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Northcote Village - 25 Separation Street, Northcote

Acoustic Assessment

ADVERTISED PLAN

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1 INTRODUCTION

Acoustic Logic Pty Ltd (AL) has been engaged by T&P Northcote Development Pty Ltd to undertake an acoustic assessment of the proposed Northcote Village Project. This report presents our acoustic assessment to address the following:

- External noise intrusion to the residential component of the development from the surrounding road network.
- Mechanical plant and equipment serving the proposed development.
- Noise emission from the proposed supermarket tenancy operation.

The assessment has been conducted based on the following documentation.

Table 1 – Referenced Documents

Company	Document No.	Date
Wardle Studio	Schematic Design Floor Plans	22 May 2026

2 PROJECT DESCRIPTION

The proposed development is a redevelopment of the existing Northcote Plaza Shopping Centre, consisting of 3 multi-storey residential apartment buildings, 2 residential townhouse buildings, and two levels of car parking in the podium for residents and 1 level in the basement for public retail parking. The tallest building is proposed to be 24 storeys. It is proposed that the development will incorporate supermarket / retail tenancies on the lower ground and upper ground levels, and communal facilities on levels from upper ground to level 3, on a residential terrace/podium.

Figure 1 below indicate the subject site, surrounding environment and measurement location.



Figure 1 – Subject site, surrounding environment and measurement location (source: Google Maps)

2.1 LOCAL NOISE SOURCE

Inspection and measurements on site indicate that the traffic noise from Separation Street was the dominant noise source. It is also expected that the apartments at high levels will also be impacted by High Street, which is classified as an arterial road.

Noise from the existing rooftop mechanical plant and equipment serving the existing supermarket tenancy was also identified. It was confirmed to AL that the majority of this equipment will be decommissioned and removed. The equipment that is proposed to be retained was measured and acoustically assessed as further discussed in Section 7.1 of this report.

3 ENVIRONMENTAL NOISE DESCRIPTORS

Environmental noise constantly varies in level, due to fluctuations in local noise sources including traffic and rail. Accordingly, a 15-minute measurement interval is normally 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 the case of environmental noise three principle 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 depends 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 measurement period. L_{eq} is important in the assessment of traffic and rail noise impact as it closely corresponds with human perception of a changing noise environment; such is the character of industrial noise.

The L_1 parameter (or the noise level exceeded for 1% of the time) is used during the night period to assess potential sleep arousal effects due to transient noise sources.

4 NOISE LEVEL MEASUREMENTS

4.1 MEASUREMENT LOCATION

4.1.1 Traffic and Background Noise Level Measurements

Traffic noise and background level measurements were conducted at the locations indicated in **Figure 1**, which are as the following:

- **Location 1 –** unattended noise monitor was installed to measure the existing background noise levels within subject site. The monitor was installed on the roof level of the existing building. The measured noise levels were not affected by façade reflections.
- **Location 2 –** attended noise level measurements was conducted to measure the traffic noise levels on Separation Street. The measurements were undertaken at approximately 2 metres from the curb with the microphone of the sound level meter was located approximately 1.5 metres above grade. The measurements had full view of Separation Street and was not impacted by façade reflections.
- **Location 3 –** attended noise level measurements was conducted to measure the traffic noise levels on Separation Street. The measurements were undertaken at approximately 10 metres from the curb with the microphone of the sound level meter was located approximately 1.5 metres above grade. The measurements had full view of Separation Street and was not impacted by façade reflections.
- **Location 4 –** attended noise level measurements was conducted to measure the traffic noise levels. The measurements were undertaken at the curb and the microphone of the sound level meter was located approximately 1.5 metres above grade. The measurements had full view of the street and was not impacted by façade reflections.

4.1.2 Existing Rooftop Mechanical Plant and Equipment Measurements

Figure 2 below indicates the existing rooftop mechanical plant and equipment that will be retained

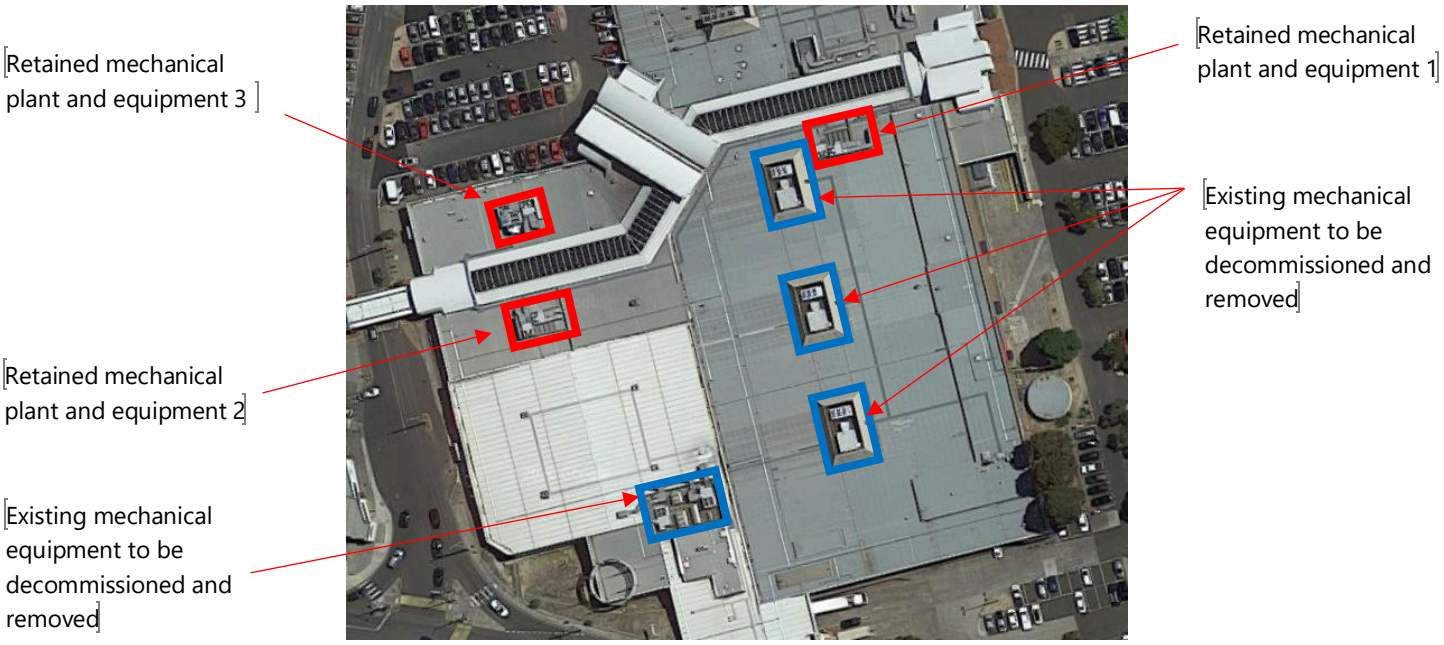


Figure 2 – Retained mechanical plant and equipment (source: Google Maps)

4.2 MEASUREMENT EQUIPMENT

A Norsonic Nor140 Sound Level Meter was used for the attended noise level measurements and Ngara noise monitors were used for the unattended long-term noise monitoring. The equipment was calibrated at the beginning and the end of the measurement using a Rion NC-75 Calibrator; no significant drift was detected. All measurements were taken on fast response mode.

4.3 MEASUREMENT DATE AND TIME

Attended noise level measurements were conducted on 13 May 2020 between 3:30pm and 5:00pm and on 14 May 2020 between 8am and 9:30am. Supplementary attended noise level measurements were conducted on 24 March 2026 between 8:00am and 9:15am.

The unattended background noise monitor was installed on site between 24 and 30 March 2026.

4.4 MEASUREMENT RESULTS

The noise measurement results are summarized in the tables below.

Table 2 – Measured Background Noise Levels (Unattended Measurements)

Measurement Location[1]	**Period**	**Measured Background $L_{90,period}$ dB(A)**
Measurement Location 1 indicated in Figure 1	Day Monday – Saturday (7am – 6pm)	50
	Evening Monday – Saturday (6pm – 10pm) Sunday (7am – 10pm)	47
	Night Monday – Sunday (10pm – 7am)	44

Table 3 – Measured Traffic Noise Levels (Attended Measurements)

Date	Time	Measurement Location[1]	Measured Noise Levels dB(A) L_{eq}
24/03/2026	8:14am – 8:29am	Location 4	62
	8:36am – 8:51am	Location 2	68
	8:54am – 9:09am	Location 3	62
13/05/2020	3:50pm – 4:15pm	Location 3	65
	4:07pm – 4:22pm	Location 2	67
	4:25pm – 4:40pm	Location 4	64[2]
14/05/2020	8:10am – 8:25am	Location 3	66
	8:26am – 8:41am	Location 2	68
	8:42am – 8:57am	Location 4	58[2]

Note 1: Refer Figure 1 for measurement locations
Note 2: Measurement results have been corrected -2.5 dB(A) for façade reflection

Table 4 – Measured Existing Rooftop Mechanical Plant and Equipment (Retained)

Measurement Location	Measured Noise Levels
Retained mechanical plant and equipment 1 indicated in Figure 2	65 dB(A) L_{eq} at 1.5 metres from the unit
Retained mechanical plant and equipment 2 and 3 indicated in Figure 2	74 L_{eq} between the two units

5 ASSESSMENT CRITERIA

5.1 EXTERNAL NOISE INTRUSION (TRAFFIC)

5.1.1 Standard D16 at Clause 58.04-3

Standard D16 contains the following requirement:

Noise impacts objectives

To contain noise sources in developments that may affect existing dwellings.

To protect residents from external and internal noise sources.

Standard D16

Noise sources, such as mechanical plants should not be located near bedrooms of immediately adjacent existing dwellings.

The layout of new dwellings and buildings should minimise noise transmission within the site.

Noise sensitive rooms (such as living areas and bedrooms) should be located to avoid noise impacts from mechanical plants, lifts, building services, non-residential uses, car parking, communal areas and other dwellings.

New dwellings should be designed and constructed to include acoustic attenuation measures to reduce noise levels from off-site noise sources.

Buildings within a noise influence area specified in Table D3 should be designed and constructed to achieve the following noise levels:

- *Not greater than 35dB(A) for bedrooms, assessed as an LAeq,8h from 10pm to 6am.*
- *Not greater than 40dB(A) for living areas, assessed LAeq,16h from 6am to 10pm.*

Buildings, or part of a building screened from a noise source by an existing solid structure, or the natural topography of the land, do not need to meet the specified noise level requirements.

Noise levels should be assessed in unfurnished rooms with a finished floor and the windows closed.

Table D3 Noise influence area

Noise Source	***Noise influence area***
Zone interface	
Industry	*300 metres from the industrial 1, 2 and 3 zone boundary*
Roads	
Freeways, tollways and other roads carrying 40,000 Annual Average Daily Traffic Volume	*300 metres from the nearest trafficable lane*
Railways	
Railway servicing passengers in Victoria	*80 metres from the centre of the nearest track*
Railway servicing freight outside Metropolitan Melbourne	*80 metres from the centre of the nearest track*
Railway servicing freight in Metropolitan Melbourne	*135 metres from the centre of the nearest track*

Note: The noise influence area should be measured from the closest part of the building to the noise source.

Decision guidelines

Before deciding on an application, the responsible authority must consider:

- *The design response.*
- *Whether it can be demonstrated that the design treatment incorporated into the development meets the specified noise levels or an acoustic report by a suitably qualified consultant submitted with the application.*
- *Whether the impact of potential noise sources within a development have been mitigated through design, location and siting.*
- *Whether the layout of rooms within a dwelling mitigates noise transfer within and between dwellings.*
- *Whether an alternative design meets the relevant objectives having regard to the amenity of the dwelling and the site context.*

Based on these conditions, the subject site has been reviewed as follows:

1. The development is **not** within 300m of an industrial zone.

2. The development is **not** within 300m of a freeway or road carrying an AADT >40,000

3. The subject site is **not** located within 80 metres of the centre of the nearest railway track.

Based on the above, the Standards D16 at Clause 58.04-3 is not applicable to this development and the internal noise level criteria has been based on Australian Standards AS2107:2016 below.

5.1.2 Australian Standards AS2107:2016

Australian Standard AS/NZS2107:2016 "Recommended Design Sound Levels and Reverberation Times for Building Interiors" sets out recommended design sound levels for residential developments depending on locality to minor or major roads.

Table 5 below details the criterion set for this development.

Table 5 – Internal Noise Criteria (Traffic Noise)

Location	Required Maximum Internal Noise Level[1]	
	Day (7am – 10pm) dB(A) L_{eq}	Night (10pm – 7am) dB(A) L_{eq}
Apartment Bedrooms	35 - 45	35 - 40
Apartment Living rooms	35 - 45	N/A

Note 1 - Noise level within furnished room ready for occupation with external windows and doors closed.

5.2 ENVIRONMENTAL NOISE EMISSION – EPA VICTORIA PUBLICATION 1826.5

We note that Acoustic Assessment report (document reference: 20200424.1/2909A/R6/BAW) prepared by Acoustic Logic Pty Ltd have developed the environmental noise emission criteria in accordance with EPA Victoria Publication 1826.5 – *'Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues'* (dated September 2025).

To ensure that noise emissions from the mechanical plant and equipment site and loading dock of the proposed development do not impact adversely on the amenity of the proposed development residents and surrounding noise sensitive areas, the proposed development should be designed to comply with Noise Protocol Part 1 of EPA Victoria Publication 1826.5.

5.2.1 Zoning Level

The 'Zoning' level is determined by the Influencing Factor (IF) and is calculated by the formula and the 'Zoning Level versus Influencing Factor' graph nominated in Section 1.1 of the EPA Noise Protocol and VicPlan Mapping. The IF is calculated from the proportion of industrial and commercial land around noise sensitive areas (in this case residential premises). Review of the surrounding area indicates an IF of approximately **0.39** which results in the zoning limits detailed in Table 6 below.

Table 6 - Zoning Levels

Period	Zoning Level
Day	57
Evening	50
Night	45

5.2.2 EPA Noise Protocol Part 1 Noise Limits

Table 7 below details the assessment criteria for this development.

Table 7 – Noise Limits

Period	Measured Background $L_{90,period}$ dB(A)[1]	Zoning limit	Project Noise Limits L_{eq} dB(A)
Day Monday – Saturday (7am – 6pm)	50	57	**57**
Evening Monday – Saturday(6pm – 10pm) Sunday (7am – 10pm)	47	50	**50**
Night Monday –Sunday (10pm – 7am)	44	45	**47**

Note 1: Based on the measured noise levels detailed in Table 2.

6 EVALUATION OF EXTERNAL NOISE INTRUSION

Internal noise levels will primarily be as a result of noise transfer through the windows, doors and lightweight walls as these are relatively light building elements that offer less resistance to the transmission of sound. Walls that are proposed to be heavy masonry elements and concrete roofs will not require upgrading.

6.1 GLAZING

Review of measured noise levels and proposed development indicates that glazing system can be selected to meet the nominated internal noise level criteria detailed in Table 5. Glazing systems based around lightweight to heavy weight double glazed combined with acoustic seals would be expected depending on the location and extend of glazing area and room sizes.

6.2 EXTERNAL WALL CONSTRUCTION

External wall construction is proposed to incorporate concrete / masonry which will not require upgrading acoustically.

Any ventilation openings in walls shall be acoustically treated to maintain the acoustic performance of the external wall construction.

6.3 ROOF CONSTRUCTION

Roof of the proposed buildings that is of concrete construction will not require upgrading acoustically.

Penetrations must be sealed gap free with a flexible sealant.

7 MECHANICAL EQUIPMENT SERVING THE PROPOSED DEVELOPMENT

To ensure that noise emissions from plant and equipment serving the development (including the Supermarket tenancy) do not impact adversely on the amenity of neighbouring residential properties, and the residential component of the proposed mixed use development, noise emissions from the mechanical plant and equipment shall comply with EPA Noise Protocol Part 1.

7.1 EXISTING ROOFTOP EQUIPMENT

The existing rooftop mechanical plant and equipment to be retained has been identified and measured as indicated in Section 4.1.2 and Table 4. To ensure compliance with EPA Noise Protocol Part 1 is achieved at the nearest residential apartment balconies, the following treatments are recommended:

1. Install solid imperforate screening to minimum 3 sides of the unit and solid roofing to the extent indicated in Figure 3 below. The wall and roof shall be constructed from FC sheet, sheet metal or similar material. The internal face of the screening (facing the mechanical units) shall incorporate absorptive lining equivalent to perforated metal faced glasswool insulation.



Figure 3 – Acoustic treatment recommendations to the retained mechanical plant and equipment

2. Any alternative system shall be reviewed and approved by a suitably qualified acoustic consultant.

7.2 FUTURE MECHANICAL PLANT AND EQUIPMENT

Based on a review of the current documentation, the major mechanical plant and equipment have been identified for the proposed development. It is noted that plant and equipment selections/design have not yet been finalised at this stage and therefore followings are in-principle acoustic treatment recommendations to ensure compliance with EPA Noise Protocol Part 1 at the nearest noise sensitive residential receivers is achieved:

1. A supermarket plant room is proposed on the upper ground level (located adjoining the loading dock entry door). The plant room is currently proposed to house air handling units (AHU) serving the supermarket. The following in-principle acoustic treatment recommendations shall be implemented:
    - The plant room shall be constructed from precast wall or similar construction.
    - Ductwork associated with AHU shall incorporate attenuators or internally lined ductwork.
    - Natural ventilation to the plant room may necessitate acoustic louvre.
    - Equipment shall be installed on vibration isolation mounts.
    - Final acoustic treatments shall be reviewed by a suitable qualified acoustic consultant during the detailed design stage.
2. A substation plant room is proposed on the upper ground level. The following in-principle acoustic treatment recommendations shall be implemented to ensure compliance with EPA Noise Protocol Part 1 at the nearest noise sensitive residential receivers is achieved:
    - The plant room shall be constructed from precast wall or similar construction.
    - Fan or similar equipment serving the substation shall incorporate attenuators or internally lined ductwork.
    - Equipment shall be installed on vibration isolation mounts.
    - Final acoustic treatments including any natural ventilation shall be reviewed by a suitable qualified acoustic consultant during the detailed design stage.
3. Rooftop level of all residential towers may be installed with ventilation system (supply / exhaust air fans) and condenser units serving the apartments. The following in-principle acoustic treatment recommendations shall be implemented to ensure compliance with EPA Noise Protocol Part 1 at the nearest noise sensitive residential receivers is achieved:
    - Supply / exhaust air fans shall incorporate attenuators or internal ductwork lining.
    - The final condenser unit selections shall be reviewed by a suitable qualified acoustic consultant during the detailed design stage. This includes any requirements of solid imperforate screening and final locations of the condenser units.
    - Equipment shall be installed on vibration isolation mounts.
    - The apartments (located below plant room) may necessitate to incorporate an upgraded acoustic ceiling nominally constructed from 2 layers of plasterboard with ceiling cavity lined with glasswool insulation.

As plant and equipment selections/design have not yet been finalised, the mechanical plant and equipment design shall be reviewed and designed by a suitably qualified acoustic consultant during the detailed design stage to ensure compliance with EPA Noise Protocol Part 1 criteria detailed in Table 7 is achieved to ensure the amenity of nearby noise sensitive residential receivers is preserved. This will be achieved by the use of standard acoustic treatment such as internally lined ductwork, acoustic attenuators, variable speed drives, and vibration isolation mounts.

It is envisaged at this stage that solid imperforate acoustic screening will be required to be installed around the rooftop mechanical plant and equipment area. The screening can be constructed from imperforate sheet metal, FC sheet or similar which can be applied behind a louvred screening. The height of the screen shall be higher than the tallest unit (min 200mm and may be taller depending on the noise data of the units). The final screen height shall be determined during the detailed design phase to ensure compliance with EPA Noise Protocol Part 1 criteria detailed in Table 7 is achieved.

8 REVIEW OF THE PROPOSED SUPERMARKET TENANCY

To ensure that the amenity of the nearby existing residential apartments and the future residents within the development is protected, the operating of the proposed supermarket tenancy located on the lower and upper ground level of the development shall be designed to ensure compliance with EPA Noise Protocol Part 1. The impact from the supermarket operation is typically due to the mechanical plant and equipment and the loading dock activities. In addition, the acoustic treatment for separation between public plaza / retail and private use / residential apartments have been recommended.

8.1 SUPERMARKET / RETAIL TENANCY MECHANICAL PLANT AND EQUIPMENT

Section 7.2 above include the in-principle acoustic treatment recommendations for mechanical plant and equipment serving the proposed supermarket / retail tenancies. Note the mechanical plant and equipment shall be reviewed and designed by a suitably qualified acoustic consultant during the detailed design stage to ensure compliance with EPA Noise Protocol Part 1 is achieved at the nearest noise sensitive residential receivers.

8.2 TRUCK MOVEMENT AND LOADING DOCK ACTIVITIES

Assessment of the noise generated by truck movement entering and exiting the loading dock and the activities within the loading dock has been based on Table 8 below to ensure compliance with EPA Noise Protocol Part 1 is achieved. The following sound power level of a large rigid (>7.5 tonne) truck driving at less than 15km/h and loading dock operation have been used in the assessment, which has been based on measurements conducted by AL of similar operations.

Table 8 – Sound Power Level

Type of Operation	Sound Power Level
Large Truck (>7.5 Tonne)	100 dB(A)
Loading Dock Operation	85 dB(A)

The following assumptions have been made:

- A maximum of 2 large truck deliveries will occur in 1 half hour.
- Large trucks will remain within loading dock for a minimum of 30 minutes whilst being unloaded.
- The worst affected residential apartments from the truck entering / exiting will be the apartments located near/above the loading dock entrance.
- The loading dock operation will only occur within the loading dock area which is undercover and no direct view from any residential apartments.

Based on the above, the following recommendations shall be implemented.

- The impact from the loading dock is typically generated by the pallet jacks / trolley movements on the slab. On this basis, the loading dock area where accessible to pallet jack / trolleys shall incorporate an isolated secondary slab.
- The slab soffit within the loading dock area shall be installed with absorptive material such as 40mm Envirospray or approved equivalent by a suitable qualified acoustic consultant. The treatment shall be implemented from the secure gate and throughout the loading dock area.
- The vehicle access door shall be solid imperforate and acoustically isolated from the building structure.
- The vehicle access door to be kept closed within the night-time period (10pm to 7am).

Provided the acoustic treatment recommendations above are implemented, we confirm that the truck movement and operation of the loading dock will achieve compliance with EPA Noise Protocol Part 1 at the nearest noise sensitive residential receivers.

9 VEHICLE ACCESS DOOR

To address noise transmission between vehicle access door to the apartments located above, refer the following in-principle acoustic treatment recommendations:

- Automatic doors shall be vibration isolated from the building structure.
- Doors shall be quiet in operation. Isolation of the door equal to Embelton NRD mounts shall be used where the motors are fixed to the structure.
- Teflon guides shall be installed in all rails.
- Ensure that door panels do not rattle, and the operation of any door guides, rollers, etc. is smooth.
- Door guides should be fitted with vibration isolated fixings where required to prevent door operation from being audible within occupied spaces.
- Door motors shall be fitted with a soft start/stop controller to minimise noise.
- The door shall be stopped approximately 5mm from the slab/ground to ensure the base of the door does not contact the concrete surface.
- Ramp finishes not to be corrugated to minimise regenerated tyre noise. Recommend broom finish.
- Isolation of the door structure is shown in the schematic below -

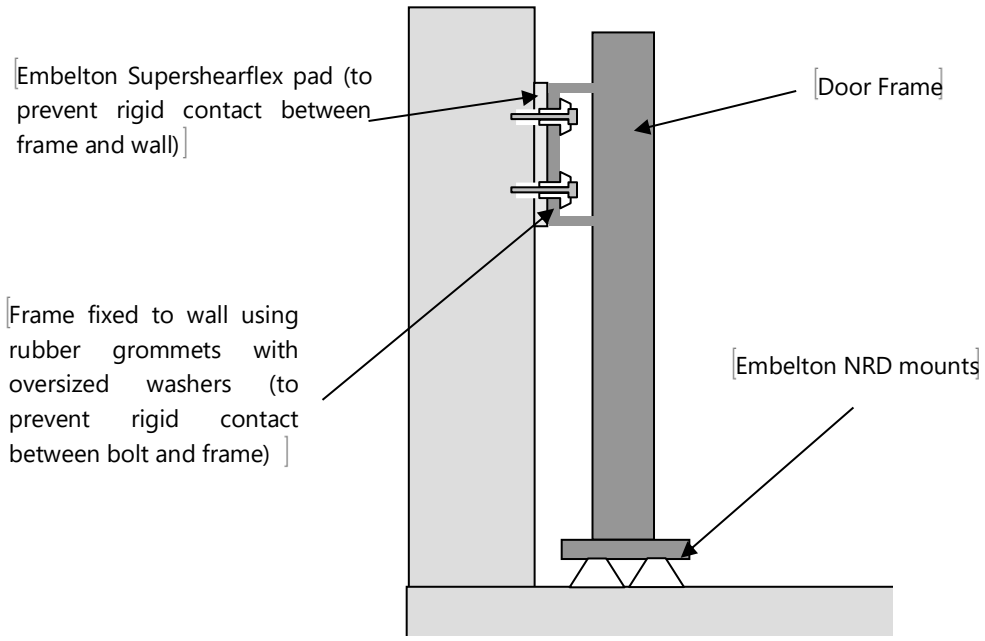


Figure 4 – Vehicle access door vibration isolation detail

10 CONCLUSION

This report details our acoustic assessment for the proposed Northcote Village Project. Provided the external fabric construction (ie glazing, external wall / door and roof / ceiling) detailed in Section 6 is implemented, then compliance with the internal traffic noise level criteria detailed in Section 5.1.2 will be achieved.

A high-level review of the mechanical plant and equipment have been conducted to ensure compliance with EPA Noise Protocol Part 1 is achieved. We noted that the mechanical plant and equipment design have not yet been finalised and shall be reviewed by a suitably qualified acoustic consultant during the detailed design stage to ensure EPA Noise Protocol Part 1 compliance is achieved.

For the truck movement and loading dock serving the proposed supermarket, compliance with EPA Noise Protocol Part 1 will be achieved provided the acoustic treatment recommendations detailed in Section 8.2 is implemented.

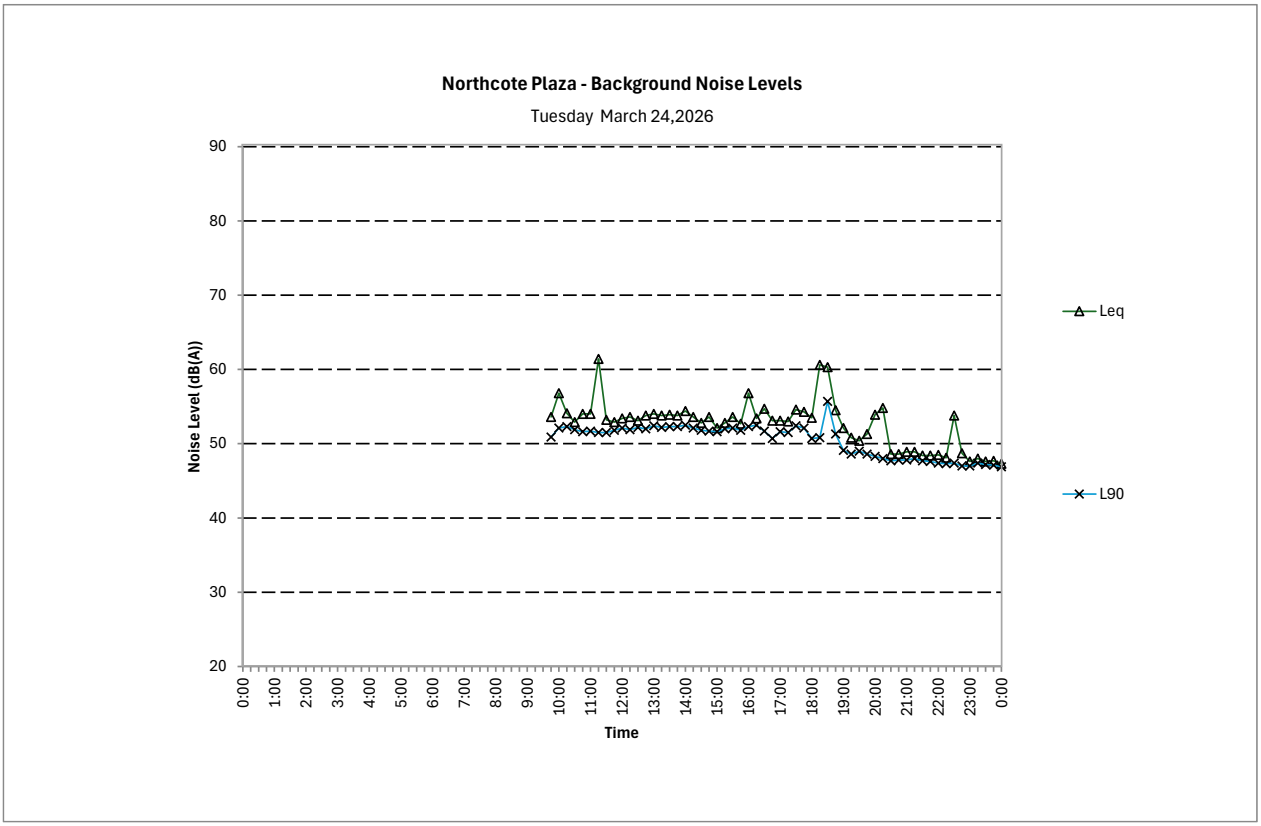
We trust this information is satisfactory. Please contact us should you have any further queries.

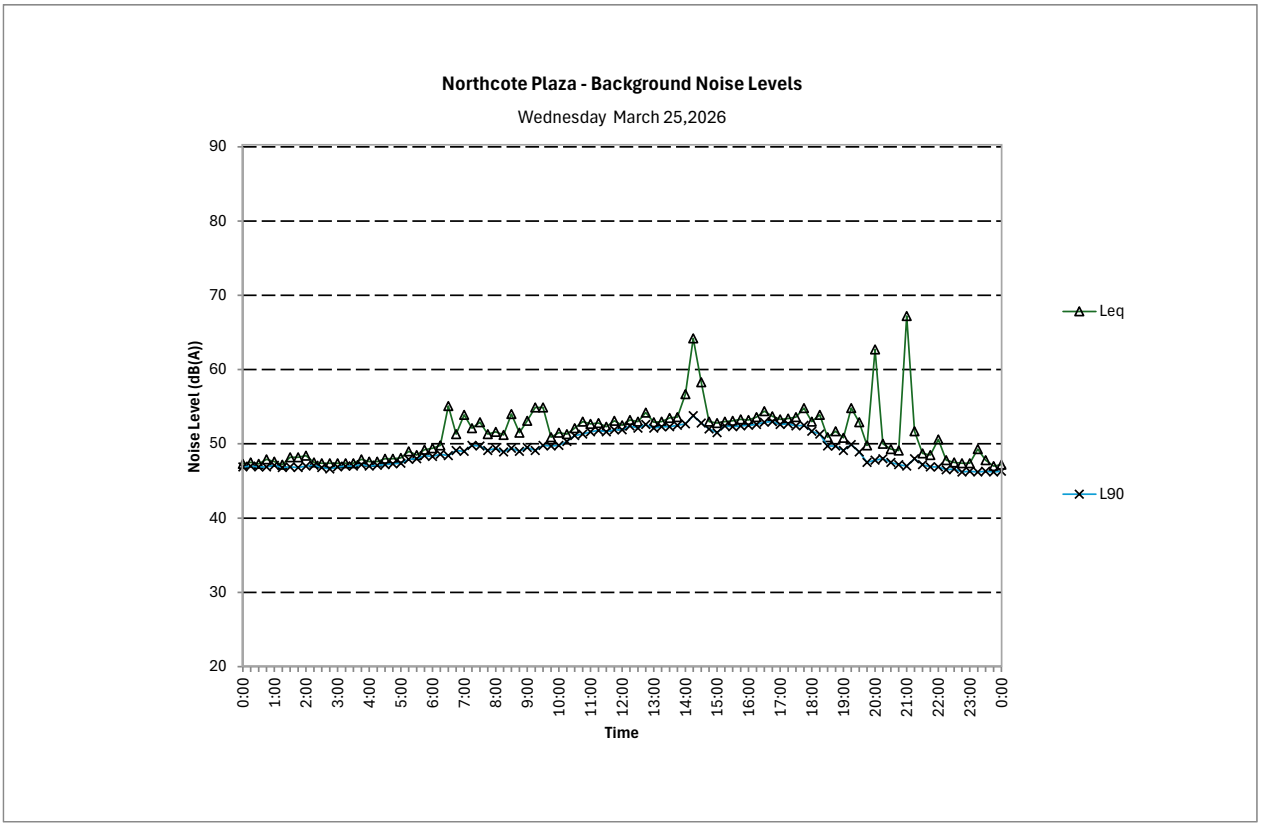
Yours faithfully,

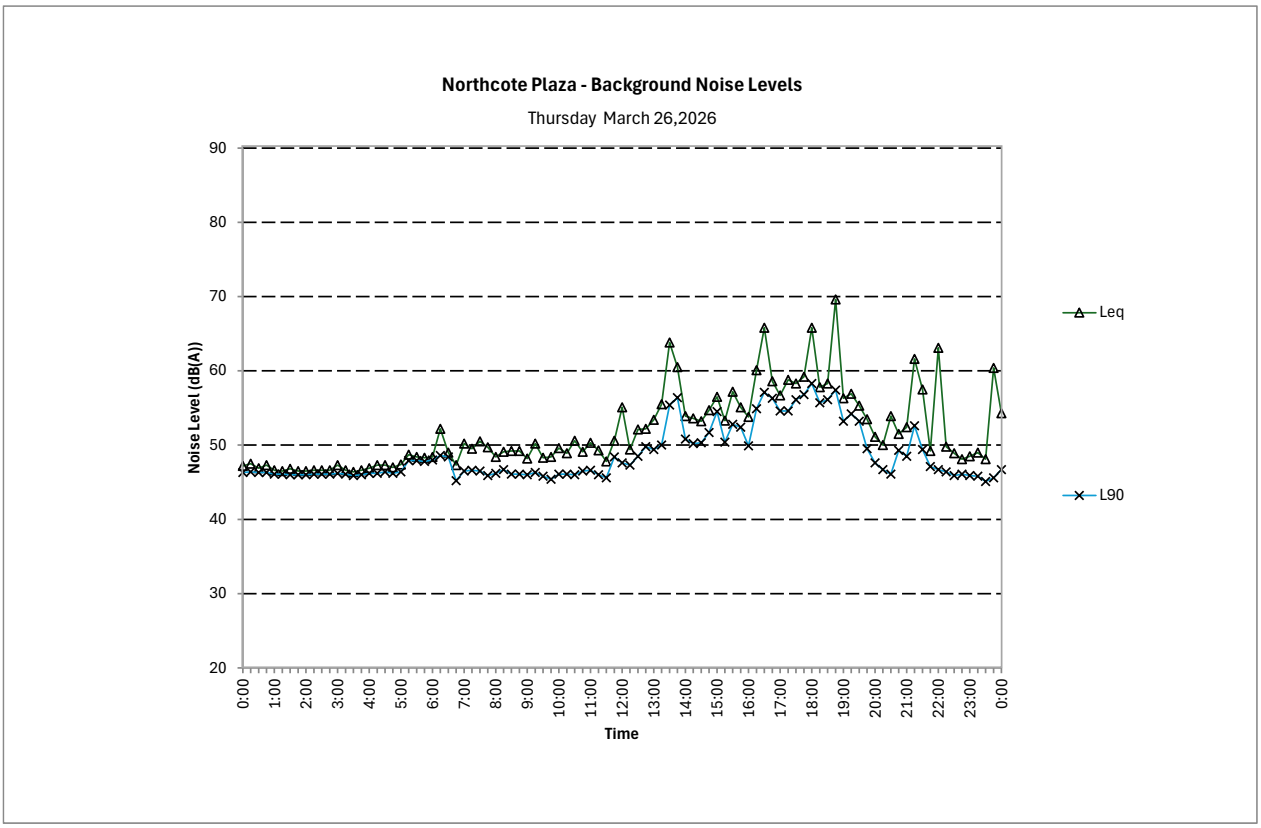


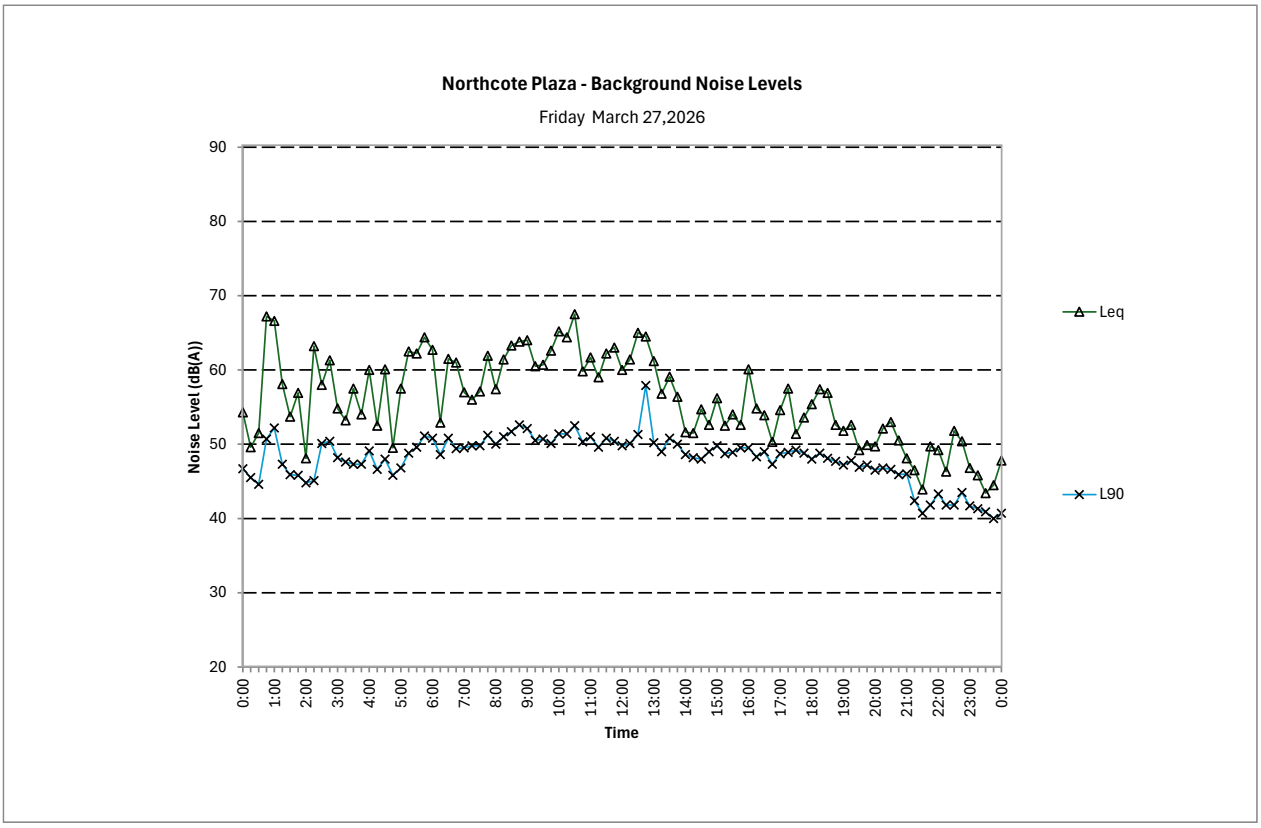
Acoustic Logic Pty Ltd
Charlie McGrath

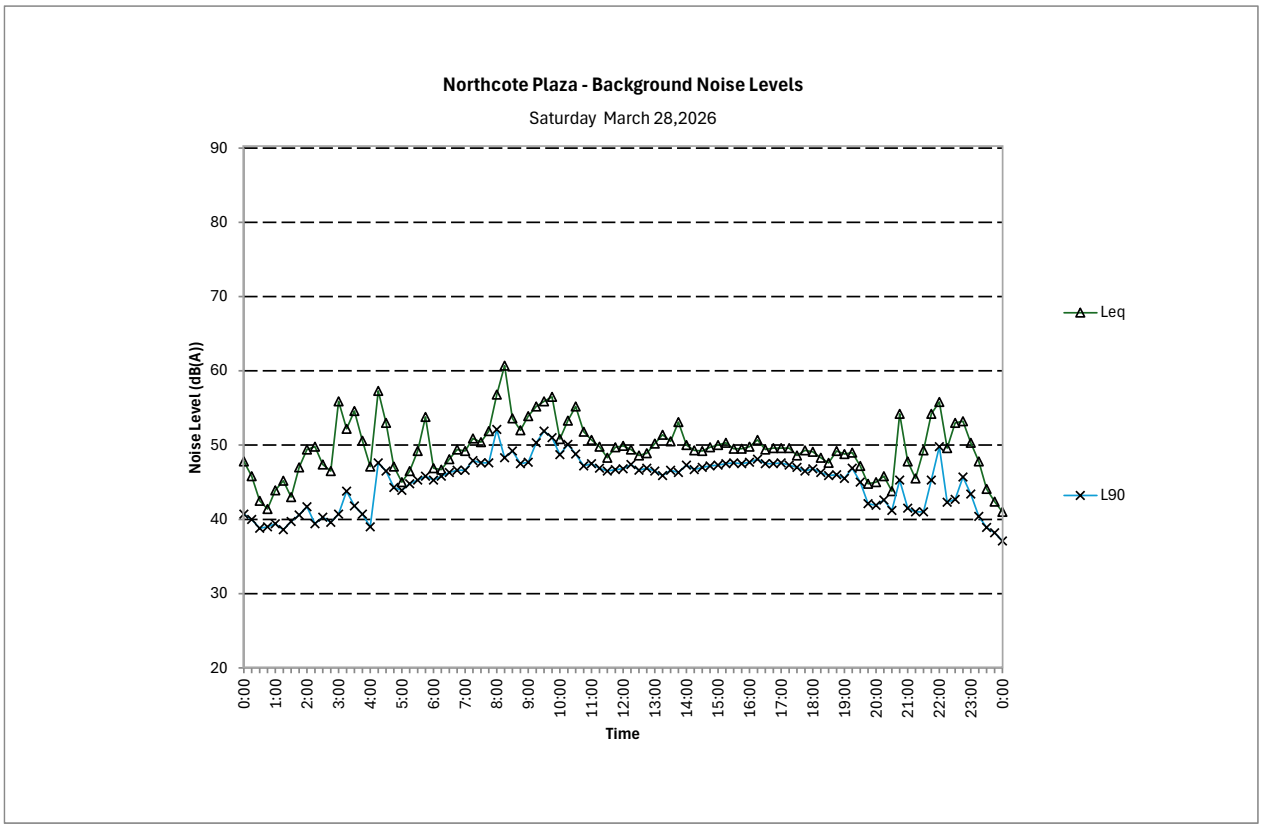
APPENDIX 1 – BACKGROUND NOISE MONITORING GRAPHS

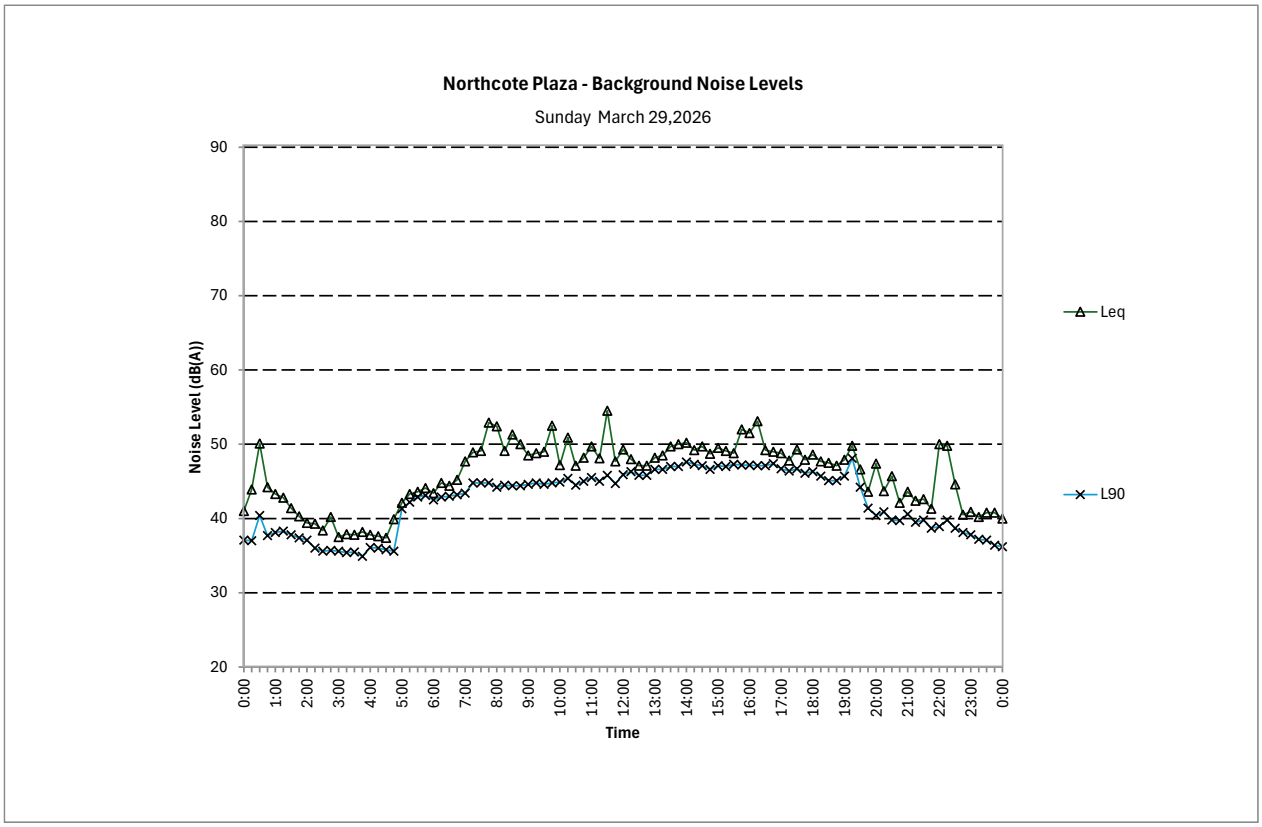


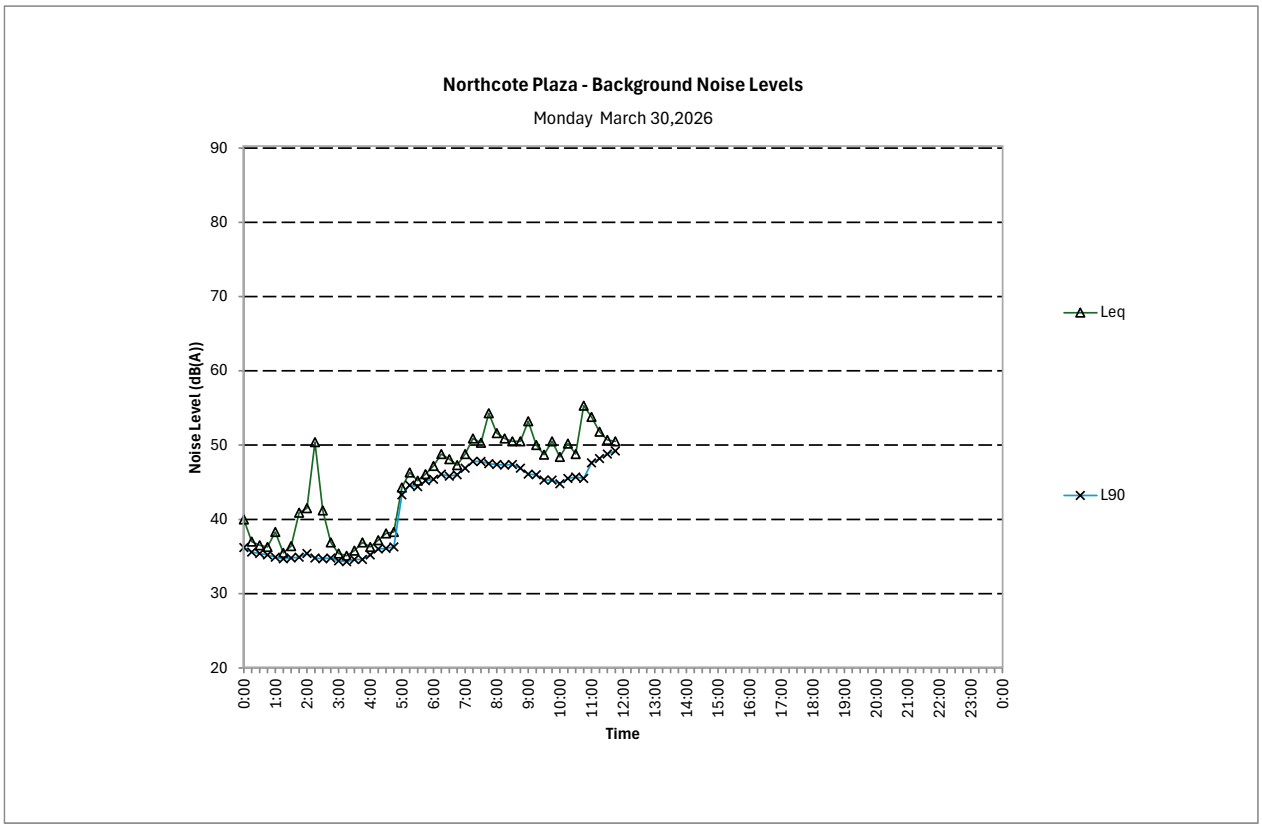



Northcote Plaza - Background Noise Levels
Thursday March 26,2026
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
Leq
L90


Northcote Plaza - Background Noise Levels
Friday March 27,2026
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
Leq
L90


Northcote Plaza - Background Noise Levels
Saturday March 28,2026
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
Leq
L90


Northcote Plaza - Background Noise Levels
Sunday March 29,2026
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
Leq
L90


Northcote Plaza - Background Noise Levels
Monday March 30,2026
Noise Level (dB(A))
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
Leq
L90

APPENDIX 2 – NOISE MONITORING PHOTOS



Background Noise Monitor Location