



ARCHITECTURAL ACOUSTICS

**ALCHERA LIVING - 40/44 WORLEY STREET, WILLAGEE
STAGE 3 & 4 DEVELOPMENT APPLICATION REPORT**

15th July 2025



For

GARY BATT ASSOCIATES ARCHITECTS

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| Report Version | Author | Notes | Date |
|----------------|------------------|-----------------------------|----------------------------|
| Initial Report | Michael Ferguson | | 14 th July 2025 |
| Rev A | Michael Ferguson | Update fire pump commentary | 15 th July 2025 |



Association of Australasian
Acoustical Consultants

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1. INTRODUCTION

This Development Application report addresses the architectural acoustic issues to be covered during the design and development stages of the proposed Stage 3 & 4 Aged Care development at Alchera Living, located at 40 / 44 Worley Street, Willagee. This report is based on the design drawings received from the project team on the 11th July, 2025.

The purposes of this report is to provide an overview of the acoustic design requirements included in Regulations, Codes, Planning Policies and Australian Standards, relevant to the Development Application stage. It therefore establishes the acoustic requirements for this project, which must then be addressed in the detailed design and construction stages.

1.1 Qualifications of Consultant

The author of this report, Michael Ferguson, has been working for Gabriels Hearne Farrell Pty Ltd (formerly Gabriels Environmental Design Pty Ltd) since the beginning of 2010. He became a full member of the Australian Acoustical Society on the 22nd March, 2014. GHF is also a Member Firm of the Association of Australasian Acoustical Consultants.

2. ENVIRONMENTAL NOISE EMISSION

The Environmental Protection (Noise) Regulations require that potential noise emissions from the development must comply with site specific 'Assigned Levels' at adjacent premises, as established in accordance with Regulations.

2.1 Assigned Noise Levels

The Regulations describe a procedure for establishing the Assigned Levels, based on the traffic flow and land zoning within a 100m radius and 450m radius outer circle, relevant to the reference receiver premises. As indicated in Fig 1 below, there is negligible commercial properties within a 450m radius of the neighbouring receivers, and no major roads within this perimeter. Therefore, there is no Influencing Factor applied to the Assigned Noise Levels for this development.



Image 01 - Influencing Factor Radii

The calculated Assigned Levels for receiver properties adjacent to this site are set out below in Table 01 on the following page.

| Type of premises receiving noise | Time of day | Assigned Noise Level (dB) | | |
|---|---|---------------------------|-----|-------------------|
| | | LA10 | LA1 | L _{Amax} |
| Noise sensitive premises; highly sensitive area. (i.e. within 15m of a residential building) | 0700 to 1900 hours Monday to Saturday | 45 | 55 | 65 |
| | 0900 to 1900 hours Sunday and public holidays | 40 | 50 | 65 |
| | 1900 to 2200 hours all days | 40 | 50 | 55 |
| | 2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays. | 35 | 45 | 55 |
| Commercial Premises | All hours | 60 | 75 | 80 |

Table 01 - Assigned Noise Levels for Adjacent Receiver Positions

The sound level parameters used for the various environmental noise criteria are described below, based on an assessment period of 15 minutes up to 4 hours:

LA10 is the 'A' weighted noise level which is not to be exceeded for more than 10% of the time, e.g. for more than 10 minutes in 100 minutes. This is the parameter relevant to most HVAC equipment, and emissions from other longer term noise sources that run for extended duration (such as exhaust fans, air-conditioning units etc.).

LA1 is the 'A' weighted noise level which is not to be exceeded for more than 1% of the time, e.g. for more than 1 minute in 100 minutes, or up to 24 minutes in 4 hours. This is the parameter relevant to noise sources that only occur occasionally, for short durations, (e.g. fire pump testing, etc.).

L_{Amax} is the 'A' weighted noise level for individual events (e.g. car door closes, car stackers, etc.) which is not to be exceeded at any time.

2.2 Adjustments for Noise Character

In accordance with Regulation 9, sounds with tonal, modulating or impulsive characteristics are deemed to be more annoying, and therefore an adjustment of +5dB is required to be added to the measured level for tonal and modulating characteristics, and +10dB for impulsive characteristics; where measurable at the point of reception.

In accordance with the noise assessment techniques described in the Regulations, noise emission from most mechanical equipment such as condensing units, cooling towers / heat pumps, and exhaust fans etc. are considered tonal and therefore a +5dB adjustment is required to be added the measured (or predicted) level. However during the daytime hours it is feasible that there is enough diversity in the units running, and combined with a higher background noise level tonality may not be measurable and therefore may not be applied during these times.

2.3 Project Noise Sources

Noise sources relevant to this development that may result in emission to neighbouring premises include:

- Mechanical Services, Air conditioning and other HVAC equipment – including condensers, exhaust fans, car park ventilation systems and the like.
- Vehicles in car parking areas
- Fire Pump (if applicable)
- Waste Collection

Each relevant Noise Source is discussed below.

2.3.1 Mechanical Services

Potential noise emissions from all mechanical equipment will be addressed in the design and documentation stages, to ensure appropriate mechanical acoustic design and specifications are incorporated, to comply with the relevant 'Assigned Levels'. For HVAC equipment the relevant Assigned Level parameter is LA10, as equipment will typically run for more than 10% of the time, as tabulated below:

| Noise Emissions from HVAC Equipment | | |
|-------------------------------------|----------------------------|-------------------------------|
| | Time of Day | Relevant Assigned Noise Level |
| Daytime - Monday to Saturday | 7am to 7pm | LA10 47 dB(A) |
| Daytime - Sundays & Public Holidays | 9am to 7pm | LA10 40 dB(A) |
| Evening - All Days | 7pm to 10pm | LA10 40 dB(A) |
| Overnight - All Days | All other times from above | LA10 35 dB(A) |

Table 02 -Relevant Assigned Noise Levels - HVAC Equipment

Since the HVAC can run any time of day, the most stringent Assigned Level Criteria of LA10 ≤ 35 dB will apply to overnight operation. Adjustment for tonality will also be considered, where relevant.

For this development, the proposed location of the main air-conditioning plant appears to be located on the individual balconies of the units. With consideration given to the noise level of the units selected, and assuming standard residential condensing units, it is reasonable that the proposed scenario has the capability of achieving compliance with the Environmental Regulations.

Once the Mechanical Services design is progressed and noise level data becomes available, a detailed assessment will be conducted to ensure compliance with the relevant Assigned Levels. Selection of equipment with inherently low noise operation, and potential use of night setback modes will be considered as part of the design process. Night setback modes are highly recommended as they typically reduce noise emissions by approximately 5dB(A), meaning that if compliance is achieved with Sunday daytime Assigned Noise Levels, compliance is also achieved during the overnight period with the setback mode activated.

Potential for noise intrusion into the development itself, via the roof / building envelope etc. will also be considered as the design develops. Given the location of the balcony equipment this is unlikely to be a concern.

2.3.2 Noise from Vehicles in Carparks

Noise emission from vehicle movements in Public Carparks that are open to public access are treated in accordance with the Road Traffic Act (as road traffic noise), and are therefore not addressed by the Environmental Protection (Noise) Regulations. This is consistent with the approach applied to parking facilities at other multi-residential and commercial developments.

However, noise from any ventilation exhaust systems (if proposed) are mechanical in nature and must be assessed for compliance against the Environmental Regulations, as per the previous mechanical services section of this report.

2.3.3 Fire Pumps

We have been advised that a fire pump is proposed as a part of the forward works on this project. This is currently proposed as a stand-alone pump room, located in the South East corner of the property.

There are commercial properties located immediately adjacent to the South of the pump room, with residential noise sensitive properties located to the East, across Worley Street. As per the building HVAC plant, any noise emissions from a proposed Fire Pump installation must be controlled to meet the relevant Assigned Noise Levels. It should be noted that this is only applicable to the testing of the equipment for maintenance purposes, during actual emergencies compliance with the Regulations is not required.

For fire pumps, we have been previously advised these maintenance runs are typically less than a 24 minute duration. Therefore, these are assessed against the LA1 Assigned Levels, as tabulated below. If the generator must be run for extended duration (> 24 minutes) then the LA10 criteria becomes relevant.

| Noise Emissions from Fire Pumps | | |
|-------------------------------------|----------------------------|-------------------------------|
| | Time of Day | Relevant Assigned Noise Level |
| Daytime - Monday to Saturday | 7am to 7pm | LA1 55 dB(A) |
| Daytime - Sundays & Public Holidays | 9am to 7pm | LA1 50 dB(A) |
| Evening - All Days | 7pm to 10pm | LA1 50 dB(A) |
| Overnight - All Days | All other times from above | LA1 45 dB(A) |
| Commercial Properties | All times | LA1 75 dB(A) |

Table 03 -Relevant Assigned Noise Levels - Fire Pump

When assessing this equipment it is assumed that the testing will only be conducted between 7am and 7pm Monday to Saturday. Equipment selections and relevant noise level data is not yet available for these items. The acoustic design and specification requirements will therefore be determined during the design development and documentation stages of the project, to fully comply with the relevant Assigned Levels. This includes noise emissions from the exhaust outlet pipe, as well as the ventilation of the fire pump room itself, as an escape path for the fire pump engine noise itself.

Based on a fully enclosed pump room, with an attenuated pump set and exhaust system e.g. Allied Class 1 pump set or similar, compliance should be achieved provided the exhaust outlet faces way from residences and there are no ventilation louvres facing the neighbours (unless provided with rear attenuation). This will be confirmed in the following stages of this project once a detailed design is undertaken.

It should also be noted that the above Assigned Noise Levels apply to any generators on site, however it is our understanding these are unlikely to be proposed on this project. Further to this, if generators are included in the project then they must also comply with the LA10 requirements during power outages, as they are not normally considered a “life safety” device.

2.3.4 Loading Bay Deliveries & Waste Management

There does not appear to be any designated loading bays documented for this project. Therefore it is assumed that any deliveries to the ground floor tenancies will be undertaken off one of the adjacent streets. These delivery vehicles would not require any assessment under the EPNR unless parking on the development lot. If located in the undercover parking facilities we do not foresee any significant concern regarding potential noise emissions.

With regards to servicing Bin compounds, noise generated by this activity falls under the recently amended part of the Regulations “14A. Waste collection and other works”. This section of the Regulations states that the Assigned Levels (Regulation 7) do not apply to a range of ‘specified works’, including ‘the collection of waste’. Provided the waste collection is conducted between 7am to 7pm Monday to Saturday, (or 9am to 7pm Sunday and public holidays), then the activity is deemed to be “Class 1”.

3. ENVIRONMENTAL NOISE INTRUSION

The proposed development is located adjacent to Worley Street, within relatively minor suburban side streets. Based on online mapping systems (as shown in the image below), the proposed development is outside of the trigger distance from the surrounding major roads for the State Planning Policy 5.4 “Road and Rail Noise”.

Therefore, there is no requirement to address noise intrusion from external sources. No further action required.

4. INTERNAL ACOUSTICS

4.1 Class 2 Acoustic Requirements

Part F5: "Sound Transmission and Insulation" of the Building Code of Australia (BCA) establishes minimum mandatory requirements for the acoustic performance of Class 2 buildings. These acoustic requirements impact on the construction of walls, ceilings, and services.

Further to the above, where requirements are not specifically stated in the BCA, we will still provide recommended acoustic performances based on what has been deemed fit-for-purpose on previous similar projects.

The following BCA Part F5 design requirements and acoustic recommendations will be addressed during design and documentation.

| Minimum Acoustic NCC Requirements - Class 2 | |
|--|---|
| Walls | |
| Party walls separating habitable areas in adjoining Sole Occupancy Units | $R_w + C_{tr} 50$ |
| Party walls between wet and habitable areas | $R_w + C_{tr} 50 + \text{discontinuous construction}$ |
| Walls to public corridor or lobby, stairs, or parts of different classification | $R_w 50$ |
| Entry Doors | |
| Entry Door to Public Area | $R_w 30$ |
| Floors | |
| Separating sole occupancy units, or parts of different classification - Airborne | $R_w + C_{tr} 50$ |
| Impact sound insulation | L_{nTw} no greater than 62 dB field measurement |
| Services | |
| Services adjacent to Habitable room | $R_w + C_{tr} 40$ |
| Services adjacent to Kitchen or Non-habitable room | $R_w + C_{tr} 25$ |

Table 04 - Minimum NCC Acoustic Requirements

The BCA also stipulates general construction requirements, as well as services access and locations etc. These minimum requirements will be outlined during the following stages of this development for the project Architect to incorporate into the documentation.

5. OVERVIEW

At the Development Application stage of this project the relevant acoustic design issues to consider are:

- Requirement for noise emissions to comply with Environmental Protection (Noise) Regulations,
- Consideration of potential traffic noise intrusion, including attenuation measures into the documentation where practicable
- Requirement to comply with the Building Code of Australia (BCA), Part F5 – Sound Transmission and Insulation.

This Acoustic Report has addressed each of the project specific acoustic design issues relevant to the Development Application stage.

Further detailed consideration of these issues is required throughout the design development and documentation stages of the project, to ensure compliance with the relevant regulations, codes and acoustic quality standards.

If you have any further queries regarding any of the information contained in this report, please call the undersigned on 9474 5966.

Regards,

Michael Ferguson

Associate Director B.IntArch(Hons) M.A.A.S.



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