

21 December 2021

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Yarra City Council
PO Box 168
RICHMOND 3121

Attention: Mary Osman

Dear Mary

147-161 Elizabeth Street, Richmond Development Application Acoustic Review

SLR Consulting Pty Ltd (SLR) has been retained by the City of Yarra to provide a review of the acoustic assessment report for the proposed development at 147-161 Elizabeth Street, Richmond.

Details of the report are as follows.

- Title: Richmond Social Housing – Stage 1, Schematic Design report
- Reference: Rp 001 R02 20201034
- Date: 10 November 2021
- Prepared for: Kerstin Thompson Architects
- Prepared by: Marshall Day Acoustics (MDA)

The report has been prepared to support the planning application for the project and to provide preliminary design advice.

1 Background Information

(Section 1 to 3 the acoustic report)

The acoustically significant aspects of the proposal are identified as:

- Residential development comprising 4 separate buildings, 4 to 8 levels in height + basement
 - Common basement carparking
 - Ground level non-residential spaces and apartments
 - Apartments on all other levels
- The subject development is in a residential area.
- Site observations and measurements have not been conducted to confirm potential noise impacts to the subject development. However likely potential noise impacts are identified as:
 - Moderate levels of road traffic noise from Elizabeth, Victoria and Church Streets.

- Noise from existing commercial uses on Victoria Street (some of the proposed buildings will overlook these premises). MDA note that these businesses should comply with environmental noise legislation at existing surrounding residential premises.

SLR Comments: *The proposal and site context have been identified.*

With respect to road traffic noise impacts, we agree that these are likely to be moderate given that Elizabeth Street is a reasonably minor through road, and the subject buildings will be at least 80 m from the nearest major road (Victoria Street).

With respect to commercial noise impacts, the subject buildings will be further from nearest commercial premises than existing apartments (which are also multilevel). Given these factors, we are satisfied that specific consideration of potential impacts is probably not essential.

The proposal is part of the Victoria's Big Housing Build and is seeking to obtain the available credit points under The Green Star Design and As-Built v1.3.

2 Noise impacts to the subject development (road traffic noise)

2.1 Criteria

(Sections 4.1, 5.3.1, 6.2 and 14.1 of the report)

The project is not within an 'influence zone' as defined in Standard D16 and is therefore not required to comply with the internal noise levels set out in D16.

However, the project is seeking to obtain the Green Star credit point 10.1 Internal Noise Levels. This credit point will be obtained if internal ambient noise levels are not greater than 5 dBA above the lower figure in the relevant AS/NZS2107:2016 ranges, as provided in Table 2. This level is 40 dB L_{Aeq} for all habitable rooms. MDA state that the Standard does not define the measurement interval, but that they recommend assessing the typical worst case 30 minute period of the measurement interval to the identified criteria.

The criteria are to be met by noise ingress to a building, and noise generated within the building itself by non-occupant sources. Occupant services is further defined in the footnote to Table 9 of the report as excluding user controlled mechanical plant such as air conditioning and exhaust fans.

SLR Comments:

Council typically recommend that the Standard D16 criteria of 40 dB $L_{Aeq,16hr}$ in habitable rooms (day/evening), and 35 dB $L_{Aeq,8hr}$ in bedrooms (night) are applied to all dwellings impacted by road traffic noise, not just those within a noise influence area.

However, the criteria proposed for this project, being 40 dB $L_{Aeq,30 mins}$ in all habitable rooms, could be expected to be equivalent, or better than, the usual City of Yarra design criteria for road traffic noise (the day/evening criterion of 40 dB $L_{Aeq,30 mins}$ is more onerous than 40 dB $L_{Aeq,16hr}$ and the night criterion of 40 dB $L_{Aeq,30 mins}$ for bedrooms is likely to be comparable to 35 dB $L_{Aeq,16hr}$).

2.2 Quantification of external noise impacts and construction advice for noise control

(Section 6.5 of the report)

External road traffic noise impacts have not been quantified and the report does not include advice for the façade. In Table 4 it is noted that the Green Star levels are likely to be met with conventional glazing systems.

SLR Comments: *We agree that road traffic noise impacts to the site are likely to be moderately low. However, the combination of no actual road traffic noise assessment and no fixed advice for façade treatments is potentially risky. Either external noise impacts should be quantified by measurement and advice provided for addressing them, or reasonably conservative advice should be provided for addressing the likely level of road traffic noise (along with the basis for these conclusions). If it is still concluded that the internal levels are likely to be met with conventional glazing systems, advice should be provided in the report regarding the assumptions around conventional systems (e.g. the glazing and façade wall acoustic ratings assumed in the assessment).*

3 Environmental Noise Limits

(Section 4.3 of the report)

The Noise Protocol Part I limits (previously SEPP N-1) have been determined from the calculated zoning levels and measured background noise levels. The measured background levels are noted to have been conducted by MDA in the vicinity of the subject site. The presented limits are equal to the zoning levels (i.e. background noise is classified as 'neutral').

SLR Comments: *Our calculation of the Noise Protocol Part Zoning Levels are in agreement with MDA's. The details of the background noise measurements used to determine noise limits are not provided in the report. This information should be included for transparency. However, we acknowledge that the background noise levels look reasonable for the area, and that the zoning levels provide reasonable environmental noise limits on this project.*

4 Control of Noise within the Development

4.1 Architectural design criteria

(Sections 6.4 and 8.1 of the report)

The project is proposed to be designed to achieve the Greenstar credit point for Acoustic Separation (Credit 10.3C) and to meet the requirements of the National Construction Code (NCC) / Building Code of Australia (BCA).

The Green Star criteria for airborne acoustic separation are noted to be more onerous than the BCA and are identified as having implication for wall footprints.

SLR Comments: *The presented criteria are correct. From a planning perspective, either of the criteria would be reasonable for the project.*

4.2 Architectural advice

(Sections 9 to 11 of the report)

Advice is provided for wall and floor constructions to comply with the identified design criteria.

SLR Comments: *The provided advice is reasonable and could be expected to achieve compliance with the identified criteria if implemented correctly.*

4.3 Building services noise criteria

(Sections 4.3 and 14 of the report)

Design criteria for noise from project mechanical plant to residential units within the development are provided in Table 9. Noise from non occupant plant (e.g. centralised plant noise through common walls) is proposed to be designed to achieve NR25 (The NR rating systems is a curve and internal levels in all measurement octave bands are required to be below the relevant reference curve. NR25 corresponds approximately to 30 dBA). Higher design levels – NR32 to 38 - are nominated for owner operated equipment such as air conditioners and exhaust fans.

Mechanical plant serving another apartment is noted to be required to be inaudible in any apartment during the night period, in accordance with the EPA Residential Noise Regulations. During the day and evening period, the plant is required to comply with background based targets of 'background + 5 dB'.

Centralised mechanical plant is required to comply with Noise Protocol, Part I limits.

SLR Comment: *The nominated design criteria are appropriate. We note that project related non-occupant mechanical plant (e.g. communal mechanical plant noise entering apartments via common shaft walls and the like) is required to comply with both Green Star / NR25 rating, and the Noise Protocol Part I effective internal noise limits. These limits are equal to the external noise limit, less 20 dB (i.e. 21 dBA on this project). It is not completely clear from the report whether the Noise Protocol Part I limits are proposed to be met by this noise.*

The actual environmental noise limits for apartment air conditioning units are not identified. Background noise monitoring would need to be conducted at the quieter times that the equipment is proposed to operate in order to do this (e.g. late evening period and during the night). However, nuisance noise from this equipment tends to be low risk, and it would be reasonable for the limits to be confirmed, and design advice provided, during the detailed design phase.

4.4 Building services advice

(Section 14.2 of the report)

A detailed review of noise from mechanical plant is proposed to be conducted as the design progresses.

SLR Comments: *It is reasonable to conduct the assessment of noise from this equipment during the detailed design phase.*

4.5 Hydraulic noise criteria

(Section 14.1 of the report)

Criteria for noise from hydraulic equipment, including pumps, water supply and drainage pipes are provided in Table 9. Acoustic separation between hydraulic pipework and apartments is also required to comply with the BCA.

SLR Comment: *The nominated criteria are generally reasonable however we note that noise from any pumps on the project are also required to comply with the Noise Protocol effective indoor limits, being 20 dB less than the external noise limit.*

4.6 Hydraulic noise control advice

(Section 10 of the report)

Advice is provided for controlling noise from hydraulic services.

SLR Comment: *The provided advice is conceptual and can be expected to address most noise from most hydraulic services.*

5 Carpark entry door

(Section 13 of the report)

Advice is provided for controlling noise from the carpark entrance gate. The advice included provision of vibration isolation to the installation and for a review of the design to be conducted prior to installation.

SLR Comment: *The provided advice is reasonable and can be expected to manage noise from the equipment if implemented correctly. We note that specific noise criteria are not provided for the carpark entrance gate, however the equipment falls within the 'intermittent / non-occupant' category in Table 9, for which the nominated criteria is 25 L_{Amax} , dB. This design would provide for a good level of amenity.*

6 Other Matters – Ground Level Non-housing spaces

There are large non-housing spaces on the ground floor of two buildings, and the use of these spaces is not identified on the plans or in the report. There is potential for use of these spaces to generate inappropriate levels of noise and/or vibration. If risky uses are proposed (e.g. gym or café / bar / restaurant operating during the evening / night periods) an acoustic report should be prepared to address potential impacts from the use.

7 Summary

SLR Consulting Australia has reviewed the acoustic report prepared to support the application for a residential development proposed for 147-161 Elizabeth Street, Richmond. The report generally addresses acoustic issues on the project, however we recommend the following changes:

- An explicit assessment of road traffic noise has not been provided. We recommend that road traffic noise is assessed and advice provided or, as a minimum, the consultant nominate conservative façade treatments for addressing the likely level of road traffic noise, and the basis for those conclusions. **The report should be updated with the information.**
- Details of the background noise measurements conducted are not included in the report. While we accept the use of the presented background data for determining Noise Protocol Part I limits for planning purposes, we note noise from the use will need to comply with lower noise limits if they are determined. Background noise levels for the purpose of identifying noise limits in accordance with the EPA Residential Noise Regulations will also need to be determined (either by reference to appropriate existing data or measured). It would be reasonable for the noise limits to be confirmed, and design advice provided, during the detailed design phase.

- The report assesses noise from project mechanical plant to AS/NZS2107 internal levels and it is unclear whether this noise is also proposed to be assessed to the Noise Protocol Part I internal limits (formerly SEPP N-1), which are lower. **The report should be updated to confirm that the Noise Protocol limits will be met on the project for sound transmitted into apartments.**
- If the ground floor non-residential spaces are likely to produce intrusive noise (e.g. gym or café / bar / restaurant operating during the evening / night periods), an acoustic report should be prepared to address potential impacts.

Regards,



Dianne Williams
Principal – Acoustics

Reviewed by JA