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7-9 Nicholson Court, Clayton

Town Planning Report

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1 INTRODUCTION

Acoustic Logic (AL) has been engaged by Pitard 7 Pty Ltd to undertake an acoustic assessment of the proposed residential development located at 7-9 Nicholson Court, Clayton. The assessment will address Standard D16 of Clause 58.04-3 of the planning scheme for the subject site. The following documents have been referenced in our assessment.

Table 1 – Referenced Documents

Author	Document	Date
Pitard Group	Job No.: 2203 Drawing number TP01 to TP15 Rev. A	12 May 2022

2 SITE DESCRIPTION

The subject development is located at 7-9 Nicholson Court, Clayton. It is bounded by Nicholson Court to the east and existing residential dwellings to the north, west and south. The Pakenham/Cranbourne Metropolitan is located approximately 110 metres to the North of the subject site and carries Metro passenger trains, V-Line passenger trains and freight trains.

The proposal is for a five-storey residential development. The proposed building will include single level of basement car parking with residential apartments on ground to level 4. Figure 1 below details the subject site and surrounding environment.

Figure 1: Subject site and surrounding environments (source: Google Maps™)

2.1 LOCAL NOISE SOURCES

Inspection and noise level measurements on site indicate that the dominant noise level impacting the subject site is train noise from Pakenham/Cranbourne Metropolitan Line located approximately 110m to the north.

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 principle 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 ASSESSMENT CRITERIA

4.1 STANDARD D16 AT CLAUSE 58.04-3

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

> *To contain noise sources in developments that may affect existing dwellings.*
>
> *To protect residents from external and internal noise sources.*
>
> ***Standard D16***
>
> *Noise sources, such as mechanical plants should not be located near bedrooms of immediately adjacent existing 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 D3 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 D3 Noise influence area

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

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 consultant 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 and the site context.*

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

1. The development is **not** within 300m of an industrial zone.
2. The development is **not** within 300m of a freeway, tollway or road carrying an AADT >40,000
3. The development is **not** within 80 metres of railway servicing passengers and **is within** 135m of freight train line.
    - The Pakenham/Cranbourne Metropolitan rail corridor is located approximately 110 metres North of the subject development and carries freight trains.

Based on the above, rail noise from Pakenham/Cranbourne Metropolitan rail corridor shall be designed to comply with the Clause 58.04-3 criteria per below.

Table 2 – 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: With external windows and doors closed. Apartments are unfurnished with finished floor

5 NOISE LEVEL MEASUREMENTS

5.1 MEASUREMENT LOCATIONS AND DATE OF MEASUREMENTS

Measurement locations are presented in Figure 2 and detailed below.

- **Measurement Location 1:** Attended rail noise level measurements conducted at the northern façade of 390 Haughton Road approximately 40m from the nearest rail track. The sound level meter microphone was located approximately 1.5 metres above grade and affected by façade reflections with full view of the rail corridor.

5.2 TIME OF MEASUREMENTS

Attended noise level measurements of the rail line at Location 1 were conducted on the 23 June 2022 between 7:30am and 8:00am.

5.3 MEASUREMENT EQUIPMENT

Attended noise measurements were conducted using a Norsonic Nor140 Sound Level Analyser. The equipment was calibrated at the beginning and the end of the measurement using a B&K 4231 calibrator; no significant drift was detected. All measurements were taken on fast response mode.

5.4 MEASUREMENT RESULTS

The measurement results are presented in the tables below.

Table 3 – Attended Train Noise Level Measurements

Location	Period	Measured Noise Levels[1]
Measurement Location 1 - facing Pakenham/Cranbourne Metropolitan rail corridor	Day (6:00-22:00)	60 dB(A)$L_{eq,16hr}$
	Night (22:00-6:00)	55 dB(A)$L_{eq,8hr}$

Note 1: Train noise L_{eq} was derived by measuring the level of 16 train pass-bys and deriving a Sound Exposure Level (SEL). An $L_{eq,16hr}$ and $L_{eq,8hr}$ value then derived from this based on the frequency of the train service during these periods.

6 EVALUATION OF EXTERNAL NOISE INTRUSION

Internal noise levels will primarily be as a result of noise transfer through the windows, doors and roof 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 will not require upgrading.

The predicted noise levels through the windows, doors and roof are discussed below. The predicted noise levels have been based on the expected level and spectral characteristics of the external noise, the area of building elements exposed to traffic 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 and 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 detailed in Table 4.

6.1 RECOMMENDED GLAZING

The glass thicknesses shown in the schedule do not consider 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 below details the minimum R_w performance requirements for the glazing assembly installed. Where open-able windows or sliding doors are installed, the total Rw performance of the system shall not be lower than the values listed in Table below. It is noted that the system supplied shall meet the overall minimum Rw 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 detailed in Table 4.

Table 4 – Minimum External Glazing Requirements / Performance

Location	Required Glazing Construction[1]	Minimum Rw of Installed Window System	Acoustic Seals[2]
All habitable rooms	6mm glass or 6/12/6 IGU	29	Yes

Note 1 – Alternative glazing system may be installed provided they are 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-lon. Bi-parting sliding doors are not acoustically acceptable.

6.2 EXTERNAL WALLS

External walls which incorporate concrete or masonry elements and as such will not require upgrading acoustically. Recommended external lightweight wall construction is provided in the figure below.

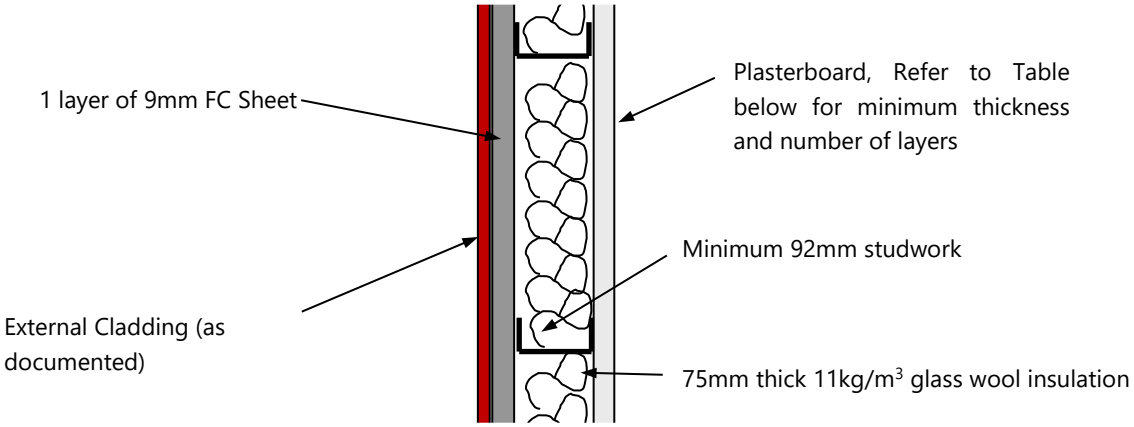

Figure 2 – Lightweight Wall Construction

Table 5 – Minimum External Light Weight Wall Construction

Location	External Wall Construction
Ground to Level 2	1 x 6mm FC Sheet/ 92mm studwork + 75mm thick 11kg/m^3 insulation/ 1 x 13mm Plasterboard
Level 3	External Colorbond Cladding + 1 x 6mm FC Sheet/ 92mm studwork + 75mm thick 11kg/m^3 insulation/ 1 x 13mm Plasterboard
Level 4	External Colorbond Cladding + 1 x 6mm FC Sheet / 92mm studwork + 75mm thick 11kg/m^3 insulation/ 2 x 13mm Plasterboard

Penetrations in walls must be sealed gap free with a flexible sealant. Any ventilation openings in the walls would need to be acoustically treated to ensure compliance with the nominated design criteria.

6.3 ROOF / CEILING CONSTRUCTION

Roof of the proposed dwellings that is of concrete construction will not require upgrading acoustically. Where lightweight roof construction is proposed it shall be constructed as per Figure 4 below:

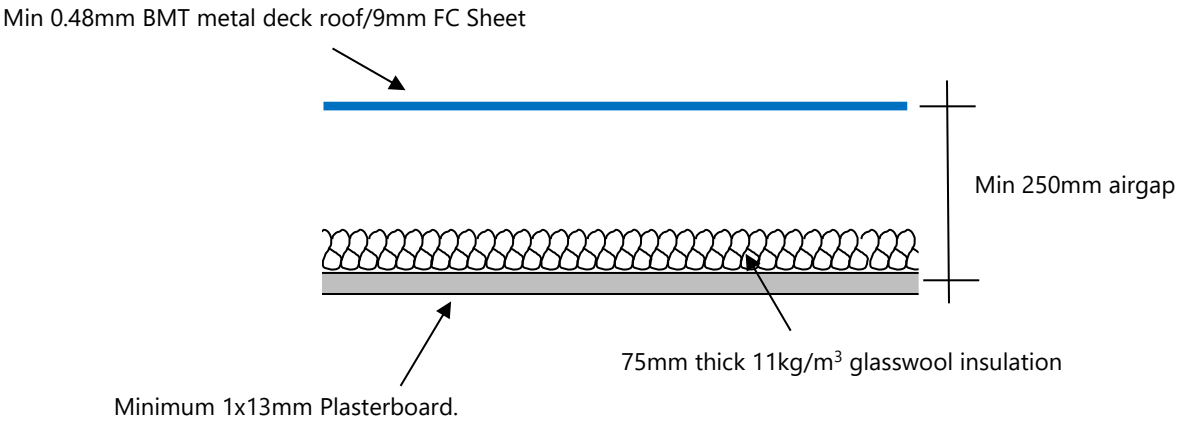

Figure 3 – Lightweight Roof Construction

Penetrations in ceilings (such as for light fittings etc.) must be sealed gap free with a flexible sealant. Any ventilation openings in the ceilings would need to be acoustically treated to maintain the acoustic performance of the ceiling construction.

7 CONCLUSION

This report details our acoustic assessment for the proposed residential development located at 7-9 Nicholson Court, Clayton. Inspection onsite indicated that the dominant noise source onsite was ral noise from the Pakenham/Cranbourne Metropolitan rail corridor. Provided the acoustic treatment recommendations in Section 6 are implemented, compliance with the assessment criteria in Section 5 will be achieved.

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,

Acoustic Logic Pty Ltd
Stanley Sinatra