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Proposed Cathedral Campus Development
11 Lahey Lane
Kangaroo Point

ACOUSTIC REPORT



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Urbis

C/- Russian Orthodox Church

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1. Introduction

This report is in response to a request by Urbis C/- Russian Orthodox Church for a road traffic and environmental noise assessment of a proposed residential and community development for St Nicholas Cathedral located at 11 Lahey Lane, Kangaroo Point. To facilitate the assessment, unattended noise monitoring was conducted to determine the traffic noise impacts to the proposed development and determine the criteria for assessment of onsite activities to sensitive receivers. Based on the results of the assessment, recommendations for acoustic treatments and/or management controls are specified in this report.

2. Site Description

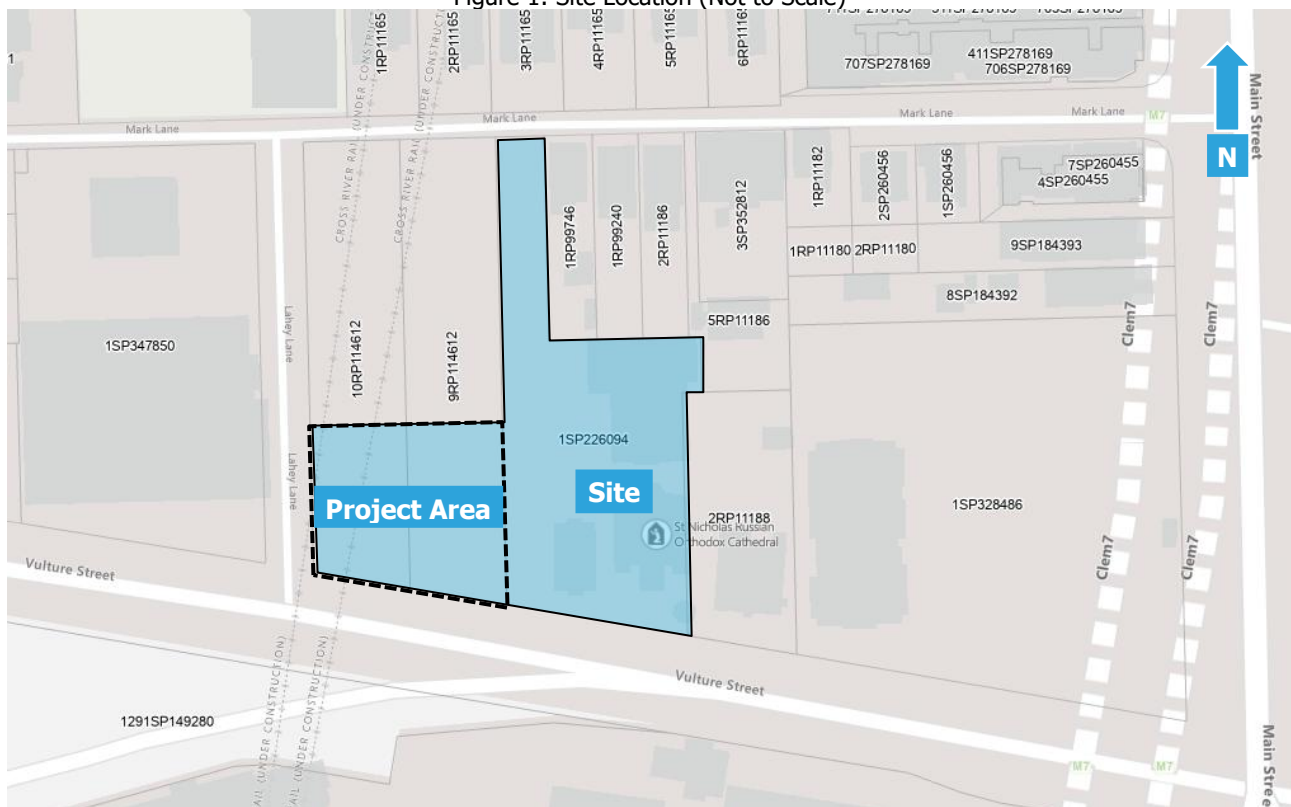
2.1 Site Location

The site is described by the following:

11 Lahey Lane, Kangaroo Point
Lot 9 and 10 on RP114612 and Lot 1 on SP226094

Refer to Figure 1 for site location.

Figure 1: Site Location (Not to Scale)



A site survey was conducted on 23 April 2025 and identified the following:

- a) The project area is currently vacant while the site is occupied by St Nicholas Cathedral, an existing baptistery and hall.
- b) Vulture Street is adjacent the southern site boundary.
- c) Lahey Lane bounds the site to the west, separating the site from commercial land uses.
- d) Main street is located approximately 150m east of the site with Leopard Street located to the west, approximately 95m from the site.
- e) The surrounding area comprises of residential and commercial land uses (Mixed use zone).

2.2 Proposal

The proposal is to construct a residential and community development consisting of the following:

- Entire Site Area: 3,454m²
- Project Area: 1,910m² with a total site cover of 1,675m².
- 34 parking spaces on basement level and 10 parking spaces on ground level.
- Ground Floor:
 - Social space/Youth club with a kitchen, classrooms, library, covered outdoor area, terrace and outdoor play area.
- 15 Apartments from levels 1 to 3 (5 apartments on each floor).
- Site access is via Lahey Lane.

Refer to the Appendices for development plans.

2.3 Acoustic Environment

The site and is primarily affected by road traffic noise from the surrounding road network.

3. Equipment

The following equipment was used to record noise levels:

- 2x Rion NL42 Environmental Noise Monitor
- Pulsar Model 105 Sound Calibrator

The Rion NL42 Environmental Noise Monitors hold current NATA Laboratory Certification and were field calibrated before and after the monitoring period, with no significant drift from the reference signal recorded.

4. Receivers and Noise Monitoring Locations

4.1 Receiver Locations

The nearest residential receiver locations were identified as follows;

1. A Highset residential dwelling is located to the east at 350 Vulture Street (Mixed Use Zone).
2. A Single Storey residential dwelling is located to the north at 52 Mark Lane (Mixed Use Zone).
3. A 6 storey Commercial building is located to the west at 310 Vulture Street (Mixed Use Zone).

These locations were chosen as being representative of the nearest sensitive receivers to the proposed development. Refer to Figure 2 for receivers and noise monitoring locations.

Figure 2: Receivers Noise monitoring locations



4.2 Unattended Noise Monitoring

4.2.1 Road Traffic Noise Monitor

A Rion NL42 road traffic noise monitor was placed at 350 Vulture Street to measure road traffic noise levels. The monitor was located approximately 10m from the nearest lane of Vulture Street in a free field position with the microphone approximately 4.4 metres above ground level. The noise monitor was set to record noise levels between 23 April and 1 May 2025.

The road traffic noise monitor was set to record noise levels in "A" Weighting, Fast response using 15 minute statistical intervals. Road traffic noise monitoring was conducted in accordance with Australian Standard *AS2702:1984 'Acoustics - Methods for the measurement of road traffic noise'*.

For the unattended noise monitoring location refer to Figure 2.

4.2.2 Ambient Noise Monitoring

A Rion NL42 environmental noise monitor was placed at 32 Mark Lane to measure ambient noise levels. The monitor was located in a free field position with the microphone approximately 1.4 metres above ground surface level. The noise monitor was set to record noise levels between 1 May and 8 May 2025.

The environmental noise monitor was set to record noise levels in "A" Weighting, Fast response using 15-minute statistical intervals. Ambient noise monitoring conducted generally in accordance with Australian Standard *AS1055:2018 'Acoustics – Description and measurement of environmental noise'*.

For the unattended noise monitoring location refer to Figure 2.

5. Measured Noise Levels

The following tables present the measured existing ambient and road traffic noise levels from the unattended noise survey. Any periods of inclement weather or extraneous noise are excluded from the omitted from the measured data prior to determining the results.

5.1 Meteorological Conditions

Meteorological observations during the unattended noise monitoring survey were obtained from the Bureau of Meteorology website (<http://www.bom.gov.au/climate/data>), shown in Table 1 below.

Table 1: Meteorological Conditions – Brisbane

Day	Date	Rainfall (mm)	Wind			
			9am		3pm	
			Direction	Speed (km/h)	Direction	Speed (km/h)
Wednesday	23/04/25	0	SW	7	SE	6
Thursday	24/04/25	5.6	SSW	4	SE	6
Friday	25/04/25	28.4	WSW	6	ESE	7
Saturday	26/04/25	4.4	SSW	6	ENE	6
Sunday	27/04/25	0	W	11	W	9
Monday	28/04/25	0	WSW	9	W	7
Tuesday	29/04/25	0	SW	4	NE	6
Wednesday	30/04/25	0	SW	6	ESE	4
Thursday	1/05/25	0	SW	6	SSE	6
Friday	2/05/25	0	S	7	SE	13
Saturday	3/05/25	0	SSW	7	ESE	11
Sunday	4/05/25	15.8	SSE	6	E	15
Monday	5/05/25	2.2	W	7	E	11
Tuesday	6/05/25	0.2	SW	6	ESE	9
Wednesday	7/05/25	0	SW	6	SE	7
Thursday	8/05/25	0	SW	6	SE	9

5.2 Road Traffic Noise Levels

The measured road traffic noise levels are as follows;

Table 2: Measured Noise Levels

Day	Date	L10 (18h)	Leq(1h)		L90 (8h)	L90 (18h)
			Day	Night		
Wednesday	23/04/25	-	81	75	-	-
Thursday*	24/04/25	-	-	-	-	-
Friday^	25/04/25	-	-	-	-	-
Saturday^	26/04/25	-	-	-	-	-
Sunday^	27/04/25	-	-	-	-	-
Monday	28/04/25	70	78	69	51	61
Tuesday	29/04/25	70	82	78	51	61
Wednesday	30/04/25	71	83	69	52	61
Overall		70.3	81	72.7	51.3	61

^The proposed development is located within a council-controlled transport noise corridor overlay. To be consistent with the advice in Section 4.3.1.2 of the Transport Noise Management Code of Practice, road traffic data for weekend periods and public holidays was not utilised in the assessment. The code specifies that measurements of traffic noise shall not be conducted during periods of atypical traffic flows. Periods of atypical traffic flows and patterns generally include weekends, school and public holidays.

*Note: Rainfall was recorded on 24 April 2025, it was found to have affected the measured noise levels. Therefore, the data of the affected time periods was omitted from the analysis.

Refer to the appendix for a graphical representation of the noise monitoring.

5.3 Ambient Noise Levels

The following table presents the measured existing ambient noise levels. Any periods of inclement weather or extraneous noise are omitted from the measured data prior to determining the results.

Table 3: Measured ambient noise levels – all time periods

Day	Date	RBL L90 dBA		
		Day	Eve	Night
Thursday	1/05/25	-	49	49
Friday	2/05/25	51	51	45
Saturday	3/05/25	51	49	46
Sunday	4/05/25	-	-	-
Monday	5/05/25	-	-	-
Tuesday	6/05/25	49	48	42
Wednesday	7/05/25	48	48	43
Thursday	8/05/25	51	-	-
Overall value		50	49	45

Noise monitoring data for the 5th of May was excluded as it was a public holiday as well as data for the 4th of May due to inclement weather.

Refer to the appendix for a graphical representation of the noise monitoring.

6. Noise Criteria

6.1 Road Traffic Noise

As the development is located near a Council controlled road, the QDC criteria detailed in this Section applies.

6.2 Queensland Development Code MP4.4

To determine the minimum design requirements for any residential buildings located within the transport noise corridor, compliance with Queensland Development Code Part MP4.4 is required. In accordance with MP4.4 the noise categories are stated in Table 4.

Table 4: Queensland Development Code Part MP4.4 Criteria

Noise category levels – Queensland Design Code Part 4.4	
Noise Category	($L_{A10, 18h}$)
Category 4	≥ 73 dBA
Category 3	68-72 dBA
Category 2	63-67 dBA
Category 1	58-62 dBA
Category 0	≤ 57 dBA

The building treatment for any future development onsite shall be determined at Building Approval stage, in general accordance with the Queensland Development Code.

6.3 Environmental Noise Criteria

To ensure a reasonable acoustic amenity is maintained, Brisbane City Council (BCC) requires environmental noise be assessed in accordance with Noise Impact Assessment PSP (2014). To accurately assess environmental noise, the noise must first be classified as to the type and its duration. Section 6.3.1 outlines the noise criteria based on the applicable zoning and overlay codes for the site and surroundings.

6.3.1 Onsite Activities

To ensure a reasonable amenity is maintained, the following criteria shall be applied for the assessment of onsite activities to sensitive receivers. The noise criteria as applied by Brisbane City Council in accordance with the Centre or Mixed Use Code and Multiple Dwelling Code of the Brisbane City Plan 2014 are as follows;

Table 5: Noise (Planning) Criteria – Mixed Use Code

Criteria Location	Intrusive Noise Criteria	Acoustic Amenity Criteria		
	Day, evening and night $L_{Aeq,adj,T}$ are not greater than the RBL plus the value in this column for the relevant criteria location, where T equals: - Day - 11hr - Evening - 4hr - Night - 9hr	Day, evening and night $L_{Aeq,adj,T}$ are not greater than the values in the column below for the relevant criteria location, where T equals: - Day - 11hr - Evening - 4hr - Night - 9hr		
		Day	Evening	Night
At a sensitive use in the Mixed use zone	5 dB(A)	60 dB(A)	55 dB(A)	50 dB(A)

Based upon the measured noise levels presented in Table 3, the intrusive noise criteria applicable to this development is provided in Table 6.

Table 6: Applicable Intrusive noise criteria

Time Period	Measured RBL $L_{A90,T}$	Intrusive Criteria dB(A) (RBL L_{90} + 5 dB(A))
Day (7am-6pm)	50	55
Evening (6pm-10pm)	49	54
Night (10pm-7am)	45	50

The night-time noise criteria as applied by Brisbane City Council in accordance the Brisbane City Plan 2014 are as follows;

Table 7: Night-time Noise Criteria

Criteria Location	Where the existing $L_{Aeq,9hr}$ night at the criteria location is:	Average of the highest 15 single L_{Amax} events over a given night (10pm-7pm) period is not greater than the following values at the relevant criteria location	The absolute highest single L_{Amax} event over a given night (10pm-7am) period is not greater than the following values at the relevant criteria location
Mixed use zone	N/A	65dB(A)	70dB(A)
	N/A		
	N/A		

Based on the measured noise levels in Section 4.2.2 the night-time noise criteria applicable to this development is as follows:

Table 8: Applicable Night-time Noise Criteria

Criteria Location	Measured $L_{Aeq,9h \text{ night}}$ dB(A)	Criteria Average L_{Amax} dB(A)	Criteria Highest L_{Amax} dB(A)
Mixed use zone	N/A	65	70

6.3.2 Offsite Activities

The criteria for the assessment of offsite activities based on review of the Brisbane City Plan 2014 is as follows;

Table 9: Noise (Planning) Criteria - Multiple Dwelling Code

Performance Outcome	Acceptable Outcome
PO21 Development in a zone in the centre zones category or Mixed use zone must: - be located, designed and constructed to protect bedrooms and other habitable rooms from exposure to noise arising from non-residential activities outside the building; - be designed and constructed to achieve a minimum reduction in sound pressure level between the exterior of the building and the bedrooms or indoor primary living areas of 30dBA. Note – A noise impact assessment report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome. Note – Site-specific criteria will be identified in a neighbourhood plan for sites within a Special Entertainment Precinct or within the Transport noise corridor overlay.	AO21 Development in a zone in the centre zones category or the Mixed use zone has a minimum acoustic performance of: - Rw 35 for glazing (windows and doors) where total area of glazing is greater than 1.8m². - Rw 32 for glazing (windows and doors) where total area of glazing is less than or equal to 1.8m².

6.3.3 Mechanical Plant

Development that included mechanical plant (including air-conditioning plant, heat pumps and swimming pool pumps) ensures it is located, designed and attenuated to achieve the following criteria:

$L_{Aeq,adj,T}$ emitted from mechanical plant is not greater than the rating background level plus 3 at a sensitive use not associated with the development.

Where T is:

- (7am to 6pm): 11hr
- (6pm to 10pm): 4hr
- (10pm to 7am): 9hr

Where $L_{Aeq,adj,T}$ is the A-weighted equivalent continuous sound pressure level during measurement time T , adjusted for tonal and impulsive noise characteristics, determined in accordance with the methodology described in the Noise impact assessment planning scheme policy.

The noise criteria applicable to this development are as follows:

Table 10: Applicable Noise Criteria

Time Period	Criteria dB(A) (RBL L_{90} + 3 dB(A))
Day 7am – 6pm	53
Evening 6pm – 10pm	52
Night 10pm – 7am	48

7. Road Traffic Assessment

Road traffic noise associated with Vulture Street was assessed at the development over a ten-year planning horizon.

7.1 Traffic Volumes

Traffic data for Vulture Street was obtained from the Brisbane City Council's key corridor performance report 2019. The data was used for predictions of future traffic volumes as this was considered to be representative of typical traffic volumes for the area.

Table 11: Traffic Volumes

Location	2019 AADT	2025 Predicted AADT	2035 Predicted AADT	Percentage of Heavy Vehicles	Predicted Annual Growth Rate
Vulture Street	29,009	30,793	34,015	3%	1%

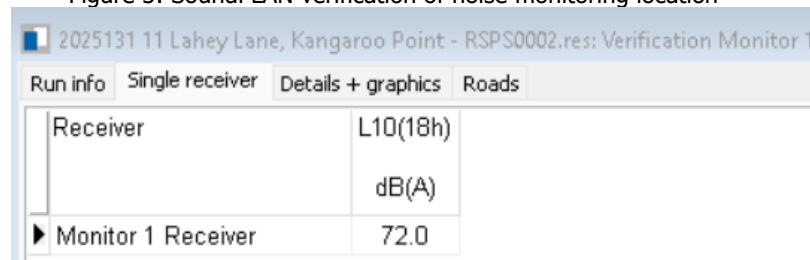
7.2 Road Traffic Noise Verification

To ensure the CoRTN noise model is accurate, a verification model of the predicted $L_{A10(18hr)}$ was created and compared to the measured noise level. The CoRTN method allows a 2dBA variation from the predicted and measured level, if the variation exceeds 2dBA a correction to the predicted level is required.

Table 12: Comparison of measured and predicted noise levels

Location	Measured $L_{A10(18hr)}$ dB(A)	Predicted $L_{A10(18hr)}$ dB(A)	Correction
Vulture Street	70.3	71.8	0

Figure 3: SoundPLAN verification of noise monitoring location



Receiver		L10(18h)
		dB(A)
► Monitor 1 Receiver		72.0

7.3 Predicted Road Traffic Noise Levels - 2035

Road traffic noise modelling for the proposed development was based on the following information:

- Site layout, floor plans and elevations provided by Cavill Architects, Project No. 2307, dated 7 May 2025.
- Vulture Street speed limit of 60km/h.
- Receiver heights were based on 1.5m above finished floor level.
- +2.5dB(A) Façade correction.

The SoundPLAN noise model predicted $L_{A10,18\text{hour}}$ levels and QDC noise categories for the development are presented in Table 13. Refer to Section 11.1 for unit and room numbering.

Table 13: Predicted traffic noise levels - Year 2035 – Building A

Level	Unit	Room	Predicted Road Traffic Noise Impacts (Façade Corrected) 2035 (dBA)	QDC Noise Category
			$L_{A10(18h)}$	
F 1	Unit 1	Bed 1 WEST	62.3	1
F 1	Unit 1	Bed 2 EAST	47.4	0
F 1	Unit 1	Bed 2 NORTH	40.5	0
F 1	Unit 1	Bed 2 NORTH	40.7	0
F 1	Unit 1	Living	55.8	0
F 1	Unit 1	Living EAST	46.9	0
F 1	Unit 2	Bed 1	65.2	2
F 1	Unit 2	Living	62.8	1
F 1	Unit 3	Bed 1	67.7	2
F 1	Unit 3	Living	65.3	2
F 1	Unit 4	Bed 1	72.9	3
F 1	Unit 4	Living	71	3
F 1	Unit 5	Bed 1	72.7	3
F 1	Unit 5	Bed 2 East	63.4	2
F 1	Unit 5	Bed 2 NORTH	42.7	0
F 1	Unit 5	Living	66.9	2
F 2	Unit 1	Bed 1 WEST	63.2	2
F 2	Unit 1	Bed 2 EAST	50.1	0
F 2	Unit 1	Bed 2 NORTH	43	0
F 2	Unit 1	Bed 2 NORTH	43.1	0
F 2	Unit 1	Living	56.9	0
F 2	Unit 1	Living EAST	50.4	0
F 2	Unit 2	Bed 1	66	2
F 2	Unit 2	Living	63.4	2
F 2	Unit 3	Bed 1	67.7	2
F 2	Unit 3	Living	65.3	2
F 2	Unit 4	Bed 1	72.3	3
F 2	Unit 4	Living	70.4	3
F 2	Unit 5	Bed 1	72.2	3
F 2	Unit 5	Bed 2 East	65.2	2
F 2	Unit 5	Bed 2 NORTH	45.5	0
F 2	Unit 5	Living	67.9	2
F 3	Unit 1	Bed 1 WEST	63.8	2
F 3	Unit 1	Bed 2 EAST	53.8	0
F 3	Unit 1	Bed 2 NORTH	47.2	0
F 3	Unit 1	Bed 2 NORTH	47.4	0
F 3	Unit 1	Living	57.6	1
F 3	Unit 1	Living EAST	54.4	0
F 3	Unit 2	Bed 1	65.9	2
F 3	Unit 2	Living	63.4	2
F 3	Unit 3	Bed 1	67.5	2

Level	Unit	Room	Predicted Road Traffic Noise Impacts (Façade Corrected) 2035 (dBA)	QDC Noise Category
			LA10(18h)	
F 3	Unit 3	Living	65.3	2
F 3	Unit 4	Bed 1	71.7	3
F 3	Unit 4	Living	69.8	3
F 3	Unit 5	Bed 1	71.6	3
F 3	Unit 5	Bed 2 East	66.2	2
F 3	Unit 5	Bed 2 NORTH	50	0
F 3	Unit 5	Living	67.7	2

Based on the predicted noise impacts, treatments would be required in accordance with QDC Part 4.4. Refer to Section 10 for recommendations.

A graphical representation of the predicted road traffic noise level at each floor level are presented from Figure 4 to Figure 6.

Figure 4: Road Traffic Noise Contours – L10 (18 hour), Level 1 Façade Corrected

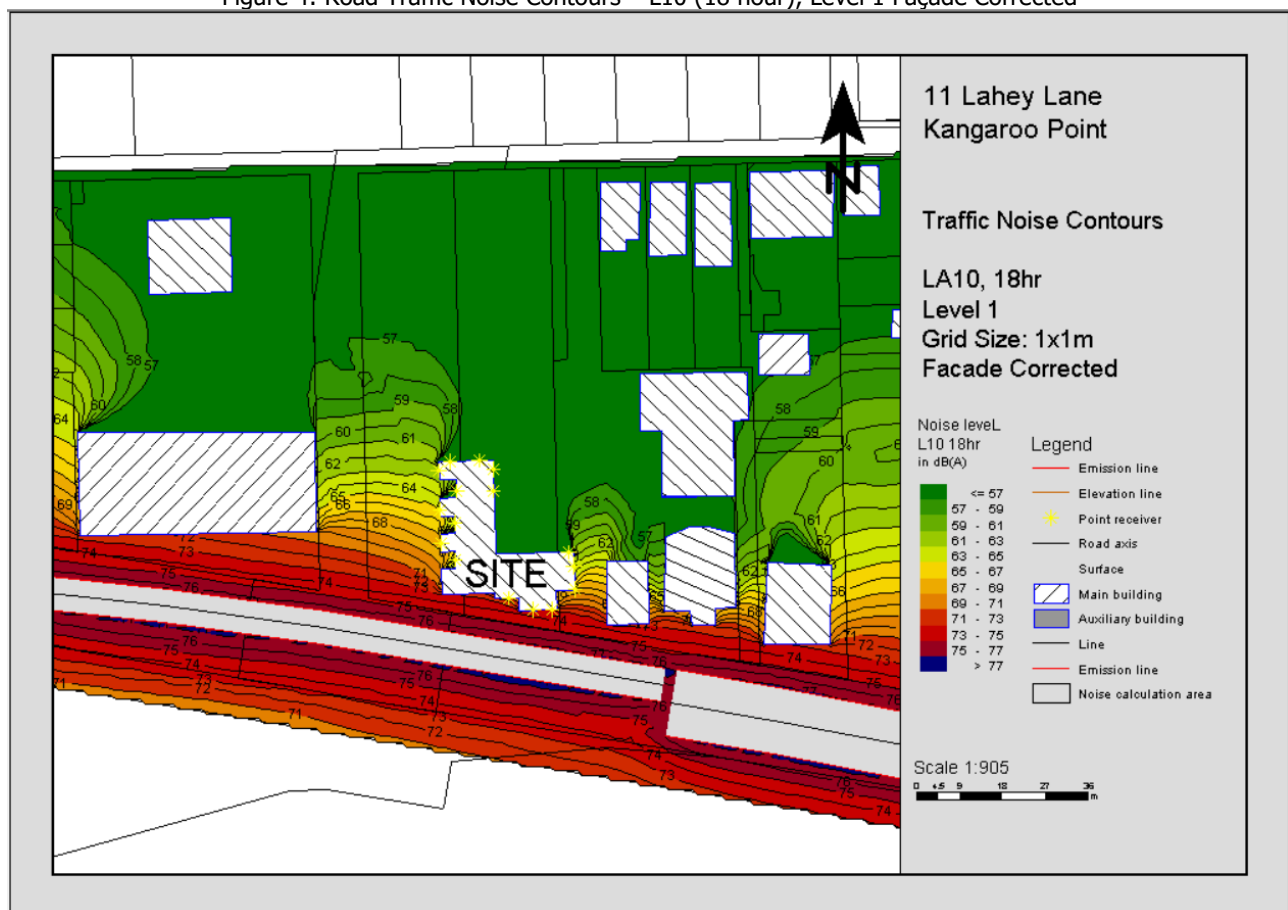


Figure 5: Road Traffic Noise Contours – L10 (18 hour), Level 2 Façade Corrected

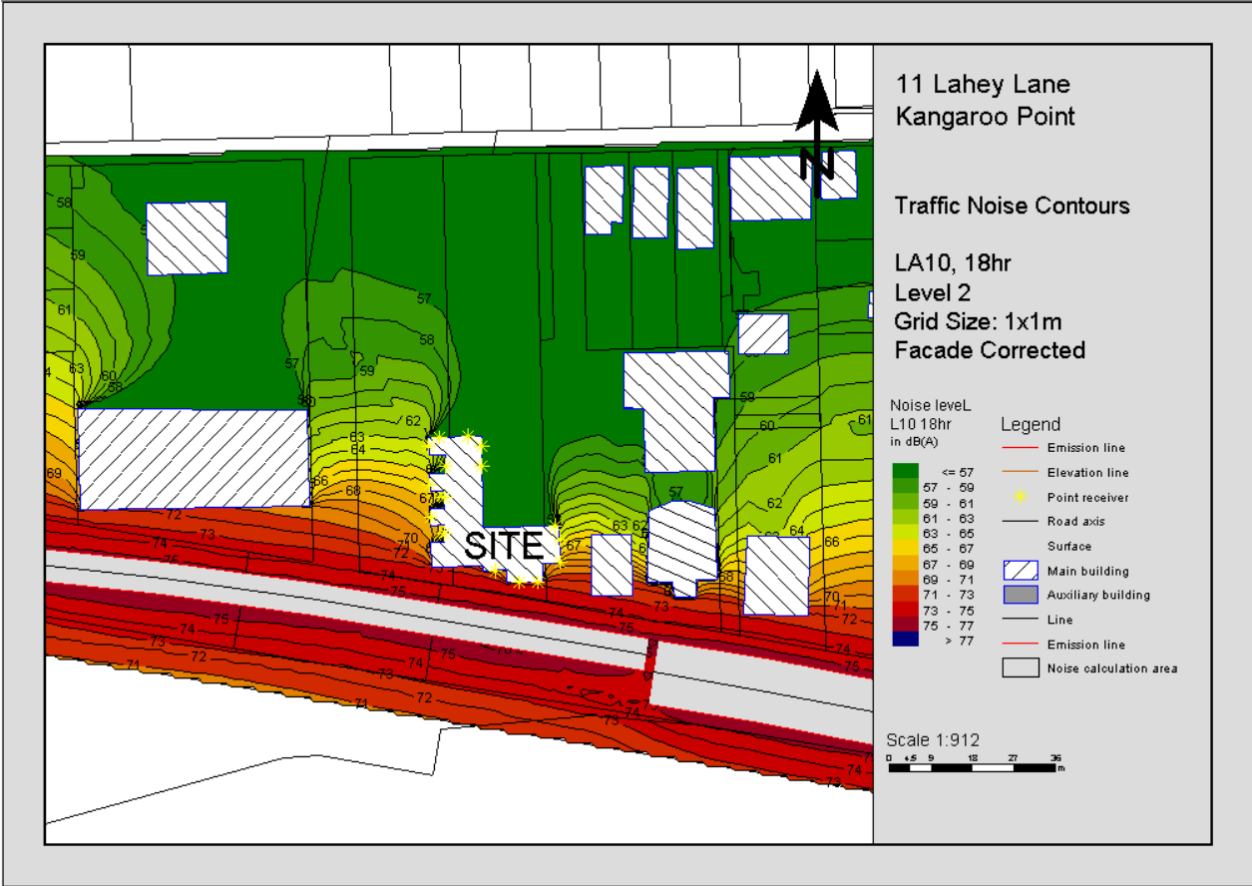
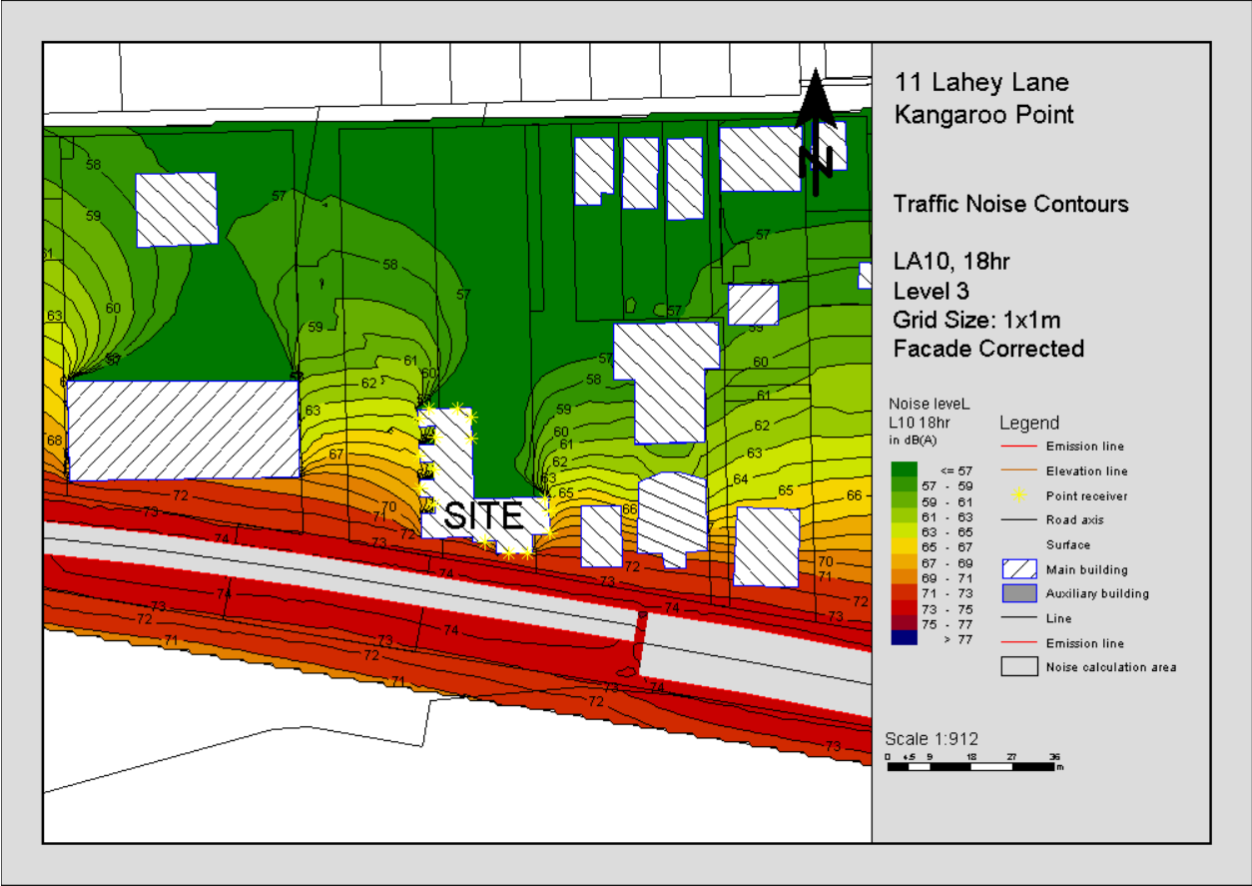


Figure 6: Road Traffic Noise Contours – L10 (18 hour), Level 3 Façade Corrected



8. Environmental Noise Assessment

8.1 Onsite Activities

Noise associated with the development was assessed based on previous measurements of similar activities. The calculations assume that the nominated activities are located at the closest representative point within the development site to each receiver location. Any relevant shielding, building transmission loss or recommended acoustic screens are taken into account for these activities.

8.1.1 Intrusive Noise and Acoustic Amenity

The average noise source levels and predicted impacts at the receiver locations are shown in Table 14 as follows. L_{Aeq} results are not shown where the calculated total is less than 0dBA.

Table 14: Average noise levels from site activities, all time periods

Receiver	Receivers																												
	1. 350 State Route 41 (E) 2. 52 Mark Lane (N) 3. 310 Vulture Street (W)																												
	Description	Source @1m dB(A)	Correction dB(A)*	Corrected dB(A)	Number of events day	Number of events eve	Number of events night	Duration per event	Distance (m)	No Barrier (height (m))	Barrier screening dB	Building TL or shield dB	Building screening dB	Dist atten. @-6dB/dd	L _{Aeq} adj. T ext. dB(A) Day	L _{Aeq} adj. T ext. dB(A) Eve	L _{Aeq} adj. T ext. dB(A) Night	Intrusive Compliance LAeq			Amenity Compliance LAeq								
																		Day	Eve	Night	Day	Eve	Night						
1	Criteria																	55	54	50	60	55	50						
	Car passby - GF	69		69	30	10	3	15	41					-32	17	17	8	Yes	Yes	Yes	Yes	Yes	Yes						
	Car start - GF	74	2	76	30	10	3	2	52					-34	13	13	4	Yes	Yes	Yes	Yes	Yes	Yes						
	Car door closure - GF	75	2	77	30	10	3	2	52					-34	14	14	5	Yes	Yes	Yes	Yes	Yes	Yes						
	Car passby - Basement	69		69	100	50	20	15	80					-38	17	18	11	Yes	Yes	Yes	Yes	Yes	Yes						
	Car start - Basement	74	2	76	100	50	20	2	50			-20		-34				Yes	Yes	Yes	Yes	Yes	Yes						
	Car door closure - Basement	75	2	77	100	50	20	2	50			-20		-34		1		Yes	Yes	Yes	Yes	Yes	Yes						
	Voice Conversation - Outdoor Covered Area	75		75	11	4	2	3600	60					-36	39	39	33	Yes	Yes	Yes	Yes	Yes	Yes						
	Outdoor Play Area	80		80	11	4	2	3600	57					-35	45	45	38	Yes	Yes	Yes	Yes	Yes	Yes						
	Kitchen Activities	76	2	78	11	4	2	3600	70					-37	41	41	35	Yes	Yes	Yes	Yes	Yes	Yes						
	Classes	73		73	11	4	2	3600	65					-36	37	37	30	Yes	Yes	Yes	Yes	Yes	Yes						
	Community space and library	75		75	11	4	2	3600	65					-36	39	39	32	Yes	Yes	Yes	Yes	Yes	Yes						
	Voice conversation Terrace	75		75	11	4	2	3600	80					-39	36	36	29	Yes	Yes	Yes	Yes	Yes	Yes						
	Total														48	48	42	Yes	Yes	Yes	Yes	Yes	Yes						
2	Criteria																	57	56	50	60	55	50						
	Car passby - GF	69		69	30	10	3	15	45					-33	16	16	7	Yes	Yes	Yes	Yes	Yes	Yes						
	Car start - GF	74	2	76	30	10	3	2	42					-32	15	15	6	Yes	Yes	Yes	Yes	Yes	Yes						
	Car door closure - GF	75	2	77	30	10	3	2	42					-32	16	16	7	Yes	Yes	Yes	Yes	Yes	Yes						
	Car passby - Basement	69		69	100	50	20	15	67					-32	22	24	16	Yes	Yes	Yes	Yes	Yes	Yes						
	Car start - Basement	74	2	76	100	50	20	2	48			-20		-34				Yes	Yes	Yes	Yes	Yes	Yes						
	Car door closure - Basement	75	2	77	100	50	20	2	48			-20		-34		1		Yes	Yes	Yes	Yes	Yes	Yes						
	Voice Conversation - Outdoor Covered Area	75		75	11	4	2	3600	65					-36	39	39	32	Yes	Yes	Yes	Yes	Yes	Yes						
	Outdoor Play Area	80		80	11	4	2	3600	50					-34	46	46	39	Yes	Yes	Yes	Yes	Yes	Yes						
	Kitchen Activities	76	2	78	11	4	2	3600	60					-36	42	42	35	Yes	Yes	Yes	Yes	Yes	Yes						
	Classes	73		73	11	4	2	3600	60					-36	37	37	30	Yes	Yes	Yes	Yes	Yes	Yes						
	Community space and library	75		75	11	4	2	3600	60					-36	39	39	33	Yes	Yes	Yes	Yes	Yes	Yes						
	Voice conversation Terrace	75		75	11	4	2	3600	70					-37	38	38	32	Yes	Yes	Yes	Yes	Yes	Yes						
	Total														49	49	42	Yes	Yes	Yes	Yes	Yes	Yes						
3	Criteria																	57	56	50	60	55	50						
	Car passby - GF	69		69	30	10	3	15	56					-35	15	14	5	Yes	Yes	Yes	Yes	Yes	Yes						
	Car start - GF	74	2	76	30	10	3	2	40					-32	16	15	7	Yes	Yes	Yes	Yes	Yes	Yes						
	Car door closure - GF	75	2	77	30	10	3	2	40					-32	17	16	8	Yes	Yes	Yes	Yes	Yes	Yes						
	Car passby - Basement	69		69	100	50	20	15	39					-32	23	24	17	Yes	Yes	Yes	Yes	Yes	Yes						
	Car start - Basement	74	2	76	11	50	20	2	44					-33	11	22	14	Yes	Yes	Yes	Yes	Yes	Yes						
	Car door closure - Basement	75	2	77	100	50	20	2	44					-33	21	22	15	Yes	Yes	Yes	Yes	Yes	Yes						
	Voice Conversation - Outdoor Covered Area	75		75	11	4	2	3600	45					-33	42	42	35	Yes	Yes	Yes	Yes	Yes	Yes						
	Outdoor Play Area	80		80	11	4	2	3600	48					-34	46	46	40	Yes	Yes	Yes	Yes	Yes	Yes						
	Kitchen Activities	76	2	78	11	4	2	3600	25					-28	50	50	44	Yes	Yes	Yes	Yes	Yes	Yes						
	Classes	73		73	11	4	2	3600	25					-28	45	45	39	Yes	Yes	Yes	Yes	Yes	Yes						
	Community space and library	75		75	11	4	2	3600	25					-28	47	47	41	Yes	Yes	Yes	Yes	Yes	Yes						
	Voice conversation Terrace	75		75	11	4	2	3600	18					-25	50	50	43	Yes	Yes	Yes	Yes	Yes	Yes						
	Total														55	55	48	Yes	Yes	Yes	Yes	Yes	Yes						

*Correction due to tonality and impulsiveness as per AS1055:2018.

Compliance is predicted for all onsite activities at the sensitive receiver locations on the condition the recommendations in Section 9 are implemented.

8.1.2 LMax Assessment

The maximum noise source levels and predicted impacts at the receiver locations are shown in as follows:

Table 15: Night-Time LMax

Receiver	Receivers											
	Description	Source @1m dB(A)	Correction dB(A) *	Corrected dB(A)	Distance (m)	No Barrier (height (m))	Barrier screening dB	Transmission Loss dB	Building Screening dB	Dist atten. @ -6dB/dd	LMax adj, T ext. dB(A)	Complies Night dB(A)
	1. 350 State Route 41 (E) 2. 52 Mark Lane (N) 3. 310 Vulture Street (W)											
	Criteria											70
1	Car passby - GF	74		74	41					-32	42	Yes
	Car start - GF	79	2	81	52					-34	47	Yes
	Car door closure - GF	80	2	82	52					-34	48	Yes
	Car passby - Basement	74		74	80					-38	36	Yes
	Car start - Basement	79	2	81	50			-20		-34	47	Yes
	Car door closure - Basement	80	2	82	50			-20		-34	28	Yes
	Voice Conversation - Outdoor Covered Area	80		80	60					-36	24	Yes
	Outdoor Play Area	85		85	57					-35	50	Yes
	Kitchen Activities	81	2	83	70					-37	46	Yes
	Classes	78		78	65					-36	42	Yes
	Community space and library	80		80	65					-36	44	Yes
	Voice conversation Terrace	80		80	80					-38	42	Yes
												70
2	Car passby - GF	77		77	45					-33	44	Yes
	Car start - GF	80	2	82	42					-32	50	Yes
	Car door closure - GF	74	2	76	42					-32	44	Yes
	Car passby - Basement	79		79	67					-37	42	Yes
	Car start - Basement	80	2	82	48			-20		-34	28	Yes
	Car door closure - Basement	74	2	76	48			-20		-34	22	Yes
	Voice Conversation - Outdoor Covered Area	79		79	65					-36	43	Yes
	Outdoor Play Area	80		80	50					-34	46	Yes
	Kitchen Activities	74	2	76	60					-36	40	Yes
	Classes	79		79	60					-36	43	Yes
	Community space and library	90		90	60					-36	54	Yes
	Voice conversation Terrace	80		80	70					-37	43	Yes
												70
3	Car passby - GF	77		77	56					-35	42	Yes
	Car start - GF	80	2	82	40					-32	50	Yes
	Car door closure - GF	74	2	76	40					-32	44	Yes
	Car passby - Basement	79		79	39					-32	47	Yes
	Car start - Basement	80	2	82	44					-33	49	Yes
	Car door closure - Basement	74	2	76	44					-33	43	Yes
	Voice Conversation - Outdoor Covered Area	79		79	45					-33	46	Yes
	Outdoor Play Area	80		80	48					-34	46	Yes
	Kitchen Activities	74	2	76	25					-28	48	Yes
	Classes	79		79	25					-28	51	Yes
	Community space and library	90		90	25					-28	62	Yes
	Voice conversation Terrace	80		80	18					-25	55	Yes

*Correction due to tonality and impulsiveness as per AS1055:2018.

Compliance is predicted for all onsite activities at the sensitive receiver locations on the condition the recommendations in Section 9 are implemented.

9. Recommendations

9.1 Façade Construction

9.1.1 Glazing

The minimum glazing treatments are required to comply with the following:

- The minimum glass thickness specified shall not be reduced regardless of the Rw performance of the glass unless the glazier can provide a specific (non generic) NATA Test report proving the proposed glazing system complies (the test report must be based on the same configuration proposed for the development). Note an estimation or calculated performance will not be accepted.
- If compliance cannot be achieved with the minimum Rw ratings for the glass thickness nominated, then glazing system shall be upgraded until compliance is achieved.
- Glazing specified with acoustic seals requires a seal that has been tested with a glazing system or door to achieve an Rw in accordance with AS/NZS ISO 717.1, mohair seals are not acceptable.
- The glazier shall provide NATA test reports on request to verify compliance with the minimum Rw ratings. Generic reports are not acceptable.

Table 16: Rw and Glazing Recommendations

Level	Unit	Location	Rw Requirement			Glazing	Acoustic Seals
			Wall	Roof	Glazing		
F 1	Unit 1	Bed 1 WEST	41	-	35	10.38 lam*	yes
F 1	Unit 1	Bed 2 EAST	41	-	35	10.38 lam*	yes
F 1	Unit 1	Bed 2 NORTH	41	-	35	10.38 lam*	yes
F 1	Unit 1	Bed 2 NORTH	41	-	35	10.38 lam*	yes
F 1	Unit 1	Living	41	-	35	10.38 lam*	yes
F 1	Unit 1	Living EAST	41	-	35	10.38 lam*	yes
F 1	Unit 2	Bed 1	41	-	35	10.38 lam	yes
F 1	Unit 2	Living	41	-	35	10.38 lam*	yes
F 1	Unit 3	Bed 1	41	-	35	10.38 lam	yes
F 1	Unit 3	Living	41	-	35	10.38 lam	yes
F 1	Unit 4	Bed 1	47	-	38	12.5 Vlam or 13.52 lam or 14.38 lam	yes
F 1	Unit 4	Living	47	-	38	12.5 Vlam or 13.52 lam or 14.38 lam	yes
F 1	Unit 5	Bed 1	47	-	38	12.5 Vlam or 13.52 lam or 14.38 lam	yes
F 1	Unit 5	Bed 2 East	41	-	35	10.38 lam	yes
F 1	Unit 5	Bed 2 NORTH	41	-	35	10.38 lam*	yes
F 1	Unit 5	Living	41	-	35	10.38 lam	yes
F 2	Unit 1	Bed 1 WEST	41	-	35	10.38 lam	yes
F 2	Unit 1	Bed 2 EAST	41	-	35	10.38 lam*	yes
F 2	Unit 1	Bed 2 NORTH	41	-	35	10.38 lam*	yes
F 2	Unit 1	Bed 2 NORTH	41	-	35	10.38 lam*	yes
F 2	Unit 1	Living	41	-	35	10.38 lam*	yes
F 2	Unit 1	Living EAST	41	-	35	10.38 lam*	yes
F 2	Unit 2	Bed 1	41	-	35	10.38 lam	yes
F 2	Unit 2	Living	41	-	35	10.38 lam	yes
F 2	Unit 3	Bed 1	41	-	35	10.38 lam	yes
F 2	Unit 3	Living	41	-	35	10.38 lam	yes
F 2	Unit 4	Bed 1	47	-	38	12.5 Vlam or 13.52 lam or 14.38 lam	yes
F 2	Unit 4	Living	47	-	38	12.5 Vlam or 13.52 lam or 14.38 lam	yes
F 2	Unit 5	Bed 1	47	-	38	12.5 Vlam or 13.52 lam or 14.38 lam	yes
F 2	Unit 5	Bed 2 East	41	-	35	10.38 lam	yes
F 2	Unit 5	Bed 2 NORTH	41	-	35	10.38 lam*	yes

Level	Unit	Location	Rw Requirement			Glazing	Acoustic Seals
			Wall	Roof	Glazing		
F 2	Unit 5	Living	41	-	35	10.38 lam	yes
F 3	Unit 1	Bed 1 WEST	41	38	35	10.38 lam	yes
F 3	Unit 1	Bed 2 EAST	41	38	35	10.38 lam*	yes
F 3	Unit 1	Bed 2 NORTH	41	38	35	10.38 lam*	yes
F 3	Unit 1	Bed 2 NORTH	41	38	35	10.38 lam*	yes
F 3	Unit 1	Living	41	38	35	10.38 lam*	yes
F 3	Unit 1	Living EAST	41	38	35	10.38 lam*	yes
F 3	Unit 2	Bed 1	41	38	35	10.38 lam	yes
F 3	Unit 2	Living	41	38	35	10.38 lam	yes
F 3	Unit 3	Bed 1	41	38	35	10.38 lam	yes
F 3	Unit 3	Living	41	38	35	10.38 lam	yes
F 3	Unit 4	Bed 1	47	41	38	12.5 Vlam or 13.52 lam or 14.38 lam	yes
F 3	Unit 4	Living	47	41	38	12.5 Vlam or 13.52 lam or 14.38 lam	yes
F 3	Unit 5	Bed 1	47	41	38	12.5 Vlam or 13.52 lam or 14.38 lam	yes
F 3	Unit 5	Bed 2 East	41	38	35	10.38 lam	yes
F 3	Unit 5	Bed 2 NORTH	41	38	35	10.38 lam*	yes
F 3	Unit 5	Living	41	38	35	10.38 lam	yes

* Minimum 10.38mm Laminate glazing (Rw 35) as per BCC Mixed Use Zone Acceptable Outcome 21.

9.1.2 Wall construction

The wall construction recommendations from QDC MP4.4 are included in the table below. Note that these are not the only allowable methods of construction for the development, and alternative constructions to achieve the required Rw ratings may also be provided. QDC Noise Categories are nominated in Table 16;

Table 17: QDC typical wall construction

QDC Noise Category	Wall Rw	QDC Acceptable forms of construction
3	47	Single leaf of clay brick masonry at least 110mm thick with: (i) a row of at least 70mm x 35mm timber studs or 64mm steel studs at 600mm centres, spaced at least 20mm from the masonry wall; and (ii) Mineral insulation or glass wool insulation at least 50mm thick with a density of at least 11 kg/m³ positioned between studs; and (iii) One layer of plasterboard at least 13mm thick fixed to outside face of studs. OR Single leaf of minimum 150mm thick masonry of hollow, dense concrete blocks, with mortar joints laid to prevent moisture bridging.
2	41	Single leaf of clay brick masonry at least 110mm thick with: (i) a row of at least 70mm x 35mm timber studs or 64mm steel studs at 600mm centres, spaced at least 20mm from the masonry wall; and (ii) mineral insulation or glass wool insulation at least 50mm thick with a density of at least 11kg/m³ positioned between studs; and (iii) One layer of plasterboard at least 10mm thick fixed to outside face of studs OR Single leaf of brick masonry at least 110mm thick with at least 13mm thick render on each face OR Concrete brickwork at least 110mm thick OR In-situ concrete at least 100mm thick OR Precast concrete at least 100mm thick and without joints.

QDC Noise Category	Wall Rw	QDC Acceptable forms of construction
1	35	Single leaf of clay brick masonry at least 110mm thick with: (i) a row of at least 70mm x 35mm timber studs or 64mm steel studs at 600mm centres, spaced at least 20mm from the masonry wall; and (ii) One layer of plasterboard at least 10mm thick fixed to outside face of studs OR Minimum 6mm thick fibre cement sheeting or weatherboards or plank cladding externally, minimum 90mm deep timber stud or 92mm metal stud, standard plasterboard at least 13mm thick internally.
0	N/A	Standard Construction

The systems listed above are not the only systems that could be used. Other wall systems may be used providing they achieve the acoustic rating or greater.

9.1.3 Roof/ceiling Construction

The roof construction recommendations from QDC MP4.4 are included in the table below. Note that these are not the only allowable methods of construction for the development, and alternative constructions to achieve the required Rw ratings may also be provided. QDC Noise Categories are nominated in Table 16;

Table 18: QDC typical roof construction

QDC Noise Category	Roof Rw	QDC Acceptable forms of construction
3	41	150mm Concrete Slab
2	38	
1	35	
0	N/A	Standard Construction

The systems listed above are not the only systems that could be used. Other roof systems may be used providing they achieve the acoustic rating or greater.

9.2 Alternative Ventilation

To achieve the required noise reductions, we recommend that all locations nominated in Table 16 have the provision for an alternative ventilation system similar to air-conditioning or mechanical ventilation to allow windows and doors to be closed.

9.3 Onsite Activities

Based on the predicted noise levels of the site and surrounds for all time periods, noise impacts at the sensitive receiver locations are predicted to comply on the condition the following acoustic treatments are implemented:

- Ramp and carpark finished surfaces should consist of materials which provides low tyre squeal characteristics. Any traversable drainage grates must be securely fastened.

9.3.1 Onsite Mechanical Plant

No information regarding mechanical services was available at the time of the assessment. We recommend that any new mechanical plant is designed to comply with the noise criteria stated in Section 6.3.3 with an assessment by qualified acoustic consultant to be conducted prior to installation.

9.3.2 Waste Collection

We recommend waste collection be conducted in accordance with existing residential collections in the area to minimise the potential for disturbance to the nearest receivers.

9.3.3 Offsite Activities

Based on BCC Mixed Use Zone Acceptable Outcome 21, the following façade treatments are required for offsite noise impacts to the development.

- All facades require minimum 10.38mm Laminate glazing (Rw 35) as per BCC Mixed Use Zone Acceptable Outcome 21.

10. Conclusion

A road traffic and environmental noise assessment was conducted for the proposed cathedral campus development to be located at 11 Lahey Lane, Kangaroo Point. On the condition the recommendations detailed in Section 9 are implemented, compliance is predicted with Brisbane City Council assessment criteria.

If you should have any queries, please do not hesitate to contact us.

Yours faithfully,



Marco Scoca
Acoustic Consultant
BEng (Civil Eng. Hons)
GradDipEngSc (Mechanical Eng.)
acousticworks)))

11.Appendices

11.1 Unit Numbering



11.2 Development Plans

CATHEDRAL CAMPUS

DEVELOPMENT APPLICATION DRAWING SET

SHEET LIST

A-100	COVER SHEET & LOCALITY PLAN	2	07.05.25
A-111	EXISTING & DEMOLITION - FLOOR PLANS	2	07.05.25
A-120	BASEMENT 1 FLOOR PLAN	2	07.05.25
A-121	GROUND FLOOR PLAN	2	07.05.25
A-122	TYPICAL APARTMENT LEVELS	2	07.05.25
A-124	ROOF PLAN	2	07.05.25
A-201	ELEVATIONS	2	07.05.25
A-202	ELEVATIONS	2	07.05.25
A-301	SECTIONS	2	07.05.25
A-302	SECTIONS	2	07.05.25
A-701	SHADOW DIAGRAMS	2	07.05.25
A-901	AREA PLANS - GFA	2	07.05.25
A-902	AREA PLANS - LANDSCAPE	2	07.05.25

REAL PROPERTY DESCRIPTION

340 VULTURE ST, WOOLLOONGABBA
PROJECT SITE AREA 1910m²
TOTAL SITE AREA 3454m²

DEVELOPMENT SUMMARY PROPOSED SITE

IMPERVIOUS AREA (Within New development) 1759m² (92%)
IMPERVIOUS AREA (Whole Site) 3302m²
TOTAL SITE COVER 1675m² 48.5%

DEVELOPMENT SUMMARY PROPOSED BUILDING

GFA SCHEDULE:

GF	361m ²
1F	370m ²
2F	370m ²
3F	370m ²
TOTAL	1471m ²

NO. OF STOREYS:

4 STOREYS

NO. OF CARPARKS:

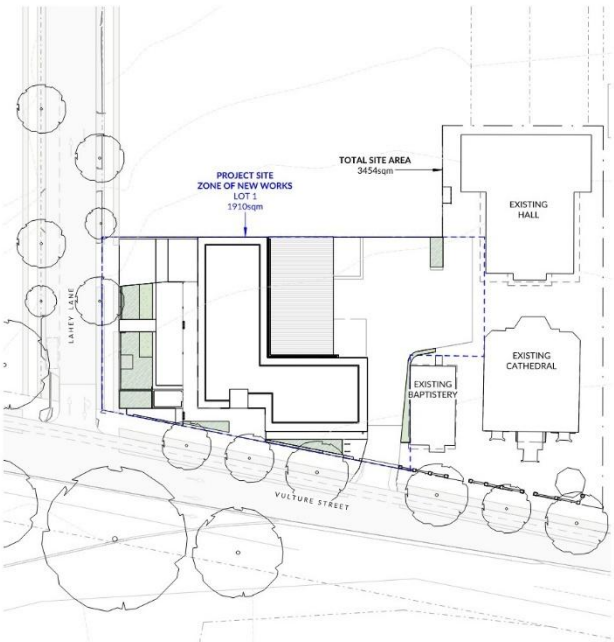
BASEMENT 34 (incl. PWD)
GROUND 10

MATERIAL LEGEND

MSR	MASONRY
CONC	CONCRETE
GL	GLAZING
SCR1	MASONRY SCREEN
SCR2	METAL SCREEN

NOTE:

THIS DRAWING HAS BEEN CONSTRUCTED FROM THIRD PARTY INFORMATION.
ALL SITE PLAN LAYOUTS, AREAS, CONTOURS AND LEVEL INFORMATION ACQUIRED FROM SURVEY DRAWING K01-0423-01 PREPARED BY WALTER CONSULTING GROUP.
ACTUAL DIMENSIONS AND LAYOUTS MAY VARY SLIGHTLY FROM THOSE INDICATED. CHECK ALL DIMENSIONS ON SITE FOR ACCURACY PRIOR TO FABRICATION AND CONSTRUCTION.
THESE DESIGN DRAWINGS HAVE BEEN PREPARED FOR APPROVAL PURPOSES ONLY AND WILL NEED TO BE SUPPLEMENTED WITH FURTHER DETAILED DESIGN AND DOCUMENTATION FOR CONSTRUCTION.



SITE PLAN

1 : 500 @ A3

DWG NO.A-100 REV.2

COVER SHEET & LOCALITY PLAN

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DEMOLITION LEGEND

FOR DEMOLITION

1 : 250 @ A3

DWG NO.A-111 REV.2

EXISTING & DEMOLITION - FLOOR PLANS

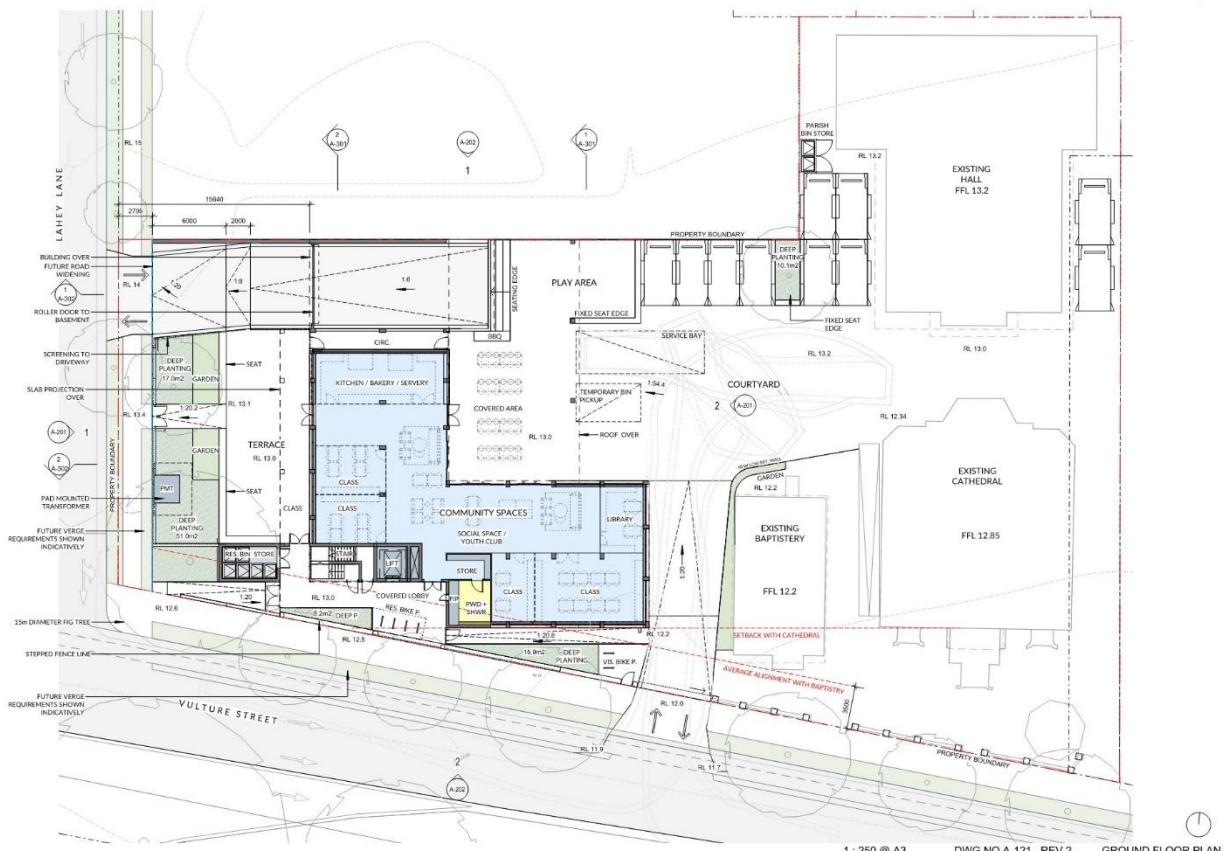
2307 | CATHEDRAL CAMPUS

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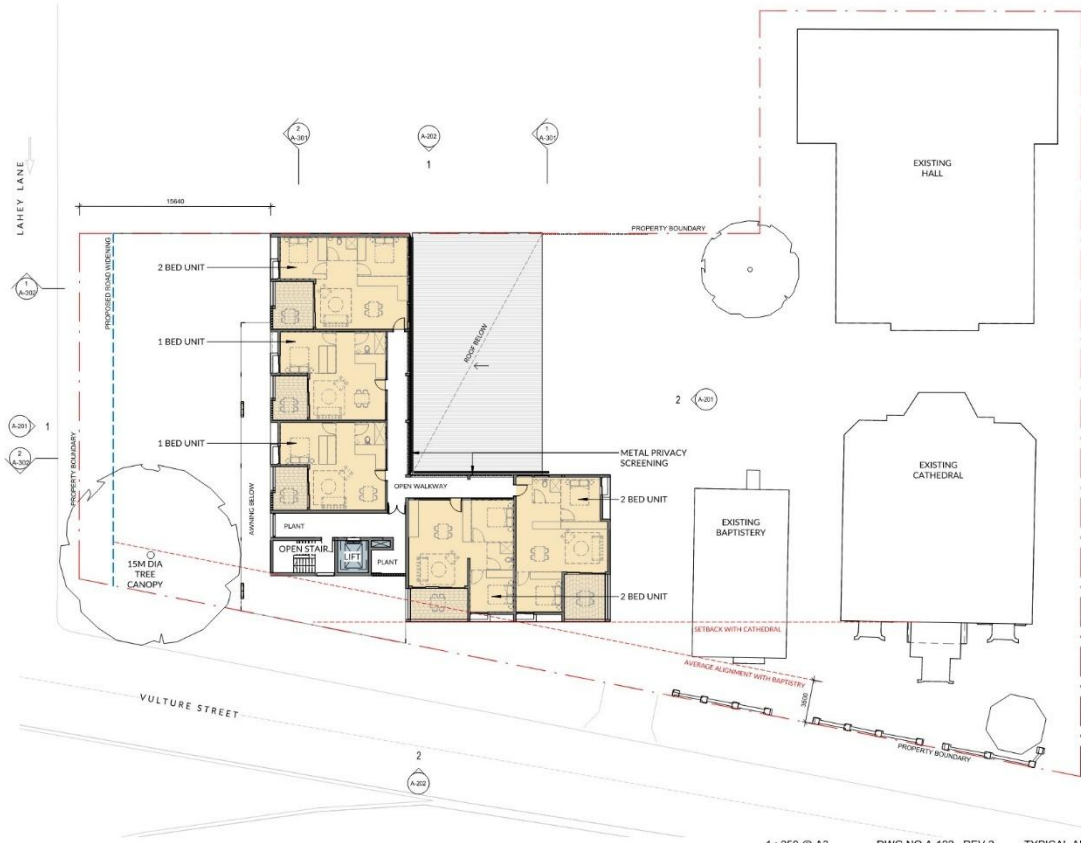
Cavill Architects

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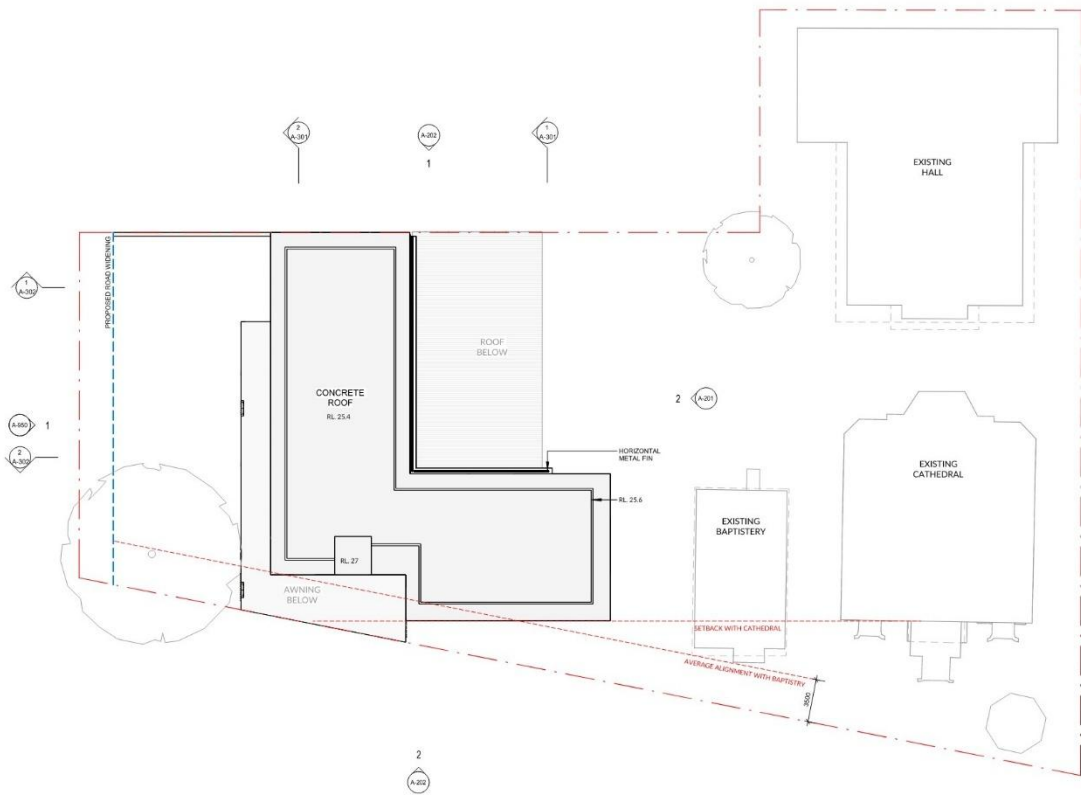


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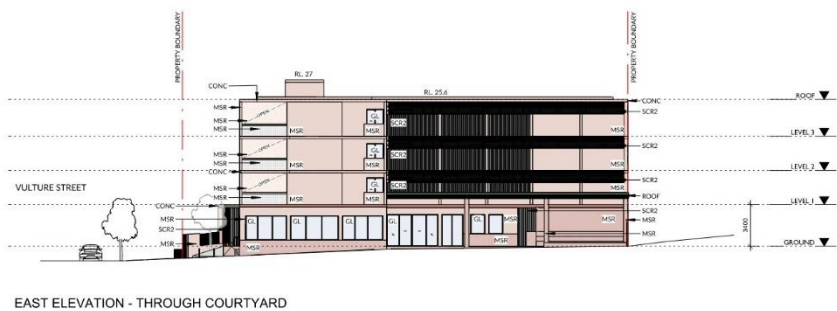
2307 | CATHEDRAL CAMPUS



Cavill Architects 1 : 250 @ A3 DWG NO A-122 REV.2 TYPICAL APARTMENT LEVELS 2307 | CATHEDRAL CAMPUS



Cavill Architects 1 : 250 @ A3 DWG NO A-124 REV.2 ROOF PLAN 2307 | CATHEDRAL CAMPUS

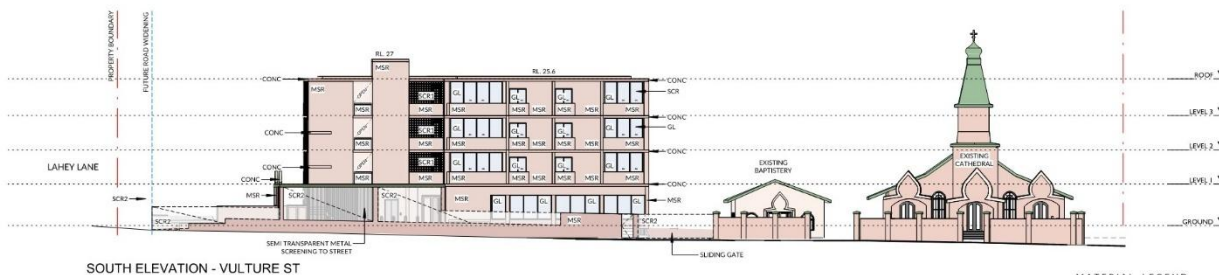


MATERIAL LEGEND

MSR	MASONRY
CONC	CONCRETE
GL	GLAZING
SCR1	MASONRY SCREEN
SCR2	METAL SCREEN

As indicated @ A3 DWG NO A-201 REV.2 ELEVATIONS
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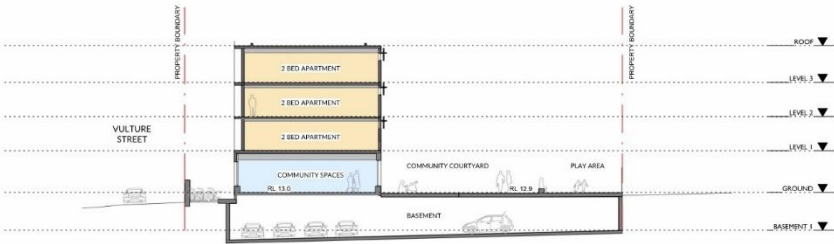


MATERIAL LEGEND

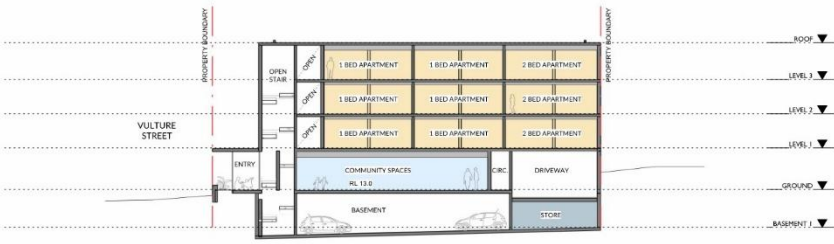
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CONC	CONCRETE
GL	GLAZING
SCR1	MASONRY SCREEN
SCR2	METAL SCREEN

As indicated @ A3 DWG NO A-202 REV.2 ELEVATIONS
2307 | CATHEDRAL CAMPUS

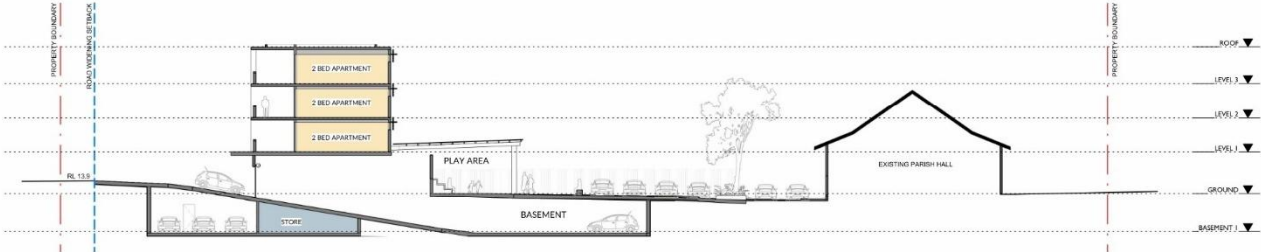
Cavill Architects



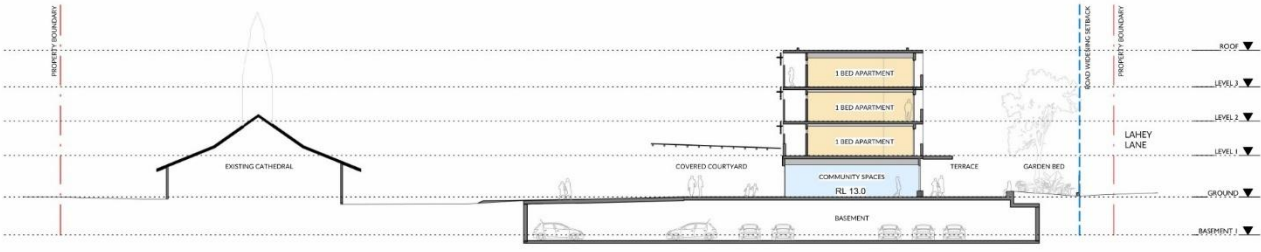
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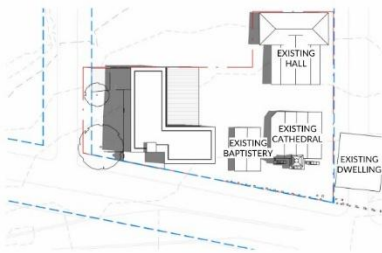
SECTION B



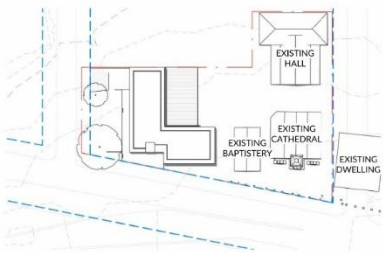
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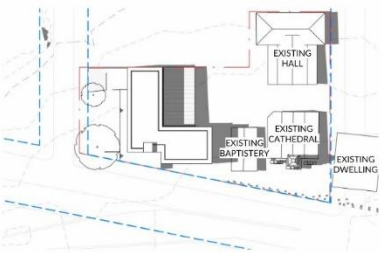
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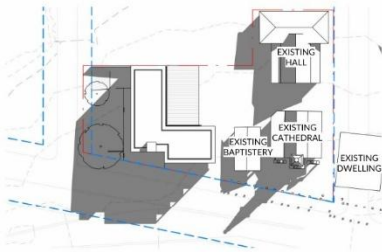
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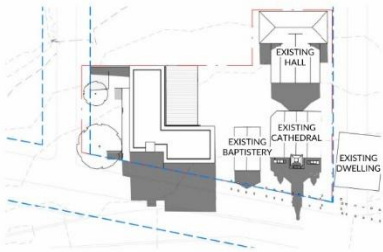
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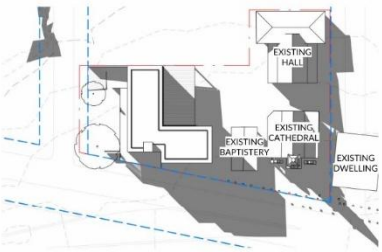
SUMMER 3PM



WINTER 9AM



WINTER 12PM



WINTER 3PM

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1: 1000 @ A3 DWG NO.A-701 REV.2 SHADOW DIAGRAMS
2307 | CATHEDRAL CAMPUS



GROUND FLOOR



LEVEL 1 (TYPICAL APARTMENT)



LEVEL 2 (TYPICAL APARTMENT)



LEVEL 3 (TYPICAL APARTMENT)

GFA AREAS

LEVEL	AREA
GROUND LEVEL	361 m ²
LEVEL 01	370 m ²
LEVEL 02	370 m ²
LEVEL 03	370 m ²
TOTAL:	1471 m ²

□ GFA

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1: 500 @ A3 DWG NO.A-901 REV.2 AREA PLANS - GFA
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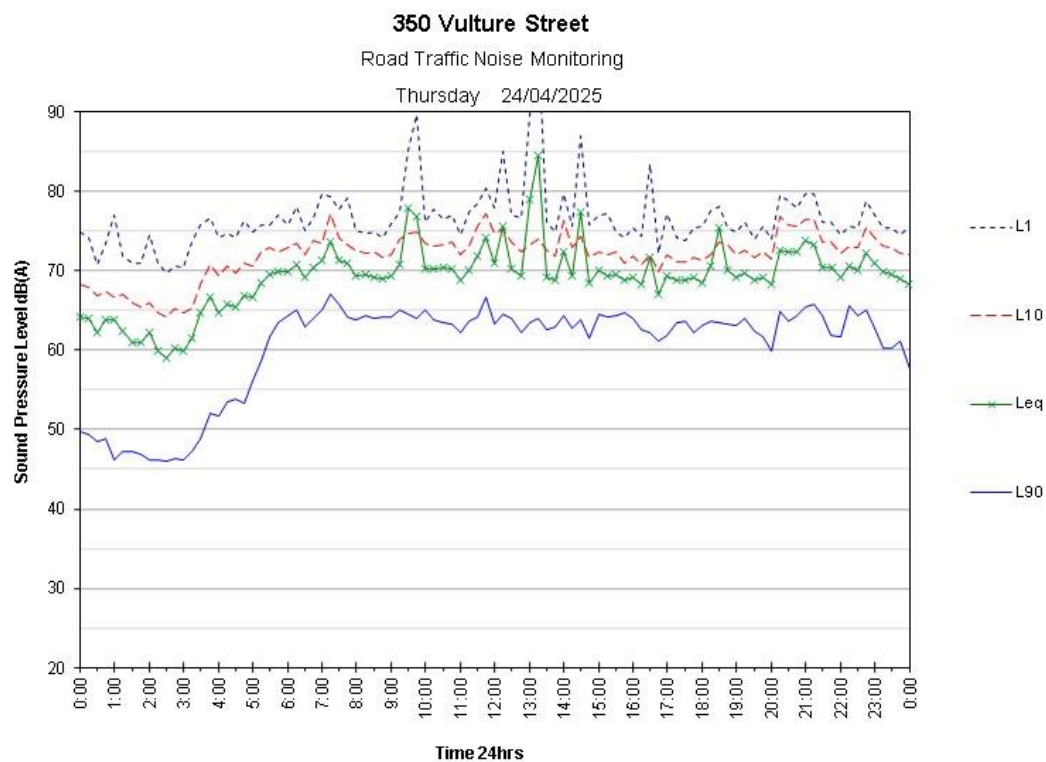
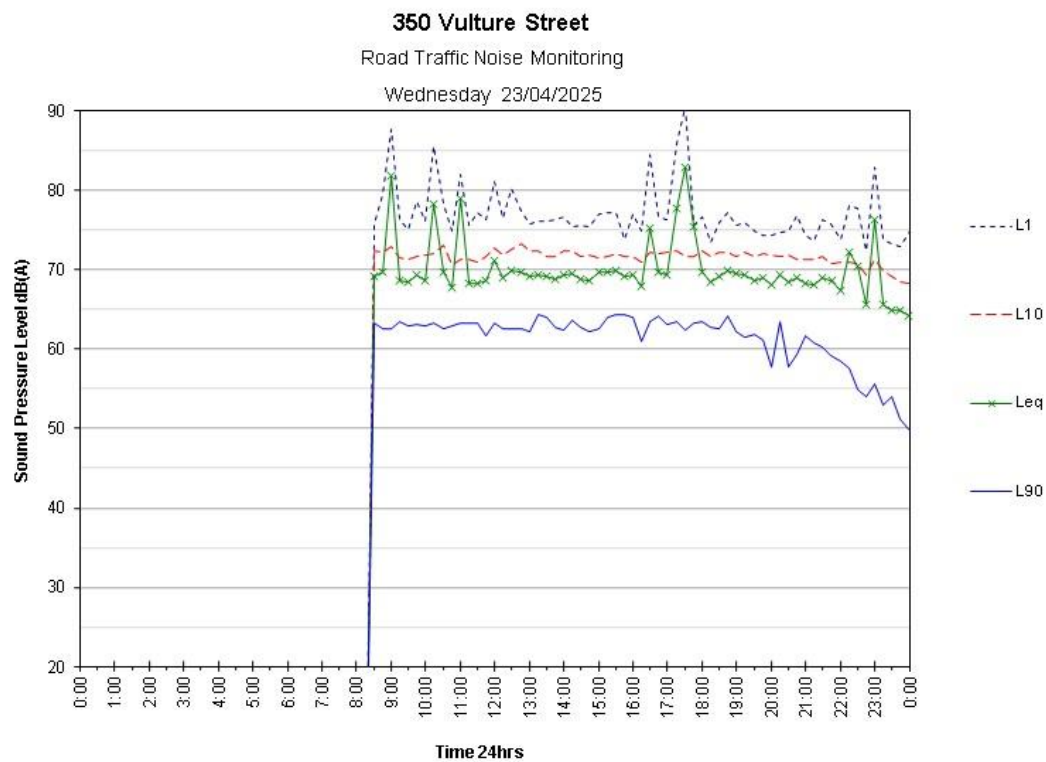


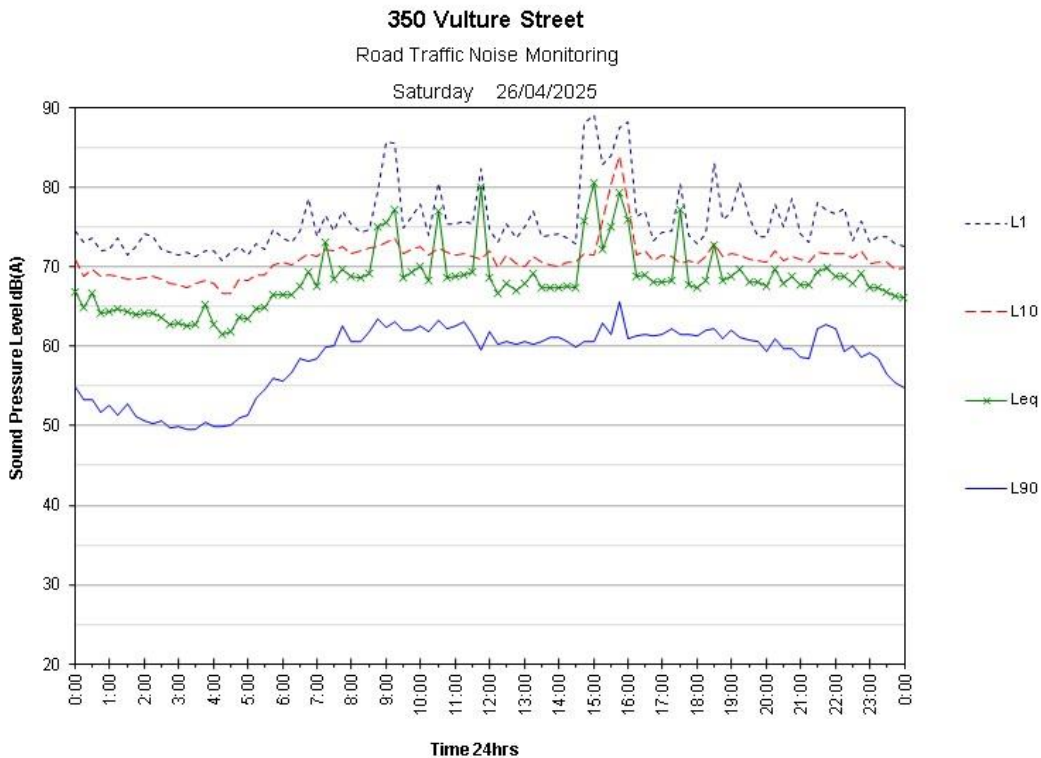
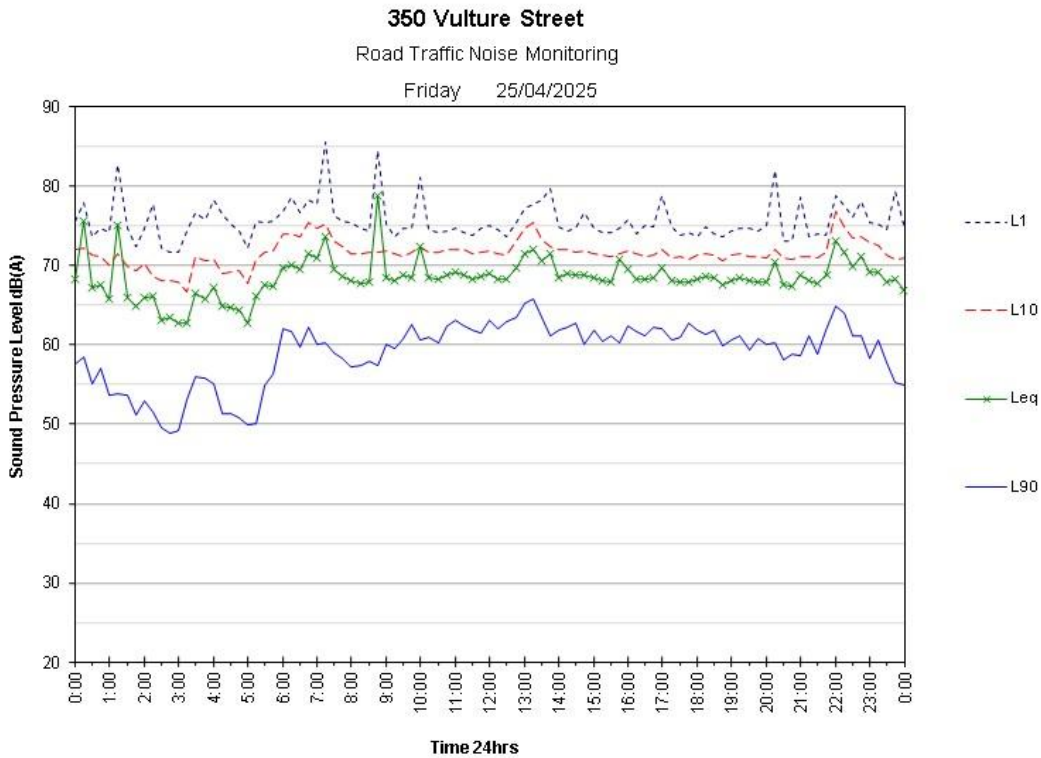
CONTAINER & DEEP PLANTING		
LEVEL	DEEP PLANTING	CONTAINER PLANTING
GROUND LEVEL	162.2 m ² (5.3%)	45.1 m ²
LEVEL 01	0 m ²	0 m ²
LEVEL 02	0 m ²	0 m ²
LEVEL 03	0 m ²	0 m ²
ROOF LEVEL	0 m ²	0 m ²
TOTAL	162.2 m ²	45.1 m ²

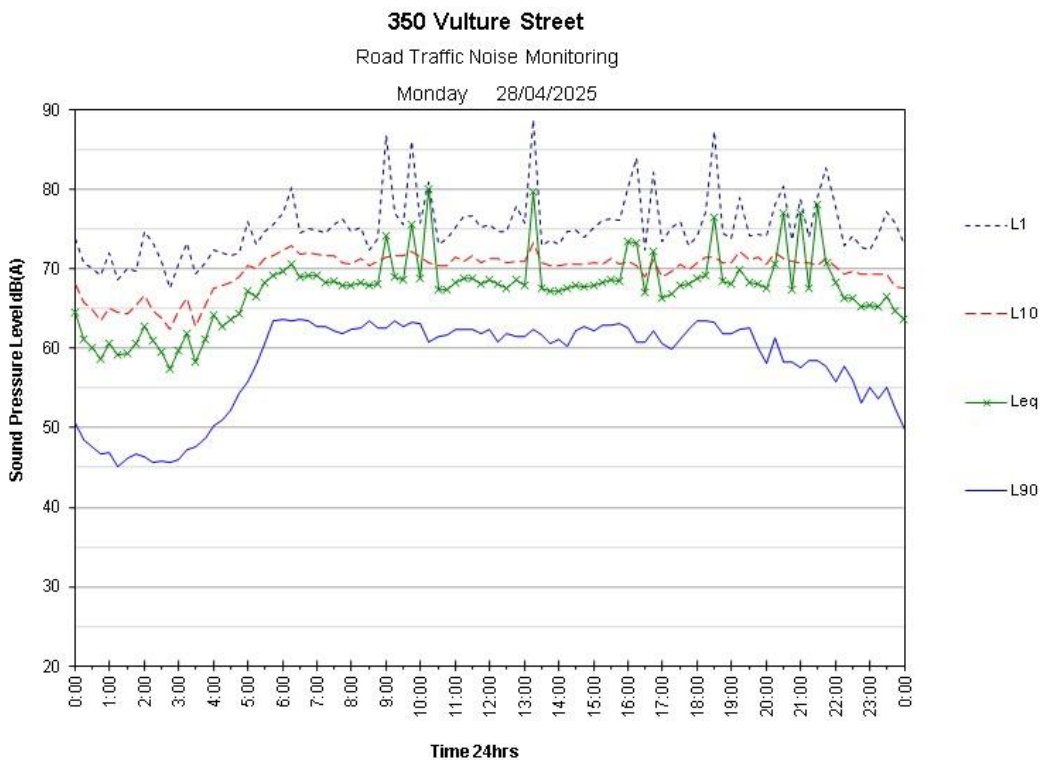
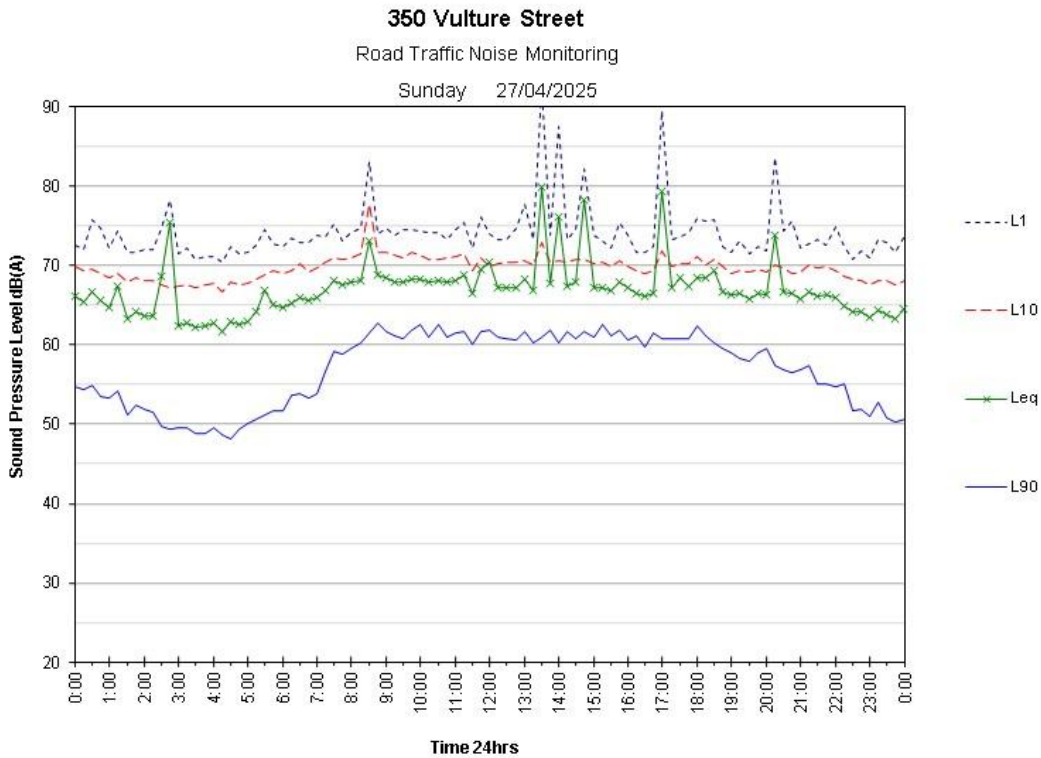
PROJECT SITE AREA	1918m ²	CONTAINER PLANTING
TOTAL PLANTING	7.9%	DEEP PLANTING

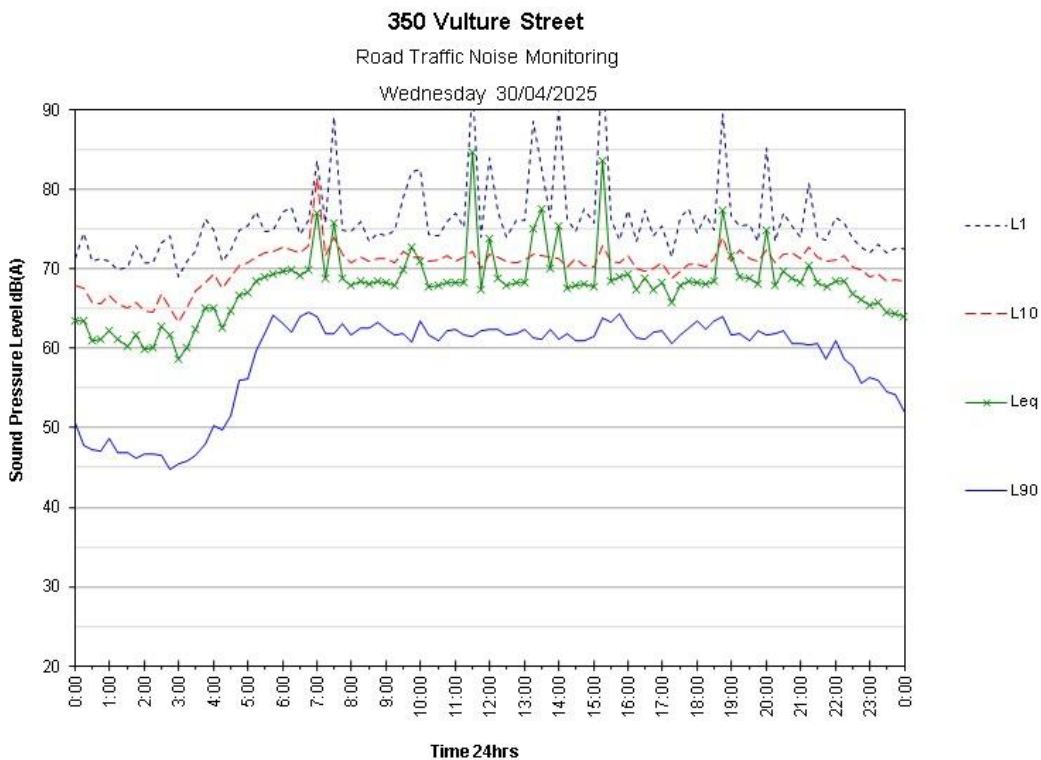
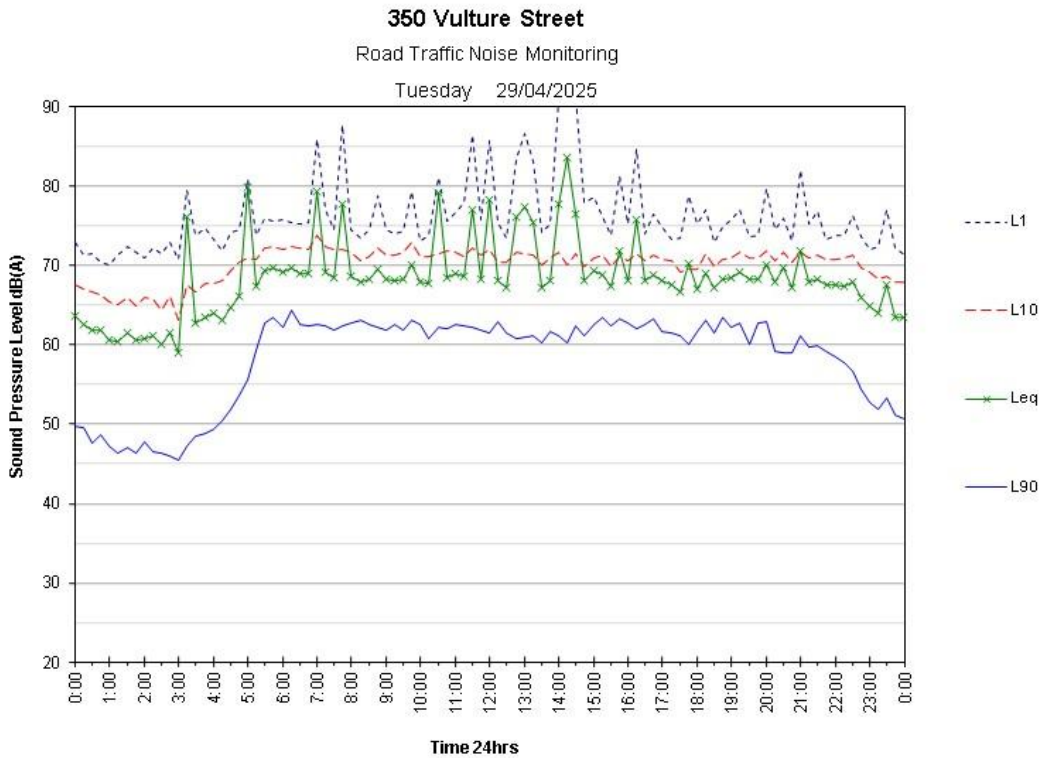
11.3 Noise Monitoring Charts

11.3.1 Road Traffic Noise Monitor









11.3.2 Ambient Noise Monitor

