



Block 16, Section 10, City 70 Allara Street, Canberra Northbourne Noise Management Plan

Geocon

Report number: 220040_Noise Management Plan_BW_R0
Date: 2 February 2022
Version: For Information

DOCUMENT CONTROL

Project Name	Block 16, Section 10, City
Project Number	220040
Report Reference	220040_Noise Management Plan_BW_R0
Client:	Geocon

Revision	Description	Reference	Date	Prepared	Checked	Authorised
1	For Information	220040_Noise Management Plan_BW_R0	2 February 2022	Ben White	Matt Furlong	Ben White

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1 INTRODUCTION

Pulse White Noise Acoustics has been engaged to undertake the Noise Management Plan for the proposed mixed use commercial and residential development located at Block 16, Section 10, City.

This assessment includes the acoustic investigation into the following:

1. Future internal noise levels from environmental noise, including traffic noise, on the future residential dwellings within the development.
2. potential for noise impacts from the operation of the completed project, including the proposed mechanical equipment and the potential for noise impact on both the surrounding external environment as well as the residential receivers located within the same building on the level above.
3. Potential noise impact from the proposed ground floor commercial/retail units on surrounding residential receivers.
4. Control of noise from other internal uses including common areas.

1.1 Development Description

The proposed development is located at Block 16, Section 10, City. The site is located at 70 Allara Street, City with Allara Street to the east, London Circuit to the west and Parkes Way within the vicinity of the site to the south.

The site is bound by existing commercial and residential properties.

The site location and measurement locations are detailed in Figure 1 below.



Figure 1 Block 16, Section 10, City site location

The site is located with an area which includes a designated land use including an area in the city centre and defined as Zone B as detailed in the figure below.

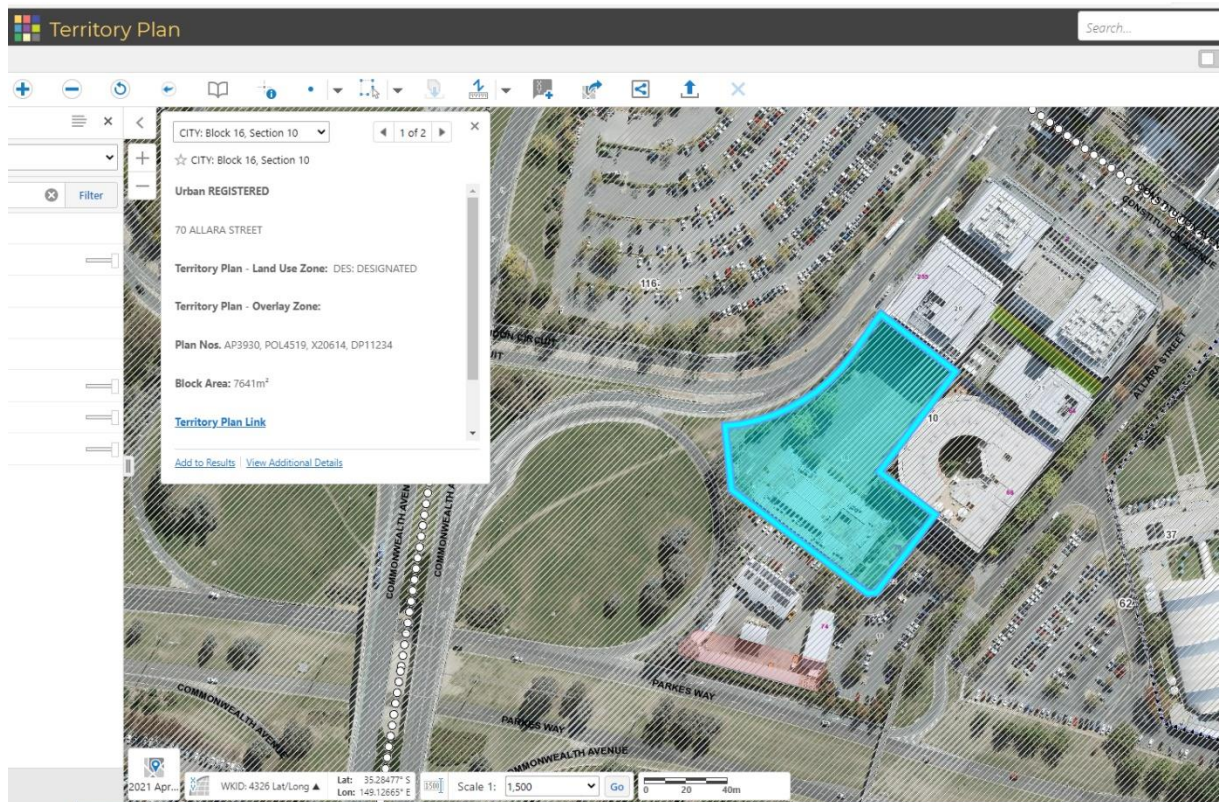


Figure 2 Territory Plan designation

2 EXISTING ACOUSTIC ENVIRONMENT

The section of the report details the acoustic survey of the existing acoustic environment surrounding the site.

The Block 16 Section 10, City site location is located with Allara Street to the east, London Circuit to the west and Parks Drive within the vicinity of the site to the south. Acoustic noise level measurements of noise levels impacting the site have been conducted at the site.

The existing noise levels at the site are predominantly as a result from traffic noise within the vicinity of the site.

As part of this assessment an acoustic survey of the existing acoustic environment at the site was undertaken. The survey included attended noise level measurements at the site, during various times of the day on the 1st February, 2022. During the testing periods there was no inclement weather periods.

Noise measurements were undertaken using a Rion NL-42EX type noise meter with serial number 00410151 and calibration with calibration number C19279. Noise levels were conducted to both the northern and southern sides of the site as detailed in Figure 1 above to obtain existing noise levels on the site. The meter was calibrated before and after testing and no significant drift was recorded.

2.1 Noise Survey Results

The attended and unattended noise locations were selected to obtain suitable noise levels for the assessment of existing noise levels impacting the site from traffic movements (Leq(t)). The results of the acoustic survey are detailed in the table below which have been used as the basis of this assessment.

Table 1 Results of the Attended Noise Survey at the Site

Measurement Location	Time of Measurement	LAeq, 15min dB(A)	Comments
Location 1 – South of the site	Peak morning period pf 8.45am to 9.00am	68	Noise level at the site dominated by vehicle movements on surrounding roadways including Parks Way to the south of the site
Location 2 – Facing London Circuit to the west of the site	Peak morning period of 9.05am to 9.20am	66	
Location 3 – Facing Allara Street to the east	Peak morning period of 9.25am to 9.40am	65	

3 INTERNAL NOISE LEVEL CRITERIA

Internal noise levels within the future residential occupancies have been based on the relevant noise levels as detailed within Section 158 of the *Territory Plan* and the Australian Standard AS2107:2000 *Acoustics - Recommended design sound levels and reverberation times for building interiors*.

The recommended levels for various areas of the project are detailed in the following table. The recommended noise levels for residential dwellings near major roadways detailed within AS2107:2016 have been used as the basis of this assessment.

The project internal noise levels criteria are detailed in the table below.

Table 2 Recommended Internal Noise Levels

Type of Occupancy/Activity	Design sound level maximum (LAeq,t)
Apartment common areas (e.g. foyer, lift lobby)	55 dB(A) 24 hours
Residential - Living areas	40 dB(A) 15 hours
Residential - Sleeping areas (night time)	35 dB(A) 9 hours
Commercial Areas	45 dB(A) 24 hours
Retail Areas	50 dB(A) 24 hours
Communal Areas	45 dB(A) 24 hours
Toilets	55 dB(A) 24 hours

Note 1: The relevant time period includes the night time period of 10pm to 7am



4 ENVIRONMENTAL NOISE INTRUSION ASSESSMENT

This section of the report details the assessment of environmental noise intrusion into the proposed development and the recommended acoustic treatments to ensure the recommended internal noise levels detailed in the Sections above (including traffic noise intrusion) are achieved.

Internal noise levels within the future areas of the development will result from the noise intrusion into the building through the external façade including glass, masonry and other façade elements. Typically, the acoustic performance of building elements including the relatively light weight elements of the building façade, including glass and/or plasterboard constructions, will be the determining factors in the resulting internal noise levels.

Calculations of internal noise levels have been undertaken based on the measured traffic and calculated aircraft environmental noise levels at the site and the characteristics of the building, including window openings, buildings constructions and the like.

4.1 External Glass Elements

The recommended acoustic constructions to the buildings external façade glass elements are detailed in the table below to ensure the recommended internal noise levels detailed above are achieved, with the façade building openings closed.

Table 3 External Glass Acoustic Requirements

Building	Façade Orientation	Room Type	Recommended Glass Construction	Minimum Façade Acoustic Performance ¹
Northern Building	Northern and Eastern Façade	Bedrooms	10.38mm Laminated OR 6/12/10	Rw 35
		Living Rooms	6.38mm Laminated OR 6/12/6	Rw 35
		Wet areas	6.38mm Laminated	Rw 30
		Common Areas	6.38mm Laminated	Rw 30
		Communal Area	6.38mm Laminated	Rw 30
		Commercial Areas	6.38mm Laminated OR 6/12/6	Rw 30
	Western and Southern Façade	Bedrooms	10.38mm Laminated OR 6/12/10	Rw 35
		Living Rooms	10.38mm Laminated OR 6/12/10	Rw 35
		Wet areas	6.38mm Laminated	Rw 30
		Common Areas	6.38mm Laminated	Rw 30
		Communal Area	6.38mm Laminated	Rw 30
		Commercial Areas	6.38mm Laminated OR 6/12/6	Rw 30

Note 1: The acoustic performance of the external façade includes the installed glazing and frame including (but not limited to) the façade systems seals and frame. All external glazing systems are required to be installed using acoustic bulb seals.

Building	Façade Orientation	Room Type	Recommended Glass Construction	Minimum Façade Acoustic Performance ¹
South Eastern Building	Southern, Western and Eastern Façade	Bedrooms	10.38mm Laminated OR 6/12/10	Rw 35
		Living Rooms	6.38mm Laminated OR 6/12/6	Rw 35
		Wet areas	6.38mm Laminated	Rw 30
		Common Areas	6.38mm Laminated	Rw 30
		Communal Area	6.38mm Laminated	Rw 30
		Commercial Areas	6.38mm Laminated OR 6/12/6	Rw 30
	Northern Façade	Bedrooms	10.38mm Laminated OR 6/12/10	Rw 35
		Living Rooms	10.38mm Laminated OR 6/12/10	Rw 35
		Wet areas	6.38mm Laminated	Rw 30
		Common Areas	6.38mm Laminated	Rw 30
		Communal Area	6.38mm Laminated	Rw 30
		Commercial Areas	6.38mm Laminated OR 6/12/6	Rw 30
South Western Building	All Façade Orientations	Bedrooms	10.38mm Laminated OR 6/12/10	Rw 35
		Living Rooms	6.38mm Laminated OR 6/12/6	Rw 35
		Wet areas	6.38mm Laminated	Rw 30
		Common Areas	6.38mm Laminated	Rw 30
		Communal Area	6.38mm Laminated	Rw 30
		Commercial Areas	6.38mm Laminated OR 6/12/6	Rw 30

Note 1: The acoustic performance of the external façade includes the installed glazing and frame including (but not limited to) the façade systems seals and frame. All external glazing systems are required to be installed using acoustic bulb seals.

4.2 External Building Elements

The proposed external building elements including masonry or concrete external walls and roof are acoustically acceptable without additional acoustic treatment.

Any light weight external pasteboard walls should be constructed from a construction with a minimum acoustic performance of R_w 50.

4.3 External Roof

The required external roof and ceiling constructions for the project are required to include the following:

1. Concrete external roof construction – no additional treatments required.
2. Light weigh metal deck roof with plasterboard ceilings - no additional treatments required.

4.4 External Opening and Penetrations

All openings and penetrations are required to be acoustically treated such that the performance of the building construction is not compromised. This may require lining of duck work behind mechanical service openings/grills, treatments to ventilation opening and the like.

5 NOISE LEVEL EMISSIONS

This section of the report details the external noise emission criteria for project.

5.1 External Environmental Noise Emission Criteria

The relevant acoustic criteria for the potential noise emissions from site include those detailed within the ACT Environment Protection Act 1997 and the Environment Protection Regulations. The location of the site is within land designated as Zone B within the on the Environment Protection Regulation 2005.

Based on Table 2.1 of the Environment Protection Regulation 2005 the relevant external noise emission criteria is detailed in the table below.

Table 4 External Noise Emission Criteria

Noise Zone	Noise Standard dB(A)			
	Monday to Saturday 7am to 10pm	Monday to Saturday 10pm to 7am	Sunday and Public Holidays 8am to 10pm	Sunday and Public Holidays 10pm to 8am
Zone B – Land in city centre and town centres	60	50	60	50

Note: Noise level based on Table 2.2 of the Environment Protection Regulation 2005

5.2 Noise Emissions Assessment

This section of the report includes the building services with the potential to generate noise emissions to surrounding receivers.

5.2.1 Building Services

At this stage of the project details of the specific mechanical plant and equipment which will be installed on the site are not available at this time. As a result, a detailed assessment of building services noise emissions and specification required acoustic treatments cannot be undertaken at this time. Notwithstanding the expected suitable acoustic treatments to plant and equipment are detailed in the following points which have previously been successfully used on other similar projects.

- Basement Supply and Exhaust Fans – location of fans within the building and treated using internally lined ductwork or acoustic silencers.
- General supply and exhaust fans – general exhaust and supply fans such as toilet, kitchen, lobby and other small mechanical fans can be acoustically treated using acoustic flex ducting or internal lined ducting.
- Condensing equipment – the location of condensers or the like on balconies or the roof of the project will be acoustically assessed. If required alternative equipment will be selected or acoustic screens installed to ensure relevant noise emission levels are achieved.

Details of the required mechanical services equipment and acoustic treatments to ensure the relevant noise level criteria is achieved will be provided as part of the design stage of the project.

5.2.2 Waste and Garbage Collection

Waste and garbage collection associated with the proposed site will be undertaken in accordance with the relevant codes and practices. The collection of waste and garbage is not considered to result in unacceptable noise impacts providing the requirements of the code of practice, which includes the following:

- Any contractor who receives a complaint relating to the noise from its operations shall attempt to resolve the complaint to the complainant's satisfaction in accordance with the following procedures.
- Where possible, the business shall reschedule the collection or take other appropriate action to resolve the problem, taking into account:
 - the impact any rescheduling may have on other persons. In any rescheduling, priority should be given to minimising noise impacts on residential premises;
 - access problems which may prevent collection at other times; and
 - any other measures, such as relocating garbage hoppers, which may reduce noise impacts

Providing the waste and garbage collection is undertaken in accordance with the above, then the resulting noise impact on residence will be acceptable.

5.3 Communal Areas

The proposed development includes a communal area which is located on level 7 of the south western building of the project, which is included in the figure below.

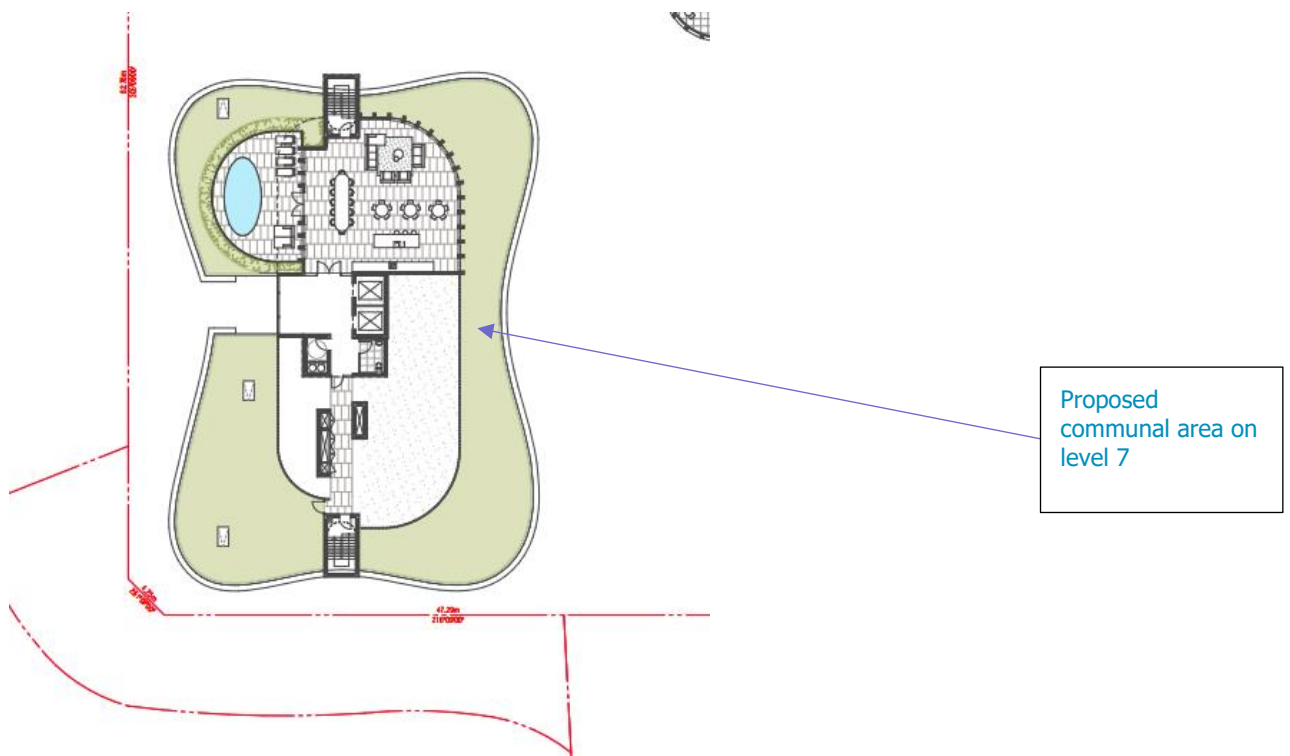


Figure 3 Proposed Communal Areas

The proposed communal area includes a number of communal rooms and outdoor spaces which will be for use of the residence and their guests. The existing acoustic environment within the vicinity of the communal open space includes noise resulting from traffic and the light rail on surrounding roadways.

For the purpose of this assessment, we have assumed the following noise levels:

To mitigate noise levels from the proposed common area to within the required noise emission criteria detailed in this report the following acoustic mitigations are recommended:

- 1) External common areas is only to be used during the daytime and evening time including the following:
 - a) (For Monday to Saturday, Daytime 7:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm.
 - b) On Sundays and Public Holidays, Daytime 8:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm)
- 2) Use of the common area is permitted for communal activities. The area is not to be used for high noise generating activities such as large gatherings, playing of loud music or parties.
- 3) Amplified music is not permitted in the external communal areas.
- 4) Signs must be installed within the area outlining the recommendations above.
- 5) All communal rooms are to include constructions including the following:
 - a) All external glazing including 10.38mm laminated with an acoustic performance of R_w 35.
 - b) Solid external walls and roof/ceilings with an acoustic performance of R_w 50.

Providing the recommended acoustic mitigations detailed in the points above are included in the design and operation of the proposed communal area will comply with the noise emission criteria detailed in this report and will be acoustically acceptable.

5.4 Communal Gym

This section of the specification details the required acoustic treatments to be included to the common area gym located on the lower ground floor of the project. The project includes a communal gym which will include the following activities:

1. General gym area.
2. Weights area.

The location of the gyms is included in the figure below.

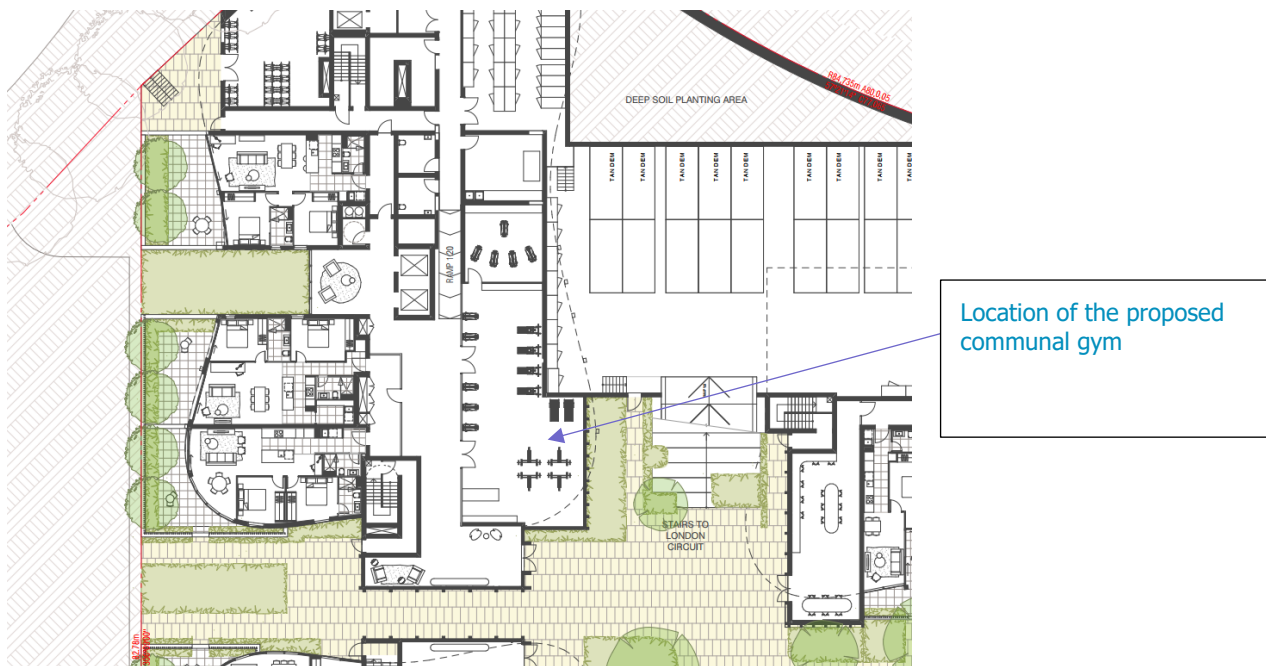


Figure 4 Proposed Communal Gym, Lower Ground Floor

5.4.1 Acoustic Treatments

This section of the specification details the required floor treatments to be installed to the proposed gym areas of the project.

Regenerated (structure-borne) noise from various impacts within the gymnasium (such as weight drops) is likely to result in the largest potential noise impacts on the dwelling located within proximity to the gym. To mitigate the resulting noise impacts from the use of the gym and gym equipment via structure born noise the introduction of a vibration isolating floor is required.

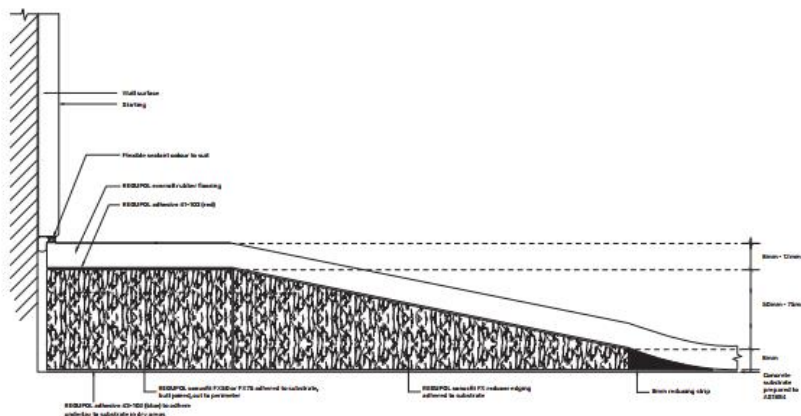
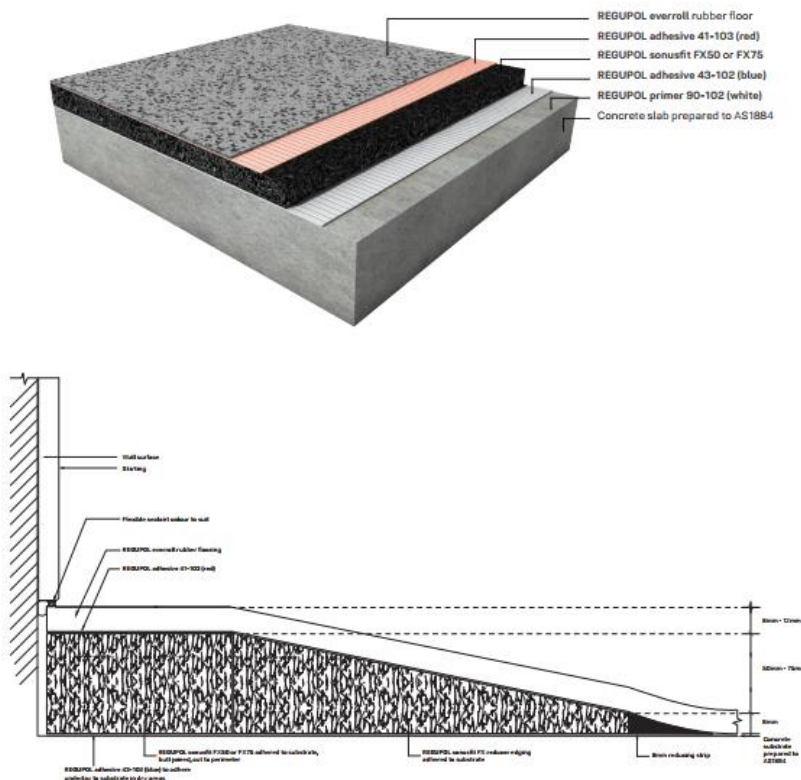
This report includes recommendations such that noise resulting from the use of the gym, including vibration, can be minimised.

The recommended flooring to areas of the gyms includes the following:

1. A carpet flooring will be acoustically acceptable for installation to the access and walkway areas were gym activities are not undertaken. This could include in front of the entry doors and service doors such that access remains possible without clashing with the swing of doors.
2. A rubber flooring should be installed to all areas of the gyms which include the use of equipment, or machines. The type of rubber flooring required within the gyms includes the following
 - a. Cardio Gym - 8mm everroll on 22mm Sonusfit E type matting or similar.
 - b. Weight areas of the gym - 8mm everroll on 75mm Sonusfit FX type matting or similar.

Details of the proposed matting including a product suitable for use in gym areas and is included in the figure below.

Figure 5 Proposed Gym Flooring



5.4.2 Gym Management Protocols

In addition to the proposed flooring included above a number of protocols and use of the gyms should be undertaken by the residents using the facility.

Additional constructions and equipment to mitigate noise resulting from the use of the equipment include the following;

1. All weights machines and equipment should include spring loaded weights machines.
2. Any running and step machines should include isolation to the building structure including external isolation to machines where possible.
3. All machines and free weights should be located such that contacts with the surrounding building elements including wall and columns is not possible.
4. The playing of amplified music should be limited to a level of no greater than 60 dB(A), all speakers should be vibration isolated from the building structure including isolation mounts similar to Embelton NR type mounts.
5. Details of the protocols for the use of the gym should be provide to the residence of the building and included in information included visually within the gym.

The recommended use of the gym includes the following:

- a) Use of the gym equipment and free wights should be undertaken in accordance with the intended use of the item is use.
- b) No dropping of weights or medicine balls from a height greater than knee height.
- c) Weights should be places in an orderly manner with the intent of mitigating noise impact on the building structure.

6 RETAIL/COMMERCIAL NOISE LEVELS

This section of the report details the assessment of potential noise levels generated within the retail and commercial tenancies on the ground floor of the project to the future residential dwellings located within the building above.

The proposed tenancies will include commercial offices or retail uses including cafes, restaurants, bars or the like. The proposed retail/commercial tenancies will not include high noise generating uses defined as entertainment facilities, the tenancies will NOT include:

1. Casino
2. Cinema
3. Commercial Theatre
4. Concert Hall
5. Amusement Arcade
6. Dance Hall
7. Discotheque
8. Music Hall
9. Night Club

6.1 Internal Noise Level Criteria to Residence Above

Noise level criteria for the potential of noise impacts from the proposed ground floor retail/commercial tenancies to the residential units located directly above has been based on the recommended internal noise levels of the Australian Standard AS2107:2016, including the lower range of the *Design Sound Level* for a residential development near a minor roadway. The relevant internal noise level criteria for the internal noise level of the units located directly above the ground floor retail/commercial areas is detailed in the table below.

Table 5 Internal Noise Level Criteria

Type of Occupancy/Activity	Design sound level maximum (LAeq,t)
Residential - Living areas	30
Residential - Sleeping areas (night time)	30

Note: The relevant time period (t) for all areas detailed is 15 minutes. Based on residential developments located near minor roads with the Australian Standard AS2107:2015.

6.2 Expected Maximum Internal Noise Levels

Based on the proposed uses of the ground floor retail/commercial tenancies the maximum noise levels will be generated in the event a restaurant or bar occupies the tenancies. Based on the noise levels of noisy restaurant/bar the expected maximum noise levels within the ground floor tenancies is up to 95 dB(A).

6.3 Building Constructions

Based on the expected maximum noise levels which may be generated within the ground floor retail/commercial tenancies the recommended building constructions to ensure internal noise levels within the residential dwellings above comply with the relevant noise level criteria include the following:

1. The ground floor external glazing should be constructed from a minimum of 10.38mm laminated glass or 6/12/10 IGU.
2. The minimum floor construction separating the ground floor tenancies and the residence above is a 20mm concrete slab.

Providing the building constructions above are included in the building construction noise levels generated from the commercial/retail tenancies on the ground floor will be suitable within the residential tenancies located directly above.

In the event the ground floor areas were to be used for uses as a casino, commercial cinema, commercial theatre, concert hall, amusement arcade, dance hall, discotheque, music hall or night club additional acoustic treatments would be required to the ground floor areas. The required additional treatment for these uses would include:

1. Isolated raised flooring including spring isolation.
2. Internal linings to walls including additional frames separated from based building constructions
3. Isolated ceiling construction including spring or neoprene isolation with multiple layers of pasteboard.
4. Cladding of internal columns or other structural elements within the ground floor tenancies including linings which are separated from the base building construction.

7 GARBAGE CHUTE ISOLATION

Any garbage chutes on the project will be vibration isolated from the building structure. The isolation of the chute will include the following:

1. Isolate the chute from the building structure using isolation mounts similar to Embelton NRD mounts or equivalent Mason mounts. Mounts should be designed to include a static deflection of approximately 5mm.
2. Garbage chutes to be contained within a riser which is complaint with the BCA for fire and acoustic requirements include a performance of $R_w + C_{tr} 25$ to wet areas and $R_w + C_{tr} 40$ to habitable areas.
3. Any compactors used in the basement area to be vibration isolation using NRD or three layers of waffle pads with metal spacers.

8 INTERNAL BUILDING DESIGN

The internal building elements of the building will be designed to comply with the minimum requirements of the BCA including the following.

Table 6 Project sound insulation requirements for doors, floors and ceiling constructions, and separation for building services

Construction Elements	Project Minimum Acoustic Performance	
	Laboratory performance requirements	Verification method*
Walls between sole occupancy units	$R_w + C_{tr}$ not < 50	$D_{nT,w} + C_{tr}$ not < 45
Walls between a bathroom, sanitary compartment, laundry or kitchen in one sole occupancy unit and a habitable room (other than a kitchen) in an adjoining unit	$R_w + C_{tr}$ not < 50 and Must have a minimum 20 mm cavity between two separate leaves ¹	$D_{nT,w} + C_{tr}$ not < 45
Walls between sole occupancy units and a plant room or lift shaft	$R_w + C_{tr}$ not < 50 and Must have a minimum 20 mm cavity between two separate leaves ¹	$D_{nT,w} + C_{tr}$ not < 45
Walls between sole occupancy units and a stairway, public corridor, public lobby or the like, or parts of a different classification	R_w not < 50	$D_{nT,w}$ not < 45
Door assemblies located in a wall between a sole-occupancy unit and a stairway, public corridor, public lobby or the like	R_w not < 50 ²	$D_{nT,w}$ not < 25
Floors between sole-occupancy units or between a sole-occupancy unit and a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification	$R_w + C_{tr}$ not < 50 $L_{n,w}$ not > 62	$D_{nT,w} + C_{tr}$ not < 45 $L_{nT,w}$ not > 62
Floors of habitable areas of one sole occupancy located above other sole occupancy	$R_w + C_{tr}$ not < 50 IIC 50	$D_{nT,w} + C_{tr}$ not < 45 FIIC 48
Soil, waste, water supply and stormwater pipes and ductwork to habitable rooms	$R_w + C_{tr}$ not < 40	n/a
Soil, waste, water supply and stormwater pipes and ductwork to kitchens and other rooms	$R_w + C_{tr}$ not < 25	n/a
Intra-tenancy Walls	There is no statutory requirement for airborne isolation via intra-tenancy walls.	
Apartment entry doors	R_w 30	R'_w 25

Note 1: A wall must be of "discontinuous construction" if it separates a sole occupancy unit from a plant room or lift shaft. Clause F5.3(c) defines "discontinuous construction" as a wall having a minimum 20 mm cavity between two separate leaves with no mechanical linkage except at the periphery.

Note 2: Clause FP5.3(b) in the 2016 BCA states that the required insulation of a floor or wall must not be compromised by a door assembly.

9 CONCLUSION

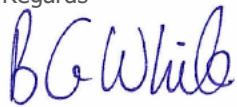
This report details the Noise Management Plan for the proposed residential development located at 70 Allara Street - Block 16 Section 10, City mixed use commercial and residential project.

This report details the required acoustic criteria for both external noise emissions and internal noise levels within the project based on the ACT Environment Protection Act 1997 and the Environment Protection Regulation 2005 and the relevant Australian Standard.

Providing all treatments detailed in this report are included to the proposed design and construction of the project then all relevant acoustic criteria will be achieved.

For any additional information please do not hesitate to contact the person below.

Regards

A handwritten signature in blue ink that reads 'Ben White'.

Ben White
Director
Pulse White Noise Acoustics



10 APPENDIX A – GLOSSARY OF TERMS

<i>Ambient Sound</i>	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.																				
<i>Audible Range</i>	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.																				
<i>Character, acoustic</i>	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.																				
<i>Decibel [dB]</i>	The level of noise is measured objectively using a Sound Level Meter. The following are examples of the decibel readings of every day sounds; <table style="margin-left: 40px;"> <tr> <td>0dB</td> <td>the faintest sound we can hear</td> </tr> <tr> <td>30dB</td> <td>a quiet library or in a quiet location in the country</td> </tr> <tr> <td>45dB</td> <td>typical office space. Ambience in the city at night</td> </tr> <tr> <td>60dB</td> <td>Martin Place at lunch time</td> </tr> <tr> <td>70dB</td> <td>the sound of a car passing on the street</td> </tr> <tr> <td>80dB</td> <td>loud music played at home</td> </tr> <tr> <td>90dB</td> <td>the sound of a truck passing on the street</td> </tr> <tr> <td>100dB</td> <td>the sound of a rock band</td> </tr> <tr> <td>115dB</td> <td>limit of sound permitted in industry</td> </tr> <tr> <td>120dB</td> <td>deafening</td> </tr> </table>	0dB	the faintest sound we can hear	30dB	a quiet library or in a quiet location in the country	45dB	typical office space. Ambience in the city at night	60dB	Martin Place at lunch time	70dB	the sound of a car passing on the street	80dB	loud music played at home	90dB	the sound of a truck passing on the street	100dB	the sound of a rock band	115dB	limit of sound permitted in industry	120dB	deafening
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80dB	loud music played at home																				
90dB	the sound of a truck passing on the street																				
100dB	the sound of a rock band																				
115dB	limit of sound permitted in industry																				
120dB	deafening																				
<i>dB(A)</i>	<i>A-weighted decibels</i> The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.																				
<i>Frequency</i>	Frequency is synonymous to <i>pitch</i> . Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.																				
<i>Loudness</i>	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on																				
<i>L_{Max}</i>	The maximum sound pressure level measured over a given period.																				
<i>L_{Min}</i>	The minimum sound pressure level measured over a given period.																				
<i>L₁</i>	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.																				
<i>L₁₀</i>	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.																				
<i>L₉₀</i>	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L ₉₀ noise level expressed in units of dB(A).																				
<i>L_{eq}</i>	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.																				
<i>Background Sound Low</i>	The average of the lowest levels of the sound levels measured in an affected area in the absence of noise from occupants and from unwanted, external ambient noise sources. Usually taken to mean the L _{A90} value																				

<i>Ctr</i>	A frequency adaptation term applied in accordance with the procedures described in ISO 717.
<i>dB (A)</i>	'A' Weighted overall sound pressure level
<i>Noise Reduction</i>	The difference in sound pressure level between any two areas. The term "noise reduction" does not specify any grade or performance quality unless accompanied by a specification of the units and conditions under which the units shall apply
<i>NR Noise Rating</i>	Single number evaluation of the background noise level. The NR level is normally around 5 to 6 dB below the "A" weighted noise level. The NR curve describes a spectrum of noise levels and is categorised by the level at 1000 Hz ie the NR 50 curve has a value of 50 dB at 1000 Hz. The NR rating is a tangential system where a noise spectrum is classified by the NR curve that just encompasses the entire noise spectrum consideration.
<i>R_w</i>	Weighted Sound Reduction Index - Laboratory test measurement procedure that provides a single number indication of the acoustic performance of a partition or single element. Calculation procedures for <i>R_w</i> are defined in ISO 140-2:1991 "Measurement of Sound Insulation in Buildings and of Building Elements Part 2: Determination, verification and application of precision data".
<i>R'_w</i>	Field obtained Weighted Sound Reduction Index - this figure is generally up to 3-5 lower than the laboratory test determined level data due to flanked sound transmission and imperfect site construction.
<i>Sound Isolation</i>	A reference to the degree of acoustical separation between any two areas. Sound isolation may refer to sound transmission loss of a partition or to noise reduction from any unwanted noise source. The term "sound isolation" does not specify any grade or performance quality and requires the units to be specified for any contractual condition
<i>Sound Pressure Level, L_p dB</i>	A measurement obtained directly using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the rms sound pressure to the reference sound pressure of 20 micro Pascals.
<i>Sound Power Level, L_w dB</i>	Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power levels is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt
<i>Speech Privacy</i>	A non-technical term but one of common usage. Speech privacy and speech intelligibility are opposites and a high level of speech privacy means a low level of speech intelligibility. It should be recognised that acceptable levels of speech privacy do not require that speech from an adjacent room is inaudible.
<i>Transmission Loss</i>	Equivalent to Sound Transmission Loss and to Sound Reduction Index in terminology used in countries other than Australia. A formal test rating of sound transmission properties of any construction, by usually a wall, floor, roof etc. The transmission loss of all materials varies with frequency and may be determined by either laboratory or field tests. Australian Standards apply to test methods for both situations.