



**8 December 2021**

Ref: 181598/9468

Avid Residential Estates Pty Ltd  
c/- ADW Johnson Pty Limited  
5 Pioneer Avenue  
Tuggerah, NSW 2259

## **RE: ACOUSTIC ASSESSMENT – WATERFORD COUNTY STAGE 71 & 72, CHISHOLM**

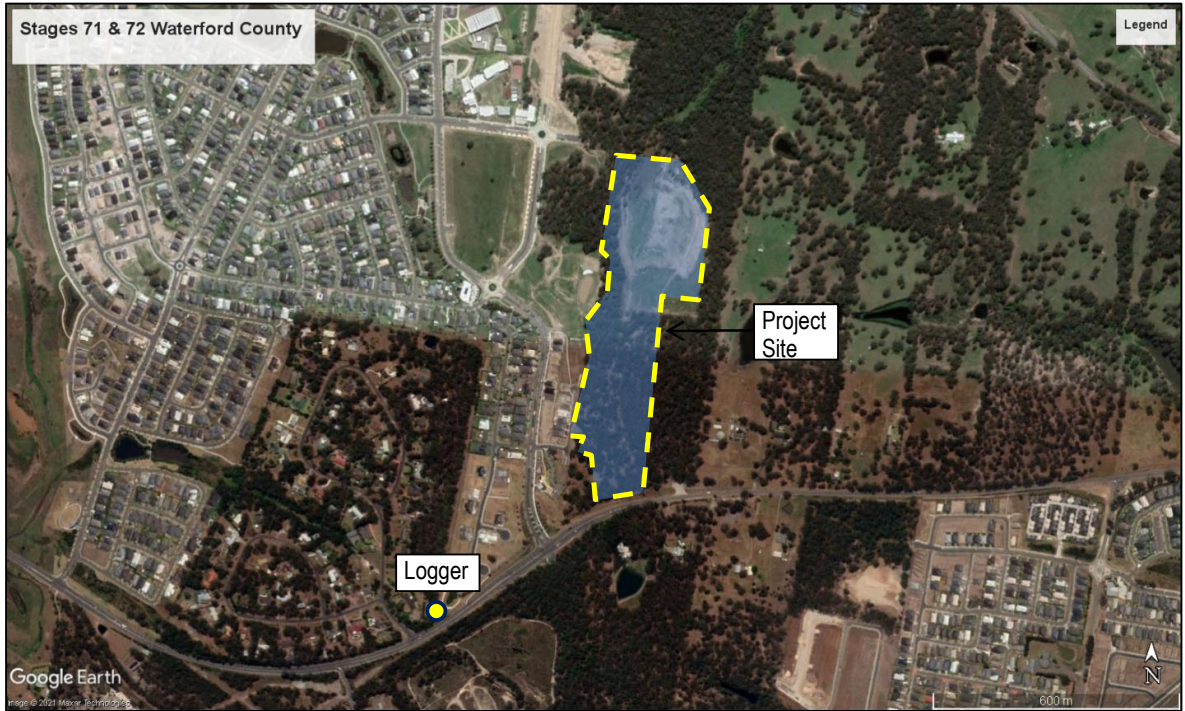
This letter report presents the results of a noise impact assessment conducted for a multiple lot housing subdivision adjacent to Settlers Boulevard and Raymond Terrace Road, Chisholm. The subject lots constitute Stage 71 and 72 of the Waterford County residential subdivision. The assessment has been conducted to accompany a development application to Maitland City Council. Spectrum Acoustics has conducted traffic noise impact assessments for several subdivisions along Raymond Terrace Road and Council's typical requirement is that the develop must achieve the internal traffic noise levels specified in Clause 102 of the Infrastructure SEPP (2007).

### **AMBIENT NOISE LOGGING**

Ambient noise levels were monitored by Spectrum Acoustics near the site from 26-29 March 2018. Data was recorded at 15 minute statistical intervals using a Svan 971 environmental noise logger. The measurements were conducted in accordance with relevant EPA guidelines and AS 1055-2018 "Acoustics – Description and Measurement of Environmental Noise". The noise logger used complies with the requirements of AS/NZS IEC 61672.2:2004 "Electroacoustics – Sound Level Meters, Part 2: Pattern evaluation tests", and has current NATA calibration certification.

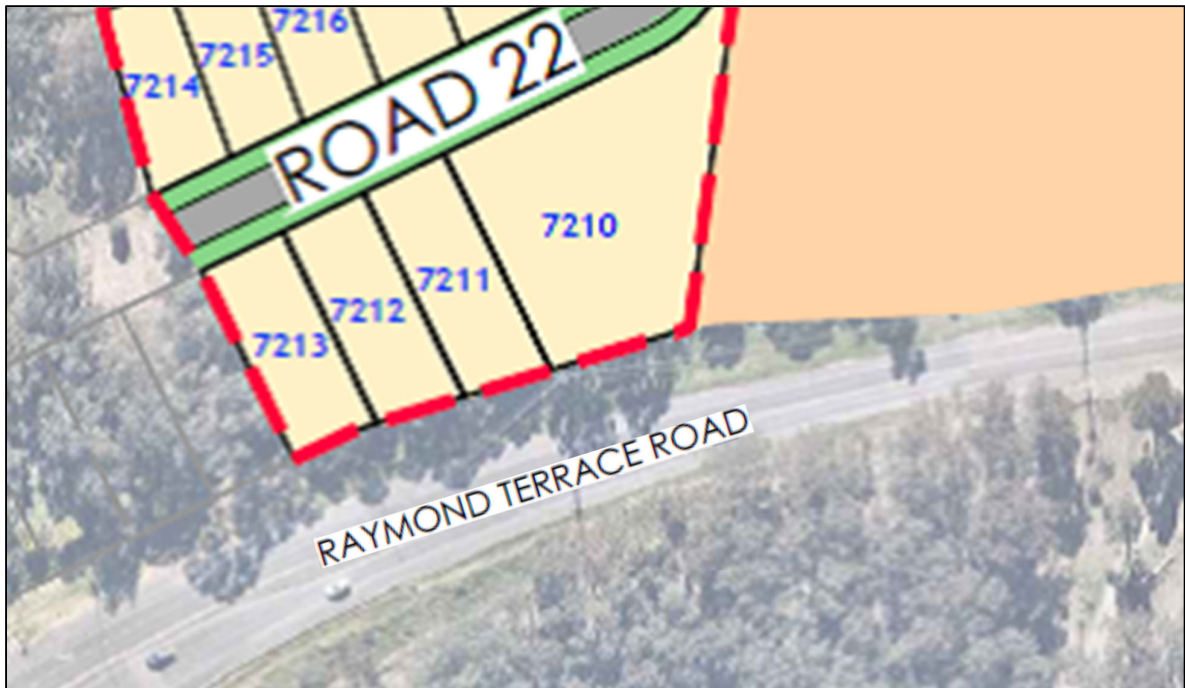
The logger was programmed to continuously register environmental noise levels over the 15 minute intervals, with internal software calculating and storing Ln percentile noise levels for each sampling period. Calibration of the logger was performed during the instrument's initialisation procedures, with calibration results being within the allowable  $\pm 0.5$  dB(A) range.

**Figure 1** shows the project site and the noise logger location. The logger was placed next to the western boundary fence of an adjoining stage of the Waterford County subdivision approximately 20m from the edge of Raymond Terrace Road.



**Figure 1.** Project site and noise logger location (Source: Google Earth).

**Figure 2** shows the Lots at the southern boundary of Stage 72 and Raymond Terrace Road.



**Figure 2.** Lots with rear facades fronting Raymond Terrace Road.

Ambient  $L_{Aeq}$  and background ( $L_{A90}$ ) noise levels obtained from the logger are summarised below in **Table 1** and shown graphically in **Appendix A**. Table 1 includes the background ( $L_{90}$ ) levels, the  $L_{eq}$  over the full day (11 hour, 7am-6pm), evening (4 hour, 6pm-10pm) and night (9 hour, 10pm-7am) periods as well as the 90<sup>th</sup> percentile ( $P_{90}$ ) of the measured  $L_{Aeq(15minute)}$  levels, representing the morning and afternoon traffic peaks.

Location	Day	Night
Raymond Terrace Road, Chisholm	40 dB(A) $L_{90}$	37 dB(A) $L_{90}$
	54 dB(A) $L_{eq}$ (period)	50 dB(A) $L_{eq}$ (period)
	57 dB(A) $L_{eq}$ ( $P_{90}$ )	54 dB(A) $L_{eq}$ ( $P_{90}$ )

### TRAFFIC NOISE ASSESSMENT

The NSW Road Noise Policy (RNP, 2012) as adopted by the Roads and Maritime Services (RMS) of NSW, recommends various criteria for different road developments and uses. For new residential developments near roads carrying more than 20,000 vehicles per day, the RNP advises that land use developers must meet internal noise goals in the Infrastructure SEPP (Department of Planning NSW, 2007). The SEPP (2007) is supported by the Department of Planning guideline “Development near Rail Corridors and Busy Roads – Interim Guideline” (2008) which gives the following internal noise level criteria in Section 3.5:

In any bedroom in the building: **35 dB(A),  $L_{eq}$**  at any time 10pm – 7am, and  
 Anywhere else in the building (other than a garage, kitchen, bathroom or hallway): **40dB(A),  $L_{eq}$**  at any time.

These criteria originated from the Rail Infrastructure Corporation (RIC) publication “Consideration of Rail Noise and Vibration in the Planning Process” (2003) where it is explicit that the criteria apply with windows and doors closed. The criteria correspond to those in AS/NZS 2107, where the noise is considered to be “quasi-continuous” in nature.

Figure 2 is a reproduction of Figure B2 from the Interim Guideline (2008) showing a typical situation of a dwelling adjacent to a busy road and calculated internal noise levels relative to external noise levels using the UK Calculation of Road Traffic Noise (CoRTN) methodology. Figure 2 shows a traffic noise level of 68 dB(A) at windows W1 and W2 directly facing the road. Windows W3 and W4 are on facades perpendicular to the road, thereby being shielded from 50% of the traffic noise by the building structure, and noise levels are 2-3 dB below the traffic noise level at W1 and W2. Window W5 is approximately twice the distance from the road as W4 and experiences an external traffic noise level 4 dB below the level at W4.

Figure 2 also gives the traffic noise loss for three construction scenarios labelled A, B and C. The following specifications for these construction scenarios are reproduced from the Guideline. The specification for walls includes insulation in the wall cavity, however brick veneer achieves  $R_w >45$  without insulation, which will not reduce the overall noise insulation of the room as a whole, since

windows are the acoustically weakest elements. Any recommendations regarding the following construction specifications assume no insulation in facade walls.

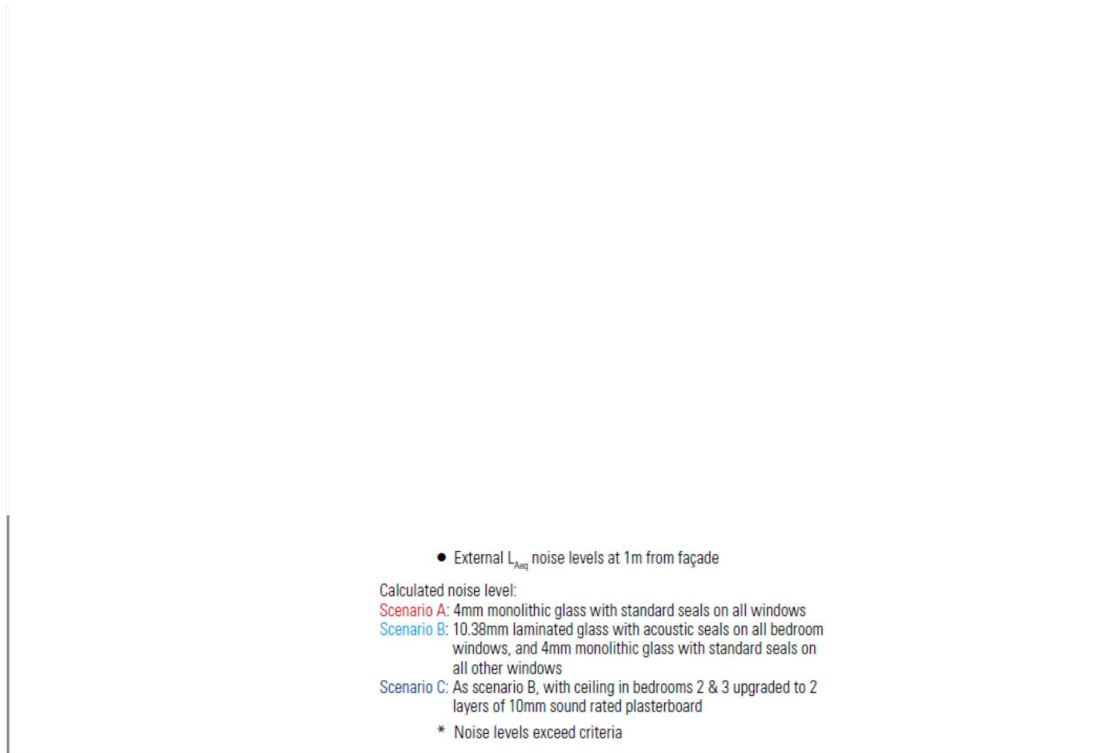


Figure 2. Traffic noise reduction for various construction types.

### Specification A

Windows	standard 4mm monolithic glass with standard weather seals on all windows	(Rw 25)
Doors	30mm solid core timber – lounge room aluminium framed glass sliding door – lounge and dining rooms	(Rw 24)
Walls	brick-veneer and standard plasterboard on timber studs with insulation in cavity	(Rw 52)
Roof	tiled roof and standard plasterboard ceiling with insulation	(Rw 43)
Floor	concrete slab	

Note: 'Rw' is the weighted sound reduction index of a building element



### Specification B

Windows	10.38mm laminated glass with acoustic seals on all bedroom windows, standard 4mm monolithic glass with standard seals on all other windows	(Rw 35)
Doors	30mm solid core timber – lounge room aluminium framed glass sliding door – lounge and dining rooms	(Rw 24)
Walls	brick-veneer and standard plasterboard on timber studs with insulation in cavity	(Rw 52)
Roof	tiled roof and standard plasterboard ceiling with insulation	(Rw 43)
Floor	concrete slab	

Note: 'Rw' is the weighted sound reduction index of a building element

### Specification C

Windows	10.38mm laminated glass with acoustic seals on all bedroom windows, standard 4mm monolithic glass with standard seals on all other windows	(Rw 35)
Doors	30mm solid core timber – lounge room aluminium framed glass sliding door – lounge and dining rooms	(Rw 24)
Walls	brick-veneer and standard plasterboard on timber studs with insulation in cavity	(Rw 52)
Roof	as per Specification B, except the single layer of standard plasterboard ceiling is replaced with a double-layer of 10mm sound-rated plasterboard ceiling	(Rw 52)
Floor	concrete slab	

Note: 'Rw' is the weighted sound reduction index of a building element

Table 2 summarises the traffic noise reduction provided by each construction scenario for the cases in Figure 2 where a room contains either one or two windows.

TABLE 2 Traffic noise reduction in dB (from Figure B2 of the Interim Guideline (2008))		
Construction scenario	Noise reduction (2 windows)	Noise reduction (1 window)
Scenario A	23	25
Scenario B	29	31
Scenario C	32	34 (estimated)

Between the minimum 23dB reduction for Scenario A and minimum 29dB reduction for Scenario B lies what will be called Scenario A/B in which 23-28 dB traffic noise reduction is required<sup>1</sup>. This will be achieved with the same construction as scenario B except using 6.5mm Vlam Hush (or equivalent) in lieu of the 10.38mm glazing (8.5mm Vlam Hush provides the same acoustic rating as 10.38mm). This conservative measure is based on adopting the 23dB noise reduction for 4mm glass, whether there are one or two windows in the room.

Since acoustic performance can vary greatly depending upon framing and seals, glazing suppliers should certify that their windows/doors will achieve the required noise reduction and not simply defer to the minimum glazing thickness recommended in this report. Where upgrades from standard 4mm glazing is recommended, confirmation of acoustic performance should be supplied by the glazing company for the purposes of certification for occupation certificate.

In considering potential noise impacts on a residential subdivision it is usual for Roads and Maritime Services NSW (RMS) to look at traffic noise levels projected for 10 years from the timing of a development.

<sup>1</sup> The value of 23dB has been included in the Scenario A/B category as a measure of conservatism.

With the increased development of the entire Urban Release Area the traffic flow on Raymond Terrace Road will also increase. To consider a conservative scenario an increase in traffic volumes of approximately 35% over existing levels has been used to determine potential impacts. Such a growth in traffic volumes would result in an increase in traffic noise of about 1.3dB(A).

Adopting the estimated peak hour traffic noise levels in Table 1 at the nearest facades of future residences on Lots 7210, 7211, 7212 and 7213 to Raymond Terrace Road implies required traffic noise reduction of 18 dB for living rooms and 20 dB for bedrooms. These levels are less than the 23 dB noise reduction achieved by standard 4mm glazing in Table 2 and no acoustic treatment is required to achieve the design internal traffic noise levels. Any proposed road side fence or barrier would provide an acoustic benefit for these Lots, but provision of an acoustic barrier is not required.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 49542276.

**SPECTRUM ACOUSTICS PTY LIMITED**



**Neil Pennington MIAP, MAAS**

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Principal/Director

**APPENDIX A**

**NOISE LOGGER DATA CHART**

