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URPS

290 Unley Road Hyde Park Development

Noise Assessment Report

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1 Introduction

Vipac Engineers and Scientists (Vipac) was engaged to conduct an acoustic assessment of the proposed 5-story development at 290 Unley Road, Hyde Park, SA 5061. The subject development is primarily residential, with a café on the ground level facing onto Unley Road.

This report presents the environmental noise criteria and impact assessment on neighbouring properties, providing early phase recommendations relating to noise mitigation for the project.

2 References

[1] South Australian *Environment Protection (Commercial and Industrial Noise) Policy 2023*, Environment Protection Authority (SA)

[2] The Planning & Design Code, SA (The Code)

[3] Guidelines for the Use of the Environment Protection (Commercial and Industrial Noise) Policy 2023, Environment Protection Authority (SA)

[4] Environment Protection Act 1993, Government of South Australia (The Act)

[5] Ministerial Building Standard 010 – Construction requirements for the control of external sound, 2023 (MBS 010)

[6] Architectural documentation, provided by SMFA, dated 26/8/24.

[7] Prediction of Noise from Small to Medium Sized Crowds, Paper Number 133, Proceedings of ACOUSTICS 2011, M.J. Hayne, J.C. Taylor, R.H. Rumble and D.J. Mee

3 Background

The proposed development is located at 290 Unley Road, Hyde Park consisting of 2,3 and 4 bedroom apartments, on floors 1-4. Each apartment will contain a balcony, with the total balcony area of approximately 110 m^2 per level. Undercroft carparking for the residents, with a total of 15 carpark spaces, is located on the ground floor.

A café is located on the ground floor, located on the Unley Rd side of the development. The café is not expected to have significant noise generated by music, with only ambient and background music within the venues and no external speakers. No carparking is allocated for the café.

Details of mechanical services have not been determined at this stage of the project. Assumptions made with regard to mechanical services are detailed within this report and should be re-assessed in future stages of the project.

Figure 3-1 details the zonings of the site and the location of the development relative to the surrounding road network and existing buildings.

The nearest residential receiver locations are to the east of the site, with the nearest commercial receivers on the adjacent site to the south. Commercial receivers are also located to the north and east, over Esmond Street and Unley Road respectively.

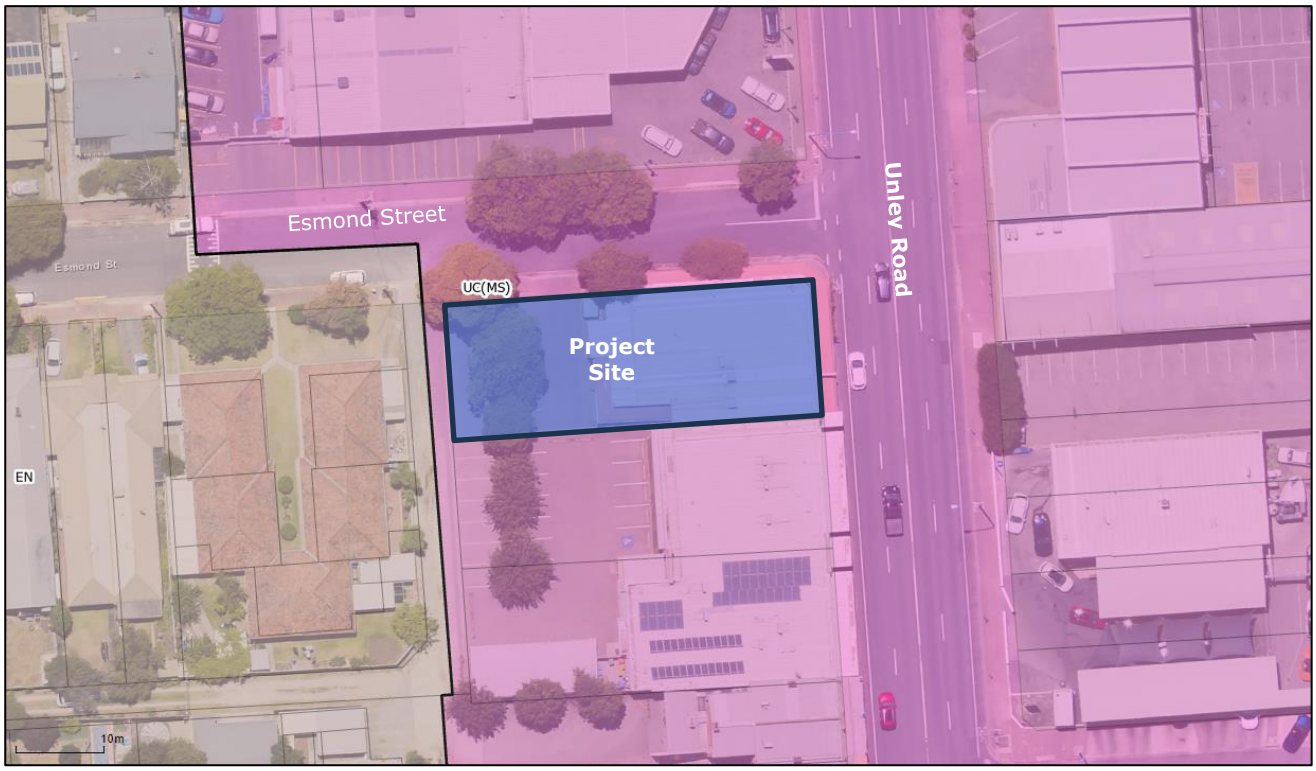


Figure 3-1: Location of Proposed Development Relative to Surrounding Roads and Buildings.

4 Planning and Design Code

4.1 Subject Site

With reference to the Code, the site is located within the "*Urban Corridor (Main Street)*" zone. The relevant desired outcome is outlined in Table 4-1.

Table 4-1: Relevant Desired Outcome – Urban Corridor (Main Street), UC(MS)

Desired Outcome	
DO1	A safe, walkable and vibrant shopping, entertainment and commercial main street precinct with an active day and evening economy supported by medium density residential development.
DO2	Built form positively contributing to: a) a streetscape that is visually interesting at human-scale comprising articulated buildings with a high level of fenestration and balconies oriented towards the street b) a fine-grain public realm comprising buildings with active frontages that are designed to reinforce the street rhythm, that consider the facades, articulation and massing of existing buildings and any spaces between them, and provide narrow tenancy footprints at ground level.

4.2 Adjacent Land

The nearest residential NSRs are located within the "*Established Neighbourhood, EN*" zone with the relevant desired outcome detailed in Table 4-2.

Table 4-2: Relevant Desired Outcome – Established Neighbourhood, EN

Desired Outcome	
DO1	A neighbourhood that includes a range of housing types, with new buildings sympathetic to the predominant built form character and development patterns.
DO2	Maintain the predominant streetscape character, having regard to key features such as roadside plantings, footpaths, front yards, and space between crossovers.

4.3 Interface Between Land Uses

Relevant Assessment Provisions relating to the noise are detailed in Table 4-3 below.

Table 4-3: Relevant Performance Outcomes – General Development Policy

Interface between Land Uses	
PO 4.1 Development that emits noise (other than music) does not unreasonably impact the amenity of sensitive receivers (or lawfully approved sensitive receivers).	DTS/DPF 4.1 Noise that affects sensitive receivers achieves the relevant Environment Protection (Commercial and Industrial Noise) Policy criteria.
PO 4.2 Areas for the on-site manoeuvring of service and delivery vehicles, plant and equipment, outdoor work spaces (and the like) are designed and sited to not unreasonably impact the amenity of adjacent sensitive receivers (or lawfully approved sensitive receivers) and zones primarily intended to accommodate sensitive receivers due to noise and vibration by adopting techniques including: a) locating openings of buildings and associated services away from the interface with the adjacent sensitive receivers and zones primarily intended to accommodate sensitive receivers b) when sited outdoors, locating such areas as far as practicable from adjacent sensitive receivers and zones primarily intended to accommodate sensitive receivers c) housing plant and equipment within an enclosed structure or acoustic enclosure d) providing a suitable acoustic barrier between the plant and / or equipment and the adjacent sensitive receiver boundary or zone.	DTS/DPF 4.2 None are applicable.
PO 4.4 External noise into bedrooms is minimised by separating or shielding these rooms from service equipment areas and fixed noise sources located on the same or an adjoining allotment.	DTS/DPF 4.4 Adjacent land is used for residential purposes.
PO 4.5 Outdoor areas associated with licensed premises (such as beer gardens or dining areas) are designed and/or sited to not cause unreasonable noise impact on existing adjacent sensitive receivers (or lawfully approved sensitive receivers).	DTS/DPF 4.5 None are applicable.

4.4 Noise And Air Emissions Overlay

The development site is located within the Noise and Air Emissions Overlay and Unley Road is a scheduled Type B Road, therefore the site is subject to the requirements of Ministerial Building Standard 010 (MBS 010) [5], with regard to traffic noise intrusion.

MBS 010 provides minimum construction specifications and methods to control noise ingress to residential buildings for occupant amenity. Assessment of the development with regard to the requirements of MBS 010 will be completed in a future stage of the development and has not been detailed within this report.

5 Environmental Noise Assessment Criteria

5.1 Continuous Noise

Noise from the proposed development is subject to the provisions of the *Environment Protection (Commercial and Industrial Noise) Policy 2023 (Noise EPP)* [1]. The Noise EPP outlines noise goals which provide one method for demonstrating compliance with the General Environmental Duty under section 25 of the Environment Protection Act 1993 (the Act) [4]:

- Demonstrating compliance with the Indicative Noise Levels (INLs) applicable to the site, as determined in accordance with Clause 5 of the Noise EPP and the Planning & Design Code SA provisions; or
- Demonstrating that noise emissions do not exceed the background noise level (L_{A90}), plus 5dB(A).

Indicative Noise Levels have been calculated for each noise sensitive receiver (NSR), in accordance with the procedure outlined in Clause 5 of the Noise EPP [1] and the relevant provisions of the Planning & Design Code (The Code) SA [2]. The site and nearby commercial NSRs are located within the Urban Corridor (Main Street), UC(MS), zone with *residential* and *commercial* land usage. Nearby residential NSRs are located in an Established Neighbourhood, EN, zone with *residential* land usage.

In accordance with Clause 5 of the Noise EPP [1], the following indicative noise factors are applicable:

- Urban Corridor (Main Street): *Residential, Commercial* land use
  - Day (7:00am – 10:00pm) – 57 dB(A)
  - Night (10:00pm – 7:00am) – 50 dB(A)
- Established Neighbourhood: *Residential* land use
  - Day (7:00am – 10:00pm) – 52 dB(A)
  - Night (10:00pm – 7:00am) – 45 dB(A)

For new developments, Part 5, Clause 19(3) of Noise EPP [1] states the following:

> *"(3) A predicted source noise level (continuous) for the development should not exceed the relevant indicative noise level less 5 dB(A)"*

Therefore, the applicable indicative noise levels (INL) are an average of the indicative factors (as per EPP Part 1, Clause 5, Subclause 5) mentioned above, minus 5 dB(A), as presented in Table 5-1, below:

Table 5-1: Indicative Noise Levels

NSR's	INL Noise Criteria, dB(A)	
	Day (7am-10pm)	Night (10pm – 7am)
Residencial NSR's	50	43
Commercial NSR's	52	45

Additionally, in accordance with Part 3 Division 14 of the Noise EPP 2023 [1], if noise emitted by the development contains any tones, modulation, impulsive or low frequency characteristics, the continuous noise level of the noise source must be adjusted as follows:

- Noise containing 1 characteristic – 5dB(A) penalty added to source continuous noise level,
- Noise containing 2 characteristics – 8dB(A) penalty added to source continuous noise level,
- Noise containing 3 or 4 characteristics – 10dB(A) penalty added to source continuous noise level.

An intermittent noise penalty is applicable during the Night assessment period from (10pm – 7am).

5.2 Maximum Noise Levels

In accordance with Part 5, Clause 19(4) of Noise EPP [1], the maximum noise level from the development, during the Night assessment period (10pm – 7am), is 60dB(A).

6 Environmental Noise Assessment

The environmental noise levels at nearby noise sensitive receiver locations have been predicted and assessed at the nearby noise sensitive receiver locations.

6.1 Noise Sources

6.1.1 Mechanical Services

Mechanical design for the project is yet to commence at this stage of the project, however, for the purpose of preliminary assessment, Table 6-1, provides indicative noise sources for mechanical services.

Table 6-1: Noise Source Levels

Noise Source	Sound Power Level, L_W (per unit), dB(A)	Octave Band centre frequency (Hz), dB							
		63	125	250	500	1k	2k	4k	8k
External air-conditioning condenser units	68 dB(A)	71	71	69	65	62	60	55	50
Exhaust fans (café kitchen)	74 dB(A)	82	81	77	68	68	63	64	60

The modelled mechanical services are indicative only and it is recommended that an additional review is completed, following final equipment selection, to verify compliance with the environmental noise criteria.

6.1.2 Café Venue (Ground Floor)

Vipac understands part of the ground floor of the development is to be used as a café.

The occupancy of the café was assumed to be up to 40 patrons. Outdoor seating is not expected, due to the proximity to Unley Road, however the assessment incudes provision for around 8 patrons. Noise from outdoor patrons has been modelled as point sources (x 4), each with a continuous sound power level of 65dB(A). This level is consistent with the noise level of a conversation at normal speech level (Hayne et al [7]). The café was assumed to be closed between 10pm and 7am.

It is assumed that any music noise would consist of only background music providing ambience within the venue and there will be no external speakers.

6.1.3 Carpark Noise

Given the close proximity to Unley Road (and Esmond Street) noise from carpark activities (such as vehicle movements, doors closing, engines starting) are expected to be significantly lower, and of a similar nature, to the existing noise levels on the site.

6.2 Recommendations

Vipac recommends the following:

- Where the external air-conditioning condenser units are located on balconies, the condensers should be located on the Unley Road and Esmond Street sides of the building, and not on the side closest to the residents at 1 Esmond Street. A review of noise from mechanical services should be conducted following final equipment selection.
- Any commercial waste collection from the undercroft car park area should be restricted to 7am – 10pm, to avoid potential exceedance of the maximum noise criteria.

6.3 Assessment

Vipac have reviewed the noise sources and determined that no penalty for noise characteristics (tonality, impulsiveness etc) is expected to be applicable.

Based on the assumptions and recommendations stated within this report, the predicted environmental noise levels are predicted to comply with the requirements of the Environmental Protection (Commercial and Industrial Noise) Policy [1].

7 Summary

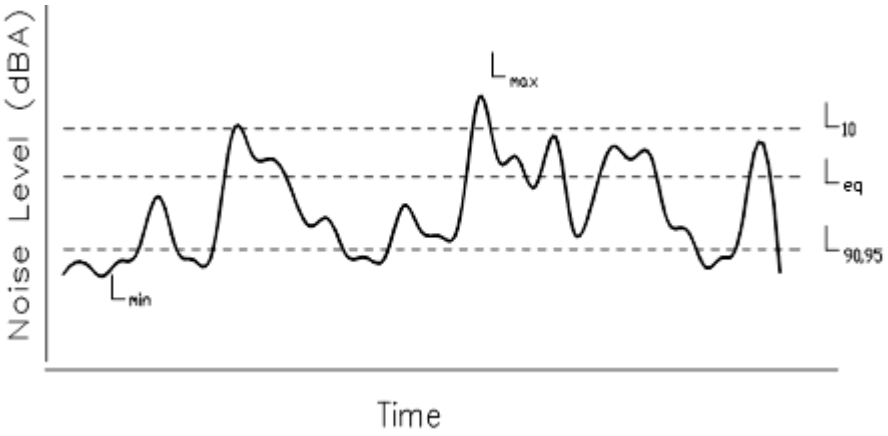
Vipac Engineers and Scientists was engaged to conduct an acoustic assessment of the proposed development at 290 Unley Road, Hyde Park 5061.

An assessment of noise emissions from the proposed development was undertaken with reference to the Planning and Design code. With implementation of the recommendations and review of mechanical services plant and equipment during the detailed design phase of the project, the impacts of noise emissions from the development are predicted to comply with the indicative noise levels as set out in the Noise EPP 2023.

The proposed development is capable of meeting the acoustic requirements under the Environment Protection Act 1993 and the requirements under the Planning and Design Code.

Appendix A Glossary of Acoustic Terminology

dB(A)	A-weighted decibels; a unit of measurement of sound pressure level which has its frequency characteristics modified by a filter ("A-weighted") to approximate the frequency response of the human ear.
L_{10} or L_{A10}	The noise level which is equalled or exceeded for 10% of the measurement period. L_{10} is an indicator of the mean maximum noise level and is used in Australia as the descriptor for intrusive noise, usually in dB(A).
L_{90} or L_{A90}	The noise level which is equalled or exceeded for 90% of the measurement period. L_{90} is an indicator of the mean minimum noise level and is used in Australia as the descriptor for background or ambient noise (usually in dB(A)).
L_{eq} or L_{Aeq}	The equivalent continuous noise level for the measurement period. L_{eq} is an indicator of the average noise level, usually in dB(A).
L_{max} or L_{Amax}	The maximum noise level for the measurement period (in dB(A))
EPP	SA EPA Environmental Protection (Commercial and Industrial Noise) Policy.
Day	Daytime assessment period according to EPP (7am to 10pm).
Night	Night-time assessment period according to EPP (10pm to 7pm).
Broadband noise	Noise comprising energy distributed across a large range of frequencies.
Impulsive noise	Noise characteristic defined in EPP as having a dominant characteristic consisting of a single pressure peak, or a sequence of such peaks, or a single burst with multiple pressure peaks whose amplitude decays with time, or a sequence of such bursts.
Intermittent noise characteristic	Noise characteristic defined in EPP as a noise has an intermittent characteristic if the noise level increases noticeably and rapidly, and holds the higher level for a noticeable period, on at least 2 occasions during the assessment period.
Low frequency noise characteristic	Noise characteristic defined in EPP as having a characteristic that dominates the overall noise with content between 20 hertz and 250 hertz.
Modulating noise characteristic	Noise characteristic defined in EPP as having a modulating characteristic if the noise level has a noticeable and cyclic variation in frequency or amplitude.
Tonal noise characteristic	Noise characteristic defined in EPP as having a perceptible and definite pitch or tone.



Note: *The subjective reaction or response to changes in noise levels can be summarised as follows*:

A 3 dB(A) increase in sound pressure level is required for the average human ear to notice a change; a 5 dB(A) increase is quite noticeable and a 10 dB(A) increase is typically perceived as a doubling in loudness.