

Appendix G Acoustic report

SCENTRE GROUP

**RESIDENTIAL DEVELOPMENT
3 BRAGOR PLACE, 17 & 19 ALMONDBURY ROAD
ARDROSS**

**DEVELOPMENT APPLICATION
ACOUSTIC REPORT**

DECEMBER 2023

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3 BRAGOR PLACE, 17 & 19 ALMONDBURY ROAD
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1.0 INTRODUCTION

Herring Storer Acoustics was commissioned by Scentre Group to conduct a preliminary review of the proposed development at 3 Bragor Place, 17 and 19 Almondbury Road, Ardross.

This report has been based on the Development Application drawings provided.

2.0 PROPOSED DEVELOPMENT

The proposed development site is located at 3 Bragor Place, 17 and 19 Almondbury Road, Ardross.

The development consists of six floors of apartments (ground to five), with basement and undercroft car parking. Three townhouses are proposed as part of the development on the northern boundary of the site.

3.0 CRITERIA

3.1 BCA PROVISIONS

For Class 2 or 3 buildings, Part F5 of the National Construction Code (NCC), outlines the minimum acoustic isolation of apartments. The townhouses may classify as a Class 1 building, however, the acoustic requirements of these classifications – whilst a different area of the NCC/BCA is the same as for Class 2 and 3.

The following summarises the acoustic criteria:

3.1.1 Walls

Wet to wet	$R_W + C_{tr}$ not less than 50 dB.
Living to living	$R_W + C_{tr}$ not less than 50 dB.
Wet to living construction.	$R_W + C_{tr}$ not less than 50 dB plus discontinuous
Kitchens to living construction.	$R_W + C_{tr}$ not less than 50 dB plus discontinuous
SOU to Lobby	R_W not less than 50 dB.

Note: Where kitchens are part of an open living area, we consider the kitchen to be part of the living area and in these cases a discontinuous construction is required. This also includes cases where kitchens are back-to-back, however, discontinuous construction is only required on one side.

3.1.2 Floors

Floors $R_W + C_{tr}$ not less than 50 dB.

Impact Isolation $L_{n,w}$ not more than 55 dB is recommended.

Note: The impact isolation criteria under the BCA is an $L_{n,w}$ of not more than 62 dB. However, as a member firm of the Association of Australasian Acoustic Consultants, (AAAC) we recommend a criteria of an $L_{n,w}$ of not more than 55 dB be adopted for a development of this type.

3.1.3 Service Risers

to Habitable Rooms $R_W + C_{tr}$ not less than 40 dB.

to Non-Habitable Rooms $R_W + C_{tr}$ not less than 25 dB.

3.1.4 Hydraulics

The above requirements also apply to storm water down pipes.

3.1.5 Doors

Door (Connecting to a lobby) R_W not less than 30 dB.

The development will be designed to comply with the requirements of Part F5 of the BCA.

3.2 ENVIRONMENTAL PROTECTION (NOISE) REGULATIONS 1997

The *Environmental Protection (Noise) Regulations 1997* stipulate the allowable noise levels at any noise sensitive premises from other premises. The allowable or assigned noise levels for noise sensitive premises are determined by the calculation of an influencing factor, which is added to the baseline criteria set out in Table 1 of the Regulations. The baseline assigned noise levels are listed in Table 3.1. For commercial premises, the allowable or assigned noise levels are the same for all hours of the day. Table 3.1 also lists the assigned noise levels for commercial premises.

TABLE 3.1 – ASSIGNED NOISE LEVELS

Premises Noise	Receiving	Time of Day	Assigned Level (dB)		
			L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises within 15 metres of a dwelling		0700 - 1900 hours Monday to Saturday	45 + IF	55 + IF	65 + IF
		0900 - 1900 hours Sunday and Public Holidays	40 + IF	50 + IF	65 + IF
		1900 - 2200 hours all days	40 + IF	50 + IF	55 + IF
		2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	35 + IF	45 + IF	55 + IF

Note: The L_{A10} noise level is the noise that is exceeded for 10% of the time.
The L_{A1} noise level is the noise that is exceeded for 1% of the time.
The L_{Amax} noise level is the maximum noise level recorded.

It is a requirement that noise from the site be free of annoying characteristics (tonality, modulation and impulsiveness) at other premises, defined below as per Regulation 9.

“impulsiveness” means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax Slow}$ is more than 15dB when determined for a single representative event;

“modulation” means a variation in the emission of noise that –

- (a) is more than 3dB $L_{A Fast}$ or is more than 3dB $L_{A Fast}$ in any one-third octave band;
- (b) is present for more at least 10% of the representative assessment period; and
- (c) is regular, cyclic and audible;

“tonality” means the presence in the noise emission of tonal characteristics where the difference between –

- (a) the A-weighted sound pressure level in any one-third octave band; and
- (b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A Slow}$ levels.

Where the above characteristics are present and cannot be practicably removed, the following adjustments are made to the measured or predicted level at other premises.

TABLE 3.2 – ADJUSTMENTS FOR ANNOYING CHARACTERISTICS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+ 5 dB	+ 5 dB	+ 10 dB

From a review of the development, the influencing factor for this development and the surrounding noise sensitive premises would be 6 dB, based on the following:

Major Roads within outer circle;	
Riseley Street	+ 2 dB
Commercial Premises within Inner Circle	
40%	+ 2 dB
Commercial Premises within Outer Circle	
40%	+ 2 dB
Total IF	+ 6 dB

Hence, the influencing factor would be + 11 dB and the assigned noise levels would be as listed in Table 3.3.

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Noise	Receiving	Time of Day	Assigned Level (dB)		
			L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises within 15 metres of a dwelling		0700 - 1900 hours Monday to Saturday	51	61	71
		0900 - 1900 hours Sunday and Public Holidays	46	56	71
		1900 - 2200 hours all days	46	56	61
		2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	41	51	61

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.

We note that noise emissions from the premises need to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*. This primarily consists of mechanical services associated with the development.

3.3 STATE PLANNING POLICY 5.4

Traffic noise impact for the proposed development will need to be assessed in accordance with WAPC State Planning Policy 5.4.

The aim of the planning policy is to design the residential building façade to achieve the following internal sound levels :

- L_{eq} 35 dB(A) in sleeping areas (bedrooms); and
- L_{eq} 40 dB(A) in living/work areas and other habitable rooms.

4.0 BCA REQUIRMENTS

The proposed development will be constructed to comply with the requirements of Part F5 of the NCC.

It is noted that adopting the flooring criteria of not more than 55 L_{nT,w} dB provides greater amenity than basic BCA compliance.

5.0 NOISE INGRESS

State Planning Policy 5.4

The location of the development, and roads/rail that may trigger an assessment in accordance with State Planning Policy 5.4, was ascertained from the WA State Government “PlanWA” website.

An extract, showing the development location and the relevant trigger distances from surrounding road/rail network is shown below in Figure 1 for State Planning Policy 5.4.

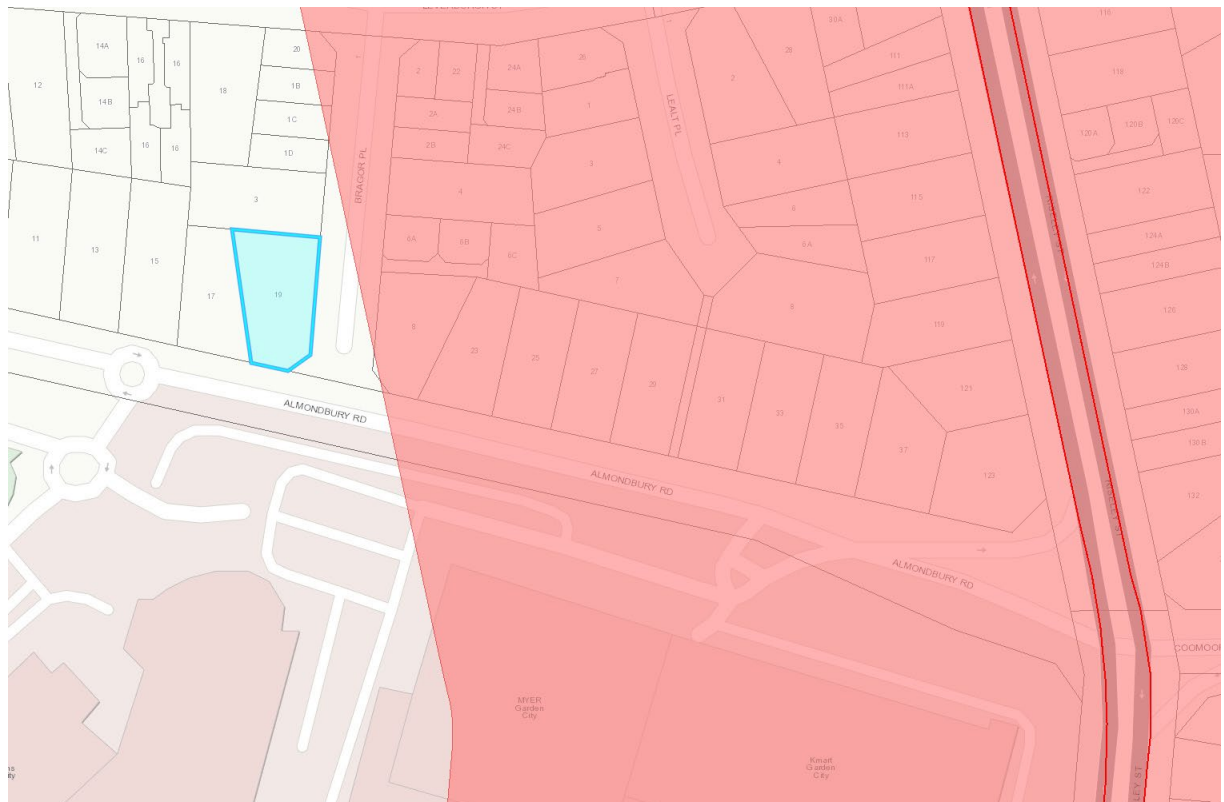


FIGURE 1 – PlanWA EXTRACT SHOWING ROAD/RAIL TRIGGERS

The above plan shows that an assessment of road and rail noise is not required in accordance with SPP 5.4 as the location is outside of the trigger distance for assessment purposes.

Regardless of the above, noise level measurements were undertaken at the site on 13th December 2023 at approximately 9am. This time is considered representative of peak traffic conditions in the area.

Noise levels were measured at 54 dB(A). At a level of 54 dB(A), no further actions in regards to upgraded construction would be required to be implemented in accordance with SPP 5.4.

6.0 NOISE FROM DEVELOPMENT

The main source of noise from the proposed development will be from mechanical services consisting of air-conditioning plant and carpark exhaust systems if needed. Noise received at neighbouring premises, and premises within the development, from these items need to comply with the assigned noise levels as determined under the *Environmental Protection (Noise) Regulations 1997*.

6.1 MECHANICAL SERVICES

The main source of noise from the proposed development will be from mechanical services consisting of air-conditioning plant and condenser units. Noise received at residence (neighbours and residence within the development) from these items need to comply with the assigned noise levels as determined under the *Environmental Protection (Noise) Regulations 1997*.

As the mechanical services could operate during the night, noise emissions from the development needs to comply with the assigned L_{A10} night period noise level of 41 dB(A) at residential premises. Potentially, noise emissions from mechanical services could be tonal, in which case an +36 dB(A) penalty for a tonal component could be applied to the resultant noise levels. Therefore, the design level at the neighbouring residential premises would be 36 L_{A10} dB.

6.1.1 Apartments

The air conditioning for the apartments is not yet known.

Once the design of the system is finalised, an acoustic assessment will be carried out of noise emissions from the mechanical plant and any noise amelioration required will be incorporated into the design to ensure compliance with the *Environmental Protection (Noise) Regulations 1997*. However, we believe that compliance would be easily achieved, and any noise mitigation would be minimal, with the proposed design.