

2 May 2025

Joss Constructions
206 East Street
Albury NSW 2640

Attention: Martin Reid

FACADE NOISE LEVEL IMPACTS

Dear Martin

Further to the meeting with Albury City Council on 29th April 2025 we have prepared this explanatory note to provide further clarity in relation to the expected noise levels incident along the south and eastern facades of the proposed apartment building, currently the subject of DA 10.2023.40336.1.

Our reporting to date has detailed the measured noise levels at the site boundary due the operation of the carpark exhaust fans associated with the adjoining shopping centre. Further site measurements and acoustic modelling has subsequently been completed to further inform the design of the development. The purpose of this note is to provide the most up to date information in relation to the expected noise levels at the facade and the acoustic controls likely to be required.

We provide the following summary:

- The southern and eastern facades of the proposed development are subject to noise from carpark exhaust fan(s) associated with the adjacent shopping centre.
- A detailed noise assessment, including attended and unattended measurements (noise logging) was completed at the site to establish environmental noise limits and assess the noise levels of the fans at the site. The assessment indicated that if the EPA *Noise Policy for Industry* noise limits had been applied to the Shopping Centre (for example by a consent condition) they would be significantly exceeded at the site boundary and the proposed apartment building.
- The outcome of the assessment was detailed in Marshall Day Acoustics report No.001 R04, 20230173, *Residential Development, 481-487 Swift Street, Albury, Acoustic Report for Planning Response*, dated 18 November 2024.
- The design of the apartment building was subsequently reconfigured to minimise noise impacts on the facade of the apartment building. This included the following:
 - Increased distance between the building facade and boundary (in the order of 10m)
 - Inclusion of localised parapet walls adjacent to fans to provide screening
 - Inclusion of solid facade elements to the southern elevation of the building
 - Inclusion of curved screening elements to apartment balconies/terraces
 - Changes to apartment layouts to prioritise non-noise sensitive spaces such as bathrooms to the southern portion of apartments
- Additional noise level measurements were carried out at the site to determine the resultant noise level at the proposed building line, both at ground and at elevation. Further modelling also indicated that the fans only operate during the day and evening periods.
- The additional noise measurements at the building line, at ground and at elevation, were used to calibrate a SoundPlanNoise model, to establish the noise levels at each facade location, with the inclusion

of the screening measures detailed above. The noise levels calculated from the model are shown in Figure 1 and Figure 2 attached.

- The SoundPlanNoise model showed that noise from the fans will increase with elevation up the apartment building façade. This is due to the diminishing screening offered by the proposed eastern boundary wall.
- Table 1 provides the expected maximum façade (external) noise levels due to the shopping centre plant. Other locations will also be exposed however these represent the highest of the modelled façade noise levels

Table 1: maximum modelled facade noise levels (shopping centre plant)

Location	Modelled Fan Noise level L_{Aeq}	Comment
Outside dining room eastern window (level 5 and 6)	63 dB	No balcony screening at this location
Outside bedroom, on balcony southeastern window (level 7)	61 dB	Partial screening from curved building element

- As shown in Table 1, the calculated noise levels at the proposed building facade are significantly lower than the boundary noise level previously reported.

The following sections detail the expected noise impact on the proposed apartment building and measures to address the noise impact.

Proposed Room Noise Criteria

Australian/New Zealand Standard AS/NZS 2107:2016 *Acoustics – Recommended design sound levels and reverberation times for building interiors* provides criteria for acceptable internal noise levels for residential dwellings with different recommendations, depending on the location of the building and type of rooms.

Allowing for the classification “Houses and Apartments in inner city areas or entertainment districts” or near major roads AS2107 recommends the following noise criteria for relevant internal spaces.

- Living areas 35 – 45dB L_{Aeq}
- Sleeping areas (night-time) 35 – 40dB L_{Aeq}
- Work areas 35 - 45dB L_{Aeq}

Based on the above, it is recommended that noise from the shopping centre plant not exceed the following levels inside the apartments:

- Living, dining and study areas 40 dB L_{Aeq}
- Sleeping areas (night-time 10pm to 7am) 35 dB L_{Aeq}
- Sleeping areas (7am to 10pm) 40 dB L_{Aeq}

Calculated Internal Noise levels

Based on the worst case examples set out in Table 1 above, Table 2 describes the expected maximum internal noise levels in the event that windows and doors were open as necessary to achieve natural ventilation. Other less exposed locations will be subject to lower noise levels. An allowance of 10 dB is typically made for the reduction of sound levels from outside to inside a habitable room via a window opened to achieve sufficient ventilation to satisfy the Building Code of Australia.

Table 2: Internal noise levels, windows open

Façade Noise (External) L _{Aeq}	Internal Noise level (via open window) L _{Aeq}	Recommended Criteria L _{Aeq}	Exceedance
63 dB (Dining Room example)	53 dB	40 dB	13 dB
61 dB (Bedroom example)	51 dB	35 ¹ dB	16 dB

¹ Assumes fans operate during the night-time hours (our measurements indicate that the fans only operate during day and evening periods)

As noted in the DA report, internal noise levels within the most exposed habitable spaces adjacent the eastern elevation of the building would exceed the noise criteria with the windows open.

In order to achieve the recommended internal noise level criteria, external windows and doors that are exposed to noise from the shopping centre plant would need to be closed. On this basis, it would be necessary to provide alternative means of ventilation to enable occupants to elect to close the windows and doors that are exposed to noise from the shopping centre plant, when required to achieve acceptable internal noise levels.

Acoustic rating for windows

As detailed above, external windows and doors would need to be closed to achieve the noise level criteria within the most exposed habitable spaces. On this basis, the external windows and doors must be selected with appropriate acoustic performance to limit sound transmission.

Based on the calculated external noise levels, window and door systems would be required to achieve a noise reduction in the order of 23-26dB. To achieve this windows and door systems would be required to achieve an acoustic rating in excess of R_w 30. This would be achievable with conventional acoustic rated window and door systems such as the following:

- 10.38mm laminated glass or 6.38/12/6.38 laminated double glazing: R_w 35
- Sliding door suite with 10.38mm laminated glass or 6.38/12/6.38 laminated double glazing: R_w 35

Such systems are readily available, comprising acoustically tested, rated and certified systems by the suppliers. Accordingly, Increased performance can be readily achieved where necessary using conventional and readily available systems.

The above R_w ratings are indicative maxima only and can be reduced in specification in areas not subject to the same level of noise exposure. As the above R_w ratings are only to demonstrate the feasibility of proposed façade controls, they should not be directly incorporated into a future consent condition.

Such systems are readily available, comprising acoustically tested, rated and certified systems by the suppliers. Increased performance can also be readily achieved where necessary using conventional and readily available systems.

Conclusion

It will be necessary to develop an alternative means of ventilation for the affected rooms on the eastern elevation, such that occupants can elect to close windows as required.

It will be necessary to prepare an acoustic specification during the detailed design stage to include with the window and door schedule. Each window and door will require a specific acoustic rating in order to align with the expected noise exposure and the use of the adjacent room. Appropriate acoustic rated systems are however commercially available.

Provided these requirements are incorporated within the building design it is expected that the proposed internal noise criteria can be achieved.

Notwithstanding the above, it is understood that noise control treatment works are proposed to the shopping centre fans. At this stage the expected improvement in noise levels has not been considered our review. As detailed above, a reduction in fan noise levels in the order of 13-16dB would eliminate the need for apartment windows to be closed to achieve the internal noise level criteria.

Yours faithfully

MARSHALL DAY ACOUSTICS PTY LTD



Simon Connolly

Associate

Figure 1: Southern and Western façades

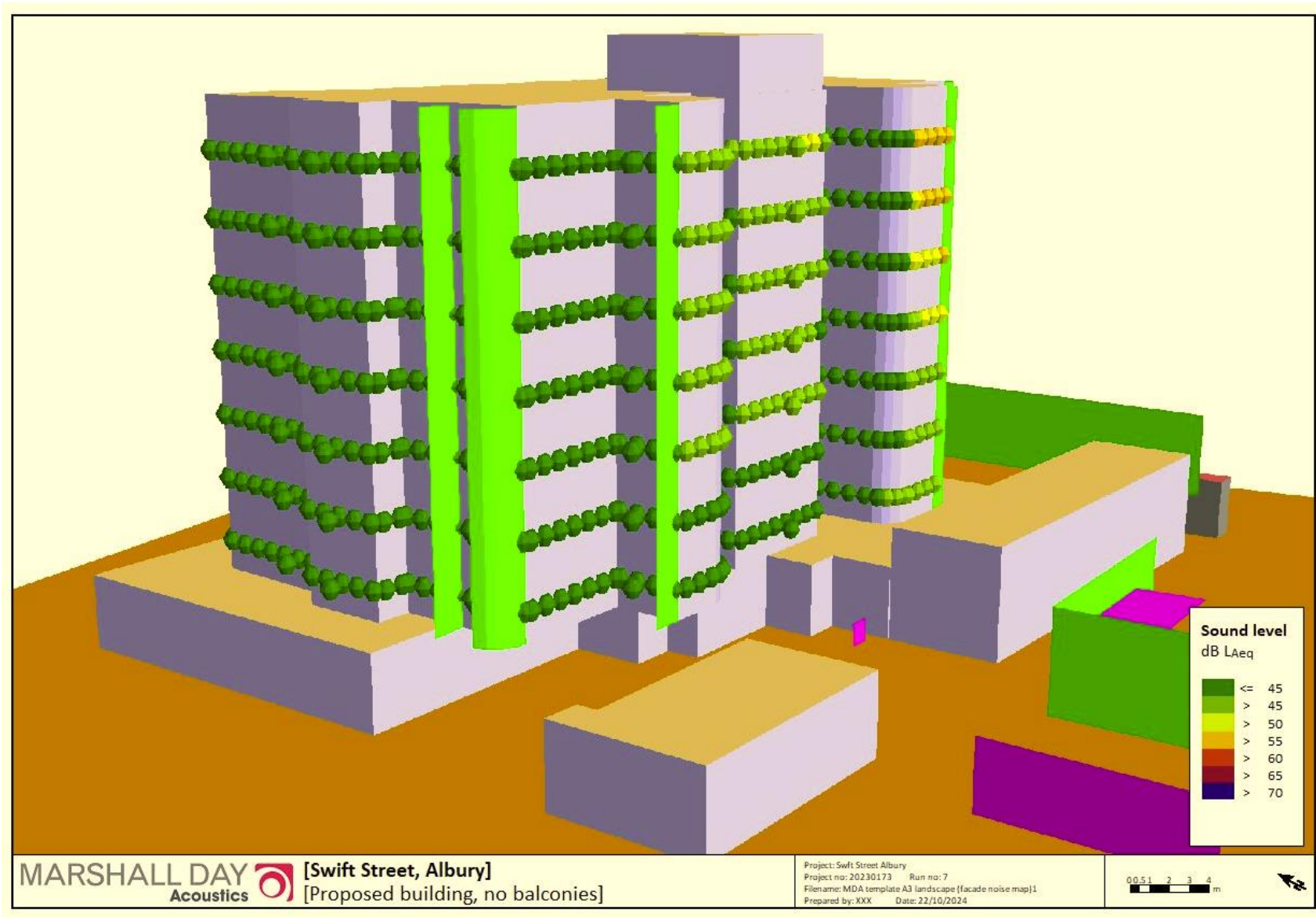


Figure 2: Southern and eastern façades

