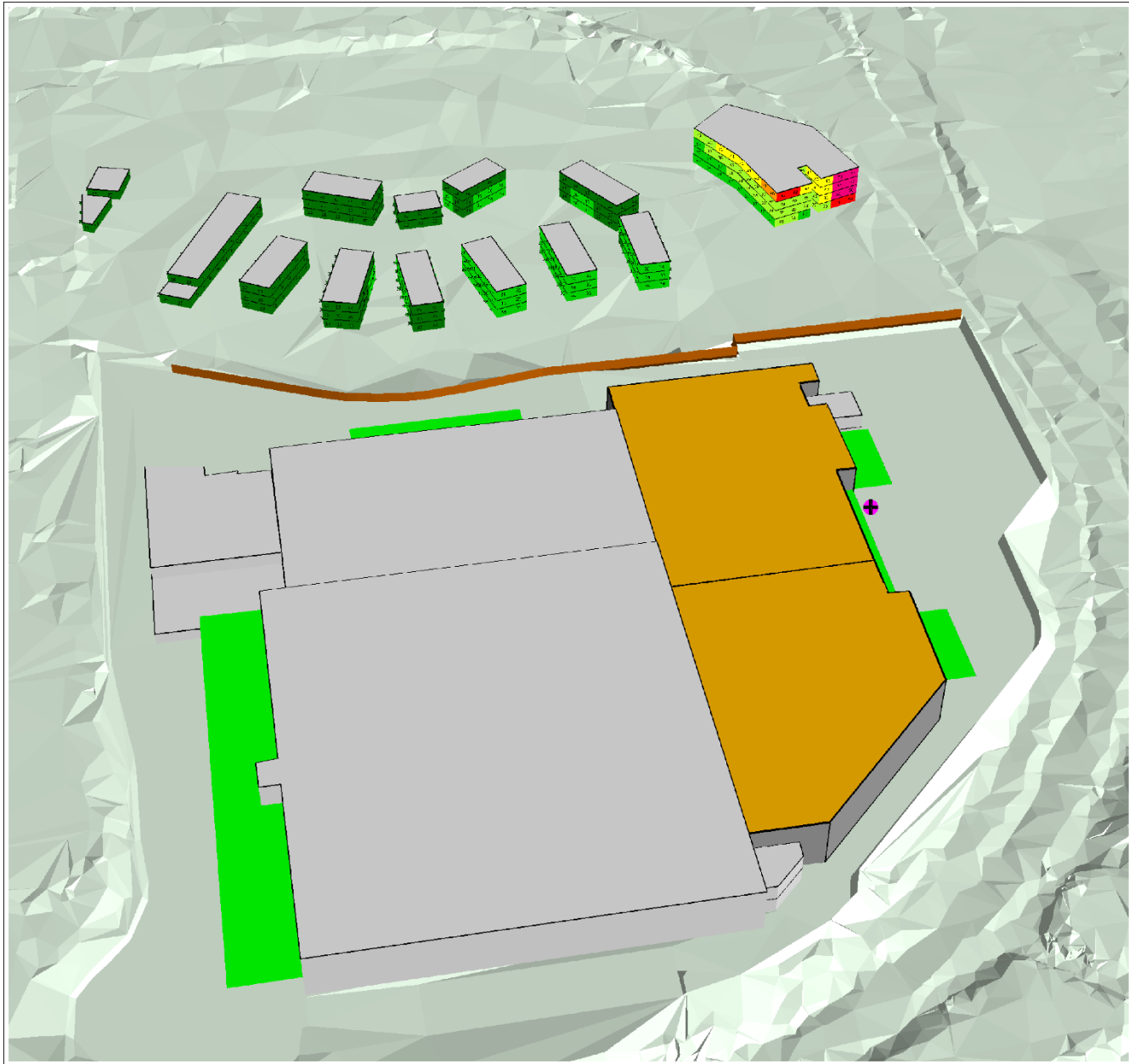


Figure 16 – Night Time SoundPlan Model Lmax View 1



2-34 Davidson Street Greenacre

Loading Dock
Predicted Noise Levels

Night Noise

Prepared by: WY
Date: 27/01/2022

Noise Level
Leq
in dB(A)

Dark Green	< 35
Light Green	35 - 38
Yellow-Green	38 - 41
Yellow	41 - 44
Orange	44 - 47
Red-Orange	47 - 50
Pink	50 - 53
Purple	53 - 56
Blue	56 - 59
Dark Blue	59 - 62
Grey	62 - 65
Black	>= 65



Figure 17 – Night Time SoundPlan Model Lmax View 2

Cumulative noise emission predictions to the most sensitive receivers around the development are summarised below. Detailed acoustic review should be undertaken at CC stage to determine mechanical acoustic treatments to control noise emissions to satisfactory levels. The worst affected receivers are **R1** and **R2** and have been summarised below. The predicted noise levels take into account the recommendations set out in Section 6.5 below.

Table 6-4 – Predicted Cumulative Noise Levels to Residential Receiver R1

Time Period	Predicted Noise	Criteria	Complies?
Day (7am to 6pm)	48 dB(A) L_{eq}	51 dB(A) L_{eq}	Yes
Evening (6pm to 10pm)	45 dB(A) L_{eq}	48 dB(A) L_{eq}	Yes
Night (10pm to 7am)	38 dB(A) L_{eq}	43 dB(A) L_{eq}	Yes*
Sleep disturbance L_{max}	< 38 L_{max}	60 dB(A) L_{max}	Yes

Table 6-5 – Predicted Cumulative Noise Levels to Residential Receiver R2

Time Period	Predicted Noise	Criteria	Complies?
Day (7am to 6pm)	41 dB(A) L_{eq}	51 dB(A) L_{eq}	Yes
Evening (6pm to 10pm)	38 dB(A) L_{eq}	48 dB(A) L_{eq}	Yes
Night (10pm to 7am)	28 dB(A) L_{eq}	43 dB(A) L_{eq}	Yes
Sleep disturbance L_{max}	52 L_{max}	60 dB(A) L_{max}	Yes

Predicted cumulative noise emissions to the most sensitive receivers are compliant with the EPA Noise Policy for Industry.

6.5 RECOMMENDATIONS

All feasible and reasonable noise mitigation measures have been applied to reduce noise levels and the following recommendations are presented:

- A 3m high imperforate acoustic barrier is to be erected along the western fence line of the development as detailed in green below. The barrier of height specified above, may be constructed of lapped and capped timber, plexiglass, 6mm Perspex, Colorbond, 9mm fibrous cement sheet or equivalent, installed with no gaps between the panels, and maximum of a 20mm gap at the bottom to allow water flow if required.

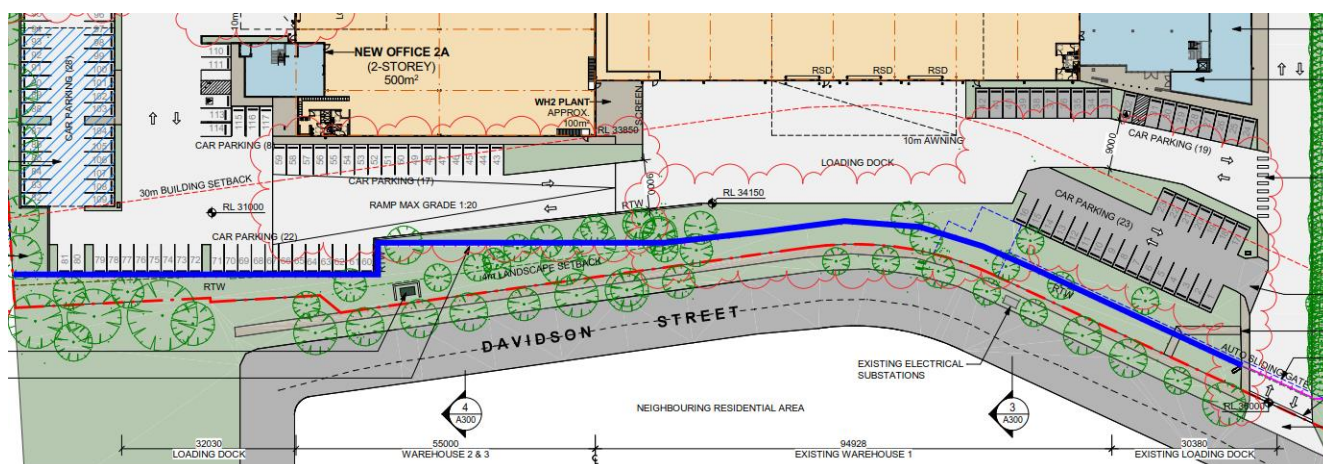


Figure 18 – 3m High Acoustic Barrier Location

It is noted that the proposed fencing and sliding gate is typical of industrial development, with a perspex backing behind acting as an impermeate layer. The figure below details the typical style of fencing to be incorporated.

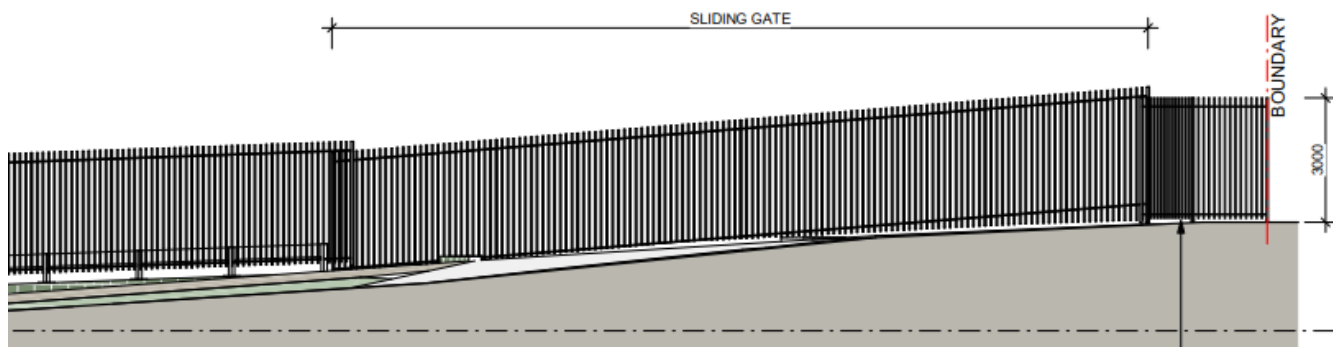


Figure 19 – 3m High Acoustic Barrier Style

- The number of vehicle movements is to be as detailed in Section 6.4.
- Night time truck movements are to be for warehouse 2 only, and will require the trucks to loop around the perimeter of the site away from residents. Truck movement loop during the night time is as shown per Figure 3.
- No air brakes shall be used for truck movements during the night time period.
- Engines should be turned off during loading and unloading movements, thus effectively having no idling noise during the loading and unloading operations.
- The above recommendations are for typical trucks up to a 26m long B-Double with a sound power level no greater than 105 dB(A) accounting for tonal penalties per Factsheet C of the EPA Noise Policy for Industry. Louder trucks with extraneous idling noise will require further assessment.
- No external loading/ unloading shall be allowed. The roller shutter doors for each dock are to remain closed except when loading/ unloading stock from trucks when they are parked.
- Awning of all loading docks are to be lined with acoustically absorptive material equal to NRC0.7.

7 CONCLUSION

This report presents an acoustic assessment of noise impacts associated with the development to be located at 2-34 Davidson St, Greenacre NSW.

External noise emissions criteria have been established in this report to satisfy the requirements of the following documents:

- Strathfield Council Pre-Development Application Meeting Minutes – 2/34 Davidson Street, Greenacre
- Strathfield Council DCP 2005
- NSW Environmental Protection Authority (EPA) – *'Road Noise Policy'* (RNP) 2011, and
- NSW Environmental Protection Authority (EPA) – *'Noise Policy for Industry'* (NPI) 2017.

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

Yours faithfully,

A handwritten signature in blue ink, appearing to read 'Weber Yeh', is positioned below the 'Yours faithfully,' text.

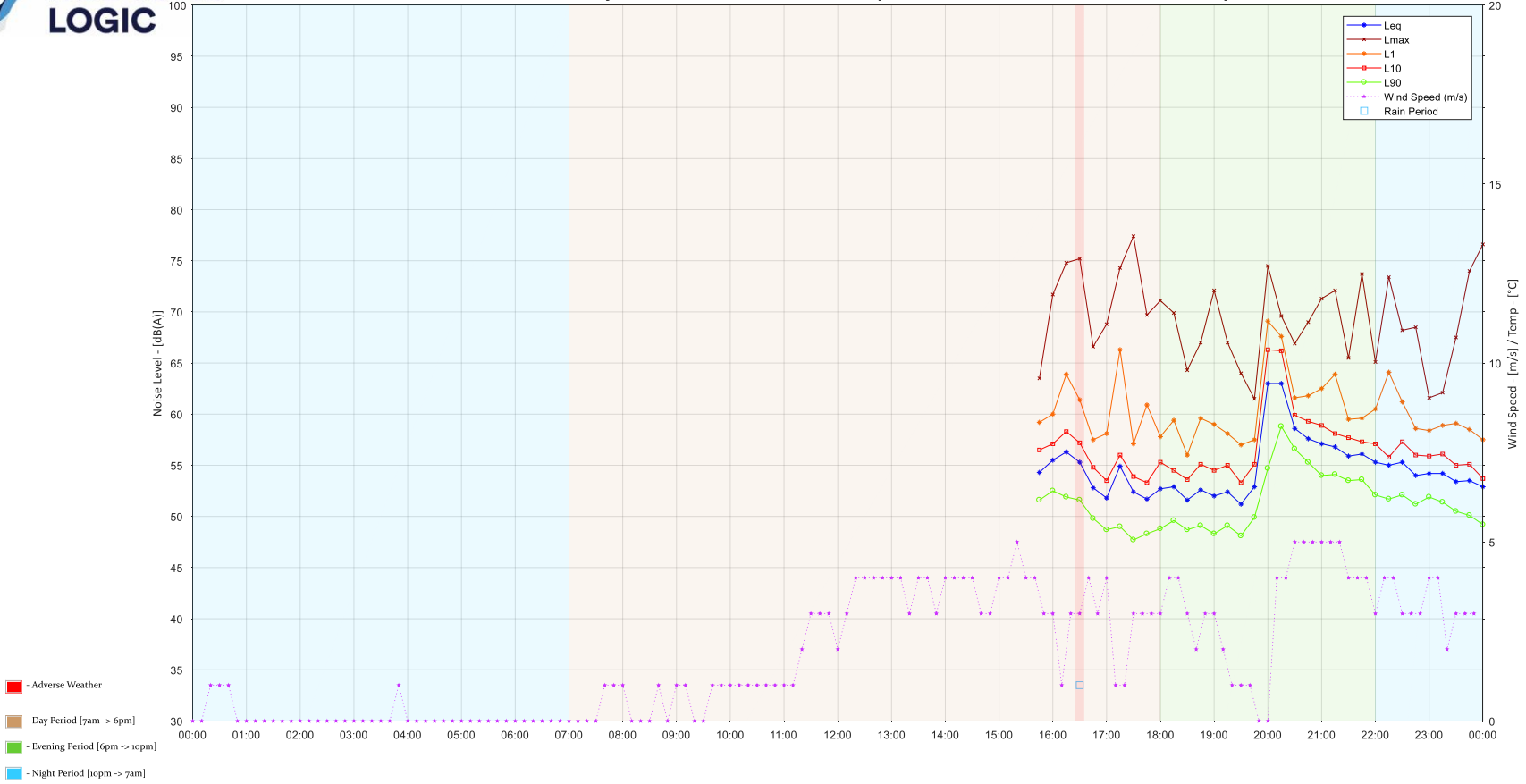
Acoustic Logic Pty Ltd
Weber Yeh

APPENDIX ONE – UNATTENDED NOISE MONITORING

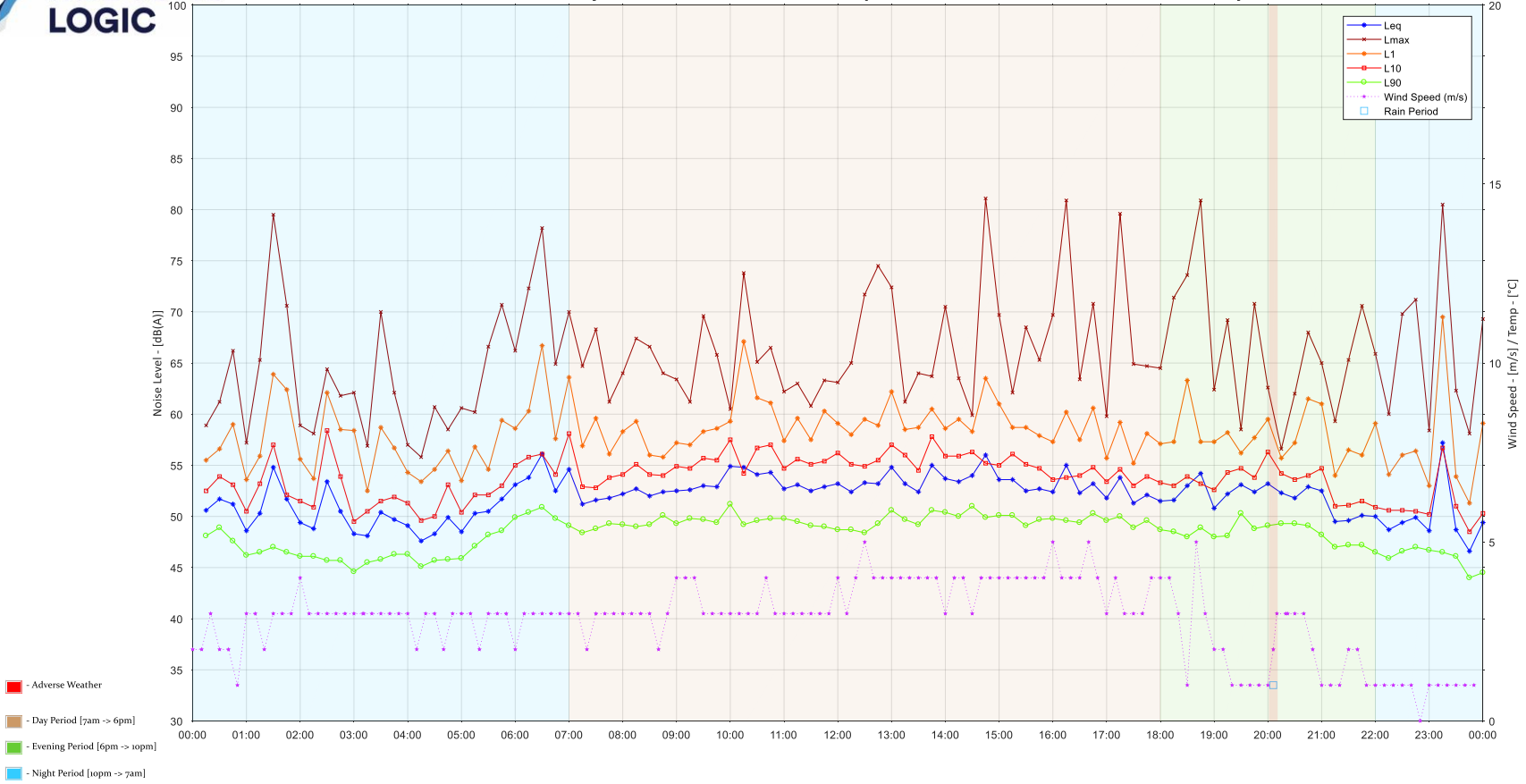
NEAR 5-7 DAVIDSON STREET



2-34 Davidson Street, Greenacre - Adjacent to Residential Development at 5-7 Davidson Street: Friday 20 November, 2020



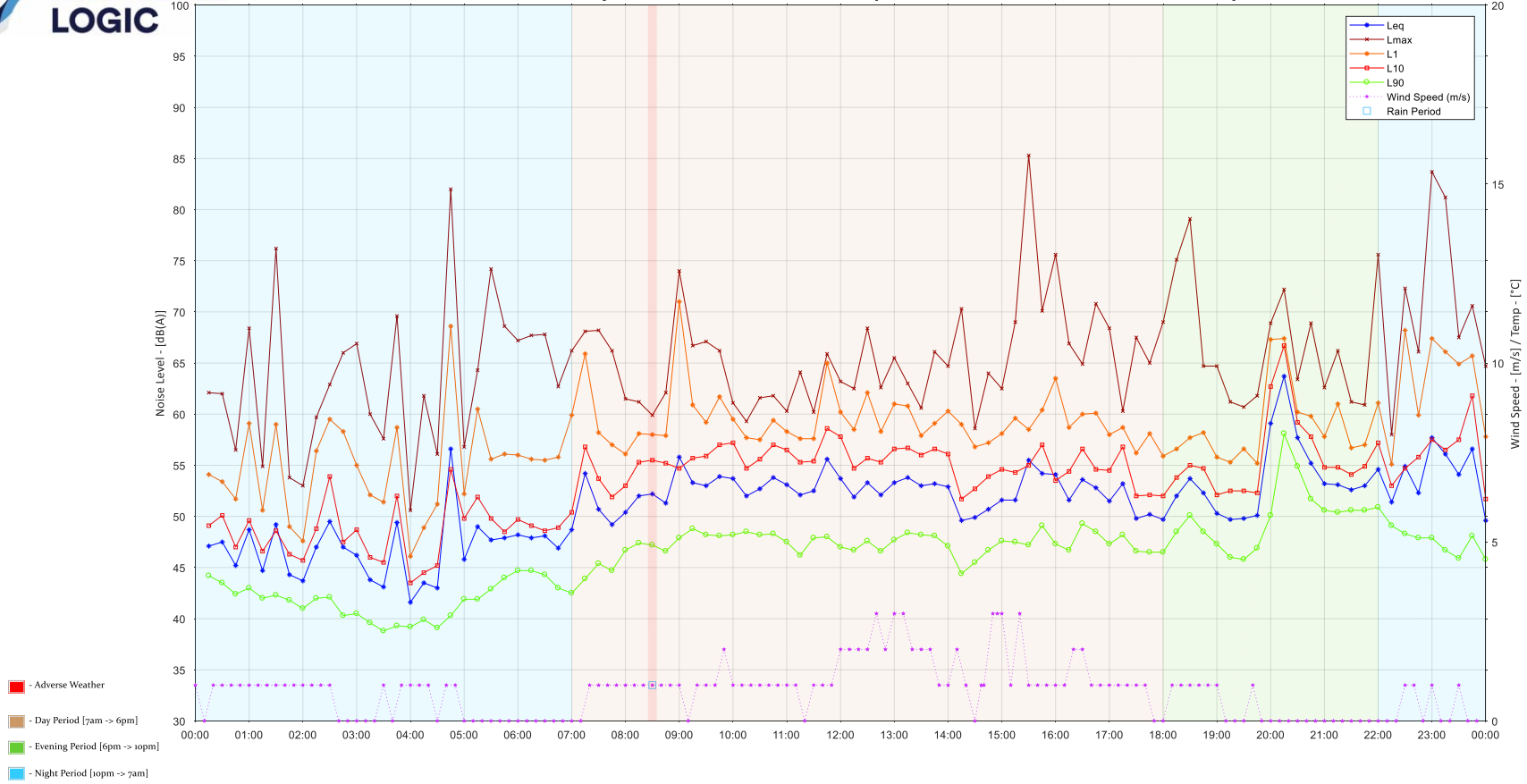
ACOUSTIC LOGIC 2-34 Davidson Street, Greenacre - Adjacent to Residential Development at 5-7 Davidson Street: Saturday 21 November, 2020



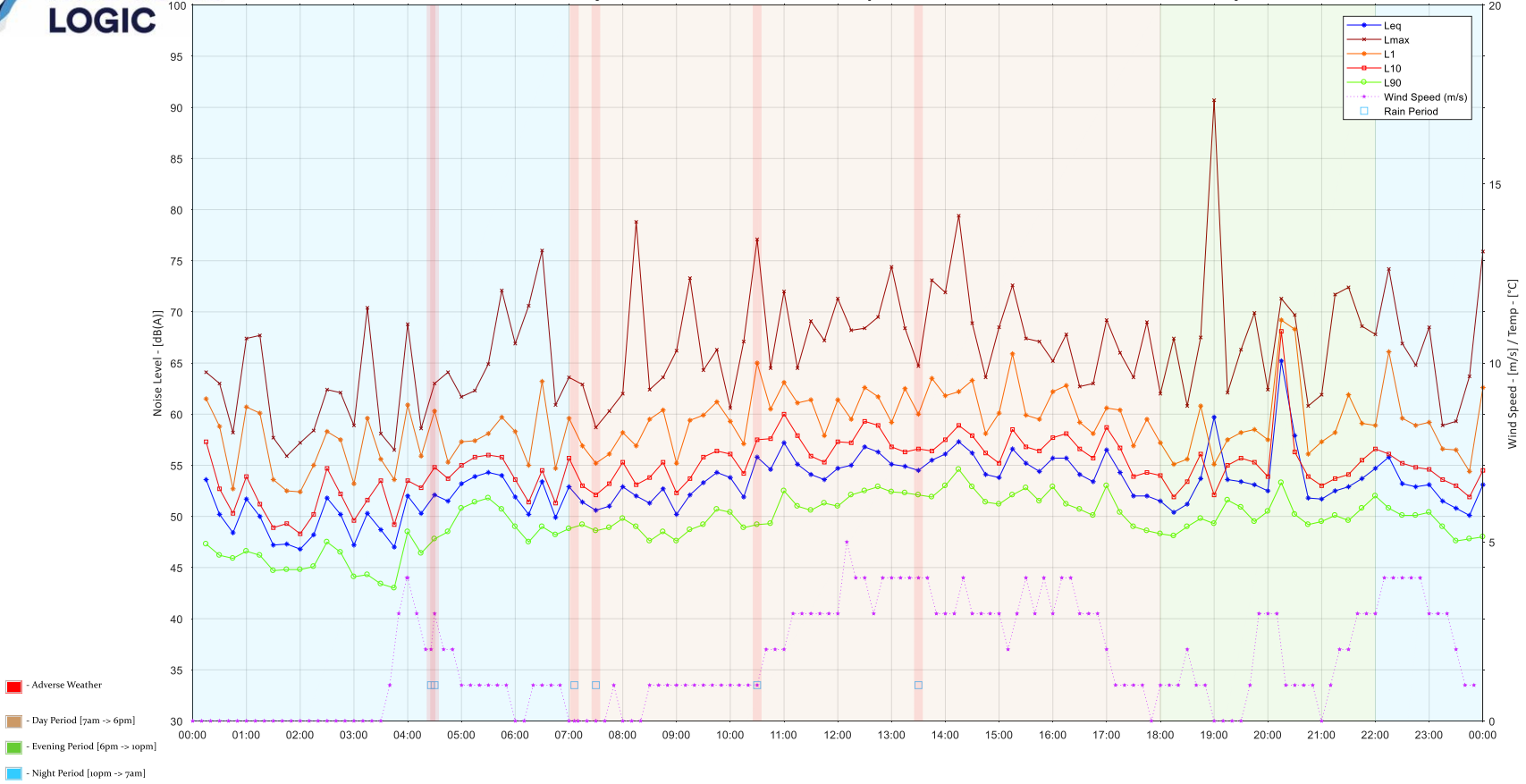


**ACOUSTIC
LOGIC**

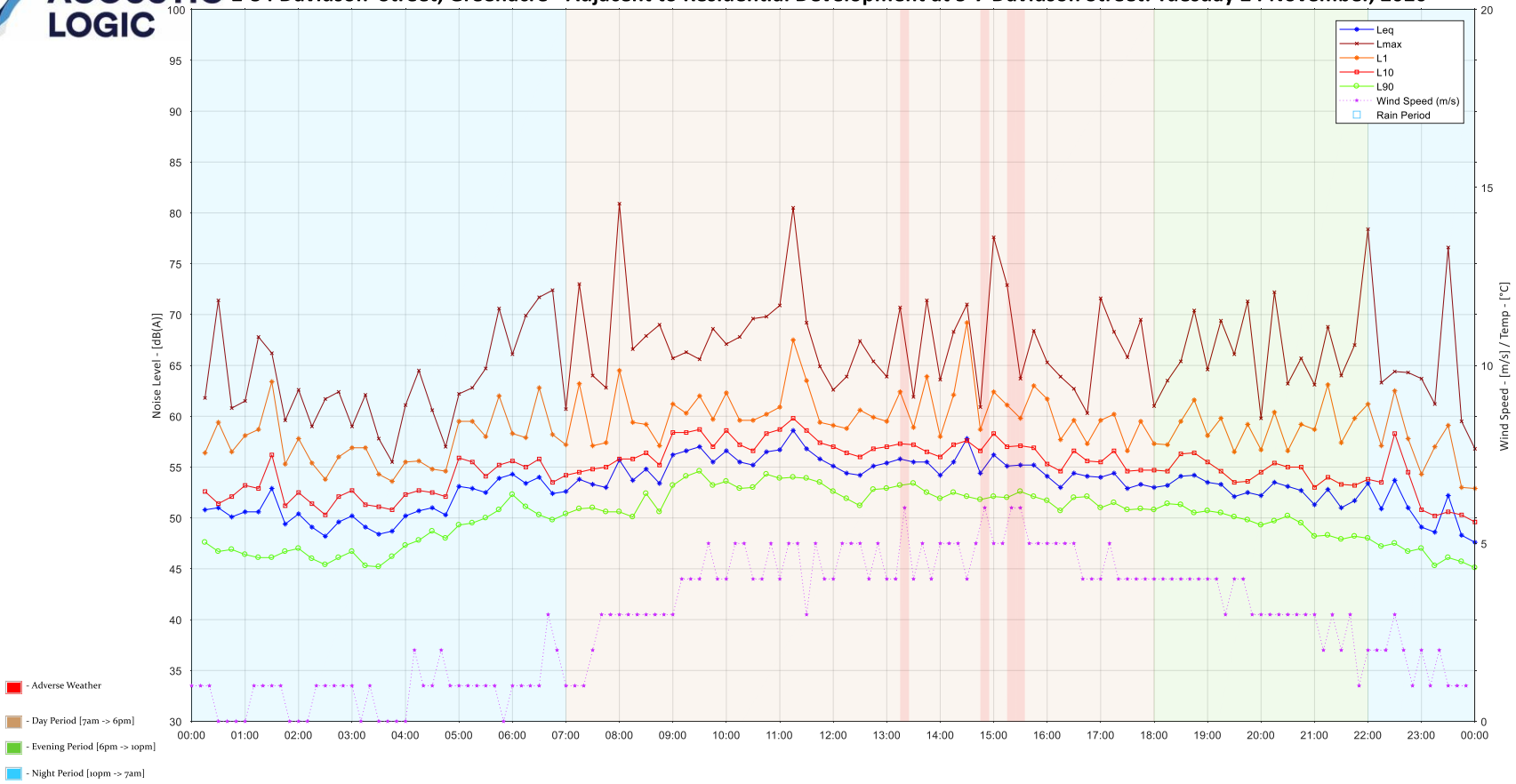
2-34 Davidson Street, Greenacre - Adjacent to Residential Development at 5-7 Davidson Street: Sunday 22 November, 2020



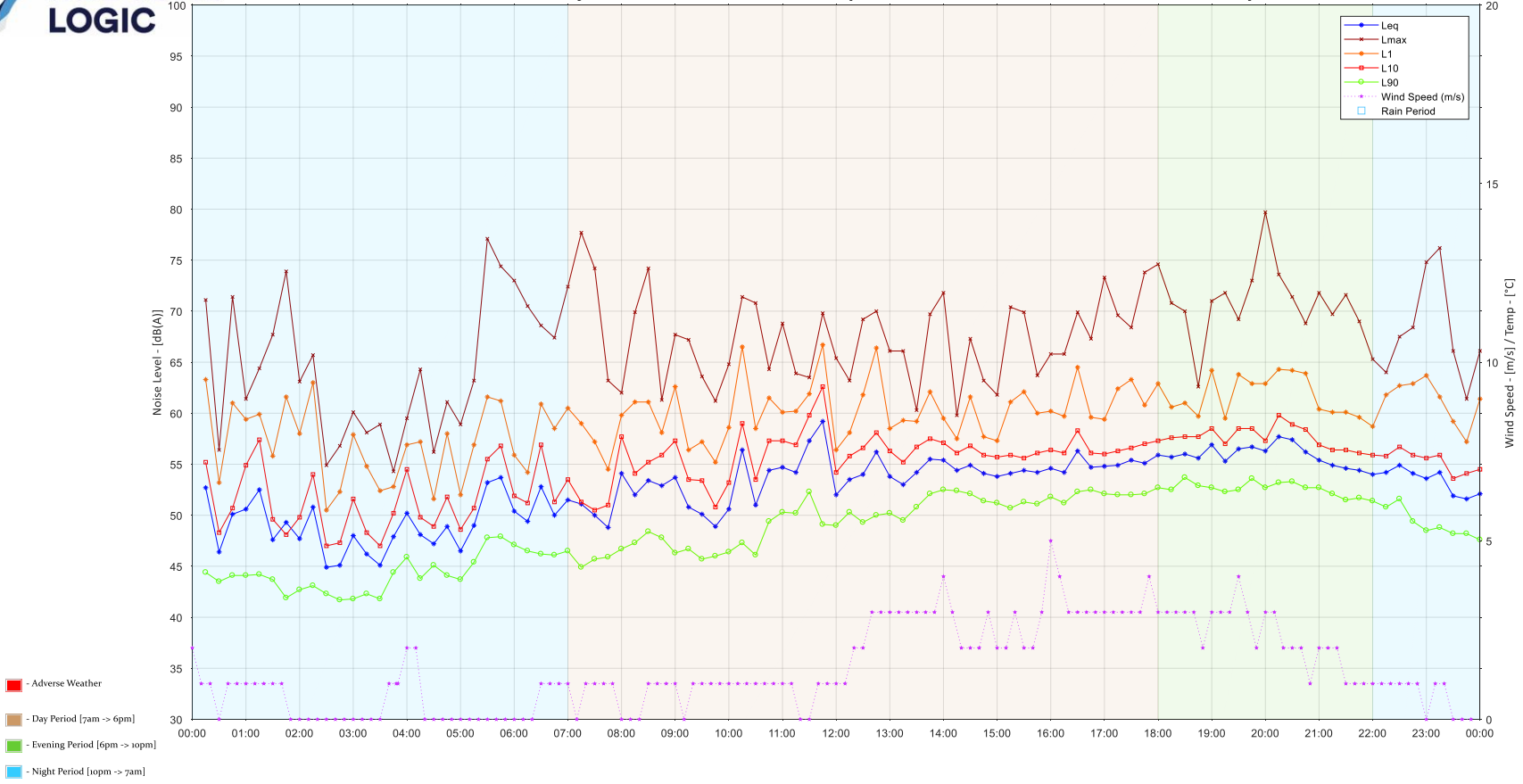
ACOUSTIC LOGIC 2-34 Davidson Street, Greenacre - Adjacent to Residential Development at 5-7 Davidson Street: Monday 23 November, 2020



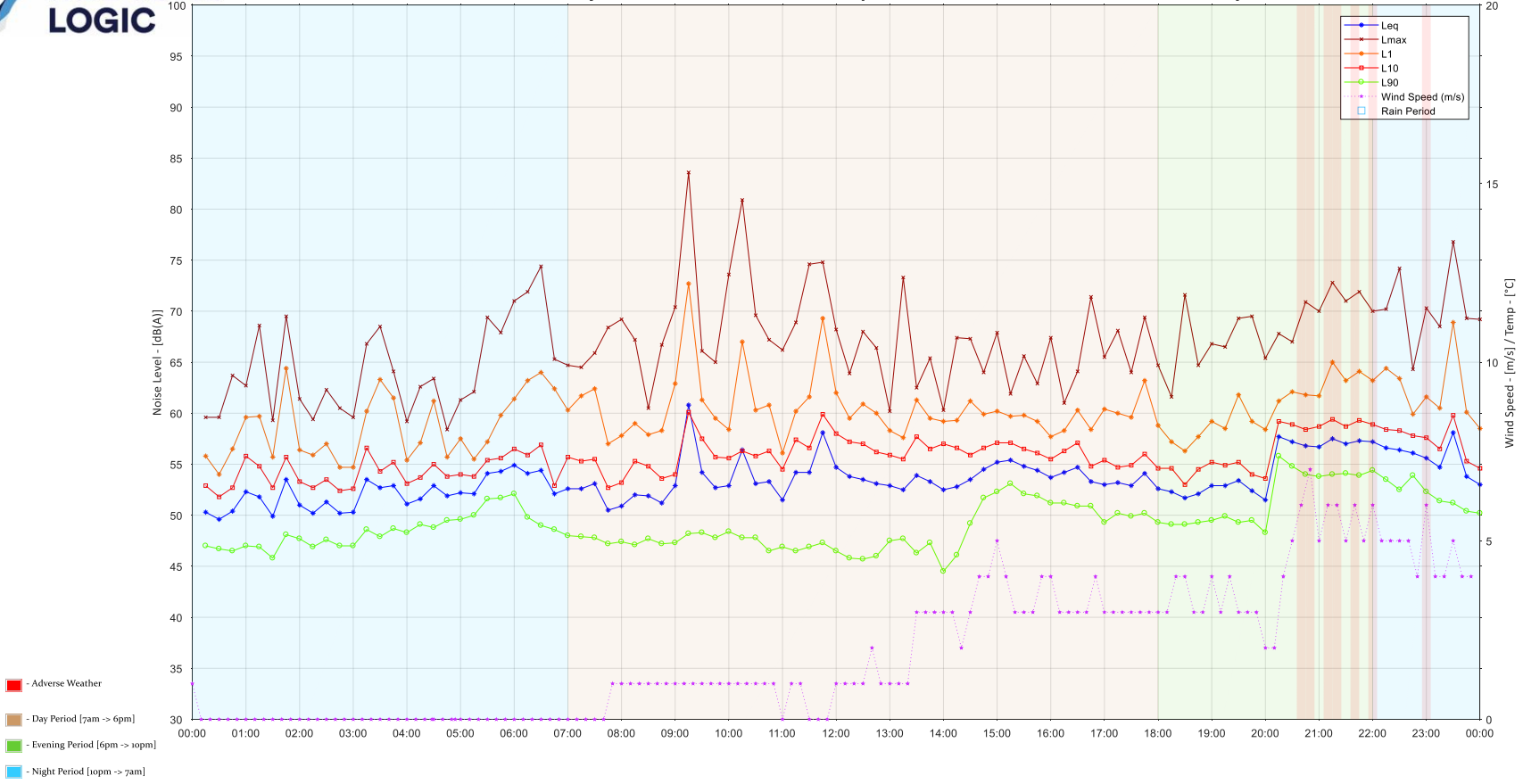
ACOUSTIC LOGIC 2-34 Davidson Street, Greenacre - Adjacent to Residential Development at 5-7 Davidson Street: Tuesday 24 November, 2020



ACOUSTIC LOGIC -34 Davidson Street, Greenacre - Adjacent to Residential Development at 5-7 Davidson Street: Wednesday 25 November, 2020

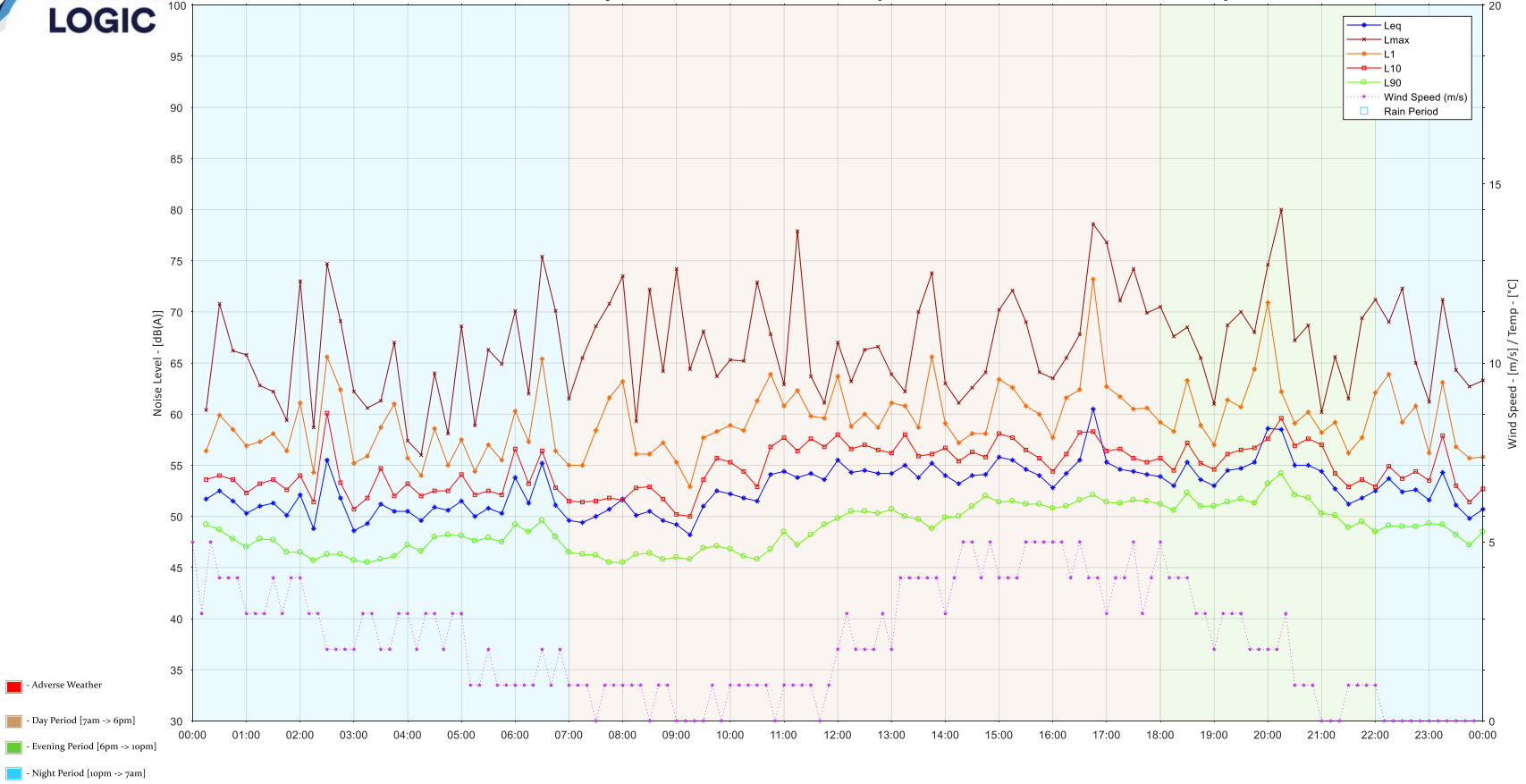


ACOUSTIC LOGIC 2-34 Davidson Street, Greenacre - Adjacent to Residential Development at 5-7 Davidson Street: Thursday 26 November, 2020

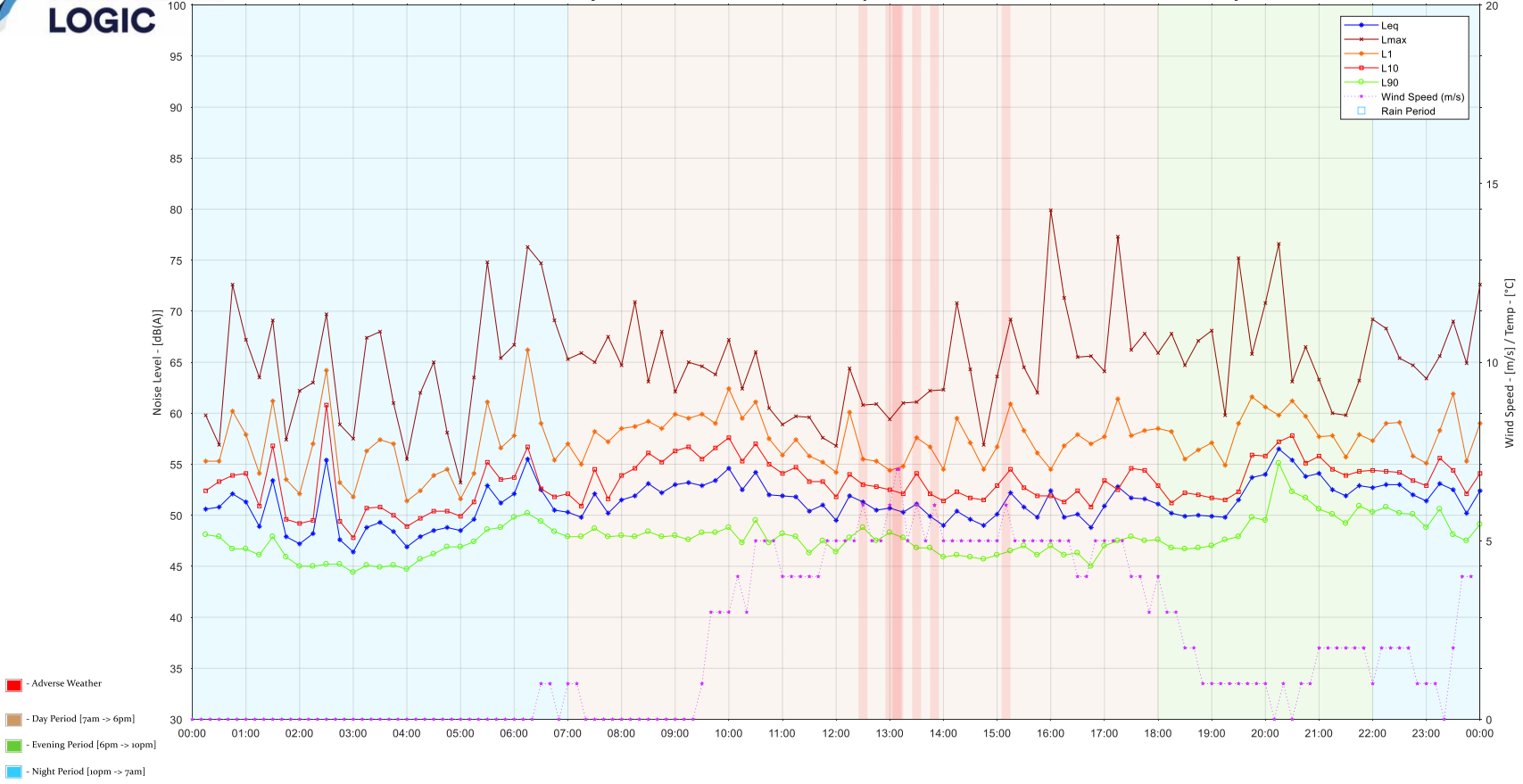




2-34 Davidson Street, Greenacre - Adjacent to Residential Development at 5-7 Davidson Street: Friday 27 November, 2020



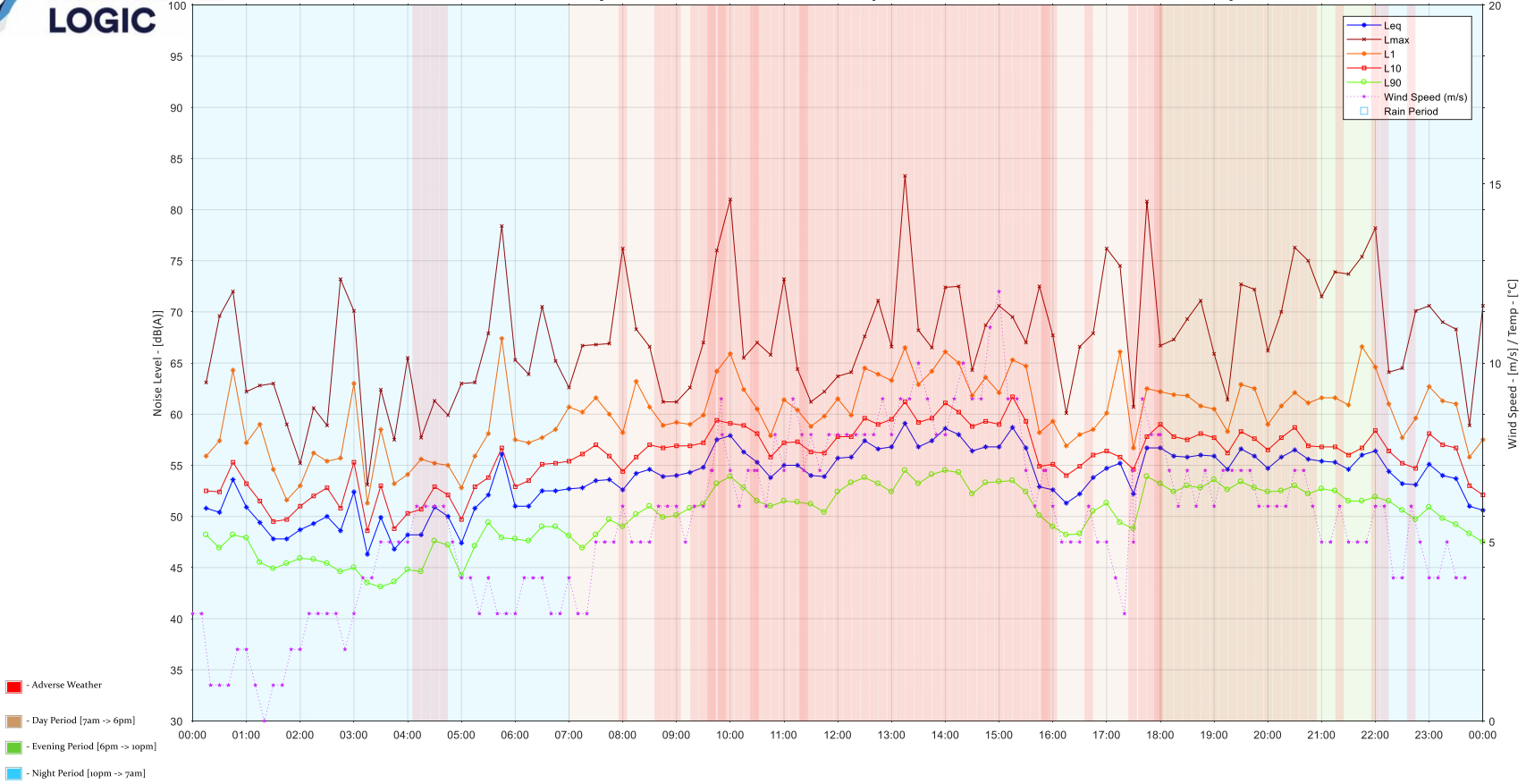
ACOUSTIC LOGIC 2-34 Davidson Street, Greenacre - Adjacent to Residential Development at 5-7 Davidson Street: Saturday 28 November, 2020



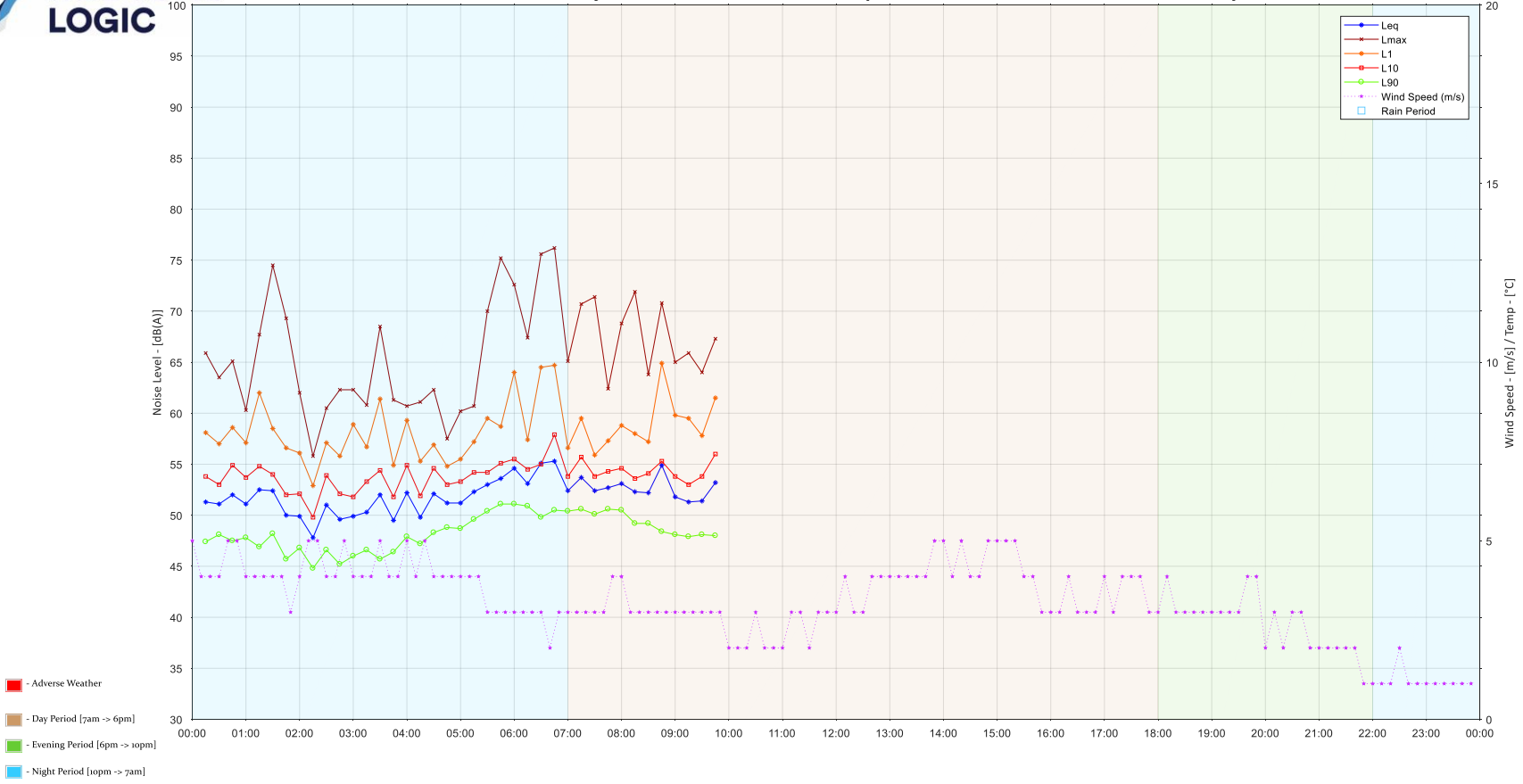


**ACOUSTIC
LOGIC**

2-34 Davidson Street, Greenacre - Adjacent to Residential Development at 5-7 Davidson Street: Sunday 29 November, 2020

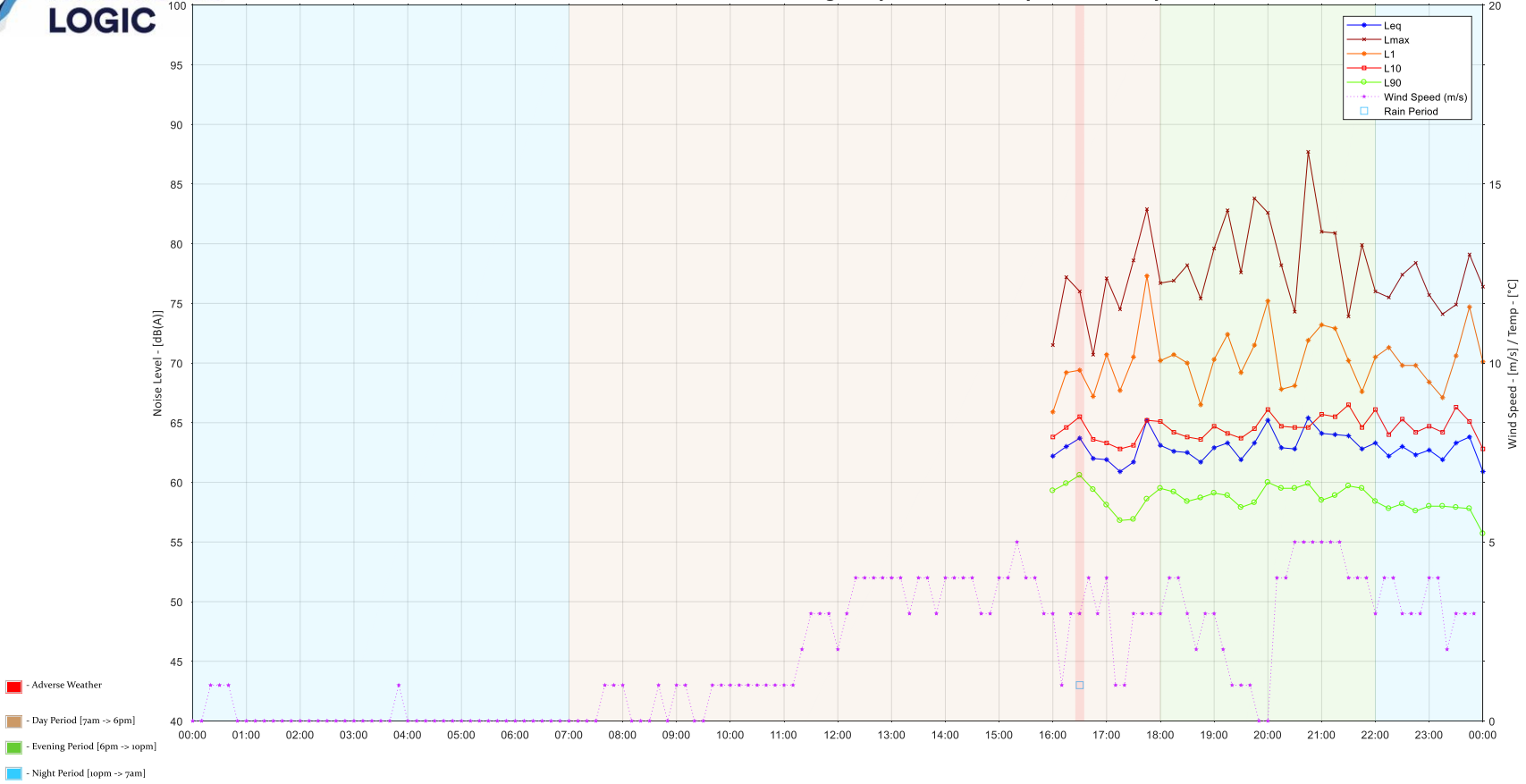


ACOUSTIC LOGIC 2-34 Davidson Street, Greenacre - Adjacent to Residential Development at 5-7 Davidson Street: Monday 30 November, 2020

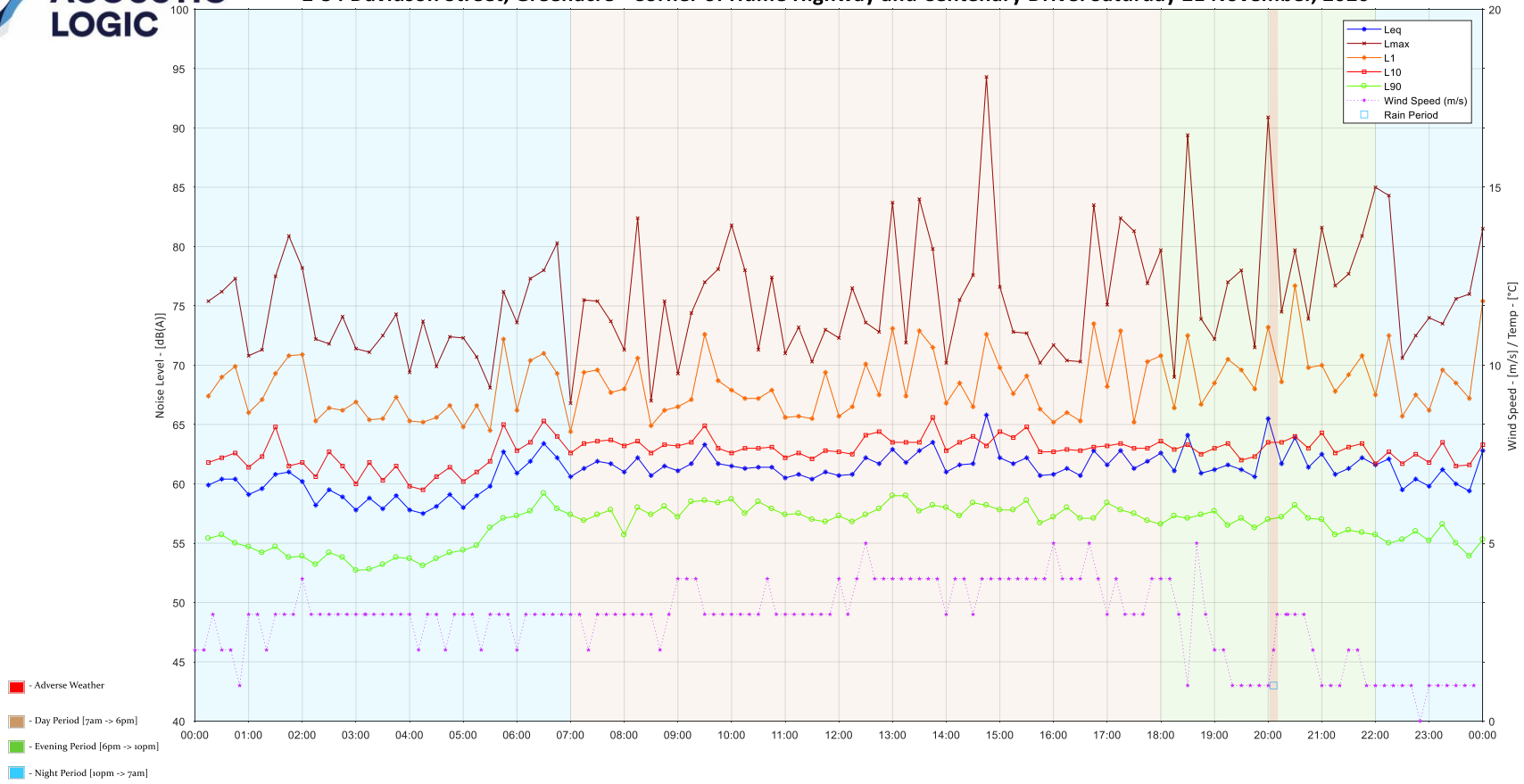


CORNER OF HUME HIGHWAY AND CENTENARY DRIVE

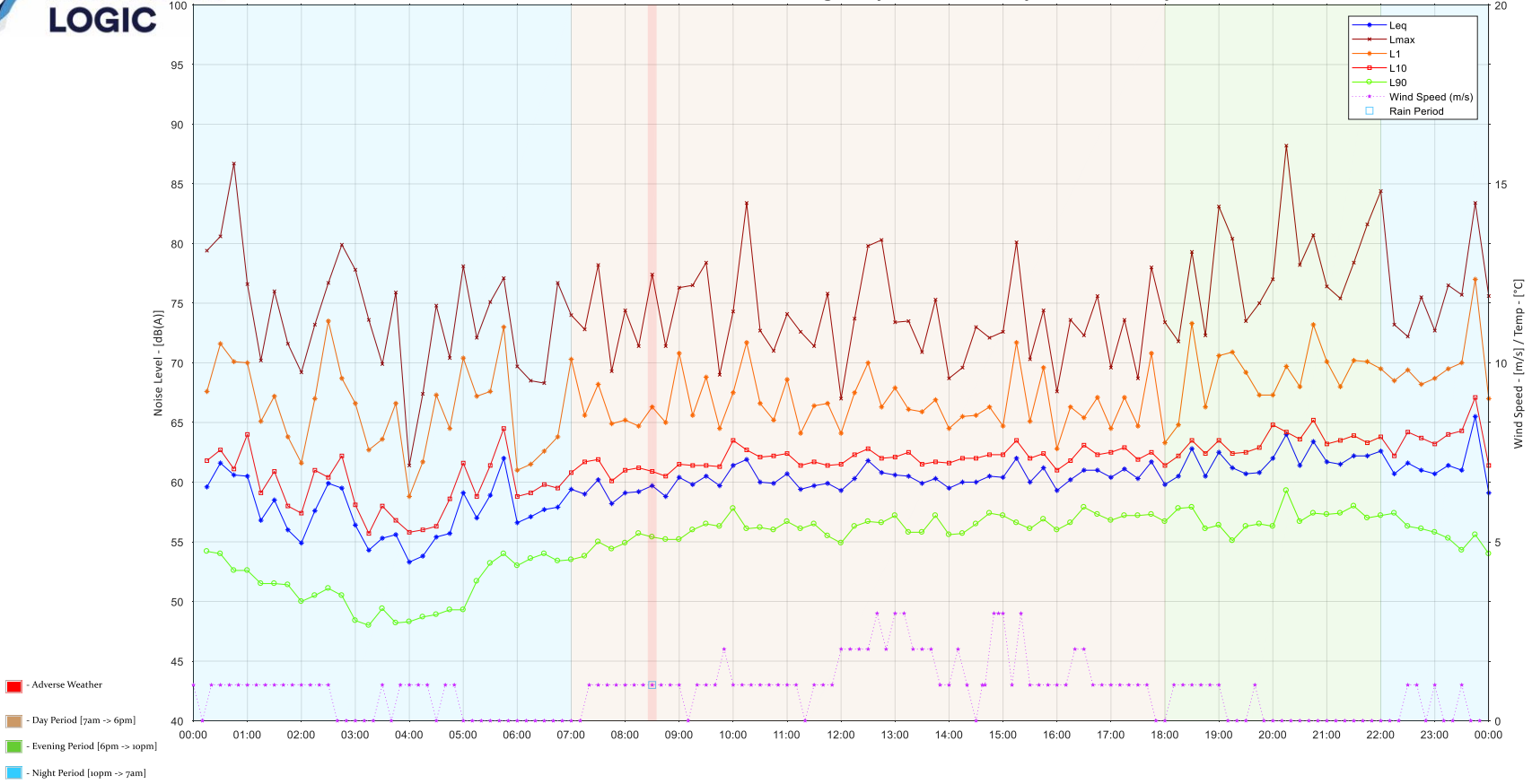
2-34 Davidson Street, Greenacre - Corner of Hume Highway and Centenary Drive: Friday 20 November, 2020



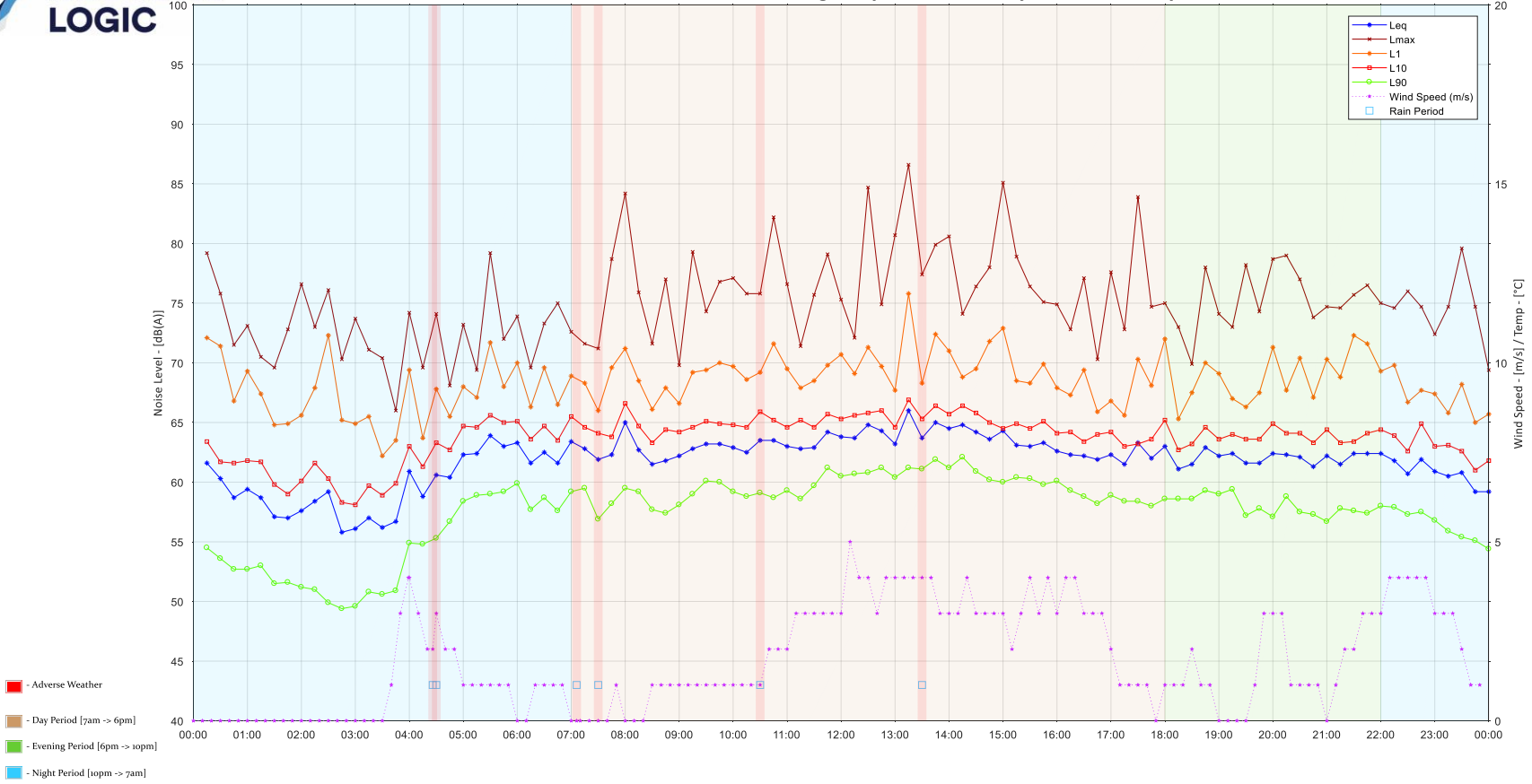
2-34 Davidson Street, Greenacre - Corner of Hume Highway and Centenary Drive: Saturday 21 November, 2020



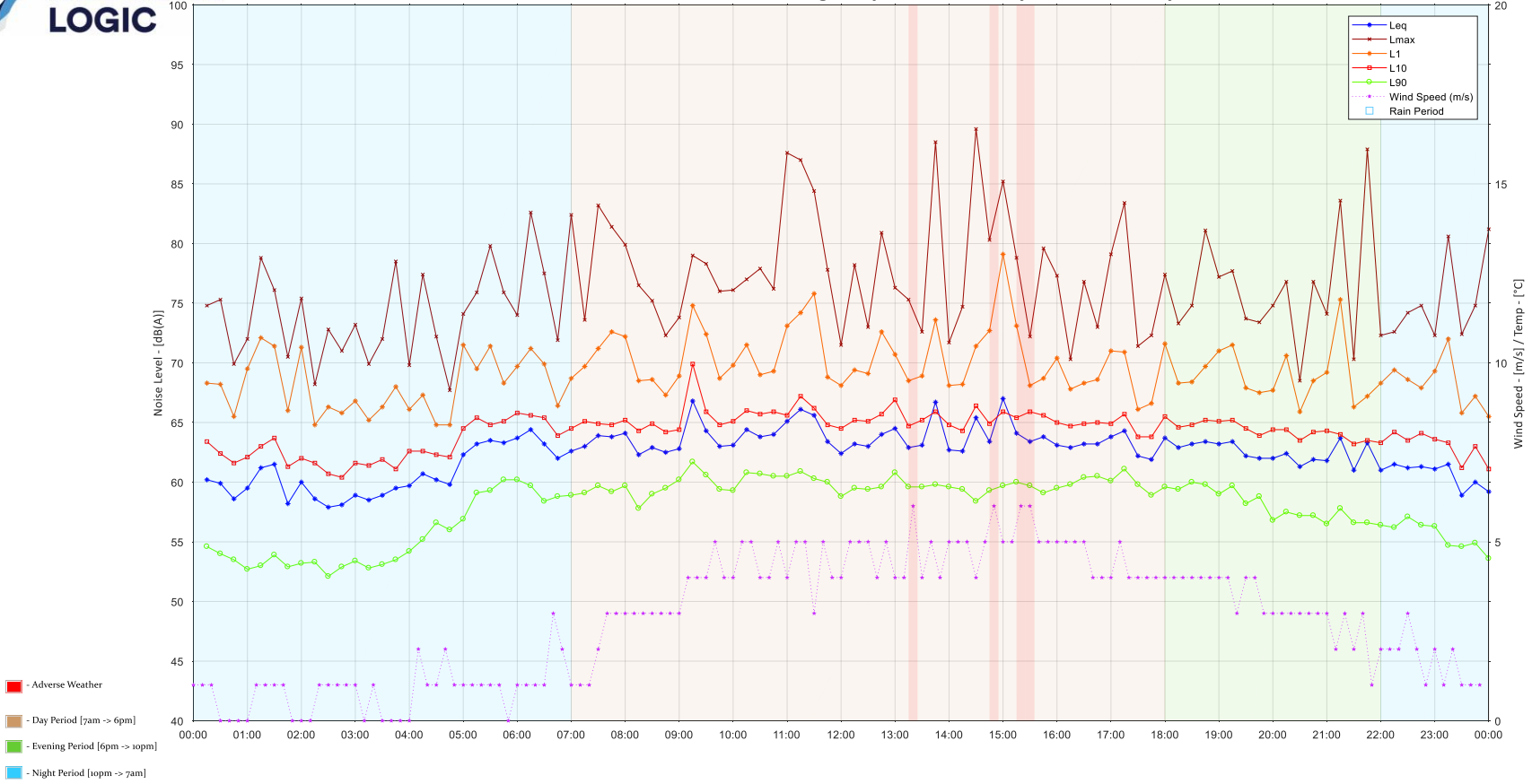
2-34 Davidson Street, Greenacre - Corner of Hume Highway and Centenary Drive: Sunday 22 November, 2020

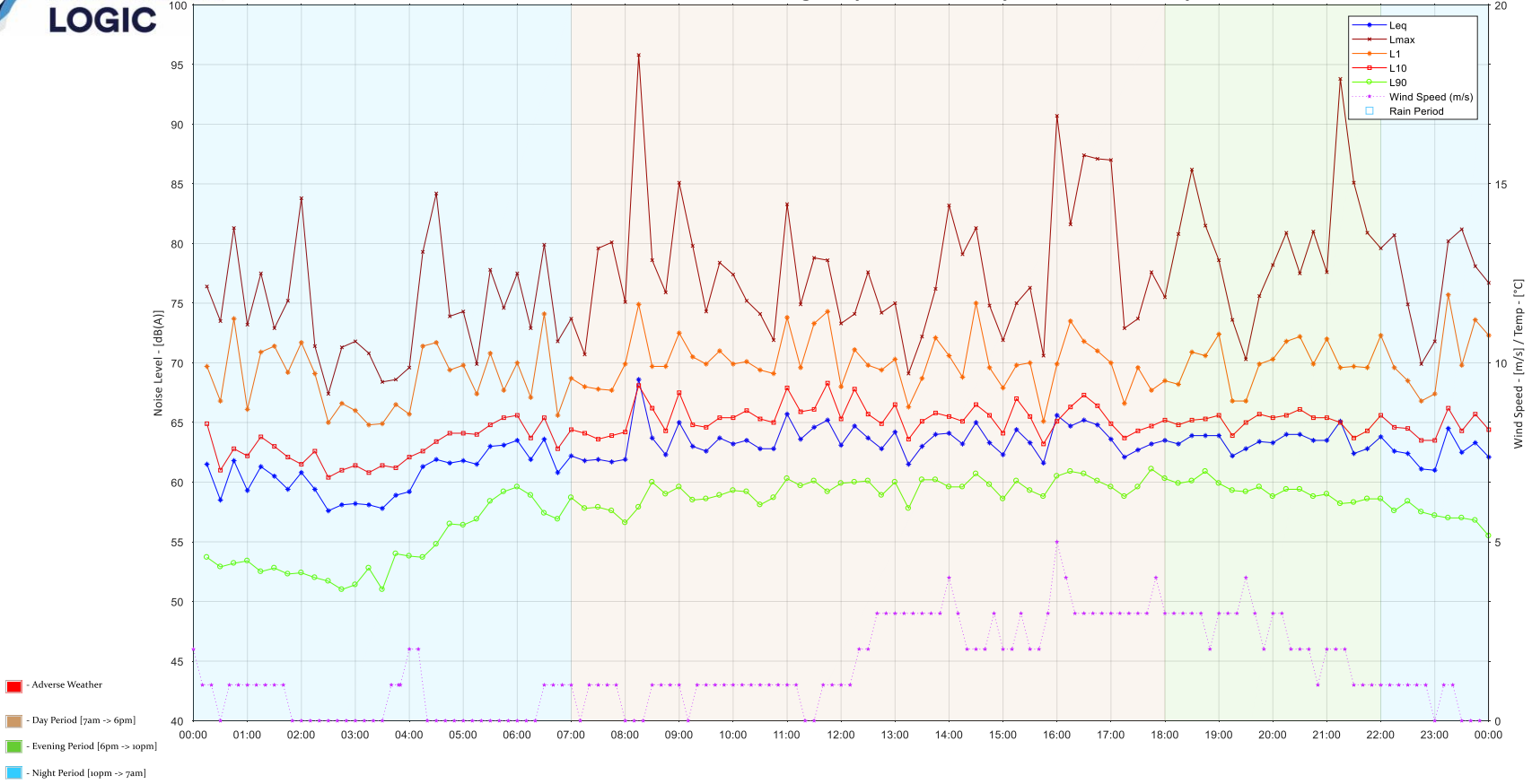


2-34 Davidson Street, Greenacre - Corner of Hume Highway and Centenary Drive: Monday 23 November, 2020

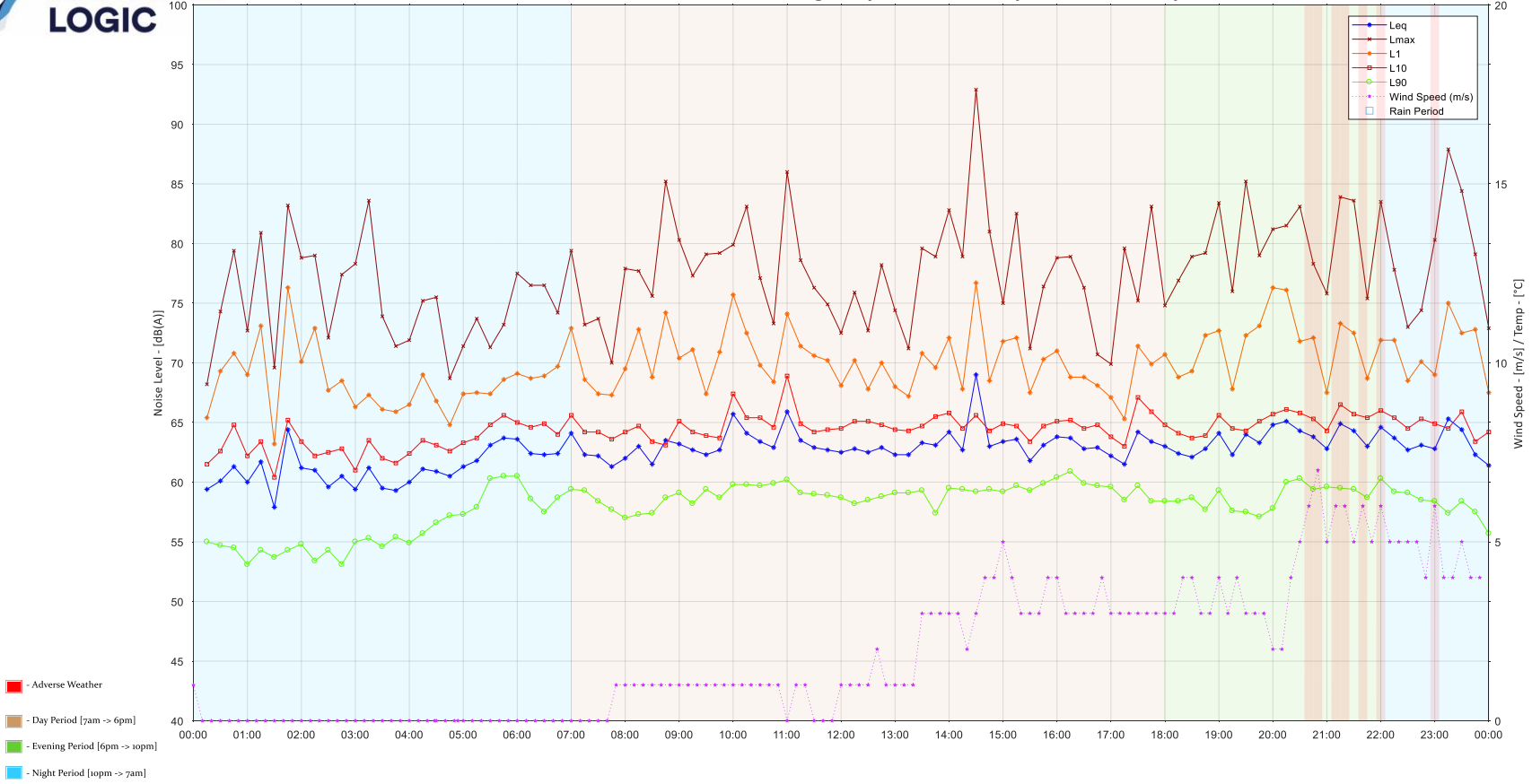


2-34 Davidson Street, Greenacre - Corner of Hume Highway and Centenary Drive: Tuesday 24 November, 2020

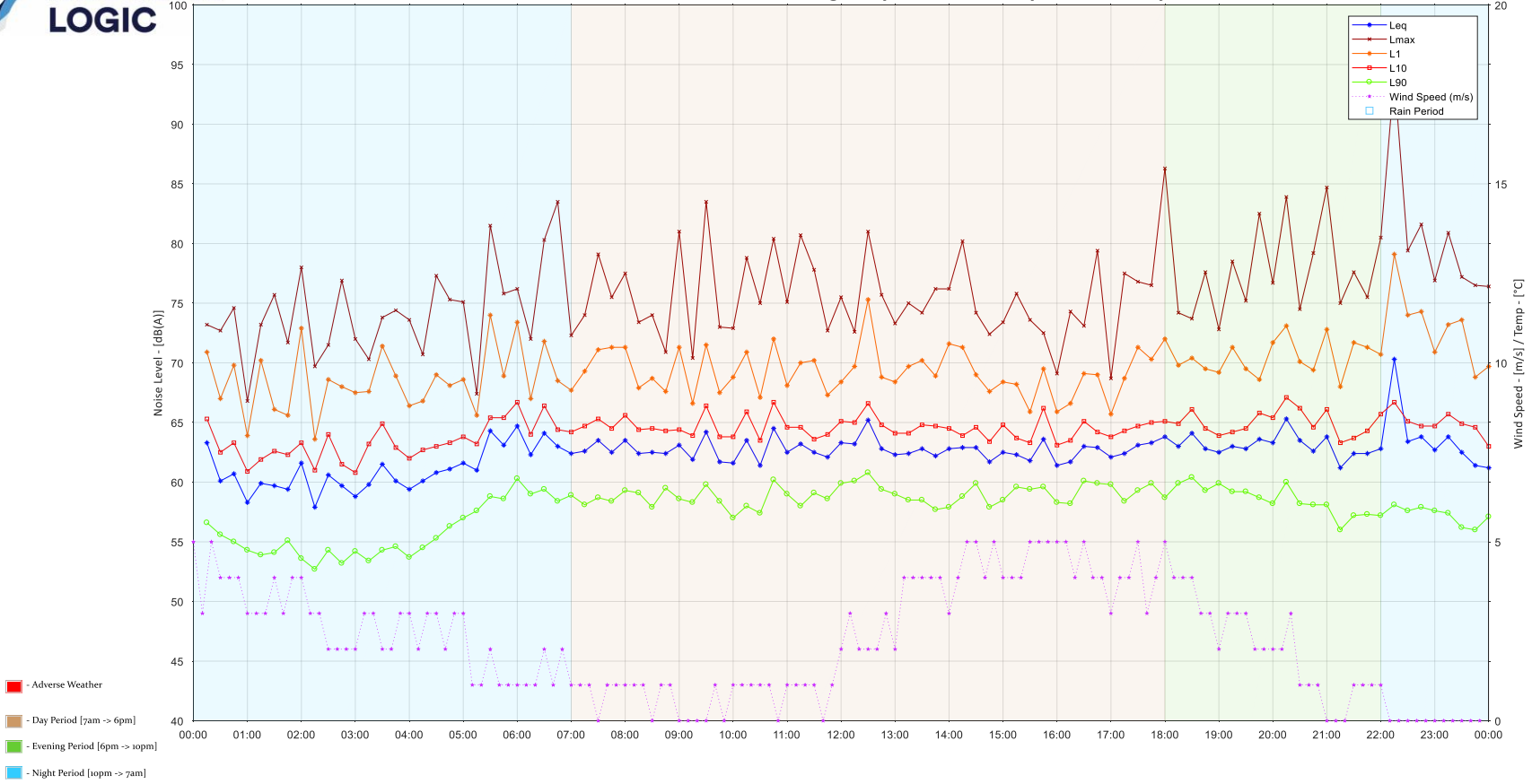




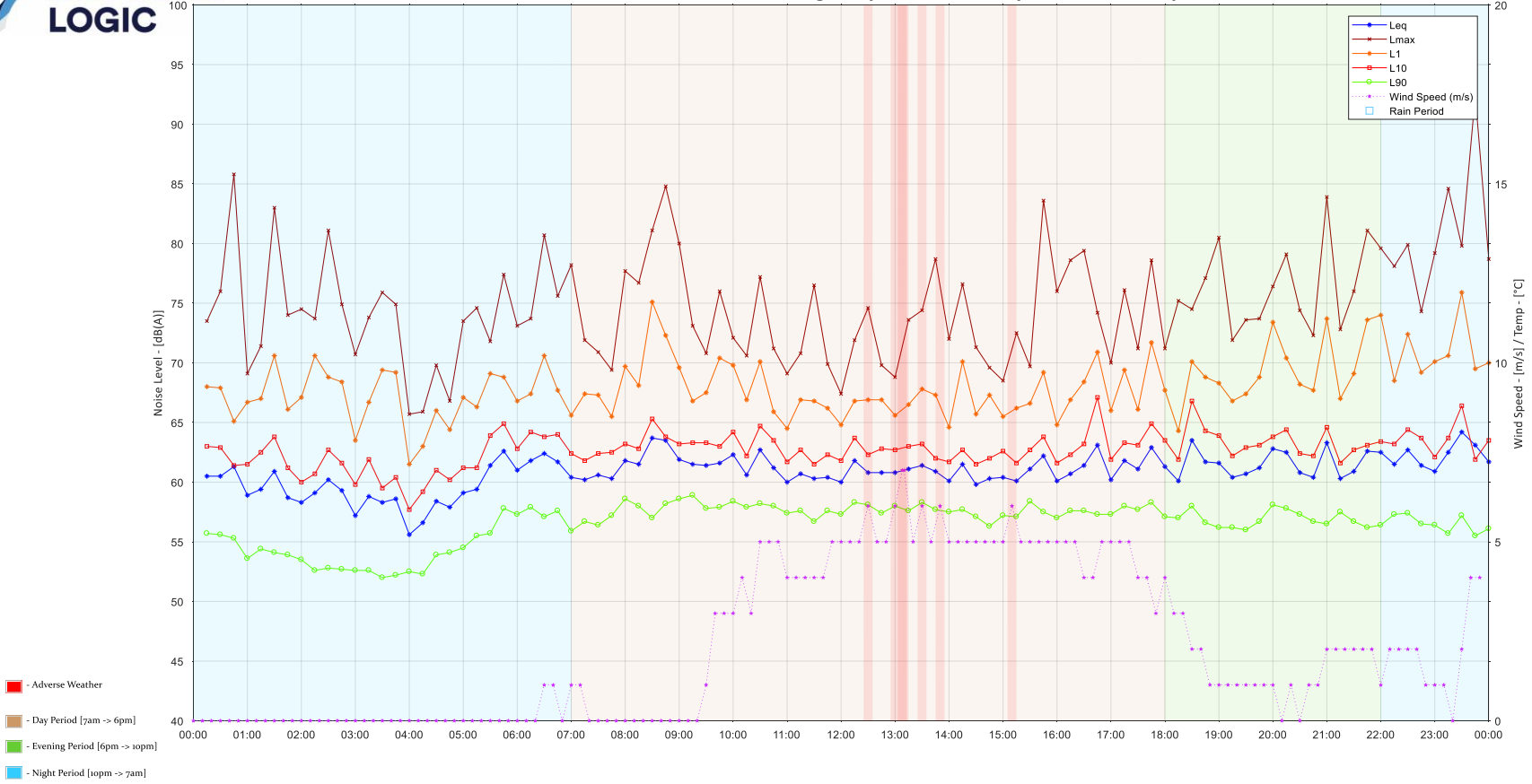
2-34 Davidson Street, Greenacre - Corner of Hume Highway and Centenary Drive: Thursday 26 November, 2020



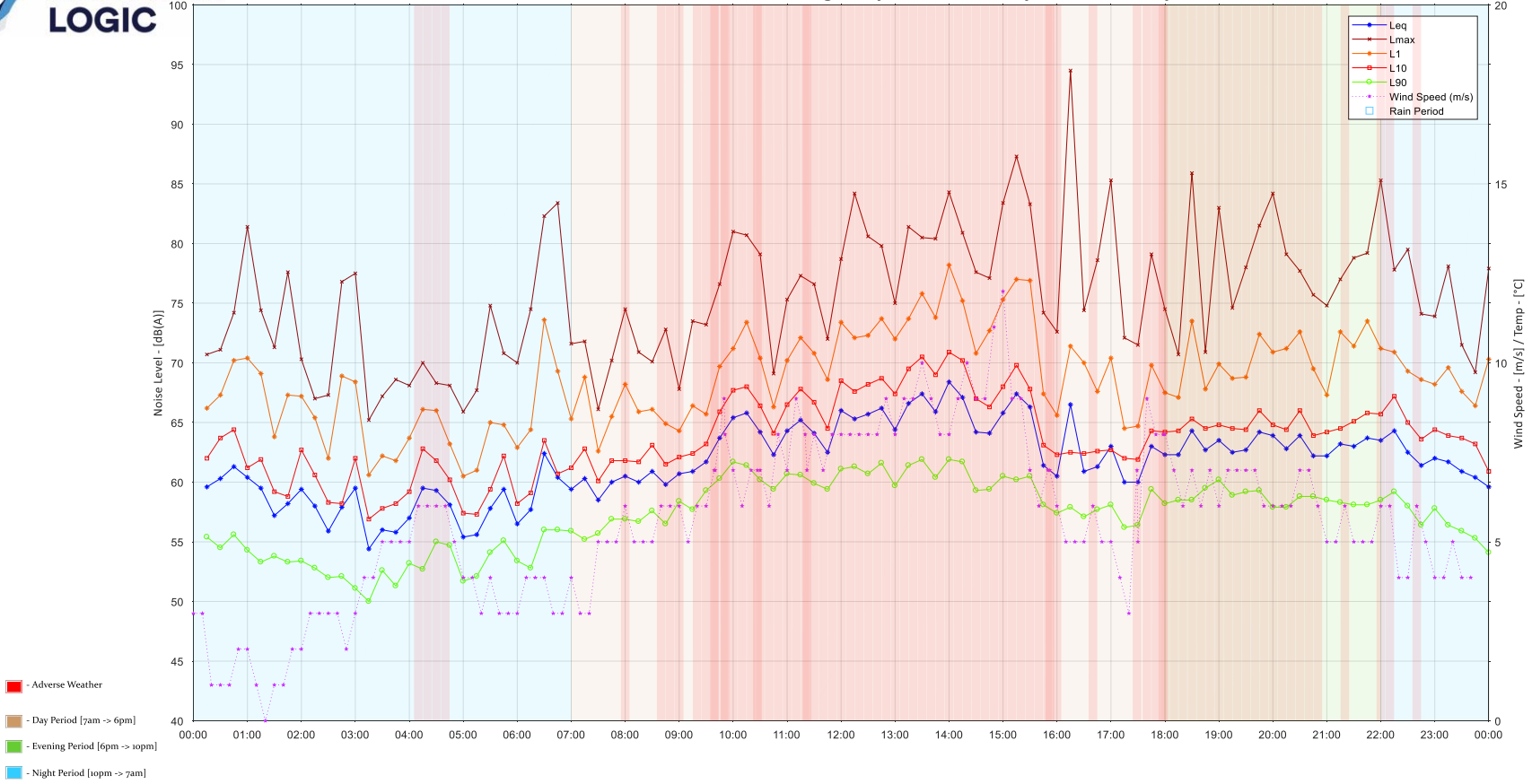
2-34 Davidson Street, Greenacre - Corner of Hume Highway and Centenary Drive: Friday 27 November, 2020



2-34 Davidson Street, Greenacre - Corner of Hume Highway and Centenary Drive: Saturday 28 November, 2020



2-34 Davidson Street, Greenacre - Corner of Hume Highway and Centenary Drive: Sunday 29 November, 2020





2-34 Davidson Street, Greenacre - Corner of Hume Highway and Centenary Drive: Monday 30 November, 2020

