

7 Hartington St, Northcote

Acoustic Assessment

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TABLE OF CONTENTS

1	INTRODUCTION	4
2	SITE DESCRIPTION	5
2.1	PROPOSED DEVELOPMENT	6
2.2	LOCAL NOISE SOURCES	6
3	ENVIRONMENTAL NOISE DESCRIPTORS	7
4	NOISE LEVEL MEASUREMENTS	8
4.1	MEASUREMENT LOCATIONS AND DATE OF MEASUREMENTS	8
4.2	MEASUREMENT EQUIPMENT	8
4.3	MEASURED NOISE LEVELS	9
5	ASSESSMENT CRITERIA	10
5.1	STANDARD D16 OF CLAUSE 58.04-3	10
5.2	AS/NZS 2107:2016	12
5.3	EPA PUBLICATION 1826.4	13
5.3.1	Receiver Zone Allocations	13
5.3.2	Part 1	13
5.3.3	Part 2 Criteria	16
5.4	CHILDREN IN OUTDOOR PLAY AREAS	17
6	CHILDCARE OUTDOOR PLAY AREAS NOISE ASSESSMENT	18
6.1	NOISE MODELLING PARAMETERS	18
6.2	SOUNDPLAN™ MODEL	20
6.3	PREDICTED NOISE IMPACTS	20
6.4	MANAGEMENT CONTROLS AND ASSOCIATED ACOUSTIC MEASURES	21
7	EVALUATION OF EXTERNAL NOISE INTRUSION	22
7.1	RECOMMENDED GLAZING	22
7.1.1	Existing Building	22
7.2	EXTERNAL WALL CONSTRUCTION	23
7.3	ROOF CONSTRUCTION	23
8	ASSESSMENT OF PLANT AND EQUIPMENT FROM THE SUBJECT SITE	23
8.1	HERITAGE BUILDING	23
8.2	PROPOSED CAFÉ/RESTAURANT	25
8.3	PROPOSED THEATRE	25
9	PROPOSED CAFÉ TENANCY	26
10	PROPOSED THEATRE NOISE ASSESSMENT	27
10.1	ASSESSMENT – NIGHT PERIOD	27
10.1.1	Mechanical Plant And Equipment	28
10.2	RECOMMENDATIONS AND MANAGEMENT CONTROLS	29
11	PROPOSED BALLROOM AND FUNCTION SPACE	30
12	CONCLUSION	30
	APPENDIX 1 – FAÇADE MARKUP	31
	APPENDIX 2 – NOISE MODELLING GRAPHICS	32
12.1	TRAFFIC (ST GEORGES ROAD)	32
12.2	RAIL NOISE (DAY PERIOD – 18 HOUR LEQ)	33
12.3	RAIL NOISE (NIGHT PERIOD – 8 HOUR LEQ)	35
12.4	CHILDCARE NOISE EMISSION PREDICTION	36
12.5	THEATRE NOISE EMISSION PREDICTION	38
	APPENDIX 3 – TRAIN LEQ DATA	40
	APPENDIX 4 – SITE PHOTOS	41

1 INTRODUCTION

Acoustic Logic (AL) has been engaged to undertake an acoustic assessment of the proposed mix-used development located at 7 Hartington Street, Northcote. The assessment addresses external noise intrusion into the development as well as potential noise emissions from site. The assessment has been conducted based on the following documentation.

Table 1 – Referenced Documents

Prepared By	Document	Reference	Date
KUD Architecture	Architectural Drawings	Project No. 22-004	Refer Appendix 1
-	Victorian Planning Provisions Clause 58.04-3	-	14 December 2023
-	Australian Standard AS/NZS 2107:2016	-	2016
EPA Victoria	Noise Limit and Assessment Protocol (Noise Protocol)	Publication 1826.4	2021

2 SITE DESCRIPTION

The subject development is located at 7 Hartington Street, Northcote. The site is bounded by St Georges Road to the west, Hawthorn Road to the north, Hartington Street and Mernda rail corridor to the east and existing residential and retirement home to the south.

St Georges Road is an arterial road which has an Annual Average Daily Traffic (AADT) volume of 34,000 vehicles and also carries the Tram Route 11. Other surrounding roadways are minor and carry only local traffic. Mernda railway line carries metropolitan passenger trains only. An industrial zone area is located approximately 200m to the northeast of subject site.

Figure 1 below details the subject site and surrounding environment.



2.1 PROPOSED DEVELOPMENT

The proposal development comprises of the following:

- Refurbishment of the existing heritage building (demolition of modern additions) and incorporation of apartments, boutique hotel, artist studios and retention of Church within the building.
- Early learning centre (ELC) fronting St Georges Road.
- Theatre located on north west corner of the site,
- Café/Restaurant
- Townhouses fronting Hawthorn Road – 3 stories and a basement for carparking,
- Apartment Buildings fronting Hartington Street – 4 stories and a basement for carparking
- Refer to Figure below for the location of each building

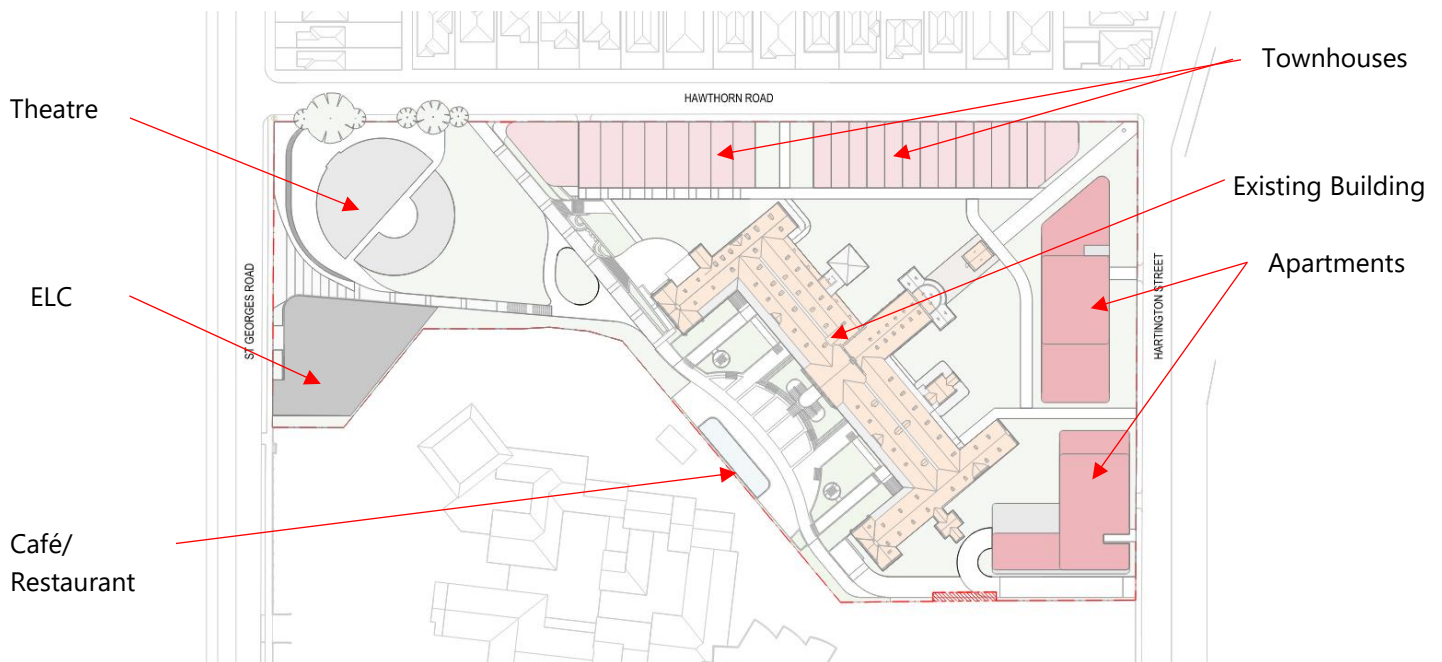


Figure 2 – Proposed Development Layout

2.2 LOCAL NOISE SOURCES

Acoustic Logic attended site on multiple occasions during which it was observed that the primary noise sources were traffic noise associated with St Georges Road and train movement on the Mernda Rail Corridor to the east. Tram movements were generally masked by traffic associated with St Georges Road.

The industrial area to the northeast of the site typical consists of a mixture of uses including warehouses, workshops, offices, and residential dwellings. Inspection of the subject site indicates that noise associated with operation was inaudible at the site. Therefore, no further assessment of the industrial zoned area is undertaken within this assessment.

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 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 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 LOCATIONS AND DATE OF MEASUREMENTS

Unattended and attended noise level measurements were conducted at the locations indicated in Figure 1. The noise level measurement locations are described below:

- **Location 1** – An unattended noise monitor was installed on a western boundary of subject site. The monitor was approximately 1.5 metres above grade and had full view of the St Georges Road. The monitor was in free field conditions. The monitor was installed between 9 and 16 May 2025.
- **Location 1** – Attended traffic noise level measurements conducted on the St Georges Road at the western boundary of subject site. The sound level meter was approximately 1.5 metres above grade with a full view of St Georges Road and was in free field conditions. Measurements were undertaken on the 16 May 2025.
- **Location 2** – An unattended noise monitor was installed on the northern boundary of the subject site (in line with where the townhouses are). The monitor was installed approximately 1.5 metres above grade. The monitor was in free field conditions. The monitor was installed between 9 and 16 May 2025.
- **Location 3** – An unattended noise monitor was installed on the southern boundary of the subject site. The monitor was installed approximately 1.5 metres above grade and was within 2m of a reflective surface. The monitor was installed between 9 and 16 May 2025.
- **Location 4** – An unattended noise monitor was installed on the eastern boundary of the subject site. The monitor was installed approximately 1.5 metres above grade with a full view of rail corridor. The monitor was in free field conditions. The monitor was installed between 9 and 16 May 2025.
- **Location 5** – Attended train noise level measurements were conducted. The sound level meter was approximately 1.5 metres above grade with a full view of rail corridor and was in free field conditions. Measurements were undertaken on 15 May 2025.
- **Location 6** – Attended train noise level measurements were conducted. The sound level meter was approximately 1.5 metres above grade with a full view of rail corridor and was in free field conditions. Measurements were undertaken on 15 May 2025.

4.2 MEASUREMENT EQUIPMENT

Unattended noise monitoring was conducted using three ARL Ngara and two Rion noise monitors. 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.

A Norsonic Nor140 Sound Level Analyser was used for the attended noise level measurements. 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 MEASURED NOISE LEVELS

The tables below detail the measured noise levels obtained from the unattended and attended noise measurements.

Table 2 – Attended Traffic Noise Level Measurements

Measurement Location	Date and Time of Measurements	Measured Noise Levels dB(A) $L_{eq,15mins}$
Location 1	16/05/2025 (16:30-16:45)	70
	16/05/2025 (16:45-17:00)	70

Table 3 – Unattended Traffic Noise Level Measurements

Measurement Location	Period	Measured Noise Levels
Location 1	Day (7:00-22:00)	72 dB(A) $L_{eq,1hr}$
	Night (22:00-7:00)	71 dB(A) $L_{eq,1hr}$
Location 2	Day (7:00-22:00)	60 dB(A) $L_{eq,1hr}$
	Night (22:00-7:00)	60 dB(A) $L_{eq,1hr}$

Table 4 – Unattended Train Noise Level Measurements

Measurement Location	Period	Measured Noise Levels
Location 4	Day (6:00-22:00)	57 dB(A) $L_{eq,16hr}$
	Night (22:00-6:00)	51 dB(A) $L_{eq,8hr}$

Table 5 – Attended Train Noise Level Measurements

Measurement Location	Period	Measured Noise Levels ¹
Location 5	Day (6:00-22:00)	56 dB(A) $L_{eq,16hr}$
	Night (22:00-6:00)	51 dB(A) $L_{eq,8hr}$
Location 6	Day (6:00-22:00)	50 dB(A) $L_{eq,16hr}$
	Night (22:00-6:00)	45 dB(A) $L_{eq,8hr}$

Note 1 – Train noise L_{eq} is derived by measuring the level of 10 train pass-bys and deriving a Sound Exposure Level (SEL). A L_{eq} value is then derived from this based on the frequency of the train service during these periods.

Table 6 – Unattended Background Noise Level Measurements

Period	Time	Measured Background L _{90,Period} dB(A)			
		Location 1	Location 2	Location 3	Location 4
Day	7am – 6pm (Mon – Sat)	52	51	39	41
Evening	6pm – 10pm (Mon – Sat)	53	45	39	42
	7am – 10pm (Sun)				
Night	10pm – 7am	45	40	36	38
Night	1am – 2am	Refer Table 7 below.			

Note 1 - Measurements have been corrected by -2.5dB to account for façade reflections.

Table 7 – Unattended Background Noise Level Measurements with Spectrum

Location	Measurement Start Time	Noise Levels dB(A) L ₉₀	Noise Level Spectrum L ₉₀ dB SPL						
			63Hz	125Hz	250Hz	500Hz	1 kHz	2 kHz	4 kHz
Location 1	13/05/2025 (1:00am-2:00am)	42	46	40	36	35	39	34	18
Location 2	13/05/2025 (1:00am-2:00am)	40	46	39	34	35	37	31	16
Location 3	13/05/2025 (1:00am-2:00am)	36 ¹	44 ¹	41 ¹	35 ¹	31 ¹	31 ¹	25 ¹	16 ¹
Location 4	13/05/2025 (1:00am-2:00am)	38	45	41	35	34	35	28	16

Note 1 - Measurements have been corrected by -2.5dB to account for façade reflections. Typical lowest measured noise level throughout monitoring period.

5 ASSESSMENT CRITERIA

5.1 STANDARD D16 OF CLAUSE 58.04-3

Standard D16 of Clause 58.04-3 contains the following condition:

Standard D16

Noise sources, such as mechanical plants should not be located near bedrooms of immediately adjacent existing dwellings or small second 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 D5 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 D5 Noise influence area

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

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 specialist 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 or small second dwelling and the site context.

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

1. The development **is** within 300m of an industrial zone.
2. The industrial zone is located to the northeast of the subject site.
3. The development is **not** within 300m of a freeway, tollway or road carrying an AADT >40,000.
4. The development **is** within 80m of railway servicing passengers and freight.
5. The Mernda railway line is located to the east of the subject site

Based on the above, refer the following comments:

1. Noise from the industrial zoned area was not evident from multiple site inspections. As such no further assessment is provided of the industrial zoned area.
2. The train noise shall be designed to comply with the Clause 58.04-3 criteria per below.

Table 8 – Internal Noise Criteria (Rail Noise)

Location	Internal Design Noise Level ¹
Living Rooms	40 dB(A) $L_{eq(16hr)}$ (6am – 10pm)
Bedrooms	35 dB(A) $L_{eq(8hr)}$ (10pm – 6am)

Note 1: Assessed with external windows and doors closed. Apartments are unfurnished with finished floor.

3. The external noise intrusion from the surrounding road shall be designed in accordance with Australian Standards AS/NZS 2107:2016.

5.2 AS/NZS 2107:2016

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 9 below details the criterion set for this development.

Table 9 – Internal Noise Criteria Traffic

Location	Internal Noise Level ¹	
	dB(A) L_{eq} (7am – 10pm)	dB(A) L_{eq} (10pm – 7am)
Bedrooms	35-45 ²	35-40
Living Areas	35-45	N/A





Note 1: Assessment is based on apartments suitably furnished ready for occupation with windows and doors closed.

Note 2: Bedrooms assessed as living rooms outside 10pm-7am.

5.3 EPA PUBLICATION 1826.4

5.3.1 Receiver Zone Allocations

EPA noise emission criteria for the subject site have been established and is discussed below. Nearby noise sensitive receiver locations have been divided into the below zones based on typical ambient noise levels in these areas. Refer Figure 3 below. Background noise levels for each zone have been based on the following:

-  Zone 1 – Results of background noise monitoring at location 1 have been used to formulate noise emission criteria for this zone. **Note zone 1 is inclusive of proposed future ELC as indicated in Figure 2.**
-  Zone 2 – Results of background noise monitoring at location 2 have been used to formulate noise emission criteria for this zone. **Note zone 2 is inclusive of proposed future town houses as indicated in Figure 2.**
-  Zone 3 – Results of background noise monitoring at location 3 have been used to formulate noise emission criteria for this zone.
-  Zone 4 – Results of background noise monitoring at location 4 have been used to formulate noise emission criteria for this zone. **Note Zone 4 is inclusive of the proposed future apartments as indicated in Figure 2.**

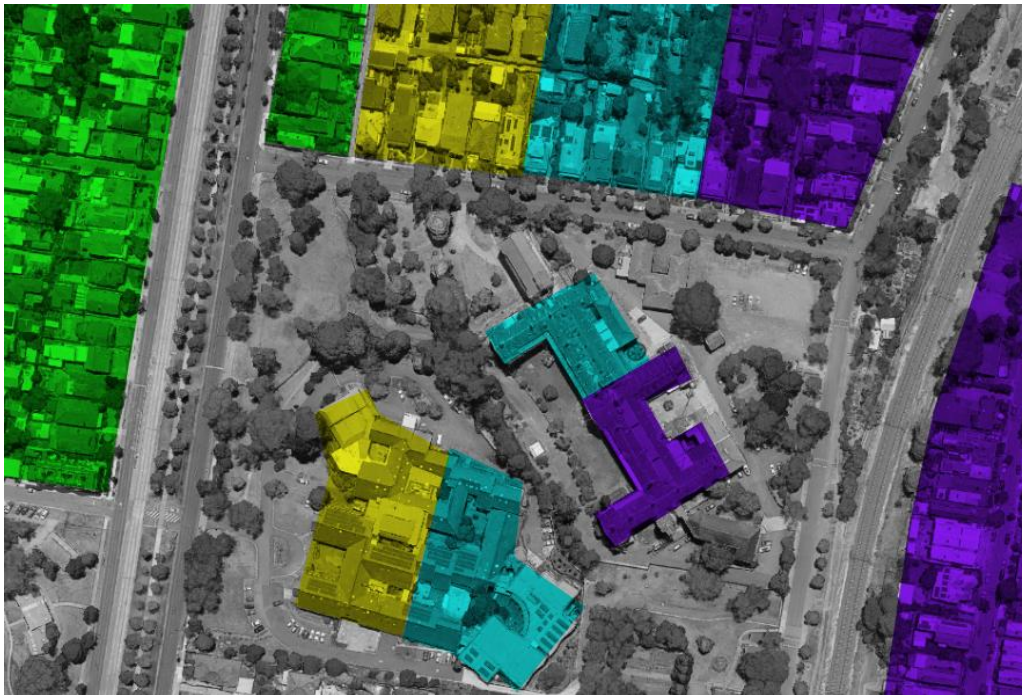


Figure 3 – Noise Emission Zone Allocation

5.3.2 Part 1

To ensure that noise emissions from the proposed development site do not impact adversely on the amenity of the surrounding noise sensitive areas, the proposed development should be designed to comply with the requirements of EPA Publication 1826.4 – Part 1.

5.3.2.1 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 EPA Publication 1826.4 and VicPlan Mapping. The IF is calculated from the proportion of industrial and commercial land around noise sensitive areas. Influencing factor and zoning levels have been presented in Table 10 below.

Table 10 - Zoning Levels

Period	Zoning Level dB(A)			
	Zone 1	Zone 2	Zone 3	Zone 4
Influencing Factor	0.26	0.07	0.06	0.13
Day	55	51	51	52
Evening	48	45	45	46
Night	43	40	40	41

5.3.2.2 Criteria

Table 11 below details the assessment criteria based on both the zoning levels and the measured background noise levels.

Table 11 – Noise Limits – Zone 1

Period	Background dB(A) $L_{90,Period}$	Zoning limit	Classification	Project Noise Limits dB(A) L_{eq}
Day Monday – Saturday (7am – 6pm)	52	55	High	58
Evening Monday – Saturday (6pm – 10pm) Sunday (7am – 10pm)	53	48	High	56
Night Monday – Sunday (10pm – 7am)	45	43	High	47
Night Monday – Sunday (1am – 2am)	41	43	High	44

Table 12 – Noise Limits – Zone 2

Period	Background dB(A) L_{90,Period}	Zoning limit	Classification	Project Noise Limits dB(A) L_{eq}
Day Monday – Saturday (7am – 6pm)	50	51	High	<u>56</u>
Evening Monday – Saturday (6pm – 10pm) Sunday (7am – 10pm)	50	45	High	<u>53</u>
Night Monday – Sunday (10pm – 7am)	42	40	High	<u>45</u>
Night Monday – Sunday (1am – 2am)	38	40	High	<u>41</u>

Table 13 – Noise Limits – Zone 3

Period	Background dB(A) L_{90,Period}	Zoning limit	Classification	Project Noise Limits dB(A) L_{eq}
Day Monday – Saturday (7am – 6pm)	39	51	Low	<u>51</u>
Evening Monday – Saturday (6pm – 10pm) Sunday (7am – 10pm)	39	45	Neutral	<u>45</u>
Night Monday – Sunday (10pm – 7am)	36	40	Neutral	<u>40</u>
Night Monday – Sunday (1am – 2am)	36	40	Neutral	<u>40</u>

Table 14 – Noise Limits – Zone 4

Period	Background dB(A) L_{90,Period}	Zoning limit	Classification	Project Noise Limits dB(A) L_{eq}
Day Monday – Saturday (7am – 6pm)	41	52	Neutral	<u>52</u>
Evening Monday – Saturday (6pm – 10pm) Sunday (7am – 10pm)	42	46	Neutral	<u>46</u>
Night Monday – Sunday (10pm – 7am)	38	41	Neutral	<u>41</u>
Night Monday – Sunday (1am – 2am)	36	41	Neutral	<u>41</u>

5.3.3 Part 2 Criteria

EPA Publication 1826.4 details the methodology to be used in assessing environmental noise emissions from music such that residential amenity may be preserved. The acoustic criteria are determined by measuring the background noise levels over an extended period and then deriving effective noise limit. The effective noise limit for an indoor venue of this type is the L_{Aeq} for the day/evening period and is derived from the measured L_{A90} + 5dB(A). The effective noise limit for the night period is L_{OCT90} + 8 dB. Table 15 and Table 16 below details the criteria based on the background measurements detailed in Table 6 and Table 7.

Table 15 – Music Noise Limits dB (Day/Evening)

Period	Time	Project Noise Limits dB(A)L_{eq}			
		Zone 1	Zone 2	Zone 3	Zone 4
Day / Evening	Monday to Saturday: 7am-11pm Sunday: 9am-10pm	46	45	45	46
Night	Monday to Friday: 11pm-2am Saturday: 11pm-2am Sunday: 10pm-2am	Refer Table 16 below.			

Table 16 – Music Noise Limits dB (Night)

Receiver Location	Music Noise Level Limits L_{OCT10} dB ¹						
	63Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz
Zone 1	54	48	44	43	47	42	26
Zone 2	54	47	42	43	45	39	24
Zone 3	49	46	43	38	37	30	24
Zone 4	53	49	43	42	43	36	24

Note 1 - Based on the background noise levels presented in Table 7.

5.4 CHILDREN IN OUTDOOR PLAY AREAS

There are currently no specific statutory requirements to assess noise emissions with respect to childcare centres from noise associated with children playing in outdoor play areas. This specific issue has been addressed in the VCAT matter of PHHH Investments Pty Ltd v Bayside City Council (VCAT Reference No P2294/2014 with Permit Application No. 2014/130/1) which has been adopted for this assessment.

The above matter proposed a childcare centre in a Neighbourhood Residential Zone near existing residential premises. The centre proposed to cater for up to 102 children. In determining the matter Member Fong concluded that “I adopt AAAC’s approach to noise and the criterion of 10 dB above background noise and adoption of permit conditions with regard to noise attenuation measures and management plan”.

Based on the above the following criteria would apply based on the measured background noise level. Note that it is proposed that the outdoor area will be used between 7:00am and 6:00pm on Monday to Friday.

Table 17 – Environmental Noise Criteria – Children in Outdoor Play Areas

Time	Measured Background $L_{90,period}$ dB(A) ¹	Criteria L_{eq} dB(A)	Project Noise Limits L_{eq} dB(A)
Day Period 7am – 6pm (Mon – Fri)	39	$L_{90} + 10$	<u>49</u>

Note 1 – Background noise measurement is based on the background noise level presented in Table 6.

6 CHILDCARE OUTDOOR PLAY AREAS NOISE ASSESSMENT

Noise emissions to nearby residential receivers have been assessed for children playing in the outdoor area of the childcare centre.

6.1 NOISE MODELLING PARAMETERS

Noise emissions from children playing in the outdoor play areas have been assessed using the following assumptions:

1. Figures 3 and 4 below indicate the dedicated outdoor play area, acoustic screening extent and modelled acoustic screen heights.
2. The screen height to the lower level outdoor play area (Figure 3 - Level 1) is 1.7m while the access gate to the external shall be of the same surface density with all gaps minimised (<20mm)
3. The screen height to the upper level outdoor play area (Figure 4 - Level 2) is 1.5m



Figure 3 – Childcare Level 1 (lower level)



Figure 4 – Childcare Level 2

4. Assessment of children in the outdoor playgrounds has been based on access being limited to 7:00am to 6:00pm.
5. Number of children located in the outdoor play areas indicated in Figure 2 are the following within the worst 1 hour period:
 - a. Level 1 outdoor play area: 66 children
 - b. Level 2 outdoor play area: 36 children
6. Recommendations in Section 6.4 are assumed to have been implemented including solid impermeate acoustic screen and roof as shown in Figure 2.
7. Sound power levels associated with specific activities on site are detailed in Table 18 below. Provided noise levels are based on measurements conducted by this office of existing childcare centres.

Table 18 – Operational Sound Power Levels

Noise Source	Sound Power Level
Children Playing (per 10 children)	82dB(A)

6.2 SOUNDPLAN™ MODEL

A SoundPlan™ model was used to simulate the noise impact from children in playgrounds. Noise levels at the receiver façades have been predicted using the above model implementing the ISO 9613-2:1996 "Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation" noise propagation standard. The predicted noise levels for each scenario is presented in Appendix 5 – Noise Modelling Graphics

6.3 PREDICTED NOISE IMPACTS

Noise impacts to the nearby noise sensitive residential receivers have been predicted and presented in Table 19 below based on the management controls indicated in Section 6.4 being adopted. For each receiver, the levels have been predicted at the worst affected façade and assessed against the requirements criteria nominated in Table 17 of this report.

Table 19 – Predicted Noise Levels of Children in Outdoor Areas

Nearby Noise Sensitive Residential Receivers	Predicted Noise Level dB(A) $L_{eq}(30min)$	Noise Emission Criteria dB(A) $L_{eq}(30min)$	Complies?
Existing Residential Buildings Along Hawthorn Road	<45	≤49	Yes
Existing Residential Buildings Along St Georges Road	<42	≤49	Yes
Proposed Townhouse within the development	<47	≤49	Yes
Existing Heritage Building Within Development	<45	≤49	Yes
St Joesph's Home 112 St Georges Road	<42	≤49	Yes

Assessment detailed in Table 16 indicates that the predicted noise levels from children noise in outdoor areas comply with the assessment criteria at identified nearby noise sensitive residential receivers. Compliance at these locations will ensure compliance will be achieved at other locations.

6.4 MANAGEMENT CONTROLS AND ASSOCIATED ACOUSTIC MEASURES

The following management controls and acoustic measures are recommended to be adopted as part of the development. The following has been assumed to be incorporated within the proposed development:

6. An acoustic screen to the external play areas with heights indicated in section 6.1 and extents as shown in Figure 3 and Figure 4.

The acoustic screen shall be of solid imperforate construction. The construction can be from transparent or opaque materials such as double lapped timber, plywood, FC sheet, masonry, glazing, minimum 5mm polycarbonate panels, Colorbond or similar with minimum surface density of 3.6kg/m² or alternative as approved by a suitably qualified acoustic consultant.

Note that the heights specified are from the height of the surface level of the outdoor play area.

7. Children shall be permitted within playgrounds only during the hours of 7:00am to 6:00pm Monday to Friday.
8. Children shall be supervised at all times when located in playgrounds.
9. Waste / recycling collection shall occur only between 7am and 6pm Monday to Saturday.
10. Use of amplified music shall be limited to internal spaces within the building.
11. Crying children are to be taken inside the centre and comforted as soon as practical.
12. Behaviour of children are to be monitored by suitably trained childcare workers.
13. Parents and guardians are to be informed of the importance to minimise noise when entering the site, dropping off or collecting children.
14. Loudspeakers apart from those required for security/emergency purposes are not recommended to be located in outdoor areas.
15. Height of play equipment shall be restricted to ensure the children playing do not exceed the height of the screens indicated in Figure 3 and 4 above.

7 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.

The predicted noise levels through the windows, doors and lightweight walls are discussed below. The predicted noise levels have been based on the predicted level and spectral characteristics of the external noise, the area of building elements exposed to noise, the absorption characteristics of the rooms and the noise reduction performance of the building elements.

Glazing/façade treatment was determined based on the measured noise levels, the predicted loss across the site, and the transmission loss of the façade. The constructions set out below are necessary for the satisfactory control of external noise to comply with the internal noise level criteria.

7.1 RECOMMENDED GLAZING

The glass thicknesses shown in the schedule do not take into account thermal, structural, safety or any other requirements other than acoustic requirements and thus may require upgrading in some instances. In these instances, increasing the glass thickness beyond the acoustic requirement will be acceptable. Where the glazing thickness has not been specified, standard glazing will be acceptable.

Table 20 below details the minimum R_w performance requirements for the glazing assembly installed. Where open-able windows or sliding doors are installed, the total R_w performance of the system shall not be lower than the values listed in this table. It is noted that the system supplied shall meet the overall minimum R_w ratings nominated based on a laboratory test report for the system. If an alternative system is proposed the system shall be reviewed and will require approval by a suitably qualified acoustic consultant to ensure that the proposed system is acceptable and will ensure compliance with the nominated internal noise design criteria.

Table 20 – Glazing Requirements

Location	Required Glazing Construction ¹	Minimum R_w of Installed Window System	Acoustic Seals ²
Refer to Appendix 1 – Façade Markup	6/12/6mm IGU	29	Yes
	6/12/6.38mm IGU	31	Yes
	6/12/11.52mm lam IGU	35	Yes
	6/12/13.52mm lam IGU	37	Yes

Note 1 – Or alternative glazing system approved by a suitable qualified acoustic consultant.

Note 2 – Mohair Seals in windows and doors are **not** acceptable where acoustic seals are required. Seals in these instances shall be equal to Schlegel Q-Ion.

7.1.1 Existing Building

Due to heritage significance of the Existing Heritage Building and ongoing architectural review, final glazing constructions have not been provided as part of this assessment. Based on current design intent, internal noise levels with SOU / Hotel guest rooms will be managed by installing secondary pane of glazing spaced from the existing windows.

Final glazing construction shall be reviewed and approved during detailed design stage noting that compliance is predicted to be achievable with use of standard / medium-weight glazing configurations. We

note that the existing heritage building incorporates residential accommodation currently and as such upgrade will improve current amenity over existing levels.

7.2 EXTERNAL WALL CONSTRUCTION

Any non-glazed sections of the façade which are proposed to be constructed from lightweight materials shall be designed to ensure compliance with the nominated internal noise criteria. Penetrations in walls must be sealed gap free with a flexible sealant. Any ventilation openings in walls shall be acoustically treated to maintain the acoustic performance of the external wall construction.

7.3 ROOF CONSTRUCTION

The heritage building will incorporate similar ceiling construction to existing with thermal insulation installed over to address external traffic and rail noise intrusion.

The apartment and townhouse buildings shall be treated in accordance with Appendix 1 – façade markup to achieve internal noise level criteria or alternative as approved by a suitably qualified acoustic consultant. Any ventilation openings through the roof would need to be acoustically treated to maintain the acoustic performance of the roof/ceiling construction.

8 ASSESSMENT OF PLANT AND EQUIPMENT FROM THE SUBJECT SITE

To ensure that noise emissions from mechanical plant and equipment serving the development do not impact adversely on the amenity of neighbouring residential properties, noise emissions from the mechanical plant and equipment serving the development shall comply with the requirements of EPA Publication 1826.4 – Part I.

The mechanical plant and equipment selections / design have not yet been finalised at this stage. To ensure amenity for future residents and nearby noise sensitive receivers is preserved, the mechanical plant and equipment serving the development shall be reviewed during the detailed design stage by a suitably qualified acoustic consultant to ensure that compliance with EPA Publication 1826.4 – Part I is achieved. This will be achieved by the use of standard acoustic treatment such as internally lined ductwork, acoustic screens/louvres, acoustic attenuators, variable speed drives, and vibration isolation mounts.

Although no design is finalised the following high level comments are provided

8.1 HERITAGE BUILDING

It is recommended that the rooftop mechanical plant incorporates a solid and imperforate screen to the rooftop plant areas as shown below. The minimum height of the screen to be min. 200mm higher than the height of the highest equipment / discharge point and to be of solid and imperforate construction from materials such as FC sheet, sheet metal or similar. Final acoustic screening requirements to be reviewed and confirmed during detailed design stage once mechanical services equipment selections and locations have been determined.

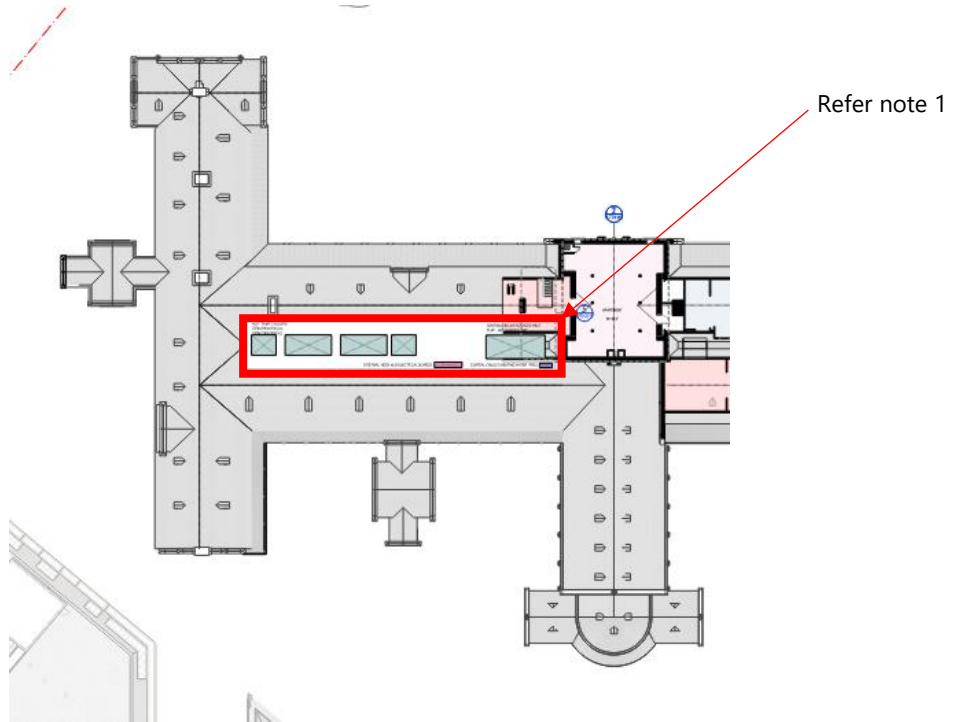


Figure 5 – Rooftop Plant Screening (Plan View)

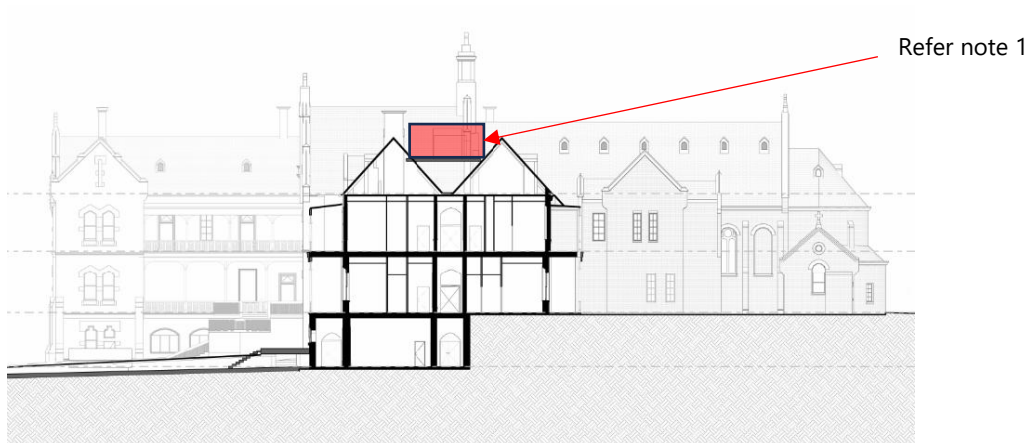


Figure 6 – Rooftop Plant Screening (Section View)

Note 1: Acoustic screen to be nom. 200mm higher than the height of the highest equipment or discharge point. Screen to be constructed from a solid and impermeate material such as FC sheet, sheet metal or similar. The screen shall be lined internally with absorptive material generally with nominal NRC of 0.75. Final specification of the treatment for the screen shall be confirmed by a suitably qualified acoustic consultant.

8.2 PROPOSED CAFÉ/RESTAURANT

For café and restaurant tenancies, it is expected noise emissions from kitchen exhaust fans will be the dominant noise source from mechanical services serving the tenancy, remaining equipment shall be reviewed during detailed design stage noting compliance will likely be achievable based on use of standard acoustic treatment and controls.

16. An inline kitchen exhaust and make up air fans are recommended.
17. Fans shall where required incorporate acoustic silencing/lined duct to the fan intakes and discharges.
18. Fans may require acoustic wrapping.
19. It is recommended that an acoustic screen be installed to approximately 300mm higher than the fan/discharges/Intakes.
20. Screening shall be solid and imperforate and constructed of 6mm FC sheet or 1mm sheet metal or approved alternative by a suitably qualified acoustic consultant.
21. Equipment serving the tenancy shall be selected and acoustically treated to achieve compliance with EPA noise emission criteria.
22. The final equipment selections and design shall be reviewed by a suitably qualified acoustic consultant during detailed design stage and provide recommended acoustic treatment measures to meet environmental noise criteria.

8.3 PROPOSED THEATRE

We note that the following are provided as a guide only and will require review once the plant and equipment design is finalised. It is noted that conventional acoustic treatment methodologies can be adopted to ensure compliance with environmental noise assessment criteria.

It is expected that heat rejection plant such as cooling towers or heat pumps / air handling units will be located on the roof of the proposed theatre. A preliminary cooling tower selection was confirmed by the mechanical engineer. The initial selection indicated a noise level of 52 dB(A) at 15m.

23. An acoustic screen shall be installed to the full perimeter of the plant area on the roof.
24. The screen shall extend to approximately 3.2m above roof level or nominal 200mm higher than the discharge. Note that this height may change during the detailed design stage of the project once actual mechanical services design is completed.
25. The acoustic screen shall be solid and imperforate and constructed of minimum 6mm FC sheet or 1mm sheet metal or product achieving nominal 7.5kgm² surface density. Alternative options are acceptable provided they are reviewed and approved by a suitably qualified acoustic consultant.
26. A gap between the base of the screen and the roof sheeting of up to 50mm would be acceptable for drainage.
27. If louvres are required to rooftop plant screen for ventilation then an acoustic louvre / silencer will be required. Final acoustic performance requirements shall be determined by a suitably qualified acoustic consultant.
28. It is recommended that the internal face of the acoustic screen be lined generally with an absorptive finish that achieves an NRC of 0.75. Note final treatment and recommendations would be subject

to review by a suitably qualified acoustic consultant of plant and equipment design/selections during detailed design.

29. Other plant and equipment serving the theatre shall be designed to ensure compliance with environmental noise criteria by a suitably qualified acoustic consultant.

Formal review of mechanical services and final equipment selections shall be undertaken by a suitably qualified acoustic consultant during the detailed design stage of the project to ensure compliance with EPA noise emission criteria is achieved.

9 PROPOSED CAFÉ TENANCY

The following requirements shall be incorporated into the proposed cafe;

- All mechanical plant and equipment associated with future tenants must comply with the EPA Publication 1826.4 – Part 1.
- Any amplified music associated with the tenancies will be limited to background music only and be limited by the operator to ensure that they comply with the EPA Publication 1826.4 – Part 2 requirements.
- Use of amplified music until close of business is permitted provided that it is background music only (conversation level). Music noise shall only be played within the premises.
- Glass bottles shall not be emptied/transferred externally before 7am or after 10pm. Outside this time period all glass must be emptied / transferred within the premises and removed in containers.
- Staff are to be instructed not to drop heavy garbage items/bottle into bins – they must be placed so as to minimise impact noise.
- The collection of waste and recycling must only occur during the hours of garbage collection for the remainder of the development.
- Refer Section 8.2 above for review of mechanical services.

10 PROPOSED THEATRE NOISE ASSESSMENT

Assessment of music noise emissions from the proposed Theatre has been undertaken and presented below. Note that if noise emissions comply during the night period they will comply at other times.

10.1 ASSESSMENT – NIGHT PERIOD

Music noise has been predicted to the identified residential receivers based on the following:

1. It is proposed that the Theatre will incorporate live music / amplified music.
2. Assessment based on music noise level spectrum indicated in Table 21 which has been based on measured noise levels of a amplified music in a similar-type venue by Acoustic Logic.

Table 21 – Music Noise Levels SPL dB(A)L₁₀

63Hz	125Hz	250Hz	500Hz	1 kHz	2 kHz	4 kHz	A-wt
105	100	98	95	97	91	85	100 L ₁₀

3. All primary sound re-enforcement within the auditorium shall be via the house PA system.
4. 1/1 Octave band noise limiting system shall be incorporated within the auditorium and foyer/bar area to ensure music noise are limited to the final levels discussed in point above.
5. Final operational levels shall be confirmed prior to occupation and set using The above music noise levels are in principle only and shall be finalised via in situ testing prior to occupation.
6. Assessment based on operation of night time period for the below hours:
7. Between the hours of 10:00PM – 2:00AM Monday to Thursday and Sunday.
8. Between the hours of 11:00PM – 2:00AM Friday and Saturday.
9. The assumptions above have been incorporated into a SoundPLAN™ noise model to simulate the noise impact from music noise to the façade of identified residential receivers. Noise level prediction has been based on ISO 9613-2:1996 "Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation" noise propagation standard.
10. Noise modelling results are attached in Appendix 3
11. As the night period is most stringent assessment period, compliance during the above hours will ensure compliance is achieved during the day and evening. Note that consideration has been given to the proposed adjacent early learning centre with assessment shown in Table 23 below which is not proposed to operate during the night period thus will be assessed against day and evening criteria only.
12. Final music noise shall be limited by octave band noise limiter to ensure compliance with EPA Publication Part 2 criteria.

The predicted music noise levels at the noise sensitive receiver are detailed below which have been assessed against the established music noise level criteria.

Table 22 – Music Noise Prediction (Night)

	Music Noise Level L_{OCT10} dB ¹						
	63Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz
Zone 1							
Predicted Music Levels	42	31	20	-	-	-	-
Criteria	54	48	44	43	47	42	26
Complies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zone 2							
Predicted Music Levels	54	45	40	-	-	-	-
Criteria	54	47	42	43	45	39	24
Complies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zone 3							
Predicted Music Levels	49	40	35	-	-	-	-
Criteria	49	46	43	38	37	30	24
Complies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zone 4							
Predicted Music Levels	34	22	13	-	-	-	-
Criteria	53	49	43	42	43	36	24
Complies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note 1 – The predicted typical worst case noise level in zone has been presented in the assessment.

Table 23 – Predicted Noise Levels to ELC (Day/Evening)

Location	Predicted Noise Level dB(A)	Criteria dB(A)	Complies?
Level 1 – Play Room Facade	<37	≤46	Yes
Level 2 – Play Room Facade	<37	≤46	Yes

10.1.1 Mechanical Plant And Equipment

Refer Section 8.3 above.

10.2 RECOMMENDATIONS AND MANAGEMENT CONTROLS

The following acoustic treatment recommendations shall be implemented to ensure compliance with assessment criteria is achieved:

1. All mechanical plant and equipment associated with future tenants must comply with the EPA Publication 1826.4 – Part I.
2. The music noise levels presented in Table 21 are in principle only and shall be finalised via in situ testing prior to occupation.
3. Music noise shall be limited by electronic 1/1 Octave band noise limiter installed on site. The noise limiter shall be set by a suitably qualified acoustic engineer to ensure compliance with the EPA Publication 1826.4 Part 2.
4. Any amplified music shall be operated through in the in-house speakers only (to avoid third-party speakers exceeding the noise limits)
5. Speakers shall be vibrated isolated from the building structure.
6. All external windows and doors shall be closed during events, except when patrons are entering/exiting the venue. Noting that airlock entry door system is currently proposed which will be used for egress purposes.
7. No external amplification systems are permitted except for emergency requirements.
8. Signage requesting patrons to leave in an orderly manner and respect neighbours shall be installed outside of the venue. Note that noise control of patrons can only be managed while patrons are inside the building.
9. The assessment based on the following in principle roof / ceiling construction as following or . alternative roof/ceiling systems provided they are reviewed by a suitably qualified acoustic consultant:
 - a) Sheetmetal roof installed on roofing channels over,
 - b) 2x22mm Structafloor installed or similar element on structural roof framing.
 - c) Nominal 600mm cavity with bulk insulation.
 - d) 2x13mm plasterboard ceiling on resilient mounts.
 - e) Architectural ceiling below.
10. The external walls are assumed to be of masonry or concrete based construction. Wall systems shall be approved by a suitably qualified acoustic consultant during detailed design stage.
11. External glazing to the auditorium space has been assumed to be based on a IGU glazing system incorporating 12mm glass / 15mm airgap /8.76mm or similar with a nominal Rw rating of Rw 42. Alternative glazing systems shall be reviewed and approved by a suitably acoustic consultant.

A final review shall be undertaken during detailed design stage to confirm final design internal music noise levels and final external building fabric construction to ensure compliance with music noise emission criteria.

11 PROPOSED BALLROOM AND FUNCTION SPACE

Within the heritage building it is currently proposed to incorporate a function space to ground level and ballroom to level 1. As the design and layouts are set at a preliminary level and noting further coordination is required with the architect, structural engineer, heritage consultants, etc, we note the following preliminary comments:

1. Upgraded ceilings are proposed to be installed within the function rooms to address acoustic separation both to the adjoining spaces and environmentally
2. Amplified music or live music shall be limited by 1/1 octave band noise limiter with final limits to be approved based on in-situ testing.
3. Airlocks are recommended to be installed to external balcony areas connecting to the function space and ballroom.
4. Due to the heritage nature and construction of the building, complete separation between the function space, ballroom and surrounding areas of the building cannot be achieved. On that basis it is recommended that amplified music or live music played within the function room and ballroom be limited by 1/1 octave band noise limiter with final limits set prior to occupation to manage to both environmental noise emissions and internal transfer of amplified music to acceptable levels.
5. Mechanical layouts and equipment selections have not been finalised at this stage. Major equipment is proposed to be located at roof level and as such can be acoustically treated to achieve compliance with EPA noise emission criteria.

12 CONCLUSION

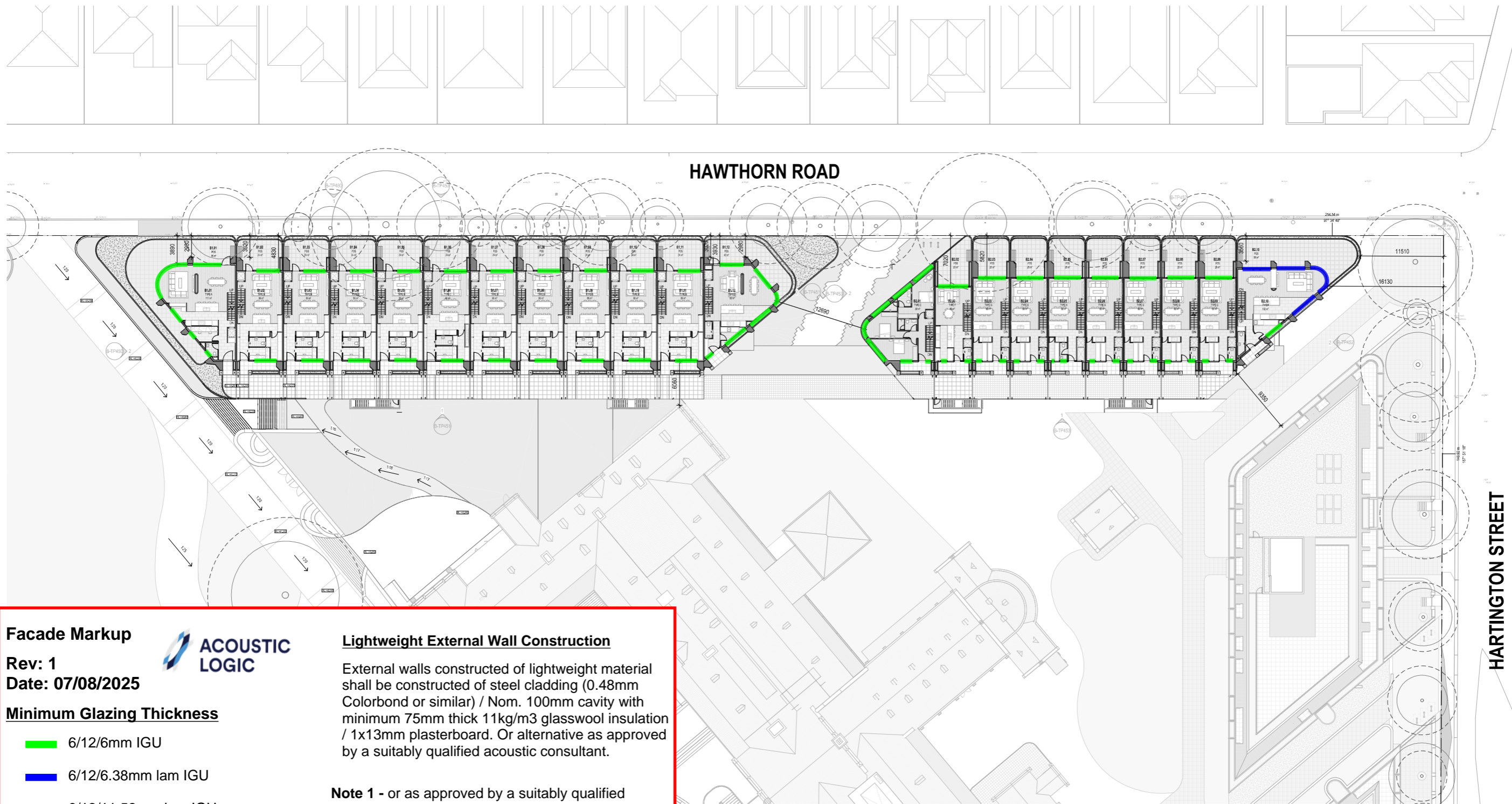
This report details our acoustic assessment of the proposed development located at 7 Hartington Street, Northcote. The assessment addresses external noise intrusion into the development as well as potential noise emissions from site. We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,



Acoustic Logic Pty Ltd
Jason Thompson

APPENDIX 1 – FAÇADE MARKUP



Facade Markup

Rev: 1
Date: 07/08/2025



Minimum Glazing Thickness

- █ 6/12/6mm IGU
- █ 6/12/6.38mm lam IGU
- █ 6/12/11.52mm lam IGU

Roof Construction

Roof shall be constructed: Minimum 0.48mm Colorbond or similar / minimum 200mm cavity with 75mm thick 11kg/m3 glass wool insulation / 1x13mm plasterboard.

Masonry External Wall Construction

External walls constructed of masonry/precast construction will not require further acoustic upgrade.

Lightweight External Wall Construction

External walls constructed of lightweight material shall be constructed of steel cladding (0.48mm Colorbond or similar) / Nom. 100mm cavity with minimum 75mm thick 11kg/m3 glasswool insulation / 1x13mm plasterboard. Or alternative as approved by a suitably qualified acoustic consultant.

- Note 1** - or as approved by a suitably qualified acoustic consultant.
- Note 2** - All glazing to contain Q-Ion bulb seals
- External doors and awning windows to contain multi-point latching
- Note 3** - Roof construction shall be min 150mm concrete slab. Final construction TBC architectural design review and acoustic review.

SUSTAINABILITY MANAGEMENT PLAN

01. NON-TRAFFICABLE ROOF AREAS TO BE DIRECTED BY A GROUND LEVEL WATER DRAIN CONNECTED TO ALL TOILETS AND LANDSCAPE IRRIGATION.
02. TERRACES (INCLUDING PLANTERS) TO BE DIRECTED INTO RANGERS INTO A 37mm MINIMUM 150MM DEEP PARAPET WITH DRAIN OF EXTENDED DETENTION.
03. SECURE RESIDENTIAL SPACES 22 RESIDENTIAL VECTOR SPACES

GENERAL NOTES - SITE

- SITE**
01. DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL DOCUMENTATION AND OTHER RELATED DRAWINGS.
 02. SEPARATE UNDERGROUND SERVICES. THE CONTRACTOR WILL LOCATE ALL SERVICES ON-SITE PRIOR TO COMMENCEMENT OF WORK.
 03. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR ROAD PAVING DETAIL AND LEVELS.
 04. INDENTIFY UNDERGROUND SERVICES WITH STAKES TO PROPOSED STORMWATER COLLECTION AND ON-SITE STORAGE HAVE BEEN SHOWN DASHED.
 05. CONTRACTOR TO CONFIRM ALL EXISTING SERVICE LOCATIONS.
 06. PROPERTY BOUNDARY AND FOOTPATH LEVELS ARE TO BE REFERENCED TO THE ORIGINAL LEVELS AS DEFINED BY VEC/MAJOR LOCAL AUTHORITY.
 07. ALL DRAWING PENETRATING FOOTINGS OR ANY OTHER CONCRETE OR MASONRY WORK ARE TO BE REFERENCED TO ALL FOR SETTLEMENT OF STRUCTURE AND/OR GROUND MOVEMENT (TYPICAL HEAVE AND CRACK OUTLINED IN GEOGRAPHICAL ENGINEERING SOIL REPORT).
 08. LANDSCAPING AS PER LANDSCAPE ARCHITECTS DESIGN UNLESS OTHERWISE NOTED. SPOT LEVELS SHOWN ON SITE PLAN ARE INDICATIVE AND SHOULD BE READ IN CONJUNCTION WITH LANDSCAPE ARCHITECTS DOCUMENTATION AND DETAILS.
- TREE PROTECTION**
10. PRIOR TO COMMENCEMENT OF WORKS, SET UP A TREE PROTECTION ZONE (TPZ). TREE PROTECTION ZONES ARE TO BE IN ACCORDANCE WITH THE ARBORIST REPORT. TREE PROTECTION ZONES MAY INCLUDE FENCING, MULCH OR GROUND PROTECTION AND MUST BE IN PLACE FOR THE DURATION OF THE WORKS.
 11. TREE PROTECTION ZONES ARE INDICATIVELY SHOWN WITH DASHED LINES AND ARE TO BE CALCULATED IN ACCORDANCE WITH AS 4801:2009 AND INCLUDE AREAS ABOVE AND BELOW GROUND.
 12. AVOID ANY WORKS IN THE TREE PROTECTION ZONE AND DISRUPT ANY EXISTING ROOTS, BRANCHES AND CONSTRUCTION WORKS UNDERTAKEN WITHIN THE TREE PROTECTION ZONE DO NOT CAUSE DAMAGE TO A TREE. THE FOLLOWING ACTIVITIES MUST BE RESTRICTED OR PROHIBITED WITHIN THE TREE PROTECTION ZONE, UNLESS APPROVED BY AN ARBORIST AND/OR COUNCIL.

REV	ISSUE	DATE
A	FOR REVIEW	06/08/2025

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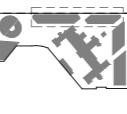
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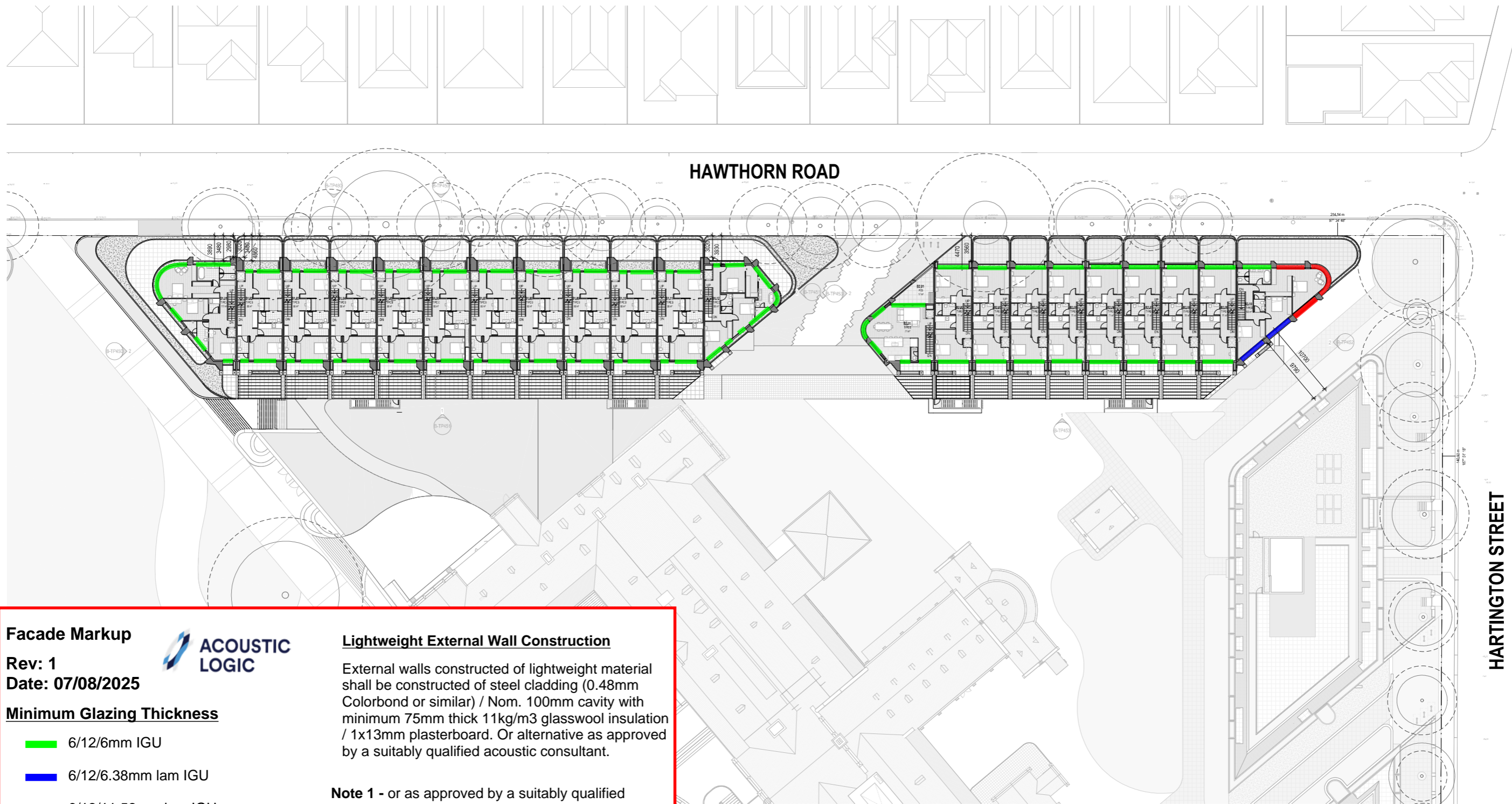
CLIENT NAME
GREEK ORTHODOX ARCHDIOCESE OF AUSTRALIA

CONTRACTOR NAME

TITLE
GROUND FLOOR SITE PLAN

ADDRESS
7 HARTINGTON STREET, NORTHCOLE

PROJECT NO.
22-004



Facade Markup

Rev: 1
Date: 07/08/2025



Minimum Glazing Thickness

- 6/12/6mm IGU
- 6/12/6.38mm lam IGU
- 6/12/11.52mm lam IGU

Roof Construction

Roof shall be constructed: Minimum 0.48mm Colorbond or similar / minimum 200mm cavity with 75mm thick 11kg/m3 glass wool insulation / 1x13mm plasterboard.

Masonry External Wall Construction

External walls constructed of masonry/precast construction will not require further acoustic upgrade.

Lightweight External Wall Construction

External walls constructed of lightweight material shall be constructed of steel cladding (0.48mm Colorbond or similar) / Nom. 100mm cavity with minimum 75mm thick 11kg/m3 glasswool insulation / 1x13mm plasterboard. Or alternative as approved by a suitably qualified acoustic consultant.

- Note 1** - or as approved by a suitably qualified acoustic consultant.
- Note 2** - All glazing to contain Q-Ion bulb seals External doors and awning windows to contain multi-point latching
- Note 3** - Roof construction shall be min 150mm concrete slab. Final construction TBC architectural design review and acoustic review.

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 11. TREE PROTECTION ZONES ARE INDICATIVELY SHOWN WITH DASHED LINES AND ARE TO BE CALCULATED IN ACCORDANCE WITH AS 4873:2009 AND INCLUDE AREAS ABOVE AND BELOW GROUND.
 12. AVOID ANY WORKS IN THE TREE PROTECTION ZONE AND DISRUPT ANY SUBSTRATE, SOIL AND/OR CONSTRUCTION WORKS UNDERTAKEN WITHIN THE TREE PROTECTION ZONE DO NOT CAUSE DAMAGE TO A TREE. THE FOLLOWING ACTIVITIES MUST BE RESTRICTED OR PREVENTED WITHIN THE TREE PROTECTION ZONE, UNLESS APPROVED BY AN ARBORIST AND/OR COUNCIL.

REV	ISSUE	DATE
A	FOR REVIEW	06/08/2025

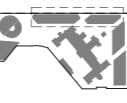
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Level 2/17 Naxos St, Cremorne VIC 3121 T: (03) 9081 1811		Colin Viscus, Suite 1, Level 9/230 Fribour La Melbourne, VIC 3000 T: 04 8226 8878		Level 5/51 Over St, Cremorne VIC 3101 T: (03) 9429 2111	285, Levens Street, Richmond VIC 3121 T: (03) 9044 5111		
Structural & Civil Engineers		Access Consultant (GDA) 1st Floor, 611 Bay Street, Brighton, VIC 3186 T: +61 9643 3478	FUNCTIONAL ACCESS SOLUTIONS PTY LTD	Travis & Wren Engineer Level 5/51 Over St, Cremorne VIC 3101 T: (03) 9429 2111	RATIO CONSULTANTS	Land Surveyor Suite 9, 305 Mansfield Hwy, Ringwood VIC 3114 T: (03) 9320 4225	JCA
Services Engineer Level 2/500 Cover St, Cremorne VIC 3121 T: (03) 9428 7847	WRAP ENGINEERING	Building Surveyor Level 1, 100 Exhibition Street, Melbourne VIC 3003 T: 03 9855 7899	COBUS	Landscape Architect 34 Bloor St, Collingwood VIC 3066 T: 03 708 1310	ACRE	Adrian 204 Victoria Street, Richmond VIC 3121 T: 03 9429 4885	JOHN PATRICK LANDSCAPE ARCHITECTS

Client Name	Title
GREEK ORTHODOX ARCHDIOCESE OF AUSTRALIA	LEVEL 01 SITE PLAN

Contractor Name	Checked By	Drawn By	Scale	Rev	Sheet No.
	BK	AV	1:200	A	B-TP05

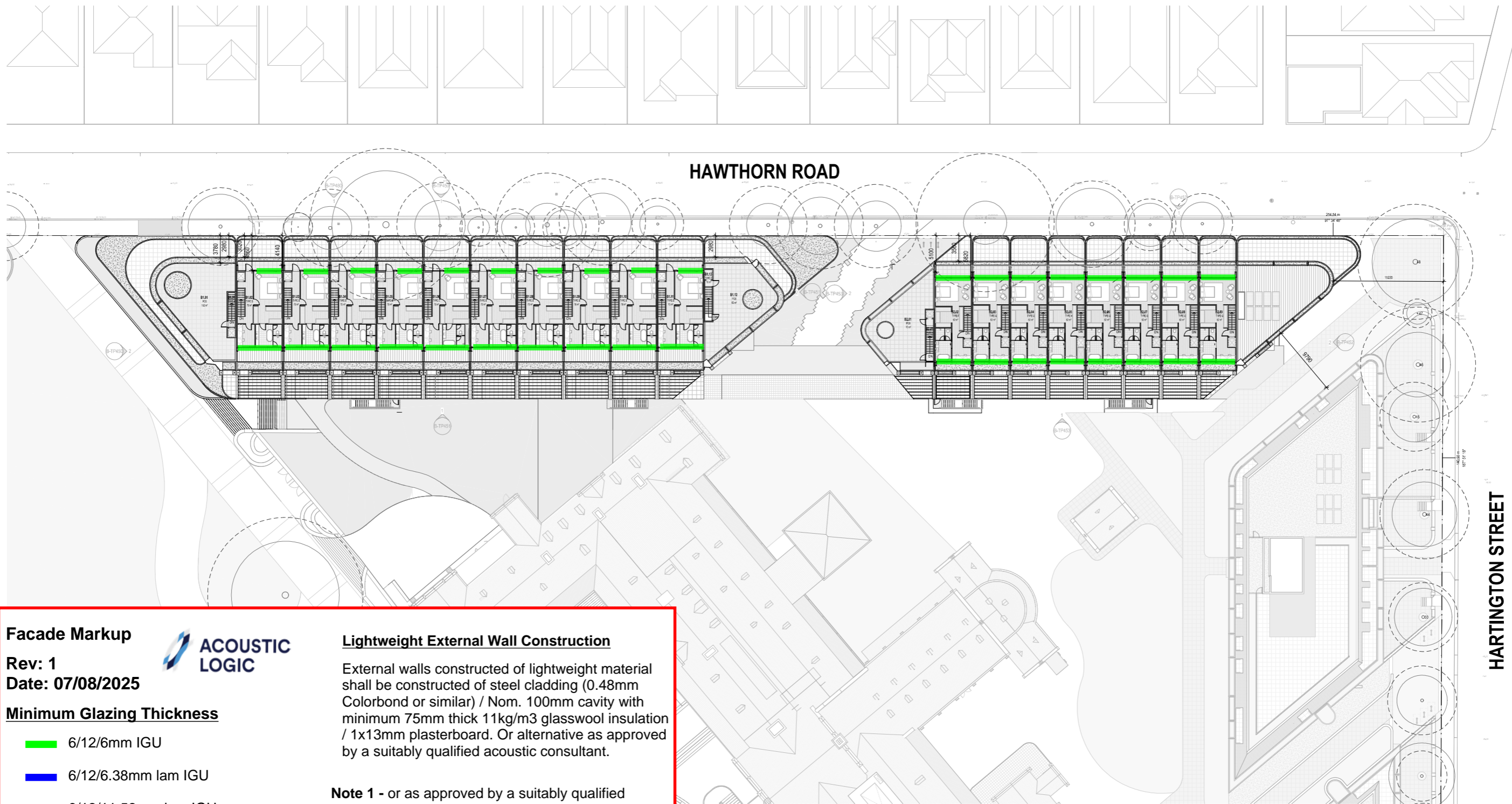
Project No.	Client Name	Title
22-004	GREEK ORTHODOX ARCHDIOCESE OF AUSTRALIA	LEVEL 01 SITE PLAN



Client Name	Title
GREEK ORTHODOX ARCHDIOCESE OF AUSTRALIA	LEVEL 01 SITE PLAN

Project No.	Client Name	Title
22-004	GREEK ORTHODOX ARCHDIOCESE OF AUSTRALIA	LEVEL 01 SITE PLAN

Checked By	Drawn By	Scale	Rev	Sheet No.
BK	AV	1:200	A	B-TP05



Facade Markup

Rev: 1
Date: 07/08/2025



Minimum Glazing Thickness

- █ 6/12/6mm IGU
- █ 6/12/6.38mm lam IGU
- █ 6/12/11.52mm lam IGU

Roof Construction

Roof shall be constructed: Minimum 0.48mm Colorbond or similar / minimum 200mm cavity with 75mm thick 11kg/m3 glass wool insulation / 1x13mm plasterboard.

Masonry External Wall Construction

External walls constructed of masonry/precast construction will not require further acoustic upgrade.

Lightweight External Wall Construction

External walls constructed of lightweight material shall be constructed of steel cladding (0.48mm Colorbond or similar) / Nom. 100mm cavity with minimum 75mm thick 11kg/m3 glasswool insulation / 1x13mm plasterboard. Or alternative as approved by a suitably qualified acoustic consultant.

- Note 1** - or as approved by a suitably qualified acoustic consultant.
- Note 2** - All glazing to contain Q-Ion bulb seals External doors and awning windows to contain multi-point latching
- Note 3** - Roof construction shall be min 150mm concrete slab. Final construction TBC architectural design review and acoustic review.

SUSTAINABILITY MANAGEMENT PLAN

01. IDENTIFY FAVORABLE ROOF AREAS TO BE DIRECTED TO A SOLAR-LIGHT PENETRATED CANOPIES CONNECTED TO ALL TOILETS AND LANDSCAPE IRRIGATION.
02. TERRACES (INCLUDING PLANTERS) TO BE DIRECTED INTO RANGING INTO TOTALING 37% MINIMUM 120MM DEEP PARASOLS WITH SHOWN OF EXTENDED DETENTION.
03. SECURE RESIDENTIAL SPACES 22 RESIDENTIAL VECTOR SPACES

GENERAL NOTES - SITE

- SITE**
01. DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL DOCUMENTATION AND OTHER RELATED DRAWINGS.
 02. SEPARATE UNDERGROUND SERVICES. THE CONTRACTOR WILL LOCATE ALL SERVICES ON SITE PRIOR TO COMMENCEMENT OF WORK.
 03. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR ROAD PAVING DETAIL AND LEVELS.
 04. IDENTIFY UNDERGROUND SERVICES WITH REFERENCE TO PROPOSED STORMWATER COLLECTION AND ON-SITE STORAGE HAVE BEEN SHOWN DASHED.
 05. CONTRACTOR TO CONFIRM ALL EXISTING SERVICE LOCATIONS.
 06. PROPERTY BOUNDARY AND FOOTPATH LEVELS ARE TO BE REBATED TO THE ORIGINAL LEVELS AS DEFINED BY VEC/MAJOR LOCAL AUTHORITY.
 07. ALL DRAWINGS PENETRATING FOOTINGS OR ANY OTHER CONCRETE OR MASONRY WORK ARE TO BE REBATED TO ALL FOR SETTLEMENT OF STRUCTURE AND/OR GROUND MOVEMENT (TYPICAL HEAVE AND CRACK OUTLINED BY GEOTECHNICAL ENGINEERING SOIL REPORT).
 08. LANDSCAPING AS PER LANDSCAPE ARCHITECTS DESIGN UNLESS OTHERWISE NOTED. SPOT LEVELS SHOWN ON SITE PLAN ARE INDICATIVE AND SHOULD BE READ IN CONJUNCTION WITH LANDSCAPE ARCHITECTS DOCUMENTATION AND DETAILS.
- TREE PROTECTION**
10. PRIOR TO COMMENCEMENT OF WORKS, SET UP A TREE PROTECTION ZONE (TPZ). TREE PROTECTION ZONES ARE TO BE IN ACCORDANCE WITH THE ARBORIST REPORT. TREE PROTECTION PLAN AND AS PER TREE PROTECTION MEASURES MAY INCLUDE FENCING, MULCH OR GROUND PROTECTION AND MUST BE IN PLACE FOR THE DURATION OF THE WORKS.
 11. TREE PROTECTION ZONES ARE INDICATIVELY SHOWN WITH DASHED LINES AND ARE TO BE CALCULATED IN ACCORDANCE WITH AS 4873:2009 AND INCLUDE AREAS ABOVE AND BELOW GROUND.
 12. AVOID ANY WORKS IN THE TREE PROTECTION ZONE AND DISRUPT ANY EXISTING ROOTS AND CONSTRUCTION WORKS UNDERTAKEN WITHIN THE TREE PROTECTION ZONE DO NOT CAUSE DAMAGE TO A TREE. THE FOLLOWING ACTIVITIES MUST BE RESTRICTED OR PROHIBITED WITHIN THE TREE PROTECTION ZONE, UNLESS APPROVED BY AN ARBORIST AND/OR COUNCIL.

REV	ISSUE	DATE
A	FOR REVIEW	06/08/2025

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Project Management	HUB PROPERTY GROUP	Fire Engineer	SQUARE 1 ENGINEERING	Town Planner	RATIO CONSULTANTS	ESD Consultant	GW
Level 2/3 Naxos St, Cremorne VIC 3121 T: (03) 9691 1611		Colin Vukobrat, Suite 1, Level 9/230 Fribourg La Melbourne, VIC 3000 T: 04 8226 8878		Level 5/5 Dower St, Cremorne VIC 3121 T: (03) 9429 2111	285, Levens Street, Richmond VIC 3121 T: (03) 9044 5111		

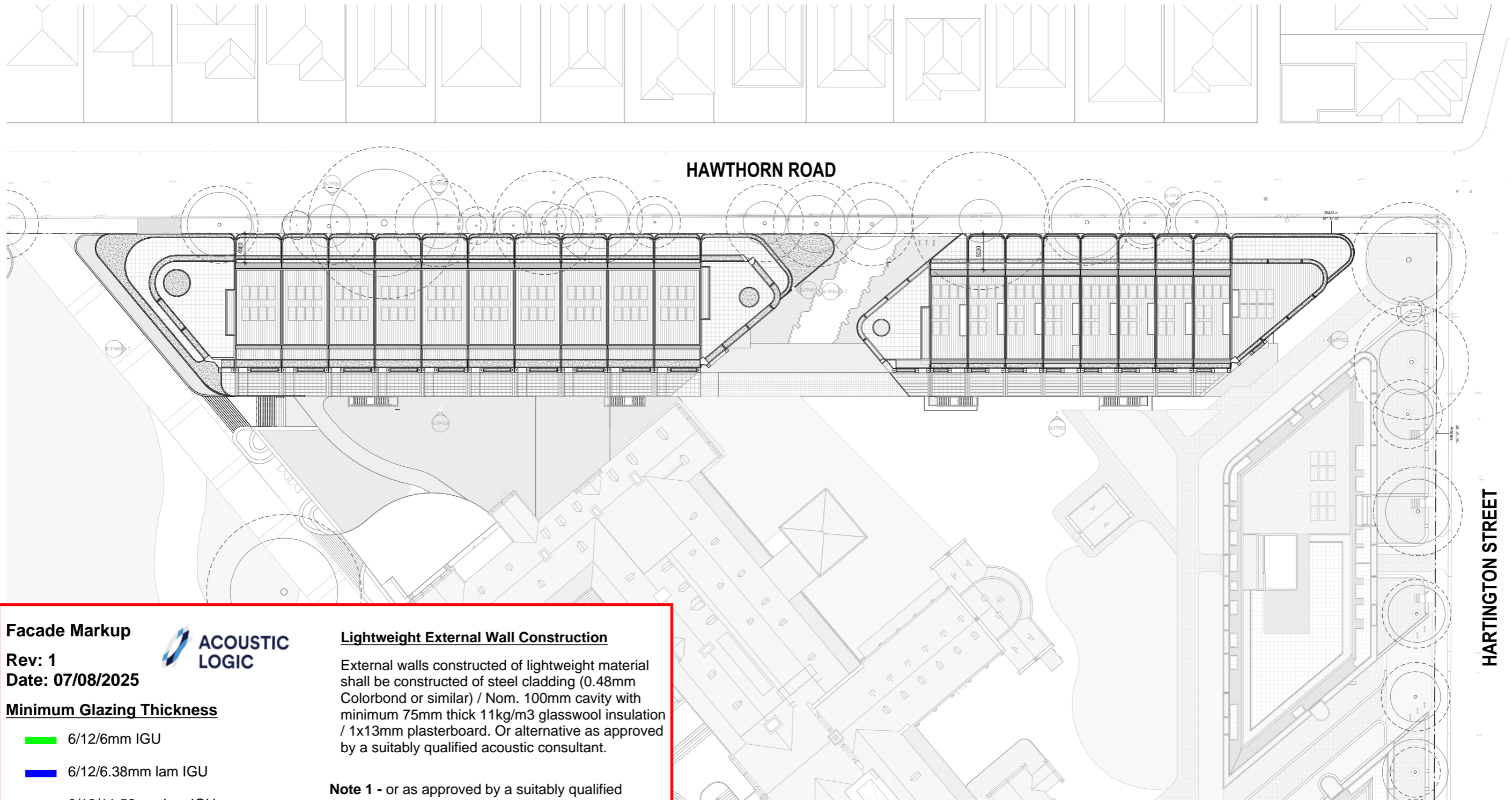
Structural & Civil Engineers	Access Consultant (DDA)	Functional Access Solutions Pty Ltd	Trails & Waste Engineer	RATIO CONSULTANTS	Land Surveyor	JCA
Level 2/500 Cover St, Cremorne VIC 3121 T: (03) 9428 7847	1st Floor, 611 Bay Street, Brighton, VIC 3186 T: +61 0843 3478		Level 5/5 Dower St, Cremorne VIC 3121 T: (03) 9429 2111	Suite 9, 305 Mansfield Hwy, Ringwood VIC 3134 T: (03) 9320 4225		

Services Engineer	WRAP ENGINEERING	Building Surveyor	COBUS	Landscape Architect	ACRE	Adriatic	JOHN PATRICK LANDSCAPE ARCHITECTS
Level 2/500 Cover St, Cremorne VIC 3121 T: (03) 9428 7847		34-Brown St, Coleridge VIC 3006 VIC 3003 T: 03 9655 7699		34-Brown St, Coleridge VIC 3006 VIC 3003 T: 03 708 1305		204 Victoria Street, Richmond VIC 3121 T: 03 9429 4865	

CONTRACTOR NAME	CLIENT NAME	TITLE
	GREEK ORTHODOX ARCHDIOCESE OF AUSTRALIA	LEVEL 02 SITE PLAN



ADDRESS	PROJECT NO.	CHECKED BY	DRAWN BY	SCALE	REV	SHEET NO.
7 HARTINGTON STREET, NORTHCOE	22-004	BK	AV	1:200	A	B-TP054



Facade Markup

Rev: 1
Date: 07/08/2025



Minimum Glazing Thickness

- █ 6/12/6mm IGU
- █ 6/12/6.38mm lam IGU
- █ 6/12/11.52mm lam IGU

Roof Construction

Roof shall be constructed: Minimum 0.48mm Colorbond or similar / minimum 200mm cavity with 75mm thick 11kg/m3 glass wool insulation / 1x13mm plasterboard.

Masonry External Wall Construction

External walls constructed of masonry/precast construction will not require further acoustic upgrade.

Lightweight External Wall Construction

External walls constructed of lightweight material shall be constructed of steel cladding (0.48mm Colorbond or similar) / Nom. 100mm cavity with minimum 75mm thick 11kg/m3 glasswool insulation / 1x13mm plasterboard. Or alternative as approved by a suitably qualified acoustic consultant.

- Note 1** - or as approved by a suitably qualified acoustic consultant.
- Note 2** - All glazing to contain Q-Ion bulb seals
- External doors and awning windows to contain multi-point latching
- Note 3** - Roof construction shall be min 150mm concrete slab. Final construction TBC architectural design review and acoustic review.

SUSTAINABILITY MANAGEMENT PLAN

01. NON-TRAFFICABLE ROOF AREAS TO BE DIRECTED TO A GULLY. LIFE MAINWATER DRAIN CONNECTED TO ALL TOILETS AND LANDSCAPE IRRIGATION.
02. TERRACES (INCLUDING PLANTER) TO BE DIRECTED INTO RANGING INTO DRAINING 37mm MINIMUM 150MM DEEP PARAPETS WITH DRAIN OF EXTENDED DETENTION.
03. SECURE RESIDENTIAL SPACES 22. RESIDENTIAL VECTOR SPACES

GENERAL NOTES - SITE

- SITE**
01. DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL DOCUMENTATION AND OTHER RELATED DRAWINGS.
 02. SEPARATE UNDERGROUND SERVICES. THE CONTRACTOR WILL LOCATE ALL SERVICES ON SITE PRIOR TO COMMENCEMENT OF WORK.
 03. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR ROAD PAVING DETAIL AND LEVELS.
 04. IDENTIFY UNDERGROUND SERVICES WITH REF TO PHOTOGRAPHY/STORMWATER 05. STORAGE AND ON-SITE STORAGE HAVE BEEN SHOWN DASHED.
 06. CONTRACTOR TO CONFIRM ALL EXISTING SERVICE LOCATIONS.
 07. PROPERTY BOUNDARY AND FOOTPATH LEVELS TO BE REBATED TO THE ORIGINAL LEVELS AS DEFINED BY VEC/MAAS AND/OR LOCAL AUTHORITY.
 08. ALL DRAINAGE PENETRATING FOOTINGS OR ANY OTHER CONCRETE OR MASONRY WORK ARE TO BE REBATED TO ALL FOR SETTLEMENT OF STRUCTURE AND/OR GROUND MOVEMENT (TYPICAL HEAVE AND CRIP OBTAINED BY GEOTECHNICAL ENGINEERING SOIL REPORT).
 09. LANDSCAPING AS PER LANDSCAPE ARCHITECTS DESIGN UNLESS OTHERWISE NOTED. SPOT LEVELS SHOWN ON SITE PLAN ARE INDICATIVE AND SHOULD BE READ IN CONJUNCTION WITH LANDSCAPE ARCHITECTS DOCUMENTATION AND DETAILS.
- TREE PROTECTION**
10. PRIOR TO COMMENCEMENT OF WORKS, SET UP A TREE PROTECTION ZONE (PTZ). TREE PROTECTION ZONES ARE TO BE IN ACCORDANCE WITH THE ARBORIST REPORT. TREE PROTECTION PLAN AND AS APPLICABLE PROTECTION MEASURES MAY INCLUDE FENCING, MULCH OR GROUND PROTECTION AND MUST BE IN PLACE FOR THE DURATION OF THE WORKS.
 11. TREE PROTECTION ZONES ARE INDICATIVELY SHOWN WITH DASHED LINES AND ARE TO BE CALCULATED IN ACCORDANCE WITH AS 4810:2009 AND INCLUDE AREAS ABOVE AND BELOW GROUND.
 12. AVOID ANY WORKS IN THE TREE PROTECTION ZONE AND DISRUPT ANY EXISTING ROOTS AND CONSTRUCTION WORKS UNDERTAKEN WITHIN THE TREE PROTECTION ZONE DO NOT CAUSE DAMAGE TO A TREE. THE FOLLOWING ACTIVITIES MUST BE RESTRICTED OR PROHIBITED WITHIN THE TREE PROTECTION ZONE, UNLESS APPROVED BY AN ARBORIST AND/OR COUNCIL.



REV	ISSUE	DATE
A	FOR REVIEW	06/08/2025

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OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS AND ALL DRAWING CONTENT MUST BE HONORED ON SITE PRIOR TO ANY WORK. IN THE EVENT THAT THERE ARE ANY ERRORS OR DISCREPANCIES IN THE DRAWINGS, THE CONTRACTOR MUST CONTACT OUR OFFICE PRIOR TO COMMENCEMENT OF WORKS.

Project Management
Level 2/3 Naxos St, Camerra VIC 3121
T: (03) 901 1011

Structural & Civil Engineers

Services Engineer
Level 2/300 Cover St, Camerra VIC 3121
T: (03) 9428 7847

HUB PROPERTY GROUP

Fire Engineer
Cadeo Vicus, Suite 1, Level 9/200 Fribourg La Melbourne, VIC 3000
T: (03) 9429 8878

Access Consultant (DDA)
1st Floor, 611 Bay Street, Brighton, VIC 3186
T: +61 03 9443 3473

Building Surveyor
Level 4, 100 Exhibition Street, Melbourne VIC 3003
T: (03) 9655 7899

SQUARE 1 ENGINEERING

FUNCTIONAL ACCESS SOLUTIONS PTY LTD

Trails & Waste Engineer
Level 6/55 Owen St, Camerra VIC 3121
T: (03) 9429 3111

Landscape Architect
34 Brown St, Coleridge VIC 3006
T: (03) 7018 3100

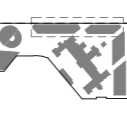
Town Planner
Level 6/55 Owen St, Camerra VIC 3121
T: (03) 9429 3111

RATIO CONSULTANTS

ESD Consultant
285, Levens Street, Richmond VIC 3121
T: (03) 9044 5111

Land Surveyor
Suite 9, 305 Mansfield Hwy, Ringwood VIC 3134
T: (03) 9320 4225

Arboret
204 Victoria Street, Richmond VIC 3121
T: (03) 9429 4855



CLIENT NAME
GREEK ORTHODOX ARCHDIOCESE OF AUSTRALIA

CONTRACTOR NAME

TITLE
ROOF SITE PLAN

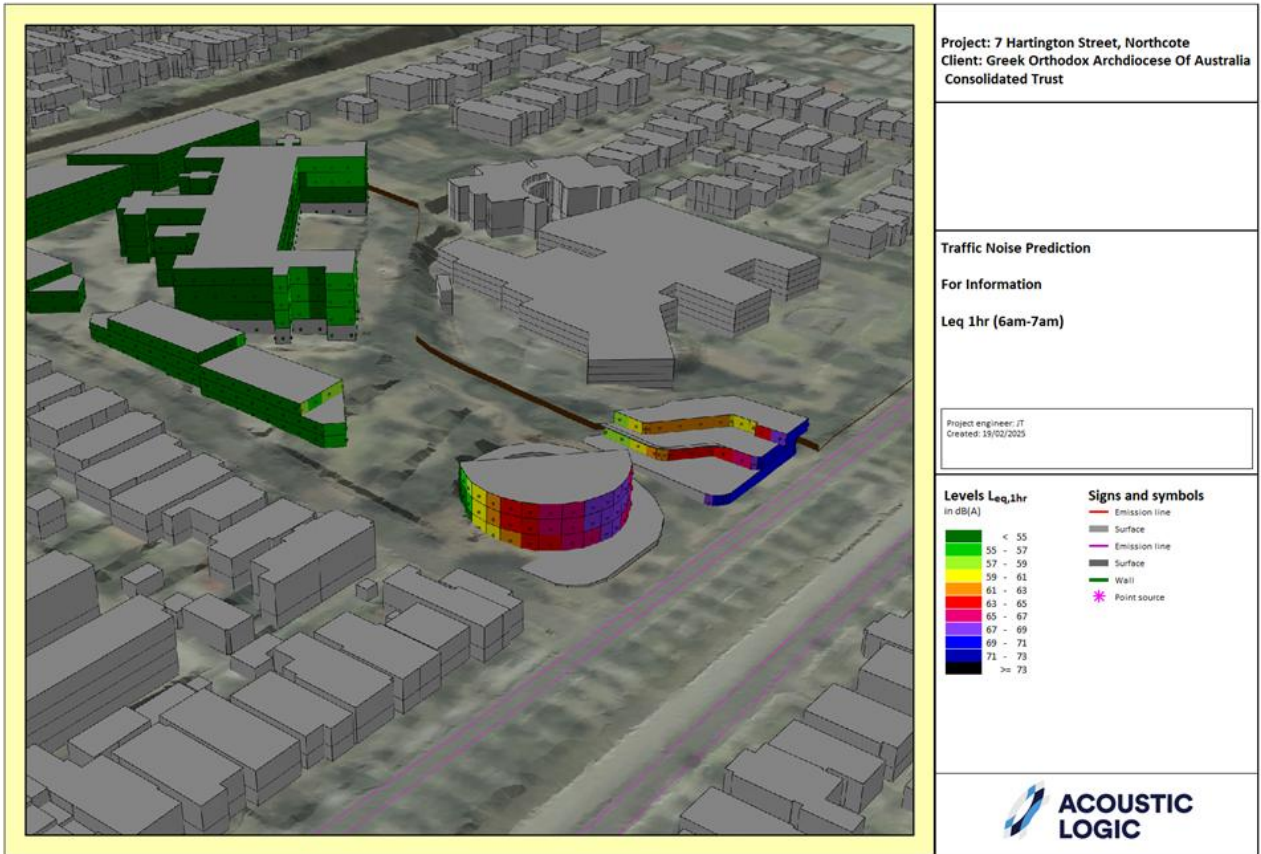
ADDRESS
7 HARTINGTON STREET, NORTHCOTE

PROJECT NO.
22-004

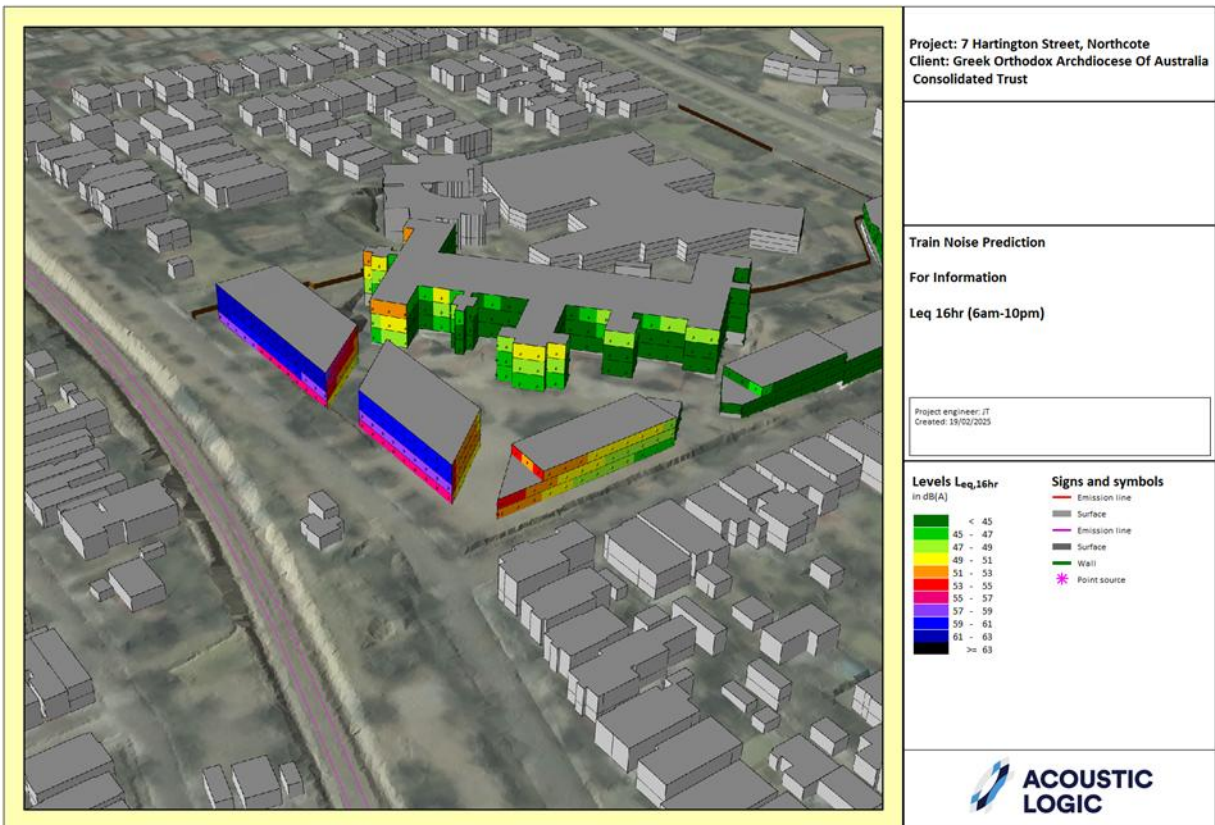
APPENDIX 2 – NOISE MODELLING GRAPHICS

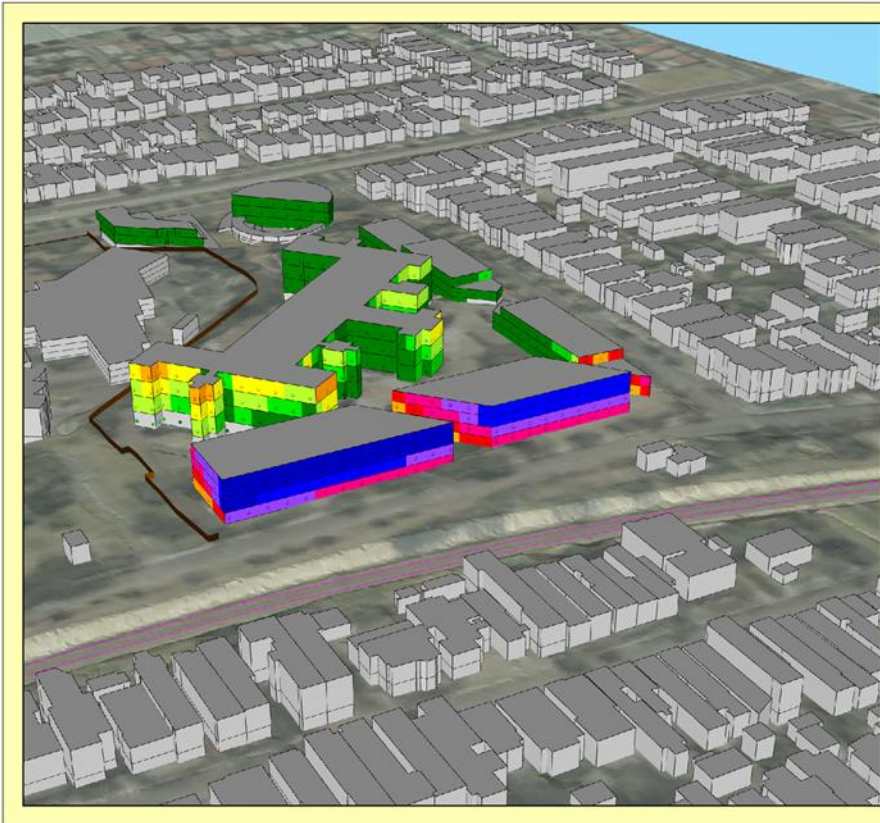
12.1 TRAFFIC (ST GEORGES ROAD)





12.2 RAIL NOISE (DAY PERIOD – 18 HOUR LEQ)





Project: 7 Hartington Street, Northcote
Client: Greek Orthodox Archdiocese Of Australia Consolidated Trust

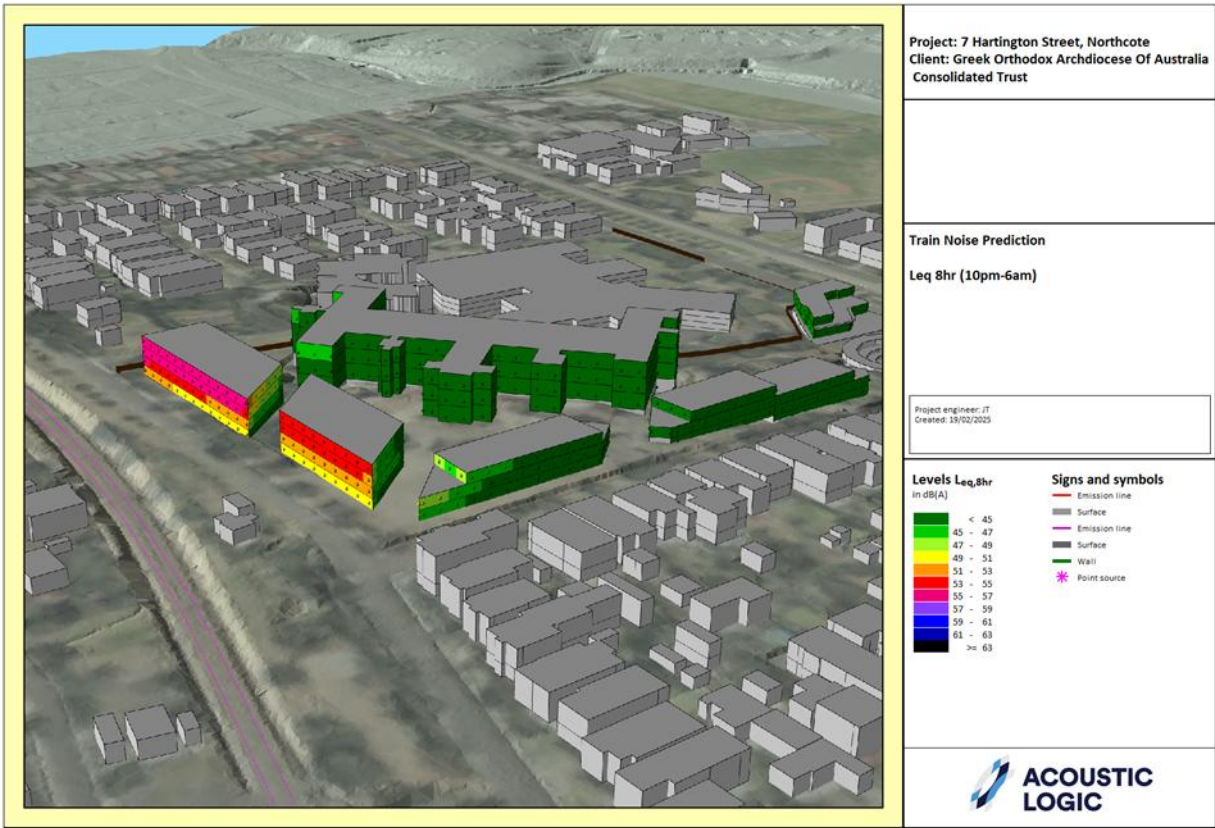
Train Noise Prediction
For Information
Leq 16hr (6am-10pm)

Project engineer: JT
 Created: 15/02/2025

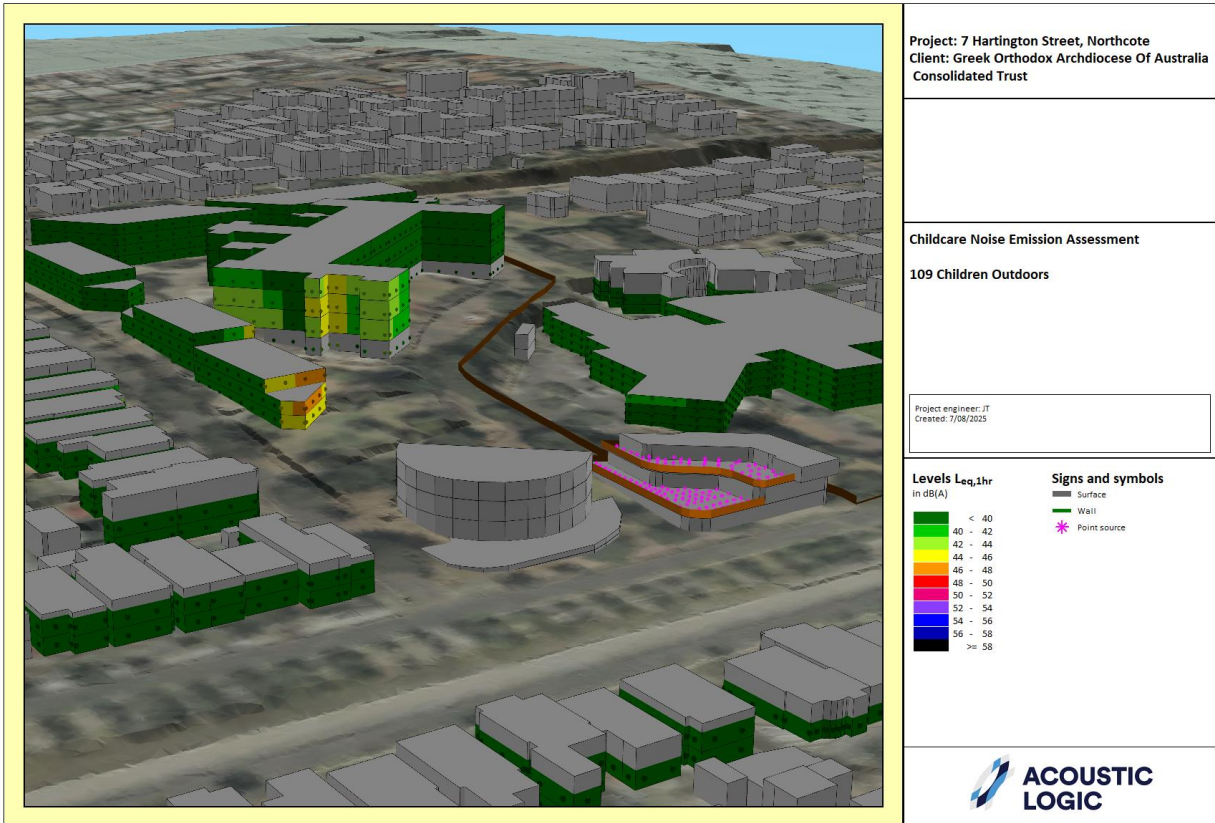
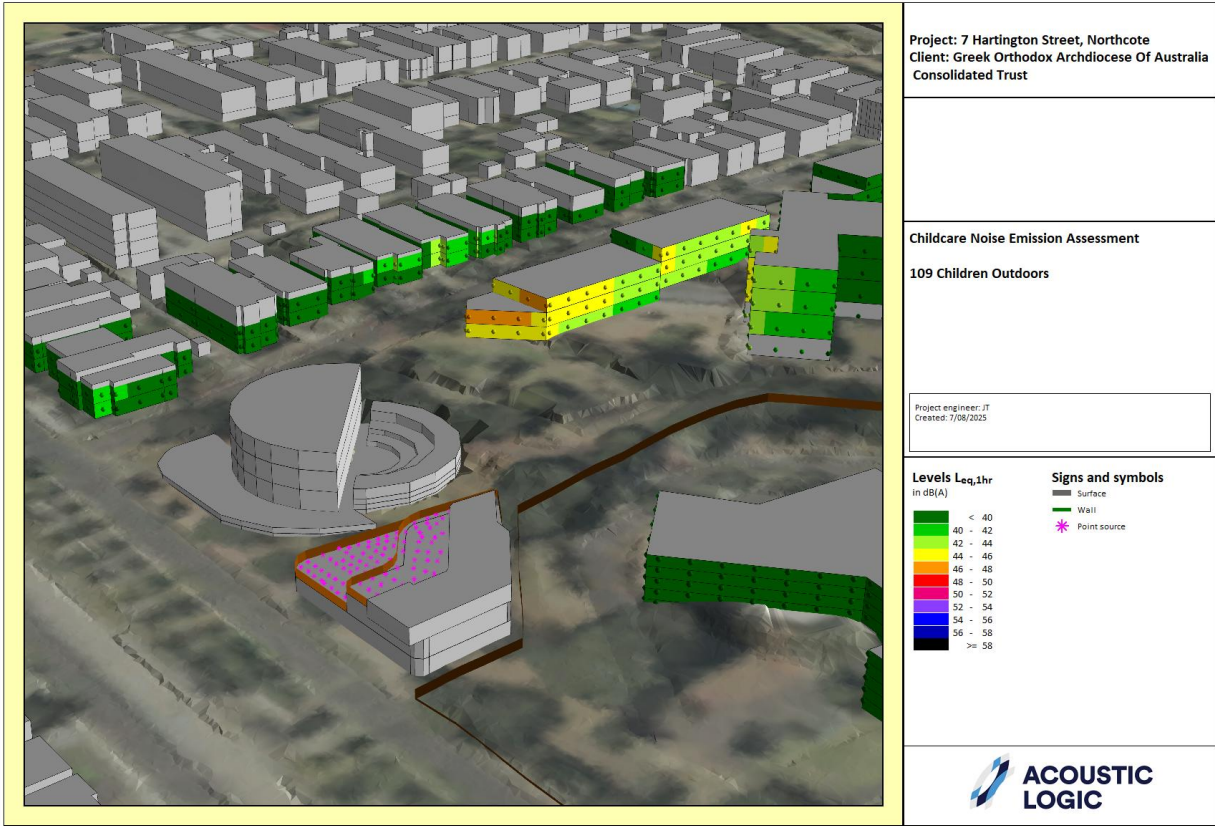
Levels Leq,16hr in dB(A)	Signs and symbols
< 45	— Emission line
45 - 47	■ Surface
47 - 49	— Emission line
49 - 51	■ Surface
51 - 53	■ Wall
53 - 55	✱ Point source
55 - 57	
57 - 59	
59 - 61	
61 - 63	
>= 63	

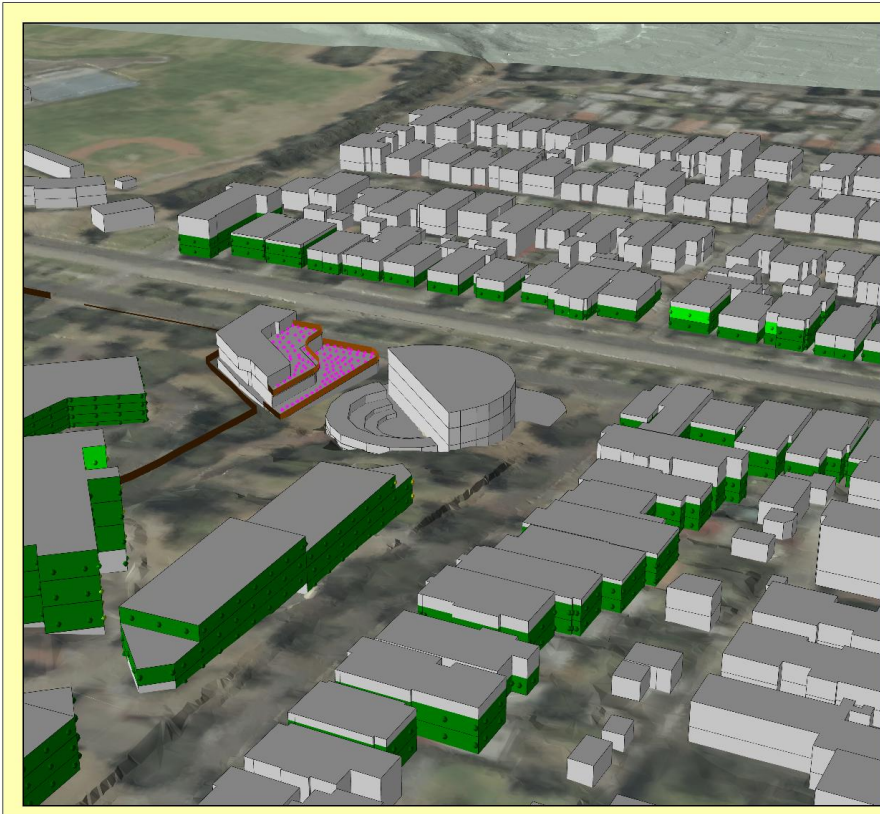


12.3 RAIL NOISE (NIGHT PERIOD – 8 HOUR LEQ)



12.4 CHILDCARE NOISE EMISSION PREDICTION

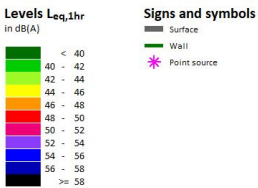




Project: 7 Hartington Street, Northcote
 Client: Greek Orthodox Archdiocese Of Australia
 Consolidated Trust

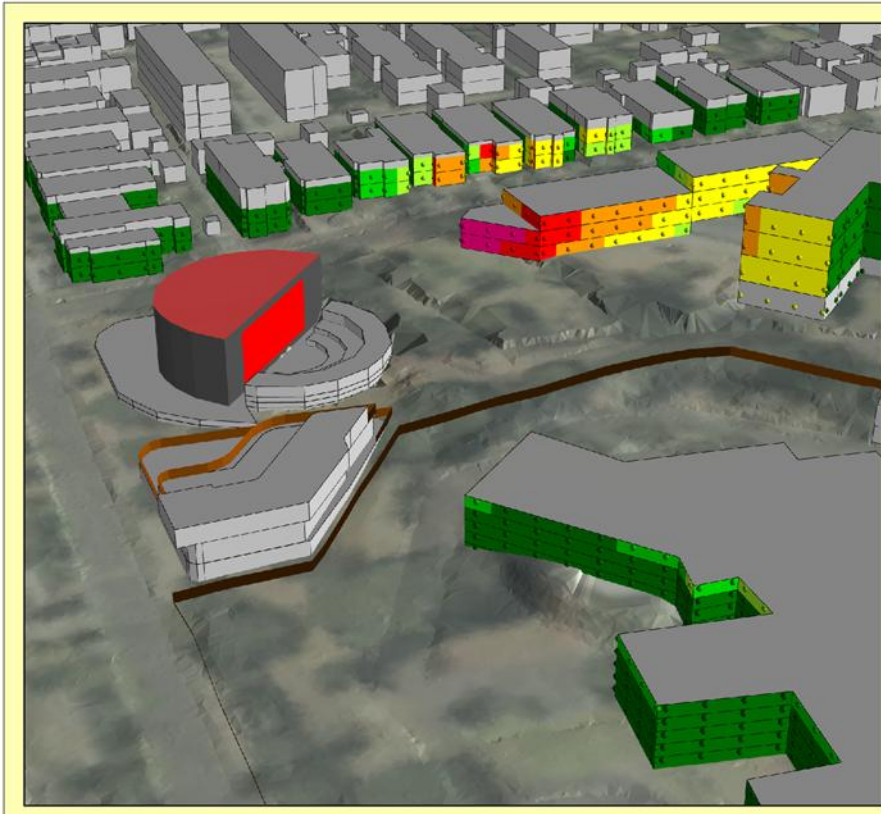
Childcare Noise Emission Assessment
 109 Children Outdoors

Project engineer: JT
 Created: 7/08/2025



12.5 THEATRE NOISE EMISSION PREDICTION



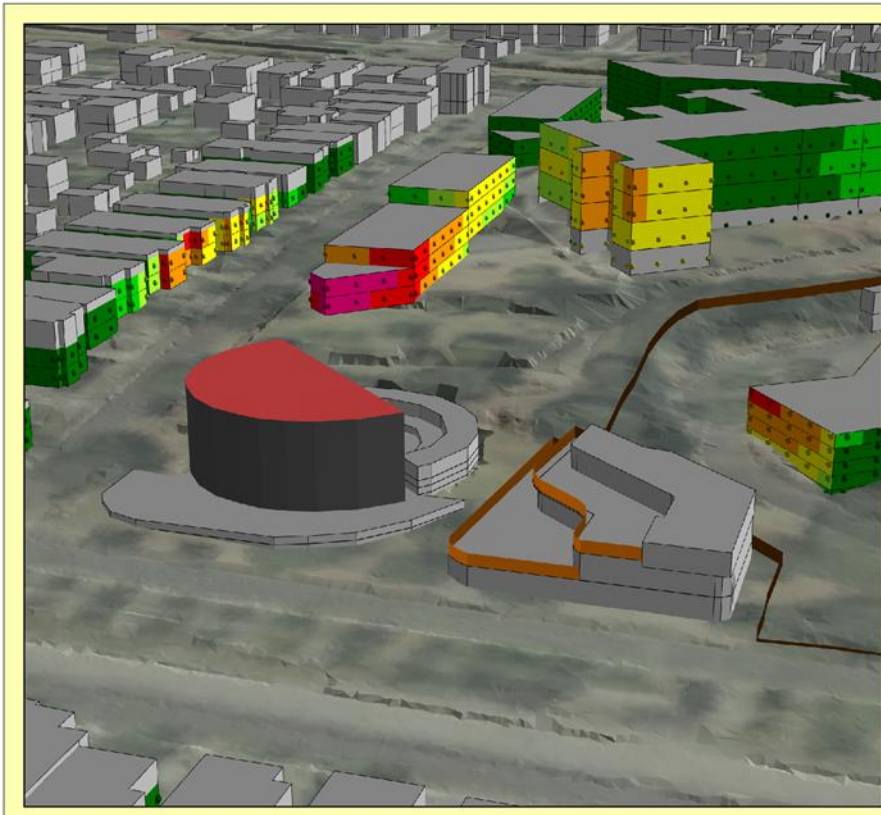


Project: 7 Hartington Street, Northcote
 Client: Greek Orthodox Archdiocese Of Australia Consolidated Trust

Theatre Music Noise Prediction

Project engineer: JT
 Created: 06/08/2025

Levels Leq,1hr in dB(A) 	Signs and symbols
---------------------------------------	------------------------------



Project: 7 Hartington Street, Northcote
 Client: Greek Orthodox Archdiocese Of Australia Consolidated Trust

Theatre Music Noise Prediction

Project engineer: JT
 Created: 06/08/2025

Levels Leq,1hr in dB(A) 	Signs and symbols
---------------------------------------	------------------------------



APPENDIX 3 – TRAIN NOISE LEVELS

Train Pass-By	Line	Measured Noise Levels dB(A) L_{eq}
Location 5	Outbound	61
	Inbound	68
	Outbound	60
	Inbound	69
	Outbound	58
	Inbound	65
	Outbound	63
	Inbound	65
	Outbound	63
	Inbound	67
Location 6	Outbound	63
	Inbound	66
	Outbound	61
	Inbound	66
	Outbound	67
	Inbound	68
	Outbound	61
	Inbound	64
	Outbound	73
	Inbound	66

APPENDIX 4 – SITE PHOTOS



Microphone

Figure 7 – Monitoring Location 1



Microphone

Figure 8 – Monitoring Location 2



Microphone

Figure 9 – Monitoring Location 3



Microphone

Figure 10 – Monitoring Location 4



Microphone

Figure 11 – Attended Measurement Location 5



Microphone

Figure 12 – Attended Measurement Location 6